



**City of Columbia City Council
Regular Meeting Agenda
December 14, 2023 - 5:30 PM**

**City Hall Council Chambers
700 North Garden Street
Columbia, TN 38401
Phone: 931-560-1510**

**Chaz Molder, Mayor
Randy McBroom, Vice Mayor
Council Member DaVena Hardison, Ward 1
Council Member Debbie Wiles, Ed. D., Ward 2
Council Member Anthony Greene, Ward 3
Council Member Kenny Marshall, Ward 4
Council Member Danny Coleman, Ward 5**

**Tony Massey, City Manager
C. Tim Tisher, City Attorney
Thad H. Jablonski, City Recorder
Liz Bermudez, Recording Secretary**

The City Council of the City of Columbia welcomes your presence and participation at this meeting. If you wish to address Council regarding any item on the Agenda, please sign the sign-up sheet and indicate which agenda item you would like to comment on. You will have the opportunity to comment on an item when it comes up on the Agenda and before Council votes on the item. Once recognized, you may then come to the podium and state your name and address. Anyone requesting accommodations due to disabilities should contact the ADA Coordinator, Wanda McClain, at 931-560-1570 prior to the meeting.

PUBLIC HEARINGS

1. **PUBLIC HEARING ON ORDINANCE NO. 4484 - AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY BEING A PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER A QUITCLAIM DEED TO THE PROPERTY OWNER - WARD 5 - DEVELOPMENT SERVICES DEPARTMENT.**

RECOMMENDATION: Conduct the Public Hearing.

INFORMATION: The City no longer has any use for a portion of right-of-way off Wendy Boulevard. Easements will be kept for utilities. The right-of-way will be split between the two adjacent property owners. The required notice of Public Hearing was advertised on November 28, 2023 in The Daily Herald.

ATTACHMENTS: Staff Report - Public Hearing on Ordinance No. 4484.

REGULAR MEETING

- 1 **CALL TO ORDER/ROLL CALL.**
- 2 **INVOCATION BY HENRY MOBLEY OF PENTECOSTAL CHURCH OF JESUS CHRIST.**
- 3 **PLEDGE OF ALLEGIANCE.**
- 4 **APPROVAL OF AGENDA.**
- 5 **PRESENTATIONS.**
 - 5.1. **RESOLUTION NO. 23-102 - A RESOLUTION DEDICATING THE CHAMPIONSHIP FIELD LOCATION IN RIDLEY SPORTS COMPLEX IN HONOR OF THE FORMER CITY OF COLUMBIA MAYOR DEAN DICKEY - ADMINISTRATION.**

RECOMMENDATION: Approve Resolution No. 23-102.

INFORMATION: The City of Columbia would like to dedicate the Championship Field in Ridley Sports Complex in honor of former City of Columbia Mayor Dickey.

ATTACHMENTS: Staff Report Resolution No. 23-102, Resolution No. 23-102

5.2. RESOLUTION NO. 23-94 - A RESOLUTION ACCEPTING A DONATION OF A FREESTANDING CLOCK FROM THE COLUMBIA NOON ROTARY CLUB TO THE CITY OF COLUMBIA PARKS AND RECREATION DEPARTMENT VALUED AT APPROXIMATELY TWENTY THOUSAND DOLLARS (\$20,000) COMMEMORATING THE CLUB'S 100TH BIRTHDAY- WARD 5 - PARKS & RECREATION DEPARTMENT.

RECOMMENDATION: Approve Resolution 23-94.

INFORMATION: The City of Columbia is requesting to receive a donation of a free-standing clock from the Columbia Noon Rotary Club to the City of Columbia Parks and Recreation Department to be installed at the Riverwalk Park Farmer's Market Pavilion. It is valued at approximately twenty thousand dollars (\$20,000). The clock is to commemorate the club's 100th birthday.

ATTACHMENTS: Staff Report Resolution No. 23-94, Resolution No. 23-94., clock documents

5.3. QUARTERLY PRESENTATION BY WIL EVANS, PRESIDENT OF THE MAURY COUNTY CHAMBER AND ECONOMIC ALLIANCE

6 ORGANIZATIONAL BUSINESS.

6.1. APPROVE THE MINUTES OF THE NOVEMBER 9, 2023, REGULAR CITY COUNCIL MEETING - CITY MANAGER'S OFFICE.

RECOMMENDATION: Approve.

ATTACHMENTS: November 9, 2023 City Council Minutes.

6.2. APPROVE THE RETIREMENT BENEFITS FOR SHERRY SHEETER, ADMINISTRATIVE ASSISTANT, POLICE DEPARTMENT AND PRESENTATION OF GIFT CHECK AND RETIREMENT PLAQUE BY MAYOR MOLDER - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Sherry Sheeter has been an employee of the City of Columbia for 22 years. Her effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Sherry Sheeter Retirement.

6.3. APPROVE THE RETIREMENT BENEFITS FOR CARL SHRAKE, POLICE OFFICER, POLICE DEPARTMENT AND PRESENTATION OF GIFT CHECK AND RETIREMENT PLAQUE BY MAYOR MOLDER - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Carl Shrake has been an employee of the City of Columbia for 28 years. His effective retirement date is December 17, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Carl Shrake Retirement.

6.4. APPROVE THE RETIREMENT BENEFITS FOR MONTY BLAND, FIRE CAPTAIN, FIRE & RESCUE - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Monty Bland has been an employee of the City of Columbia for 24 years. His effective retirement date is December 14, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Monty Bland Retirement.

6.5. APPROVE THE RETIREMENT BENEFITS FOR CLINTON BLANKENSHIP, WASTEWATER MAINTENANCE WORKER, WASTEWATER DEPARTMENT - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Clinton Blankenship has been an employee of the City of Columbia for 21 years. His effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Clinton Blankenship Retirement.

6.6. APPROVE THE RETIREMENT BENEFITS FOR JOHN WILLIAMS, ENGINEERING TECHNICIAN, DEVELOPMENT SERVICES DEPARTMENT - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: John Williams has been an employee of the City of Columbia for 15 years. His effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report John Williams Retirement.

6.7. APPROVE THE RETIREMENT BENEFITS FOR CHAD HELTON, FIRE CAPTAIN, FIRE & RESCUE - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Chad Helton has been an employee of the City of Columbia for 26 years. His effective retirement date is December 27, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Chad Helton Retirement.

6.8. APPROVE THE RETIREMENT BENEFITS FOR SHARON HOWELL, ACCOUNTING TECHNICIAN II, CITY RECORDER - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: Sharon Howell has been an employee of the City of Columbia for 27 years. Her effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: Staff Report Sharon Howell Retirement.

6.9. APPROVE THE APPOINTMENT OF AARON THOMAS TO THE CITY OF COLUMBIA ARTS COUNCIL FOR A THREE-YEAR TERM EXPIRING ON DECEMBER 14, 2026.

RECOMMENDATION: Approve.

6.10. RE-ELECTION OF ERNIE ALLEN, JR., TO THE BOARD OF DIRECTORS OF THE INDUSTRIAL DEVELOPMENT BOARD AND THE HEALTH, EDUCATIONAL AND HOUSING FACILITY BOARD TO FOR A SIX-YEAR TERM THAT BEGAN ON NOVEMBER 14, 2023, AND EXPIRES ON NOVEMBER 14, 2029.

RECOMMENDATION: Approve.

7 CONSENT AGENDA

7.1. APPROVE DISBURSEMENTS FOR THE MONTH OF OCTOBER 2023 IN THE AMOUNT OF \$4,420,866.28 - FINANCE.

RECOMMENDATION: Approve.

ATTACHMENTS: October 2023 Disbursements.

7.2. RECEIVE AND FILE QUARTERLY INVESTMENT REPORT FOR THE PERIOD ENDING JUNE 30, 2023 PURSUANT TO THE CITY'S INVESTMENT AND INTERNAL CONTROLS POLICIES – SPG, FINANCIALLY RESPONSIBLE CITY PROVIDING EXCELLENT SERVICES - FINANCE.

RECOMMENDATION: Acknowledge receipt of report on City investments for the period ending June 30, 2023.

INFORMATION: The State of Tennessee requires that any municipality investing City reserve funds shall adopt an investment policy. The City Council adopted an investment policy at the December 13, 2018 City Council meeting. According to internal controls developed subsequent to the policy, staff prepares and files quarterly investment reports with the City Council.

The City began investing excess reserve funds in treasuries in March 2019. The attached investment reports reflects all investment

activities through the quarter ending June 30, 2023. After a rebound in the market for treasuries in October 2021, additional reserve funds were reinvested in treasuries to capture the maximum possible interest income.

Highlights for the quarter ending June 30th include:

- \$16,046,651 in new funds invested or reinvested in treasuries during the quarter.
- There were no withdrawals during the period ending June 30.
- \$99,138 represents General Fund investment income received for the quarter.
- \$35,760 represents the combined investment income received for all other funds during the period.

ATTACHMENTS: Staff Report June quarterly report, Investments Report 06.30.23 SIGNED.

7.3.ACCEPTANCE OF THE CITY OF COLUMBIA ANNUAL COMPREHENSIVE FINANCIAL REPORT FOR THE FISCAL YEAR ENDED JUNE 30, 2023 – SPG, FINANCIALLY RESPONSIBLE CITY PROVIDING EXCELLENT SERVICES - FINANCE.

RECOMMENDATION: Accept the Annual Comprehensive Financial Report for the Fiscal Year ended June 30, 2023.

INFORMATION: At the May 11, 2023 meeting, the City Council awarded a bid for auditing services to Henderson, Hutcherson and McCullough for three years with a provision for renewal for two subsequent years. The firm performs the City's annual audit and assists in preparation of the Annual Comprehensive Financial Report (ACFR).

The audit process went smoothly again this year, with City staff continuing to prepare as much information as possible (financial schedules, spreadsheets, etc.) in an attempt to expedite the audit process and reduce billing costs to the City. Ultimately, the City received a "clean" audit report for FY 2023.

In previous years including the last fiscal year (FY 2022), additional

services and testing (“single audit” testing) were required and performed in conjunction with federal grant expenditures in accordance with Government Auditing Standards issued by the Comptroller General of the United States and OMB Circular A-133, Audits of States, Local Governments & Non-Profit Organizations. No single audit was required for the year ended June 30, 2023.

Last year, the City applied for and received its twenty fourth consecutive “Certificate of Achievement for Excellence in Financial Reporting” from the Government Finance Officers Association (GFOA) of the United States and Canada. The Certificate of Achievement is valid for one year only. At the time the award was presented, GFOA also made recommendations for enhancements to future reports. Issues presented by GFOA have been addressed and we plan to apply for the award for the FY 2023 financial report with the belief that we continue to meet program requirements.

Aimed at providing accurate and high-quality financial reporting in a condensed format, the City applied for and received its fifth “Popular Annual Financial Reporting Awards Program” (PAFR) for the FY 2022 by GFOA. The financial data presented in the PAFR was taken from the ACFR and is intended to supplement, not replace, the ACFR.

The PAFR is best described as a condensed, abbreviated version of the ACFR. The PAFR provides readers with the most relevant financial information for the year to emphasize the City’s sound fiscal health, major financial highlights and important trends. At the time the PAFR award was presented, GFOA made recommendations for enhancements to future reports. Issues presented by GFOA have been addressed and we plan to apply for the PAFR award for FY 2023 with the belief that we continue to meet program requirements. Columbia was one of three Tennessee cities to receive both awards last year.

ATTACHMENTS: Staff Report Annual Comprehensive Financial Report., Columbia Report

7.4. APPROVE CHANGE ORDER TO THE AGREEMENT WITH ADAMS CONTRACTING, LLC IN THE AMOUNT OF \$225,493.76 - DEVELOPMENT SERVICES DEPARTMENT.

RECOMMENDATION: Approve Change Order.

INFORMATION: The City of Columbia entered into a contract with Adams Contracting, LLC on October 19, 2022. Contract No. E 2022-02 for the South Garden Streetscape Project. The original contract price was \$2,132,231.75. This Change Order is for a net increase of \$225,493.76 to cover additional construction costs incurred. The total contract price with the approved Change Order will be \$2,357,725.51

CERTIFICATION: The Chief Financial Officer certifies that \$225,494 will be included in the second consideration appropriation amendment in Capital Projects-South Garden Streetscape.

ATTACHMENTS: Staff Report Change Order, Contract No. E 2022-02 South Garden St Agreement, Final Summary Change Order S. Garden Street-AdamsSigned.

7.5. APPROVE AND AUTHORIZE THE MAYOR TO EXECUTE A THREE-YEAR CONTRACT EXTENSION WITH SHERRILL MORGAN IN THE AMOUNT OF \$39,500 IN 2024 FOR EMPLOYEE INSURANCE CONSULTING - HUMAN RESOURCES.

RECOMMENDATION: Approve.

INFORMATION: This Agreement shall continue for an initial period of three years beginning on January 1, 2024, after which it shall automatically continue on a year-to-year basis until either party provides notice of termination in accordance with the provisions of this Article. The client or Sherrill Morgan may terminate this agreement at any time, with or without cause, provided that 30 days' written notice is given to the other party prior to the effective date of termination. In consideration for the services of Sherrill Morgan, the client shall compensate Sherrill Morgan a fee of \$39,500 in 2024, \$40,500 in 2025, and \$41,500 in 2026. Upon termination under this Article, the Client shall pay a pro rata fee for any work already performed by Sherrill Morgan. Travel and accommodation expenses

for Sherrill Morgan staff, when necessary during the contract period, are included in the fees stated in this Article.

CERTIFICATION: The Chief Financial Officer certifies that \$39,500 is available and unencumbered in Health Insurance Fund - Professional Services.

ATTACHMENTS: Staff Report Sherrill Morgan Contract, Sherrill Morgan Agreement 2024.

7.6. APPROVE BID AWARD TO BRINDLEY CONSTRUCTION IN THE AMOUNT OF \$4,882,000 FOR RENOVATIONS TO FIRE STATION #1 LOCATED AT 1000 SOUTH GARDEN STREET AND AUTHORIZE THE MAYOR TO EXECUTE ANY RELATED DOCUMENTS - FIRE & RESCUE.

RECOMMENDATION: Approve a bid award to Brindley Construction in the amount of \$4,882,000 for renovations to Fire Station #1 located at 1000 South Garden Street.

INFORMATION: Competitive bids were solicited for the renovation to Fire Station #1, located at 1000 South Garden Street.

Five bids were received, and a decision was made to declare Brindley Construction the apparent low bidder due to their submitted bid envelope and contents being affirmed to comply with the State of Tennessee Board of Contractors, License and Bidding Requirements.

CERTIFICATION: The Chief Financial Officer certifies that \$4,882,000 will be included in the second consideration appropriation amendment in Capital Projects-Fire Administration - Buildings.

ATTACHMENTS: Staff Report Brindley Construction, Contract for Fire Station 1 Reno, Exhibit A - Drawing Index, Exhibit B - Spec Table of Contents, City of Columbia Fire Station A201 Gen Cond 120523 (1), Columbia Fire Station No. 1 Schedule of Values (1), Brindley120423LetterColumbia, Bid Tabulation, 2021007_addendum 1, 2021007_addendum 2, 2021007_addendum 3, Fire Station #1 - CD Construction Set - Fire Station #1 (10-30-2023), Fire

8 ADMINISTRATION.

9 RESOLUTIONS.

9.1.RESOLUTION NO. 23-81 - A RESOLUTION TO ACCEPT THE ESTABLISHED UPDATED OCCUPATIONAL SAFETY AND HEALTH PROGRAM PLAN, DEVISE RULES AND REGULATIONS, AND TO PROVIDE FOR A SAFETY DIRECTOR AND THE IMPLEMENTATION OF SUCH PROGRAM PLAN - HUMAN RESOURCES.

RECOMMENDATION: Approve Resolution No. 23-81.

INFORMATION: The City of Columbia, in electing to update the established Program Plan, will maintain an effective and comprehensive Occupational Safety and Health Program Plan for its employees as required by TOSHA. The Plan is designed to provide a safe and healthful place of employment. The Plan is required to be updated every seven years and the last update was August 11, 2016. The Organizational Chart was also updated as requested by TOSHA.

ATTACHMENTS: Staff Report Resolution No. 23-81, Resolution No. 23-81 w/organizational chart.

9.2.RESOLUTION NO. 23-90 - A RESOLUTION ACCEPTING THE DONATION OF \$1,005 (ONE THOUSAND FIVE DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF A HIGH EXPANSION FOAM PRO/PAK TO BE UTILIZED BY COLUMBIA FIRE & RESCUE - FIRE & RESCUE.

RECOMMENDATION: Approve Resolution No. 23-90.

INFORMATION: Columbia Fire & Rescue requests City Council's approval to accept the donation of \$1,005 from Joshua Ranes of Muletown Bearded Axe.

This monetary donation will provide for the purchase of a High

Expansion Foam Pro/Pak. This High Expansion Foam Pro/Pak is a portable device allowing firefighting foam to be used in special applications needing a high expansion ratio. This system is designed mainly for use in hazardous material environments, allowing the foaming agent to suppress hazardous vapors.

ATTACHMENTS: Staff Report Resolution No. 23-90, Resolution No. 23-90.

9.3. RESOLUTION NO. 23-91 - A RESOLUTION ACCEPTING A DONATION OF \$2,000 (TWO THOUSAND DOLLARS) FOR THE PURCHASE OF SUPPLIES FOR COLUMBIA FIRE & RESCUE - FIRE & RESCUE.

RECOMMENDATION: Approve Resolution No. 23-91.

INFORMATION: An undisclosed citizen of the City of Columbia desires to support the operations of Columbia Fire & Rescue by making a donation of \$2,000 (Two Thousand Dollars) for the purchase of High Heat Gloves and CellBlockEX. CellBlockEX is a dry granulate material used for the prevention and suppression of Class D lithium-ion battery fires and combustible liquids.

Columbia Fire & Rescue requests City Council's approval to accept the donation of \$2,000 (Two Thousand Dollars).

ATTACHMENTS: Staff Report Resolution No. 23-91, Resolution No. 23-91.

9.4. RESOLUTION NO. 23-92 - A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF THE SANITARY SEWER IMPROVEMENTS SERVING DRUMWRIGHT, PHASE 2 - WASTEWATER DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-92.

INFORMATION: Drumwright, Phase 2 consists of 2,092 linear feet of 8" gravity sanitary sewer main. The developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

ATTACHMENTS: Staff Report Resolution No. 23-92, Resolution No. 23-92 w/dedication letter.

9.5. RESOLUTION NO. 23-93 - A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF THE SANITARY SEWER IMPROVEMENTS SERVING WILLIAMSPORT LANDING-SINGLE FAMILY, PHASE 1 - WASTEWATER DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-93.

INFORMATION: Williamsport Landings-Single Family, Phase 1 consists of 2,130 linear feet of 8" sanitary sewer main. The Developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

ATTACHMENTS: Staff Report Resolution No. 23-93, Resolution No. 23-93 w/dedication letter.

9.6. RESOLUTION NO. 23-95 - A RESOLUTION AUTHORIZING THE ACQUISITION OF PROPERTY AND EASEMENTS INCLUDING THE AUTHORIZATION OF EMINENT DOMAIN PROCEEDING IF NECESSARY FOR THE IRON BRIDGE ROAD REPLACEMENT IMPROVEMENTS PROJECT - CITY ATTORNEY'S OFFICE.

RECOMMENDATION: Approve Resolution No. 23-95.

INFORMATION: The City previously authorized the design of the Iron Bridge Road Replacement Project which includes the replacement of Iron Bridge. The infrastructure design for the project has been completed and it is now time for the acquisition of property and utility easements. Acquisition of the property described in "Exhibit A" of the Resolution is necessary for the completion of the project. The resolution also authorizes the use of eminent domain proceedings, if necessary, for this project to be completed.

ATTACHMENTS: Staff Report Resolution No. 23-95, Resolution No. 23-95 w/Exhibit A.

9.7. RESOLUTION NO. 23-96 - TAX CORRECTIONS - CITY RECORDER'S OFFICE.

RECOMMENDATION: Approve Resolution No. 23-96.

INFORMATION: The City Recorder is presenting tax corrections through 11/17/2023 for Council consideration as submitted by Mr. Bobby Daniels, Maury County Tax Assessor.

ATTACHMENTS: Staff Report Resolution No. 23-96, Resolution No. 23-96, Resolution No. 23-96 Exhibit A.

9.8. RESOLUTION NO. 23-97 - A RESOLUTION ACCEPTING THE DONATION OF \$1,000 (ONE THOUSAND DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF DEFENSE SHIELDS TO BE UTILIZED BY THE COLUMBIA POLICE DEPARTMENT - POLICE DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-97.

INFORMATION: The Columbia Police Department requests the City Council's approval to accept the donation of \$1000 (One Thousand Dollars) from Joshua Ranes of Muletown Bearded Axe.

This monetary donation will provide for the purchase of defense shields. The defense shield provides full torso protection with a tough polycarbonate shield. The shield features an aluminum handle, web arm strap, POLICE lettering and weighs about 6 lbs. This equipment will provide protection for patrol officers if they ever have to be deployed in an unruly environment.

ATTACHMENTS: Staff Report Resolution No. 23-97, Resolution No. 23-97.

9.9. RESOLUTION NO. 23-98 - A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING BEAR CREEK GLEN, PHASE 1 - WARD 5 - WASTEWATER DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-98.

INFORMATION: Bear Creek Glen, Phase 1 consists of 796 linear feet of 8" gravity sanitary sewer main. The developers have met all the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

ATTACHMENTS: Staff Report Resolution No. 23-98, Resolution No. 23-98.

9.10. RESOLUTION NO. 23-99 - A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING BEAR CREEK OVERLOOK, PHASE 1 - WARD 5 - WASTEWATER DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-99.

INFORMATION: Bear Creek Overlook, Phase 1 consists of 1,865 linear feet of 8" sanitary sewer main. The developers have met all the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

ATTACHMENTS: Staff Report Resolution No. 23-99, Resolution No. 23-99 w/dedication letter.

9.11. RESOLUTION NO. 23-100 - A RESOLUTION TO RATIFY THE APPLICATION OF THE FY 2022 STATE & LOCAL CYBERSECURITY GRANT PROGRAM AND AUTHORIZE THE MAYOR TO EXECUTE DOCUMENTS RELATED TO ACCEPTING AND ADMINISTERING THE GRANT - MIS.

RECOMMENDATION: Approve Resolution No. 23-100.

INFORMATION: The MIS Department has the opportunity to apply for a grant from the FY 2022 State & Local Cybersecurity Grant Program for the purpose of MDR (Managed Detection and Response) security services. This grant does not require a match.

ATTACHMENTS: Staff Report Resolution No. 23-100, Resolution No. 23-100, 2022 Federal DHS Cyber Grant TN District Info Sep 2023, State of TN SLCGP Preso , Cybersecurity Plan TN (V 7.3) approved 062923.

9.12. RESOLUTION NO. 23-103 - A RESOLUTION RATIFYING THE ACCEPTANCE OF DONATIONS VALUED AT APPROXIMATELY ONE THOUSAND DOLLARS (\$1,000) FROM MR. AND MRS. TONY AND CONNIE MASSEY TO THE CITY OF COLUMBIA FOR

THE CITY OF COLUMBIA ANNUAL EMPLOYEE CHRISTMAS PARTY - FINANCE.

RECOMMENDATION: Approve Resolution No. 23-103.

INFORMATION: Finance is requesting that the City Council ratify the acceptance of donated items valued at approximately \$1,000 by Mr. and Mrs. Tony and Connie Massey. The intent of the donated items were for the express use as door prizes at the City Employee Christmas Party to show appreciation for the City of Columbia employees.

ATTACHMENTS: Staff Report Resolution No. 23-103, Resolution No. 23-103.

9.13. RESOLUTION NO. 23-104 – A RESOLUTION TO ACCEPT THE STREETS AND DRAINAGE IMPROVEMENTS IN HOMESTEAD AT CARTER’S STATION SUBDIVISION, SECTION 4, PHASE 1A, 1B, 2 AND 3 FOR OWNERSHIP AND MAINTENANCE - DEVELOPMENT SERVICES DEPARTMENT.

RECOMMENDATION: Approve Resolution No. 23-104.

INFORMATION: This Resolution refers to acceptance of streets and drainage improvements in Homestead at Carter’s Station, Section 4, Phase 1A, 1B, 2 and 3, for ownership and maintenance in the City of Columbia. The Engineering Division has made inspections and recommends acceptance of the streets and drainage improvements.

ATTACHMENTS: Staff Report Resolution No. 23-104, Resolution No. 23-104, Homestead 4 1A final acceptance 10.3.23, Homestead 4 1B final acceptance 10.3.23, Homestead 4 2 final acceptance 10.3.23, Homestead 4 3 final acceptance 10.3.23, Homestead 4.1A FP, Homestead 4.1B FP, Homestead 4.2 FP, Homestead 4.3 FP, Homestead 4.3.

10 ORDINANCES.

10.1. 2ND CONSIDERATION ON ORDINANCE NO. 4484 - AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY

BEING A PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER A QUITCLAIM DEED TO THE PROPERTY OWNER - CITY MANAGER'S OFFICE.

RECOMMENDATION: Approve Ordinance No. 4484 on second consideration.

INFORMATION: The City no longer has any use for a portion of right-of-way off Wendy Boulevard. Easements will be kept for utilities. The right-of-way will be split between the two adjacent property owners.

ATTACHMENTS: Staff Report Ordinance No. 4484, Ordinance No. 4484, Ordinance No. 4484 Exhibit "A".

10.2.1ST CONSIDERATION OF ORDINANCE NO. 4485 – AN ORDINANCE TO AMEND THE FISCAL YEAR 2023-2024 BUDGET ORDINANCE NO. 4464 PROVIDING FOR REVISIONS TO THE GENERAL AND CAPITAL PROJECTS FUNDS AND ESTABLISH THE DATE OF JANUARY 11, 2024 AS THE DATE OF PUBLIC HEARING - FINANCE.

RECOMMENDATION: Approve Ordinance No. 4485 on first consideration and establish the date of January 11, 2024 as the date of public hearing.

INFORMATION: The proposed ordinance is the second amendment to the FY 2024 Appropriation Ordinance, impacting the Capital Projects and several departments within the General Fund.

Within this budget amendment, the following items are included:

- Replenish General City Admin – Reserves for the transfer to Capital Projects Fund (\$149,122),
- Budget funds in Police for 2024 THSO Grant totaling \$20,000,
- Budget funds in Parks to establish a budget for Mid-State Classic (\$45,000),
- Budget \$200,000 for the 2024 Tourism Enhancement Grant funds for blue-way access on the Duck River and \$49,122 for engineering for Parking Garage Design from the prior fiscal year.

A detailed schedule of items included within this budget amendment is attached. This amendment increases the City's total budget for FY 2024 by \$463,244 to \$101,392,976.

ATTACHMENTS: Staff Report Ordinance No. 4485, Ordinance No. 4485, Ordinance No. 4485 Supporting Documents, Ordinance No. 4485 - Summary.

10.3.1ST CONSIDERATION ON ORDINANCE NO. 4486 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 89E GROUP F PARCELS 1.01 AND 1.02, LOCATED OFF MORNINGSIDE LANE, FROM CD-3L (NEIGHBORHOOD LARGE LOT CHARACTER DISTRICT) TO CD-4 (GENERAL URBAN CHARACTER DISTRICT) AND ESTABLISH JANUARY 11, 2024 AS THE DATE OF PUBLIC HEARING - WARD 3 - DEVELOPMENT SERVICES DEPARTMENT.

RECOMMENDATION: Approve Ordinance No. 4486 on first consideration and establish January 11, 2024 as the date of Public Hearing.

INFORMATION: The applicant is requesting to rezone the property from CD-3L (Neighborhood Large Lot Character District) to CD-4 (General Urban Character District) with the future development concept reflecting single family lots on the four acres of property. The future land use plan designation of Urban Neighborhood is consistent with the CD-4 requested zone. The Planning Commission reviewed this request at the November 8, 2023 meeting and recommended approval by a vote of four to three.

ATTACHMENTS: Staff Report Ordinance No. 4486, Ordinance No. 4486, Ordinance No. 4486 Exhibit A, Ordinance No. 4486 Exhibit B, Ordinance No. 4486 - Concept Plan, Development Services Staff Report Ordinance No. 4486.

10.4.1ST CONSIDERATION OF ORDINANCE NO. 4488 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2022

DELINQUENT PROPERTY TAXES - CITY RECORDER'S OFFICE.

RECOMMENDATION: Approve Ordinance No. 4488 on first consideration.

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent property taxes. Following adoption of the ordinance, the City Recorder provides the County Attorney with a certified list of delinquent 2022 property taxes. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent property taxes.

ATTACHMENTS: Staff Report Ordinance No. 4488, Ordinance No. 4488.

10.5.1ST CONSIDERATION OF ORDINANCE NO. 4489 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2020, 2021 AND 2022 DELINQUENT PERSONAL PROPERTY TAXES - CITY RECORDER'S OFFICE.

RECOMMENDATION: Approve Ordinance No. 4489 on first consideration.

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent personal property taxes. Following adoption of the ordinance, the City Recorder may provide the County Attorney with a certified list of delinquent 2020, 2021 and 2022 personal property taxes. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent personal property taxes.

ATTACHMENTS: Staff Report Ordinance No. 4489, Ordinance No. 4489.

10.6.1ST CONSIDERATION OF ORDINANCE NO. 4490 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2022

DELINQUENT SPECIAL ASSESSMENTS - CITY RECORDER'S OFFICE.

RECOMMENDATION: Approve Ordinance No. 4490 on first consideration.

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent special assessments. Following adoption of the ordinance, the City Recorder provides the County Attorney with a certified list of delinquent 2022 special assessments. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent special assessments.

ATTACHMENTS: Staff Report Ordinance No. 4490, Ordinance No. 4490.

11 OTHER BUSINESS.

12 EXECUTIVE SESSION.

13 ADJOURNMENT.

14 UPCOMING EVENTS.

14.1. CHRISTMAS LIGHTS IN THE PARKS - WOODLAND PARK, FAIRVIEW PARK & RIVERWALK PARK - DECEMBER 11TH UNTIL NEW YEAR'S DAY.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Paul Keltner, AICP, Director of Development Services, paul@columbiatn.com 931.560.1560

AGENDA ITEM TITLE:

PUBLIC HEARING ON ORDINANCE NO. 4484 - AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY BEING A PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER A QUITCLAIM DEED TO THE PROPERTY OWNER - WARD 5

RECOMMENDATION: Conduct the Public Hearing.

INFORMATION: The City no longer has any use for a portion of right-of-way off Wendy Boulevard. Easements will be kept for utilities. The right-of-way will be split between the two adjacent property owners. The required notice of Public Hearing was advertised November 28, 2023 in The Daily Herald.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Jill Carlson, Sr. Administrative Assistant, jcarlson@columbiatn.com 931-560-1451

AGENDA ITEM TITLE: RESOLUTION NO. 23-102 - A RESOLUTION DEDICATING THE CHAMPIONSHIP FIELD LOCATION IN RIDLEY SPORTS COMPLEX IN HONOR OF THE FORMER CITY OF COLUMBIA MAYOR DEAN DICKEY

RECOMMENDATION: Approve Resolution No. 23-102.

INFORMATION: The City of Columbia would like to dedicate the Championship Field in Ridley Sports Complex in honor of former City of Columbia Mayor Dickey.

**A RESOLUTION DEDICATING THE CHAMPIONSHIP FIELD LOCATED IN
RIDLEY SPORTS COMPLEX IN HONOR OF THE FORMER CITY OF
COLUMBIA MAYOR DEAN DICKEY**

WHEREAS, former Mayor Dean Dickey was born on August 30, 1933 and was in the Retail Food Industry for forty-eight years, twenty-seven of those as owner and operator of seven supermarkets in the Middle Tennessee area from 1973-1997; and

WHEREAS, he is a proud graduate of Campbellsville High School, served in the US Army during the Korean Conflict with an Honorable Discharge and was instrumental in establishing the Tennessee Grocers Association; and

WHEREAS, Mayor Dean Dickey stayed active in our community by being a strong leader of various organizations, including: Chamber of Commerce, United Way, American Red Cross, and Kiwanis Club of Columbia, while also serving as a City of Columbia Council Member for Ward 4 until elected Mayor of the City of Columbia in 2010 until 2018; and

WHEREAS, Mayor Dickey loves his family and spending time with them. He is married to his wife Joann with two children Debbie Nowlin and Mike Dickey and has many grandchildren and great grandchildren.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that such city does hereby honor the former Mayor Dean Dickey by dedicating the championship field located in Ridley Sports Complex in his honor.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:


C. TIM TISHER, CITY ATTORNEY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Jill Carlson, Senior Administrative Assistant, jcarlson@columbiatn.com , 931-560-1451

AGENDA ITEM TITLE: RESOLUTION NO. 23-94 – A RESOLUTION ACCEPTING A DONATION OF A FREESTANDING CLOCK FROM THE COLUMBIA NOON ROTARY CLUB TO THE CITY OF COLUMBIA PARKS AND RECREATION DEPARTMENT VALUED AT APPROXIMATELY TWENTY THOUSAND DOLLARS (\$20,000) COMMEMORATING THE CLUB’S 100TH BIRTHDAY

RECOMMENDATION: Approve Resolution No. 23-94.

INFORMATION: The City of Columbia is requesting to receive a donation of a free-standing clock from the Columbia Noon Rotary Club to the City of Columbia Parks and Recreation Department to be installed at the Riverwalk Park Farmer’s Market Pavilion it is valued at approximately twenty thousand dollars (\$20,000). The clock is to commemorate the club’s 100th birthday.

ATTACHMENTS: Resolution No. 23-94.

**A RESOLUTION ACCEPTING A DONATION OF A FREESTANDING CLOCK FROM
THE COLUMBIA NOON ROTARY CLUB TO THE CITY OF COLUMBIA PARKS
AND RECREATION DEPARTMENT VALUED AT APPROXIMATELY TWENTY
THOUSAND DOLLARS (\$20,000) COMMEMORATING THE CLUB'S 100TH
BIRTHDAY**

WHEREAS, the City of Columbia Parks and Recreation Department has been donated a freestanding clock with an approximate value of Twenty Thousand Dollars (\$20,000) to be installed at the Riverwalk Park Farmers Market Pavilion. The donation from the Columbia Noon Rotary Club is to commemorate the club's 100th birthday; and

WHEREAS, no matching funds are required.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that such City does hereby endorse the efforts of the Columbia Parks and Recreation Department and the Columbia Noon Rotary Club by accepting this donation.

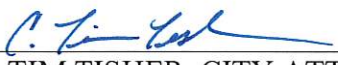
PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY





November 7, 2023

Gaye Pike
Columbia Noon Rotary Club
708 N. Main Street
Columbia, TN 38401

Via email: gayep@caledonianfinancial.com

Subject: Clock Equipment - Columbia Noon Rotary Club - Columbia, TN

Dear Gaye:

Thank you for your order. Enclosed please find our Standard Purchase and Sale Agreement for this project. I've also attached Drawings A-17016, A-5095, B-16149-SM and A-17016-PLQ2. If these drawings meet with your approval, please sign and return it to us along with this P&S. If you would like any revisions made, please let us know.

The foundation materials will ship right away by UPS. The clock will be crated and ship when completed. You can provide us with two addresses if you wish.

We look forward to working with your Club.

Sincerely,

Brandie Morris

Brandie Morris
Director of Marketing
blm@electrictime.com

ELECTRIC TIME COMPANY, INC. 97 WEST STREET - MEDFIELD, MA USA 02052
PHONE 508-359-4396 - FAX 508-359-4482 SALES@ELECTRICTIME.COM
[HTTP://WWW.ELECTRICTIME.COM](http://WWW.ELECTRICTIME.COM)

STANDARD PURCHASE AND SALE AGREEMENT Columbia Noon Rotary Club - Columbia, TN Please return all pages
--

VENDOR Electric Time Co., Inc.
 P.O. Box 466
 Medfield, MA 02052

PURCHASER Gaye Pike
 Columbia Noon Rotary Club
 708 N. Main Street
 Columbia, TN 38401

SHIP TO *Please Advise – Complete address, contact name & telephone*

EQUIPMENT

Quantity	Description
(1)	Complete Small Two-Dial E. Howard Post Clock Replica, with an electronic reset control in the base. Cast aluminum post and doors, one door to be removable for access to the interior. The base of the post measures approximately 11" square. Cast aluminum top head and ornamental top. <u>No fiberglass to be used</u>. Total height of clock, 10'-9". UL listed. Single source: Clock, controller and movement to be manufactured by the same company. All exterior parts of the clock to have a high solids, exterior grade, forest green polyurethane painted finish with a satin clear top coat. Our standard painted finishes are: blue, medium or dark bronze (matches Duranodic #312 & #313), off-white, matte-black, satin aluminum, forest green, red, bright white or gold. Raised aluminum header lettering to read "COLUMBIA, TN ROTARY" and saddle lettering to read "EST. 1924", highlighted in 23kt Gold Leaf. 23kt Gold Leaf highlighting on casting details. Flat milky-white acrylic dials. Dials to be back lighted with white LEDs. Illumination to be controlled by a photoelectric cell. Black dial markings Style "A" and clock hands Style "WS". Rotary International "Wheel" logo on the dials, in golden yellow. Hands made of aluminum with non-corrosive bronze bushings. Clear flat tempered glass crystals are provided for protection of the clock faces and hands. Style MI clock movements. All bearing surfaces to be made of self-lubricating materials, as periodic lubrication will then not be required. All parts to be made of

ELECTRIC TIME COMPANY, INC. 97 WEST STREET - MEDFIELD, MA USA 02052
 PHONE 508-359-4396 - FAX 508-359-4482 SALES@ELECTRICTIME.COM
<http://WWW.ELECTRICTIME.COM>

STANDARD PURCHASE AND SALE AGREEMENT
Columbia Noon Rotary Club - Columbia, TN
Please return all pages

(2)	non-corrosive metals such as brass and stainless steel. UL listed. Type CTRL-99BMI, Automatic Clock Controller with IP65 enclosure – Indoor & Outdoor Use. Automatically resets clock after power failures and for Daylight Savings Time (if required). Precision Quartz Time base 4 minutes per year maximum drift. Optional GPS – no drift. Built in 100 year daylight savings time calendar. 2 Line 16 character back lighted LCD display. ETL listed to UL 863. Power Failure Event logging. Standard MI output – 4 clocks maximum standard. Standard 24VDC RP output -20 clocks maximum. Sweep Second hand output. Hour Strike Capability. RS-232 and RS-485 output ports. 24 VAC hour strike output – configurable pulse output. To be located in base of clock by Manufacturer. GPS Satellite Receiver mounted inside of clock head by Manufacturer. To enable clock to synchronize with National Bureau Standard Atomic Clock. This will provide time accurate to 1 microsecond 1×10^{-6}. Stainless steel anchor rods, full size templates and foundation drawing for foundation. Bronze plaques, per Drawings B-16149-SM and A-17016-PLQ2, to have a leatherette finish with brushed bronze raised lettering, both to have a black painted background. "Rotary Test" plaque to be mounted on the operating "door" of the post clock. Large "Dedication" plaque to be mounted separately by others.
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PRICE	All of the above for the net (BUY) price of US\$18,932.00 plus \$775.00 shipping and handling to Columbia, TN. This price does not include any local taxes.
DELIVERY	12 to 15 weeks after receipt of order, deposit and release, F.O.B. Medfield, MA. We will strive to deliver the clock as far in advance of your February 29, 2024 dedication as possible.
TERMS	All orders are subject to our standard terms and conditions.
PAYMENT	Since this equipment is custom built, on any order over \$1,000.00 we require a 40% deposit (\$7,572.00), for the remaining amount;
_____	I will remit the balance amount prior to shipping. We accept checks, credit cards, and ACH/wire payments. Payments made with a credit card are subject to a 3% convenience fee.

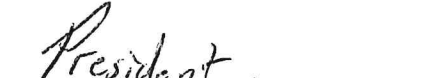
ELECTRIC TIME COMPANY, INC. 97 WEST STREET - MEDFIELD, MA USA 02052
PHONE 508-359-4396 - FAX 508-359-4482 SALES@ELECTRICTIME.COM
<http://WWW.ELECTRICTIME.COM>

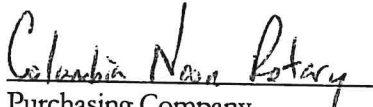
STANDARD PURCHASE AND SALE AGREEMENT
Columbia Noon Rotary Club - Columbia, TN
Please return all pages

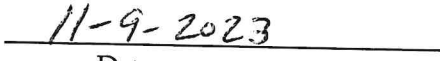
GUARANTEE

Electric Time Co., Inc. will guarantee all equipment free from inherent mechanical or electrical defects for three years from the date of shipment.


Authorized Signature


Title


Purchasing Company

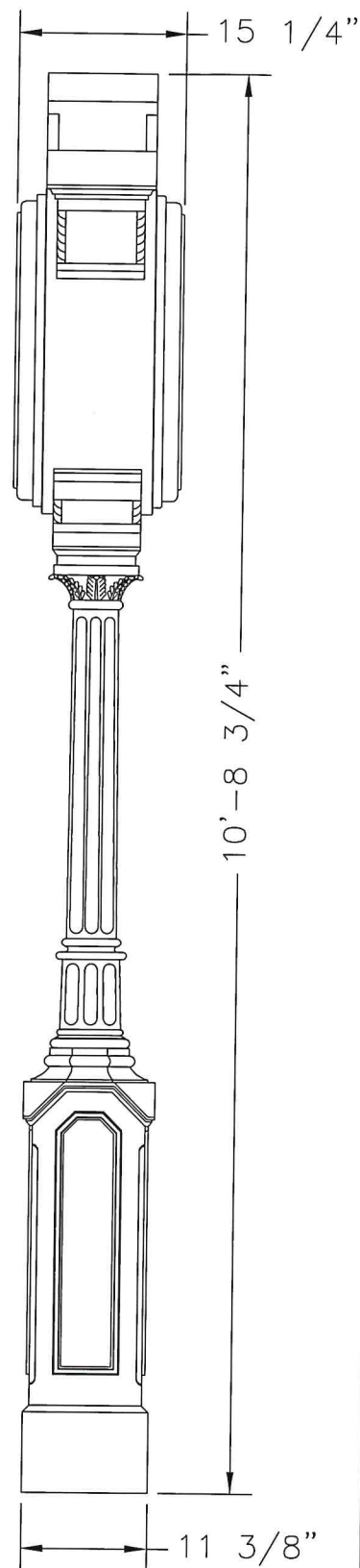
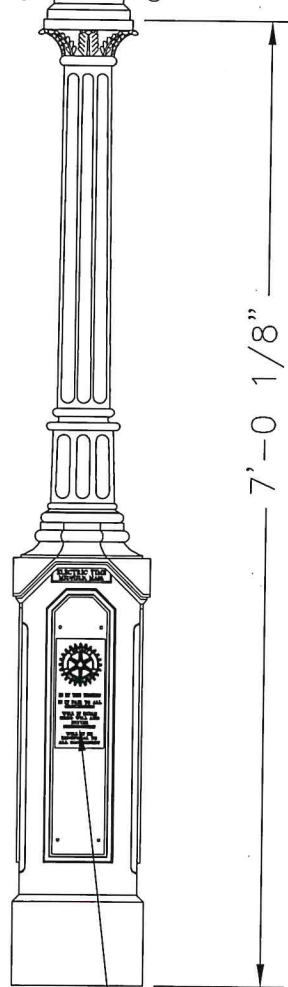
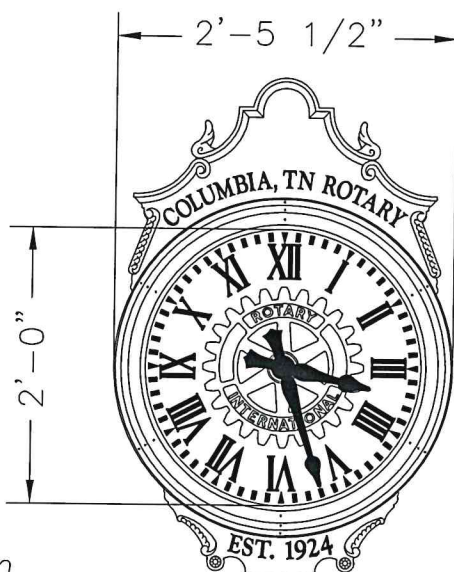
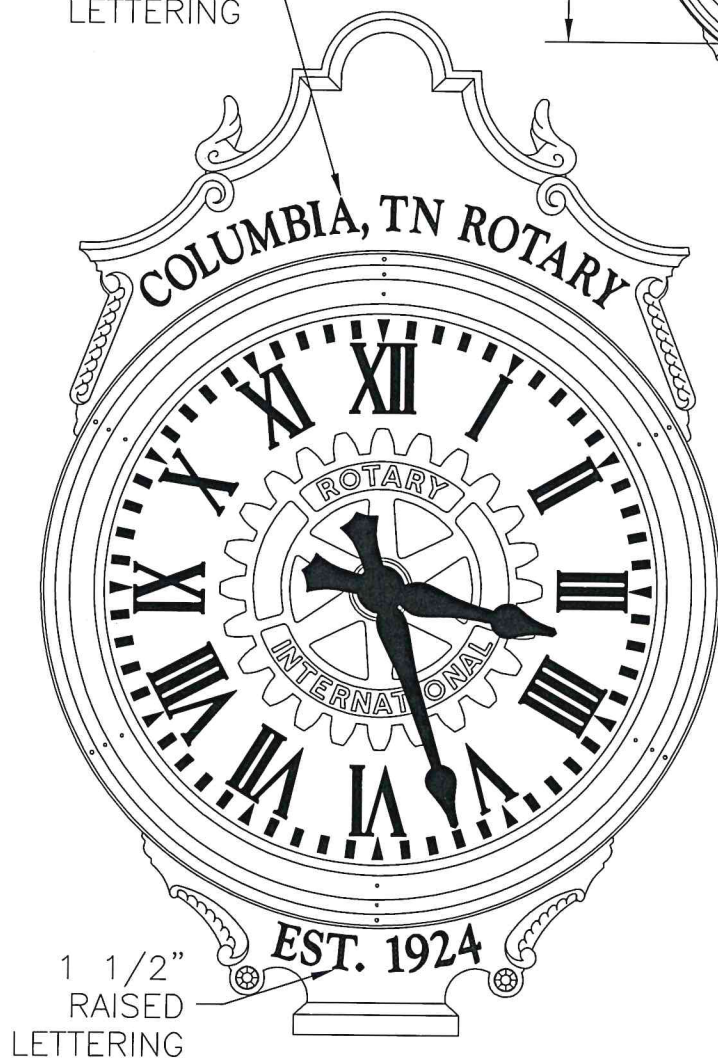

Date

FACE: A
HANDS: WS

HEAD DETAIL

SCALE: 1-1/2" = 1'

1 1/2"
RAISED
LETTERING

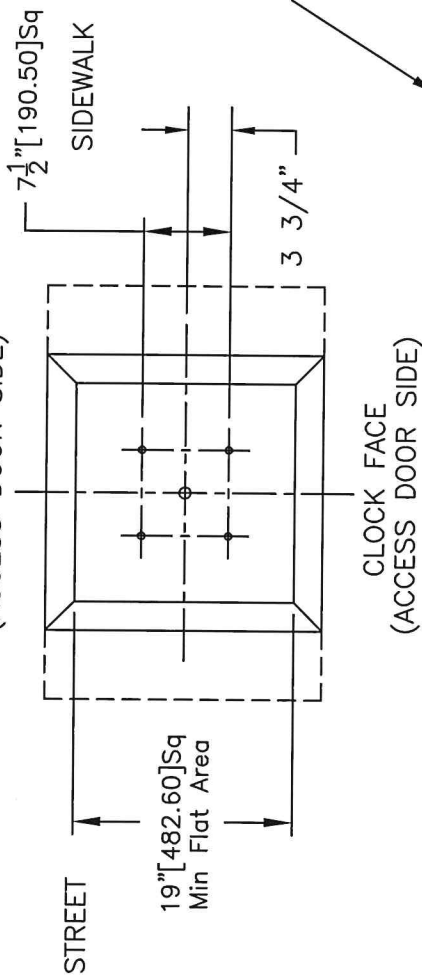


"4 WAY TEST" PLAQUE

POST CLOCK ELEV.
SCALE: 3/4" = 1'

VIEW	LASER	PATH	M:\ACAD10\A-17016.DWG			
DRAWING		TITLE	Small 2 Dial Howard Post Clock Columbia Noon Rotary Club - Columbia (TN)			
A-17016		REVISIONS	● SCALE	DATE	DRAWN	APP'V
			AS NOTED	10-31-23	WOR	TDE
			company, inc medfield, ma			

CLOCK FACE
(ACCESS DOOR SIDE)



NOTE: 1ST PLATE TO BE 6" FROM BOTTOM AND 2ND PLATE 24" FROM BOTTOM. MAKE SURE ANCHOR RODS ARE 7-1/2" ON CENTER AND PERPENDICULAR TO GRADE AFTER POURING

If mounting indoors on existing concrete slab, use 5/8"x5"Lg Concrete Bolts, 2-3/4" min. embedded depth (McMaster Carr #92405A402)

Conduit by Others

(4) 5/8" [15.88] $\emptyset$ Rods
36" [914.40] Long Steel

TEMPLATES

1" [25.40] Min. -

—3—

[]

Grade

36"[914.40]

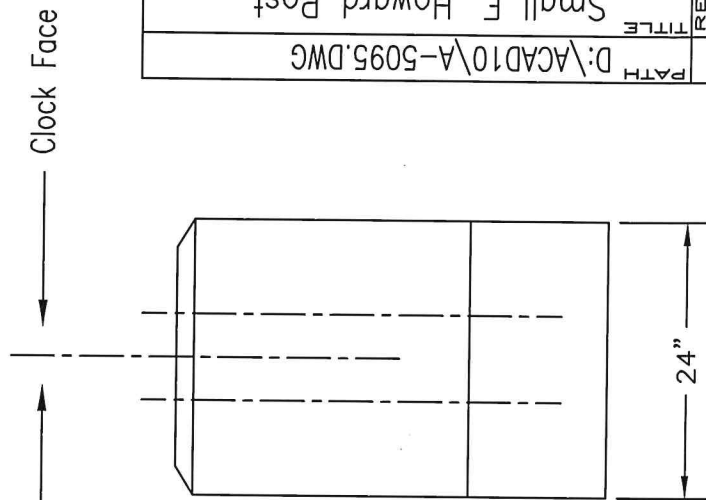
— Back Fill
Mixed w/ 1:5
Cement, Packed
in 6" Layers

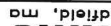
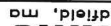
000 P S I
Concrete

Undisturbed Soil

FOOTING DETAIL

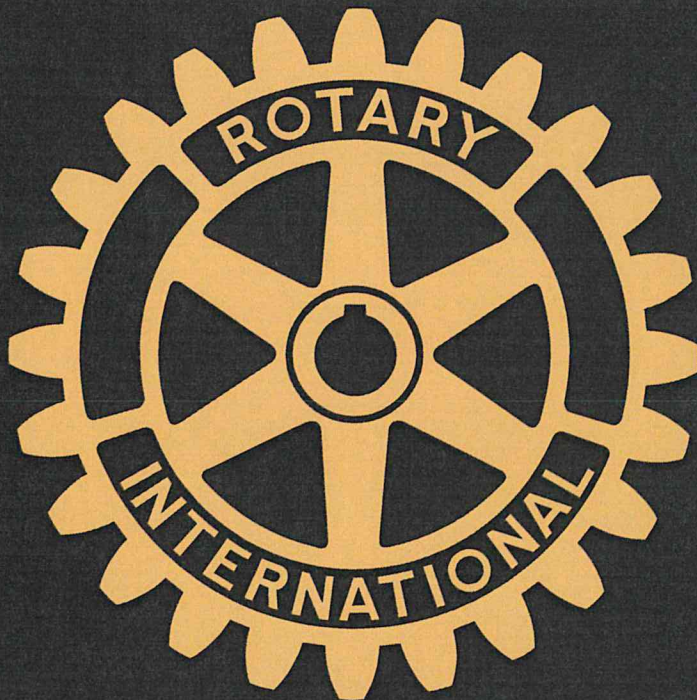
SIDE ELEVATION



VIEW	D:\ACAD10\A-5095.DWG		TITLE		Small E. Howard Post Foundation Detail		APP'V		TDE		 company, inc medfield, ma				
REVIEWS		Rev. A 10-12-94		● SCALE		3/4" = 1'		DATE		4-29-94		 company, inc medfield, ma			
Rev. B 10-10-95		DMC		Rev. C 10-10-96		DMC		Rev. D 3-22-02		WOR		Rev. E 5-5-06		WOR	
DRAWING		A-5095													

4.00"

9.50"

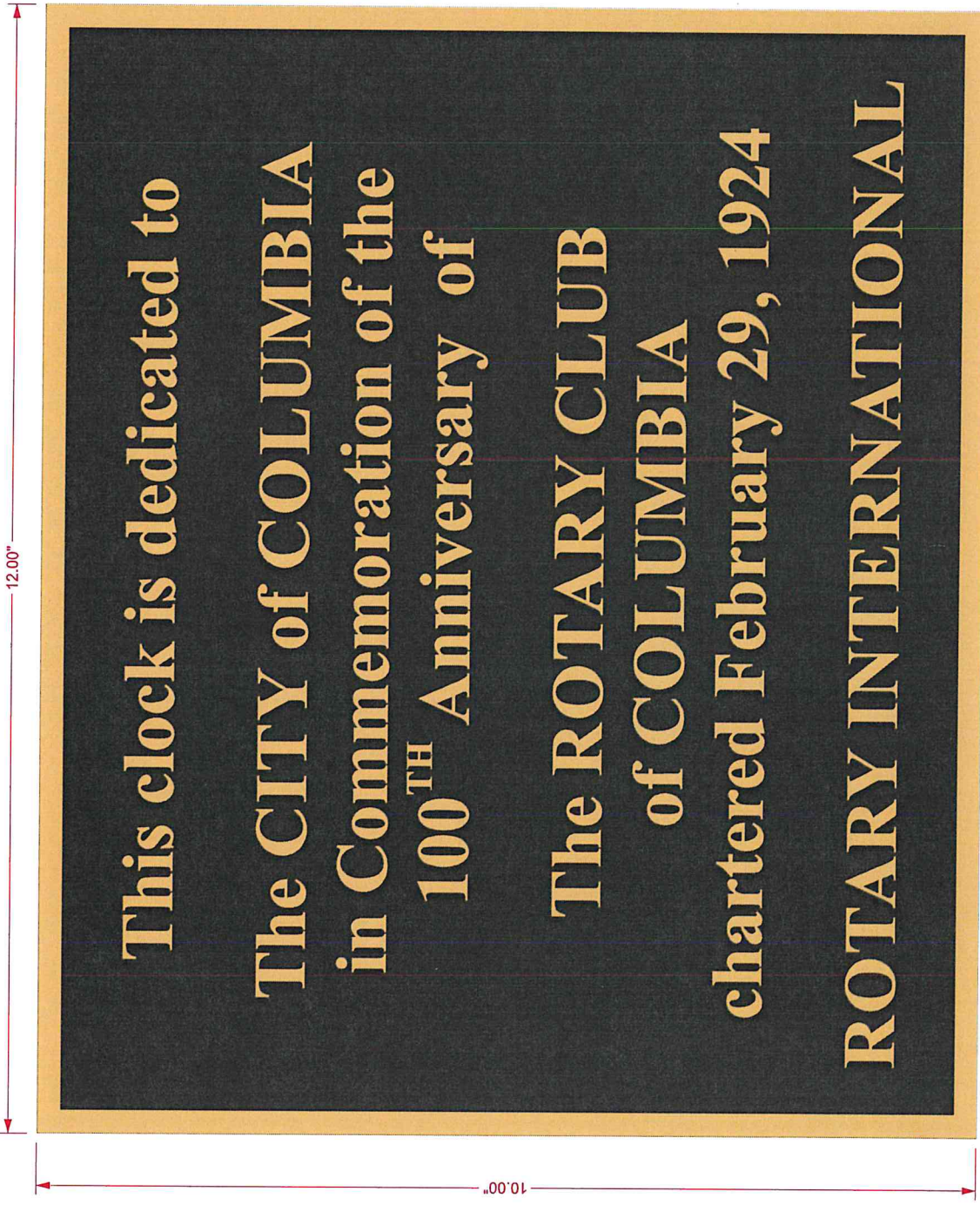


IS IT THE TRUTH?
IS IT FAIR TO ALL
CONCERNED?
WILL IT BUILD
GOOD WILL AND
BETTER
FRIENDSHIPS?
WILL IT BE
BENEFICIAL TO
ALL CONCERNED?

SPECIFICATIONS:

- 1/4" THICK, PAINTED EDGES
- MOUNTING - BLIND STUDS
- BORDER - NONE
- TEXTURE - LEATHERETTE
- BACKGROUND - BLACK FINISH
- CLEAR COAT - SATIN
- OVERALL SIZE - 4" W x 9 1/2" T

VIEW	PATH		M:\CDR\B-16149_SM.CDR				
	TITLE						
	Plaque - Rotary Test						
	● SCALE						
	FULL						
REVISIONS		DATE		DRAWN		APP'V	
		10-23-20		WOR		WOR	
							
DRAWING		B-16149 SM					



- SPECIFICATIONS:
- 1/4" THICK, PAINTED EDGES
 - MOUNTING - BLIND STUDS
 - BORDER - NONE
 - TEXTURE - LEATHERETTE
 - BACKGROUND - BLACK FINISH
 - CLEAR COAT - SATIN
 - OVERALL SIZE - 12" W x 10" H

PATH		M:\CDRVA-17016-PLQ2.CDR	
TITLE		Dedication Plaque	
REVISIONS		Columbia Noon Rotary Club - Columbia (TN)	
●	SCALE	DATE	11-02-23
	WOR	DRAWN	WOR
	WOR	APPV	WOR
electric time		company, inc.	

DRAWING
A-17016-PLQ2

Standard Terms & Conditions of Sale

97 West Street, P.O. Box 466

Medfield, MA 02052 USA

(p) 508.359.4396 (f) 508.359.4482

www.electrictime.com

TAXES Unless otherwise stated, prices are exclusive of applicable sales, excise or similar taxes of federal, state or local government. As a Massachusetts corporation, we collect only Massachusetts taxes. Any other applicable taxes must be reported and paid directly by the purchaser.

INSURANCE Any insurance requirements made by you which result in an expense to Electric Time Co., Inc., will be in addition to any published or quoted prices. Copies of insurance certificates are available on request. To be named as an additional insured for a specific project, there will be an additional \$250.00 one-time charge.

PRICES All prices are in U.S. dollars and payment is to be in U.S. dollars. Unless otherwise stated, if we provide a written quotation, we hold quoted prices for 90 days. Prices are subject to change without notice. It is our policy not to review and execute contracts for orders under \$25,000.

SHIPMENTS Unless otherwise stated, all shipments are made F.O.B., Medfield, MA, USA. All quoted lead times are approximate based upon current and projected work loads. Shipments will be made the least expensive and fastest way, taking into consideration the delivery and urgent need of your order, unless otherwise stated on your order. Prepaid freight charges will be added to invoices.

CLAIMS Upon acceptance from Electric Time Co., Inc. by the carrier, the material becomes the property of the consignee. All claims for damage, breakage or loss, concealed or obvious, must be made to the carrier by the consignee. Claims of short shipment must be made to Electric Time Co., Inc. within five (5) days of receipt of material.

PAYMENT Orders under \$1,000.00 will require full payment with order. Since all the equipment we manufacture is custom built, we require a 40% deposit on any order over \$1,000.00. To establish an account with us, we require three credit references and the name of your bank with full addresses. If you do not care to open an account, we can ship upon receipt of final payment. All payments are due NET 10 days upon receipt of invoice. Final payment is due within 30 days after shipment of clocks invoiced. After 30 days, there will be a 1-1/2% interest charge per month on any unpaid balance. Minimum invoice charge is \$55.00. Payments made with a credit card are subject to a 3% convenience fee. For international sales, payment is to be made by wire transfer.

WARRANTY All equipment is sold subject to the mutual agreement that it is warranted by Electric Time Co., Inc. to be free from defects of material and construction, but our liability in connection with it shall be limited to replacing or repairing without charge at our factory any material or construction defects which become apparent within three years from the date on which new equipment is shipped, that we shall have no liability for damages of any kind arising from the installation and/or use of the apparatus by anyone, and that the purchaser by the acceptance of the equipment will assume all liability for any damages which may result from its use or misuse by the purchaser, his or its employees or by others. There is no guarantee or warranty or liability except as here stated.

RETURNS Since most of our clocks are custom built, in general, returns are not accepted. Standard stock items may be returned for credit, subject to inspection and acceptance, if prior authorization has been obtained from Electric Time Co., Inc. There will be a 20% restocking charge on all standard catalog items.

FINISHES Our standard paint colors are matte black, off-white, bright-white, satin aluminum, medium bronze (matches Duranodic #312), dark bronze (matches Duranodic #313), forest green, gold, blue and red. Other colors and finishes are available at additional cost.



97 West Street, PO Box 466; Medfield MA 02052
p. 508.359.4396; f. 508.359.4482
sales@electrictime.com; www.electrictime.com
FID #04-1282140

Pro-forma Invoice

Invoice Number: 11723 BLM

Invoice Date: 11/7/2023

To: Gaye Pike
Columbia Noon Rotary Club
708 N. Main Street
Columbia, TN 38401

VIA Email: gaye@caledonianfinancial.com

Project Name: Columbia Noon Rotary Club - Columbia, TN

Quantity	Clock Equipment	Total Price
(1)	Complete Small Two-Dial E. Howard Post Clock Replica, per Drawing A-17016, with an electronic reset control in the base, per agreement.	US\$18,932.00
(2)	Bronze plaques, per Drawings B-16149-SM and A-17016-PLQ2, per agreement.	
	SHIPPING & HANDLING	US\$775.00
	Total Order Amount	US\$19,707.00
	Deposit Required	US\$7,572.00

We accept checks, credit cards, and ACH/wire payments. Payments made with a credit card are subject to a 3% convenience fee.

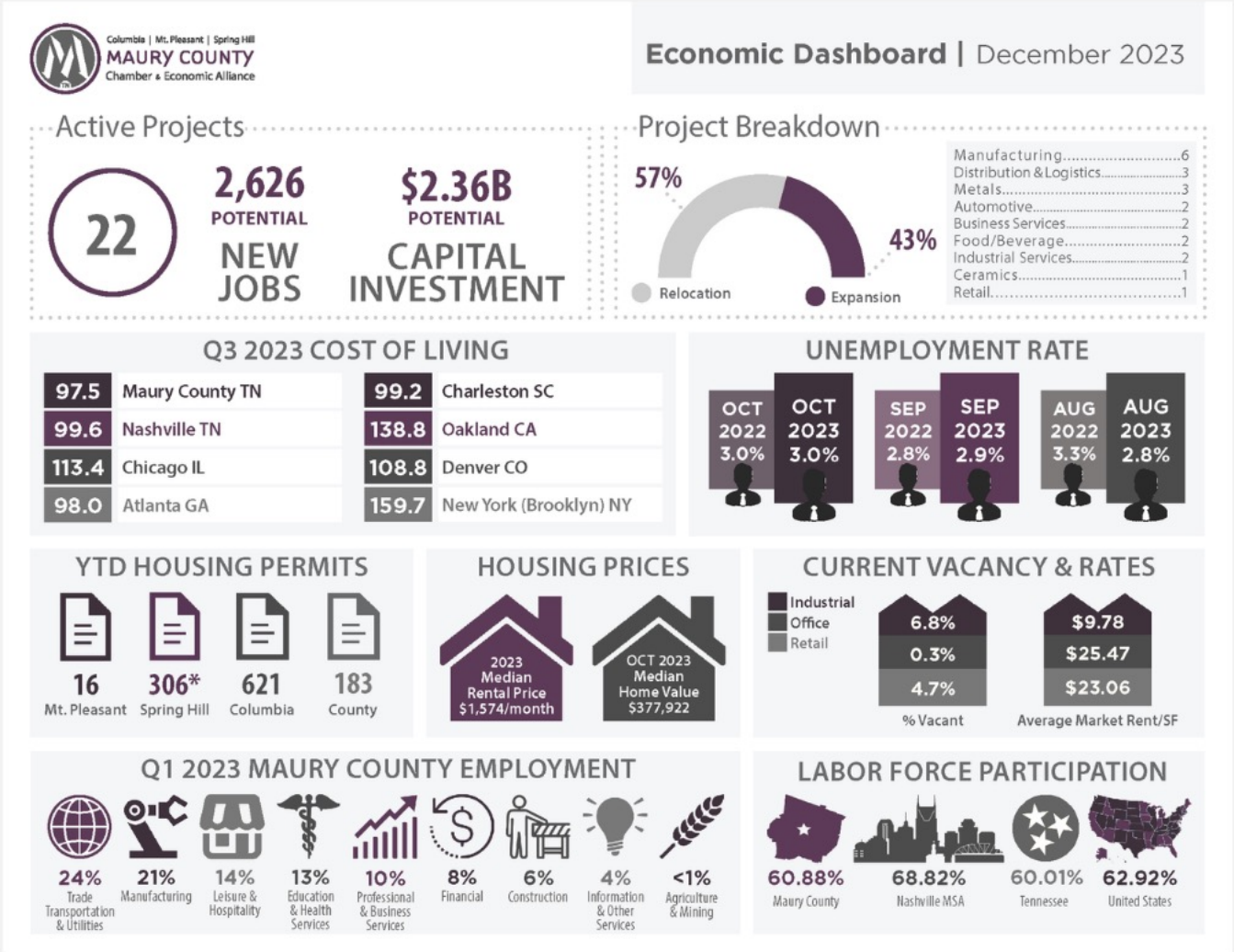
CITY OF COLUMBIA QUARTERLY UPDATE

DECEMBER 2023



Columbia | Mt. Pleasant | Spring Hill
MAURY COUNTY
Chamber & Economic Alliance

ECONOMIC DEVELOPMENT DASHBOARD



XXENTRIA

Low Waste. High Efficiency.

INVESTMENT

\$45M

JOB

85

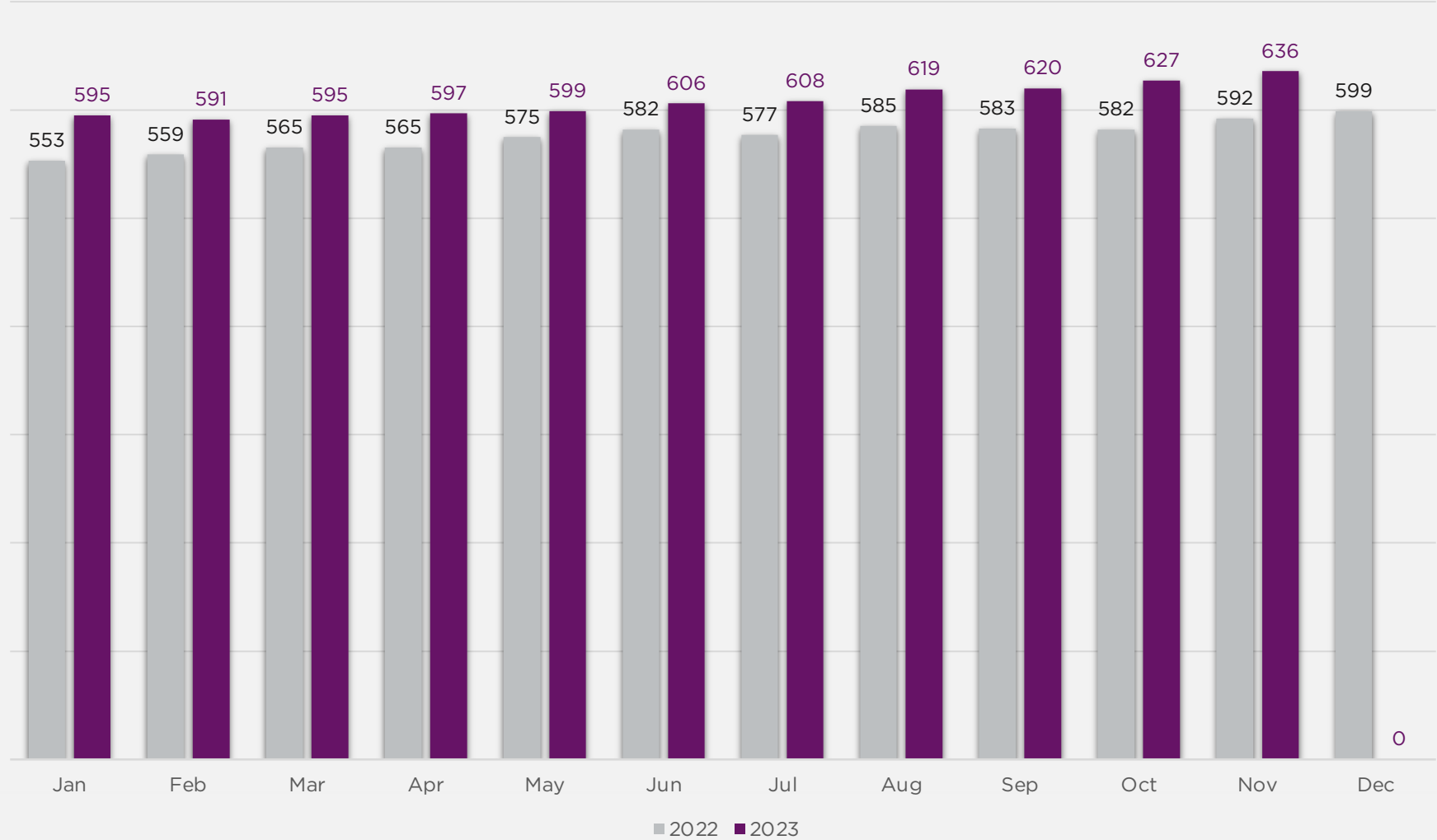
TYPE

Relocation

LOCATION

Cherry Glen

2023 CHAMBER MEMBERSHIP



\$47,015

Local First Gift Cards Sold in 2023

\$30,120 of that was during our
two day promo in November.

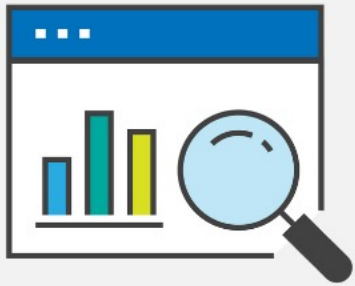




SizeUpMAURY

Columbia | Mt. Pleasant | Spring Hill





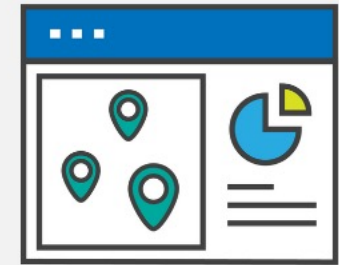
Benchmark
Performance



Discover New
Customers



Optimize
Advertising



Demographic
Analysis

Maury Alliance Annual Meeting

**SAVE THE
DATE**

JAN 30
5PM - 8PM

November 9, 2023 - 5:30 PM

PUBLIC HEARINGS

Item 1. - PUBLIC HEARING ON RESOLUTION NO. 23-74 - A RESOLUTION TO PROVIDE FOR THE ANNEXATION OF A PORTION OF RIGHT OF WAY ALONG MORROW LANE INTO THE CITY OF COLUMBIA, TENNESSEE - WARD 4

Mayor Chaz Molder called the Public Hearing to order, pursuant to proper notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

There being no one present to speak on the Public Hearing, Council Member Coleman moved to close the Public Hearing on Resolution No. 23-74. Council Member Greene seconded the motion.

All Council Members present voted aye.

Item 2. - PUBLIC HEARING ON ORDINANCE NO. 4468 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 101 PARCEL 39.00, LOCATED AT 6218 CAYCE LANE, FROM CD-2 (RURAL CHARACTER DISTRICT) TO CD-3 (NEIGHBORHOOD CHARACTER DISTRICT) - WARD 2

Mayor Chaz Molder called the Public Hearing to order, pursuant to proper notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

There being no one present to speak on the Public Hearing, Council Member Coleman moved to close the Public Hearing on Ordinance No. 4468. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 3. - PUBLIC HEARING ON ORDINANCE NO. 4482 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 100M GROUP C PARCEL 18 LOCATED OFF W. 18TH STREET, FROM SD-LI (LIGHT INDUSTRIAL SPECIAL DISTRICT) TO CD-4 (GENERAL URBAN CHARACTER DISTRICT) - WARD 4

Mayor Chaz Molder called the Public Hearing to order, pursuant to proper notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

There being no one present to speak on the Public Hearing, Council Member Marshall moved to close the Public Hearing on Ordinance No. 4482. Council Member Coleman seconded the motion.

All Council Members present voted aye.

Item 4. - PUBLIC HEARING ON ORDINANCE NO. 4477 - AN ORDINANCE TO AMEND TITLE 18, CHAPTER 2, SECTIONS 18-208(2) AND 18-209(5)(f) OF THE COLUMBIA MUNICIPAL CODE BY ADDING A PARAGRAPH TO TITLE 18, CHAPTER 2, SECTION 18-208(2) AND BY DELETING TITLE 18, CHAPTER 2, SECTION 18-209(5)(f) IN ITS ENTIRETY AND REPLACING SUCH SECTION WITH A NEW TITLE 18, CHAPTER 2, SECTION 18-209(5)(f)

Mayor Chaz Molder called the Public Hearing to order, pursuant to proper notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

There being no one present to speak on the Public Hearing, Council Member Greene moved to close the Public Hearing on Ordinance No. 4477. Council Member Coleman seconded the motion.

All Council Members present voted aye.

Item 5. - PUBLIC HEARING ON ORDINANCE NO. 4478 - AN ORDINANCE TO ADD TITLE 18, CHAPTER 1, SECTION 18-106 TO THE COLUMBIA MUNICIPAL CODE PERTAINING TO SEWERS

Mayor Chaz Molder called the Public Hearing to order, pursuant to proper notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

There being no one present to speak on the Public Hearing, Council Member Greene moved to close the Public Hearing on Ordinance No. 4478. Council Member Coleman seconded the motion.

All Council Members present voted aye.

REGULAR MEETING

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

CALL TO ORDER/ROLL CALL

Mayor Chaz Molder called the meeting to order, pursuant to proper public notice having been given. Present were Council Member Danny Coleman, Council Member Tony Greene, Council Member Debbie Wiles, Vice Mayor Randy McBroom, Mayor Chaz Molder, Council Member Kenny Marshall, City Manager Tony Massey, City Attorney Tim Tisher, City Recorder Thad Jablonski and Recording Secretary Liz Bermudez. Council Member DaVena Hardison was absent.

INVOCATION BY REVEREND TRENT OGILVIE.

Council Member DaVena Hardison arrived to the meeting at 5:35 p.m.

PLEDGE OF ALLEGIANCE

Mayor Molder led the Pledge of Allegiance.

APPROVAL OF AGENDA

Council Member Marshall moved to approve Agenda. Council Member Greene seconded the motion.

All Council Members present voted aye.

PRESENTATIONS

Item 5.1. - **INTRODUCTION OF THE 2023-2024 COLUMBIA MAYOR'S YOUTH COUNCIL MEMBERS.**

Mayor Molder swore in the Youth Council Members. The Youth Council introduced themselves and spoke about upcoming events the group will be leading.

Item 5.2. - **RESOLUTION NO. 23-88 - A RESOLUTION DEDICATING THE SOCCER COMPLEX BUILDING LOCATED IN RIDLEY PARK SPORTS COMPLEX IN HONOR OF THE LATE FORMER CITY OF COLUMBIA CITY COUNCIL MEMBER STEVE BOSHERS**

Mayor Molder moved to approve Resolution No. 23-88. Council Member Greene seconded the motion.

All Council Members present voted aye.

Mayor Molder spoke of the late Steve Boshers forever being remembered and how he has a spot in Columbia history. The Boshers family was present and well represented during the meeting.

Item 5.3. - **RESOLUTION NO. 23-89 - A RESOLUTION DEDICATING A PLAYGROUND AND PAVILION IN WOODLAND PARK LOCATED OFF THE WHEELER DRIVE ENTRANCE IN HONOR OF THE LATE FORMER CITY OF COLUMBIA COUNCIL MEMBER CHARLES KENNETH "KEN" WILES**

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

Mayor Molder moved to approve Resolution No. 23-89. Council Member Greene seconded the motion.

All Council Members present voted aye.

Vice Mayor McBroom and Mayor Molder shared some of their memories of the late Ken Wiles and spoke about how he is missed by many. Council Member Debbie Wiles and their son Brent Wiles were present for this honor of dedicating a playground and pavilion in Ken Wiles' memory.

ORGANIZATIONAL BUSINESS

Item 6.1. - APPROVE THE MINUTES OF THE OCTOBER 12, 2023 COUNCIL REGULAR MEETING

Council Member Greene moved to approve the Minutes of the October 12, 2023 Council Regular Meeting. Council Member Coleman seconded the motion.

All Council Members present voted aye.

Item 6.2. - RE-ELECTION OF DAVID FORRESTER TO THE CITY OF COLUMBIA CIVIL SERVICE BOARD FOR A FOUR-YEAR TERM. THE TERM BEGAN ON NOVEMBER 5, 2023 AND EXPIRES ON NOVEMBER 5, 2027.

Council Member Marshall moved to approve the re-election of David Forrester to the City of Columbia Civil Service Board for a four-year term that expires on November 5, 2027. Council Member Greene seconded the motion.

All Council Members present voted aye.

CONSENT AGENDA

Mayor Molder requested Item 7.8 be removed from the Consent Agenda and be placed after Item 8.1. Council Member Coleman moved to approve the Consent Agenda with the exception of Item 7.8 which will be after Item 8.1. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 7.1. - APPROVE DISBURSEMENTS FOR THE MONTH OF SEPTEMBER 2023 IN THE AMOUNT OF \$5,516,593.53

Item 7.2. - APPROVE THE BID AWARD AND AUTHORIZE THE MAYOR TO EXECUTE A CONTRACT WITH TENNESSEE PROPERTY MANAGEMENT LLC FOR LANDSCAPE MANAGEMENT SERVICES

Item 7.3. - APPROVE PAYMENT TO MAURY COUNTY TO PROVIDE FUNDING FOR THE MAURY COUNTY/CITY OF COLUMBIA ANIMAL SERVICES FACILITY FOR THE FIRST QUARTER OF FY 2024 \$50,000

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

Item 7.4. - RECEIVE AND FILE QUARTERLY INVESTMENT REPORT FOR THE PERIOD ENDING JUNE 30, 2023 PURSUANT TO THE CITY'S INVESTMENT AND INTERNAL CONTROLS POLICIES

Item 7.5. - APPROVE AND AUTHORIZE THE MAYOR TO SIGN A CONTRACT BETWEEN THE CITY OF COLUMBIA AND LIFESTYLE PUBLICATIONS FOR ADVERTISING IN THE DECEMBER AND MARCH ISSUES OF FRANKLIN LIFESTYLES IN THE AMOUNT OF \$2,880.

Item 7.6. - APPROVE AND AUTHORIZE THE PURCHASE OF (4) FORD POLICE INTERCEPTOR UTILITY AWD VEHICLES FROM FORD OF MURFREESBORO IN THE AMOUNT OF \$183,928 UTILIZING THE STATE OF TENNESSEE CONTRACT

Item 7.7. - APPROVE THE CITY OF COLUMBIA'S ADMINISTRATIVE FEES FOR GROUP MEDICAL INSURANCE PREMIUMS EFFECTIVE JULY 1, 2023, AND AUTHORIZE THE MAYOR TO SIGN ANY NECESSARY DOCUMENTS - HUMAN RESOURCE DEPARTMENT

ADMINISTRATION

Item 8.1. - APPROVE THE REQUEST FROM GENERAL MOTORS TO TERMINATE THE EXISTING PILOT AGREEMENT.

Mr. Wil Evans gave a brief explanation to why this item was on the City Council's agenda. He advised GM's Pilot is getting expanded, and they cannot have two pilots at the same time. The Maury County Commission, Spring Hill BOMA and Mt. Pleasant have all terminated the pilot as requested.

Mayor Molder moved to approve terminating the existing pilot agreement with General Motors. Council Member Coleman seconded the motion.

All Council Members present voted aye.

Item 7.8. - APPROVE AND AUTHORIZE THE MAYOR TO EXECUTE THE MEMORANDUM OF UNDERSTANDING BETWEEN THE CITY OF COLUMBIA AND THE COLUMBIA PEACE AND JUSTICE INITIATIVE, INC. (CPJI).

June Sanders, Louvonia Wilson, Brian McKelvy, JoAnn McClellan, Eric Previti, Eric Jacobson, Russ Adcox, and Dr. Christa S. Martin all came before the Council to either share their support for this item or to request a different statue be put in at the location.

Mayor Molder moved to approve the Memorandum of Understanding between the City of Columbia and the Columbia Peace and Justice Initiative, Inc. Council Member Greene seconded the motion.

After some discussion, all Council Members present voted aye.

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

RESOLUTIONS

Item 9.1. - **RESOLUTION NO. 23-74 - A RESOLUTION TO PROVIDE FOR THE ANNEXATION OF A PORTION OF RIGHT OF WAY ALONG MORROW LANE INTO THE CITY OF COLUMBIA, TENNESSEE - WARD 4**

Vice Mayor McBroom left the Council Chambers.

Council Member Marshall moved to approve Resolution No. 23-74. Council Member Coleman seconded the motion.

All Council Members present voted aye.

Item 9.2. - **RESOLUTION NO 23-83 – SPECIAL ASSESSMENT CORRECTIONS**

Council Member Coleman moved to approve Resolution No. 23-83. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 9.3. - **A RESOLUTION TO ACCEPT THE STREETS AND DRAINAGE IMPROVEMENTS IN ELAN SUBDIVISION, PHASE 1 FOR OWNERSHIP AND MAINTENANCE**

Council Member Coleman moved to approve Resolution No. 23-84. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 9.4. - **RESOLUTION NO. 23-85 - TAX CORRECTIONS**

Council Member Greene moved to approve Resolution No. 23-85. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 9.5. - **RESOLUTION NO. 23-86 - A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING QUAIL RUN, PHASE 3 - WARD 5**

Council Member Coleman moved to approve Resolution No. 23-86. Council Member Greene seconded the motion. Vice Mayor McBroom returned to the Council Chambers.

All Council Members present voted aye.

Item 9.6. - **RESOLUTION NO. 23-87 - A RESOLUTION TO ACCEPT THE SANITARY SEWER IMPROVEMENTS SERVING ELAN, PHASE 2 - WARD 5**

Council Member Coleman moved to approve Resolution No. 23-87. Council Member Greene seconded the motion.

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

All Council Members present voted aye.

ORDINANCES

Item 10.1. - 2ND CONSIDERATION ON ORDINANCE NO. 4468 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 101 PARCEL 39.00 LOCATED AT 6218 CAYCE LANE, FROM CD-2 (RURAL CHARACTER DISTRICT) TO CD-3 (NEIGHBORHOOD CHARACTER DISTRICT) - WARD 2

Susan Shuff, Darryl Shuff and Jennie Parashak all spoke in opposition of the request for the rezoning. Aaron Evens was present to answer any questions that Council may have about this item. He spoke about a CD 3L zoning and improvements to the area to help with traffic and stabilizing ditches to hold more water.

Mayor Molder advised this project is currently going before Planning Commission and it was deferred yesterday with a request for a CD 3L zone.

Mayor Molder moved to deny Ordinance No. 4468 on second consideration due to the adverse impact on adjoining properties. Council Member Coleman seconded the motion.

All Council Members present voted aye. Ordinance No. 4468 fails on second consideration.

Item 10.2. - 2ND CONSIDERATION OF ORDINANCE NO. 4477 - AN ORDINANCE TO AMEND TITLE 18, CHAPTER 2, SECTIONS 18-208(2) AND 18-209(5)(f) OF THE COLUMBIA MUNICIPAL CODE BY ADDING A PARAGRAPH TO TITLE 18, CHAPTER 2, SECTION 18-208(2) AND BY DELETING TITLE 18, CHAPTER 2, SECTION 18-209(5)(f) IN ITS ENTIRETY AND REPLACING SUCH SECTION WITH A NEW TITLE 18, CHAPTER 2, SECTION 18-209(5)(f)

Council Member Coleman moved to approve Ordinance No. 4477 on second consideration. Council Member Marshall seconded the motion.

All Council Members present voted aye.

Item 10.3. - 2ND CONSIDERATION OF ORDINANCE NO. 4478 - AN ORDINANCE TO ADD TITLE 18, CHAPTER 1, SECTION 18-106 TO THE COLUMBIA MUNICIPAL CODE PERTAINING TO SEWERS

Council Member Coleman moved to approve Ordinance No. 4478 on second consideration. Council Member Greene seconded the motion.

All Council Members present voted aye.

Item 10.4. - 2ND CONSIDERATION ON ORDINANCE NO. 4482 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 100M GROUP C PARCEL 18 LOCATED OFF W. 18TH STREET, FROM SD-LI (LIGHT

November 9, 2023 - 5:30 PM

INDUSTRIAL SPECIAL DISTRICT) TO CD-4 (GENERAL URBAN CHARACTER DISTRICT) - WARD 4

Council Member Marshall moved to approve Ordinance No. 4482 on second consideration. Council Member Greene seconded the motion.

All Council Members present voted aye.

Item 10.5. - 1ST CONSIDERATION ON ORDINANCE NO. 4483 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING A PORTION OF TAX MAP 51 PARCEL 58, LOCATED OFF NASHVILLE HIGHWAY AND HONEY FARM WAY, FROM PUD-CEG (PLANNED UNIT DEVELOPMENT - COMMERCIAL ENTERPRISE GENERAL) TO CD-4C (GENERAL URBAN CORRIDOR CHARACTER DISTRICT) AND ESTABLISH DECEMBER 14, 2023 AS THE DATE OF PUBLIC HEARING - WARD 5

Tom DuBois and Matt Walsh shared their concerns with City Council regarding this item. Greg Gamble, who represents the applicant advised this property has been planned for commercial use since the PUD. He spoke about plans for a traffic signal and turn lane. Drew Smith advised they have not submitted the plans for the turn land or traffic signal yet and they do not intend to increase the residential density.

Mayor Molder asked what would be allowed with the zoning that is there now. Development Services Director Paul Keltner went over what it is acceptable.

Mayor Molder moved to approve Ordinance No. 4483 on first consideration and establish the date of December 14, 2023 as the date of Public Hearing. Council Member Coleman seconded the motion.

All members present voted aye with the exception of Council Member Hardison, Council Member Marshall, Council Member Wiles, and Vice Mayor McBroom who all voted no. The motion to approve Ordinance No. 4483 on first consideration failed with a vote of 3-4.

Item 10.6. - 1ST CONSIDERATION ON ORDINANCE NO. 4484 - AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY BEING A PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER A QUITCLAIM DEED TO THE PROPERTY OWNER AND ESTABLISH THE DATE OF DECEMBER 14, 2023 AS THE DATE OF PUBLIC HEARING.

Council Member Coleman moved to approve Ordinance No. 4484 on first consideration and establish the date of December 14, 2023 as the date of Public Hearing. Mayor Molder seconded the motion.

All Council Members present voted aye.

CITY COUNCIL REGULAR MEETING - COLUMBIA, TENNESSEE

November 9, 2023 - 5:30 PM

OTHER BUSINESS

Mayor Molder said The Polks at Preservation Park was a wonderful event and kudos to those that helped. He also mentioned the Veterans Day parade on Saturday and the Rotary Pancake Breakfast on Saturday from 6 a.m. - 4 p.m.

Mr. Massey advised that city offices are closed tomorrow.

EXECUTIVE SESSION

ADJOURNMENT

There being no further business, Council Member Coleman moved to adjourn the meeting. Council Member Marshall seconded the motion. All members present voted aye. The meeting adjourned at 07:14 p.m.

UPCOMING EVENTS



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR SHERRY SHEETER, ADMINISTRATIVE ASSISTANT, POLICE DEPARTMENT AND PRESENTATION OF GIFT CHECK AND RETIREMENT PLAQUE BY MAYOR MOLDER.

RECOMMENDATION: Approve.

INFORMATION: Sherry Sheeter has been an employee of the City of Columbia for 22 years. Her effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR CARL SHRAKE, POLICE OFFICER, POLICE DEPARTMENT AND PRESENTATION OF GIFT CHECK AND RETIREMENT PLAQUE BY MAYOR MOLDER.

RECOMMENDATION: Approve.

INFORMATION: Carl Shrake has been an employee of the City of Columbia for 28 years. His effective retirement date is December 17, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR MONTY BLAND, FIRE CAPTAIN, FIRE & RESCUE.

RECOMMENDATION: Approve.

INFORMATION: Monty Bland has been an employee of the City of Columbia for 24 years. His effective retirement date is December 14, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR CLINTON BLANKENSHIP, WASTEWATER MAINTENANCE WORKER, WASTEWATER DEPARTMENT.

RECOMMENDATION: Approve.

INFORMATION: Clinton Blankenship has been an employee of the City of Columbia for 21 years. His effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR JOHN WILLIAMS, ENGINEERING TECHNICIAN, DEVELOPMENT SERVICES DEPARTMENT

RECOMMENDATION: Approve.

INFORMATION: John Williams has been an employee of the City of Columbia for 15 years. His effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

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Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR CHAD HELTON, FIRE CAPTAIN, FIRE & RESCUE.

RECOMMENDATION: Approve.

INFORMATION: Chad Helton has been an employee of the City of Columbia for 26 years. His effective retirement date is December 27, 2023 with pension payments to begin on January 1, 2024.

ATTACHMENTS: *None.*



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Tara Ferry, Human Resources Generalist, tferry@columbiatn.com, (931) 560-1572

**AGENDA ITEM TITLE: APPROVE THE RETIREMENT BENEFITS FOR SHARON HOWELL,
ACCOUNTING TECHNICIAN II, CITY RECORDER**

RECOMMENDATION: Approve.

INFORMATION: Sharon Howell has been an employee of the City of Columbia for 27 years. Her effective retirement date is December 15, 2023 with pension payments to begin on January 1, 2024.

CITY OF COLUMBIA
DISBURSEMENTS FOR MONTH ENDING OCTOBER 31, 2023

FUND	GROSS	TRANSFERS & CD's	PAYROLL TRANSFERS	NET TOTAL
General Fund	2,924,234.58	379,736.89	1,391,011.93	1,153,485.76
Sanitation Fund	221,284.30	23,174.41	76,356.73	121,753.16
Wastewater Fund	661,833.84	44,460.93	186,954.39	430,418.52
Street & Transportation Fund				-
State Street Aid	146,124.88			146,124.88
Drug Fund	977.07			977.07
Debt Service Fund	400.00			400.00
Capital Projects Fund	12,461.19			12,461.19
Sewer Revenue & Tax Bond Issue				-
Sewer Impact Fee #2				-
Insurance Fund	423,550.42	368,872.12		54,678.30
2017 GO Public Imp Bonds				-
2010 GO Bond Issue				-
Cleary Construction Escrow				-
Industrial Development Board	30,000.00			30,000.00
	\$ 4,420,866.28	\$ 816,244.35	\$ 1,654,323.05	\$ 1,950,298.88

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

GENERAL FUND

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133205	10/5/2023	Randolph Electronics	\$27.98
133206	10/5/2023	Roto-Rooter	\$360.36
133207	10/5/2023	Tn Dept Of Revenue	\$433.93
133208	10/5/2023	Maury Co United Way	\$449.00
133209	10/5/2023	Turner & Osborne Tire Co	\$328.44
133210	10/5/2023	Truckers Lighthouse	\$927.20
133211	10/5/2023	Neel-Schaffer	\$63,299.00
133212	10/5/2023	AT&T	\$1,427.33
133213	10/5/2023	David's Lock & Key Inc	\$159.00
133214	10/5/2023	Dixie Diesel Service	\$8,541.04
133215	10/5/2023	Federal Express	\$15.21
133216	10/5/2023	Kim Dale	\$142.79
133217	10/5/2023	Rogers Group Inc	\$1,140.30
133218	10/5/2023	Robert J Young Company LLC	\$190.88
133219	10/5/2023	Gulf States Distributors Inc	\$3,908.80
133220	10/5/2023	Tn Valley Packing Co	\$1,259.33
133221	10/5/2023	Break Time Services	\$64.00
133222	10/5/2023	Best Cleaners	\$349.14
133223	10/5/2023	State Of TN Attn: Lily White	\$115.90
133224	10/5/2023	State Of TN Dept Of Revenue	\$22.36
133225	10/5/2023	Columbia Firefighter Assn	\$475.00
133226	10/5/2023	Maury County Equipment	\$84.00
133227	10/5/2023	Better Business Solutions	\$156.00
133228	10/5/2023	J & M Supply Solutions	\$307.79
133229	10/5/2023	D & D Towing & Recovery	\$425.00
133230	10/5/2023	Atmos Energy	\$51.37
133231	10/5/2023	The Hogan Company	\$4,430.53
133232	10/5/2023	Advanced Turf Solutions Inc	\$348.27
133233	10/5/2023	SRM Concrete	\$934.00
133234	10/5/2023	State Systems, LLC	\$93.00
133235	10/5/2023	Cintas Corporation #241	\$451.57
133236	10/5/2023	Needle And Grain	\$170.00
133237	10/5/2023	Maury County 911	\$20,921.55
133238	10/5/2023	In & Around Nashville	\$5,210.00
133239	10/5/2023	Phillips Distributing	\$1,725.00
133240	10/5/2023	LanLink Communications, LLC	\$3,467.85
133241	10/5/2023	TriStar Elevator LLC	\$264.00
133242	10/5/2023	Liquidity Services Operations LLC	\$56.32
133243	10/5/2023	Muletown Rec	\$10,000.00
133244	10/5/2023	Freedom Hill Land Management	\$13,104.58
133245	10/5/2023	Waynes Pest Control	\$255.00
133246	10/5/2023	Main Street Media of TN	\$531.25
133247	10/5/2023	Wells Fargo Financial Leasing, Inc	\$134.26
133248	10/5/2023	Maury Regional Medical Group	\$1,202.00
133249	10/5/2023	Kristi D Ransom	\$1,500.00
133250	10/5/2023	Todd Edwards	\$300.00
133251	10/12/2023	Ace Hardware	\$25.90
133252	10/12/2023	Columbia Power & Water Systems	\$28,037.44
133253	10/12/2023	Daily Herald (Subscription)	\$266.00
133254	10/12/2023	Communications Services, Inc.	\$1,126.24
133255	10/12/2023	South Central Tennessee Development District	\$3,000.00
133256	10/12/2023	NAFECO Inc	\$227.00

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

GENERAL FUND

PAGE 2

133257	10/12/2023	Stoltz Printing Co	\$159.00
133258	10/12/2023	Robert J Young Company LLC	\$1,606.00
133259	10/12/2023	Gulf States Distributors Inc	\$4,036.80
133260	10/12/2023	Short Services Group dba Landscape Management Co	\$4,106.45
133261	10/12/2023	Tennessee Electrical Inc	\$3,950.00
133262	10/12/2023	Break Time Services	\$288.25
133263	10/12/2023	Maury County Equipment	\$66.12
133264	10/12/2023	Municipal Emergency Services	\$343.00
133265	10/12/2023	Mutual Of Omaha	\$12,674.21
133266	10/12/2023	J & M Supply Solutions	\$1,267.65
133267	10/12/2023	Tri Star Energy	\$7,967.17
133268	10/12/2023	CPWS - Broadband	\$600.00
133269	10/12/2023	King's Firearms And More	\$30,500.00
133270	10/12/2023	Atmos Energy	\$292.33
133271	10/12/2023	AT&T	\$147.85
133272	10/12/2023	Municipal Technical Advisory Service	\$85.00
133273	10/12/2023	Life Services EAP	\$1,647.30
133274	10/12/2023	Lee Company	\$1,577.03
133275	10/12/2023	Gateway Tire & Service Center	\$326.93
133276	10/12/2023	Nickell Company LLC	\$7,700.00
133277	10/12/2023	SRM Concrete	\$3,013.00
133278	10/12/2023	Volkert Inc	\$399.00
133279	10/12/2023	Choice Screening	\$20.00
133280	10/12/2023	Johnson Controls	\$835.50
133281	10/12/2023	Leaf	\$1,286.00
133282	10/12/2023	Copycats Print Services Llc	\$144.00
133283	10/12/2023	Cintas Corporation #241	\$2,210.23
133284	10/12/2023	Maury Regional Medical Center	\$150.00
133285	10/12/2023	Henderson, Hutcherson & McCullough	\$17,394.40
133286	10/12/2023	Summit Uniforms	\$115.00
133287	10/12/2023	The Marbet Company	\$2,700.00
133288	10/12/2023	Reach Technologies	\$94.33
133289	10/12/2023	Apparel Masters of Tennessee	\$704.75
133290	10/12/2023	TriStar Elevator LLC	\$264.00
133291	10/12/2023	REA Service, LLC	\$750.00
133292	10/12/2023	Verizon Connect	\$322.15
133293	10/12/2023	Freedom Hill Land Management	\$6,600.00
133294	10/12/2023	Southern Duplicating of Middle Tennessee	\$673.36
133295	10/12/2023	Waynes Pest Control	\$90.00
133296	10/12/2023	Main Street Media of TN	\$962.51
133297	10/12/2023	American Pumping	\$550.00
133298	10/12/2023	Wells Fargo Financial Leasing, Inc	\$287.98
133299	10/12/2023	Maury Regional Medical Group	\$32.00
133300	10/12/2023	Tyler Technologies, Inc	\$1,400.00
133301	10/12/2023	Columbia Kubota	\$1,018.69
133302	10/12/2023	Door Resources	\$3,460.60
133303	10/12/2023	Diamond Equipment Inc	\$8,900.00
133304	10/12/2023	Thomas Creative Agency	\$600.00
133305	10/12/2023	TW Lawncare	\$9,250.00
133306	10/12/2023	Bat Cave Custom	\$3,550.00
133307	10/18/2023	Columbia Power & Water Systems	\$14,546.60
133308	10/18/2023	Morgan Brothers Electric Inc	\$10,724.08

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

GENERAL FUND

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133309	10/18/2023	Mail Call	\$1,697.73
133310	10/18/2023	Ricky Stanfill	\$1,000.00
133311	10/18/2023	John Tyler Cobb	\$193.00
133312	10/18/2023	Royal Flush Portables	\$285.00
133313	10/18/2023	MX-Sport Grafix & Awards LLC	\$1,476.98
133314	10/18/2023	J & M Supply Solutions	\$220.05
133315	10/18/2023	McNeece Service Company	\$5,800.00
133316	10/18/2023	Uline	\$138.65
133317	10/18/2023	Farmers Family Restaurant	\$3,900.00
133318	10/18/2023	Preventia Security	\$288.50
133319	10/18/2023	Nick Brown	\$208.00
133320	10/18/2023	Gateway Tire & Service Center	\$336.45
133321	10/18/2023	C.E.S. City Electric Supply Co	\$368.26
133322	10/18/2023	Tracy Latham	\$500.00
133323	10/18/2023	State Systems, LLC	\$675.00
133324	10/18/2023	Chrysler Dodge Jeep Ram of Columbia	\$146.00
133325	10/18/2023	Combined Insurance, a Chubb Company	\$1,510.89
133326	10/18/2023	Copycats Print Services Llc	\$86.07
133327	10/18/2023	Cintas Corporation #241	\$572.09
133328	10/18/2023	Waynes Pest Control	\$55.00
133329	10/18/2023	Southeastern Shirt Corp.	\$384.68
133330	10/18/2023	Leia Smith	\$64.19
133331	10/18/2023	Columbia Kubota	\$8,373.95
133332	10/18/2023	AT&T (Fiber Optics)	\$566.88
133333	10/18/2023	Thermo Scientific Portable Analytical Instruments	\$53,550.00
133334	10/18/2023	John Morrissey	\$94.00
133335	10/18/2023	StyleBlueprint LLC	\$7,250.00
133336	10/24/2023	Tony Gray	\$225.00
133337	10/24/2023	Tri Star Energy	\$38,226.83
133338	10/24/2023	Austin Brass	\$330.04
133339	10/24/2023	Kevin McCarthy	\$360.17
133340	10/26/2023	AFLAC-Amer Family Life Assurance Co	\$199.64
133341	10/26/2023	Columbia Power & Water Systems	\$8,559.79
133342	10/26/2023	Columbia Rubber & Gasket Co	\$19.36
133343	10/26/2023	Communications Services, Inc.	\$143.44
133344	10/26/2023	Maury Co Government	\$23,512.51
133345	10/26/2023	Morgan Brothers Electric Inc	\$4,084.97
133346	10/26/2023	Maury Co United Way	\$449.00
133347	10/26/2023	NAFECO Inc	\$339.00
133348	10/26/2023	Duck River Electric	\$102.69
133349	10/26/2023	Red Bud Supply Inc	\$47.57
133350	10/26/2023	AT&T	\$68.39
133351	10/26/2023	Pioneer Manufacturing Company	\$1,893.83
133352	10/26/2023	David's Lock & Key Inc	\$123.08
133353	10/26/2023	Complete Forms Supply Co LLC	\$57.74
133354	10/26/2023	NexAir LLC	\$39.17
133355	10/26/2023	Sunbelt Rentals Inc	\$1,145.00
133356	10/26/2023	Environmental Systems Research Institute, Inc	\$19,850.00
133357	10/26/2023	Tennessee Electrical Inc	\$6,960.00
133358	10/26/2023	Break Time Services	\$237.00
133359	10/26/2023	Best Cleaners	\$68.94
133360	10/26/2023	Unum Life Insurance Co Of Amer	\$2,238.80

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

GENERAL FUND

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133361	10/26/2023	Columbia Firefighter Assn	\$475.00
133362	10/26/2023	Heritage-Crystal Clean, LLC	\$499.50
133363	10/26/2023	Parman Energy Group LLC	\$3,421.61
133364	10/26/2023	J & M Supply Solutions	\$345.45
133365	10/26/2023	Pictometry Int'l Corp	\$36,069.39
133366	10/26/2023	Atmos Energy	\$660.91
133367	10/26/2023	Preventia Security	\$304.00
133368	10/26/2023	Lee Company	\$4,664.03
133369	10/26/2023	Daily Herald (Ads)	\$1,146.12
133370	10/26/2023	Gateway Tire & Service Center	\$31.83
133371	10/26/2023	SRM Concrete	\$3,509.00
133372	10/26/2023	State Systems, LLC	\$1,473.25
133373	10/26/2023	Johnson Controls	\$524.00
133374	10/26/2023	Chrysler Dodge Jeep Ram of Columbia	\$7,953.00
133375	10/26/2023	WES Engineers & Surveyors	\$4,800.00
133376	10/26/2023	Certified Languages International	\$216.05
133377	10/26/2023	Cintas Corporation #241	\$1,614.29
133378	10/26/2023	Colonial Life	\$9,269.04
133379	10/26/2023	Kellye Murphy	\$159.82
133380	10/26/2023	Maury County 911	\$7,578.83
133381	10/26/2023	Tristar Bank	\$6,364.60
133382	10/26/2023	Waypoint Business Solutions	\$4,884.74
133383	10/26/2023	Firstnet Services Provided By AT&T Mobility	\$1,501.50
133384	10/26/2023	Knighthorst Shredding, LLC	\$68.31
133385	10/26/2023	Verizon Wireless 03	\$41.89
133386	10/26/2023	Verizon Wireless 09	\$1,027.49
133387	10/26/2023	Game Time Sports Fields LLC	\$2,250.00
133388	10/26/2023	Volunteer Paving LLC	\$97.68
133389	10/26/2023	LPT LLC	\$149,850.00
133390	10/26/2023	T-Mobile	\$129.58
133391	10/26/2023	Sonny Hargrove Trucking, LLC	\$1,600.00
133392	10/26/2023	Holston Gases	\$5,841.30
133393	10/26/2023	Visual Media Co LLC	\$600.00
133394	10/26/2023	Southeastern Shirt Corp.	\$722.53
133395	10/26/2023	Maury Regional Medical Group	\$998.00
133396	10/26/2023	Southern Pipe & Supply	\$72.60
133397	10/26/2023	Maury Regional Occupational Health	\$326.00
133398	10/26/2023	Tyler Technologies, Inc	\$1,400.00
133399	10/26/2023	Columbia Kubota	\$196.83
133400	10/26/2023	Lamplsey Concrete, Inc	\$7,890.00
133401	10/26/2023	Alert 360	\$297.21
133402	10/26/2023	Mohawk Lifts LLC	\$7,589.18
133403	10/26/2023	Taft Excavating LLC	\$5,550.00
133404	10/26/2023	Brandon Morris	\$125.00
133405	10/26/2023	Higher Ground Sports Turf, LLC	\$1,000.00
133406	10/26/2023	Nancy Breslin	\$19.00
133407	10/26/2023	Rattle & Snap	\$200.00
133408	10/30/2023	Nicole Fall	\$225.00
133409	10/30/2023	Travis Neas	\$50.00
133410	10/30/2023	Brandon Schroeder	\$225.00
133411	10/30/2023	Jeff Segroves	\$225.00
133412	10/30/2023	Trent Thomson	\$270.00

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

GENERAL FUND

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133413	10/30/2023	Alex MacPherson	\$225.00
133414	10/30/2023	Michael Waters	\$270.00
133415	10/30/2023	Darrell Freeman	\$270.00
133416	10/30/2023	Landen Barber	\$225.00
133417	10/30/2023	City of Col Petty Cash	\$368.00
133418	10/31/2023	City Of Col Employees Retireme	\$181,686.04
133419	10/31/2023	City Of Col Tn Retirement	\$23,792.87

Total Purchase Cards:	\$	106,439.78
Total Payroll Transfers:	\$	1,391,011.93
Total Misc. Transfers:	\$	379,736.89
Total Checks: 215	\$	<u>1,047,045.98</u>
Total:	\$	2,924,234.58

STATE STREET AID

8054	10/5/2023	Columbia Power & Water Systems	\$10,623.37
8055	10/5/2023	Neel-Schaffer	\$5,130.00
8056	10/5/2023	Advance Paving	\$10,200.00
8057	10/5/2023	Cutting Edge Lawn and Landscapes	\$2,600.00
8058	10/12/2023	Advance Paving	\$7,800.00
8059	10/12/2023	Cutting Edge Lawn and Landscapes	\$1,300.00
8060	10/26/2023	Columbia Power & Water Systems	\$4,433.97
8061	10/26/2023	Temple Inc	\$103,626.00
8062	10/26/2023	Duck River Electric	\$15.56

Total Purchase Cards:	\$	395.98
Total Misc. Transfers:	\$	-
Total Checks: 9	\$	<u>145,728.90</u>
Total:	\$	146,124.88

SANITATION

22133	10/5/2023	Robert J Young Company LLC	\$16.50
22134	10/5/2023	Atmos Energy	\$51.36
22135	10/5/2023	Cintas Corporation #241	\$184.45
22136	10/5/2023	Marshall County Solid Waste and Recycling	\$2,199.60
22137	10/5/2023	Muletown Rec	\$1,029.41
22138	10/5/2023	Wells Fargo Financial Leasing, Inc	\$134.25
22139	10/5/2023	Maury Regional Medical Group	\$122.00
22140	10/12/2023	Columbia Power & Water Systems	\$1,182.53
22141	10/12/2023	Mutual Of Omaha	\$645.97
22142	10/12/2023	Tri Star Energy	\$1,037.91
22143	10/12/2023	Life Services EAP	\$107.10
22144	10/12/2023	United Waste Haulers Of TN LLC	\$45,052.23
22145	10/12/2023	Henderson, Hutcherson & McCullough	\$1,790.60
22146	10/12/2023	Toter, LLC	\$36,310.19
22147	10/18/2023	Combined Insurance, a Chubb Company	\$159.06
22148	10/26/2023	Columbia Power & Water Systems	\$27.11
22149	10/26/2023	Unum Life Insurance Co Of Amer	\$165.60
22150	10/26/2023	Daily Herald (Ads)	\$71.88

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

SANITATION

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22151	10/26/2023	Cintas Corporation #241	\$552.27
22152	10/26/2023	Colonial Life	\$922.11
22153	10/26/2023	Samsara Inc	\$1,324.81
22154	10/31/2023	City Of Col Employees Retireme	\$8,269.03
22155	10/31/2023	City Of Col Tn Retirement	\$1,082.88

Total Purchase Cards:	\$	19,314.31
Total Payroll Transfers:	\$	76,356.73
Total Misc. Transfers:	\$	23,174.41
Total Checks: 23	\$	<u>102,438.85</u>
Total:	\$	221,284.30

WASTEWATER

48286	10/5/2023	Columbia Oil Company Inc	\$150.07
48287	10/5/2023	Duck River Electric	\$258.16
48288	10/5/2023	W W Grainger Inc	\$885.32
48289	10/5/2023	Vulcan Materials Co	\$616.25
48290	10/5/2023	TriStar Elevator LLC	\$614.00
48291	10/5/2023	Donnie Boshers	\$428.00
48292	10/5/2023	Muletown Rec	\$1,470.59
48293	10/5/2023	Maury Regional Medical Group	\$538.00
48294	10/12/2023	Columbia Power & Water Systems	\$74,909.13
48295	10/12/2023	Ted's Sporting Goods	\$250.00
48296	10/12/2023	Stoltz Printing Co	\$419.50
48297	10/12/2023	ICM - Improved Construction Methods	\$588.00
48298	10/12/2023	Robert J Young Company LLC	\$76.01
48299	10/12/2023	Hach Company	\$3,000.00
48300	10/12/2023	J R Wauford & Co Cons Eng, Inc	\$124,200.00
48301	10/12/2023	Nixon Power Services LLC	\$4,828.30
48302	10/12/2023	Mutual Of Omaha	\$2,057.48
48303	10/12/2023	Tri Star Energy	\$2,156.78
48304	10/12/2023	Atmos Energy	\$50.96
48305	10/12/2023	Life Services EAP	\$204.00
48306	10/12/2023	Lee Company	\$38,636.77
48307	10/12/2023	Camfil Usa Inc	\$1,934.16
48308	10/12/2023	Cintas Corporation #241	\$439.36
48309	10/12/2023	Henderson, Hutcherson & McCullough	\$6,395.00
48310	10/12/2023	ACT & C	\$377.03
48311	10/12/2023	Waypoint Analytical, LLC	\$120.00
48312	10/12/2023	Source Technologies	\$21,045.80
48313	10/12/2023	Drees Premier Homes, Inc	\$2,390.00
48314	10/18/2023	Columbia Power & Water Systems	\$94.02
48315	10/18/2023	Duck River Electric	\$2,146.88
48316	10/18/2023	Combined Insurance, a Chubb Company	\$44.10
48317	10/18/2023	Cintas Corporation #241	\$402.13
48318	10/26/2023	Columbia Power & Water Systems	\$5,678.07
48319	10/26/2023	Columbia Oil Company Inc	\$636.67
48320	10/26/2023	Duck River Electric	\$397.00
48321	10/26/2023	AT&T	\$5,128.27
48322	10/26/2023	Labtronx Inc	\$1,887.50
48323	10/26/2023	W W Grainger Inc	\$1,040.56

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

WASTEWATER

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48324	10/26/2023	Robert J Young Company LLC	\$353.29
48325	10/26/2023	B & B Concrete Products Inc	\$250.00
48326	10/26/2023	WM CORPORATE SERVICES, INC	\$59,640.71
48327	10/26/2023	Environmental Systems Research Institute, Inc	\$19,850.00
48328	10/26/2023	Vulcan Materials Co	\$817.11
48329	10/26/2023	Unum Life Insurance Co Of Amer	\$484.00
48330	10/26/2023	Tri Star Energy	\$3,399.34
48331	10/26/2023	Atmos Energy	\$46.66
48332	10/26/2023	Cook's Pest Control Inc	\$117.00
48333	10/26/2023	Cintas Corporation #241	\$402.13
48334	10/26/2023	Colonial Life	\$1,669.83
48335	10/26/2023	Maury Regional Medical Group	\$254.00
48336	10/31/2023	City Of Col Employees Retireme	\$18,103.92
48337	10/31/2023	City Of Col Tn Retirement	\$2,370.82

Total Purchase Cards:	\$	16,165.84
Total Payroll Transfers:	\$	186,954.39
Total Misc. Transfers:	\$	44,460.93
Total Checks: 52	\$	<u>414,252.68</u>
Total:	\$	661,833.84

DRUG

5959	10/12/2023	Thomson Reuters - West	\$64.00
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Total Purchase Cards:	\$	913.07
Total Checks: 1	\$	<u>64.00</u>
Total:	\$	977.07

INSURANCE

3063	10/5/2023	Sherrill Morgan	\$9,875.00
3064	10/5/2023	Muletown Rec	\$12,500.00
3065	10/12/2023	Maury Regional Hospital Marshall Medical Ctr	\$115.00
3066	10/26/2023	BlueCross BlueShield Of TN	\$23,917.22
3067	10/26/2023	Maury Regional Hospital Marshall Medical Ctr	\$8,271.08

Total Misc. Transfers:	\$	368,872.12
Total Checks: 5	\$	<u>54,678.30</u>
Total:	\$	423,550.42

CAPITAL PROJECTS

3045	10/5/2023	Gresham Smith & Partners	\$1,040.21
3046	10/5/2023	Morrison Engineering LLC	\$2,100.00
3047	10/9/2023	Beaman Toyota	\$7,000.00

**CITY OF COLUMBIA
DISBURSEMENT REPORT
FOR THE PERIOD 10/1/2023 - 10/31/2023**

CAPITAL PROJECTS

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3048	10/26/2023	Ragan Smith & Associates Inc	\$2,320.98
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Total Misc. Transfers:	\$	-
Total Checks: 4	\$	12,461.19
Total:	\$	12,461.19

DEBT SERVICE

2396	10/12/2023	U S Bank	\$400.00
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Total Misc. Transfers:	\$	-
Total Checks: 1	\$	400.00
Total:	\$	400.00

IDB

1068	10/12/2023	Retail Strategies LLC	\$30,000.00
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Total Misc. Transfers:	\$	-
Total Checks: 1	\$	30,000.00
Total:	\$	30,000.00



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Thad Jablonski, Finance Director, tjablonski@columbiatn.com, 931-560-1580

AGENDA ITEM TITLE: RECEIVE AND FILE QUARTERLY INVESTMENT REPORT FOR THE PERIOD ENDING JUNE 30, 2023 PURSUANT TO THE CITY'S INVESTMENT AND INTERNAL CONTROLS POLICIES – SPG, FINANCIALLY RESPONSIBLE CITY PROVIDING EXCELLENT SERVICES

RECOMMENDATION: Acknowledge receipt of report on City investments for the period ending June 30, 2023.

INFORMATION: The State of Tennessee requires that any municipality investing City reserve funds shall adopt an investment policy. The City Council adopted an investment policy at the December 13, 2018 City Council meeting. According to internal controls developed subsequent to the policy, staff prepares and files quarterly investment reports with the City Council.

The City began investing excess reserve funds in treasuries in March 2019. The attached investment reports reflects all investment activities through the quarter ending June 30, 2023. After a rebound in the market for treasuries in October 2021, additional reserve funds were reinvested in treasuries to capture the maximum possible interest income.

Highlights for the quarter ending June 30th include:

- \$16,046,651 in new funds invested or reinvested in treasuries during the quarter.
- There were no withdrawals during the period ending June 30.
- \$99,138 represents General Fund investment income received for the quarter.
- \$35,760 represents the combined investment income received for all other funds during the period.

City of Columbia
Quarterly Investment Report
4/1/2023 - 6/30/2023

Reported to City Council on November 9, 2023

Delivered by:



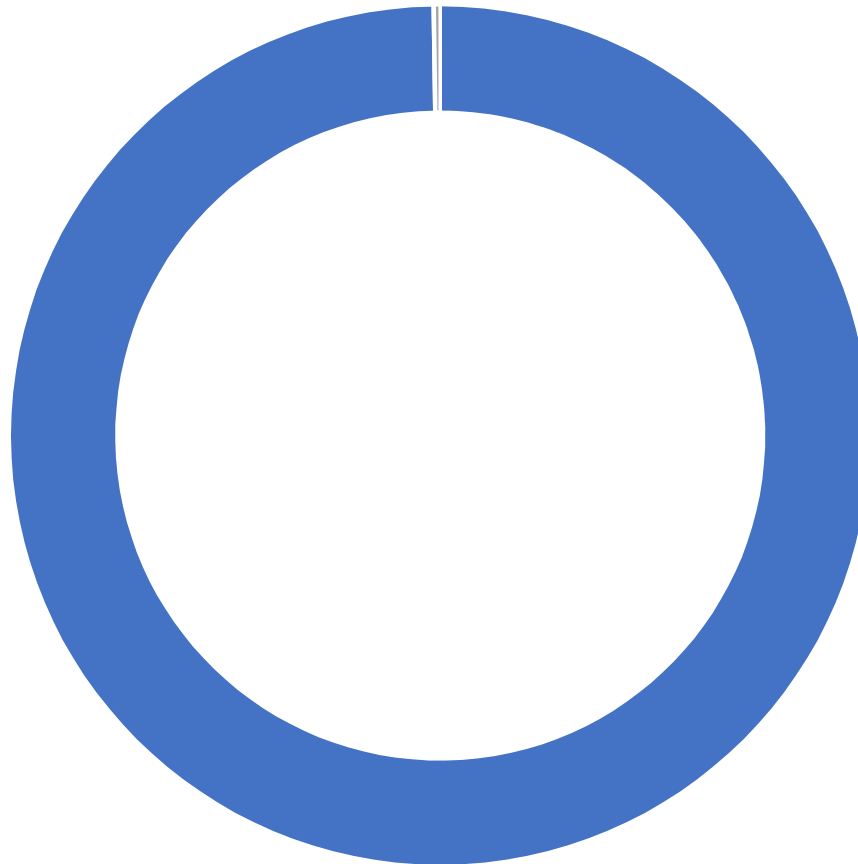
Thad H. Jablonski
Assistant City Manager, CFO & City Recorder

Investment Highlights

\$	16,046,651	New Funds invested during the quarter
\$	-	Amount of withdrawals during the quarter
\$	99,138	Investment income received for the quarter (General Fund)
\$	35,760	Investment income received for the quarter (Other Funds)
\$	134,898	

Investment Asset Allocation

■ United States Treasury Notes/Bills ■ US Govt. Money Market Funds ■ Cash



Product Type	Balance	Allocation %
United States Treasury Notes/Bills	68,962,955	99.74%
US Govt. Money Market Funds	23,179	0.03%
Cash	155,970	0.23%

Raymond James/First Farmers Investment Portfolio Value							
	Inception 3/5/2019	4/1/2022- 6/30/2022	7/1/2022- 9/30/2022	10/1/2022- 12/31/2022	1/1/2023 3/30/2023	4/1/2023 6/30/2023	LTD 3/5/2019- 6/30/2023
Investments - Treasury Securities/MMF	34,435,865	53,918,511	53,932,829	53,993,688	54,024,340	54,119,544	54,119,544
Cash	9,745	27,209	23,117	30,652	95,204	401,897	401,897
Total	34,445,610	53,945,720	53,955,946	54,024,340	54,119,544	54,521,441	54,521,441
Beg Bal Investment in Treasury Sec.	-	44,908,855	53,918,511	53,932,829	53,993,688	66,006,121	-
Initial Investment in Treasury Sec.	34,435,865						34,435,865
Investment Acquisitions	-	8,988,658	14,317	3,060,396	12,012,433	16,046,651	106,016,061
Maturities/Disposals	-	-	-	(2,999,537)	0	(12,000,000)	(70,847,563)
Bond Discount/Realized Gains/Chg in Accrued	-	20,999	-	-			448,409
	34,435,865	53,918,511	53,932,829	53,993,688	66,006,121	70,052,772	70,052,772

Raymond James/First Farmers Deposit Program Cash Value							
	Inception 3/5/2019	4/1/2022- 6/30/2022	7/1/2022- 9/30/2022	10/1/2022- 12/31/2022	1/1/2023 3/30/2023	4/1/2023 6/30/2023	LTD 3/5/2019- 6/30/2023
Cash - Beg. Bal.	-	76,855	27,209	23,117	30,652	95,204	-
Investment Interest Income		58,404	10,206	118,798	12,127	116,877	1,287,250
Interest Income	-	9	8	226	13,983	128,658	145,358
Contributions	34,445,610	9,000,000	12	-	12,000,012	4,016,031	108,242,269
Maturities/Disposals	-	-	-	2,999,537	(0)	12,000,000	70,847,563
Reinvestments	(34,435,865)	(8,988,658)	(14,317)	(3,060,396)	(12,012,433)	(16,046,651)	(140,451,926)
Withdrawals	-	(119,402)	-	(50,630)	50,864	91,777	(34,712,848)
Debt Service Paid	-	-	-	-	-		(4,955,769)
Total	9,745	27,209	23,117	30,652	95,204	401,897	401,898

Raymond James/First Farmers Investment Income							
	Inception 3/5/2019	4/1/2022- 6/30/2022	7/1/2022- 9/30/2022	10/1/2022- 12/31/2022	1/1/2023 3/30/2023	4/1/2023 6/30/2023	LTD 3/5/2019- 12/31/2022
Investment Income	-	58,404	10,206	118,798	12,127	116,877	1,287,250
Bond Discount/Realized Gains	-	20,999	-	-	-	-	448,409
Interest Earned	-	9	8	226	13,983	128,658	145,358
Total Investment Income	-	79,412	10,214	119,024	26,110	245,535	1,881,017



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Thad Jablonski, Finance Director, tjablonski@columbiatn.com, 931-560-1580

AGENDA ITEM TITLE: ACCEPTANCE OF THE CITY OF COLUMBIA ANNUAL COMPREHENSIVE FINANCIAL REPORT FOR THE FISCAL YEAR ENDED JUNE 30, 2023 – SPG, FINANCIALLY RESPONSIBLE CITY PROVIDING EXCELLENT SERVICES

RECOMMENDATION: Accept the Annual Comprehensive Financial Report for the Fiscal Year ended June 30, 2023.

INFORMATION: At the May 11, 2023 meeting, the City Council awarded a bid for auditing services to Henderson, Hutcherson and McCullough for three years with a provision for renewal for two subsequent years. The firm performs the City's annual audit and assists in preparation of the Annual Comprehensive Financial Report (ACFR).

The audit process went smoothly again this year, with City staff continuing to prepare as much information as possible (financial schedules, spreadsheets, etc.) in an attempt to expedite the audit process and reduce billing costs to the City. Ultimately, the City received a "clean" audit report for FY 2023.

In previous years including the last fiscal year (FY 2022), additional services and testing ("single audit" testing) were required and performed in conjunction with federal grant expenditures in accordance with Government Auditing Standards issued by the Comptroller General of the United States and OMB Circular A-133, Audits of States, Local Governments & Non-Profit Organizations. No single audit was required for the year ended June 30, 2023.

Last year, the City applied for and received its twenty fourth consecutive "Certificate of Achievement for Excellence in Financial Reporting" from the Government Finance Officers Association (GFOA) of the United States and Canada. The Certificate of Achievement is valid for one year only. At the time the award was presented, GFOA also made recommendations for enhancements to future reports. Issues presented by GFOA have been addressed and we plan to apply for the award for the FY 2023 financial report with the belief that we continue to meet program requirements.

Aimed at providing accurate and high-quality financial reporting in a condensed format, the City applied for and received its fifth "Popular Annual Financial Reporting Awards Program" (PAFR) for the FY 2022 by GFOA. The financial data presented in the PAFR was taken from the ACFR and is intended to supplement, not replace, the ACFR.



CITY OF COLUMBIA
**ANNUAL
COMPREHENSIVE
FINANCIAL
REPORT**
FISCAL YEAR 2022-2023

CITY OF COLUMBIA
700 N. GARDEN STREET
COLUMBIA, TN 38401
www.ColumbiaTn.com

City of Columbia, Tennessee
Annual Comprehensive Financial Report
For the Fiscal Year ended June 30, 2023

Prepared by: City of Columbia Finance Department

CITY OF COLUMBIA, TENNESSEE

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Introduction



December 14, 2023

*The Honorable Mayor and City Council
And the Citizens of the City of Columbia:*

The Annual Comprehensive Financial Report (ACFR) of the City of Columbia, Tennessee (the City) for the fiscal year ended June 30, 2023 is hereby submitted. The financial statements are presented in conformity with generally accepted accounting principles (GAAP) as set forth by the Governmental Accounting Standards Board (GASB) and have been audited in accordance with generally accepted auditing standards.

This report consists of management's representation concerning the finances of the City. Consequently, management assumes full responsibility for the completeness and reliability of all of the information presented in this report. To provide a reasonable basis for making these representations, management of the City has established a comprehensive internal control framework that is designed both to protect the government's assets from loss, theft, or misuse and to compile sufficient reliable information for the preparation of the City's financial statements in conformity with GAAP. Because the cost of internal controls should not outweigh their benefits, the City's comprehensive framework of internal controls has been designed to provide reasonable rather than absolute assurance that the financial statements will be free from material misstatement. Management asserts, that to the best of its knowledge and belief, this financial report is complete and reliable in all material respects.

Henderson, Hutcherson & McCullough, PLLC, Certified Public Accountants, have issued an unmodified ("clean") opinion on the City of Columbia's financial statements for the year ended June 30, 2023. The independent auditor's report is located at the front of the financial section of this report.

GAAP requires management to provide a narrative introduction, overview and analysis to accompany the basic financial statement in the form of Management's Discussion and Analysis (MD&A). This letter of transmittal is designed to complement MD&A and should be read in conjunction with it. The City of Columbia's MD&A can be found following the report of the independent auditors.

Profile of the government

The City of Columbia is located in Maury County, and is the county seat for Maury County government. Columbia was first settled in 1807 and incorporated on November 18, 1817. Located approximately 45 miles southwest of Nashville, today Columbia is one of the fastest growing cities in Middle Tennessee and a major cultural and economic hub for the South-Central Tennessee region.

The City of Columbia operates under the Council-Manager form of government. The governing Council consists of seven members. The Mayor and Councilman at Large (Vice Mayor) are elected at-large, staggered two-year terms from the election of Council members. The five City Council members are elected by ward. The City Council appoints the City Manager, who is the chief administrative officer of the City. The City Manager is responsible for carrying out policies and ordinances of the Council, overseeing day-to-day operations of the government and appointing the heads of city departments. The City Council also appoints the City Attorney.

The City provides a wide range of municipal services including public safety (police, fire protection and emergency management), highway and street maintenance, public works, parks and recreation, development services (engineering, planning and code administration), solid waste collection and general administrative support services. The City also provides treatment of sewage collected via the City of Columbia wastewater system. Columbia Power & Water Systems provide electric power, water and broadband services in the Columbia service area.

The annual budget serves as the foundation for the City's financial planning and control. The appropriated budget is approved by fund and department. The legal level of budgetary control (i.e. the level at which expenditures may not legally exceed appropriations) is the fund and department level. All departments of the City are required to submit requests for budget appropriations to the Chief Financial Officer (CFO) in the first quarter of the calendar year. The City Manager, in concert with the CFO, uses these requests as a starting point for developing a proposed budget. After numerous meetings with department heads, the City Manager presents the budget to the City Council for approval.

Two meetings and a public hearing are necessary for approving the budget. Although the legal level of budgetary control is at the department level for the general fund and at the fund level for all other funds, the City prepares the budget by fund, function, and activity. Additional appropriations in a fund require two considerations by the Council at properly noticed meetings of the Council with second consideration preceded by a noticed public hearing. Department heads may transfer funds within and between activities with approval of the City Manager. Budget-to-actual comparisons are provided within this report for each individual governmental fund for which a budget has been adopted. For the General Fund, this comparison is presented beginning on page A-10 as part of the basic financial statements. For the other governmental funds with appropriated annual budgets, the comparisons are presented beginning on page D-1.

Local economy

The City generally enjoys a favorable economic environment and local indicators point to continued stability. The region has a varied commercial and industrial base, which adds to employment stability. The local economy is a well-balanced blend of financial, agricultural, wholesale, retail, manufacturing, and service industries. Residential and commercial development in the area has spurred continuing growth.

Multiple economic indicators express the strength of the local economy. An annualized unemployment rate during fiscal year 2023 indicates a 3.3% unemployment rate for the City of Columbia. The fiscal year unemployment data shows a 1.4% decrease from the prior year. According to the U.S. Census data, Maury County has a growth rate of 2.89%, which ranks No. 4 in Tennessee within the top 5% of fastest growing counties in the U.S. According to Smart Asset's 2022 rankings, Maury County ranks No. 2 in Tennessee and top 5% of counties in the U.S. for new building permits in addition to being No. 4 in Tennessee and top 5% of counties in the U.S. for incoming investment.

Notable sectoral drivers of employment in the area continue to be the healthcare, business services and manufacturing sectors with automotive, metals, plastics and ceramics industries dominating manufacturing in the area. Based in Columbia, Maury Regional Medical Center (MRMC) is the flagship hospital for Maury Regional Health. MRMC is the largest hospital between Nashville and Huntsville. As the City's largest employer, Maury Regional Health employs 3,200 system-wide as of 2023, including over 200 physicians. The regional healthcare system serves more than a quarter-million people in the southern Middle Tennessee region. The system is a six-time IBM Watson Health 15 Top Health System, a notable distinction within the industry. MRMC was granted provisional designation as a Level IV Trauma Center by the State in November 2023.

As of June 30, the largest local employer in the automotive sector is the General Motors (GM) manufacturing plant in Spring Hill. The local GM plant is the largest GM manufacturing operation in North America. In

January 2020, GM committed \$40 million to develop and build 5.3L V8 DFM engines with GM's advanced Dynamic Fuel Management technology. In May 2020, the automaker announced plans to power the continent's largest plant using solar power. The current workforce at the plant includes more than 4,000 GM employees with more than 2,000 third-party employees on-site daily. Including the aforementioned investment, GM has invested more than \$2.3 billion in the local manufacturing complex since 2010.

In October 2020, GM announced plans to invest an additional \$2 billion in the local plant to build fully electric vehicles, including the all-new Cadillac LYRIQ. The new electric vehicle initiative invests in a new auto assembly line and employee training and development in next generation jobs. In April 2021, Ultium Cells LLC, a joint venture of LG Energy Solution and General Motors, announced it would invest more than \$2.3 billion to build its second battery cell manufacturing plant in the United States, a new 2.8 million-square-foot facility. The Ultium Plant is expected to begin operations in 2024.

The October and April GM/Ultium announcements are the third largest and second largest economic development projects, respectively, announced in state history to date. In December 2022, GM announced an additional \$275 million in investment in the Ultium Cells joint venture aimed at a 40% increase in capacity, which would add an additional 400 new jobs for a total facility employment of approximately 1,700.

The City hosts national, regional and state-based commercial and franchise business operations, providing the City with a strong retail base and a healthy mix of local and national brand retail. Corporate headquarters in Columbia include Maury Regional Health, Tennessee Farm Bureau and subsidiaries, First Farmers and Merchants Bank and Trust, Local Government Corporation, A-Z Resource, JRN Inc., and Baxter Enterprises.

The Industrial Development Board of the City of Columbia (IDB) promotes industry and trade. The Columbia IDB continues to promote the recently acquired Columbia Rail Site a shelve-ready 225 acre industrial site featuring direct access to regional rail networks. The site was previously certified as a "Tennessee Select Site" by the Tennessee Department of Economic and Community Development. Additionally, the site was also recognized by national rail operator CSX as a "CSX Select Site." The Columbia Rail Site is the second CSX Select Site in Tennessee and one of only two dozen properties across CSX's service territory to meet the rigorous site selection criteria.

During FY 2023, the Columbia IDB continued to promote economic development projects in the City of Columbia. The Columbia IDB used payment-in-lieu-of-tax authority and state grants in attracting and recruiting the following industries to locate and/or expand operations in the City: Sleep Solutions, JC Ford Company, Fiberon, the Columbia Mall (Hull Properties), Mersen and Smile Direct. Since 2020, over 1,200 new jobs and \$387,000,000 million in new capital investment has been announced via economic development projects including two headquarter relocations.

Columbia's downtown historic commercial district is also home to a federal courthouse and state offices, among other public and non-profit agencies located within the City. Local and regional agencies based in Columbia include Maury County Government, Maury County Public Schools, Columbia Main Street Corporation, South Central Tennessee Human Resource Agency, the Housing Coalition of South Central Tennessee, Tennessee Career Center, Columbia Housing Redevelopment Corporation, Columbia Power and Water Systems and City offices, among others.

Redevelopment and a growing commercial base continue to characterize the economic climate in the City's downtown historic commercial district. Increased from the prior year, downtown growth includes a number of new businesses, business relocations and renovations of existing businesses. Building permit activity during the fiscal year is indicative of planned and ongoing construction for more than 50 downtown

structures. Most of the aforementioned structures are of historical significance with exterior/interior renovations underway.

The City's population increased from 28,583 in 1990, 33,055 in 2000 to 34,722 in 2010. Population estimates using American Community Survey and Census data show that the 2023 estimated population stands at approximately 45,792, representing an approximately 9.8% increase compared to 2020 census. Strong growth in the City's residential population continues to serve as a driver for increased residential and commercial development, reflected in building permit activity noted below.

The number of all building permits issued during fiscal year 2023 (2,588) increased by 279 permits, representing a 12.1% increase. Total valuation for all building permits issued in 2023 increased approximately 41.5% from \$205.3 million to \$290.5 million. A five-year comparison of all building permits issued and related valuation follows:

<u>Fiscal Year:</u>	<u>2023</u>		<u>2022</u>		<u>2021</u>		<u>2020</u>		<u>2019</u>
No. of permits / Change prior yr.	2,588	12.1%	2,309	32.0%	1,749	18.0%	1,482	-5.2%	1,563
Permit Val. / Change prior yr.	\$290.5	41.5%	\$205.3	29.8%	\$158.2	81.0%	\$87.4	28.6%	\$122.4

During the five year-period from fiscal year 2019 to fiscal year 2023, the number of *residential building permits* increased by 78.7% and permit valuation for residential increased by 89.5%.

Long-term financial planning and major initiatives

Annually, the City Council reviews and prioritizes capital investment projects to be accomplished within the next five years. The intent of the City's five-year Capital Improvements Program (CIP) for FY 2024-2028 is to match available funding with high priority projects and highlight any funding shortfalls. Staff compiled a comprehensive list of projects anticipated within the next five years and proposed projects based on the City's strategic plan objectives. *Columbia 2023-2028*, the City's strategic plan effective in fiscal year 2024, was adopted in June 2023. The CFO worked with management to develop the proposed CIP with input from all City departments. Ultimately, the City Council selected projects to fund within the five-year CIP, all high-priority projects. The CIP document will be continually adjusted at minimum annually to reflect the City Council's decisions regarding ongoing highest priorities to be funded.

Priorities approved for funding during fiscal year 2024 in the City's fiscal year 2024-2028 CIP are:

- Fire Station No. 1 Renovations.
- Public Works Storage/Fuel Facility – Phase 2.
- HVAC Replacement City Hall.
- South Garden Streetscape project.
- Street Resurfacing.
- Downtown Wayfinding.
- Intersection Improvements at Nashville Highway/Bear Creek Pike.
- Iron Bridge Replacement.
- "Columbia Works" infrastructure Improvements (high-impact Public Works projects city-wide).
- Wastewater System improvements, budgeted in the City's Sewer Fund including Bear Creek Pike Pump Station replacement, Duck River Station Upgrade and Treatment Plant project.
- Technology Upgrades and Replacement.
- Capital Equipment/Vehicle Replacements.

Other *Columbia 2023-2028* plan initiatives completed or underway during fiscal year 2023 include:

- Compensation study recommendations approved and budgeted for fiscal year 2024.

- Engineering and design phase for new Wastewater Treatment Facility nearly completed.
- Fire Station No. 1 renovations - design phase complete.
- Downtown Parking Garage construction to begin.
- “Smart” Traffic Signal upgrades to ensure Citywide coverage for public safety preemption.
- Engineering and design phase underway for splash pad at Fairview Park.
- Polks at Preservation Park nearing completion.

Relevant financial policies

The City has adopted [financial policies](#) related to General Fund reserves, debt management and investments. In December 2020, the City amended its reserve policy to establish a higher minimum reserve of 33% (previously 25%) of budgeted General Fund expenditures. Actual expenditures including transfers out total approximately \$42.7 million in fiscal year 2023. The ending *unassigned fund balance* of \$49.2 million represents 115.3% of fiscal year 2023 actual expenditures including transfers out in the General Fund.

The City continues to explore adopting additional best practice financial policies including budgeted, economic development and enterprise risk management.

Awards – Acknowledgements

Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the City of Columbia for its annual comprehensive financial report for the fiscal year ended June 30, 2022. This was the 24th consecutive year that the government has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current annual comprehensive financial report continues to meet the Certificate of Achievement Program’s requirements and we are submitting it to GFOA to determine its eligibility for another certificate.

This report has been prepared with the help of City Recorder’s Office and Finance staff and the cooperation of each City department. The guidance provided by the City Manager, the support and leadership extended by the Mayor and City Council and the technical assistance and guidance of the staff of Henderson, Hutcherson & McCullough in the preparation of this report are all recognized and appreciated.

Respectfully submitted,

Thad H. Jablonski

CFO/Assistant City Manager



Government Finance Officers Association

**Certificate of
Achievement
for Excellence
in Financial
Reporting**

Presented to

**City of Columbia
Tennessee**

For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

June 30, 2022

Christopher P. Morill

Executive Director/CEO

CITY OF COLUMBIA, TENNESSEE
LIST OF ELECTED AND APPOINTED OFFICIALS
JUNE 30, 2023

Elected Officials

Mayor	Charles (Chaz) M. Molder
Vice Mayor	Randy McBroom
Council Member – Ward 1	Davena Hardison
Council Member – Ward 2	Debbie Wiles
Council Member – Ward 3	Tony Greene
Council Member – Ward 4	Kenny Marshall
Council Member – Ward 5	Danny Coleman

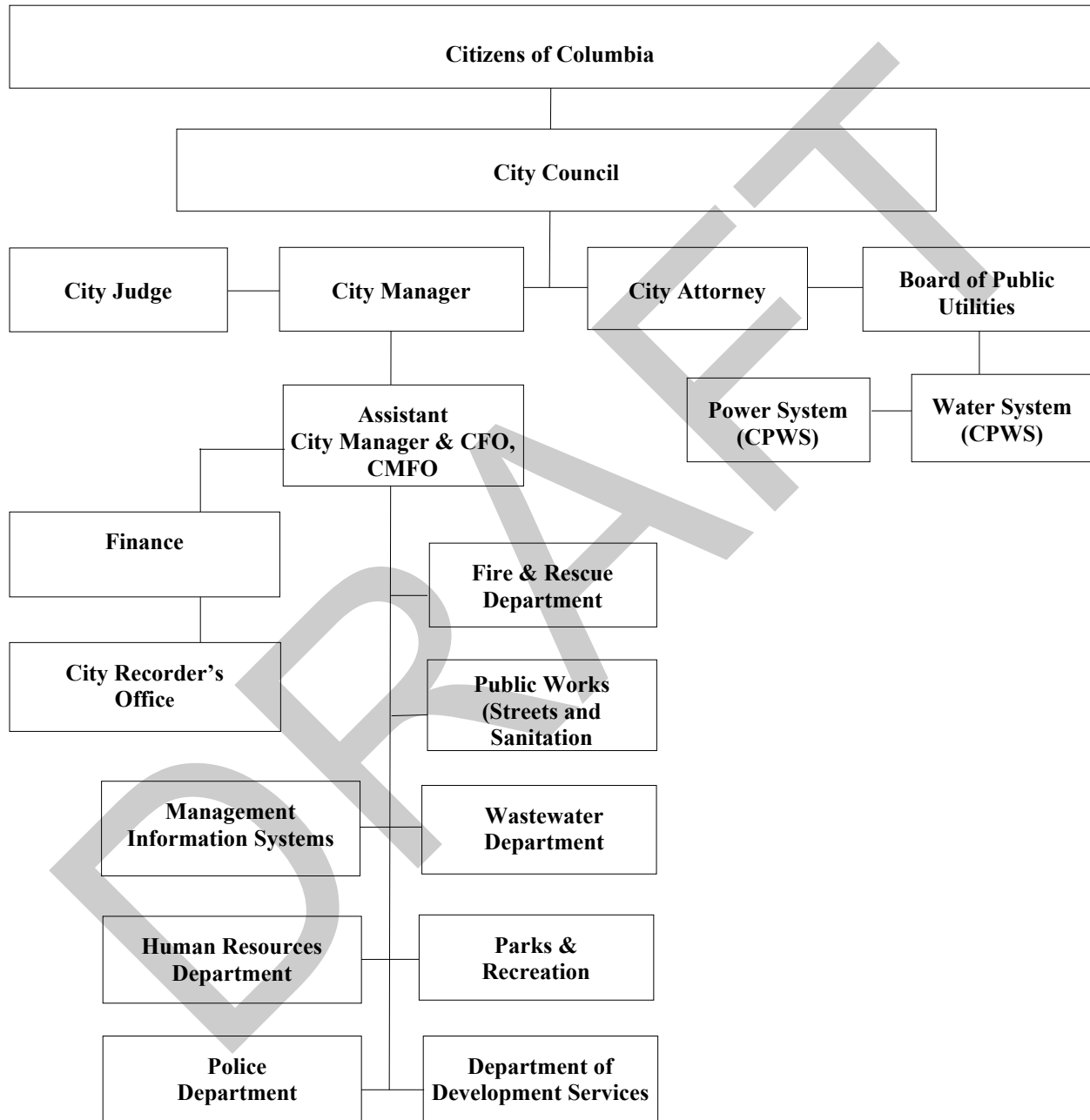
Appointed Officials

City Manager	Tony Massey
Assistant City Manager / CFO / City Recorder	Thad Jablonski*
City Engineer	Glenn Harper
Development Services Director	Paul Keltner
Fire Chief	Ty Cobb
Management Information Systems Director	Jonathon Stotler
Parks & Recreation Director	Mackel Reagan
Personnel Director	Wanda McClain
Police Chief	Jeremy Alsup
Public Works Director	Jeff DeWire
Wastewater Director	Donnie Boshers

*Certified Municipal Finance Officer (CMFO)

CITY OF COLUMBIA, TENNESSEE ORGANIZATION CHART

FOR THE FISCAL YEAR ENDED JUNE 30, 2023



Notes:

Chief Financial Officer (CFO)

Certified Municipal Finance Officer (CMFO) certified, each municipality in the state required to have a designated CMFO

Columbia Power & Water Systems (CPWS), governed by the Board of Public Utilities

Financial Section



INDEPENDENT AUDITOR'S REPORT

To the Honorable Mayor and
Members of the City Council
City of Columbia, Tennessee

Report on the Audit of the Financial Statements

Opinions

We have audited the financial statements of the governmental activities, the business-type activities, each major fund, budgetary comparisons for the general and sanitation funds, and the aggregate remaining fund information of the City of Columbia, Tennessee (the City), as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise the City's basic financial statements as listed in the table of contents. We also have audited each fiduciary fund type of the City as of and for the year ended June 30, 2023, as displayed in the City's basic financial statements.

In our opinion, the accompanying financial statements present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information, as well as each fiduciary fund type of the City, as of June 30, 2023, and the respective changes in financial position and, where applicable, cash flows thereof and the respective budgetary comparisons for the general and sanitation funds for the year then ended in accordance with accounting principles generally accepted in the United States of America.

We did not audit the financial statements of the Columbia Power and Water System (Enterprise) Funds, which represent 68 percent, 69 percent, and 89 percent, respectively, of the assets and deferred outflows, net position, and operating revenues of the business-type activities. Those financial statements were audited by other auditors whose report thereon has been furnished to us, and our opinion, insofar as it relates to the amounts included for Columbia Power and Water System (Enterprise) Funds, is based solely on the report of the other auditors.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the City and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

The City's management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the City's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinions. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards*, issued by the Comptroller General of the United States, will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the City's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis on pages 5 through 17 of the Financial Section and the required supplementary information on pages B-1 through B-9 be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the City's basic financial statements. The combining and individual nonmajor fund financial statements, the budgetary comparison schedules included as other supplementary information, financial schedules and schedule of expenditures of federal and state awards, as required by the audit requirements of Title 2 *U.S. Code of Federal Regulations* (CFR), Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance), are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America by us and other auditors. In our opinion, the information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information Included in the Annual Report

Management is responsible for the other information included in the annual report. The other information comprises the introductory and statistical sections but does not include the financial statements and our auditor's report thereon. Our opinions on the financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon. In connection with our audit of the financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated December 14, 2023 on our consideration of the City's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the City's internal control over financial reporting and compliance.

Chattanooga, Tennessee
December 14, 2023

Henderson Hutcherson
& McCullough, PLLC

**CITY OF COLUMBIA, TENNESSEE
MANAGEMENT'S DISCUSSION AND ANALYSIS
YEAR ENDED JUNE 30, 2023**

As management of the City of Columbia, Tennessee (the City), we offer readers of the City's financial statements this narrative overview and analysis of the financial activities of the City for the fiscal year ended June 30, 2023. Management's Discussion and Analysis (MD&A) focuses on current year activities and resulting changes. We encourage readers to consider the information presented here in conjunction with the Letter of Transmittal, which can be found on pages i through v of this report, and in conjunction with the basic financial statements, starting on page A-1 of this report.

Financial Highlights

- **Net Position.** The assets and deferred outflows of resources of the City exceeded its liabilities and deferred inflows of resources at the close of the most recent fiscal year by approximately \$392.9 million, compared to \$352.6 million in the prior fiscal year. Nearly \$90.3 million (unrestricted net position) may be used to meet government's ongoing obligations to citizens and creditors.
- **Fund Balances.** At the close of the current fiscal year, the City's governmental funds reported combined ending fund balances of \$64.5 million. In the prior year, this amount was approximately \$52.5 million. The increase of \$12.0 million is due primarily to increased revenues over expenditures, particularly in the General Fund.
- **General Fund - Fund Balance.** At the end of the current fiscal year, unassigned fund balance in the General Fund was \$49.2 million, or 115.3% of the \$42.7 million in General Fund actual expenditures (including transfers to other funds). The total fund balance in the General Fund increased approximately \$6.2 million from the prior year. Increased revenues over expenditures (primarily due increased local sales tax collections) in addition to cost containment measures implemented by Management to stay within current revenues provided for the 14.2% increase in fund balance.
- **Budget.** The City's 2023 General Fund budget as originally adopted included \$5.1 million from accumulated fund balance. As amended, the final budget included accumulated budgeted fund balance of \$13.1 million. With actual revenues exceeding current expenditures, the fund balance in the General Fund increased \$6.2 million during the year ended June 30, 2023.
- **Capital Assets.** The City has undertaken several infrastructure projects including improvements to the South Garden Streetscape, intersection improvements at Nashville Highway/Bear Creek Pike, Fire Station No. 1 Renovations, Public Works facility improvements, "Columbia Works" infrastructure improvements (including storm sewer, drainage and street improvements), wastewater (sewer) system Bear Creek pump station rehabilitation project, and a new wastewater (sewer) treatment plant.
- **Debt.** The City's debt (principal on bonds) decreased by \$2.3 million from \$30.9 million to \$28.6 million during the current fiscal year. Approximately \$1.0 million in governmental activities debt was repaid during the year.

Overview of the Financial Statements

This discussion and analysis are intended to serve as an introduction of the City's basic financial statements. The City's basic financial statements are comprised of three components: 1) government-wide financial statements, 2) fund financial statements, and 3) notes to the financial statements. This report also contains other supplementary information in addition to the basic financial statements.

Government-wide financial statements The *government-wide financial statements* are designed to provide readers with a broad overview of the City's finances, in a manner similar to a private-sector business.

The *statement of net position* presents information on all of the City's assets, deferred outflow of resources, liabilities and deferred inflow of resources, with the difference reported as *net position*. Over periods of time, increases or decreases in net position may serve as a useful indicator of whether the financial position of the City is improving or deteriorating. The *statement of activities* presents information showing how the government's net position changed during the most recent fiscal year. All changes in net position are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., uncollected taxes and earned but unused vacation leave).

The government-wide financial statements distinguish functions of the City that are principally supported by taxes and intergovernmental revenues (governmental activities) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (business-type activities). The governmental activities of the City include general government, public safety, public works (roads and streets), sanitation, development services, and parks and recreation. The business-type activities of the City include the sewer, power (power includes both electric and broadband services) and water systems.

The government-wide financial statements can be found on pages A-1 through A-3 of this report.

Fund Financial Statements A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The City, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All of the funds of the City can be divided into three categories: governmental funds, proprietary funds and fiduciary funds.

Governmental Funds *Governmental funds* are used to account for essentially the same functions reported as *governmental activities* in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on *near-term inflows and outflows of spendable resources*, in addition to *balances of spendable resources* available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements.

Because the focus of governmental funds is narrower than that of the government-wide financial statements, it is useful to compare the information presented for governmental funds with similar information presented for governmental activities in the government-wide financial statements. By doing so, readers may better understand the long-term impact of the government's near-term financing decisions. Both the governmental fund balance sheet and the governmental fund statement of revenues, expenditures and changes in fund balances provide a reconciliation to facilitate this comparison between governmental funds and governmental activities.

The City maintains eight (8) individual governmental funds, including the Industrial Development Board (IDB) of the City of Columbia. Information is presented separately in the governmental fund balance sheet and in the governmental fund statement of revenues, expenditures and changes in fund balances for the General, Sanitation and Capital Projects funds, which are considered to be major funds. Data from the other nonmajor governmental funds is combined into a single, aggregated presentation in the form of combining statements on pages C-1 and C-2 of this report.

The City adopts an annual appropriated budget for its General Fund, Special Revenue Funds and Debt Service Fund. A budgetary comparison has been provided to demonstrate compliance for the General Fund on pages D-1 through D-5, the Special Revenue Funds on pages D-6 through D-9 and the Debt Service Fund on page D-10. Capital Projects Fund appears on page D-11.

The basic *governmental fund financial statements* can be found on pages A-4 through A-11 of this report.

Proprietary Funds The City uses two (2) types of proprietary funds: enterprise funds and internal service funds. *Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. The City uses enterprise funds to account for activities in its Sewer Fund and Columbia Power and Water Systems' Power and Water Funds. *Internal service funds* are an accounting device used to accumulate and allocate costs internally among the City's various functions. The City uses an internal service fund to account for costs associated with the City's employee health insurance plan. The balance of the internal service fund at June 30, 2023 was allocated in a pro-rata share to the General, Sanitation and Wastewater funds.

Proprietary funds provide the same type of information as the government-wide financial statements, except in more detail. The proprietary fund financial statements provide separate information for the Sewer Fund and the Power and Water systems' funds, all three of which are considered to be major funds of the City. The basic proprietary fund financial statements can be found on pages A-12 through A-16 of this report.

Fiduciary Funds Fiduciary funds are used to account for resources held for the benefit of parties outside the government. The City uses fiduciary funds to account for the City's pension and retiree health plans. Fiduciary funds are *not* reflected in the government-wide financial statement because the resources of these funds are not available to support the City's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds. The basic fiduciary fund financial statements can be found on pages A-17 through A-18 of this report.

Notes to the financial statements The notes provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements. The notes to the financial statements can be found beginning on page A-19 of this report.

Other information In addition to the basic financial statements and accompanying notes, this report also presents required supplementary information concerning the City's progress in funding its obligation to provide pension and OPEB benefits to its employees. Required supplementary information can be found on pages B-1 through B-9 of this report.

The combining statements referred to earlier in connection with nonmajor governmental funds are presented immediately following the required supplementary information on pension and OPEBs. Combining and individual fund statements and schedules can be found on pages C-1 through C-2 of this report.

Government-wide Financial Analysis

As noted earlier, net position over time may serve as a useful indicator of a government's financial position. The City's assets and deferred outflows exceeded liabilities and deferred inflows by \$392.9 million at the close of the most recent fiscal year.

City of Columbia's Net Position
As of June 30, 2023

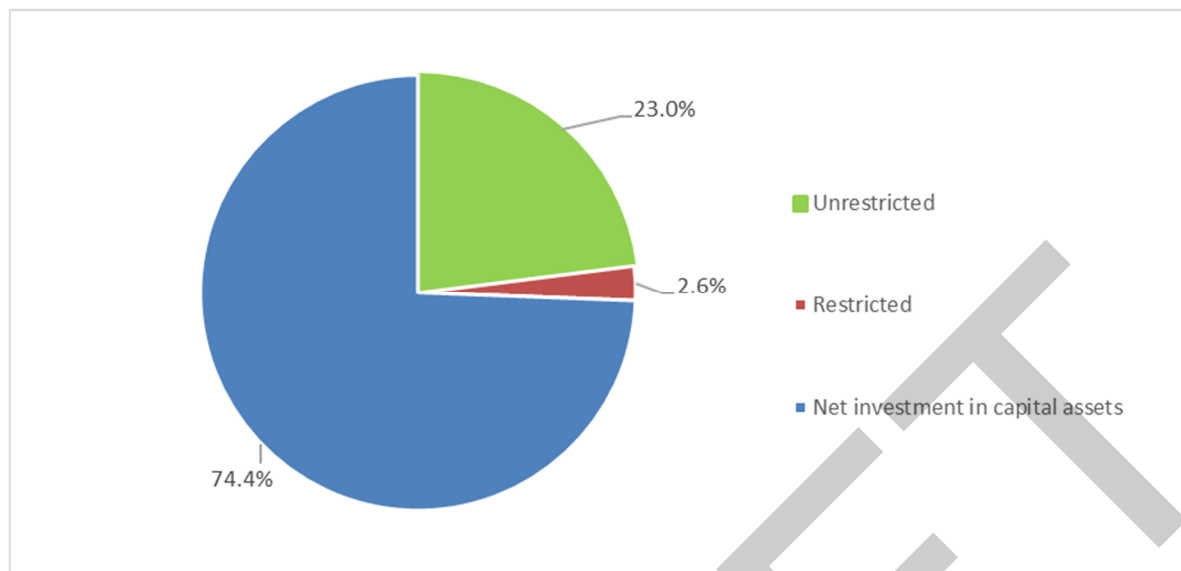
	<u>Governmental Activities</u>		<u>Business-Type Activities</u>		<u>Total</u>	
	<u>2023</u>	<u>2022</u>	<u>2023</u>	<u>2022</u>	<u>2023</u>	<u>2022</u>
Current and other assets	\$ 106,556,717	\$ 93,465,278	\$ 139,804,150	\$ 90,071,871	\$ 246,360,867	\$ 183,537,149
Capital assets, net of accumulated depreciation	60,096,062	60,062,901	190,559,274	217,108,245	250,655,336	277,171,146
Total assets	<u>166,652,779</u>	<u>153,528,179</u>	<u>330,363,424</u>	<u>307,180,116</u>	<u>497,016,203</u>	<u>460,708,295</u>
Deferred outflows of resources	<u>8,555,882</u>	<u>3,880,661</u>	<u>1,958,022</u>	<u>1,008,141</u>	<u>10,513,904</u>	<u>4,888,802</u>
Current and other liabilities	15,365,200	9,137,450	48,795,356	28,247,516	64,160,556	37,384,966
Long-term liabilities outstanding	27,340,071	29,468,242	3,769,923	22,245,892	31,109,994	51,714,134
Total liabilities	<u>42,705,271</u>	<u>38,605,692</u>	<u>52,565,279</u>	<u>50,493,408</u>	<u>95,270,550</u>	<u>89,099,100</u>
Deferred inflows of resources	<u>17,451,892</u>	<u>20,781,254</u>	<u>1,861,329</u>	<u>3,131,522</u>	<u>19,313,221</u>	<u>23,912,776</u>
Net position:						
Net investment in capital assets	69,016,295	63,106,117	223,299,374	197,980,448	292,315,669	261,086,565
Restricted	7,823,074	7,823,074	2,468,713	3,948,310	10,291,787	11,771,384
Unrestricted	38,212,129	27,092,703	52,126,751	52,634,569	90,338,880	79,727,272
Total net position	<u>\$ 115,051,498</u>	<u>\$ 98,021,894</u>	<u>\$ 277,894,838</u>	<u>\$ 254,563,327</u>	<u>\$ 392,946,336</u>	<u>\$ 352,585,221</u>

The City's net position increased by approximately \$40.4 million, or 11.4%, compared to the prior year. A significant portion of the increase is attributed to the acquisition and investment in capital assets (less depreciation and new debt). A significant portion of the remaining increase is from development-related activity revenues and controlled spending through efforts by the City Council, management and departments to contain expenses without reducing service levels.

Governmental policy continues to recognize that local revenue sources must be the foundation for providing basic public services rather than depending on uncertain federal and state sources. To this end, it is vital to continue focusing on efforts to seek balanced diversity, equity and efficiency in local revenue systems to better accommodate future change. By far, the largest portion of the City's net position, nearly \$292.3 million, or 74.4%, reflects its investment in capital assets (e.g., land, buildings, machinery, and equipment), less the portion of related debt outstanding used to acquire those assets. The City uses these capital assets to provide services to citizens; consequently, these assets are not available for future spending.

Although the City's investment in its capital assets is reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be liquidated to repay these liabilities. A portion of the City's net position, \$10.3 million, or 2.6%, represents resources that are subject to external restriction on how they may be used (e.g. roads and streets, public safety, debt service and solid waste disposal). The remaining balance of \$90.3 million, or 23.0%, is unrestricted net position that may be used to meet the government's ongoing obligations to citizens and creditors.

***Restricted, Unrestricted and Net Investment in Capital Assets
As of June 30, 2023***



Governmental and business-type activities' net position represented \$115.0 million and \$277.9 million, respectively, of total net position for the City in 2023. Governmental activities and business-type activities contributed \$17.0 million and \$23.3 million, respectively, to increased net position compared to the prior fiscal year. Key elements of this increase are as follows:

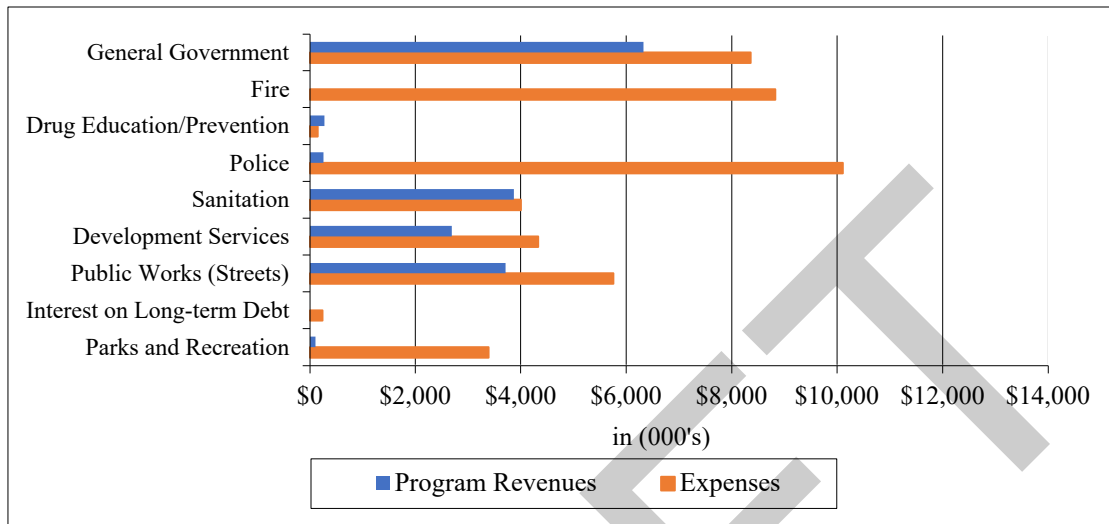
City of Columbia's Changes in Net Position
Year ended June 30, 2023

	Governmental Activities		Business-Type Activities		Total	
Revenues:	2023	2022	2023	2022	2023	2022
Program revenues:						
Charges for services	\$ 7,033,928	\$ 7,003,476	\$ 126,827,687	\$ 118,351,637	\$ 133,861,615	\$ 125,355,113
Operating grants and contributions	7,118,512	7,313,896			7,118,512	7,313,896
Capital grants and contributions	3,100,799	3,500,022	7,233,667	3,193,210	10,334,466	6,693,232
General revenues:						
Property taxes	12,735,027	12,633,089	-	-	12,735,027	12,633,089
Sales taxes	18,439,114	17,022,037	-	-	18,439,114	17,022,037
Other local taxes and fees	7,530,625	4,923,206	-	-	7,530,625	4,923,206
Miscellaneous	1,728,107	306,967	1,468,286	134,515	3,196,393	441,482
Total revenues	<u>57,686,112</u>	<u>52,702,693</u>	<u>135,529,640</u>	<u>121,679,362</u>	<u>193,215,752</u>	<u>174,382,055</u>
Expenses:						
General government	8,358,540	7,068,195	-	-	8,358,540	7,068,195
Police	10,106,126	9,612,492	-	-	10,106,126	9,612,492
Fire	8,827,584	8,412,648	-	-	8,827,584	8,412,648
Drug & education prevention	150,313	41,908	-	-	150,313	41,908
Public works-streets	5,756,901	5,275,242	-	-	5,756,901	5,275,242
Development services	4,329,843	3,413,761	-	-	4,329,843	3,413,761
Sanitation	4,001,219	3,731,455	-	-	4,001,219	3,731,455
Parks and recreation	3,392,565	3,356,165	-	-	3,392,565	3,356,165
Interest on long-term debt	243,604	286,039	-	-	243,604	286,039
Power	-	-	89,107,963	80,447,425	89,107,963	80,447,425
Water	-	-	12,264,319	11,090,703	12,264,319	11,090,703
Sewer	-	-	9,149,739	9,094,080	9,149,739	9,094,080
Total expenses	<u>45,166,695</u>	<u>41,197,905</u>	<u>110,522,021</u>	<u>100,632,208</u>	<u>155,688,716</u>	<u>141,830,113</u>
Increase (decrease) in net position before transfers	12,519,417	11,504,788	25,007,619	21,047,154	37,527,036	32,551,942
Transfers	1,676,108	1,770,978	(1,676,108)	(1,770,978)	-	-
Changes in net position	<u>14,195,525</u>	<u>13,275,766</u>	<u>23,331,511</u>	<u>19,276,176</u>	<u>37,527,036</u>	<u>32,551,942</u>
Net position-beginning	98,021,894	84,746,128	254,563,327	235,287,151	352,585,221	320,033,279
Prior year adjustment	2,834,079	-	-	-	2,834,079	-
Net position-ending	<u>\$ 115,051,498</u>	<u>\$ 98,021,894</u>	<u>\$ 277,894,838</u>	<u>\$ 254,563,327</u>	<u>\$ 392,946,336</u>	<u>\$ 352,585,221</u>

Governmental Activities

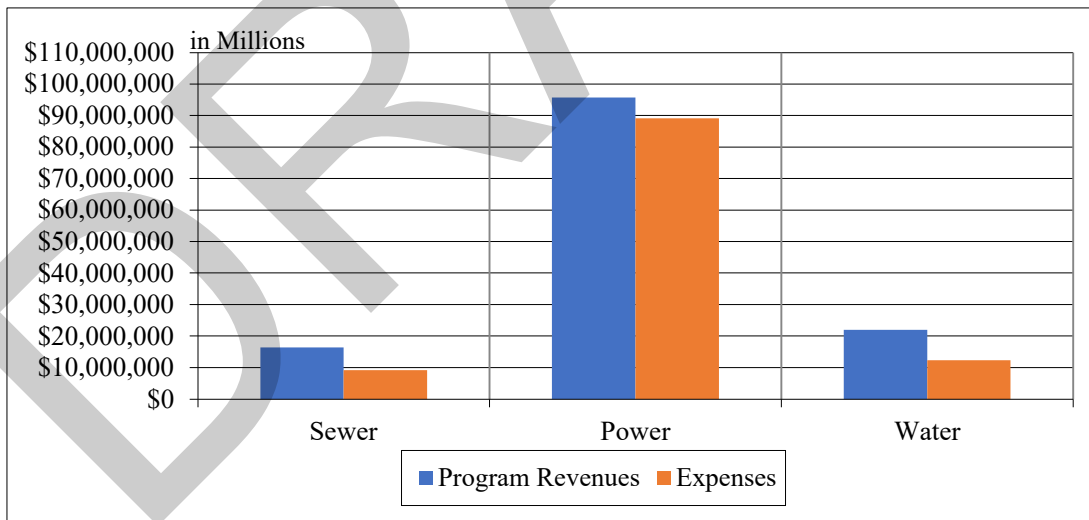
Governmental activities increase in net position from FY 2022 to FY 2023 is \$17.0 million, or 17.4%. The primary factor underlying this increase is sales tax collections and the impact of residential and commercial growth and the revenue generated by said growth, such as business tax, hotel-motel tax and the local sales tax. Local sales tax collections totaled \$1.4 million, or 9.46% over last year's collections. Other factors include increase in net investment in capital assets, roads and streets, and capital projects. Actual revenues over the prior year and cost containment measures implemented to stay within current revenues during the fiscal year ensured revenues exceeded expenditures for the year.

***Expenses and Program Revenues – Governmental Activities
Year ended June 30, 2023***



As the graph above shows, Public Safety (Police, Fire and Drug Education/Prevention) expenses represent the largest share of governmental activities, i.e., nearly half, reflecting the City's commitment to maintaining a safe community. Public Works (Streets) expenses were also a substantial activity, reflecting the City's commitment to a safe streets and roadways. For the most part, expenses closely paralleled inflation and growth in the demand for services.

***Expenses and Program Revenues – Business-type Activities
Year ended June 30, 2023***



Business-Type Activities

Business-type activities increased the City's net position by \$23.3 million, accounting for 57.8% of the total growth in the government's net position. As the graph above shows, revenues exceeded expenses in all of the city's business-type activities. Revenues for business-type activities increased \$13.9 million, or 11.4%, compared to the prior fiscal year. Most of the increase in business activities revenues are due to increased charges for services. The increase in business-type activities' revenues was primarily due to a \$8.5 million, or 7.2%, increase in charges for services over the prior year. Increased charges for services include higher year-over-year electric and broadband sales. In addition, the city's Sewer Fund recorded the first year of impact fee revenues.

Expenses of business type-activities increased \$9.9 million, or 9.8%, compared to the prior fiscal year. Business-type activities expenses were increased primarily due to increased Power expenses, accounting for 87.6% of year-over-year increase. Most of the increase in Power expenses follow from increased cost of energy purchased from the Tennessee Valley Authority.

Financial Analysis of Governmental Funds

As noted previously, the City uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements related to financial reporting.

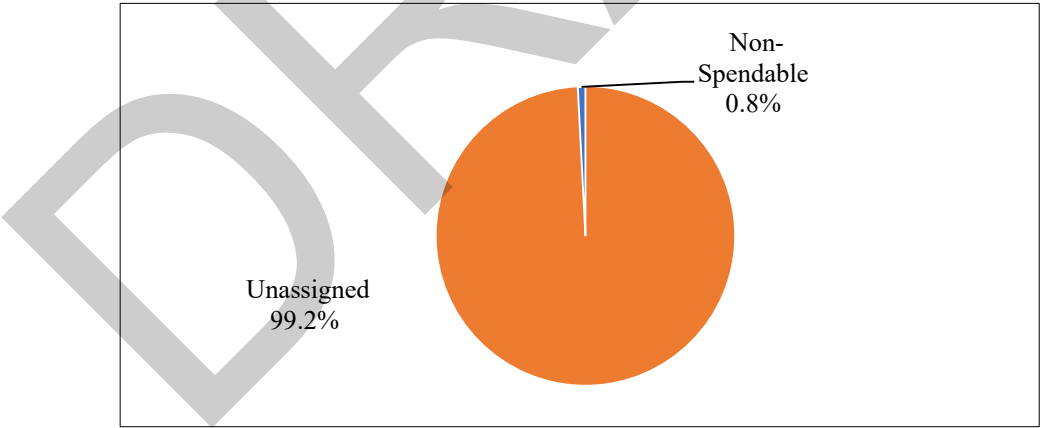
Governmental Funds

The focus of the City’s governmental funds is to provide information on near-term inflows, outflows and balances of spendable resources. Such information is useful in assessing the City’s financing requirements. In particular, unassigned fund balances may serve as a useful measure of a government’s net resources available for discretionary use as they represent the portion of fund balance that has not yet been limited to use for a particular purpose.

At June 30, 2023, the City’s governmental funds reported combined ending fund balances of \$64.5 million, representing an increase of \$12.0 million in comparison with the prior year of approximately \$52.5 million. The increase is primarily due to increased business taxes including business tax revenue, local sales tax and hotel-motel tax among other revenues in the General Fund. Additionally, increased revenues over expenditures and cost containment measures implemented to stay within current revenues resulted in increases to ending fund balances across most governmental funds.

The General Fund is the chief operating fund of the City. The 2023 ending fund balance of \$49.6 million, represents an increase of \$6.2 million compared to 2022. As shown in the graph below, the fiscal year 2023 General Fund ending balance is comprised of \$0.4 million, or 0.8%, in non-spendable funds for inventory and prepaid items, and \$49.2 million, or 99.2%, in unassigned funds.

General Fund – Fund Balance Composition – June 30, 2023



The most significant continuing revenue sources in the General Fund are derived from taxes. During the current fiscal year, taxes represented \$36.8 million, or 78.0%, of total General Fund revenues. Taxes in the General Fund increased \$1.7 million, or 4.9%, in 2023 compared to the prior fiscal year. Beginning in 2021, local sales tax surpassed property tax as the largest source of revenue in the General Fund, the trend continuing in 2023. Local sales tax increased to \$18.4 million during 2023 compared to \$17.0 million in 2022, an increase of 8.3%. Property tax revenue – the General Fund’s most stable source of revenue - increased to \$12.7 million in 2023 compared to \$12.6 million in 2022.

The Sanitation Fund, which receives user fees from solid waste collection and disposal operations, had a fund balance of \$1.9 million as of June 30, 2023. This balance represents an increase of \$0.2 million. The increase in fund balance was primarily due to cost containment measures intended to reduce expenditures to remain within current revenues without reducing service levels.

The fund balance in the Capital Projects Fund increased to \$5.5 million as of the end of 2023. Approximately \$2.2 million was spent on programmed capital improvement projects during 2023. During the year, \$2.9 million was transferred from the General Fund to the Capital Projects Fund. Federal/state grant proceeds received during 2023 totaled \$0.3 million. West 7th Streetscape construction was completed during the year, design and environmental approvals for intersection improvements at US 31/US 412 proceeded during 2023, and the South Garden Streetscape Project.

Budgetary Highlights

In accordance with state law, the City's governing body approves a budget for the General Fund, Special Revenue Funds, Capital Projects and Debt Service Fund. The Industrial Development Board (IDB), appointed by the governing body, adopted a budget for the IDB Fund.

Original budget compared to final budget

The fiscal year 2023 original and final budgets (both including transfers) for budgeted funds are as follows:

Fund	Original Budget	Final Budget	Variance
General Fund			
Council, Attorney & Court	\$ 418,323	\$ 443,323	\$ 25,000
City Manager's Office	638,151	448,278	(189,873)
Management Information Systems	1,430,581	1,676,406	245,825
Finance	492,089	499,724	7,635
City Recorder	562,835	570,265	7,430
Personnel	256,062	262,840	6,778
General Government (incl. Tourism)	4,914,295	10,629,477	5,715,182
Police Department	11,094,232	13,144,928	2,050,696
Fire & Rescue	9,139,614	10,322,334	1,182,720
Streets & Maintenance	5,180,617	6,531,369	1,350,752
Development Services	1,876,509	1,923,343	46,834
Parks & Recreation	3,028,442	4,105,322	1,076,880
Transfers	\$ 3,056,418	\$ 5,646,940	\$ 2,590,522
Total General Fund	\$ 42,088,168	\$ 56,204,549	\$ 14,116,381
Other Governmental Funds*			
Solid Waste- Sanitation Fund	\$ 3,484,552	\$ 4,778,810	\$ 1,294,258
State Street Aid Fund	1,240,000	2,104,560	864,560
Drug Fund	151,053	151,053	-
Street & Transportation	65,100	65,100	-
Industrial Development Board	908,775	4,035,658	3,126,883
Debt Service Fund	1,647,954	1,647,954	-
Capital Projects Fund	3,540,276	13,515,327	9,975,051
	\$ 53,125,878	\$ 82,503,011	\$ 29,377,133
*Expenditures plus transfers out			

Budgetary Highlights (Continued)

The original General Fund budget was \$42.1 million (including transfers) for the current fiscal year. As shown in the table above, the final budget (including transfers) was increased \$14.1 million to \$56.2 million. During the year, the budget was amended to include \$1.9 million for capital outlays in General Fund and projects not included in the original appropriation totaling \$5.8 million.

Other amendments during the year affected special revenue funds as follows:

- The Sanitation Fund was amended to budget \$0.6 million for increased fuel and landfill costs and \$0.4 million for a refuse collection vehicle ordered in 2022 but not received as of June 30, 2022.
- The Capital Projects Fund was amended by \$5.2 million including reappropriated funds for West 7th Streetscape project, South Garden Streetscape project, Fire Station No. 1 renovations (design), and Iron Bridge repair project (design).

There were no amendments to the Drug, Debt Service or Streets and Transportation Funds.

Final budget compared to actual results

In the General Fund, the 2023 final budgeted expenditures (including transfers) of \$56.2 million anticipated \$36.5 million in revenues and \$1.7 million of transfers in from business-type activities. Approximately \$1.7 million of transfers in were realized for the year. The final budget also included the use of a \$18 million allocation from fund balance. Actual results for the year reflect an increase of fund balance of approximately \$6.1 million.

Actual current revenues for the year were approximately \$47.2 million, representing \$10.7 million more than anticipated. As noted, no budgeted fund balance was used to offset revenues during 2023. Cost containment measures implemented by management allowed the City to finish the year with \$42.7 million in actual expenditures (including transfers). The largest shares of excess budgeted to actual expenditures are unexpended reserves (used as local match for grants, additional pension and other increased anticipated costs), street paving and other goods and services not completed/received before June 30, wayfinding and the presidential park projects which were in design phases as of June 30, 2023 and unused salaries and services budgeted.

Due to strong residential and commercial growth, actual charges for services (solid waste collection fees) revenue in the Sanitation Fund was 6.1% greater than the budgeted amount during the current fiscal year. Actual revenues in the Sanitation Fund totaled \$3.9 million and budgeted revenues totaled \$3.7 million for the year. Actual expenditures (including transfers) totaled \$3.7 million and the ending fund balance increased approximately \$0.2 million during 2023. The increase in fund balance is attributed to cost containment measures to ensure that current expenditures do not exceed current revenues.

Capital Projects Fund expenditures were budgeted at \$13.5 million with anticipated revenues budgeted at \$4.3 million. Actual Capital Projects Fund revenues total \$0.3 million for the current fiscal year. Actual capital outlay of \$2.2 million was primarily offset by \$2.9 million of transfers in from the General and State Street Aid Funds. Lower than anticipated expenditures follow from projects' status in design and pre-construction during the year.

Capital Asset and Debt Administration

Capital Assets

The City's investment in capital assets from its governmental and business-type activities as of June 30, 2023 was approximately \$320.5 million (net of accumulated depreciation). This investment in capital assets includes land, buildings, machinery and equipment, park facilities, roads, highways and bridges.

City of Columbia's Capital Assets
(Net of depreciation)
As of June 30, 2023

	Governmental	Business-type	
	<u>Activities</u>	<u>Activities</u>	<u>Total</u>
Land and land improvements	\$ 11,324,278	\$ 4,208,540	\$ 15,532,818
Buildings and improvements	39,450,281	76,582,342	116,032,623
Machinery and equipment	28,928,930	25,463,168	54,392,098
Infrastructure (plant and lines)	88,060,775	260,761,380	348,822,155
Construction in progress	9,073,794	45,281,433	54,355,227
Total Capital Assets	\$ 176,838,058	\$ 412,296,863	\$ 589,134,921
Total accumulated depreciation	\$ 96,343,923	\$ 172,247,616	\$ 268,591,539
Net of accumulated depreciation	\$ 80,494,135	\$ 240,049,247	\$ 320,543,382

Major capital asset events during the fiscal year included the following:

- Completion West 7th Streetscape project.
- Significant progress was made on construction of the South Garden Streetscape project, a major streetscape project anticipated to be completed during 2024.
- Numerous "Columbia Works" infrastructure projects were completed during the year.

Additional information on the City's capital assets can be found in the notes to the financial statements section of this report beginning on page A-28.

Long-term Debt

At the end of the current year, the City of Columbia had outstanding debt of approximately \$28.6 million. Of this amount, \$18.6 million comprises general obligation bonds backed by the full faith and credit of the government and \$0.4 million represents capital outlay notes comprising the city's governmental activities debt. Of the \$17.0 million of business-type activities debt, \$7.4 million is comprised of general obligation bonds of the Sewer Fund; \$2.0 million is represented by Revenue and Tax Bonds secured by both the taxing power of the City and specific revenue sources (i.e., revenue and tax bonds) of the Power Fund (Broadband System debt); and \$7.6 million is secured by Water Fund revenues.

City of Columbia's Outstanding Debt
As of June 30, 2023

	Governmental	Business-type	
	<u>Activities</u>	<u>Activities</u>	<u>Total</u>
General obligation bonds*	\$ 11,223,699	\$ 7,364,599	\$ 18,588,298
Capital outlay notes	353,324	-	353,324
Revenue and tax bonds*	-	\$ 2,005,700	2,005,700
Revenue bonds*	-	7,604,920	7,604,920
Capital lease	-	-	-
Total Outstanding Debt	\$ 11,577,023	\$ 16,975,219	\$ 28,552,242

*Presented net of original issuance discounts and premiums

The City's debt decreased by \$2.3 million, or 7.6% during the current fiscal year. No new debt was issued in 2023.

The City maintains an "AA+/Aa2" Rating for general obligation debt. The Aa2 rating was first received by Moody's in 2011. Standard & Poor's (S&P) provided the City's AA+ bond rating prior to the City's 2017 general obligation bond issuance and last affirmed by S&P in November 2020 during a general obligation bond refunding transaction. State statutes impose no debt limit on the amount of general obligation debt a governmental entity may issue. The City's debt policy establishes written guidance and restrictions for amount and type of debt the City will issue, the issuance process and management of the City's debt portfolio. Readers may access the City's debt policy and other financial policies [here](#).

Additional information on the City of Columbia's long-term debt can be found in the notes to the financial statements section of this report beginning on page A-29.

Economic Factors and Next Year's Budget and Rates

Residential population growth continued to increase in fiscal year 2023 with growth anticipated to continue to increase in fiscal year 2024. Columbia's most recent population estimate for 2023 is 45,792 using US Census/American Community Survey data. The 2023 estimated population represents an increase of approximately 5.7% compared to 2022. Strong residential growth continues to drive increased residential and commercial development. Increased development activity is evidenced by the number of building permits issued during fiscal year 2023 (2,588), which represents an increase of 279 permits, or 12.1%, compared to fiscal year 2022. Fiscal year 2024 anticipated building permits issued are expected to exceed 2,900, estimated based on trends during the past five years.

The unemployment rate (not seasonally adjusted) for September 2023 for the City was 3.3%, unchanged since September 2022. Maury County unemployment stood at 2.9% in September 2023, compared to 3.4% for the State of Tennessee and a national average of 3.6% (not seasonally adjusted).

In addition to the unemployment rate, factors considered in preparing the City's budget for fiscal year 2024 included:

- Property tax is the most stable source of revenue for the City. The property tax rate levied in fiscal year 2024 is \$0.8251. Fiscal year 2024 budgeted property taxes comprise 25.9% of overall budgeted General Fund operating revenues. The 2024 budget anticipates \$12.1 million in property tax revenue. Other revenue sources are subject to some degree of fluctuation in economic cycles.
- Local sales tax for fiscal year 2023 continued to represent the largest single source of revenue in the General Fund. Fiscal year 2024 budgeted local sales tax represents 31.7% of total operating revenue budgeted. The 2024 budget anticipates \$14.8 million in local sales tax revenue.
- The City continues to follow the *Columbia 2023-2028* strategic plan focused on fiscal responsibility, quality of life, strong public safety, community engagement and commitment to a strong downtown Columbia and the City as a whole.
- The City updates and adopts a five-year Capital Improvements Program (CIP) annually. The fiscal year 2024-2028 CIP anticipates the expenditure of \$99.5 million in city, state and federal funds over the next five years.

Requests for Information

This financial report is designed to provide a general overview of the City of Columbia's finances for those with an interest in the government's finances. Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to:

City of Columbia
Attn: Thad H. Jablonski
Chief Financial Officer/Assistant City Manager
700 North Garden Street
Columbia, Tennessee 38401

DRAFT

Basic Financial Statements



CITY OF COLUMBIA, TENNESSEE

STATEMENT OF NET POSITION

June 30, 2023

	Governmental Activities	Business-type Activities	Total Primary Government
ASSETS			
Cash and cash equivalents	\$ 25,198,626	\$ 40,251,159	\$ 65,449,785
Investments	39,945,466	28,754,539	68,700,005
Restricted assets:			
Cash and cash equivalents:			
Customer deposits	-	5,031,385	5,031,385
Debt service	-	573,452	573,452
Investments - debt service	-	1,759,617	1,759,617
Receivables, net of allowance for uncollectible	18,806,975	6,300,735	25,107,710
Internal balances	342,334	(342,334)	-
Inventories	3,998	3,526,340	3,530,338
Prepaid items	423,042	275,467	698,509
Net OPEB asset	1,438,204	159,802	1,598,006
Other assets	-	4,024,015	4,024,015
Capital assets:			
Land and other nondepreciable assets	20,398,072	49,489,973	69,888,045
Capital assets, net of accumulated depreciation	60,096,062	190,559,274	250,655,336
Total assets	<u>166,652,779</u>	<u>330,363,424</u>	<u>497,016,203</u>
DEFERRED OUTFLOWS OF RESOURCES			
Deferred charge on refunding	68,814	225,346	294,160
Deferred pension outflows	7,428,438	1,109,995	8,538,433
Deferred OPEB outflows	1,058,630	622,681	1,681,311
Total deferred outflows of resources	<u>8,555,882</u>	<u>1,958,022</u>	<u>10,513,904</u>
LIABILITIES			
Accounts payable	203,285	2,768,697	2,971,982
Accrued and other payables	2,478,828	12,236,091	14,714,919
Customer deposits	-	5,031,385	5,031,385
Unearned revenue	-	8,032,063	8,032,063
Long-term liabilities, due within one year	2,430,121	4,018,286	6,448,407
Long-term liabilities, due in more than one year	10,252,966	16,057,601	26,310,567
Long-term liabilities, net pension liability	27,340,071	4,085,298	31,425,369
Long-term liabilities, net OPEB liability	-	315,375	315,375
Long-term liabilities, TVA advances	-	20,483	20,483
Total liabilities	<u>42,705,271</u>	<u>52,565,279</u>	<u>95,270,550</u>
DEFERRED INFLOWS OF RESOURCES			
Deferred pension inflows	71,518	10,686	82,204
Deferred OPEB inflows	2,732,651	1,527,571	4,260,222
Deferred revenue	14,647,723	323,072	14,970,795
Total deferred inflows of resources	<u>17,451,892</u>	<u>1,861,329</u>	<u>19,313,221</u>
NET POSITION			
Net investment in capital assets	67,990,949	223,299,374	291,290,323
Restricted			
Roads and streets	2,464,288	-	2,464,288
Public safety	439,515	-	439,515
Industrial Development Board	4,253,769	-	4,253,769
OPEB asset	1,438,204	159,802	1,598,006
Debt service	271,323	2,308,911	2,580,234
Solid waste disposal	1,921,618	-	1,921,618
Unrestricted	36,271,832	52,126,751	88,398,583
Total net position	<u>\$ 115,051,498</u>	<u>\$ 277,894,838</u>	<u>\$ 392,946,336</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF ACTIVITIES

Year Ended June 30, 2023

Functions/Programs	Expenses	Program Revenues		
		Charges for Services	Operating Grants and Contributions	Capital Grants and Contributions
PRIMARY GOVERNMENT				
Governmental activities -				
General government	\$ 8,358,540	\$ 613,118	\$ 5,555,666	\$ 156,951
Public safety				
Police	10,106,126	223,487	38,182	-
Fire	8,827,584	-	-	-
Drug education and prevention	150,313	281,345	-	-
Public works	5,756,901	1,935,746	1,524,664	253,319
Development services	4,329,843	-	-	2,690,529
Parks and recreation	3,392,565	106,886	-	-
Sanitation	4,001,219	3,873,346	-	-
Interest on long-term debt	243,604	-	-	-
Total governmental activities	45,166,695	7,033,928	7,118,512	3,100,799
Business-type activities -				
Sewer system	9,149,739	14,259,966	-	2,091,510
Power system	89,107,963	95,431,121	-	270,593
Water system	12,264,319	17,136,600	-	4,871,564
Total business-type activities	110,522,021	126,827,687	-	7,233,667
Total primary government	\$ 155,688,716	\$ 133,861,615	\$ 7,118,512	\$ 10,334,466
General Revenues				
Property taxes				
Local sales taxes				
Business taxes				
Hotel and motel taxes				
Alcoholic beverage taxes				
Franchise and excise taxes				
In lieu of taxes				
Unrestricted investment losses				
Other revenue				
Transfers				
Total general revenues				
Change in net position				
Net position, beginning				
Prior period adjustments				
Net position, beginning (as restated)				
Net position, ending				

The accompanying notes are an integral part of the financial statements.

Net (Expense) Revenue and Changes in Net Position		
Primary Government		
Governmental Activities	Business-type Activities	Total
\$ (2,032,805)	\$ -	\$ (2,032,805)
(9,844,457)	-	(9,844,457)
(8,827,584)	-	(8,827,584)
131,032	-	131,032
(2,043,172)	-	(2,043,172)
(1,639,314)	-	(1,639,314)
(3,285,679)	-	(3,285,679)
(127,873)	-	(127,873)
(243,604)	-	(243,604)
(27,913,456)	-	(27,913,456)
-	7,201,737	7,201,737
-	6,593,751	6,593,751
-	9,743,845	9,743,845
-	23,539,333	23,539,333
(27,913,456)	23,539,333	(4,374,123)
12,735,027	-	12,735,027
18,439,114	-	18,439,114
1,602,934	-	1,602,934
921,048	-	921,048
1,852,828	-	1,852,828
1,181,579	-	1,181,579
55,568	-	55,568
1,916,668	-	1,916,668
1,728,107	1,468,286	3,196,393
1,676,108	(1,676,108)	-
42,108,981	(207,822)	41,901,159
14,195,525	23,331,511	37,527,036
98,021,894	254,563,327	352,585,221
2,834,079	-	2,834,079
100,855,973	254,563,327	355,419,300
<u>\$ 115,051,498</u>	<u>\$ 277,894,838</u>	<u>\$ 392,946,336</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

GOVERNMENTAL FUNDS BALANCE SHEET

June 30, 2023

	General	Sanitation	Capital Project
ASSETS			
Cash and cash equivalents	\$ 11,972,680	\$ 658,975	\$ 3,464,055
Investments	36,976,291	984,922	1,984,253
Receivables, net of allowance for uncollectibles:			
Taxes	13,565,449	-	-
Accounts receivables	253,417	-	-
Due from other governments	4,478,848	-	65,496
Due from other funds	-	329,499	-
Inventories	3,998	-	-
Prepaid items	405,912	17,130	-
Total assets	<u>\$ 67,656,595</u>	<u>\$ 1,990,526</u>	<u>\$ 5,513,804</u>
LIABILITIES			
Accounts payable	\$ 157,395	\$ 11,956	\$ -
Accrued liabilities	768,594	30,190	-
Other payables	1,646,440	-	-
Due to other funds	151,623	9,632	-
Unearned revenue	1,967,938	-	-
Total liabilities	<u>4,691,990</u>	<u>51,778</u>	<u>-</u>
DEFERRED INFLOWS OF RESOURCES			
Unavailable revenue - property taxes	13,291,185	-	-
Unavailable revenue - other	38,007	-	-
Total deferred inflows of resources	<u>13,329,192</u>	<u>-</u>	<u>-</u>
FUND BALANCES			
Nonspendable:			
Inventories	3,998	-	-
Prepaid items	405,912	17,130	-
Restricted for:			
Roads and streets	-	-	-
Public safety	-	-	-
Industrial Development Board	-	-	-
Debt service	-	-	-
Solid waste disposal	-	1,921,618	-
Committed to:			
Capital projects	-	-	5,513,804
Unassigned	49,225,503	-	-
Total fund balances	<u>49,635,413</u>	<u>1,938,748</u>	<u>5,513,804</u>
Total liabilities, deferred inflows of resources, and fund balances	<u>\$ 67,656,595</u>	<u>\$ 1,990,526</u>	<u>\$ 5,513,804</u>

The accompanying notes are an integral part of the financial statements.

Other Governmental Funds	Total Governmental Funds
\$ 7,105,908	\$ 23,201,618
-	39,945,466
-	13,565,449
7,088	260,505
326,987	4,871,331
-	329,499
-	3,998
-	423,042
<u>\$ 7,439,983</u>	<u>\$ 82,600,908</u>
\$ 4,426	\$ 173,777
-	798,784
-	1,646,440
-	161,255
-	1,967,938
<u>4,426</u>	<u>4,748,194</u>
-	13,291,185
<u>6,662</u>	<u>44,669</u>
<u>6,662</u>	<u>13,335,854</u>
-	3,998
-	423,042
2,464,288	2,464,288
439,515	439,515
4,253,769	4,253,769
271,323	271,323
-	1,921,618
-	5,513,804
-	49,225,503
<u>7,428,895</u>	<u>64,516,860</u>
<u>\$ 7,439,983</u>	<u>\$ 82,600,908</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

RECONCILIATION OF THE BALANCE SHEET OF GOVERNMENTAL FUNDS TO THE STATEMENT OF NET POSITION

June 30, 2023

Differences in amounts reported for governmental activities in the statement of net position on pages and A-4 and A-5:

Fund balances – total governmental funds	\$ 64,516,860
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Amounts reported for governmental activities in the statement of net position are different because:

Capital assets used in governmental activities are not financial resources and therefore are not reported in the funds.	80,494,134
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Certain revenues will be collected after year end but are not available soon enough to pay for the current period's expenditures and therefore are deferred or not reported in the funds.	656,069
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The internal service fund is used by management to charge costs of medical and dental insurance to individuals. The assets and liabilities if the internal service fund are included in the governmental activities in the statement of net position.	2,257,657
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The City's other post-employment benefit plan has not been funded. The OPEB obligation is considered a long-term obligation and is not reported in the funds.	1,438,204
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Contributions to pension plans made after the measurement date are recorded as expenditures in governmental funds but must be deferred in the statement of net position. Certain amounts related to the net pension liability are also deferred and amortized over time as follows:

Deferred outflows:

Contributions to pension plan	\$ 3,121,225
Experience loss - pension plan	545,221
Earnings variance - pension plan	3,761,992
Contributions to OPEB plan	330,649
Change of assumption - OPEB plan	727,983

Deferred inflows:

Experience gain - pension plan	(71,518)
Experience gain - OPEB plan	(1,686,229)
Earnings variance - OPEB plan	(1,046,424)
	5,682,899

The net pension liability is not due and payable in the current period and is not reported in the funds.	(27,340,071)
--	--------------

Long-term liabilities are not due and payable in the current period and are not reported in the funds. All liabilities, both due in one year and due in more than one year, are reported in the statement of net position. These items consist of:

Bonds and notes payable	(11,268,324)
Less deferred refunding and issue premiums	(239,885)
Compensated absences	(1,106,064)
Accrued interest payable	(39,981)
	(12,654,254)

Net position of governmental activities	<u>\$ 115,051,498</u>
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The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN
FUND BALANCES
GOVERNMENTAL FUNDS**

Year Ended June 30, 2023

	General	Sanitation	Capital Project
REVENUES			
Taxes	\$ 36,783,726	\$ -	\$ -
Licenses and permits	2,241,184	-	-
Intergovernmental	5,844,283	-	273,796
Charges for services	438,465	3,873,346	-
Fines and forfeitures	198,101	-	-
Miscellaneous	1,667,558	70,152	235,521
Total revenues	<u>47,173,317</u>	<u>3,943,498</u>	<u>509,317</u>
EXPENDITURES			
Current			
General government	10,513,265	-	-
Public safety			
Police	10,803,461	-	-
Fire	8,640,298	-	-
Drug education and prevention	-	-	-
Public works	3,709,562	-	-
Development services	1,642,138	-	-
Parks and recreation	3,015,535	-	-
Sanitation	-	3,623,417	-
Industrial Development Board	-	-	-
Capital outlay	-	-	2,229,145
Debt service			
Principal retirements	-	-	-
Interest and fiscal charges	-	-	-
Total expenditures	<u>38,324,259</u>	<u>3,623,417</u>	<u>2,229,145</u>
Excess (deficiency) of revenues over (under) expenditures	<u>8,849,058</u>	<u>320,081</u>	<u>(1,719,828)</u>
OTHER FINANCING SOURCES			
Transfers in	1,676,108	-	2,910,335
Transfers out	(4,356,753)	(125,486)	-
Total other financing sources (uses)	<u>(2,680,645)</u>	<u>(125,486)</u>	<u>2,910,335</u>
Net change in fund balances	6,168,413	194,595	1,190,507
FUND BALANCE			
Beginning, as previously stated	43,467,000	1,744,153	4,323,297
Prior period adjustment	-	-	-
Beginning, as restated	<u>43,467,000</u>	<u>1,744,153</u>	<u>4,323,297</u>
FUND BALANCE, ending	<u>\$ 49,635,413</u>	<u>\$ 1,938,748</u>	<u>\$ 5,513,804</u>

The accompanying notes are an integral part of the financial statements.

Other Governmental Funds	Total Governmental Funds
\$ -	\$ 36,783,726
-	2,241,184
1,524,664	7,642,743
-	4,311,811
336,711	534,812
<u>6,543,953</u>	<u>8,517,184</u>
<u>8,405,328</u>	<u>60,031,460</u>
-	10,513,265
-	10,803,461
-	8,640,298
150,313	150,313
1,054,391	4,763,953
-	1,642,138
-	3,015,535
-	3,623,417
2,687,705	2,687,705
-	2,229,145
1,327,151	1,327,151
<u>318,280</u>	<u>318,280</u>
<u>5,537,840</u>	<u>49,714,661</u>
<u>2,867,488</u>	<u>10,316,799</u>
1,646,904	6,233,347
<u>(75,000)</u>	<u>(4,557,239)</u>
<u>1,571,904</u>	<u>1,676,108</u>
4,439,392	11,992,907
4,489,503	54,023,953
<u>(1,500,000)</u>	<u>(1,500,000)</u>
<u>2,989,503</u>	<u>52,523,953</u>
<u>\$ 7,428,895</u>	<u>\$ 64,516,860</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**RECONCILIATION OF THE STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES OF GOVERNMENTAL FUNDS
TO THE STATEMENT OF ACTIVITIES**

Year Ended June 30, 2023

Differences in amounts reported for governmental activities in the statement of activities on pages A-7 and A-8:

Net change in fund balances – total governmental funds		\$ 11,992,907
Amounts reported for governmental activities in the statement of activities are different because:		
Capital outlay expenditures in governmental funds, that meet the capitalization threshold, are presented as capital assets in the statement of net position.		5,806,325
The net effect of various transactions involving capital assets to decrease net position.		(2,213,303)
Depreciation expense on governmental capital assets are included in the statement of activities.		(3,483,774)
Amortization of right to use leased asset		(1,147)
Net loss of the internal service fund are reported with governmental activities.		(5,389)
Bond proceeds and notes issued provide financial resources to governmental funds while repayment of principal consumes the current financial resources of governmental funds. Also, governmental funds report the effect of premiums, discounts and deferred amounts on refundings when debt is first issued; these amounts are deferred and amortized in the statement of activities. The net effect of these differences in the treatment of long-term debt is as follows:		
Principal repayments	\$ 1,326,751	
Amortization of bond premium and refundings	<u>75,076</u>	1,401,827
Certain items reported in the statement of activities do not require the use of current financial resources and are not reported as expenditures in the governmental funds. This item consists of:		
Change in compensated absences	65,024	
Change in net pension liability and related deferrals	150,838	
Change in net OPEB liability and related deferrals	<u>482,217</u>	<u>698,079</u>
Change in net position of governmental activities		<u>\$ 14,195,525</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Taxes	\$ 29,712,100	\$ 29,712,100	\$ 36,783,726	\$ 7,071,626
Licenses and permits	1,059,300	1,059,300	2,241,184	1,181,884
Intergovernmental	4,066,100	5,024,853	5,844,283	819,430
Charges for services	295,500	367,864	438,465	70,601
Fines and forfeitures	216,000	216,000	198,101	(17,899)
Miscellaneous	110,459	130,898	1,667,558	1,536,660
Total revenues	<u>35,459,459</u>	<u>36,511,015</u>	<u>47,173,317</u>	<u>10,662,302</u>
EXPENDITURES				
Current				
General government	8,712,336	14,530,313	10,513,265	4,017,048
Public safety				
Police	11,094,232	13,144,928	10,803,461	2,341,467
Fire	9,139,614	10,322,334	8,640,298	1,682,036
Public works	5,180,617	6,531,369	3,709,562	2,821,807
Development services	1,876,509	1,923,343	1,642,138	281,205
Parks and recreation	3,028,442	4,105,322	3,015,535	1,089,787
Total expenditures	<u>39,031,750</u>	<u>50,557,609</u>	<u>38,324,259</u>	<u>12,233,350</u>
Excess (deficiency) of revenues over (under) expenditures	<u>(3,572,291)</u>	<u>(14,046,594)</u>	<u>8,849,058</u>	<u>22,895,652</u>
OTHER FINANCING SOURCES (USES)				
Transfers in	1,694,000	1,694,000	1,676,108	(17,892)
Transfers out	<u>(3,056,418)</u>	<u>(5,646,940)</u>	<u>(4,356,753)</u>	<u>1,290,187</u>
Total other financing sources (uses)	<u>(1,362,418)</u>	<u>(3,952,940)</u>	<u>(2,680,645)</u>	<u>1,272,295</u>
Net change in fund balance	<u>\$ (4,934,709)</u>	<u>\$ (17,999,534)</u>	6,168,413	<u>\$ 24,167,947</u>
FUND BALANCE, beginning			<u>43,467,000</u>	
FUND BALANCE, ending			<u>\$ 49,635,413</u>	

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
SANITATION FUND**

Year Ended June 30, 2023

	Budget		Actual	Variance with Final Budget
	Original	Final		
REVENUES				
Charges for services, garbage fees	\$ 3,650,200	\$ 3,650,200	\$ 3,873,346	\$ 223,146
Miscellaneous				
Interest and other	5,000	5,000	70,152	65,152
Total revenues	<u>3,655,200</u>	<u>3,655,200</u>	<u>3,943,498</u>	<u>288,298</u>
EXPENDITURES				
Sanitation				
Salaries	1,114,181	1,133,462	903,282	230,180
Employee benefits	622,374	623,957	474,373	149,584
Services	1,507,275	1,857,275	1,642,306	214,969
Supplies	366,208	1,289,602	603,456	686,146
Total expenditures	<u>3,610,038</u>	<u>4,904,296</u>	<u>3,623,417</u>	<u>1,280,879</u>
Excess (deficiency) of revenues over (under) expenditures	<u>45,162</u>	<u>(1,249,096)</u>	<u>320,081</u>	<u>1,569,177</u>
OTHER FINANCING SOURCES (USES)				
Transfers out	(125,486)	(125,486)	(125,486)	-
Total other financing sources (uses)	<u>(125,486)</u>	<u>(125,486)</u>	<u>(125,486)</u>	<u>-</u>
Net change in fund balance	<u>\$ (80,324)</u>	<u>\$ (1,374,582)</u>	194,595	<u>\$ 1,569,177</u>
FUND BALANCE, beginning			<u>1,744,153</u>	
FUND BALANCE, ending			<u>\$ 1,938,748</u>	

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF NET POSITION
PROPRIETARY FUNDS

June 30, 2023

	Sewer System	Power System	Water System	Total	Governmental Activities Internal Service Fund
ASSETS					
Current assets:					
Cash and cash equivalents	\$ 11,859,478	\$ 19,930,920	\$ 8,460,761	\$ 40,251,159	\$ 1,997,008
Investments	28,754,539	-	-	28,754,539	-
Restricted assets:					
Cash and cash equivalents:					
Customer deposits	-	4,372,221	659,164	5,031,385	-
Debt service	-	340,951	232,501	573,452	-
Investments - debt service	-	-	1,759,617	1,759,617	-
Accounts receivable, net	105,698	6,195,037	-	6,300,735	111,753
Due from other funds	809,687	66,253	2,474,993	3,350,933	180,455
Inventories	97,007	2,854,011	575,322	3,526,340	-
Prepaid items	4,628	218,173	52,666	275,467	-
Other assets	9,485	3,849,288	4,129	3,862,902	-
Total current assets	41,640,522	37,826,854	14,219,153	93,686,529	2,289,216
Noncurrent assets:					
Capital assets:					
Land and other nondepreciable assets	7,304,393	20,808,468	21,377,112	49,489,973	-
Capital assets, net of accumulated depreciation	57,104,729	66,432,329	67,022,216	190,559,274	-
Total capital assets	64,409,122	87,240,797	88,399,328	240,049,247	-
Total noncurrent assets	64,409,122	87,240,797	88,399,328	240,049,247	-
Other assets:					
Conservation loans receivable	-	19,206	-	19,206	-
Net OPEB asset	159,802	-	-	159,802	-
Unamortized bond issue expense	-	26,311	59,755	86,066	-
Other	-	55,841	-	55,841	-
Total other assets	159,802	101,358	59,755	320,915	-
Total assets	106,209,446	125,169,009	102,678,236	334,056,691	2,289,216
DEFERRED OUTFLOWS OF RESOURCES					
Advance refundings of debt	225,346	-	-	225,346	-
Deferred outflows - OPEB	117,626	338,387	166,668	622,681	-
Deferred outflows - pension	1,109,995	-	-	1,109,995	-
Total deferred outflows of resources	1,452,967	338,387	166,668	1,958,022	-

(Continued)

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF NET POSITION
PROPRIETARY FUNDS

June 30, 2023

	Sewer System	Power System	Water System	Total	Governmental Activities Internal Service Fund
(Continued)					
LIABILITIES					
Current liabilities:					
Accounts payable	\$ 16,390	\$ 2,364,890	\$ 387,417	\$ 2,768,697	\$ 31,559
Accrued expenses and other liabilities	102,303	9,484,391	2,649,397	12,236,091	-
Customer deposits	-	4,372,221	659,164	5,031,385	-
Due to other funds	18,332	2,799,932	875,003	3,693,267	-
Unearned revenue	8,032,063	-	-	8,032,063	-
Compensated absences, current portion	121,558	215,960	80,768	418,286	-
Long-term liabilities, current portion	1,385,000	965,000	1,250,000	3,600,000	-
Total current liabilities	9,675,646	20,202,394	5,901,749	35,779,789	31,559
Noncurrent liabilities -					
Advances - Tennessee Valley Authority	-	20,483	-	20,483	-
Net pension liability	4,085,298	-	-	4,085,298	-
Net OPEB liability	-	211,301	104,074	315,375	-
Compensated absences, less current portion	-	1,997,941	684,441	2,682,382	-
Long-term liabilities, less current portion	5,979,599	1,040,700	6,354,920	13,375,219	-
Total noncurrent liabilities	10,064,897	3,270,425	7,143,435	20,478,757	-
Total liabilities	19,740,543	23,472,819	13,045,184	56,258,546	31,559
DEFERRED INFLOWS OF RESOURCES					
Deferred inflows - pension	10,686	-	-	10,686	-
Deferred inflows - OPEB	303,628	820,042	403,901	1,527,571	-
Deferred inflows - other	142,122	-	180,950	323,072	-
Total deferred inflows of resources	456,436	820,042	584,851	1,861,329	-
NET POSITION					
Net investment in capital assets	57,269,869	85,235,097	80,794,408	223,299,374	-
Restricted - medical insurance	-	-	-	-	2,257,657
Restricted - OPEB asset	159,802	-	-	159,802	-
Restricted - debt service	-	340,951	1,967,960	2,308,911	-
Unrestricted	30,035,763	15,638,487	6,452,501	52,126,751	-
Total net position	\$ 87,465,434	\$ 101,214,535	\$ 89,214,869	\$ 277,894,838	\$ 2,257,657

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION
PROPRIETARY FUNDS

Year Ended June 30, 2023

	Sewer System	Power System	Water System	Total	Governmental Activities Internal Service Fund
OPERATING REVENUES					
Charges for services	\$ 14,259,966	\$ 92,575,049	\$ 16,271,301	\$ 123,106,316	\$ -
Medical premiums	-	-	-	-	4,505,204
Other	-	2,856,072	865,299	3,721,371	-
Total revenues	<u>14,259,966</u>	<u>95,431,121</u>	<u>17,136,600</u>	<u>126,827,687</u>	<u>4,505,204</u>
OPERATING EXPENSES					
Purchased power	-	66,647,919	-	66,647,919	-
Purchases programming	-	2,994,769	-	2,994,769	-
Production/treatment	3,795,584	-	3,423,709	7,219,293	-
Distribution	1,084,085	7,403,256	2,044,027	10,531,368	-
Customer accounts and service	-	2,197,461	1,136,375	3,333,836	-
Other direct costs and expenses	1,400,765	-	-	1,400,765	-
Administration and general expenses	-	5,299,800	3,090,946	8,390,746	162,711
Medical claims expense	-	-	-	-	4,427,981
Depreciation	<u>2,654,142</u>	<u>4,532,690</u>	<u>2,380,080</u>	<u>9,566,912</u>	<u>-</u>
Total operating expenses	<u>8,934,576</u>	<u>89,075,895</u>	<u>12,075,137</u>	<u>110,085,608</u>	<u>4,590,692</u>
OPERATING INCOME	5,325,390	6,355,226	5,061,463	16,742,079	(85,488)
NONOPERATING REVENUES (EXPENSES)					
Other income	1,232,983	233,279	2,024	1,468,286	80,099
Other expense	(856)	-	-	(856)	-
Amortization expense	-	17,632	101,534	119,166	-
Interest expense	<u>(214,307)</u>	<u>(49,700)</u>	<u>(290,716)</u>	<u>(554,723)</u>	<u>-</u>
Total nonoperating revenues (expenses)	<u>1,017,820</u>	<u>201,211</u>	<u>(187,158)</u>	<u>1,031,873</u>	<u>80,099</u>
INCOME BEFORE CONTRIBUTIONS AND TRANSFERS	<u>6,343,210</u>	<u>6,556,437</u>	<u>4,874,305</u>	<u>17,773,952</u>	<u>(5,389)</u>
Capital contributions	2,091,510	270,593	4,871,564	7,233,667	-
Transfers out - payments in lieu of tax	<u>(276,930)</u>	<u>(1,236,789)</u>	<u>(162,389)</u>	<u>(1,676,108)</u>	<u>-</u>
CHANGE IN NET POSITION	8,157,790	5,590,241	9,583,480	23,331,511	(5,389)
NET POSITION, beginning	79,307,644	95,624,294	79,631,389	254,563,327	2,263,046
NET POSITION, ending	<u>\$ 87,465,434</u>	<u>\$ 101,214,535</u>	<u>\$ 89,214,869</u>	<u>\$ 277,894,838</u>	<u>\$ 2,257,657</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS

Year Ended June 30, 2023

	Sewer Fund	Power Fund	Water Fund	Total	Governmental Activities Internal Service Fund
CASH FLOWS FROM OPERATING ACTIVITIES					
Receipts from customers and users	\$ 14,231,590	\$ 95,809,344	\$ 16,018,777	\$ 126,059,711	\$ 4,393,451
Receipts (payments) from other funds	4,092,093	-	-	4,092,093	(180,455)
Payments to suppliers	(4,577,364)	(83,831,004)	(3,006,474)	(91,414,842)	(4,642,155)
Payments to employees	(2,034,401)	(6,834,505)	(4,914,700)	(13,783,606)	-
Other receipts	-	4,352,830	759,117	5,111,947	-
Net cash from operating activities	11,711,918	9,496,665	8,856,720	30,065,303	(429,159)
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES					
Collections of conservation loans	-	28,884	-	28,884	-
Proceeds from surety bonds	79,484	-	-	79,484	-
Payments in lieu of taxes	(276,930)	(1,236,789)	(162,389)	(1,676,108)	-
Payments of TVA advances	-	(29,751)	-	(29,751)	-
Net cash from noncapital financing activities	(197,446)	(1,237,656)	(162,389)	(1,597,491)	-
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES					
Principal paid on long-term debt	(1,355,000)	(950,000)	-	(2,305,000)	-
Interest paid on long-term debt	(215,163)	(49,700)	(271,500)	(536,363)	-
Purchase of property, plant and equipment	(3,106,830)	(18,328,533)	(3,746,791)	(25,182,154)	-
Net (cost to remove) salvage on utility plant	-	(15,852)	(76,242)	(92,094)	-
Net cash from capital and related financing activities	(4,676,993)	(19,344,085)	(4,094,533)	(28,115,611)	-
CASH FLOWS FROM INVESTING ACTIVITIES					
Interest on investments	1,201,798	233,279	2,024	1,437,101	80,099
Unrealized gain/loss on investments	281,016	-	-	281,016	-
Sale of investments	-	-	3,769,233	3,769,233	-
Purchase of investments	(4,731,314)	-	(3,769,233)	(8,500,547)	-
Net cash from investing activities	(3,248,500)	233,279	2,024	(3,013,197)	80,099
Net change in cash and cash equivalents	3,588,979	(10,851,797)	4,601,822	(2,660,996)	(349,060)
Cash and cash equivalents, June 30, 2022	8,270,499	35,495,889	4,750,604	48,516,992	2,346,068
Cash and cash equivalents, June 30, 2023	\$ 11,859,478	\$ 24,644,092	\$ 9,352,426	\$ 45,855,996	\$ 1,997,008

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS

Year Ended June 30, 2023

	Sewer Fund	Power Fund	Water Fund	Total	Governmental Activities Internal Service Fund
RECONCILIATION OF OPERATING INCOME (LOSS) TO NET CASH FROM OPERATING ACTIVITIES					
OPERATING INCOME (LOSS)	\$ 5,325,390	\$ 6,355,226	\$ 5,061,463	\$ 16,742,079	\$ (85,488)
ADJUSTMENTS NOT AFFECTING CASH					
Depreciation	2,654,142	4,532,690	2,380,080	9,566,912	-
Pension expense	(22,539)	-	-	(22,539)	-
OPEB expense (income)	(53,580)	-	-	(53,580)	-
(Increase) decrease in -					
Accounts receivable	(28,376)	1,029,696	2,869	1,004,189	(111,753)
Due from other funds	2,047	184,873	(122,323)	64,597	(180,455)
Inventories	28,794	(732,536)	(116,577)	(820,319)	-
Other assets	(2,200)	885,570	389,671	1,273,041	12,500
Advance refundings of debt	74,015	-	-	74,015	-
Increase (decrease) in -					
Accounts payable	(295,905)	(4,559,046)	(93,475)	(4,948,426)	(63,963)
Accrued expenses and other liabilities	2,371	(344,542)	(167,641)	(509,812)	-
Customer deposits	-	47,411	73,030	120,441	-
Deferred revenue	4,016,031	-	-	4,016,031	-
Compensated absences	11,728	158,208	55,682	225,618	-
Unearned revenue	-	1,939,115	1,393,941	3,333,056	-
Total adjustments	6,386,528	3,141,439	3,795,257	13,323,224	(343,671)
Net cash from operating activities	\$ 11,711,918	\$ 9,496,665	\$ 8,856,720	\$ 30,065,303	\$ (429,159)
Schedule of non-cash capital and related financing activities:					
Capital contributions	\$ 2,091,510	\$ 270,593	\$ 4,871,564	\$ 7,233,667	\$ -
Depreciation and amortization capitalized	\$ -	\$ 279,564	\$ 101,222	\$ 380,786	\$ -
Net OPEB income (expense)	\$ 53,580	\$ -	\$ -	\$ 53,580	\$ -

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**STATEMENT OF FIDUCIARY NET POSITION
FIDUCIARY FUNDS**

JUNE 30, 2023

	Trust Funds Pension and Other Postemployment Benefits Trust Fund	Maury Fund Maury County Drug Task Force Fund
ASSETS		
Cash and cash equivalents	\$ 987,189	\$ 26,370
Receivables:		
Interest	105,536	-
Investments, at fair value:		
Fixed income funds	27,761,345	-
Equity securities	40,487,950	-
CPWS investments	3,694,018	-
Total assets	<u>73,036,038</u>	<u>26,370</u>
LIABILITIES		
Confiscations pending	-	26,370
Total liabilities	<u>-</u>	<u>26,370</u>
NET POSITION		
Restricted for employee's pension benefits	51,526,998	-
Restricted for employee's postemployment benefits	21,509,040	-
	<u>\$ 73,036,038</u>	<u>\$ -</u>

The accompanying notes are an integral part of the financial statements.

CITY OF COLUMBIA, TENNESSEE

**STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FIDUCIARY FUNDS**

Year Ended June 30, 2023

	Trust Funds	Maury Fund
	Pension and Other Postemployment Benefits Trust Fund	Maury County Drug Task Force Fund
ADDITIONS		
Contributions:		
Employer	\$ 2,641,510	\$ -
Plan member	574,315	-
Fines	-	1,985
Total contributions	<u>3,215,825</u>	<u>1,985</u>
Investment income:		
Net appreciation in fair value of investments including interest and dividends	<u>(8,456,078)</u>	<u>-</u>
Net investment income	<u>(8,456,078)</u>	<u>-</u>
Total additions	<u>(5,240,253)</u>	<u>1,985</u>
DEDUCTIONS		
Benefits paid to participants	6,164,862	-
Administrative expenses	196,682	12
Payments to other governments	<u>-</u>	<u>7,071</u>
Total deductions	<u>6,361,544</u>	<u>7,083</u>
CHANGE IN NET POSITION	<u>(11,601,797)</u>	<u>(5,098)</u>
NET POSITION - beginning	<u>84,637,835</u>	<u>31,468</u>
NET POSITION - ending	<u><u>\$ 73,036,038</u></u>	<u><u>\$ 26,370</u></u>

The accompanying notes are an integral part of the financial statements.

Notes to Basic Financial Statements



CITY OF COLUMBIA, TENNESSEE

NOTES TO BASIC FINANCIAL STATEMENTS

June 30, 2022

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CITY OF COLUMBIA, TENNESSEE

NOTES TO BASIC FINANCIAL STATEMENTS

JUNE 30, 2023

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Reporting Entity

The City of Columbia, Tennessee (the City) was incorporated under the Private Acts of 1972. The City operated under a Council-Manager form of government and is governed by the Mayor, a councilman at large that serves as the Vice-Mayor, and a councilman from each of the five wards of the City.

The accompanying financial statements present the City of Columbia as the primary government. The primary government includes Columbia Power and Water Systems (CPWS) as enterprise funds. CPWS, a separately administered organization, is not legally separate since the City affirms all board member appointments.

Because the following organizations are not legally separate, data from these entities has been presented as part of primary government:

Columbia Power System – Columbia Power System provides electrical and broadband service to customers located generally within Maury County, Tennessee. The Columbia Power System's board is appointed by the Mayor of the City of Columbia and is approved by City Council. Columbia Power System is fiscally dependent upon the City because the City Council approves the borrowing of money and issuance of bonds.

Columbia Water System – Columbia Water System provides water to residential and commercial customers in the Columbia, Tennessee area. The Columbia Water System's board is appointed by the Mayor of the City of Columbia and is approved by City Council. Columbia Water System is fiscally dependent upon the City because the City Council approves all the Water System's rate changes, borrowing of money, and the issuance of bonds.

Separately issued financial statements can be obtained from:

Columbia Power and Water System
201 Pickens Lane
Columbia, TN 38401

Columbia Housing Authority – Columbia Housing Authority (the Authority) is considered a related party to the City but not part of the City's reporting entity. The Mayor of the City of Columbia appoints the Authority's board of directors; however, the Authority's operating and capital expenditures, including debt service, are financed entirely from grants from the U.S. Department of Housing and Urban Development and from income generated by the Authority.

The Industrial Development Board of the City of Columbia, Tennessee - The Industrial Development Board (IDB) serves all citizens of the government. The Board was formed to promote industry and to develop trade by attracting manufacturing, industrial, and commercial enterprises to the City of Columbia. The IDB is governed by a board as appointed by City Council. Debt issuance authorizations are approved by City Council, and the City is legally obligated in case there are deficiencies in debt service payments and resources are not available from any other remedies. The IDB provides services almost entirely to the City which is why the operations of the IDB are reported as a special revenue fund.

Basis of Presentation

Government-wide Financial Statements

The government-wide financial statements (i.e., the statement of net position and the statement of activities) report information on all of the non-fiduciary activities of the primary government and its component units. *Governmental activities*, which normally are supported by taxes and intergovernmental revenues, are reported separately from *business-type activities* which rely to a significant extent on fees and charges for support.

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

While separate government-wide and fund financial statements are presented, they are interrelated. The governmental activities column incorporates data from governmental funds and internal service funds, while business-type activities incorporate data from the enterprise funds. Fiduciary funds are excluded from the government-wide financial statements.

Transfers within governmental activities and business-type activities are eliminated upon consolidation. Any residual balances outstanding between the governmental activities and the business-type activities are reported in the government-wide financial statements as "internal balances."

Fund Financial Statements

The fund financial statements provide information about City funds, including fiduciary funds. Separate financial statements are provided for governmental funds, proprietary funds, and fiduciary funds. Because the emphasis of fund financial statements is on major governmental and enterprise funds, each major fund is displayed in a separate column. Remaining funds are aggregated and reported as nonmajor funds.

The City reports the following major governmental funds:

General Fund - The General Fund is the City's primary operating fund. It accounts for all financial resources of the general government except those accounted for in another fund. Revenues are derived primarily from taxes and intergovernmental revenues.

Capital Projects - The Capital Projects Fund accounts for the acquisition or construction of capital projects, other than those financed by proprietary funds. Revenues are derived primarily from the sale of general obligation bonds and notes, loans, intergovernmental revenues, and earnings on investments.

Sanitation Fund - The Sanitation Fund accounts for the sanitation service charges and related expenditures as required by the Solid Waste Management Act of 1991 codified at TCA 68-211-801.

The City reports the following major enterprise funds:

Sewer System - The Sewer System Fund accounts sewer service charges and related expenditures.

The following major proprietary funds are operated by the Columbia Board of Public Utilities whose members are appointed by the Mayor and approved by the Council of the City of Columbia, Tennessee.

Columbia Power System - The Columbia Power System accounts for power service charges and related expenditures. In 2002, the System established a broadband telecommunications network division pursuant to Section 7-52-601, Tennessee Code Annotated.

Columbia Water System - The Columbia Water System accounts for water service charges and related expenditures.

Internal Service - The Internal Service Fund is used to account for costs associated with the employees' health insurance plan.

The fiduciary funds account for assets held by the City in a trustee capacity or as an agent on behalf of others. Trust funds account for assets held by the government under terms of a formal trust agreement. The government reports the following fiduciary funds:

Trust Fund – Trust fund is used to account for assets and related liabilities held by the City in a fiduciary capacity for current and former employees of the City. The Trust fund includes the resources of the Columbia general pension plan, Columbia Power and Water OPEB plan, and the Columbia OPEB plan. The resources are held in trust to fund post-retirement health, medical, and retirement benefits.

Custodial Fund – Maury County Drug Task Force Fund – The custodial fund is used to account for assets seized relative to drug cases pending final resolution.

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Additionally, the City reports the following fund types:

Special Revenue – Special Revenue Funds are used to account for the proceeds of specific revenue sources (other than major capital projects) requiring separate accounting because of legal or regulatory provisions or administrative action.

Debt Service - The Debt Service Fund is used to account for the accumulation of resources for the payment of interest, principal, and related costs of long-term liabilities of the governmental activities.

During the course of normal operations, the City has numerous transactions between funds to provide services, construct assets and service debt; these transactions are generally reflected as transfers. Any residual balances outstanding at year end are reported as due to/due from other funds.

Measurement Focus and Basis of Accounting

The accounting and financial reporting treatment is determined by the applicable measurement focus and basis of accounting. Measurement focus indicates the type of resources being measured such as *current financial resources* or *economic resources*. The basis of accounting indicates the timing of transactions or events for recognition in the financial statements.

Government-wide Financial Statements are reported using the *economic resources measurement focus* and the *accrual basis of accounting*. Revenues are recorded when earned and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows. Property taxes are recognized as revenues in the year for which they are levied. Grants and similar items are recognized as revenue as soon as all eligibility requirements imposed by the provider have been met.

Governmental Fund Financial Statements are reported using the *current financial resources measurement focus* and the *modified accrual basis of accounting*. Revenues are recognized as soon as they are both measurable and available. Revenues are considered to be available when they are collectible within the current period or soon enough thereafter to pay liabilities of the current period.

The City considers revenues as available if they are collected within thirty days of the end of the fiscal period, except for property taxes, for which the time period is sixty days. Property taxes, sales taxes, franchise taxes, licenses, and interest associated with the current fiscal period are all considered to be susceptible to accrual and have been recognized as revenues of the current fiscal period. All other revenue items are considered to be measurable and available only when cash is received by the government.

Expenditures generally are recorded when a liability is incurred, as under accrual accounting. However, debt service expenditures, as well as expenditures related to compensated absences and claims and judgments, are recorded only when payment is due. General capital asset acquisitions are reported as expenditures in governmental funds. Issuance of long-term debt and acquisitions under finance purchases are reported as other financing sources.

Proprietary and Trust Funds are reported using the *economic resources measurement focus* and the *accrual basis of accounting*.

Budgetary Information

Annual budgets are adopted on a basis consistent with generally accepted accounting principles for the general fund, special revenue funds and the debt service fund. The capital projects fund is appropriated on a project-length basis.

The appropriated budget is approved by fund and department. The legal level of budgetary control (i.e. the level at which expenditures may not legally exceed appropriations) is the fund and department level. The City Manager has been delegated the authority to make interfund transfers within the general fund. Amounts transferred are reported to City Council as required by TCA 6-56-209.

All unencumbered and unexpended appropriations lapse at the end of the fiscal year. Encumbrances are commitments related to unperformed contracts for goods or services (i.e., purchase orders).

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Encumbrance accounting is utilized to assure effective budgetary control and accountability. Encumbrances are carried forward to the subsequent year and become part of the subsequent year's budget for annually budgeted funds.

Appropriations for capital projects do not lapse until completion of the project. Because of the project nature of these funds, budgetary comparison statements on an annual basis do not provide meaningful information and, accordingly, are not presented in the accompanying financial statements.

Assets, Liabilities, Deferred Outflows/Inflows of Resources and Net Position/Fund Balance

Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, amounts due from banks, interest-bearing deposits at various financial institutions, certificates of deposits and short-term investments with an original maturity of three months or less.

Investments

Investments, including the Pension and OPEB Trust Funds, are reported at fair value, except for interest-earning investment contracts that have a remaining maturity of one year or less at the time of purchase. Securities traded on a national or international exchange are valued at the last reported sales price at current exchange rates. Investments that do not have an established market are reported at estimated fair value. Any change in the value of investments recorded at fair value is included in investment income.

Receivables

Accounts receivable are presented, when considered necessary, net of an allowance for doubtful accounts. Unbilled revenues for estimated usage between the last meter reading cycle and June 30 are recorded by the Power Fund, the Water and Sewer Funds do not accrue unbilled revenue.

Internal Balances and Interfund Transfers

During the course of operations, numerous transactions occur between individual funds for goods or services rendered. These receivables and payables are classified as due to/from other funds on the balance sheet and are eliminated in the government-wide financial statements, with the residual reported as internal balances. Other activities between funds that are representative of lending or borrowing arrangements outstanding at the end of the fiscal year are referred to as due to/from other funds.

Inventories and Prepaid Items

For enterprise funds, inventories consist primarily of materials and supplies and are reported at cost. Inventories held for resale should be reported at lower of cost or net realizable value. Certain payments to vendors reflect costs applicable to future accounting periods and are recorded as prepaid items using the consumption method.

Energy Conservation Loans-Power System

The Power System participates with TVA in its energy conservation loan program. Under this program, eligible customers may obtain low interest loans for conservation improvements. Advances from TVA are reported as other liabilities and loans receivable from customers are reported as other assets. Any uncollected loans are the responsibility of TVA.

Capital Assets

Capital assets, which include property, plant, equipment and infrastructure assets (such as roads, bridges, sidewalks, sewers, lighting systems, drainage systems, and similar items) are reported in the government-wide and proprietary fund financial statements. The City defines capital assets as assets with an initial, individual cost of more than \$5,000 (\$1,500 for the Power and Water Systems) and an estimated useful life of one year or greater.

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The initial capitalization of infrastructure assets reported by governmental activities was based on replacement cost deflated to the acquisition year. As the City constructs or acquires additional capital assets each period, including infrastructure assets, they are capitalized and reported at historical cost. The reported value excludes normal maintenance and repairs. Donated capital assets are recorded at their estimated fair value at the date of contribution. Donated capital assets, donated works of art and similar items, and capital assets received in a service concession arrangement should be reported at acquisition value rather than fair value.

Interest incurred during the construction phase of capital assets of enterprise funds is included as part of the capitalized value of the asset's construction. The amount of interest capitalized is the net interest expense incurred (interest expense less interest income) from the date of the borrowing until completion of the project.

Land and construction in progress are not depreciated. The other property, plant, equipment, and infrastructure of the primary government are depreciated using the straight-line method over the following estimated useful lives:

	<u>Useful Life</u>
Buildings	40 - 50 years
Machinery, equipment and vehicles	5 - 20 years
Improvements other than buildings	10 - 20 years
Utility plant in service	3 - 50 years
Public domain infrastructure	10 - 60 years

Deferred Outflows/Inflows of Resources

In addition to assets, the statement of net position will sometimes report a separate section for deferred outflows of resources. This represents a consumption of net assets that applies to a future period(s) and will not be recognized as an outflow of resources (as either an expense or expenditure) until that period. The City reports deferred gains on refunding and deferred contributions on pension and other post-employment benefit (OPEB) plans. A deferred gain on refunding results from the difference in the carrying value of refunded debt and its reacquisition price. This amount is deferred and amortized over the shorter of the life of the refunded or refunding debt. Deferred contributions for the pension plans were made during the fiscal year but are after the measurement date of the actuarial report. These amounts will be recognized during the next measurement period.

In addition to liabilities, the statement of net position will sometimes report a separate section for deferred inflows of resources. This represents an acquisition of net assets that applies to a future period(s) and will not be recognized as inflow of resources (revenue) until that period. The City has four items that qualify for reporting in this category: (1) Unavailable revenue for property taxes recorded as receivables for the current calendar year tax levy which is not due until October 1. This amount, reported on the governmental funds balance sheet, will be recognized as revenue next year as it is received. (2) Unavailable revenue received after the availability period. This includes property taxes received after 60 days plus other local taxes and intergovernmental revenues received after 30. They are reported as deferred inflows on the governmental funds balance sheet and will be recognized as revenue next year. (3) Unavailable revenue relating to loans. (4) Certain amounts related to pensions must be deferred.

Differences between projected and actual earnings on pension plan investments are deferred and amortized over five years. Changes in pension and OPEB plan assumptions are deferred and amortized over the expected remaining service lives of employees. Differences in experience on pension plan investments are deferred and amortized over four years.

Pensions and Other Post-Employment Benefits

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions/OPEB and pension/OPEB expense, information about the fiduciary net position of the City of Columbia Employees' Retirement Plan Pension Plan and additions/deductions from the plan net positions have been determined on the same basis as they are reported by the plans.

Benefit payments (including refunds of employee contributions) are recognized in the fund financial statements when due and payable in accordance with the benefit terms. Payments made after the measurement date are deferred in government-wide statements. Investments are reported at fair value.

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Net Position Flow Assumption

Sometimes the City will fund outlays for a particular purpose from both restricted (e.g., restricted bond or grant proceeds) and unrestricted resources. In order to calculate the amounts to report as restricted net position and unrestricted net position in the government-wide and proprietary fund financial statements, a flow assumption must be made about the order in which the resources are considered to be applied. It is the City's policy to use restricted resources first, then unrestricted resources as they are needed.

Fund Balance Flow Assumptions

Sometimes the City will fund outlays for a particular purpose from both restricted and unrestricted resources (the total of committed, assigned and unassigned fund balance). In order to calculate the amounts to report for each category of fund balance in the governmental fund financial statements, a flow assumption must be made about the order in which the resources are considered to be applied. It is the City's policy to consider restricted fund balance to have been depleted before using any of the components of unrestricted fund balance. Further, when the components of unrestricted fund balance can be used for the same purpose, committed fund balance is depleted first, followed by assigned fund balance. Unassigned fund balance is applied last.

Fund Balance Policies

Fund balance of governmental funds is reported in various categories based on the nature of any limitations requiring the use of resources for specific purposes.

Nonspendable Fund Balance - represents amounts that cannot be spent because they are either not in spendable form (such as inventory or prepaid items) or legally required to remain intact (such as notes receivable or principal of a permanent fund).

Restricted Fund Balance - represents amounts with external constraints placed on the use of these resources (such as debt covenants, grantors, other governments, etc.) or imposed by enabling legislation.

Committed Fund Balance - represents amounts that can only be used for specific purposes imposed by an ordinance of the City Council. Committed resources cannot be used for any other purpose unless the City Council removes or changes the specified use by ordinance.

Assigned Fund Balance - represents amounts the City intends to use for specific purposes as expressed by City Council resolution or an official delegated the authority to assign amounts. The City Manager has been granted the ability to assign amounts to a specific purpose as part of the annual budget ordinance.

Unassigned Fund Balance - represents the residual classification for the General Fund or deficit balances in other funds.

Revenues, Expenditures/Expenses

Program Revenues

Program revenues include: (1) charges to customers or applicants who purchase, use, or directly benefit from goods, services, or privileges provided by a given function or segment and (2) grants and contributions that are restricted to meeting the operational or capital requirements of a particular function or segment. All taxes and other internally dedicated resources are reported as general revenues rather than program revenues.

(Continued)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Property Taxes

Property taxes are levied as of November 1, on the assessed value as of the prior January 1, for property located in the City's boundaries. Property taxes are secured by a statutory lien effective as of the original levy date of January 1, however, property taxes are not legally available until the subsequent fiscal year. Taxes are due November 1 and become delinquent December 16 each tax year. Property taxes are levied annually by the City based upon assessed valuations established by the State of Tennessee. The various types of property are assessed at a percentage of market value as follows:

Farm and residential real property:	25%
Commercial and industrial property:	
Real	40%
Personal	30%
Public utilities real and personal property	55% (Railroads 40%)

Indirect Costs

Certain indirect costs are included in program expense reported for individual functions.

Compensated Absences

City employees are granted vacation and sick leave in varying amounts. In the event of termination an employee is paid for accumulated vacation leave, but not for accumulated sick leave. Accumulated vacation is accrued when incurred in the government wide and propriety financial statements. The general and proprietary funds are used to liquidate this liability. A liability for these amounts is reported in the governmental funds only if they have matured, for example, as a result of employee terminations or retirements.

Employees of the Power and Water Fund use a paid time off (PTO) style of accruing paid leave. This policy converts all vacation and sick leave into a single PTO pool. The liability for accumulated PTO pay is reported in long-term debt, with the current portion recorded in current liabilities.

Proprietary Funds Operating and Non-operating Revenues and Expenses

Proprietary funds distinguish operating revenues and expenses from non-operating items. Operating revenues include charges for services. Operating expenses include costs of services as well as materials, contracts, personnel and depreciation on capital assets. All revenues and expenses not meeting these definitions are reported as non-operating revenues and expenses. The Columbia Board of Public Utilities is regulated by TVA relative to the establishment of power rates. TVA will not allow debt issue costs to be expensed in the period of issuance. Accordingly, the Board has approved continue amortization of bond issue costs as defined in GASB Statement 62 for the Electric and Water Funds.

Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions. These assumptions affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

NOTE 2 – CASH AND INVESTMENTS

Investments

As of June 30, 2023, The City Pension and OPEB Funds had the following investments:

	S&P or Moody's Rating	Fair Value Measurements Using:		
		Cost	Fair Value	Fair Value Hierarchy
Fixed income *	N/A	\$ 29,373,795	\$ 26,596,814	Level 1
Equities	AA+	34,342,002	44,747,177	Level 1
Debt and equity securities **	N/A	**	3,694,018	Level 1
		<u>\$ 63,715,797</u>	<u>\$ 75,038,009</u>	

* Mutual Funds not rated

** Investments of the Columbia Power & Water Systems OPEB Plan, cost information not available.

As of June 30, 2023, the Trust Funds had the following investments in any one organization that represent five percent or more of the fair value of the plan net assets:

	Pension	OPEB
Dodge & Cox Income Fund	\$ 2,997,637	\$ 1,229,004
Fidelity Contrafund	2,892,836	-
Jpmorgan Short Duration Core Plus	2,774,928	-
Vanguard Short Term Investment	3,787,710	1,271,706

Interest rate risk – Interest rate risk is the risk that changes in interest rates will adversely affect the fair value the fair value of an investment. Investments held for longer periods are subject to increased risk of adverse interest rate changes. City policy provides that to the extent practicable, investments are matched with anticipated cash flows. Typically, certificates of deposit are issued for periods less than one year.

Custodial credit risk - The City's policies limit deposits and investments to those instruments allowed by applicable state laws. State statutes require that all deposits with financial institutions must be collateralized by securities whose fair value is equal to 105% of the value of the uninsured deposits. The deposits must be covered by federal depository insurance or the Tennessee Bank Collateral Pool, by collateral held by the City's agent in the City's name, or by the Federal Reserve Banks acting as third-party agents. State statutes also authorize the City to invest in bonds, notes or treasury bills of the United States or any of its agencies, certificates of deposit at Tennessee state chartered banks and savings and loan associations and federally chartered banks and savings and loan associations, repurchase agreements utilizing obligations of the United States or its agencies as the underlying securities, the state pooled investment fund, and mutual funds. Statutes also require that securities underlying repurchase agreements must have a fair value at least equal to the amount of funds invested in the repurchase transaction.

Credit risk – The City does not have a formal investment policy, however, management's current investment practice is formulated around the prudent-person rule: investments are made as a prudent person should be expected to make, with discretion and intelligence, to produce reasonable income, preserve capital and, in general, avoid speculative investments.

NOTE 3 – RECEIVABLES

Amounts in the financial statements are shown net of allowance for uncollectibles. Below is the detail of receivables including the applicable allowances for uncollectible accounts as of June 30, 2023:

	Governmental Activities Funds				Business-Type Activities	Total
	General	Capital Projects	Other Governmental	Internal Service		
Primary Government						
Receivables:						
Taxes	\$ 13,609,687	\$ -	\$ -	\$ -	\$ -	\$ 13,609,687
Accounts	253,417	-	7,088	111,753	105,698	477,956
Customer service	-	-	-	-	6,397,424	6,397,424
Intergovernmental	4,478,848	65,496	326,987	-	-	4,871,331
Gross receivables	18,341,952	65,496	334,075	111,753	6,503,122	25,356,398
Less:						
Allowance for uncollectibles	(44,238)	-	-	-	(202,387)	(246,625)
Net receivables	<u>\$ 18,297,714</u>	<u>\$ 65,496</u>	<u>\$ 334,075</u>	<u>\$ 111,753</u>	<u>\$ 6,300,735</u>	<u>\$ 25,109,773</u>

NOTE 4 – CAPITAL ASSETS

Capital asset activity for the year ended June 30, 2023, was as follows:

	Beginning Balance	Additions	Deductions	Ending Balance
PRIMARY GOVERNMENT				
Governmental Activities:				
Non-depreciable assets:				
Land and land improvements	\$ 13,327,658	\$ 180,287	\$ 2,183,667	\$ 11,324,278
Construction in progress	6,994,327	2,079,467	-	9,073,794
Total non-depreciable assets	<u>20,321,985</u>	<u>2,259,754</u>	<u>2,183,667</u>	<u>20,398,072</u>
Depreciable assets:				
Buildings and improvements	39,127,490	322,791	-	39,450,281
Machinery and equipment	26,720,198	2,434,935	226,203	28,928,930
Infrastructure	87,271,929	788,846	-	88,060,775
Total depreciable assets	<u>153,119,617</u>	<u>3,546,572</u>	<u>226,203</u>	<u>156,439,986</u>
Less accumulated depreciation for:				
Buildings and improvements	\$ 11,157,905	\$ 968,300	\$ -	\$ 12,126,205
Machinery and equipment	14,514,447	1,836,508	196,567	16,154,388
Infrastructure	67,384,364	678,966	-	68,063,330
Total accumulated depreciation	<u>93,056,716</u>	<u>3,483,774</u>	<u>196,567</u>	<u>96,343,923</u>
Depreciable assets, net	<u>60,062,901</u>	<u>62,798</u>	<u>29,636</u>	<u>60,096,063</u>
Governmental activities capital assets, net	<u>\$ 80,384,886</u>	<u>\$ 2,322,552</u>	<u>\$ 2,213,303</u>	<u>\$ 80,494,135</u>

(Continued)

NOTE 4 – CAPITAL ASSETS (Continued)

	<u>Beginning Balance</u>	<u>Additions</u>	<u>Deductions</u>	<u>Ending Balance</u>
Business-Type Activities:				
Non-depreciable assets:				
Land	\$ 3,844,516	\$ 364,024	\$ -	\$ 4,208,540
Construction in progress	<u>26,977,610</u>	<u>18,303,823</u>	<u>-</u>	<u>45,281,433</u>
Total non-depreciable assets	<u>30,822,126</u>	<u>18,667,847</u>	<u>-</u>	<u>49,489,973</u>
Depreciable assets:				
Structures and improvements	76,500,016	337,389	255,063	76,582,342
Plant and lines	249,884,259	11,878,887	1,001,766	260,761,380
Machinery and equipment	<u>23,737,156</u>	<u>1,912,487</u>	<u>186,475</u>	<u>25,463,168</u>
Total depreciable assets	<u>350,121,431</u>	<u>14,128,763</u>	<u>1,443,304</u>	<u>362,806,890</u>
Less accumulated depreciation for:				
Structures and improvements	30,081,140	1,844,083	255,063	31,670,160
Plant and lines	115,238,062	6,834,659	1,169,066	120,903,655
Machinery and equipment	<u>18,516,110</u>	<u>1,268,955</u>	<u>111,264</u>	<u>19,673,801</u>
Total accumulated depreciation	<u>163,835,312</u>	<u>9,947,697</u>	<u>1,535,393</u>	<u>172,247,616</u>
Depreciable assets, net	<u>186,286,119</u>	<u>4,181,066</u>	<u>(92,089)</u>	<u>190,559,274</u>
Business-type activities capital assets, net	<u>\$ 217,108,245</u>	<u>\$ 22,848,913</u>	<u>\$ (92,089)</u>	<u>\$ 240,049,247</u>

Depreciation expense is charged to functions as follows:

Primary Government – Governmental Activities:

General Government	\$ 342,400
Public Safety	
Police	599,825
Fire	477,821
Sanitation	377,802
Public Works	992,948
Recreation	<u>692,978</u>
Total	<u>\$ 3,483,774</u>

Primary Government – Business-Type Activities:

Sewer	\$ 2,654,142
Power	4,812,254
Water	<u>2,481,301</u>
Total	<u>\$ 9,947,697</u>

Depreciation expense capitalized as part of construction costs amount to \$-, \$279,564, \$101,222 for the Sewer, Power and Water Systems, respectively for 2023.

NOTE 5 – LONG-TERM LIABILITIES**Governmental Activities****Description of Long-term Obligations**

The City periodically issues general obligation bonds and notes for the acquisition and construction of major capital facilities. These bonds and notes are direct obligations and are backed by the full faith and credit of the City. Certain bonds are subject to federal arbitrage regulations. These bonds and notes are generally issued as 10- to 20-year serial bonds.

(Continued)

NOTE 5 – LONG-TERM LIABILITIES (Continued)

General obligation long-term obligations are summarized as follows:

<u>Series</u>	<u>Original Principal</u>	<u>Interest Rates</u>	<u>Final Maturity</u>	<u>Principal June 30, 2023</u>
General obligations refunding bonds, Series 2016	\$ 1,400,000	3.00% - 4.00%	12/01/29	\$ 725,000
General obligations public improvement bonds, Series 2017	8,970,000	3.00%	06/01/36	6,580,000
Public safety equip/improv capital outlay note, Series 2014	1,900,000	2.00%	05/31/24	207,124
General obligations refunding bonds, Series 2019	4,875,000	2.00% - 4.00%	12/01/29	3,610,000
Sanitation equipment capital outlay note, Series 2019	<u>350,000</u>	2.73%	09/01/24	<u>146,200</u>
Total payable from debt service fund	<u>\$ 17,495,000</u>			<u>\$ 11,268,324</u>

Debt service requirements for general obligation bonds, notes payable, financed purchases, and compensated absences are met by the General, Capital Project, and Sanitation Funds. The pension and OPEB liability attributable to governmental activities will be liquidated by the General Fund and Special Revenue Funds. All general obligation bonds, notes payable, and financed purchases are included in the calculation of net investment in capital assets.

Business-type Activities**Description of Long-term Obligations**

The City periodically issues general obligation bonds and financed purchases for the acquisition and construction of major capital facilities. These bonds and financed purchases are direct obligations of each business-type activities and are supported by the operation of the fund. Certain bonds are subject to federal arbitrage regulations. These bonds are generally issued as 15- to 30-year serial bonds.

Business-type activities long-term liabilities are summarized as follows:

<u>Series</u>	<u>Original Principal</u>	<u>Interest Rates</u>	<u>Final Maturity</u>	<u>Principal June 30, 2023</u>
Sewer Fund				
General obligation refunding bonds – Series 2016	\$ 6,135,000	2.25%	09/01/33	\$ 3,495,000
General obligation refunding bonds – Series 2020	4,195,000	1.10%	06/30/32	3,780,000
Power System				
Broadband revenue and tax bonds – Series 2014/2015	9,100,000	1.79%	12/01/25	1,950,000
Water System				
Revenue bonds, Series 2021	<u>6,770,000</u>	2.00% - 5.00%	12/01/33	<u>6,770,000</u>
Total payable from business-type activities	<u>\$ 26,200,000</u>			<u>\$ 15,995,000</u>

(Continued)

NOTE 5 – LONG-TERM LIABILITIES (Continued)**Changes in Long-term Liabilities**

Changes in long-term liabilities for the fiscal year ended June 30, 2023, were as follows:

	Balance <u>July 1, 2022</u>	<u>Additions</u>	<u>Reductions</u>	Balance <u>June 30, 2023</u>	Due Within <u>One Year</u>
Primary Government					
GOVERNMENTAL ACTIVITIES					
Bonds:					
2016 General obligation public improvement bonds	\$ 860,000	\$ -	\$ 135,000	\$ 725,000	\$ 140,000
2017 General obligation public improvement bonds	7,010,000	-	430,000	6,580,000	440,000
2019 General obligation public improvement bonds	4,050,000	-	440,000	3,610,000	465,000
Notes Payable:					
2014 Public safety equip/improv capital outlay note	410,199	-	203,075	207,124	207,167
2017 Sanitation equipment capital outlay note	48,655	-	48,655	-	-
2019 Sanitation equipment capital outlay note	216,221	-	70,021	146,200	71,890
Plus: Premium	383,775	-	75,076	308,699	-
Compensated absences	<u>1,171,088</u>	<u>-</u>	<u>65,024</u>	<u>1,106,064</u>	<u>1,106,064</u>
Total governmental activities	<u>\$ 14,149,938</u>	<u>\$ -</u>	<u>\$ 1,466,851</u>	<u>\$ 12,683,087</u>	<u>\$ 2,430,121</u>
BUSINESS-TYPE ACTIVITIES					
Sewer Fund					
2016 G.O. refunding bonds	\$ 4,470,000	\$ -	\$ 975,000	\$ 3,495,000	\$ 995,000
2020 G.O. refunding bonds	4,160,000	-	380,000	3,780,000	390,000
Plus: Premium	100,244	-	10,645	89,599	-
Compensated absences	<u>109,830</u>	<u>11,728</u>	<u>-</u>	<u>121,558</u>	<u>121,558</u>
	<u>8,840,074</u>	<u>11,728</u>	<u>1,365,645</u>	<u>7,486,157</u>	<u>1,506,558</u>
Power System					
2014/2015 Broadband revenue and tax bonds	2,900,000	-	950,000	1,950,000	965,000
Plus: Unamortized bond premium	89,120	-	33,420	55,700	-
Compensated absences	<u>2,056,219</u>	<u>361,887</u>	<u>204,205</u>	<u>2,213,901</u>	<u>215,960</u>
	<u>5,045,339</u>	<u>361,887</u>	<u>1,187,625</u>	<u>4,219,601</u>	<u>1,180,960</u>
Water System					
2021 Revenue bonds	\$ 6,770,000	\$ -	\$ -	\$ 6,770,000	\$ 1,250,000
Plus: Unamortized bond premium	935,252	-	89,784	845,468	-
Less: Unamortized bond discount	(11,668)	-	(1,120)	(10,548)	-
Compensated absences	<u>709,527</u>	<u>139,120</u>	<u>83,438</u>	<u>765,209</u>	<u>80,768</u>
	<u>8,403,111</u>	<u>139,120</u>	<u>172,102</u>	<u>8,370,129</u>	<u>1,330,768</u>
Total business-type activities	<u>\$ 22,288,524</u>	<u>\$ 512,735</u>	<u>\$ 2,725,372</u>	<u>\$ 20,075,887</u>	<u>\$ 4,018,286</u>

(Continued)

NOTE 5 – LONG-TERM LIABILITIES (Continued)

Principal and interest requirements to maturity for bonds and notes payable are as follows:

Year	Governmental Activities Funds				Business-Type Activities	
	<u>Bonds</u>		<u>Notes from Direct Borrowings</u>		<u>Bonds</u>	
	<u>Principal</u>	<u>Interest</u>	<u>Principal</u>	<u>Interest</u>	<u>Principal</u>	<u>Interest</u>
2024	\$ 1,045,000	\$ 270,987	\$ 279,014	\$ 8,247	\$ 3,600,000	\$ 414,489
2025	1,080,000	239,981	74,310	2,050	3,185,000	315,891
2026	1,110,000	207,919	-	-	1,585,000	234,678
2027	1,145,000	180,050	-	-	1,640,000	176,322
2028	1,155,000	156,781	-	-	1,255,000	128,847
2029-2033	3,665,000	487,128	-	-	4,730,000	212,642
2034-2036	1,715,000	103,950	-	-	-	-
	<u>\$ 10,915,000</u>	<u>\$ 1,646,796</u>	<u>\$ 353,324</u>	<u>\$ 10,297</u>	<u>\$ 15,995,000</u>	<u>\$ 1,482,869</u>

Debt Refunding

On December 21, 2021, the Water System issued \$6,770,000 Water System Revenue Refunding Bonds, Series 2021 with an average coupon of 4.00%. The Water System issued the bonds to refund total debt service of \$9,375,000 of the outstanding series Water Revenue Bonds Series 2006, Water Revenue Bonds Series 2008, and the Water Revenue Bonds Series 2012 with a true interest rate cost 4.00%. The Water System used the net proceeds along with other resources to purchase U.S. government securities. These securities were deposited in an irrevocable trust to provide for all future debt service on the refunded portion of the 2006, 2008, 2012 series bonds. As a result, that portion of 2006, 2008, 2012 series bonds are considered defeased, and the Water System has removed the liabilities from its accounts. The outstanding principal of the defeased bonds is \$6,770,000 at June 30, 2023.

The refunding reduced total debt service payments over the next 11 years by \$772,668. This results in an economic gain (difference between the present values of the debt service payments on the old and new debt) of \$211,375.

The current refunding resulted in a difference between the reacquisition price and the net carrying amount of the old debt of \$211,375. The difference is reported in deferred inflows of resources in the accompanying Statement of Net Position and is being charged to operations through fiscal year 2026 using the straight-line method. Unamortized deferred cost of the Series 2021 Bonds totaled \$180,950 as of June 30, 2023.

NOTE 6 – CITY OF COLUMBIA GENERAL PENSION TRUST FUND

The City acts as Trustee for the City of Columbia General Pension Plan, the City of Columbia Other Postemployment Benefit (OPEB) Plan, and the Columbia Power and Water Other Postemployment Benefit (OPEB) Plan. The trust funds are combined and are included in the accompanying financial statements as Fiduciary Funds. The note disclosure relates to the City of Columbia General Pension Plan.

Trust Investments

Investment policy - It is the policy of the City of Columbia to pursue an investment strategy that reduces risk through the prudent diversification of the portfolio across a broad selection of distinct asset classes. The following is the current asset allocation policy as of June 30, 2023:

Investment policies are adopted by City Ordinance and may be amended by future City Ordinances. The current City Ordinance No. 4047 adopted by City Council on December 10, 2015 allows First Farmers Bank Trust Department of Columbia, Tennessee to invest up to 60% of the Retirement Funds in Stock and/or Equities in the sole discretion of the Bank, provided timely notice of such investment or reinvestment shall be given to the Trustees of such Plan. Prior to the adoption of Ordinance No. 4047, the percentage rate was 55% of the Retirement Funds.

(Continued)

NOTE 6 – CITY OF COLUMBIA GENERAL PENSION TRUST FUND (Continued)

Policies pertaining to asset allocation - The Trustees may recommend changes in the investment percentage. The recommendation is forwarded to the City Manager for the City Council consideration by the adoption of an amended Ordinance.

Concentrations - The plan did not hold investments (other than those issued / guaranteed by US government) in any one organization that represents 5 percent or more of the pension plan's fiduciary net position.

Rate of return - For the year ended June 30, 2023, the annual money-weighted rate of return based on cash flows on pension plan investments, net of pension plan investment expense, was 8.28%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS

City of Columbia General Pension Plan

Plan Description

Plan administration - All full-time employees of the City of Columbia hired after July 1, 1974 through June 30, 2012 were eligible to participate in the City of Columbia, Tennessee Employees Retirement Plan (the Plan). The Plan was closed to any employee hired after June 30, 2012. The Plan is a single employer defined benefit pension plan that is accounted for as a pension trust fund of the City. The assets of the Plan are held separately and are used only for the payment of benefits to the members of the Plan or their beneficiaries and other administrative expenses of the plan. The Plan is administered by the Plan Trustees and Retirement Committee. The Trustees consist of the Mayor, City Recorder, City Attorney, and Council Member and City Employee appointed by Council. The Retirement Committee consists of the Vice Mayor and four City Employees appointed by Council. The Plan does not issue a separate financial report.

Benefits provided - The Plan provides certain retirement, death, disability or termination of service prior to retirement benefits to plan members and their beneficiaries. Section 5.09 of the Plan document provides for cost-of-living adjustments (COLA). The City Council of the City of Columbia, Tennessee (the City Council) has the authority to establish and amend the benefit provisions of the plan by City Ordinance. There were no changes in plan benefits since the last actuarial valuation.

Plan membership - Pension plan membership as of June 30, 2022 the valuation date, consisted of the following:

Inactive plan participants:	
Retirees and beneficiaries currently receiving benefits	233
Terminated employees entitled to benefits	<u>14</u>
Total	<u>247</u>
Active plan participants:	
Vested	119
Nonvested	<u>-</u>
Total	<u>119</u>

Contributions - For the year ended June 30, 2022, Plan members were required to contribute 6.74% of their annual covered salary. The City is required to make contributions at an actuarial determined rate, which is adjusted, as necessary. The City's contribution rate for the year ended June 30, 2022 was 35.6%. The contribution requirements of the plan members and the City are established under provisions of the Plan document and may be amended by the City Council. The City has historically based the contribution rate on the prior year actuarial valuation.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)

Net Pension Liability

Actuarial assumptions - The total pension liability was determined by an actuarial valuation as of June 30, 2022 using the following actuarial assumptions, applied to all periods included in the measurement and rolled forward to the measurement date of June 30, 2022:

Actuarial valuation	Entry age normal
Inflation	2.00 percent
Salary increases	3.50 percent
Rate of retirement	Same method as used for contribution determination
Cost-of-living adjustment	Annual increase is the lesser of (i) the annual change in the consumer price index not seasonally adjusted and (ii) 3.0 percent
Mortality rate	RP-2014 Blue Collar Mortality Table
Termination rates	50% of 2003 SOA Pension Plan Turnover Study
Asset valuation method	5-year smoothing method where the difference between the expected return and the actual is recognized over 5 years for the actuarially determined contribution. Fair value used for GASB 67 and 68 is based on quoted market prices
Amortization method	Level dollar amortization of unfunded liabilities for GASB 67 and 68. Investment gains are amortized over 5 years. Experience gains or losses are amortized over the average working lifetime of all participants. Plan amendments are recognized immediately. Changes in actuarial assumptions over the average working lifetime of all participants.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)**City of Columbia General Pension Plan** (Continued)

The investment rate of return was as of June 30, 2022 was 7.25% per annum. The long-term expected rate of return on pension plan investments was determined using a building block method in which best-estimate ranges of expected future real rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation.

Discount rate - The discount rate used to measure the total pension liability was 7.25 percent.

Paragraph 43 of Statement No.67 provides for an alternative method to be used other than the projection of the pension plan's fiduciary net position based on projected contributions, benefit payments and investment earnings. The annual recommended contribution is based on the Entry Age Normal Funding Method where the contributions is equal to the normal cost plus 30-year closed amortization of the unfunded liabilities. The City adopted a funding policy as required by recent State of Tennessee legislation. The funding policy states that the City will contribute at least the actuarially determined contribution as described in the funding policy. Based on actuarial theory if the actuarial experience is within reasonable expectations, and the City makes at least the actuarially determined contribution, the Plan's fiduciary net position will remain positive.

The information below provides an aggregate view of these plans for the primary government:

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Net Position (b)	Net Pension Liability (a) – (b)
Balances at 6/30/2021	\$ 80,958,724	\$ 60,480,539	\$ 20,478,185
Changes for the year:			
Service cost	935,471	-	935,471
Interest expense	5,749,276	-	5,749,276
Difference between expected and actual experience	496,582	-	496,582
Contributions – city	-	2,269,142	(2,269,142)
Contributions – members	-	574,315	(574,315)
Expected investment income	-	4,295,097	(4,295,097)
Difference between expected and actual returns	-	(10,773,005)	10,773,005
Benefits paid	(5,187,686)	(5,187,686)	-
Plan administrative expenses	-	(131,404)	131,404
Net changes	1,993,643	(8,953,541)	10,947,184
Balances at 6/30/2022	\$ 82,952,367	\$ 51,526,998	\$ 31,425,369

The components of the net pension liability of the City on June 30, 2022 were as follows:

Total pension liability	\$ 82,952,367
Plan fiduciary net position	(51,526,998)
Net pension liability	\$ 31,425,369

Plan fiduciary net position as a percentage of the total pension liability	62.10%
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(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)

City of Columbia General Pension Plan (Continued)

Sensitivity of the net pension liability to changes in the discount rate - The following presents the sensitivity of the net pension liability of the Plan to changes in the discount rate. Analysis is calculated using the discount rate of 7.25 percent, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25 percent) or 1-percentage-point higher (8.25 percent) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
GPP net pension liability	\$ 40,892,493	\$ 31,425,369	\$ 23,485,112

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions

For the year ended June 30, 2023, the City recognized \$3,414,237 in pension expense, \$2,970,386 was recorded within the governmental activities and \$443,851 was recorded within the sewer fund.

Pension expense was determined as follows:

Deferred pension outflows	
Service cost	\$ 935,471
Interest	5,749,276
Contribution - members	(574,315)
Expected investment return	(4,295,097)
Recognition of deferred inflows/outflows of resources	
Recognition of economic/demographic gains (losses)	471,334
Recognition of investment gains(losses)	976,516
Recognition of assumption changes or inputs	19,648
Plan administrative expense	131,404
Pension expense	<u>\$ 3,414,237</u>

On June 30, 2023, deferred outflows of resources and deferred inflows of resources related to pensions are as follows:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between expected and actual experience	\$ 626,690	\$ 82,204
Net difference between projected and actual earnings on pension plan investments	4,324,129	-
Changes of assumptions	-	-
Contributions made subsequent to measurement date	3,587,614	-
Total	<u>\$ 8,538,433</u>	<u>\$ 82,204</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources, excluding deferred contributions, related to pensions will be recognized in pension expense as follows:

Year ended June 30,	
2023	\$ 1,334,407
2024	917,675
2025	461,932
2026	2,154,601
Thereafter	-
	<u>\$ 4,868,615</u>

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)

City of Columbia Other Postemployment Benefits Plan – Supplemental Health Care Plan

Plan Description

The City's OPEB plan is a single-employer plan funded through an irrevocable trust that was established in 2009. City Ordinances provide for the City to pay qualified retiree health care insurance premiums from age 54 to age 65 (pre 65 benefits) and supplemental health care insurance for retirees who retire on or after July 1, 1989 and who are at least 65 years of age (post 65 benefits). The City Council has the authority to establish and amend benefit provisions of the Plan. The Plan does not issue a separate financial report.

Plan membership - OPEB plan membership for the 2022 fiscal year, consisted of the following:

Inactive members or their beneficiaries currently receiving benefits	197
Active members	<u>111</u>
Total	<u>308</u>

Contributions - The City contributes to the plan at an actuarially determined rate. The City's contribution rate for the 2022 year was 5.3%. The contribution requirements of the City are established under provisions of GASB Statement 45. The ARC represents a level of funding that is projected to cover normal costs each year and to amortize any unfunded actuarial liabilities over a thirty-year closed period as a level percentage of payroll.

Annual OPEB Cost and Net OPEB Obligation

Annual Contributions - The annual required contribution for the current year was determined as part of the July 1, 2013 actuarial update using the entry age actuarial method. A method under which the actuarial value of the projected benefits of each individual included in the actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit age.

Actuarial valuations for OPEB plans involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. These actuarially determined amounts are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress, presented as supplementary information, provides multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

Plan participation	100% of future eligible retirees are assumed to elect medical coverage upon retirement.
Dependent coverage	Spouses of retirees are not included in the valuation. Spouses are not covered beyond age 65. As a result, there no existing liability to the City for providing access to this coverage.

Investment policy - See the investment note disclosure that details the investments related to the OPEB Trust at Note 2.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)

City of Columbia Other Postemployment Benefits Plan – Supplemental Health Care Plan (Continued)

Net OPEB Liability

	Increase (Decrease)		
	Total OPEB Liability (a)	Plan Net Position (b)	Net OPEB Liability (a) – (b)
Balances at 6/30/2021	\$ 18,674,138	\$ 20,462,878	\$ (1,788,740)
Changes for the year:			
Service cost	276,089	-	276,089
Interest expense	1,289,105	-	1,298,105
Changes of benefit terms	-	-	-
Difference between expected and actual experience	-	-	-
Changes of assumptions	-	-	-
Contributions – city	-	-	-
Contributions – members	-	-	-
Net investment income	-	1,404,471	(1,404,471)
Benefits paid	(811,737)	(811,737)	-
Plan administrative expenses	-	(21,011)	21,011
Other	-	-	-
Net changes	753,457	571,723	190,734
Balances at 6/30/2022	\$ 19,436,595	\$ 21,034,602	\$ (1,598,006)

The components of the net OPEB liability of the City on June 30, 2022 were as follows:

Total OPEB liability	\$ 19,436,595
Plan fiduciary net position	(21,034,602)
Net OPEB liability	\$ (1,598,006)
Plan fiduciary net position as a percentage of the total OPEB liability	108.22%

Actuarial assumptions - The total OPEB liability was determined by an actuarial valuation as of June 30, 2022, using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Salary increases	3.5 percent
Investment rate of return	7.00 percent, net of OPEB plan investment expense, including inflation
Healthcare cost trend rates	6.25% in 2023 graded to 5.20% over 2 years and following the Getzen model thereafter

Mortality rates were based on the RP-2014 Blue Collar Mortality Table for Males and Females with Generational Improvements under Improvement Scales MP-2021.

The actuarial assumptions used in the June 30, 2022 valuation were based on the results of an actuarial experience study for the period ending June 30, 2021.

Discount rate - 7.00% per annum for Statement No. 74 and 75, based on the expected long-term rate of return of the plan assets.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)**OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB**

Sensitivity of Net OPEB Liability to Changes in the Healthcare Cost Trend Rate - The following represents the Net OPEB Liability calculated using the stated health care cost trend assumption, as well as what the OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1 percentage-point lower or 1-percentage point higher than the assumed trend rate:

	<u>1% Decrease</u>	<u>Healthcare Cost Trend Rates</u>	<u>1% Increase</u>
Net OPEB liability	\$ <u>(3,441,446)</u>	\$ <u>(1,598,006)</u>	\$ <u>552,155</u>

Sensitivity of Net OPEB Liability to Changes in the Discount Rate - The following represents the Net OPEB liability calculated using the stated discount rate, as well as what the Net OPEB Liability would be if were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	<u>1% Decrease (6%)</u>	<u>Discount Rate (7%)</u>	<u>1% Increase (8%)</u>
Net OPEB pension liability	\$ <u>905,162</u>	\$ <u>(1,598,006)</u>	\$ <u>(3,795,526)</u>

For the year ended June 30, 2023, the City recognized (\$569,566) in OPEB expense, (\$512,609) was recorded within the governmental activities and (\$56,957) was recorded within the sewer fund.

OPEB expense was determined as follows:

Service cost	\$ 276,089
Interest	1,298,105
Expected investment return	(1,404,471)
Recognition of deferred inflows/outflows of resources	
Recognition of economic/demographic gains (losses)	(649,506)
Recognition of investment gains(losses)	(336,317)
Recognition of assumption changes or inputs	225,523
Plan administrative expense	21,011
	<u>\$ (569,566)</u>

On June 30, 2023, deferred outflows of resources and deferred inflows of resources related to OPEB are as follows:

	<u>Deferred Outflows of Resources</u>	<u>Deferred Inflows of Resources</u>
Difference between expected and actual experience	\$ -	\$ 1,873,586
Changes of assumptions	808,869	-
Difference in earnings	-	1,162,693
Contributions made subsequent to measurement date	367,387	-
Total	<u>\$ 1,176,256</u>	<u>\$ 3,036,279</u>

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)**OPEB Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to OPEB (Continued)**

Amounts reported as deferred outflows of resources and deferred inflows of resources, excluding deferred contributions, related to OPEB will be recognized in OPEB expense as follows:

Year ended June 30,	
2023	\$ (524,653)
2024	(601,523)
2025	(601,518)
2026	(249,859)
2027	(249,857)
Thereafter	-
	<u>\$ (2,227,410)</u>

Columbia Power and Water Other Postemployment Benefits Plan**Plan Description**

The Systems' OPEB Plan, CPWS Insurance Trust, is a single-employer defined benefit plan funded through an irrevocable trust that was established during the year ended June 30, 2009. Plan members are not required to contribute to the plan. The Plan does not issue a separate financial report.

The System's annual OPEB cost (expense) is calculated based on the annual required contribution (ARC), an amount actuarially determined in accordance with the parameters of GASB Statement No. 75. The ARC represents a level of funding that, if paid on an ongoing basis, is projected to cover normal costs each year and to amortize any unfunded actuarial liabilities (or funding excess) over a thirty-year period beginning July 1, 2008. The current rate is calculated using a percent of annual covered payroll. The Plan is not required to issue a separate financial report.

The Systems contributed 100% of the required contribution for the Plan year. A schedule of employer contributions for the year is listed below:

<u>Year</u>	<u>Power System</u>	<u>Water System</u>	<u>Percentage Contributed</u>
2023	\$ -	\$ -	100%

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events in the future. Amounts determined regarding the funded status of the Plan and the annual required contributions of the Systems are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

Projections of benefits are based on the substantive plan (the plan as understood by the Systems and plan members) and include the types of benefits in force at the valuation date and the pattern of sharing benefit costs between the Systems and the plan member to that point. Actuarial calculations reflect a long-term perspective and employ methods and assumptions that are designed to reduce short-term volatility in actuarial accrued liabilities and the accrued value of assets. Significant methods and assumptions were as follows:

Actuarial valuation update	June 30, 2023
Actuarial cost method	Entry age normal
Amortization method	Level dollar amount
Remaining amortization period	20 years, (closed) beginning in 2017

The actuarial assumptions included 5.0% long-term investment rate of return. The healthcare cost trend rate assumptions include an ultimate rate of 6.75% over 3 years to 6.25% grading uniformly to 5.75% over 2 years, and following the Getzen model thereafter until reaching an ultimate rate of 4.04% in the year 2075.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)

Columbia Power and Water Other Postemployment Benefits Plan (Continued)

The ARC that resulted from the valuation ranges from \$82,224 to \$313,000, depending on the level of funding by the Systems. The over-funded accrued liability is estimated to be \$315,375 for fiscal year 2023. The results of the valuation must be viewed as an estimate of the actual results that will occur in the future. In addition, certain assumptions have been made that will affect the results of the valuation.

Plan membership - OPEB plan membership as of June 30, 2023, consisted of the following:

Number of Participants:	
Actives (with medical coverage)	2
Retirees (with medical coverage)	33
Disables (with medical coverage)	-
Retiree Spouses (with medical coverage)	25
Total	<u>60</u>

Benefits provided - Eligibility is attained at age 55 with 30 years of service or attained at age 65. 100% of future eligible retirees are assumed to elect medical coverage upon retirement. It is assumed that these are the eligibility requirements for postretirement medical, life and disability benefits.

Spouses and beneficiaries are provided the same coverage as employees. A spouse is considered as having his or her own individual policy for the purposes of this plan.

Columbia Power & Water Systems provides a life insurance benefit to each eligible employee at retirement. The life insurance benefit is prorated by age as follows:

Age	Face Amount
69 or earlier	\$ 10,000
Between 70 & 74	\$ 6,500
75 or later	\$ 4,420

Investment policy - See the investment note disclosure that details the investments related to the OPEB Trust at Note 2.

Net OPEB (Asset) Liability

The components of the net OPEB liability of the City on June 30, 2023 were as follows:

Total OPEB liability	\$ 4,009,793
Plan fiduciary net position	<u>(3,694,418)</u>
Net OPEB liability	<u>\$ 315,375</u>
Plan fiduciary net position as a percentage of the total OPEB liability	92.13%

Actuarial assumptions - The total OPEB liability was determined by an actuarial valuation as of June 30, 2023, using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Salary increases	0.00 percent, average, including inflation
Investment rate of return	5.0 percent, net of OPEB plan investment expense, including inflation
Healthcare cost trend rates	6.25 percent graded uniformly to 5.75 percent over two years, then following the Getzen model thereafter to an ultimate rate of 4.04 percent in 2075

Mortality rates were based on the RP-2014 Mortality Table for Males or Females, as appropriate, with generational mortality improvement to current year under Projection Scale MP-2020.

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)**Columbia Power and Water Other Postemployment Benefits Plan (Continued)**

The actuarial assumptions used in the June 30, 2022 valuation were based on the results of an actuarial experience study for the period ending June 30, 2022.

Discount rate - The discount rate used to measure the total OPEB liability was 5.0 percent. The projection of cash flows used to determine the discount rate assumed that the Systems' contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to the total OPEB liability.

Sensitivity of Net OPEB Liability to Changes in the Healthcare Cost Trend Rate - The following represents the Net OPEB Liability calculated using the stated health care cost trend assumption, as well as what the OPEB liability would be if it were calculated using a healthcare cost trend rate that is 1 percentage-point lower or 1-percentage point higher than the assumed trend rate:

	<u>1% Decrease</u>	<u>Healthcare Cost Trend Rates</u>	<u>1% Increase</u>
Net OPEB pension liability	\$ 1,279	\$ 315,375	\$ 680,508

Sensitivity of Net OPEB Liability to Changes in the Discount Rate - The following represents the Net OPEB liability calculated using the stated discount rate, as well as what the Net OPEB Liability would be if were calculated using a discount rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	<u>1% Decrease (4.75%)</u>	<u>Discount Rate (5.75%)</u>	<u>1% Increase (6.75%)</u>
Net OPEB pension liability	\$ 1,279	\$ 315,375	\$ 680,508

Net OPEB Liability

	<u>Increase (Decrease)</u>		
	<u>Total OPEB Liability (a)</u>	<u>Plan Net Position (b)</u>	<u>Net OPEB Liability (a) – (b)</u>
Balances at 6/30/2022	\$ 3,138,000	\$ 4,269,245	\$ (1,131,245)
Changes for the year:			
Service cost	3,677	-	3,677
Interest expense	150,134	-	150,134
Changes of benefit terms	-	-	-
Difference between expected and actual experience	889,915	-	889,915
Changes of assumptions	(32,934)	-	(32,934)
Contributions – city	-	-	-
Contributions – members	-	-	-
Net investment income	-	(414,788)	414,788
Benefits paid	(138,999)	(138,999)	-
Plan administrative expenses	-	(21,040)	21,040
Other	-	-	-
Net changes	871,793	(574,827)	1,446,620
Balances at 6/30/2023	\$ 4,009,793	\$ 3,694,418	\$ 315,375

(Continued)

NOTE 7 – RETIREMENT PLAN AND OTHER POSTEMPLOYMENT BENEFIT PLANS (Continued)**Columbia Power and Water Other Postemployment Benefits Plan (Continued)**

For the year ended June 30, 2023, the Systems recognized OPEB expense of \$617,441. On June 30, 2023, deferred outflows of resources and deferred inflows of resources related to OPEB are as follows:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Difference between projected and actual earnings	\$ -	\$ 269,088
Changes of assumptions	-	174,921
Difference between expected and actual experience	-	274,879
Contributions made subsequent to measurement date	-	-
Total	<u>\$ -</u>	<u>\$ 718,888</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources, excluding deferred contributions, related to OPEB will be recognized in OPEB expense as follows:

Year ended June 30,	
2024	\$ (204,886)
2025	(201,860)
2026	(201,142)
2027	(111,000)
2028	-
Thereafter	-
	<u>\$ (718,888)</u>

The aggregate OPEB expense for both the City and the Systems was \$47,875.

NOTE 8 – OTHER DEFERRED COMPENSATION AND DEFINED CONTRIBUTION PLANS**City (exclusive of Columbia Power & Water) Plans**

The City offers all employees an IRC 457 deferred compensation plan. The 457 Plan is funded exclusively by employee contributions and permits employees to defer a portion of their salary until future years. The assets of the 457 Plan are held in trust by ICMA-RC for the exclusive benefit of the participants (employees) and their beneficiaries and may not be diverted to any other use. ICMA-RC acts as agent of the City to provide direction to participants for the investment of the funds held in their account, transfer of assets and all other matter. In accordance with the provisions of GASB Statement 32, plan balances and activities are not reflected in the City's financial statements.

(Continued)

NOTE 8 – OTHER DEFERRED COMPENSATION AND DEFINED CONTRIBUTION PLANS (Continued)**City (exclusive of Columbia Power & Water) Plans (Continued)**

Effective July 1, 2012, the City began offering its full-time employees both a single employer IRC 401(a) defined contribution plan and a single employer IRC 457 deferred compensation plan. Plan investments are held in trust by ICMA-TC. In a defined contribution plan, benefits depend solely on amounts contributed to the Plan plus investment earnings. Full-time employees hired on or after July 1, 2012 are required to participate in the Plan upon hire. Contributions to the employees' account and related earnings become vested after 5 years of service. Employees who are vested and terminate employment are also eligible for a deposit of 50% of the value of their sick leave balances to the Plan. Forfeitures resulting employees who leave employment prior to being fully vested reduce the City's current period contribution requirements. Full-time employees hired on or after July 1, 2012 must contribute 4% of their salary with equal match by the City. Employees may also contribute an additional percentage of their salary to the 457 Plan with a match of up to 2% by the City made to the 401(a) Plan.

<u>Year</u>	<u>Total Payroll</u>	<u>Covered Payroll</u>	<u>Employees Contributions</u>	<u>Percent Covered Payroll</u>	<u>Employer Contributions</u>	<u>Percent Covered Payroll</u>
2023	\$ 20,459,969	\$10,824,355	\$ 432,974	4.00%	\$ 432,927	5.14%

All full-time employees who meet eligibility requirements and so elect can participate in the City of Columbia Board of Public Utilities 401(k) Retirement Plan, (the "Plan"), a single-employer contributory defined contribution plan. The City of Columbia Board of Public Utilities administers the plan and has the authority to establish and amend the plan documents, as necessary. In a defined contribution plan, benefits depend solely on amounts contributed to the Plan plus investment earnings. Employees are eligible to participate at a minimum age of 21 years, following one year of service.

The Plan requires minimum employee and employer contributions of 4% and 8%, respectively, of the employee's base salary. Employees may elect to make additional contributions, which are not matched by the Systems. The Systems' contributions for each employee (together with interest earnings on such contributions) are allocated to the employee's account, 20% vested after 1 year and fully vested after 5 years of service. Forfeitures, resulting from employees who leave employment prior to being fully vested in the Plan, are used to reduce the Systems' current period contribution requirements.

	<u>Year</u>	<u>Total Payroll</u>	<u>Covered Payroll</u>	<u>Employees Contributions</u>	<u>Percent Covered Payroll</u>	<u>Employer Contributions</u>	<u>Percent Covered Payroll</u>
Power	2023	\$ 9,093,714	\$ 7,175,768	\$ 740,924	10.30%	\$ 574,061	8.00%
Water	2023	4,394,073	3,662,507	322,985	8.80%	293,001	8.00%

NOTE 9 – INTERFUND RECEIVABLES AND PAYABLES

<u>Receivable Fund</u>	<u>Payable Fund</u>	<u>Amount</u>
Sewer System Fund	Water System Fund	\$ 808,750
Water System Fund	Power System Fund	2,474,993
Power System Fund	Water System Fund	66,253
Sanitation Fund	Power System Fund	324,939
Sanitation Fund	Sewer System Fund	4,770
Sewer System Fund	General Fund	56
Internal Service Fund	General Fund	157,932
Internal Service Fund	Sanitation Fund	8,961
Internal Service Fund	Sewer System Fund	13,562
Sewer System Fund	Sanitation Fund	881
		<u>\$ 3,861,097</u>

NOTE 10 – INTERFUND TRANSFERS

	Transfers In:			
	General Fund	Capital Projects	Nonmajor Governmental	Total
Transfers out:				
General Fund	\$ -	\$ 2,835,335	\$ 1,521,418	\$ 4,356,753
Water Fund	162,389	-	-	162,389
Power Fund	1,236,789	-	-	1,236,789
Sewer Fund	276,930	-	-	276,930
Sanitation Fund	-	-	125,486	125,486
Nonmajor Governmental	-	75,000	-	75,000
Total	\$ 1,676,108	\$ 2,910,335	\$ 1,646,904	\$ 6,233,347

All interfund transfers are eliminated for reporting purposes. Transfers are used to: (1) move money from General Fund to Special Revenue fund, (2) move unrestricted revenues from the General Fund to the Capital Project fund for ongoing projects, (3) move money from Power and Water fund to the General Fund as payment in lieu of taxes.

NOTE 11 – RISK MANAGEMENT

The City is exposed to various risks of loss related to torts; theft of, damage to, and destruction of assets; medical benefits; certain retiree medical benefits; unemployment compensation; injuries to employees; errors and omissions; and natural disasters. Such risks will be addressed as follows:

The City (Excluding Columbia Power System and Columbia Water System)

The City established the self-insured medical insurance fund (an internal service fund) to provide for the funding for risks associated with the employee's health insurance plan. Under the plan, the City retains the risk of loss up to a limit of \$125,000 per employee. The City has obtained stop/loss commercial insurance to cover claims beyond this limit. All full-time employees are eligible to participate in the plan. A premium charge based upon actuarial estimates of amounts needed to pay prior and current employees. Liabilities of the fund are reported when it is probable that a loss has occurred, and the amount of the loss can be reasonable estimated. The fund establishes claims liabilities based on estimates of the ultimate cost of claims that have been reported but not settled, and of claims that have been incurred but not reported. The process used to compute claim liabilities does not necessarily result in an exact amount. For the government-wide financials statements the activity and assets and liabilities of the fund have been allocated to the participating funds. Changes in the balances of claims liabilities during the year are as follows within the Internal Service Fund:

	2023	2022
Unpaid claims, beginning of year	\$ 93,459	\$ 185,995
Incurred claims, including IBNRs/reduction in estimated liabilities	3,565,556	3,722,590
Claim payments	(3,629,519)	(3,815,126)
Unpaid claims, end of year	\$ 29,496	\$ 93,459

All unpaid claims are estimated to be paid within one year.

(Continued)

NOTE 11 – RISK MANAGEMENT (Continued)

The City continues to carry commercial insurance for all other risks of loss through the Tennessee Municipal League Risk Management Pool. The TML Pool is a cooperative risk sharing arrangement between local government agencies that works in many ways like a traditional insurer. The City meets the TML Pool's guidelines and complies with its rules and regulations, including loss control requirements as well as its underwriting standards. Rates of the TML Pool are actuarially projected to provide adequate funding to cover loss reserves and expenses, as well as building contingency reserves. The City has also purchased commercial insurance for the surety bonds for principal management officials. Management believes insurance coverage is sufficient to preclude any significant uninsured losses to the City. Settled claims have not exceeded this insurance coverage in any of the past three years.

NOTE 12 – TAX ABATEMENTS

The City of Columbia currently offers Commercial and Industrial Development. Pursuant to Tennessee Code Annotated (TCA) 7-53-305, the Industrial Development Board (IDB) of the City of Columbia are allowed to own property within the city. The city may delegate the authority to the IDB to negotiate and accept payments in lieu of ad valorem taxes from the corporation's lessees, provided that such payments are deemed to be in furtherance of the corporation's public purposes. Every PILOT has to be for business operations, which are defined as a project under TCA 7-53-101 (13). The IDB is allowed by state law to be exempt from taxation and to lease property as a method of security so that PILOT payments may be accepted by cities and counties.

Economic Development

The City utilizes two programs to promote economic development and growth, in particular, commercial and industrial projects that involve a significant capital investment and the generation of new jobs with wages in excess of the annual average wage in the City of Columbia.

Commercial and Industrial Development

This program offers tax abatements for a specified period in exchange for benefits received by the city due to an increase in real and personal property investments, as well as the creation of jobs. Application is made to the Chamber of Commerce, with approval by the Industrial Development Board (IDB) and City Council. To be eligible for a tax reduction, you must either relocate into the city or expand business within the city. Qualified businesses will be eligible for abatement of all or a portion of property taxes dependent on the dollar amount of the investment and the number and average wage of jobs created. There are provisions for recapturing abated taxes if certain terms of the agreement are not met.

NOTE 13 – COMMITMENTS AND CONTINGENCIES

Electric Power Contract

The Power System has a contract to purchase all electrical power from the Tennessee Valley Authority (TVA). This contract requires at least five years prior written notice for termination by either party.

Contingencies

The City are parties to various lawsuits and claims in the ordinary course of their operations. Management believes that the potential adverse impact of these proceedings would not be material to the basic financial statements of the City.

On June 30, 2023, standby letters of credit of approximately \$13,482,963 had been issued under agreements expiring through July 31, 2023 related to governmental activities. The letters are maintained as security for performance of certain developments in the City. Additionally, the City has issued \$1,646,800 in surety bonds related to performance of certain developments in the City. The surety bonds are refundable to the developers upon satisfaction of the performance requirements.

On June 30, 2023, standby letters of credit of approximately \$6,563,829 had been issued under agreements expiring through April 13, 2023 related to Wastewater. The letters are maintained as security for performance of certain developments in the City. Additionally, the City has issued \$1,149,988 in surety bonds related to performance of certain developments in the City. The surety bonds are refundable to the developers upon satisfaction of the performance requirements.

NOTE 14 – SEGMENT INFORMATION

The Power System consists of an electric utility division and a broadband division both of which provide service to customers located generally in the Maury County, TN area. The System has outstanding electric system revenue bonds and broadband telecommunications network revenue and tax bonds. Accordingly, summary financial information for the electric utility division and the broadband division is presented as follows (eliminating entries between the divisions have been excluded):

CONDENSED STATEMENT OF NET POSITION

	<u>Electric</u>	<u>Broadband</u>
Assets and Deferred Outflows		
Utility plant	\$ 80,127,364	\$ 7,113,433
Current assets	35,352,562	3,247,112
Deferred changes and other assets	<u>820,074</u>	<u>26,311</u>
Total assets	<u>116,300,000</u>	<u>10,386,856</u>
Liabilities and Deferred Inflows		
Current liabilities	15,364,167	273,826
Current liabilities payable from restricted assets	4,308,602	1,028,619
Long-term debt	1,765,396	1,273,245
Other noncurrent liabilities and deferred items	<u>231,784</u>	<u>745,027</u>
Total liabilities	<u>21,669,949</u>	<u>3,320,717</u>
Deferred Inflows	<u>820,042</u>	<u>-</u>
Net position		
Net investment in capital assets	\$ 80,127,364	\$ 5,107,733
Restricted		
Debt service	-	340,951
Unrestricted	<u>14,021,032</u>	<u>1,617,455</u>
Total net position	<u>94,148,396</u>	<u>7,066,139</u>
Total liabilities, deferred inflows and net position	<u>\$ 116,638,387</u>	<u>\$ 10,386,856</u>

CONDENSED STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET POSITION

	<u>Electric</u>	<u>Broadband</u>
Operating revenue	\$ 86,603,664	\$ 9,332,866
Operating expense	<u>(81,540,349)</u>	<u>(7,660,305)</u>
Operating income	5,063,315	1,672,561
Nonoperating revenue (expense)	230,016	(28,805)
Transfers out – payment in lieu of taxes	(1,617,439)	-
Capital contributions – utility plant	<u>266,125</u>	<u>4,468</u>
Change in net position	<u>3,942,017</u>	<u>1,648,224</u>
Net position, beginning	<u>90,206,379</u>	<u>5,417,915</u>
Net position, end of year	<u>\$ 94,148,396</u>	<u>\$ 7,066,139</u>

CONDENSED STATEMENT OF CASH FLOWS

	<u>Electric</u>	<u>Broadband</u>
Net cash provided (used) by:		
Operating activities	\$ 5,969,239	\$ 2,324,056
Noncapital financing activities	(867)	-
Capital and related financing activities	(16,564,978)	(2,815,695)
Investing activities	<u>236,006</u>	<u>442</u>
Net increase (decrease)	(10,360,600)	(491,197)
Beginning cash and cash equivalents	<u>33,188,669</u>	<u>2,307,220</u>
Ending cash and cash equivalents	<u>\$ 22,828,069</u>	<u>\$ 1,816,023</u>

NOTE 15 – JOINT VENTURE

The Maury County Emergency Communication District (E911) is operated under a consolidation agreement between Maury County and the City of Columbia. The City has no equity interest in the Communications District and is committed to sharing operating expenses with the County. The joint venture is not a part of the reporting entity. Financial statements for E911 as of June 30, 2023 have not been prepared. Therefore, condensed financial information for E911 as of June 30, 2022, the latest financial statement date, is as follows:

STATEMENT OF NET POSITION

Assets and deferred outflows:

Current assets	\$ 869,009
Other assets	1,117,226
Deferred outflows	<u>286,760</u>
Total assets and deferred outflows	<u>\$ 2,272,995</u>

Liabilities, deferred inflows, and net position:

Current liabilities	\$ 52,031
Long-term debt	-
Deferred inflows	332,717
Net position	<u>1,888,247</u>
Total liabilities, deferred inflows, and net position	<u>\$ 2,272,995</u>

SCHEDULE OF REVENUES, EXPENSES AND CHANGES IN NET POSITION

Total operating revenues	\$ 1,552,390
Total operating expenses	<u>(1,723,018)</u>
Loss from operations	(170,628)
Non-operating revenues (expenses)	<u>462,419</u>
Changes in net position	<u>\$ 291,791</u>

Complete financial statements can be obtained from: 2907 Cayce Lane, Columbia TN 38401

NOTE 16 – PRIOR PERIOD ADJUSTMENTS

During the year ended June 30, 2023, the City discovered land and CIP that was not previously recorded on the government-wide financial statements. As such, a prior period adjustment has been recorded on the government-wide financial statements to reflect the capital assets owned by the City. The effect on the government-wide financial statements resulted in an increase in the Net Position by \$4,334,079 and an increase in non-depreciable capital assets by this amount.

During the year ended June 30, 2023, the City discovered grant revenue recorded in the prior year that had not been earned yet and therefore should have been deferred. As such, a prior period adjustment has been recorded for the IDB fund and government wide statements to decrease the fund balance/net position and increase unearned revenue. The effect on the fund financial statements resulted in a decrease in fund balance of the IDB fund by \$1,500,000 and an increase in unearned revenue by this amount. The effect on the government-wide financial statements resulted in a decrease in the Net Position by \$1,500,000 and an increase in unearned revenue by this amount.

NOTE 17 – PENSION AND OTHER POSTEMPLOYMENT BENEFITS TRUST

The individual pension and postemployment benefit plans (OPEB) are presented as follows:

COMBINING STATEMENT OF PENSION/OPEB TRUST NET PENSION:

	General <u>Pension</u>	General <u>OPEB</u>	Water and <u>Power OPEB</u>	<u>Total</u>
Assets				
Cash and cash equivalents	\$ 870,030	\$ 76,518	\$ 38,711	\$ 985,259
Interest receivable	68,066	30,316	7,131	105,513
Investments, fair value				
Fixed income funds	20,431,142	7,330,203	-	27,761,345
Equity securities	30,157,760	10,330,190	-	40,487,950
CPWS investments	-	-	3,648,576	3,648,576
	<u>\$ 51,526,998</u>	<u>\$ 17,767,227</u>	<u>\$ 3,694,418</u>	<u>\$ 72,988,643</u>
Net position				
Restricted for pension	\$ 51,526,998	\$ -	\$ -	\$ 51,526,998
Restricted for OPEB	-	17,767,227	3,694,418	21,461,645
	<u>\$ 51,526,998</u>	<u>\$ 17,767,227</u>	<u>\$ 3,694,418</u>	<u>\$ 72,988,643</u>

COMBINING STATEMENT OF CHANGES IN NET POSITION:

	General <u>Pension</u>	General <u>OPEB</u>	Water and <u>Power OPEB</u>	<u>Total</u>
Additions:				
Employer contributions	\$ 2,269,142	\$ 372,368	\$ -	\$ 2,641,510
Plan member contributions	574,315	-	-	574,315
	<u>2,843,457</u>	<u>372,368</u>	<u>-</u>	<u>3,215,825</u>
Investment income (loss)	(6,477,908)	(2,195,650)	(421,640)	(9,095,198)
Total additions (deductions)	<u>(3,634,451)</u>	<u>(1,823,282)</u>	<u>(421,640)</u>	<u>(5,879,373)</u>
Deductions:				
Benefits paid	5,187,686	830,793	132,147	6,150,626
Administrative expenses	131,404	41,576	21,040	194,020
Total deductions	<u>5,319,090</u>	<u>872,369</u>	<u>153,187</u>	<u>6,344,646</u>
Change in net position	(8,953,541)	(2,695,651)	(574,827)	(12,224,019)
Net position, beginning	<u>60,480,539</u>	<u>20,462,878</u>	<u>4,269,245</u>	<u>85,212,662</u>
Net position, ending	<u>\$ 51,526,998</u>	<u>\$ 17,767,227</u>	<u>\$ 3,694,418</u>	<u>\$ 72,988,643</u>

NOTE 18 – SUBSEQUENT EVENTS

Management has evaluated events and transactions subsequent to the balance sheet date through December 14, 2023 (the date the financial statements were available to be issued) for potential recognition or disclosure in the financial statements. Management has not identified any events that require disclosure.

Required Supplementary Information



Required Supplementary Information

Pension and OPEB Trust Funds

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CHANGES IN THE CITY'S NET PENSION LIABILITY AND
RELATED RATIOS
PENSION TRUST FUND - GENERAL
Last 10 Fiscal Years**

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability										
Service cost	\$ 899,367	\$ 935,471	\$ 1,036,352	\$ 1,183,972	\$ 1,246,632	\$ 1,032,682	\$ 1,300,152	\$ 1,305,399	\$ 1,348,687	\$ 1,340,715
Interest	5,871,675	5,749,276	5,651,663	5,443,486	5,276,330	5,061,754	4,969,545	4,809,559	4,465,773	4,421,469
Changes of assumptions	-	-	-	-	-	-	-	-	-	-
Difference between expected and actual experience	1,781,873	496,582	(164,402)	1,182,543	205,077	820,889	(881,814)	(297,253)	243,872	268,892
Changes in assumptions	-	-	-	-	78,589	-	-	-	-	-
Benefit payments, including refund of member contributions	(5,726,240)	(5,187,686)	(4,965,014)	(4,616,949)	(4,259,768)	(4,079,451)	(3,617,682)	(3,593,835)	(3,352,270)	(3,103,879)
Net change in total pension liability	2,826,675	1,993,643	1,558,599	3,193,052	2,546,860	2,835,874	1,770,201	2,223,870	2,706,062	2,927,197
Total pension liability - beginning	82,952,367	80,958,724	79,400,125	76,207,073	73,660,213	70,824,339	69,054,138	66,830,268	64,124,206	61,197,009
Total pension liability - ending (a)	\$ 85,779,042	\$ 82,952,367	\$ 80,958,724	\$ 79,400,125	\$ 76,207,073	\$ 73,660,213	\$ 70,824,339	\$ 69,054,138	\$ 66,830,268	\$ 64,124,206
Plan fiduciary net position										
Contributions - employer	\$ 3,587,614	\$ 2,269,142	\$ 2,810,309	\$ 2,888,438	\$ 2,986,755	\$ 2,273,739	\$ 2,698,206	\$ 2,823,351	\$ 2,872,307	\$ 2,406,530
Contributions - employee	566,633	574,315	636,783	766,595	841,025	632,022	857,827	862,500	905,788	950,763
Net investment income	4,195,977	(6,477,908)	12,035,001	1,877,902	2,786,749	2,934,539	3,829,501	1,698,472	1,265,225	4,584,810
Benefit payments, including refund of member contributions	(5,726,240)	(5,187,686)	(4,965,014)	(4,616,949)	(4,259,768)	(4,079,451)	(3,617,682)	(3,593,835)	(3,352,270)	(3,103,879)
Administrative expense	(114,113)	(131,404)	(120,324)	(128,821)	(126,454)	(87,026)	(109,330)	(107,824)	(136,774)	(156,393)
Other	-	-	-	-	-	-	-	59,550	-	-
Net change in plan fiduciary net position	2,509,871	(8,953,541)	10,396,755	787,165	2,228,307	1,673,823	3,658,522	1,742,214	1,554,276	4,681,831
Plan fiduciary net position - beginning	51,526,998	60,480,539	50,083,784	49,296,619	47,068,312	45,394,489	41,735,967	39,993,753	38,439,477	33,757,646
Plan fiduciary net position - ending (b)	\$ 54,036,869	\$ 51,526,998	\$ 60,480,539	\$ 50,083,784	\$ 49,296,619	\$ 47,068,312	\$ 45,394,489	\$ 41,735,967	\$ 39,993,753	\$ 38,439,477
Net pension liability - ending (a) - (b)	\$ 31,742,173	\$ 31,425,369	\$ 20,478,185	\$ 29,316,341	\$ 26,910,454	\$ 26,591,901	\$ 25,429,850	\$ 27,318,171	\$ 26,836,515	\$ 25,684,729
Plan fiduciary net position as a percentage of the total pension liability	63.00%	62.12%	74.71%	63.08%	64.69%	63.90%	64.09%	60.44%	59.84%	59.95%
Covered payroll	\$ 7,771,507	\$ 8,383,675	\$ 9,161,864	\$ 9,865,847	\$ 10,388,055	\$ 10,918,022	\$ 11,453,088	\$ 12,556,875	\$ 12,977,297	\$ 12,578,334
Net pension liability as a percentage of covered payroll	408.44%	374.84%	223.52%	297.15%	259.05%	243.56%	222.03%	217.56%	206.80%	204.20%

Notes to Schedule:

Benefit changes. None

Changes in assumptions. None.

This schedule will present 10 years as information is available.

CITY OF COLUMBIA, TENNESSEE

SCHEDULE OF CHANGES IN THE CITY'S NET OPEB LIABILITY AND
RELATED RATIOS

CITY OF COLUMBIA OPEB TRUST FUND - GENERAL

Last 10 Fiscal Years

	2023	2022	2021	2020	2019	2018	2017
Total OPEB liability							
Service cost	\$ 276,089	\$ 276,089	\$ 258,027	\$ 348,164	\$ 325,387	\$ 239,407	\$ 223,223
Interest	1,323,971	1,298,105	1,361,025	1,303,944	1,213,936	1,156,375	1,197,754
Changes of assumptions	(1,123,486)	-	463,043	-	1,115,620	-	-
Difference between expected and actual experience	5,237,016	-	(2,212,054)	-	(684,948)	-	(1,413,903)
Benefit payments, including refund of member contributions	(798,816)	(811,737)	(762,194)	(730,852)	(683,039)	(635,881)	(592,896)
Net change in total OPEB liability	4,914,774	762,457	(892,153)	921,256	1,286,956	759,901	(585,822)
Total OPEB liability - beginning	19,436,595	18,674,138	19,566,291	18,645,035	17,358,079	16,598,178	17,184,000
Total OPEB liability - ending (a)	\$ 24,351,369	\$ 19,436,595	\$ 18,674,138	\$ 19,566,291	\$ 18,645,035	\$ 17,358,079	\$ 16,598,178
Plan fiduciary net position							
Contributions - employer	\$ 396,181	\$ -	\$ 412,870	\$ 519,985	\$ 545,294	\$ 289,413	\$ 557,241
Contributions - employee	-	-	-	-	-	-	-
Net investment income	(1,832,018)	1,404,471	4,004,417	1,155,206	944,729	1,051,585	1,273,068
Benefit payments, including refund of member contributions	(798,816)	(811,737)	(762,194)	(730,852)	(683,039)	(635,881)	(592,896)
Administrative expense	(22,171)	(21,011)	(21,011)	-	(19,739)	-	(20,898)
Other	-	-	(722,139)	-	(78,723)	-	-
Net change in plan fiduciary net position	(2,256,824)	571,723	2,911,943	944,339	708,522	705,117	1,216,515
Plan fiduciary net position - beginning	21,034,601	20,462,878	17,550,935	16,606,596	15,898,074	15,192,957	13,976,442
Plan fiduciary net position - ending (b)	\$ 18,777,777	\$ 21,034,601	\$ 20,462,878	\$ 17,550,935	\$ 16,606,596	\$ 15,898,074	\$ 15,192,957
Net OPEB liability - ending (a) - (b)	\$ 5,573,592	\$ (1,598,006)	\$ (1,788,740)	\$ 2,015,356	\$ 2,038,439	\$ 1,460,005	\$ 1,405,221
Plan fiduciary net position as a percentage of the total OPEB liability	77.11%	108.22%	109.58%	89.70%	89.07%	91.59%	91.53%
Covered payroll	\$ 7,326,913	\$ 7,993,368	\$ 7,723,061	\$ 8,745,679	\$ 8,449,931	\$ 10,436,721	\$ 10,083,788
Net OPEB liability as a percentage of covered payroll	76.07%	-19.99%	-23.16%	23.04%	24.12%	13.99%	13.94%

Notes to Schedule:

Benefit changes. None

Changes in assumptions. None.

This schedule will present 10 years as information is available.

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CHANGES IN THE CITY'S NET OPEB LIABILITY AND
RELATED RATIOS
COLUMBIA POWER AND WATER OPEB TRUST FUND
Last 10 Fiscal Years**

	2023	2022	2021	2020	2019	2018
Total OPEB liability						
Service cost	\$ 3,677	\$ 3,502	\$ 5,181	\$ 4,934	\$ 4,622	\$ 13,473
Interest	150,134	155,874	226,091	230,271	306,110	304,550
Changes of assumptions	(32,934)	-	(306,114)	-	274,954	-
Difference between expected and actual experience	889,915	(135,362)	(1,196,829)	(182,207)	(1,948,792)	(134,752)
Benefit payments, including refund of member contributions	(138,999)	(130,991)	(136,829)	(153,996)	(143,221)	(152,576)
Net change in total OPEB liability	871,793	(106,977)	(1,408,500)	(100,998)	(1,506,327)	30,695
Total OPEB liability - beginning	3,138,000	3,244,977	4,653,477	4,754,475	6,260,802	6,230,107
Total OPEB liability - ending (a)	\$ 4,009,793	\$ 3,138,000	\$ 3,244,977	\$ 4,653,477	\$ 4,754,475	\$ 6,260,802
Plan fiduciary net position						
Contributions - employer	\$ -	\$ 82,224	\$ 118,749	\$ 256,693	\$ 267,517	\$ 312,711
Contributions - employee	-	-	-	-	-	-
Net investment income	(414,788)	634,164	180,640	181,813	153,299	201,936
Benefit payments, including refund of member contributions	(138,999)	(130,991)	(136,828)	(153,996)	(143,221)	(152,576)
Administrative expense	(21,040)	(19,241)	(18,145)	(17,328)	(15,832)	(12,918)
Other	-	-	-	-	-	-
Net change in plan fiduciary net position	(574,827)	566,156	144,416	267,182	261,763	349,153
Plan fiduciary net position - beginning	4,269,247	3,703,091	3,558,675	3,291,493	3,029,730	2,680,577
Plan fiduciary net position - ending (b)	\$ 3,694,420	\$ 4,269,247	\$ 3,703,091	\$ 3,558,675	\$ 3,291,493	\$ 3,029,730
Net OPEB liability - ending (a) - (b)	\$ 315,373	\$ (1,131,247)	\$ (458,114)	\$ 1,094,802	\$ 1,462,982	\$ 3,231,072
Plan fiduciary net position as a percentage of the total OPEB liability	92.13%	136.05%	114.12%	76.47%	69.23%	48.39%
Covered payroll	\$ 272,737	\$ 440,525	\$ 440,525	\$ 512,807	\$ 512,807	\$ 1,007,268
Net OPEB liability as a percentage of covered payroll	115.63%	-256.80%	-103.99%	213.49%	285.29%	320.78%

Notes to Schedule:

GASB Statement No. 74 was implemented as of June 30, 2018.

Information from 2012-2017 is not available and this schedule will be presented on a prospective basis.

See Independent Auditor's Report.

This is a 10-year schedule, however, the information in this schedule is not required to be presented retrospectively. Years will be added to this schedule in future fiscal years until 10 years of information is available.

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CITY CONTRIBUTIONS
PENSION TRUST FUND - GENERAL
Last 10 Fiscal Years**

	2023*	2022	2021	2020*	2019*	2018*	2017*	2016	2015	2014
Actuarially determined contribution	\$ 2,830,615	\$ 2,981,730	\$ 2,810,308	\$ 2,694,555	\$ 2,638,164	\$ 2,756,360	\$ 2,756,118	\$ 2,793,112	\$ 2,620,609	\$ 2,406,530
Contributions in relation to the actuarially determined contribution	2,830,615	2,981,730	2,810,309	2,694,567	2,640,093	2,756,360	2,756,118	2,823,351	2,872,307	2,406,530
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (1)</u>	<u>\$ (12)</u>	<u>\$ (1,929)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (30,239)</u>	<u>\$ (251,698)</u>	<u>\$ -</u>
Covered payroll	\$ 7,771,507	\$ 8,383,675	\$ 9,161,864	\$ 9,865,847	\$ 10,388,055	\$ 10,918,022	\$ 11,453,088	\$ 12,556,875	\$ 12,977,297	\$ 12,578,334
Contributions as a percentage of covered payroll	36.42%	35.57%	30.67%	27.31%	25.41%	25.25%	24.06%	22.48%	22.13%	19.13%

Notes to Schedule:

See notes to the financial statements for valuation, methods, and assumptions information.

This schedule will present 10 years as information is available.

** Including contribution receivables*

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CITY CONTRIBUTIONS
CITY OF COLUMBIA OPEB TRUST FUND - GENERAL
Last 10 Fiscal Years**

	2023	2022	2021	2020	2019	2018	2017
Actuarially determined contribution	\$ -	\$ -	\$ 419,679	\$ 519,985	\$ 522,597	\$ 289,413	\$ 340,379
Contributions in relation to the actuarially determined contribution	396,181	372,368	412,870	519,985	545,294	289,413	557,241
Contribution deficiency (excess)	<u>\$ (396,181)</u>	<u>\$ (372,368)</u>	<u>\$ 6,809</u>	<u>\$ -</u>	<u>\$ (22,697)</u>	<u>\$ -</u>	<u>\$ (216,862)</u>
Covered payroll	\$ 7,326,913	\$ 7,993,368	\$ 7,723,061	\$ 8,745,679	\$ 8,449,931	\$ 10,436,721	\$ 10,083,788
Contributions as a percentage of covered payroll	5.41%	4.66%	5.35%	5.95%	6.45%	2.77%	5.53%

Notes to Schedule:

*See notes to the financial statements for valuation, methods, and assumptions information.
This schedule will present 10 years as information is available.*

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CITY CONTRIBUTIONS
COLUMBIA POWER AND WATER OPEB TRUST FUND
Last 10 Fiscal Years**

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Actuarially determined contribution	\$ -	\$ 6,852	\$ 82,224	\$ 96,455	\$ 267,517	\$ 267,517	\$ 312,711	\$ 394,216	\$ 395,729	\$ 582,093
Contributions in relation to the actuarially determined contribution	-	6,852	82,224	118,749	256,693	267,517	312,711	394,216	395,729	582,093
Contribution deficiency (excess)	\$ -	\$ -	\$ -	\$ (22,294)	\$ 10,824	\$ -	\$ -	\$ -	\$ -	\$ -
Covered payroll	\$ 272,737	\$ 440,525	\$ 440,525	\$ 440,525	\$ 512,807	\$ 512,807	\$ 1,007,268	\$ 1,007,268	\$ 1,491,931	\$ 1,491,931
Contributions as a percentage of covered payroll	0.00%	1.56%	18.67%	26.96%	50.06%	52.17%	31.05%	39.14%	26.52%	39.02%

Note to Schedule:

This schedule will present 10 years as information is available.

CITY OF COLUMBIA, TENNESSEE

SCHEDULE OF INVESTMENT RETURNS - OPEB TRUST FUND

Last 10 Fiscal Years

OPEB TRUST FUND - GENERAL

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense										
City of Columbia Pension Trust Fund - General	8.28%	-10.94%	24.59%	4.39%	5.95%	6.54%	9.21%	4.30%	3.30%	13.61%
City of Columbia OPEB Trust Fund - General	8.19%	-10.85%	24.03%	7.00%	6.00%	7.00%	9.12%	N/A	N/A	N/A
Columbia Power and Water Systems OPEB Trust Fund	6.01%	-10.04%	14.47%	4.07%	5.46%	4.99%	7.35%	1.44%	N/A	N/A

Notes to Schedule:

This schedule will present 10 years as information is available.

Required Supplementary Information

City Pension and OPEB Plans

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CHANGES IN THE CITY'S NET PENSION LIABILITY AND
RELATED RATIOS
GENERAL PENSION PLAN
Last 10 Fiscal Years**

	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total pension liability									
Service cost	\$ 935,471	\$ 1,036,352	\$ 1,183,972	\$ 1,246,632	\$ 1,032,682	\$ 1,300,152	\$ 1,305,399	\$ 1,348,687	\$ 1,340,715
Interest	5,749,276	5,651,663	5,443,486	5,276,330	5,061,754	4,969,545	4,809,559	4,465,773	4,421,469
Changes of assumptions	-	-	-	78,589	-	-	-	-	-
Difference between expected and actual experience	496,582	(164,402)	1,182,543	205,077	820,889	(881,814)	(297,253)	243,872	268,892
Benefit payments, including refund of member contributions	(5,187,686)	(4,965,014)	(4,616,949)	(4,259,768)	(4,079,451)	(3,617,682)	(3,593,835)	(3,352,270)	(3,103,879)
Net change in total pension liability	1,993,643	1,558,599	3,193,052	2,546,860	2,835,874	1,770,201	2,223,870	2,706,062	2,927,197
Total pension liability - beginning	80,958,724	79,400,125	76,207,073	73,660,213	70,824,339	69,054,138	66,830,268	64,124,206	61,197,009
Total pension liability - ending (a)	\$ 82,952,367	\$ 80,958,724	\$ 79,400,125	\$ 76,207,073	\$ 73,660,213	\$ 70,824,339	\$ 69,054,138	\$ 66,830,268	\$ 64,124,206
Plan fiduciary net position									
Contributions - employer	\$ 2,269,142	\$ 2,810,309	\$ 2,888,438	\$ 2,986,755	\$ 2,273,739	\$ 2,698,206	\$ 2,823,351	\$ 2,872,307	\$ 2,406,530
Contributions - employee	574,315	636,783	766,595	841,025	632,022	857,827	862,500	905,788	950,763
Net investment income	(6,477,908)	12,035,001	1,877,902	2,786,749	2,934,539	3,829,501	1,698,472	1,265,225	4,584,810
Benefit payments, including refund of member contributions	(5,187,686)	(4,965,014)	(4,616,949)	(4,259,768)	(4,079,451)	(3,617,682)	(3,593,835)	(3,352,270)	(3,103,879)
Administrative expense	(131,404)	(120,324)	(128,821)	(126,454)	(87,026)	(109,330)	(107,824)	(136,774)	(156,393)
Other	-	-	-	-	-	-	59,550	-	-
Net change in plan fiduciary net position	(8,953,541)	10,396,755	787,165	2,228,307	1,673,823	3,658,522	1,742,214	1,554,276	4,681,831
Plan fiduciary net position - beginning	60,480,539	50,083,784	49,296,619	47,068,312	45,394,489	41,735,967	39,993,753	38,439,477	33,757,646
Plan fiduciary net position - ending (b)	\$ 51,526,998	\$ 60,480,539	\$ 50,083,784	\$ 49,296,619	\$ 47,068,312	\$ 45,394,489	\$ 41,735,967	\$ 39,993,753	\$ 38,439,477
Net pension liability - ending (a) - (b)	\$ 31,425,369	\$ 20,478,185	\$ 29,316,341	\$ 26,910,454	\$ 26,591,901	\$ 25,429,850	\$ 27,318,171	\$ 26,836,515	\$ 25,684,729
Plan fiduciary net position as a percentage of the total pension liability	62.12%	74.71%	63.08%	64.69%	63.90%	64.09%	60.44%	59.84%	59.95%
Covered payroll	\$ 8,383,675	\$ 9,161,864	\$ 9,865,847	\$ 10,388,055	\$ 10,918,022	\$ 11,453,088	\$ 12,556,875	\$ 12,977,297	\$ 12,578,334
Net pension liability as a percentage of covered payroll	374.84%	223.52%	297.15%	259.05%	243.56%	222.03%	217.56%	206.80%	204.20%

Notes to Schedule:

Benefit changes. None

Changes in assumptions. None.

This schedule will present 10 years as information is available.

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF CITY CONTRIBUTIONS
GENERAL PENSION PLAN
Last 10 Fiscal Years**

	2023	2022	2021	2020**	2019**	2018**	2017**	2016	2015	2014
Actuarially determined contribution	\$ 2,830,615	\$ 2,981,730	\$ 2,810,308	\$ 2,694,555	\$ 2,638,164	\$ 2,756,360	\$ 2,756,118	\$ 2,793,112	\$ 2,620,609	\$ 2,406,530
Contributions in relation to the actuarially determined contribution	2,830,615	2,981,730	2,810,309	2,694,567	2,640,093	2,756,360	2,756,118	2,823,351	2,872,307	2,406,530
Contribution deficiency (excess)	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (1)</u>	<u>\$ (12)</u>	<u>\$ (1,929)</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ (30,239)</u>	<u>\$ (251,698)</u>	<u>\$ -</u>
Covered payroll	\$ 7,771,507	\$ 8,383,675	\$ 9,161,864	\$ 9,865,847	\$ 10,388,055	\$ 10,918,022	\$ 11,453,088	\$ 12,556,875	\$ 12,977,297	\$ 12,578,334
Contributions as a percentage of covered payroll	36.42%	35.57%	30.67%	27.31%	25.41%	25.25%	24.06%	22.48%	22.13%	19.13%

Notes to Schedule:

See notes to the financial statements for valuation, methods, and assumptions information.

This schedule will present 10 years as information is available.

*** Including contribution receivables*

Combining Financial Statements



CITY OF COLUMBIA, TENNESSEE

COMBINING BALANCE SHEET
NONMAJOR GOVERNMENTAL FUNDS

June 30, 2023

	Special Revenue Funds				Debt Service Fund	Total Nonmajor Governmental Funds
	State Street Aid Fund	Drug Fund	Streets and Transportation Fund	Industrial Development Board		
ASSETS						
Cash and cash equivalents	\$ 2,174,977	\$ 447,017	\$ 32,540	\$ 4,180,051	\$ 271,323	\$ 7,105,908
Accounts receivable	-	-	-	7,088	-	7,088
Due from other governments	247,628	-	12,729	66,630	-	326,987
Total assets	<u>\$ 2,422,605</u>	<u>\$ 447,017</u>	<u>\$ 45,269</u>	<u>\$ 4,253,769</u>	<u>\$ 271,323</u>	<u>\$ 7,439,983</u>
LIABILITIES						
Accounts payable	\$ 3,586	\$ 840	\$ -	\$ -	\$ -	\$ 4,426
Total liabilities	<u>3,586</u>	<u>840</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>4,426</u>
DEFERRED INFLOWS OF RESOURCES						
Unavailable revenue - other	-	6,662	-	-	-	6,662
Total deferred inflows of resources	<u>-</u>	<u>6,662</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>6,662</u>
FUND BALANCES						
Restricted for:						
Roads and streets	2,419,019	-	45,269	-	-	2,464,288
Public safety	-	439,515	-	-	-	439,515
Industrial Development Board	-	-	-	4,253,769	-	4,253,769
Debt service	-	-	-	-	271,323	271,323
Total fund balances	<u>2,419,019</u>	<u>439,515</u>	<u>45,269</u>	<u>4,253,769</u>	<u>271,323</u>	<u>7,428,895</u>
Total liabilities, deferred inflows of resources, and fund balances	<u>\$ 2,422,605</u>	<u>\$ 447,017</u>	<u>\$ 45,269</u>	<u>\$ 4,253,769</u>	<u>\$ 271,323</u>	<u>\$ 7,439,983</u>

CITY OF COLUMBIA, TENNESSEE

COMBINING SCHEDULE OF REVENUES, EXPENDITURES, AND
CHANGES IN FUND BALANCES
NONMAJOR GOVERNMENTAL FUNDS

Year Ended June 30, 2023

	Special Revenue Funds				Debt Service Fund	Total Nonmajor Governmental Funds
	State Street Aid Fund	Drug Fund	Streets and Transportation Fund	Industrial Development Board		
REVENUES						
Intergovernmental:						
Gasoline tax - State of Tennessee	\$ 1,448,288	\$ -	\$ 76,376	\$ -	\$ -	\$ 1,524,664
Fines and fees	-	336,711	-	-	-	336,711
TVA InvestPrep Grant	-	-	-	2,564,517	-	2,564,517
Contributions	-	-	-	17,910	-	17,910
Miscellaneous:						
Interest income	72,642	11,751	184	169,504	40,460	294,541
Other	1,335	-	-	3,665,650	-	3,666,985
Total revenues	<u>1,522,265</u>	<u>348,462</u>	<u>76,560</u>	<u>6,417,581</u>	<u>40,460</u>	<u>8,405,328</u>
EXPENDITURES						
Current:						
Public works	989,290	-	65,101	-	-	1,054,391
Public safety	-	150,313	-	-	-	150,313
Professional services	-	-	-	2,687,705	-	2,687,705
Debt service:						
Principal retirements	-	-	-	-	1,327,151	1,327,151
Interest and fiscal charges	-	-	-	-	318,280	318,280
Total expenditures	<u>989,290</u>	<u>150,313</u>	<u>65,101</u>	<u>2,687,705</u>	<u>1,645,431</u>	<u>5,537,840</u>
Excess (deficiency) of revenues over (under) expenditures	532,975	198,149	11,459	3,729,876	(1,604,971)	2,867,488
OTHER FINANCING SOURCES						
Transfers in	-	-	-	-	1,646,904	1,646,904
Transfers out	(75,000)	-	-	-	-	(75,000)
Total other financing sources (uses)	<u>(75,000)</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1,646,904</u>	<u>1,571,904</u>
Net change in fund balances	457,975	198,149	11,459	3,729,876	41,933	4,439,392
FUND BALANCE						
Beginning, as previously stated	1,961,044	241,366	33,810	2,023,893	229,390	4,489,503
Period period adjustment	-	-	-	(1,500,000)	-	(1,500,000)
Beginning, as restated	<u>1,961,044</u>	<u>241,366</u>	<u>33,810</u>	<u>523,893</u>	<u>229,390</u>	<u>2,989,503</u>
FUND BALANCE, ending	<u>\$ 2,419,019</u>	<u>\$ 439,515</u>	<u>\$ 45,269</u>	<u>\$ 4,253,769</u>	<u>\$ 271,323</u>	<u>\$ 7,428,895</u>

Budgetary and Other Schedules



CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget Amounts			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Taxes				
Real and personal property taxes	\$ 12,190,000	\$ 12,190,000	\$ 12,735,027	\$ 545,027
Local sales taxes	14,070,000	14,070,000	18,900,208	4,830,208
Business taxes	1,725,000	1,725,000	2,523,982	798,982
Local beer and liquor taxes	1,344,500	1,344,500	1,852,828	508,328
Tax equivalent payments	45,200	45,200	55,568	10,368
Other taxes	337,400	337,400	716,113	378,713
Total taxes	<u>29,712,100</u>	<u>29,712,100</u>	<u>36,783,726</u>	<u>7,071,626</u>
Licenses and permits				
Privilege licenses	<u>1,059,300</u>	<u>1,059,300</u>	<u>2,241,184</u>	<u>1,181,884</u>
Total licenses and permits	<u>1,059,300</u>	<u>1,059,300</u>	<u>2,241,184</u>	<u>1,181,884</u>
Intergovernmental				
State shared revenues	4,066,100	4,600,681	5,685,039	1,084,358
State and federal grants	-	424,172	159,244	(264,928)
Total intergovernmental	<u>4,066,100</u>	<u>5,024,853</u>	<u>5,844,283</u>	<u>819,430</u>
Charges for services				
Administrative charge - Sewer Fund	215,000	215,000	242,846	27,846
Other	<u>80,500</u>	<u>152,864</u>	<u>195,619</u>	<u>42,755</u>
Total charges for services	<u>295,500</u>	<u>367,864</u>	<u>438,465</u>	<u>70,601</u>
Fines and forfeits				
City court fines and fees	<u>216,000</u>	<u>216,000</u>	<u>198,101</u>	<u>(17,899)</u>
Total fines and forfeits	<u>216,000</u>	<u>216,000</u>	<u>198,101</u>	<u>(17,899)</u>

(Continued)

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget Amounts		Actual	Variance with Final Budget
	Original	Final		
(Continued)				
Miscellaneous				
Insurance recoveries	\$ -	\$ 15,000	\$ 198,634	\$ 183,634
Interest	80,000	80,000	1,256,724	1,176,724
Rent	8,000	8,000	11,750	3,750
Contributions	-	5,439	7,439	2,000
Other	22,459	22,459	193,011	170,552
Total miscellaneous	110,459	130,898	1,667,558	1,536,660
 Total revenues	 35,459,459	 36,511,015	 47,173,317	 10,662,302
EXPENDITURES				
General government:				
Council, Attorney, and Court:				
Salaries	48,510	48,510	45,508	3,002
FICA and employee benefits	43,913	43,913	46,700	(2,787)
Services	113,350	113,350	71,747	41,603
Supplies and materials	7,000	7,000	904	6,096
Special appropriations	205,550	230,550	225,610	4,940
	418,323	443,323	390,469	52,854
City Managers Office:				
Salaries	348,919	354,942	360,002	(5,060)
FICA and employee benefits	107,344	107,376	110,530	(3,154)
Services	178,788	(17,140)	65,218	(82,358)
Supplies and materials	3,100	3,100	1,158	1,942
	638,151	448,278	536,908	(88,630)

(Continued)

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget Amounts		Actual	Variance with Final Budget
	Original	Final		
(Continued)				
Management Information Systems:				
Salaries	\$ 264,461	\$ 269,381	\$ 255,380	\$ 14,001
FICA and employee benefits	61,929	62,306	62,929	(623)
Services	263,950	504,478	210,444	294,034
Supplies and materials	840,241	840,241	774,734	65,507
	<u>1,430,581</u>	<u>1,676,406</u>	<u>1,303,487</u>	<u>372,919</u>
Finance:				
Salaries	379,741	386,840	366,747	20,093
FICA and employee benefits	83,288	83,824	79,225	4,599
Services	21,700	21,700	4,223	17,477
Supplies and materials	7,360	7,360	1,403	5,957
	<u>492,089</u>	<u>499,724</u>	<u>451,598</u>	<u>48,126</u>
City Recorder:				
Salaries	377,163	384,058	353,330	30,728
FICA and employee benefits	154,334	154,869	145,244	9,625
Services	26,350	26,350	1,230	25,120
Supplies and materials	4,988	4,988	3,343	1,645
	<u>562,835</u>	<u>570,265</u>	<u>503,147</u>	<u>67,118</u>
Personnel:				
Salaries	181,479	184,987	179,999	4,988
FICA and employee benefits	44,218	44,488	45,530	(1,042)
Services	27,765	27,765	20,353	7,412
Supplies and materials	2,600	5,600	3,185	2,415
	<u>256,062</u>	<u>262,840</u>	<u>249,067</u>	<u>13,773</u>
Other:				
Salaries	328,814	469,195	329,912	139,283
FICA and employee benefits	1,134,247	1,134,307	1,090,093	44,214
Services	2,522,234	6,157,139	4,999,140	1,157,999
Supplies and materials	929,000	2,868,836	659,444	2,209,392
	<u>4,914,295</u>	<u>10,629,477</u>	<u>7,078,589</u>	<u>3,550,888</u>
Total general government	<u>8,712,336</u>	<u>14,530,313</u>	<u>10,513,265</u>	<u>4,017,048</u>

(Continued)

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget Amounts		Actual	Variance with Final Budget
	Original	Final		
(Continued)				
Department of Public Safety:				
Police:				
Salaries	\$ 6,518,612	\$ 6,635,430	\$ 6,021,144	\$ 614,286
FICA and employee benefits	2,397,373	2,406,955	2,297,497	109,458
Services	799,807	1,102,069	607,732	494,337
Supplies and materials	1,378,440	3,000,474	1,877,088	1,123,386
	<u>11,094,232</u>	<u>13,144,928</u>	<u>10,803,461</u>	<u>2,341,467</u>
Fire:				
Salaries	5,840,372	6,103,495	5,442,785	660,710
FICA and employee benefits	2,098,134	2,106,215	1,932,532	173,683
Services	395,366	725,190	554,483	170,707
Supplies and materials	805,742	1,387,434	710,498	676,936
	<u>9,139,614</u>	<u>10,322,334</u>	<u>8,640,298</u>	<u>1,682,036</u>
Total department of public safety	<u>20,233,846</u>	<u>23,467,262</u>	<u>19,443,759</u>	<u>4,023,503</u>
Department of public works:				
Streets and Maintenance:				
Salaries	2,101,973	2,140,028	1,823,862	316,166
FICA and employee benefits	844,489	847,563	753,070	94,493
Services	1,315,600	1,858,367	366,054	1,492,313
Supplies and materials	918,555	1,685,411	766,576	918,835
	<u>5,180,617</u>	<u>6,531,369</u>	<u>3,709,562</u>	<u>2,821,807</u>
Total department of public works	<u>5,180,617</u>	<u>6,531,369</u>	<u>3,709,562</u>	<u>2,821,807</u>
Development services:				
Salaries	1,121,329	1,147,144	1,038,579	108,565
FICA and employee benefits	380,660	382,647	360,012	22,635
Services	282,300	298,952	210,746	88,206
Supplies and materials	92,220	94,600	32,801	61,799
	<u>1,876,509</u>	<u>1,923,343</u>	<u>1,642,138</u>	<u>281,205</u>
Total development services	<u>1,876,509</u>	<u>1,923,343</u>	<u>1,642,138</u>	<u>281,205</u>

(Continued)

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCES -
BUDGET AND ACTUAL
GENERAL FUND**

Year Ended June 30, 2023

	Budget Amounts			Variance with Final Budget
	Original	Final	Actual	
(Continued)				
Department of parks and recreation:				
Parks and Recreation:				
Salaries	\$ 1,550,720	\$ 1,579,847	\$ 1,296,507	\$ 283,340
FICA and employee benefits	479,048	481,352	411,738	69,614
Services	433,350	739,500	472,994	266,506
Supplies and materials	565,324	1,304,623	834,296	470,327
Total department of parks and recreation	3,028,442	4,105,322	3,015,535	1,089,787
 Total expenditures	39,031,750	50,557,609	38,324,259	12,233,350
 Excess (deficiency) of revenues over (under) expenditures	(3,572,291)	(14,046,594)	8,849,058	22,895,652
 OTHER FINANCING SOURCES (USES)				
Transfers in	1,694,000	1,694,000	1,676,108	(17,892)
Transfers out	(3,056,418)	(5,646,940)	(4,356,753)	1,290,187
	(1,362,418)	(3,952,940)	(2,680,645)	1,272,295
 NET CHANGE IN FUND BALANCES	\$ (4,934,709)	\$ (17,999,534)	6,168,413	\$ 24,167,947
 FUND BALANCE, beginning			43,467,000	
 FUND BALANCE, ending			\$ 49,635,413	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
STATE STREET AID FUND**

Year Ended June 30, 2023

	Budget			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Intergovernmental				
Gasoline and motor fuel tax	\$ 750,000	\$ 750,000	\$ 859,135	\$ 109,135
Gasoline 3 cent	186,000	186,000	214,672	28,672
Tennessee gas tax	300,000	300,000	374,481	74,481
Miscellaneous	4,000	4,000	73,977	69,977
Total revenues	1,240,000	1,240,000	1,522,265	282,265
EXPENDITURES				
Public works				
Services	326,298	926,298	866,213	60,085
Supplies	838,702	1,103,262	123,077	980,185
Total expenditures	1,165,000	2,029,560	989,290	1,040,270
OTHER FINANCING USES				
Transfers out	(75,000)	(75,000)	(75,000)	-
Net change in fund balance	\$ -	\$ (864,560)	457,975	\$ 1,322,535
FUND BALANCE, beginning			1,961,044	
FUND BALANCE, ending			\$ 2,419,019	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
DRUG FUND**

Year Ended June 30, 2023

	Budget			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Fines and fees				
Drug fines, confiscated property	\$ 132,000	\$ 132,000	\$ 336,711	\$ 204,711
Miscellaneous				
Interest	800	800	11,751	10,951
Total revenues	<u>132,800</u>	<u>132,800</u>	<u>348,462</u>	<u>215,662</u>
EXPENDITURES				
Public safety				
Services	115,853	115,853	148,855	(33,002)
Supplies	<u>35,200</u>	<u>35,200</u>	<u>1,458</u>	<u>33,742</u>
Total expenditures	<u>151,053</u>	<u>151,053</u>	<u>150,313</u>	<u>740</u>
Net change in fund balance	<u>\$ (18,253)</u>	<u>\$ (18,253)</u>	198,149	<u>\$ 216,402</u>
FUND BALANCE, beginning			<u>241,366</u>	
FUND BALANCE, ending			<u>\$ 439,515</u>	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
STREET AND TRANSPORTATION FUND**

Year Ended June 30, 2023

	Budget Amounts			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Intergovernmental				
Gasoline tax	\$ 65,000	\$ 65,000	\$ 76,376	\$ 11,376
Miscellaneous	100	100	184	84
Total revenues	<u>65,100</u>	<u>65,100</u>	<u>76,560</u>	<u>11,460</u>
EXPENDITURES				
Public works				
Services	<u>65,100</u>	<u>65,100</u>	<u>65,101</u>	<u>(1)</u>
Total expenditures	<u>65,100</u>	<u>65,100</u>	<u>65,101</u>	<u>(1)</u>
Net change in fund balance	<u>\$ -</u>	<u>\$ -</u>	11,459	<u>\$ 11,459</u>
FUND BALANCE, beginning			<u>33,810</u>	
FUND BALANCE, ending			<u>\$ 45,269</u>	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
INDUSTRIAL DEVELOPMENT BOARD**

Year Ended June 30, 2023

	Budget			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Grant revenue	\$ 505,000	\$ 3,060,223	\$ 2,564,517	\$ (495,706)
Contributions	50,000	50,000	17,910	(32,090)
Miscellaneous				
Interest	1,000	1,000	169,504	168,504
Other	352,775	924,435	3,665,650	2,741,215
Total revenues	<u>908,775</u>	<u>4,035,658</u>	<u>6,417,581</u>	<u>2,381,923</u>
EXPENDITURES				
Professional services	<u>908,775</u>	<u>4,035,658</u>	<u>2,687,705</u>	<u>1,347,953</u>
Total expenditures	<u>908,775</u>	<u>4,035,658</u>	<u>2,687,705</u>	<u>1,347,953</u>
Net change in fund balance	<u>\$ -</u>	<u>\$ -</u>	3,729,876	<u>\$ 3,729,876</u>
FUND BALANCE				
Beginning , as previously stated			2,023,893	
Prior period adjustment			<u>(1,500,000)</u>	
Beginning, as restated			<u>523,893</u>	
FUND BALANCE, ending			<u>\$ 4,253,769</u>	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
DEBT SERVICE FUND**

Year Ended June 30, 2023

	Budget			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Miscellaneous	\$ 4,000	\$ 4,000	\$ 40,460	\$ 36,460
Total revenues	<u>4,000</u>	<u>4,000</u>	<u>40,460</u>	<u>36,460</u>
EXPENDITURES				
Debt Service				
Principal retirements	1,327,015	1,327,015	1,327,151	(136)
Interest and fiscal charges	<u>320,939</u>	<u>320,939</u>	<u>318,280</u>	<u>2,659</u>
Total expenditures	<u>1,647,954</u>	<u>1,647,954</u>	<u>1,645,431</u>	<u>2,523</u>
Excess (deficiency) of revenues over (under) expenditures	(1,643,954)	(1,643,954)	(1,604,971)	38,983
OTHER FINANCING SOURCES (USES)				
Transfers in	<u>1,646,904</u>	<u>1,646,904</u>	<u>1,646,904</u>	<u>-</u>
Total other financing sources	<u>1,646,904</u>	<u>1,646,904</u>	<u>1,646,904</u>	<u>-</u>
Net change in fund balance	<u>\$ 2,950</u>	<u>\$ 2,950</u>	41,933	<u>\$ 38,983</u>
FUND BALANCE, beginning			<u>229,390</u>	
FUND BALANCE, ending			<u>\$ 271,323</u>	

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE -
BUDGET AND ACTUAL
CAPITAL PROJECT FUND**

Year Ended June 30, 2023

	Budget Amounts			Variance with Final Budget
	Original	Final	Actual	
REVENUES				
Intergovernmental				
Federal and state grants	\$ -	\$ 4,267,058	\$ 273,796	\$ (3,993,262)
Miscellaneous				
Interest and other	-	-	235,521	235,521
Prior year revenue	791,821	3,879,821	-	(3,879,821)
Total revenues	791,821	8,146,879	509,317	(7,637,562)
EXPENDITURES				
Capital outlay	3,540,276	13,515,327	2,229,145	11,286,182
Total expenditures	3,540,276	13,515,327	2,229,145	11,286,182
Excess (deficiency) of revenues over (under) expenditures	(2,748,455)	(5,368,448)	(1,719,828)	3,648,620
OTHER FINANCING SOURCES				
Transfer in	1,610,000	4,200,522	2,910,335	(1,290,187)
Total other financing sources	1,610,000	4,200,522	2,910,335	(1,290,187)
Net change in fund balance	\$ (1,138,455)	\$ (1,167,926)	1,190,507	\$ 2,358,433
FUND BALANCE, beginning			4,323,297	
FUND BALANCE, ending			\$ 5,513,804	

Financial Schedules



CITY OF COLUMBIA, TENNESSEE

SCHEDULE OF CHANGES IN PROPERTY TAX RECEIVABLES

Year Ended June 30, 2023

<u>Tax Year</u>	<u>Balance June 30, 2022</u>	<u>Current Year Tax Levy</u>	<u>Taxes Collected</u>	<u>Tax Adjustments</u>	<u>Balance June 30, 2023</u>
2022	\$ -	\$ 12,795,025	\$ (12,398,395)	\$ 5,678	\$ 402,308
2021	309,581	-	(244,176)	180	65,585
2020	40,211	-	(24,167)	-	16,044
2019	19,702	-	(3,279)	-	16,423
2018	15,730	-	(4,247)	-	11,483
2017	17,238	-	(3,000)	-	14,238
2016	8,423	-	(465)	-	7,958
2015	6,865	-	(223)	-	6,642
2014	5,719	-	(156)	-	5,563
2013	6,350	-	(105)	-	6,245
2012	3,805	-	(213)	-	3,592
2011	<u>8,276</u>	<u>-</u>	<u>(17)</u>	<u>(8,259)</u>	<u>-</u>
	<u>\$ 441,900</u>	<u>\$ 12,795,025</u>	<u>\$ (12,678,443)</u>	<u>\$ (2,401)</u>	556,081
		Estimated property tax 2022-2023 tax levy			<u>12,567,722</u>
		Total property tax receivable			13,123,803
		Less allowance for doubtful accounts			<u>(44,238)</u>
		Total property tax receivable, net			<u>\$ 13,079,565</u>

Note: All uncollected delinquent taxes have been filed in accordance with applicable laws.

City of Columbia, Tennessee
Schedule of Changes in Long-Term Debt by Individual Issue
June 30, 2023

Description of Indebtedness	Original Amount of issue	Interest Rate	Date of Issue	Final Maturity Date	Outstanding 7/1/2022	Issued During Period	Paid and/or Matured During Period	Refunded During Period	Outstanding 6/30/2023
Governmental Activities									
<u>NOTES PAYABLE</u>									
<u>Payable through Debt Service Fund</u>									
Public Safety equip/improv capital outlay, Series 2014	\$ 1,900,000	2.00%	7/14/2014	5/31/2024	\$ 410,199	\$ -	\$ 203,075	\$ -	\$ 207,124
Sanitation Equipment Capital outlay, Series 2017	\$ 235,000	1.72%	11/1/2017	11/1/2022	48,655	-	48,655	-	-
Sanitation Equipment Capital outlay, Series 2019	\$ 350,000	2.73%	9/1/2019	9/1/2024	216,221	-	70,021	-	146,200
Total Notes Payable through Debt Service Fund					675,075	-	321,751	-	353,324
<u>CAPITAL LEASES</u>									
<u>Payable through Debt Service Fund</u>									
General Obligation refunding, Series 2016	\$ 1,400,000	2.25%	1/15/2016	12/1/2028	860,000	-	135,000	-	725,000
General Obligation public improvement, Series 2017	\$ 8,970,000	3.00%	2/3/2017	6/1/2036	7,010,000	-	430,000	-	6,580,000
General Obligation refunding, Series 2019	\$ 4,875,000	2.00 - 4.00%	9/6/2019	12/1/2029	4,050,000	-	440,000	-	3,610,000
Total Bonds Payable through Debt Service Fund					11,920,000	-	1,005,000	-	10,915,000
Total Governmental Activities					\$ 12,595,075	\$ -	\$ 1,326,751	\$ -	\$ 11,268,324
Business-Type Activities									
<u>BONDS PAYABLE</u>									
<u>Payable through Sewer Fund</u>									
General Obligation, Series 2016	\$ 6,135,000	2.25%	1/15/2016	12/1/2028	\$ 4,470,000	\$ -	\$ 975,000	\$ -	\$ 3,495,000
General Obligation, Series 2020	\$ 4,195,000	1.05 - 2.00%	12/18/2020	6/30/2032	4,160,000	-	380,000	-	3,780,000
Total Payable Sewer Fund					8,630,000	-	1,355,000	-	7,275,000
<u>Payable through Power System Fund</u>									
Broadband rev and tax, Series 2014/2015	\$ 9,100,000	1.79%	12/19/2014	3/1/2025	2,900,000	-	950,000	-	1,950,000
Total Payable Power System Fund					2,900,000	-	950,000	-	1,950,000
<u>Payable through Water System Fund</u>									
Revenue Bonds, Series 2021	\$ 6,770,000	2.00 - 5.00%	12/21/2021	12/1/1933	6,770,000	-	-	-	6,770,000
Total Payable Water System Fund					6,770,000	-	-	-	6,770,000
Total Bonds Payable Business-Type					18,300,000	-	2,305,000	-	15,995,000
Total Business-Type Activities					\$ 18,300,000	\$ -	\$ 2,305,000	\$ -	\$ 15,995,000

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF DEBT SERVICE REQUIREMENTS
GOVERNMENTAL OBLIGATION DEBT**

JUNE 30, 2023

Year Ending June 30,	General Obligation Refunding & Improvement Bonds - 2016 - General Fund		Public Safety Improvement/Equipment Capital Outlay Note - 2014		General Obligation Bonds - 2017		General Obligation Bonds - 2019		Equipment Capital Outlay Note 2019		Total	
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
2024	\$ 140,000	\$ 14,737	\$ 207,124	\$ 4,212	\$ 440,000	\$ 164,250	\$ 465,000	\$ 92,000	\$ 71,890	\$ 4,035	\$ 1,324,014	\$ 279,234
2025	145,000	11,531	-	-	450,000	155,450	485,000	73,000	74,310	2,050	1,154,310	242,031
2026	145,000	8,269	-	-	460,000	146,450	505,000	53,200	-	-	1,110,000	207,919
2027	150,000	4,950	-	-	470,000	137,250	525,000	37,850	-	-	1,145,000	180,050
2028	145,000	1,631	-	-	480,000	127,850	530,000	27,300	-	-	1,155,000	156,781
2029	-	-	-	-	490,000	117,050	545,000	16,550	-	-	1,035,000	133,600
2030	-	-	-	-	500,000	106,026	555,000	5,550	-	-	1,055,000	111,576
2031	-	-	-	-	510,000	93,526	-	-	-	-	510,000	93,526
2032	-	-	-	-	525,000	80,776	-	-	-	-	525,000	80,776
2033	-	-	-	-	540,000	67,650	-	-	-	-	540,000	67,650
2034	-	-	-	-	555,000	51,450	-	-	-	-	555,000	51,450
2035	-	-	-	-	570,000	34,800	-	-	-	-	570,000	34,800
2036	-	-	-	-	590,000	17,700	-	-	-	-	590,000	17,700
Total	<u>\$ 725,000</u>	<u>\$ 41,118</u>	<u>\$ 207,124</u>	<u>\$ 4,212</u>	<u>\$ 6,580,000</u>	<u>\$ 1,300,228</u>	<u>\$ 3,610,000</u>	<u>\$ 305,450</u>	<u>\$ 146,200</u>	<u>\$ 6,085</u>	<u>\$ 11,268,324</u>	<u>\$ 1,657,093</u>

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF DEBT SERVICE REQUIREMENTS
SEWER FUND**

JUNE 30, 2023

Year Ending June 30,	General Obligation Refunding Bonds - 2016		General Obligation Refunding Bonds - 2020		Total	
	Principal	Interest	Principal	Interest	Principal	Interest
2024	\$ 995,000	\$ 67,444	\$ 390,000	\$ 53,490	\$ 1,385,000	\$ 120,934
2025	1,025,000	44,719	395,000	45,640	1,420,000	90,359
2026	360,000	29,138	405,000	37,640	765,000	66,778
2027	365,000	20,982	415,000	29,440	780,000	50,422
2028	375,000	12,657	425,000	23,165	800,000	35,822
2029	375,000	4,219	425,000	18,809	800,000	23,028
2030	-	-	435,000	14,076	435,000	14,076
2031	-	-	440,000	8,825	440,000	8,825
2032	-	-	450,000	3,038	450,000	3,038
Total	<u>\$ 3,495,000</u>	<u>\$ 179,159</u>	<u>\$ 3,780,000</u>	<u>\$ 234,123</u>	<u>\$ 7,275,000</u>	<u>\$ 413,282</u>

CITY OF COLUMBIA, TENNESSEE

SCHEDULE OF DEBT SERVICE REQUIREMENTS
WATER SYSTEM

JUNE 30, 2023

Year Ending June 30,	Water Revenue Bonds - 2021		Total	
	Principal	Interest	Principal	Interest
2024	\$ 1,250,000	\$ 258,650	\$ 1,250,000	\$ 258,650
2025	780,000	207,900	780,000	207,900
2026	820,000	167,900	820,000	167,900
2027	860,000	125,900	860,000	125,900
2028	455,000	93,025	455,000	93,025
2029	480,000	69,650	480,000	69,650
2030	505,000	45,025	505,000	45,025
2031	530,000	27,100	530,000	27,100
2032	540,000	16,400	540,000	16,400
2033	550,000	5,500	550,000	5,500
Total	<u>\$ 6,770,000</u>	<u>\$ 1,017,050</u>	<u>\$ 6,770,000</u>	<u>\$ 1,017,050</u>

CITY OF COLUMBIA, TENNESSEE

**SCHEDULE OF DEBT SERVICE REQUIREMENTS
POWER SYSTEM**

JUNE 30, 2023

Year Ending June 30,	2014/2015 Broadband Telecommunications Revenue & Tax Refunding Bonds - 2014/215		Total	
	Principal	Interest	Principal	Interest
2024	\$ 965,000	\$ 34,905	\$ 965,000	\$ 34,905
2025	985,000	17,632	985,000	17,632
Total	\$ 1,950,000	\$ 52,537	\$ 1,950,000	\$ 52,537

City of Columbia, Tennessee

Continuing Disclosure Report

For the Fiscal Year ended June 30, 2023

Base CUSIP: **198558**
 198630
 198576
 198612

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ATTACHMENT: 2023 City of Columbia ACFR

CITY OF COLUMBIA
SUMMARY OF OUTSTANDING DEBT
(as of June 30, 2023)

Original Issue Amount	Issue	Date Issued	Final Maturity Date	Interest Rate	Amount Outstanding 6/30/2023
General Obligation Bonds:					
\$ 1,400,000	General Obligation Refunding Bonds, Series 2016 (General Government Portion)	1/15/2016	12/1/2028	2.25%	\$ 725,000
8,970,000	General Obligation Public Improvement Bonds , Series 2017	2/3/2017	6/1/2036	3.00%	6,580,000
4,875,000	General Obligation Refunding Bonds, Series 2019	9/6/2019	12/1/2029	2.00% - 4.00%	3,610,000
Total General Obligation Bonds					\$ 10,915,000
General Obligation Notes:					
\$ 1,900,000	Public Safety Equipment Improvement Capital Outlay Notes, Series 2014	7/14/2014	5/31/2024	2.00%	\$ 207,124
350,000	Sanitation Capital Outlay Notes, Series 2019	9/1/2019	9/1/2024	2.73%	146,200
Total General Obligation Notes					\$ 353,324
Total General Obligation Debt					\$ 11,268,324
Self- Supporting Utility Debt (also secured by general obligation pledge of City):					
Sewer Fund Debt:					
\$ 6,135,000	General Obligation Refunding Bonds, Series 2016 (Sewer Portion)	1/15/2016	12/1/2028	2.25%	\$ 3,495,000
4,195,000	General Obligation Refunding Bonds, Series 2020 (Sewer)	12/18/2020	12/1/2031	1.00% - 2.00%	3,780,000
Total Sewer Fund Debt					\$ 7,275,000
Columbia Broadband System Debt (only portion also secured by general obligation pledge of City):					
\$ 9,100,000	Broadband Telecommunications Network Revenue and Tax	12/19/2014	3/1/2025	1.79%	\$ 1,950,000
Total Columbia Broadband System Debt					\$ 1,950,000
Columbia Water System Debt (only portion also secured by general obligation pledge of City):					
\$ 6,770,000	Waterworks System Revenue Bonds, Series 2021	12/21/2021	12/1/2032	2.00-5.00%	\$ 6,770,000
Total Columbia Water System Debt					\$ 6,770,000
Total Self- Supporting Utility Debt					\$ 15,995,000
Total Current Outstanding Debt					\$ 27,263,324
Debt Statement as of June 30, 2023					
Outstanding Debt					
Total Current Outstanding Debt					\$ 27,263,324
Gross Direct Debt					\$ 27,263,324
Less: Self -Supporting Debt					(15,995,000)
Net Direct Debt					\$ 11,268,324
Net Overlapping Debt					
City Portion of Maury County Debt					\$ 128,720,356
Total Net Overlapping Debt					128,720,356
Overall Net Debt					<u>\$ 139,988,680</u>

DEBT RECORD OF COLUMBIA

There is no record of a default on bond principal and interest from information available .

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR)/audit for year ended June 30, 2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
POPULATION TRENDS AND DEBT RATIOS
(as of June 30, 2023)

POPULATION

	<u>City</u>	<u>Tennessee</u>
2022 Census and American Community Survey	45,792	7,051,339
2021 Census and American Community Survey	43,340	6,975,218
2020 Census and American Community Survey	41,690	6,910,840
2019 Census and American Community Survey	40,494	6,829,174
2018 Census and American Community Survey	39,475	6,771,631
2017 Census and American Community Survey	38,407	6,708,799
2016 Census and American Community Survey	37,316	6,646,010
2015 Census and American Community Survey	36,569	6,591,170
2014 Census and American Community Survey	35,935	6,541,223
2013 Census and American Community Survey	35,431	6,494,340

PER CAPITA DEBT RATIO

Outstanding Debt	\$ 595.37
Gross Direct Debt	595.37
Net Direct Debt	246.08
Total Net Overlapping	2,810.98
Overall Net Debt	3,057.06

DEBT RATIOS

	<u>Assessed Value</u>	<u>Estimated Actual Value</u>
Outstanding Debt to	2.59%	0.77%
Gross Direct Debt to	2.59%	0.77%
Net Direct Debt to	1.07%	0.32%
Total Net Overlapping Debt to	12.21%	3.63%
Overall Net Debt to	13.28%	3.94%

DEBT TREND

Debt Category	6/30/2023	6/30/2022	6/30/2021	6/30/2020	6/30/2019
General Obligation Bonds & Loan Agreements	\$ 10,915,000	\$ 11,920,000	\$ 12,890,000	\$ 13,824,207	\$ 13,879,207
General Obligation Notes	353,324	675,075	989,425	1,436,385	1,512,731
Sewer Fund Bonds & Loan Agreements	7,275,000	8,630,000	9,915,000	11,000,000	12,510,000
Water Revenue & Tax Bonds	6,770,000	6,770,000	10,640,000	11,855,000	13,020,000
Broadband Telecom Revenue & Tax Bonds	1,950,000	2,900,000	3,830,000	4,740,000	5,640,000
Total Outstanding Debt	\$ 27,263,324	\$ 30,895,075	\$ 38,264,425	\$ 42,855,592	\$ 46,561,938

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR)/audit for years ending 2019 -2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
GOVERNMENTAL ACTIVITIES
DEBT SERVICE REQUIREMENTS
(as of June 30, 2023)

Year No.	Year Ended June 30	Total Outstanding Bonds & Notes Principal	Percent Principal Retired	Total Outstanding Bonds & Notes Interest	Total Debt Service Requirements
1	2024	\$ 1,324,342		\$ 279,222	\$ 1,603,564
2	2025	1,153,554		242,017	1,395,571
3	2026	1,110,000		207,919	1,317,919
4	2027	1,145,000	42.00%	180,050	1,325,050
5	2028	1,155,000		156,781	1,311,781
6	2029	1,035,000		133,600	1,168,600
7	2030	1,055,000		111,575	1,166,575
8	2031	510,000		93,525	603,525
9	2032	525,000	37.98%	80,775	605,775
10	2033	540,000		67,650	607,650
11	2034	555,000		51,450	606,450
12	2035	570,000		34,800	604,800
13	2036	590,000	20.01%	17,700	607,700
		<u>\$ 11,267,896</u>	<u>100.00%</u>	<u>\$ 1,657,064</u>	<u>\$ 12,924,960</u>

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR)/audit for year ended June 30, 2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
SEWER FUND
DEBT SERVICE REQUIREMENTS
(as of June 30, 2023)

Year No.	Year Ended June 30	Total Outstanding Bonds & Notes Principal	Percent Principal Retired	Total Outstanding Bonds & Notes Interest	Total Debt Service Requirements
1	2024	\$ 1,385,000		\$ 120,934	\$ 1,505,934
2	2025	1,420,000		90,359	1,510,359
3	2026	765,000		66,778	831,778
4	2027	780,000	59.79%	50,422	830,422
5	2028	800,000		35,822	835,822
6	2029	800,000		23,028	823,028
7	2030	435,000		14,076	449,076
8	2031	440,000		8,825	448,825
9	2032	450,000	40.21%	3,038	453,038
		<u>\$ 7,275,000</u>	<u>100.00%</u>	<u>\$ 413,282</u>	<u>\$ 7,688,282</u>

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR)/audit for year ended June 30, 2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
BROADBAND TELECOMMUNICATIONS NETWORK REVENUE
DEBT SERVICE REQUIREMENTS
(as of June 30, 2023)

Year No.	Year Ended June 30	Total Outstanding Bonds & Notes Principal	Percent Principal Retired	Total Outstanding Bonds & Notes Interest	Total Debt Service Requirements
1	2024	\$ 965,000		\$ 34,905	\$ 999,905
2	2025	985,000	100.00%	17,632	1,002,632
		<u>\$ 1,950,000</u>	<u>100.00%</u>	<u>\$ 52,537</u>	<u>\$ 2,002,537</u>

Source: Columbia Power and Water System ACFR/Audit Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

CITY OF COLUMBIA
DEBT SERVICE REQUIREMENTS - COLUMBIA WATER SYSTEM
(as of June 30, 2023)

Year No.	Year Ending June 30	Total Outstanding Bonds & Notes Principal	Percent Principal Retired	Total Outstanding Bonds & Notes Interest	Total Debt Service Requirements
1	2024	\$ 1,250,000		\$ 258,650	\$ 1,508,650
2	2025	780,000		207,900	987,900
3	2026	820,000		167,900	987,900
4	2027	860,000	54.80%	125,900	985,900
5	2028	455,000		93,025	548,025
6	2029	480,000		69,650	549,650
7	2030	505,000		45,025	550,025
8	2031	530,000		27,100	557,100
9	2032	540,000	37.08%	16,400	556,400
10	2033	550,000	8.12%	5,500	555,500
		<u>\$ 6,770,000</u>	<u>100.00%</u>	<u>\$ 1,017,050</u>	<u>\$ 7,787,050</u>

Source: Columbia Power and Water System ACFR/Audit Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

DEBT SERVICE REQUIREMENTS - COLUMBIA POWER SYSTEM

(as of June 30, 2023)

THERE IS NOT A DEBT SCHEDULE FOR COLUMBIA POWER SYSTEM AS THE ELECTRIC DIVISION OF THE POWER SYSTEM IS DEBT FREE.

Source: Columbia Power and Water System ACFR/Audit Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

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CITY OF COLUMBIA
PROPERTY VALUATION AND PROPERTY TAX
(as of June 30, 2023)

	Fiscal Year Tax Year	2022-2023 2022	2021-2022 2021	2020-2021 2020	2019-2020 2019	2018-2019 2018
ESTIMATED ACTUAL VALUES						
Residential & Farm		\$ 3,583,076,600	\$ 2,210,888,900	\$ 2,104,249,200	\$ 2,025,018,800	\$ 1,931,937,000
Commercial & Industrial		1,264,048,063	999,789,200	974,064,800	912,508,300	882,866,700
Personal Tangible Property		364,488,262	338,214,015	311,093,155	442,041,372	447,712,800
Public Utilities		538,800	510,700	510,700	510,700	510,645
Total Estimated Actual Values		\$ 5,212,151,725	\$ 3,549,402,815	\$ 3,389,917,855	\$ 3,380,079,172	\$ 3,263,027,145
Annual Percentage Change		46.85%	4.70%	0.29%	3.59%	35.96%
Estimated Per Capita Amount	\$	113,822	\$ 81,897	\$ 81,312	\$ 83,471	\$ 82,661
ASSESSED VALUES						
Residential & Farm (at 25%)	\$	895,769,150	\$ 552,722,225	\$ 526,062,300	\$ 506,254,700	\$ 482,984,250
Commercial & Industrial (at 40%)		505,619,225	399,915,680	389,625,920	365,003,320	353,146,680
Personal Tangible Property (at 30% - 40%)		121,490,851	101,553,840	95,778,533	157,049,490	160,642,485
Public Utilities (at 30% -55%)		296,340	280,885	280,885	280,885	280,855
Total Assessed Values		\$ 1,523,175,566	\$ 1,054,472,630	\$ 1,011,747,638	\$ 1,028,588,395	\$ 997,054,270
Annual Percentage Change		44.45%	4.22%	-1.64%	3.16%	30.73%
Estimated Per Capita Amount	\$	33,263	\$ 24,330	\$ 24,268	\$ 25,401	\$ 25,257.87
Appraisal Ratio		100.00%	100.00%	100.00%	100.00%	100.00%
Assessed Values to Actual Values		29.22%	29.71%	29.85%	30.43%	30.56%
Property Tax Rate		\$0.8251	\$1.1597	\$1.1597	\$1.1597	\$1.1597
Tax Levied	\$	12,795,025	\$ 12,500,116	\$ 11,971,756	\$ 12,198,049	\$ 11,820,739
Collections						
Current Fiscal Year	\$	12,678,443	\$ 12,607,900	\$ 12,013,222	\$ 12,229,474	\$ 11,890,730
Percent Collected Current FY		99.09%	100.86%	100.35%	100.26%	100.59%
Delinquent Taxes as of June 30, 2022	\$	442,159	\$ 525,265	\$ 574,003	\$ 587,916	\$ 386,340
Delinquent Taxes as % of Levy		3.46%	4.20%	4.79%	4.82%	3.27%

TOP TEN TAXPAYERS

Business	Type of Business	Tax Year 2022 Assessed Value*	Assessed Value as a % of Total Assessment
TN Farmers Life Ins. Co.	Insurance	\$ 38,476,304	2.53%
TRH Health Insurance	Insurance	\$ 9,568,826	0.63%
Arden Village Apartments	Housing	\$ 8,682,360	0.57%
TN Farm Bureau Fed Inc.	Insurance	\$ 7,441,400	0.49%
ERGH Investors, LLC	Housing	\$ 7,265,240	0.48%
Walmart	Retail	\$ 6,100,000	0.40%
NHC - Maury Regional Healthcare	Health Care	\$ 6,043,640	0.40%
Burchell Properties	Housing	\$ 5,625,070	0.37%
Bostelman Realty, LLC	Housing	\$ 5,490,470	0.36%
Tristar Maury Behavioral Healthcare, LLC	Health Care	\$ 5,441,360	0.36%
		\$ 100,134,670	

*Tax Year 2022 property taxes due and collected during FY 2023.

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR) for years ending 2019-2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
STATEMENT OF OPERATING REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCES- TOTAL GOVERNMENTAL FUNDS
(as of June 30, 2023)

	2023	2022	2021	2020	2019
REVENUES					
Taxes	\$ 36,783,726	\$ 35,074,465	\$ 31,574,594	\$ 27,763,948	\$ 26,448,519
Intergovernmental Revenue	7,642,743	8,428,701	9,040,012	7,687,250	6,081,799
Licenses & Permits	2,241,184	2,604,458	1,737,096	1,189,603	930,837
Fine and Forfeits	534,812	226,437	360,551	352,176	430,636
Charges for Services	4,311,811	4,170,424	3,964,403	3,980,230	3,920,566
Other Revenue	8,517,184	6,442,472	2,446,451	2,421,420	896,759
Debt Issuance	-	-	-	442,451	-
Operating Transfers In	6,233,347	6,388,486	8,265,343	3,462,233	8,689,636
Total Revenues & Other Sources	<u>\$ 66,264,807</u>	<u>\$ 63,335,443</u>	<u>\$ 57,388,450</u>	<u>\$ 47,299,311</u>	<u>\$ 47,398,752</u>
EXPENDITURES					
Current					
General Government	\$ 12,155,403	\$ 9,246,005	\$ 7,726,683	\$ 8,970,180	\$ 10,085,051
Public Works	4,763,953	4,368,697	3,608,932	4,889,943	4,065,905
Sanitation	362,341	4,723,229	3,892,993	3,460,281	3,205,053
Public Safety	19,594,072	17,986,350	17,413,791	16,681,541	16,818,979
Recreation	3,015,535	2,758,457	2,425,763	2,398,037	2,527,934
Community Support	2,687,705	1,709,313	63,650	3,532,251	29,586
Capital Outlay	2,229,145	1,913,766	6,090,062	6,688,256	6,063,649
Debt Service	1,645,431	1,645,464	1,777,680	1,881,849	2,041,549
Operating Transfer Out	4,557,239	4,617,508	6,565,828	1,887,163	4,420,878
Total Expenditures & Other Uses	<u>\$ 54,271,900</u>	<u>\$ 48,968,789</u>	<u>\$ 49,565,382</u>	<u>\$ 50,389,501</u>	<u>\$ 49,258,584</u>
Excess of Revenues & Other Source					
Over (Under) Expenditures & Other Uses	11,992,907	14,366,654	7,823,068	(3,090,190)	(1,859,832)
Fund Balance, July 1	<u>\$ 57,188,953</u>	<u>\$ 42,822,299</u>	<u>\$ 34,999,231</u>	<u>\$ 38,089,421</u>	<u>\$ 39,949,253</u>
Fund Balance, June 30	<u>\$ 69,181,860</u>	<u>\$ 57,188,953</u>	<u>\$ 42,822,299</u>	<u>\$ 34,999,231</u>	<u>\$ 38,089,421</u>

FUND BALANCES

	2023	2022	2021	2020	2019
GOVERNMENTAL FUNDS					
General Fund	\$ 49,635,413	\$ 43,467,000	\$ 35,553,556	\$ 29,364,003	\$ 26,295,308
Sanitation Fund	1,938,748	1,744,153	2,796,425	1,798,664	1,339,578
State Street Aid Fund	2,419,019	1,961,044	883,852	1,487,175	1,879,472
Drug Fund	439,515	241,366	219,970	192,892	196,295
Streets & Transportation Fund	45,269	33,810	22,975	18,972	17,462
Industrial Development Board	4,253,769	5,188,893	1,378,750	262,005	2,226,064
Debt Service Fund	271,323	229,390	226,428	143,407	88,505
Capital Project Fund	5,513,804	4,323,297	1,740,343	1,732,113	6,046,738
Total Governmental Funds	<u>\$ 64,516,860</u>	<u>\$ 57,188,953</u>	<u>\$ 42,822,299</u>	<u>\$ 34,999,231</u>	<u>\$ 38,089,422</u>

NET POSITION

	2023	2022	2021	2020	2019
PROPRIETARY FUNDS					
Sewer Fund	\$ 87,465,434	\$ 79,307,644	\$ 72,930,158	\$ 68,095,034	\$ 65,118,339
Power System	\$ 94,148,396	\$ 95,624,294	\$ 88,335,670	\$ 81,895,490	\$ 75,878,804
Water System	89,214,869	79,631,389	74,021,323	69,576,318	65,890,444
Total Proprietary Funds	<u>\$ 270,828,699</u>	<u>\$ 254,563,327</u>	<u>\$ 235,287,151</u>	<u>\$ 219,566,842</u>	<u>\$ 206,887,587</u>

LOCAL OPTION SALES TAX COLLECTIONS

	2023	2022	2021	2020	2019
General Fund	\$ 18,900,208	\$ 17,516,135	\$ 15,620,379	\$ 11,785,162	\$ 10,867,058
% of Increase	7.90%	12.14%	32.54%	8.45%	9.62%

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR) for years ending 2019-2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
STATEMENT OF OPERATING REVENUES, EXPENDITURES
AND CHANGES IN FUND BALANCES - GENERAL FUND
(as of June 30, 2023)

	2023	2022	2021	2020	2019
REVENUES					
Taxes	\$ 36,783,726	\$ 35,074,465	\$ 31,574,594	\$ 27,763,948	\$ 26,448,519
Intergovernmental Revenue	5,844,283	6,358,557	5,103,373	4,127,318	3,957,888
Licenses & Permits	2,241,184	2,604,458	1,737,096	1,189,603	930,837
Fine and Forfeitures	198,101	164,270	208,107	244,260	308,507
Charges for Services	438,465	415,613	305,080	409,919	422,013
Other Revenue	1,667,558	(95,462)	1,068,002	692,055	721,481
Operating Transfers In	1,676,108	1,770,978	1,695,015	1,580,070	2,030,758
Total Revenues & Other Sources	<u>\$ 48,849,425</u>	<u>\$ 46,292,879</u>	<u>\$ 41,691,267</u>	<u>\$ 36,007,173</u>	<u>\$ 34,820,003</u>
EXPENDITURES					
Current					
General Government	\$ 12,155,403	\$ 9,246,005	\$ 7,726,683	\$ 8,970,180	\$ 10,085,051
Public Works	3,709,562	4,013,512	3,043,873	3,174,978	3,376,592
Public Safety	19,443,759	17,944,442	17,265,038	16,572,595	16,591,753
Recreation	3,015,535	2,758,457	2,425,763	2,398,037	2,527,934
Operating Transfers Out	4,356,753	4,417,019	5,040,357	1,822,688	4,058,538
Total Expenditures & Other Uses	<u>\$ 42,681,012</u>	<u>\$ 38,379,435</u>	<u>\$ 35,501,714</u>	<u>\$ 32,938,478</u>	<u>\$ 36,639,868</u>
Excess of Revenues & Other Source					
Over (Under) Expenditures & Other Uses	6,168,413	7,913,444	6,189,553	3,068,695	(1,819,865)
Fund Balance , July 1	<u>\$ 43,467,000</u>	<u>\$ 35,553,556</u>	<u>\$ 29,364,003</u>	<u>\$ 26,295,308</u>	<u>\$ 28,115,173</u>
Fund Balance , June 30	<u>\$ 49,635,413</u>	<u>\$ 43,467,000</u>	<u>\$ 35,553,556</u>	<u>\$ 29,364,003</u>	<u>\$ 26,295,308</u>

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR) for years ending 2019-2023 by Henderson, Hutcherson & McCullough.

CITY OF COLUMBIA
STATEMENT OF OPERATING REVENUES, EXPENSES
AND CHANGES IN NET POSITION- SEWER FUND
(as of June 30, 2023)

	2023	2022	2021	2020	2019
OPERATING REVENUES					
Services	\$ 14,259,966	\$ 13,268,444	\$ 12,070,520	\$ 10,819,190	\$ 11,218,683
Other Revenues	-	1,967,937	-	-	-
Total Operating Revenues	14,259,966	15,236,381	12,070,520	10,819,190	11,218,683
OPERATING EXPENSES					
Other Direct Expenses	6,280,434	5,302,087	5,599,323	5,521,534	5,249,127
Depreciation	2,654,142	2,454,273	2,487,346	2,534,583	2,574,239
Total Operating Expenses	8,934,576	7,756,360	8,086,669	8,056,117	7,823,366
Operating Income	5,325,390	7,480,021	3,983,851	2,763,073	3,395,317
Non-Operating Revenues (Expenses)					
Other Non-Operating Net Rev. (Exp.)	1,232,127	382,078	330,505	371,623	245,936
Interest Expense	(214,307)	(235,849)	(306,097)	(345,634)	(385,448)
Total Non-Operating Rev. (Exp.)	1,017,820	146,229	24,408	25,989	(139,512)
Net Income (Loss) Before Contributions	6,343,210	7,626,250	4,008,259	2,789,062	3,255,805
Transfer Out	(276,930)	(378,498)	(388,994)	(493,186)	(498,361)
Capital contributions - utility plant	2,091,510	485,010	608,760	651,780	948,560
Capital Grant					
Change in Net Assets	\$ 8,157,790	\$ 7,732,762	\$ 4,228,025	\$ 2,947,656	\$ 3,706,004
Net Assets - Prior Year (as restated)	\$ 79,307,644	\$ 71,574,882	\$ 67,346,857	\$ 64,399,201	\$ 61,013,953
Net Assets - Current Year	\$ 87,465,434	\$ 79,307,644	\$ 71,574,882	\$ 67,346,857	\$ 64,399,201

Source - City of Columbia Tennessee Annual Comprehensive Financial Report (ACFR)/audit for years ending 2018 -2023 by Henderson, Hutcherson & McCullough.

	SEWER CUSTOMERS				
Property Type	2023	2022	2021	2020	2019
Apartment	4,159	3,478	3,491	3,159	3,092
Residential	16,065	15,192	14,649	14,001	13,660
Commercial	2,021	2,041	2,057	1,974	1,981
Industrial	11	11	11	11	11
Total	22,256	20,722	20,208	19,145	18,744

Source - City of Columbia Tennessee Officials

TEN LARGEST SEWER CUSTOMERS			
Customer Name	Type of Business	Consumption	Billed Amount
The Ashley Apartments	Housing	10,349,700	\$50,878
Boing US Holdco, Ross Adkison	Automotive	9,288,200	\$44,801
Columbia Housing Authority	Housing	8,220,900	\$40,447
Fresenius Medical Care Of	Medical	8,122,700	\$40,060
Maury County Government	County	7,728,000	\$38,047
Graymere Apartments	Housing	7,107,300	\$34,991
Columbia State Community College	Education	6,790,300	\$33,437
Jacph Properties of Tn, LLC	Housing	6,592,800	\$32,485
SREIT Columbia Hills, LLC	Housing	6,528,600	\$32,155
Shreejienterprize, LLC	Housing	6,023,200	\$29,679

Source - City of Columbia Tennessee Officials

	SEWER RATES	
	Inside City Limits	Outside City Limits
Minimum Bill/ Charge	\$14.99	\$28.48
Charge per Unit	\$4.90/1000 gallons	\$9.30/1000 gallons

Source - City of Columbia Tennessee Officials.

CITY OF COLUMBIA
STATEMENT OF OPERATING REVENUES, EXPENSES, AND CHANGES IN NET POSITION
COLUMBIA POWER & WATER SYSTEMS: BROADBAND DIVISION
(as of June 30, 2023)

	2023	2022	2021	2020	2019
Operating Revenues	\$ 9,332,866	\$ 9,287,866	\$ 8,921,453	\$ 8,539,511	\$ 8,586,138
Operating Expenses	7,660,305	7,484,281	7,309,162	7,560,382	7,595,524
Operating Income	1,672,561	1,803,585	1,612,291	979,129	990,614
Non- Operating Revenues (Expenses)	(28,805)	(47,519)	(71,351)	(94,897)	(133,359)
Income Before Contributions	1,643,756	1,756,066	1,540,940	884,232	857,255
Capital Contributions - Utility Plant	4,468	38,027	10,372	1,863	12,080
Increase In Net Position	\$ 1,648,224	\$ 1,794,093	\$ 1,551,312	\$ 886,095	\$ 869,335
Net Position - Beginning of Year	\$ 5,417,915	\$ 3,623,822	\$ 2,072,510	\$ 1,186,415	\$ 317,080
Net Position - End of Year	\$ 7,066,139	\$ 5,417,915	\$ 3,623,822	\$ 2,072,510	\$ 1,186,415

Source: Columbia Power and Water System ACFR Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

Number of Subscribers by Service
as of June 30, 2023

Cable :

Basic	1,988
Expanded Basic	1,770
Digital	738
Premium	190
High Definition	565
Telephone	942
Total	6,193

Internet:

Residential	5,855
Commercial	365
Other	119
Total	6,339

Source: Columbia Power and Water System - Broadband Division Monthly Report for June 2023

CITY OF COLUMBIA
SUMMARY OF REVENUE, EXPENSES AND
CHANGES IN NET POSITION - COLUMBIA WATER SYSTEM
(as of June 30, 2023)

	<u>FY 2023</u>	<u>FY 2022</u>	<u>FY 2021</u>	<u>FY 2020</u>	<u>FY 2019</u>
Revenues and Expenses					
Operating Revenues	\$ 17,136,600	\$ 14,700,682	\$ 13,632,433	\$ 13,074,181	\$ 13,238,872
Operating Expenses	12,075,137	10,745,652	10,048,355	9,566,948	9,413,561
Operating Income	<u>5,061,463</u>	<u>3,955,030</u>	<u>3,584,078</u>	<u>3,507,233</u>	<u>3,825,311</u>
Non-Operating Revenue (Expense)	<u>(187,158)</u>	<u>(340,207)</u>	<u>(474,357)</u>	<u>(477,757)</u>	<u>42,441</u>
Income Before Transfers and Contributions	<u>4,874,305</u>	<u>3,614,823</u>	<u>3,109,721</u>	<u>3,029,476</u>	<u>3,867,752</u>
Transfers and Contributions	4,709,175	1,995,243	1,335,284	656,398	564,921
Increase (Decrease) In Net Position	<u>\$ 9,583,480</u>	<u>\$ 5,610,066</u>	<u>\$ 4,445,005</u>	<u>\$ 3,685,874</u>	<u>\$ 4,432,673</u>
Net Position - Beginning of Year	<u>\$ 79,631,389</u>	<u>\$ 74,021,323</u>	<u>\$ 69,576,318</u>	<u>\$ 65,890,444</u>	<u>\$ 61,457,771</u>
Net Position - End of Year	<u>\$ 89,214,869</u>	<u>\$ 79,631,389</u>	<u>\$ 74,021,323</u>	<u>\$ 69,576,318</u>	<u>\$ 65,890,444</u>

Source: Columbia Power and Water System ACFR Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

TOP TEN COLUMBIA WATER SYSTEM CUSTOMERS

<u>Business</u>	<u>Type of Business</u>	<u>Consumption*</u>	<u>Billed Amount</u>
Maury County Water System	Utility	6,412,163	\$ 1,975,521
Town of Spring Hill	Municipal	4,644,056	\$ 1,498,063
General Motors, LLC	Manufacturing	2,780,140	\$ 1,279,754
Mersen USA GSTN Corporation	Manufacturing	614,830	\$ 283,712
Tennessee Distilling Group	Beverage	372,724	\$ 133,976
Maury Regional Medical Center	Healthcare	332,168	\$ 121,077
Worldwide Stages, LLC	Entertainment	193,974	\$ 89,714
City of Columbia WW TN	Utility	224,970	\$ 80,083
Nashville Ready Mix of Columbia	Manufacturing	218,863	\$ 78,052
City of Columbia	Municipal	191,295	\$ 75,635

* Hundreds of Gallons

Source: Columbia Power & Water Systems Top Customer Report.

CITY OF COLUMBIA
SUMMARY OF REVENUE, EXPENSES AND
CHANGES IN NET POSITION - COLUMBIA POWER SYSTEM: ELECTRIC DIVISION
(as of June 30, 2023)

	<u>FY 2023</u>	<u>FY 2022</u>	<u>FY 2021</u>	<u>FY 2020</u>	<u>FY 2019</u>
Revenues and Expenses					
Operating Revenues	\$ 86,603,664	\$ 79,631,979	\$ 71,434,190	\$ 71,128,504	\$ 71,033,928
Operating Expenses	81,540,349	73,056,991	65,070,837	64,955,273	67,063,579
Operating Income	<u>5,063,315</u>	<u>6,574,988</u>	<u>6,363,353</u>	<u>6,173,231</u>	<u>3,970,349</u>
Non-Operating Revenue (Expense)	<u>230,016</u>	<u>13,130</u>	<u>14,230</u>	<u>119,738</u>	<u>1,167,117</u>
Income Before Transfers and Contributions	<u>5,293,331</u>	<u>6,588,118</u>	<u>6,377,583</u>	<u>6,292,969</u>	<u>5,137,466</u>
Transfers and Contributions	(1,351,314)	(1,093,587)	(1,488,715)	(1,162,378)	(1,329,908)
Increase (Decrease) In Net Position	<u>\$ 3,942,017</u>	<u>\$ 5,494,531</u>	<u>\$ 4,888,868</u>	<u>\$ 5,130,591</u>	<u>\$ 3,807,558</u>
Net Position - Beginning of Year	<u>\$ 90,206,379</u>	<u>\$ 84,711,848</u>	<u>\$ 79,822,980</u>	<u>\$ 74,692,389</u>	<u>\$ 70,884,831</u>
Net Position - End of Year	<u>\$ 94,148,396</u>	<u>\$ 90,206,379</u>	<u>\$ 84,711,848</u>	<u>\$ 79,822,980</u>	<u>\$ 74,692,389</u>

Source: Columbia Power and Water System ACFR Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

TOP TEN COLUMBIA POWER SYSTEM CUSTOMERS

<u>Business</u>	<u>Type of Business</u>	<u>Consumption</u>	<u>Billed Amount</u>
Maury Regional Healthcare	Healthcare	25,543,611	\$ 2,599,499
Maury County Board of Education	Education	6,922,192	\$ 899,891
Columbia Water System	Utility	8,528,997	\$ 877,681
City of Columbia Sewer Treatment	Utility	6,755,482	\$ 665,873
Tenneco Automotive Operating	Manufacturing	5,736,500	\$ 581,059
Columbia State Community College	Education	5,211,489	\$ 547,012
Samuel Sons & Co, Inc	Distributing	4,352,000	\$ 466,546
Ultium Cells	Manufacturing	4,240,800	\$ 446,819
Fauceria Interior Systems	Manufacturing	4,726,800	\$ 419,213
Walmart	Retail	4,025,000	\$ 412,461

Source: Columbia Power & Water Systems Top Customer Report.

CITY OF COLUMBIA
Broadband Telecommunication Network
Cable and Internet Rates
(as of June 30, 2023)

Standard Cable Rates:

Analog:

Basic	\$	26.00
Expanded Basic		79.00

Digital:

Digital Gateway		88.00
Premium Services ⁽¹⁾		16.50

Internet: ⁽¹⁾

Residential :

PowerNet 100.0	\$	50.00
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Commercial

Power Net Business 50.0	\$	125.00
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⁽¹⁾ Price varies based on services selected.

Source: Columbia Power and Water System ACFR Report ending June 30, 2023 prepared by Alexander Thompson and Arnold PLLC.

Statistical Section



CITY OF COLUMBIA, TENNESSEE

Statistical Section Index

Year Ended June 30, 2023

This part of the City of Columbia's comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the City's overall financial health.

Financial Trends

These schedules contain trend information to help readers understand how The City's financial performance and well-being have changed over time.

F-1 – F-5

Revenue Capacity

These Schedules contain information to help readers assess the City's most significant local revenue source is property tax.

F-6 – F-14

Debt Capacity

These schedules present information to help readers assess the affordability of the City's current levels of outstanding debt and the City's ability to issue additional debt in the future.

F-15 – F-19

Demographic and Economic Information

These schedules offer demographic and economic indicators to help readers understand the environment within which the City's financial activities take place.

F-20 – F-21

Operating Information

These schedules contain service and infrastructure data to help readers understand how the Information in the City's financial report relates to the services the City provides and the activities it performs.

F-22 – F-25

CITY OF COLUMBIA, TENNESSEE
Financial Trends Information
Net Position by Component, Last Ten Fiscal Years

	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Governmental activities										
Net investment in capital assets	\$ 69,016,295	\$ 63,106,117	\$ 59,733,813	\$ 50,846,126	\$ 43,356,315	\$ 37,005,055	\$ 33,193,547	\$ 32,818,883	\$ 32,909,034	\$ 31,342,867
Restricted	7,823,074	7,823,074	5,484,319	3,883,439	5,735,917	3,010,799	2,364,870	3,478,803	3,098,146	3,780,216
Unrestricted	38,212,129	27,092,703	19,386,900	12,902,618	13,402,063	14,557,874	11,813,052	5,395,431	607,418	17,586,563
Total governmental activities net position	<u>\$115,051,498</u>	<u>\$ 98,021,894</u>	<u>\$ 84,605,032</u>	<u>\$ 67,632,183</u>	<u>\$ 62,494,295</u>	<u>\$ 54,573,728</u>	<u>\$ 47,371,469</u>	<u>\$ 41,693,117</u>	<u>\$ 36,614,598</u>	<u>\$ 52,709,646</u>
Business-type activities										
Net investment in capital assets	\$223,299,374	\$197,980,448	\$179,536,921	\$165,026,053	\$152,674,804	\$148,642,897	\$141,999,500	\$132,591,349	\$129,324,547	\$130,443,503
Restricted	2,468,713	3,190,376	3,454,641	3,086,687	3,022,152	2,940,308	2,856,591	3,678,813	3,600,713	3,498,826
Unrestricted	52,126,751	53,392,503	52,295,589	51,454,102	51,190,631	42,847,667	40,019,395	40,923,833	39,104,761	35,942,912
Total business-type activities net position	<u>\$277,894,838</u>	<u>\$254,563,327</u>	<u>\$235,287,151</u>	<u>\$219,566,842</u>	<u>\$206,887,587</u>	<u>\$194,430,872</u>	<u>\$184,875,486</u>	<u>\$177,193,995</u>	<u>\$172,030,021</u>	<u>\$169,885,241</u>
Primary government										
Net investment in capital assets	\$292,315,669	\$261,086,565	\$239,270,734	\$215,872,179	\$196,031,119	\$185,647,952	\$175,193,047	\$165,410,232	\$162,233,581	\$161,786,370
Restricted	10,291,787	11,013,450	8,938,960	6,970,126	8,758,069	5,951,107	5,221,461	7,157,616	6,698,859	7,279,042
Unrestricted	90,338,880	80,485,206	71,682,489	64,356,720	64,592,694	57,405,541	51,832,447	46,319,264	39,712,179	53,529,475
Total primary government net position	<u>\$392,946,336</u>	<u>\$352,585,221</u>	<u>\$319,892,183</u>	<u>\$287,199,025</u>	<u>\$269,381,882</u>	<u>\$249,004,600</u>	<u>\$232,246,955</u>	<u>\$218,887,112</u>	<u>\$208,644,619</u>	<u>\$222,594,887</u>

CITY OF COLUMBIA, TENNESSEE
Financial Trends Information
Changes in Net Position, Last Ten Fiscal Years*

	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Governmental activities:										
Revenues:										
Charges for services:										
Sanitation	\$ 3,873,346	\$ 3,754,811	\$ 3,659,323	\$ 3,570,311	\$ 3,498,553	\$ 3,400,515	\$ 3,300,628	\$ 3,199,487	\$ 3,072,873	\$ 3,026,748
Police	223,487	199,244	219,805	270,767	309,915	282,264	343,034	398,131	471,324	435,329
Other	2,937,095	3,049,421	2,220,460	1,683,234	1,492,235	1,408,922	1,292,109	641,081	642,148	622,329
Operating grants and contributions	7,118,512	7,313,896	6,302,511	5,171,661	5,139,714	5,067,588	4,857,405	1,098,479	1,293,895	1,556,547
Capital grants and contributions	3,100,799	3,500,022	3,909,634	4,066,839	3,202,828	3,550,580	793,864	184,530	2,137,572	2,602,381
General Revenues:										
Property taxes	12,735,027	12,633,089	11,994,320	12,270,028	12,164,763	11,641,901	11,051,383	11,081,793	10,945,490	10,960,754
Sales taxes	18,439,114	17,022,037	15,103,504	11,294,469	10,361,255	9,913,746	9,780,603	11,958,028	10,946,492	10,173,743
Other taxes	5,558,389	5,353,236	4,412,743	4,172,435	4,124,259	3,998,178	3,859,517	4,405,484	3,610,074	3,311,692
Miscellaneous	3,700,343	(123,063)	1,166,874	689,538	668,843	309,353	480,925	936,547	390,010	256,384
Total governmental activities revenues	\$ 57,686,112	\$ 52,702,693	\$ 48,989,174	\$ 43,189,282	\$ 40,962,365	\$ 39,573,047	\$ 35,759,468	\$ 33,903,560	\$ 33,509,878	\$ 32,945,907
Expenses:										
General government	\$ 8,358,540	\$ 7,068,195	\$ 3,498,207	\$ 4,904,389	\$ 8,516,355	\$ 3,899,359	\$ 4,336,380	\$ 4,912,611	\$ 4,950,758	\$ 5,105,778
Public Safety (Police and Fire)*							15,688,701	15,009,895	14,266,192	14,280,134
Police*	10,106,126	9,612,492	9,158,314	9,175,193	8,709,492	8,135,340	-	-	-	-
Fire*	8,827,584	8,412,648	8,157,062	7,948,573	7,024,187	8,486,501	-	-	-	-
Drug education & prevention*	150,313	41,908	178,753	123,947	252,226	185,337	-	-	-	-
Public Works	5,756,901	5,275,242	4,344,436	5,522,494	3,132,110	3,701,452	4,798,422	3,573,219	4,126,015	3,399,371
Sanitation	4,001,219	3,731,455	3,597,460	3,715,202	3,126,177	3,236,094	3,336,499	3,303,006	3,126,853	3,069,085
Parks and recreation	3,392,565	3,356,165	2,662,254	2,657,486	2,397,140	1,260,967	2,331,186	2,093,393	1,921,320	1,937,519
Development Services	4,329,843	3,413,761	1,760,182	5,044,550	1,406,147	1,219,548	1,238,258	1,194,238	1,025,890	1,050,114
Community Support	-	-	-	-	-	-	196,000	307,309	276,102	279,386
Program Costs	-	-	-	-	-	-	-	-	529,149	-
Interest on long-term debt	243,604	286,039	354,672	539,630	508,725	544,665	410,190	366,541	391,387	385,680
Total governmental activities expenses	\$ 45,166,695	\$ 41,197,905	\$ 33,711,340	\$ 39,631,464	\$ 35,072,559	\$ 30,669,263	\$ 32,335,638	\$ 30,760,212	\$ 30,613,666	\$ 29,507,067
Total governmental activities net expense	12,519,417	11,504,788	15,277,834	3,557,818	5,889,806	8,903,784	3,423,830	3,143,348	2,896,212	3,438,840
Total operating transfers	1,676,108	1,770,978	1,695,015	1,580,070	2,030,758	1,898,899	1,862,142	1,935,171	1,948,656	1,832,459
Total governmental activities change in net position	\$ 14,195,525	\$ 13,275,766	\$ 16,972,849	\$ 5,137,888	\$ 7,920,564	\$ 10,802,683	\$ 5,285,972	\$ 5,078,519	\$ 4,844,868	\$ 5,271,299
Business-type activities: Power, Water & Sewer										
Program revenues:										
Charges for services										
Power	\$ 95,431,121	\$ 88,414,574	\$ 79,837,168	\$ 79,176,569	\$ 79,127,484	\$ 78,026,176	\$ 74,364,525	\$ 69,032,354	\$ 69,400,709	\$ 68,708,684
Water	17,136,600	14,700,682	13,632,433	13,074,181	13,238,872	12,827,934	11,400,802	10,172,069	10,485,022	10,294,575
Sewer	14,259,966	15,236,381	12,070,520	10,819,190	11,218,683	11,045,039	10,764,359	9,622,342	8,990,593	9,189,205
Capital grants and contributions	7,233,667	3,193,210	2,028,640	1,628,111	1,855,005	1,986,347	1,960,956	769,005	345,695	345,132
Other	1,468,286	134,515	488,489	555,719	539,449	206,611	154,061	102,347	197,852	95,984
Total business-type activities program revenues	\$ 135,529,640	\$ 121,679,362	\$ 108,057,250	\$ 105,253,770	\$ 105,979,493	\$ 104,092,107	\$ 98,644,703	\$ 89,698,117	\$ 89,419,871	\$ 88,633,580
Expenses:										
Power	\$ 89,107,963	\$ 80,447,425	\$ 72,303,524	\$ 72,437,950	\$ 73,695,218	\$ 71,183,176	\$ 69,802,825	\$ 65,247,476	\$ 66,368,295	\$ 65,151,490
Water	12,264,319	11,090,703	10,532,308	10,097,789	9,420,108	9,855,009	9,940,524	9,031,211	7,786,069	7,689,022
Sewer	9,149,739	9,094,080	8,074,317	8,458,706	8,376,694	8,042,062	8,965,341	8,320,285	8,632,740	8,471,305
Total business-type activities expenses	\$ 110,522,021	\$ 100,632,208	\$ 90,910,149	\$ 90,994,445	\$ 91,492,020	\$ 89,080,247	\$ 88,708,690	\$ 82,598,972	\$ 82,787,104	\$ 81,311,817
Total business activities net expense	25,007,619	21,047,154	17,147,101	14,259,325	14,487,473	15,011,860	9,936,013	7,099,145	6,632,767	7,321,763
Total business activities operating transfers	(1,676,108)	(1,770,978)	(1,695,015)	(1,580,070)	(2,030,758)	(1,898,899)	(1,862,142)	(1,935,171)	(1,948,656)	(1,832,459)
Total business activities change in net position	\$ 23,331,511	\$ 19,276,176	\$ 15,452,086	\$ 12,679,255	\$ 12,456,715	\$ 13,112,961	\$ 8,073,871	\$ 5,163,974	\$ 4,684,111	\$ 5,489,304
Total change in net position	\$ 37,527,036	\$ 32,551,942	\$ 32,424,935	\$ 17,817,143	\$ 20,377,279	\$ 23,915,644	\$ 13,359,843	\$ 10,242,493	\$ 9,528,979	\$ 10,760,603

* Public Safety was reported as a consolidated department until FY 2018, which during 2018 was reported Police, Fire & Rescue, and Drug Education & Prevention

CITY OF COLUMBIA, TENNESSEE
Financial Trends Information
Fund Balances, Governmental Funds, Last Ten Fiscal Years

	Fiscal Year									
	<u>2023</u>	<u>2022</u>	<u>2021</u>	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2015</u>	<u>2014</u>
General Fund										
Nonspendable	\$ 409,910	\$ 306,307	\$ 151,130	\$ 166,398	\$ 185,937	\$ 195,848	\$ 192,874	\$ 250,197	\$ 247,190	\$ 223,052
Restricted	-	-	-	-	-	-	-	83,284	83,284	83,284
Assigned	-	-	-	-	-	-	-	2,217,840	1,422,828	1,930,050
Unassigned	<u>49,225,503</u>	<u>43,160,693</u>	<u>35,402,426</u>	<u>29,197,605</u>	<u>26,109,371</u>	<u>27,919,325</u>	<u>25,575,506</u>	<u>19,604,465</u>	<u>17,438,706</u>	<u>15,034,542</u>
Total General Fund	<u>\$49,635,413</u>	<u>\$43,467,000</u>	<u>\$35,553,556</u>	<u>\$29,364,003</u>	<u>\$26,295,308</u>	<u>\$28,115,173</u>	<u>\$25,768,380</u>	<u>\$22,155,786</u>	<u>\$19,192,008</u>	<u>\$17,270,928</u>
All Other Governmental Funds										
Nonspendable	\$ 17,130	\$ 20,447	\$ 13,565	\$ 19,676	\$ 15,672	\$ 10,546	\$ 14,806	\$ 41,585	\$ 15,198	\$ 16,075
Restricted	9,350,513	6,213,209	5,514,835	3,883,439	5,731,703	3,010,799	2,364,870	2,823,446	2,441,488	3,127,243
Committed	<u>5,513,804</u>	<u>4,323,297</u>	<u>1,740,343</u>	<u>1,732,113</u>	<u>6,046,738</u>	<u>8,812,735</u>	<u>9,916,400</u>	<u>1,955,940</u>	<u>900,455</u>	<u>89,725</u>
Total all other governmental funds	<u>\$14,881,447</u>	<u>\$10,556,953</u>	<u>\$ 7,268,743</u>	<u>\$ 5,635,228</u>	<u>\$11,794,113</u>	<u>\$11,834,080</u>	<u>\$12,296,076</u>	<u>\$ 4,820,971</u>	<u>\$ 3,357,141</u>	<u>\$ 3,233,043</u>

CITY OF COLUMBIA, TENNESSEE
Financial Trends Information
Changes in Fund Balances, Governmental Funds, Last Ten Fiscal Years

	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Revenues:										
Taxes	\$ 36,783,726	\$ 35,074,465	\$ 31,574,594	\$ 27,763,948	\$ 26,448,519	\$ 25,425,553	\$ 24,944,326	\$ 23,813,515	\$ 21,993,026	\$ 21,252,380
Licenses and permits	2,241,184	2,604,458	1,737,096	1,189,603	930,837	866,191	817,389	621,717	318,425	307,459
Fines and forfeitures	534,812	226,437	360,551	352,176	430,636	412,894	342,684	342,812	403,575	403,800
Intergovernmental revenues	7,642,743	8,428,701	9,040,012	7,687,250	6,081,799	7,314,395	5,361,391	4,972,474	6,767,528	6,179,248
Charges for services	4,311,811	4,170,424	3,964,403	3,980,230	3,920,566	3,801,855	3,763,458	3,542,605	3,384,995	3,345,627
Interest	1,256,724	(430,030)	577,981	557,952	501,537	159,545	130,698	100,266	85,607	76,814
Other	7,260,460	3,654,226	1,480,158	1,853,905	395,222	275,172	269,416	381,938	359,346	317,242
Total Revenues	60,031,460	53,728,681	48,734,795	43,385,064	38,709,116	38,255,605	35,629,362	33,775,327	33,312,502	31,882,570
Other financing sources:										
Bond/loan proceeds, local government contributions and net operating transfers in	6,233,347	6,441,762	8,653,655	3,914,247	8,689,636	4,424,137	13,478,679	7,496,890	5,160,224	3,017,863
Total other financing sources	6,233,347	6,441,762	8,653,655	3,914,247	8,689,636	4,424,137	13,478,679	7,496,890	5,160,224	3,017,863
Total Revenues and Other financing sources	\$ 66,264,807	\$ 60,170,443	\$ 57,388,450	\$ 47,299,311	\$ 47,398,752	\$ 42,679,742	\$ 49,108,041	\$ 41,272,217	\$ 38,472,726	\$ 34,900,433
Expenditures:										
Current										
General government	\$ 10,513,265	\$ 7,541,557	\$ 6,030,151	\$ 7,457,881	\$ 8,708,490	\$ 5,136,311	\$ 5,456,600	\$ 4,793,680	\$ 4,881,980	\$ 4,634,131
Public works	8,387,370	9,091,926	7,501,925	8,350,224	7,270,958	6,982,741	7,373,191	6,258,925	6,813,430	5,927,370
Development Services	1,642,138	1,704,448	1,696,532	1,512,299	1,376,561	1,242,388	1,238,258	1,216,022	1,083,598	1,085,107
Public safety*							15,105,192	14,704,229	14,618,819	14,114,370
Police*	10,803,461	9,908,512	9,184,528	8,737,795	8,699,061	8,808,581	-	-	-	-
Fire*	8,640,298	8,035,930	8,080,510	7,834,800	7,892,692	8,601,871	-	-	-	-
Drug education & prevention*	150,313	41,908	144,253	108,946	227,226	165,337	-	-	-	-
Parks and recreation	3,015,535	2,758,457	2,425,763	2,398,037	2,527,934	2,170,239	1,975,918	1,790,542	1,741,159	1,731,306
Industrial Development Board **	2,687,705	1,709,313	63,650	3,532,251	29,586	-	-	-	-	-
Community support/other	-	-	-	-	-	-	196,000	307,559	276,352	279,886
Capital outlay	2,229,145	1,913,766	6,090,062	6,688,256	6,063,649	3,502,603	2,627,269	2,287,751	4,469,594	2,326,574
Debt service										
Interest	318,280	360,714	403,404	530,503	508,689	544,629	459,870	370,157	390,732	386,788
Principal	1,327,151	1,284,750	1,374,276	1,351,346	1,532,860	1,491,757	1,100,545	1,043,836	840,317	812,029
Total Expenditures	\$ 49,714,661	\$ 44,351,281	\$ 42,995,054	\$ 48,502,338	\$ 44,837,706	\$ 38,646,457	\$ 35,532,843	\$ 32,772,701	\$ 35,115,981	\$ 31,297,561

* Public Safety was reported as a consolidated department until FY 2018, which during 2018 was reported Police, Fire & Rescue, and Drug Education & Prevention

** Created in 2019

CITY OF COLUMBIA, TENNESSEE
Financial Trend Information
Changes in Fund Balances, Governmental Funds, Last Ten Fiscal Years (continued)

	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Other financing uses:										
Net transfers out	\$ 4,557,239	\$ 4,617,508	\$ 6,570,328	\$ 1,887,163	\$ 4,420,878	\$ 2,148,488	\$ 2,487,499	\$ 4,071,907	\$ 1,311,568	\$ 1,185,404
Total other financing uses	<u>4,557,239</u>	<u>4,617,508</u>	<u>6,570,328</u>	<u>1,887,163</u>	<u>4,420,878</u>	<u>2,148,488</u>	<u>2,487,499</u>	<u>4,071,907</u>	<u>1,311,568</u>	<u>1,185,404</u>
 Total Expenditures and Other financing uses	<u>54,271,900</u>	<u>48,968,789</u>	<u>49,565,382</u>	<u>50,389,501</u>	<u>49,258,584</u>	<u>40,794,945</u>	<u>38,020,342</u>	<u>36,844,608</u>	<u>36,427,549</u>	<u>32,482,965</u>
 Net change in fund balances	<u>\$ 11,992,907</u>	<u>\$ 11,201,654</u>	<u>\$ 7,823,068</u>	<u>\$ (3,090,190)</u>	<u>\$ (1,859,832)</u>	<u>\$ 1,884,797</u>	<u>\$ 11,087,699</u>	<u>\$ 4,427,609</u>	<u>\$ 2,045,177</u>	<u>\$ 2,417,468</u>
 Debt services as a percentage of non-capital expenditures	3.75%	4.67%	6.28%	6.39%	6.02%	6.37%	4.81%	4.64%	4.04%	4.14%

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Assessed Value and Estimated Actual Value of Taxable Property, Last Ten Years

Fiscal Year		Estimated Actual Value			Assessed Value*	Taxable Assessed Value as a %	Total Direct Rate***
		Real Property	Personal Property	Total		of Actual Taxable Value	
2023	**	\$ 4,847,742,100	\$ 364,488,262	\$ 5,212,230,362	\$ 1,523,175,566	29.22 %	0.8251
2022		3,211,188,800	338,214,015	3,549,402,815	1,054,472,630	29.71 %	1.1597
2021		3,078,824,700	311,093,155	3,389,917,855	1,011,747,638	29.85 %	1.1597
2020		2,938,037,800	442,041,372	3,380,079,172	1,028,588,395	30.43 %	1.1597
2019	**	2,815,314,400	447,712,800	3,263,027,200	997,054,300	30.56 %	1.1597
2018		2,151,471,600	383,091,138	2,534,562,738	777,040,550	30.66 %	1.4400
2017		2,063,683,000	351,532,609	2,415,215,609	740,688,148	30.67 %	1.4400
2016		2,029,379,200	299,998,509	2,329,377,709	722,059,087	31.00 %	1.4400
2015	**	2,008,179,900	270,076,101	2,278,256,001	705,435,248	30.96 %	1.4400
2014		2,293,376,980	272,880,280	2,566,257,260	710,987,445	27.71 %	1.4400

* Assessed value information does not include public utility assessments. Totals for exemptions are not available.

** Maury County property reappraisal became effective in the 2015, 2019 and 20203 fiscal years.

*** Per \$100 of assessed value

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Direct and Overlapping Property Tax Rates, Last Ten Fiscal Years

Fiscal Year	Direct Rate City **	Overlapping Rate*** Maury County**	Combined Totals**
2023 *	0.8251	1.9100	2.7351
2022	1.1597	2.2364	3.3961
2021	1.1597	2.2364	3.3961
2020	1.1597	2.2364	3.3961
2019 *	1.1597	2.2364	3.3961
2018	1.4400	2.8150	4.2550
2017	1.4400	2.8150	4.2550
2016	1.4400	2.6200	4.0600
2015 *	1.4400	2.6200	4.0600
2014	1.4400	2.5970	4.0370

* Property reappraisals became effective in the 2015, 2019 and 2023 fiscal years. Accordingly, a new tax rate was determined and certified by the State Board of Equalization.

** Per \$100 of assessed valuation

***Overlapping rates are those of Maury County government that apply to property owners within the City of Columbia.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Principal Property Taxpayers, Fiscal Years 2023 and 2014*

Taxpayer	Fiscal Year 2023			Fiscal Year 2014		
	Taxable Assessed Value**	Rank 2022	Percentage of Total City Taxable Assessed Value	Taxable Assessed Value**	Rank 2013	Percentage of Total City Taxable Assessed Value
Public Utilities:						
Atmos Energy Corporation	\$ 11,945,848		0.8 %	\$ 7,179,784		1.0 %
Bell South Telecommunications	****		****	\$ 5,806,048		0.8 %
United Cities Gas Company	****		****	****		****
Columbia Power System	****		****	****		****
Columbia Water System	****		****	****		****
Other real and personal property:						
TN Farmers Assurance Co.	****		****	\$ 29,497,180	1	4.1 %
TN Farmers Life Ins. Co.	\$ 38,476,304	1	2.5 %	\$ 26,089,633	2	3.7 %
TN Farmers Mutual Insurance Co.	\$ -		- %			
Arden Village Apartments	\$ 8,682,360	3	0.6 %	****		****
TRH Health Insurance	\$ 9,568,826	2	0.6 %	\$ 4,861,052	5	\$ 1
TN Farm Bureau Fed Inc.	\$ 7,441,400	4	0.5 %	\$ 5,848,720	4	0.8 %
Ergh Investors LLC	\$ 7,265,240	5	0.5 %	****		****
Wal-Mart Real Estate	\$ 6,100,000	6	0.4 %	\$ 6,641,920	3	0.9 %
Tristar Maury Behavioral Healthcare LLC	\$ 5,441,360	10	0.4 %	****		****
Nhc-Maury Regional Healthcare LLC	\$ 6,043,640	7	0.4 %	****	6	****
Bostelman Realty LLC	\$ 5,490,470	9	0.4 %	****		****
Burchell Properties	\$ 5,625,070	8	\$ 0	\$ 3,334,155	9	0.5 %
First Farmers & Merchants	****		****	\$ 4,641,393	6	0.7 %
Lakes of Columbia	****		****	\$ 4,147,796	7	0.6 %
National Health Investors	****		****	\$ 3,121,280	10	0.4 %
James Campbell Medical	****		****	****		**** %
Community First Bank &	****		****	\$ 3,459,976	8	0.5 %
UMH Countryside Village	****		****	****		****
Total	\$ 112,080,518		7.4 %	\$ 104,628,937		14.7 %

*Source - 2022 & 2013 City Tax Book

**Total Assessment Value as of

January 1, 2022.....	\$ 1,054,472,630	January 1, 2013.....	\$ 695,103,805
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Property taxes are levied as of November 1 on property values assessed as of January 1 that same year.

***2022 - No Assessed Value Listed for these taxpayers. The following amounts were paid in lieu of taxes:

Columbia Electric System \$1,236,788.56, Columbia Water System \$162,389.30, and Atmos Gas \$589,785.25.

***2013 - No Assessed Value Listed for these taxpayers. The following amounts were paid in lieu of taxes:

Columbia Electric System \$1,183,048.65, Columbia Water System \$165,825.11, and Atmos Gas \$446,865.41.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Property Tax Levies and Collections, Last Ten Fiscal Years

Fiscal Year Ended June 30	Taxes Levied for the Fiscal Year	Collected within the Fiscal Year of the Levy		Collections in Subsequent Years	Total Collections to Date	
		Amount	Percentage of Levy		Amount	Percentage of Levy
2023	\$ 12,795,025	\$ 12,398,395	96.90 %	\$ -	\$ 12,398,395	96.90 %
2022	\$ 12,500,116	\$ 12,242,770	97.94 %	\$ 244,176	\$ 12,486,946	99.89 %
2021	\$ 11,971,756	\$ 11,628,707	97.13 %	\$ 330,272	\$ 11,958,979	99.89 %
2020	\$ 12,198,049	\$ 11,826,303	96.95 %	\$ 365,038	\$ 12,191,341	99.95 %
2019	\$ 11,820,739	\$ 11,426,730	96.67 %	\$ 392,039	\$ 11,818,769	99.98 %
2018	\$ 11,492,343	\$ 11,107,015	96.65 %	\$ 456,930	\$ 11,563,945	100.62 %
2017	\$ 10,986,884	\$ 10,603,511	96.51 %	\$ 393,854	\$ 10,997,365	100.10 %
2016	\$ 10,735,192	\$ 10,322,672	96.16 %	\$ 334,185	\$ 10,656,857	99.27 %
2015	\$ 10,466,717	\$ 9,977,660	95.33 %	\$ 484,030	\$ 10,461,690	99.95 %
2014	\$ 10,513,084	\$ 9,980,984	94.94 %	\$ 516,907	\$ 10,497,891	99.86 %

Note: Taxes are levies each November 1 on the assessed value as of the prior January 1. Taxes are due in one payment on November 1 and are delinquent on December 16 each tax year.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Local Sales Tax Revenue by Industry, Principal Employers, Fiscal Years 2023 and 2014

Sector	Fiscal Year 2023				Fiscal Year 2014			
	Number of Filers	Percentage of Total	Tax Liability	Percentage of Total	Number of Filers	Percentage of Total	Tax Liability	Percentage of Total
1. Retail Trade	565	47.68%	\$ 21,811,749	73.85%	642	59.83%	\$ 10,781,744	81.47%
2. Services	242	20.42%	2,911,220	9.86%	241	22.46%	1,087,223	8.22%
3. Manufacturing	84	7.09%	1,330,170	4.50%	48	4.47%	254,538	1.92%
4. Wholesale Trade	51	4.30%	1,976,973	6.69%	52	4.85%	531,881	4.02%
5. Construction	24	2.03%	61,182	0.21%	14	1.30%	22,256	0.17%
6. Finance Insurance Real Estate	16	1.35%	12,171	0.04%	12	1.12%	7,579	0.06%
7. Transportation and Utilites	12	1.01%	559,500	1.89%	10	0.93%	355,298	2.68%
8. Agriculture	13	1.10%	23,107	0.08%	7	0.65%	7,168	0.05%
9. Other, Non Classified	178	15.02%	847,987	2.87%	47	4.38%	186,206	1.41%
Total	<u>1,185</u>	<u>100.00%</u>	<u>\$ 29,534,059</u>	<u>100.00%</u>	<u>1,073</u>	<u>100.00%</u>	<u>\$ 13,233,893</u>	<u>100.00%</u>

Source: Tennessee Department of Revenue, Research Division.

Notes:

1. Figures subject to revision due to amended taxpayer returns.
2. Figures represent local sales tax collected by taxpayers during the period, not disbursements from the Department of Revenue. Thus, amounts presented above do not match to amounts reflected within the financial report.
3. Does not include Columbia 's share of county clerk or out-of-state taxpayer amounts.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Taxable Sales by Category, Last Ten Calendar Years

Category	Calendar Year									
	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
1 Apparel Stores	\$ 22,603,877	\$ 22,963,056	\$ 15,865,740	\$ 17,835,994	\$ 16,260,638	\$ 15,126,294	\$ 16,015,993	\$ 15,458,322	\$ 15,200,271	\$ 9,641,247
2 General Merchandise Stores	148,544,164	140,987,008	135,306,060	127,515,478	121,669,712	119,938,999	119,811,085	112,166,050	108,897,056	111,607,346
3 Food Stores	134,420,717	128,384,898	130,021,645	117,126,388	114,532,284	108,776,435	103,841,632	97,131,245	91,615,035	88,400,843
4 Eating and Drinking Places	137,255,401	121,145,271	99,415,694	106,342,301	98,824,286	96,141,796	91,680,136	87,131,189	80,698,112	76,545,372
5 Furniture Stores	22,582,586	21,759,272	18,133,941	15,130,821	16,638,181	17,107,137	17,333,905	14,196,985	13,552,554	17,533,343
6 Building Materials	102,605,075	93,028,516	84,630,819	72,247,056	70,947,858	71,955,819	65,573,150	59,236,352	51,930,626	46,049,173
7 MV Dealers and Service Stations	118,444,822	115,952,817	104,669,534	99,870,451	94,168,932	90,062,144	85,524,943	76,237,749	70,077,597	66,897,295
8 Other Retail	77,092,162	73,919,681	67,721,651	67,414,082	66,154,075	65,990,187	66,128,568	64,482,389	58,937,401	57,405,838
9 All Other Outlets	274,637,615	240,568,886	199,715,225	181,693,829	172,479,999	154,739,785	154,554,632	143,067,587	126,036,249	98,414,318
Total	<u>\$ 1,038,186,419</u>	<u>\$ 958,709,405</u>	<u>\$ 855,480,309</u>	<u>\$ 805,176,400</u>	<u>\$ 771,675,965</u>	<u>\$ 739,838,596</u>	<u>\$ 720,464,044</u>	<u>\$ 669,107,868</u>	<u>\$ 616,944,901</u>	<u>\$ 572,494,775</u>

Source: Tennessee Department of Revenue, Research Division.

Notes:

1. Figures subject to revision due to amended taxpayer returns.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Direct and Overlapping Sales Tax Rates, Last Ten Fiscal Years

<u>Fiscal Year</u>	<u>City Direct Rate*</u>
2023	2.75%
2022	2.75%
2021	2.75%
2020 **	2.75%
2019	2.25%
2018	2.25%
2017	2.25%
2016	2.25%
2015	2.25%
2014	2.25%

* Maury County retains half of the 2.75% City sales tax as funding for the school system.

** In February 2020, a referendum was approved increasing local option sales tax by 0.50%, with an effective date of May 1, 2020.

CITY OF COLUMBIA, TENNESSEE
Revenue Capacity Information
Schedule of Electric Rates (Unaudited), Last 10 Fiscal Years ****

COLUMBIA POWER SYSTEM

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
RESIDENTIAL RATE										
Customer charge per month	\$ 17.08	\$ 17.08	\$ 17.08	\$ 17.08	\$ 17.08	\$ 17.08	\$ 17.08	\$ 14.61	\$ 12.76	\$ 12.76
Energy charge per kWh per month	0.07805	0.07805	0.09636	0.07805	0.07800	0.07109	0.07458	0.07300	0.07022	0.06837
GENERAL POWER RATE***										
PART A (DEMAND 0 - 5,000 kW)										
1. Up to 50 kW and/or 15,000 kWh										
Customer charge per month	\$ 20.42	\$ 20.42	\$ 20.42	\$ 20.42	\$ 20.42	\$ 20.42	\$ 20.42	\$ 20.42	\$ 18.65	\$ 18.65
Energy charge per kWh per month	0.08921	0.08921	0.10729	0.08921	0.08916	0.08178	0.08515	0.08350	0.08237	0.08090
2. From 51 kW to 1,000 kW and/or more than 15,000 kWh										
Customer charge per month	\$ 65.76	\$ 65.76	\$ 65.76	\$ 65.76	\$ 65.76	\$ 65.76	\$ 65.76	\$ 65.76	\$ 34.19	\$ 34.19
Demand charge:										
First 50 kW per month	\$ 14.10	\$ 14.10	\$ 14.10	\$ 14.10	\$ 14.09	\$ 13.80	\$ 13.55	\$ 13.30	\$ 13.30	\$ 13.02
Energy charge:										
First 15,000 kWh per month	0.09339	0.09339	0.11147	0.09339	0.09337	0.08597	0.08932	0.08765	0.08577	0.08401
Additional kWh per month	0.04488	0.04488	0.06271	0.04488	0.04488	0.03934	0.04257	0.04171	0.03983	0.03896
3. Demand greater than 1,000 kW										
Customer charge per month	\$ 314.22	\$ 314.22	\$ 314.22	\$ 314.22	\$ 314.22	\$ 314.22	\$ 314.22	\$ 314.22	\$ 130.54	\$ 130.54
Demand charge:										
First 1,000 kW per month*	\$ 13.66	\$ 13.66	\$ 13.66	\$ 13.66	\$ 17.65	\$ 13.36	\$ 13.11	\$ 12.86	\$ 12.84	\$ 12.84
Additional kW per month*	\$ 12.37	\$ 12.37	\$ 12.37	\$ 12.37	\$ 16.36	\$ 12.07	\$ 11.82	\$ 11.57	\$ 11.57	\$ 11.55
Energy charge:										
All kWh per month	0.04657	0.04657	0.06440	0.04657	0.04656	0.04100	0.04419	0.04330	0.04284	0.04279
PART B (DEMAND 5,001 - 15,000 kW)**										
Customer charge per month	N/A	N/A	N/A	N/A	N/A	N/A	\$ 1,850	\$ 1,850	\$ 1,850	\$ 1,850
Demand charge:										
Per kW per month*	N/A	N/A	N/A	N/A	N/A	N/A	\$ 19.92	\$ 19.48	\$ 22.70	\$ 22.16
Energy charge:										
All kWh per month	N/A	N/A	N/A	N/A	N/A	N/A	0.03018	0.02949	0.02680	0.02614
First 620 kWh per kW per month										
Additional kWh per month										
PART C (DEMAND 15,001 - 25,000 kW)**										
Customer charge per month	N/A	N/A	N/A	N/A	N/A	N/A	\$ 1,850	\$ 1,850	\$ 1,850	\$ 1,850
Demand charge:										
Per kW per month*	N/A	N/A	N/A	N/A	N/A	N/A	\$ 19.41	\$ 18.87	\$ 22.19	\$ 21.65
Energy charge:										
All kWh per month	N/A	N/A	N/A	N/A	N/A	N/A	0.02958	0.02891	0.02693	0.02627
First 620 kWh per kW per month										
Additional kWh per month										
PART D (DEMAND > 25,001 kW)**										
Customer charge per month	N/A	N/A	N/A	N/A	N/A	N/A	\$ 1,850	\$ 1,850	\$ 1,850	\$ 1,850
Demand charge:										
Per kW per month*	N/A	N/A	N/A	N/A	N/A	N/A	\$ 19.30	\$ 18.86	\$ 25.84	\$ 25.20
Energy charge:										
Per kW per month	N/A	N/A	N/A	N/A	N/A	N/A	0.02723	0.02661	0.01949	0.01902
OUTDOOR LIGHTING										
Street, Parks, and Athletic Fields										
Customer charge	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50	\$ 2.50
Each kWh	0.05112	0.05112	0.06943	0.05112	0.05111	0.04164	0.04896	0.04818	0.04528	0.04348
Plus investment charge										
Security Lighting										
Energy charge:										
All kWh	0.05112	0.05112	0.06943	0.05112	0.05111	0.04164	0.04896	0.04818	0.04528	0.04348

* Establishes minimum bill requirements

** Minimum bill or contract demand minimum is applicable, facilities rental and reactive demand charges.

*** Seasonal customers add \$.0133 (1.33 cents) to first 15,000 kWh and \$4.00 per kW to billed demand charges.

**** Base rates shown. Rates will adjust quarterly for TVA Fuel Cost Adjustment.

Note: Electric rates require approval by the Tennessee Valley Authority.

CITY OF COLUMBIA, TENNESSEE

Revenue Capacity Information

Schedule of Primary Power & Water System Revenue by Payor Type (Unaudited), Current Year and 9 Years Ago

COLUMBIA POWER SYSTEM

Fiscal Year 2023			Fiscal Year 2014		
Customer Type	Gross Revenue	%	Customer Type	Gross Revenue	%
Residential	\$ 46,157,212	55.07%	Residential	\$ 32,520,610	52.29%
Commercial	9,482,632	11.31%	Commercial	7,365,051	11.84%
Industrial	27,492,837	32.80%	Industrial	21,266,224	34.20%
Street and athletic	258,812	0.31%	Street and athletic	655,125	1.05%
Outdoor Lighting	421,559	0.50%	Outdoor Lighting	380,348	0.61%
Total energy sales before bad debt expense	<u>\$ 83,813,052</u>	<u>100.00%</u>	Total energy sales before bad debt expense	<u>\$ 62,187,358</u>	<u>100.00%</u>

COLUMBIA WATER SYSTEM

Fiscal Year 2023			Fiscal Year 2014		
Customer Type	Gross Revenue	%	Customer Type	Gross Revenue	%
Residential	\$ 8,416,708	51.63%	Residential	\$ 5,581,360	59.42%
Commercial	2,712,766	16.64%	Commercial	1,618,488	17.23%
Industrial	1,634,418	10.03%	Industrial	890,145	9.48%
Public and private fire protection	132,299	0.81%	Public and private fire protection	115,955	1.23%
Sales for resale	3,365,540	20.65%	Sales for resale	1,184,755	12.61%
Bulk and flat rates	39,932	0.24%	Bulk and flat rates	1,812	0.02%
Total water sales before bad debt expense	<u>\$ 16,301,663</u>	<u>100.00%</u>	Total water sales before bad debt expense	<u>\$ 9,392,515</u>	<u>100.00%</u>

CITY OF COLUMBIA, TENNESSEE
Debt Capacity Information
Ratios of Outstanding Debt by Type, Last Ten Fiscal Years

Fiscal Year	Population*	Per Capita Income**	<u>Governmental Activities</u>		<u>Business-type Activities</u>		Total Primary Government	Percentage of Personal Income ^a	Per Capita ^a
			General Obligation Bonds***	Notes Payable	Revenue Bonded Debt****	General Obligation Bonds***			
2023	45,792	\$ 37,625	\$ 11,223,699	\$ 353,324	\$ 9,610,620	\$ 7,364,599	\$ 28,552,242	0.13%	\$ 623.52
2022	43,340	\$ 31,873	\$ 12,303,774	\$ 675,075	\$ 10,682,703	\$ 8,730,244	\$ 32,391,796	0.10%	\$ 747.39
2021	41,690	\$ 28,083	\$ 13,348,850	\$ 989,425	\$ 15,250,253	\$ 9,696,213	\$ 39,284,741	0.07%	\$ 942.31
2020	40,494	\$ 25,685	\$ 14,328,526	\$ 1,436,385	\$ 21,892,128	\$ 6,275,000	\$ 43,932,039	0.06%	\$ 1,084.90
2019	39,475	\$ 27,852	\$ 15,169,470	\$ 1,512,731	\$ 24,336,794	\$ 7,475,000	\$ 48,493,995	0.06%	\$ 1,228.47
2018	38,407	\$ 26,159	\$ 16,079,955	\$ 2,145,591	\$ 26,989,087	\$ 8,375,000	\$ 53,589,633	0.05%	\$ 1,395.31
2017	37,316	\$ 24,437	\$ 17,657,639	\$ 1,835,149	\$ 29,560,082	\$ 9,265,000	\$ 58,317,870	0.04%	\$ 1,562.81
2016	36,569	\$ 23,509	\$ 8,323,928	\$ 3,142,893	\$ 37,173,174	\$ 10,135,000	\$ 58,774,995	0.04%	\$ 1,607.24
2015	35,935	\$ 22,944	\$ 8,658,990	\$ 2,765,757	\$ 50,461,504	\$ -	\$ 61,886,251	0.04%	\$ 1,722.17
2014	35,431	\$ 22,674	\$ 9,114,786	\$ 1,251,074	\$ 53,581,185	\$ -	\$ 63,947,045	0.04%	\$ 1,804.83

* Fiscal year population reported using annual year prior 2020 Census and estimated population statistics by the US Census Bureau.

** US Census Bureau America Community Survey annual population statistics; ESRI estimates for two most recent years.

*** Presented net of original issuance discounts and premiums

**** Includes Revenue and Revenue & Tax Bonds, net of original issuance discounts and premiums and loss on refunding

^a See Schedule 19 for personal income and population data. These ratios are calculated using personal income data from the prior calendar year and estimated population at June 30th fiscal year end.

CITY OF COLUMBIA, TENNESSEE
Debt Capacity Information
Ratios of General Bonded Debt Outstanding, Last Ten Fiscal Years

Fiscal Year	Population*	Actual Value of Taxable Property**	General Bonded Debt ***	Percent of General Obligation Debt to Actual Value	Bonded Debt Per Capita
2023	45,792	\$ 5,212,230,362	\$ 18,941,622	0.36%	\$ 413.64
2022	43,340	\$ 3,549,402,815	\$ 21,034,018	0.59%	\$ 485.33
2021	41,690	\$ 3,389,917,855	\$ 23,045,063	0.68%	\$ 552.77
2020	40,494	\$ 3,380,079,172	\$ 20,603,526	0.61%	\$ 508.80
2019	39,475	\$ 3,263,027,200	\$ 22,644,470	0.69%	\$ 573.64
2018	38,407	\$ 2,534,562,738	\$ 24,454,955	0.96%	\$ 636.73
2017	37,316	\$ 2,415,215,609	\$ 26,922,639	1.11%	\$ 721.48
2016	36,569	\$ 2,329,367,709	\$ 18,458,928	0.79%	\$ 504.77
2015	35,935	\$ 2,278,256,001	\$ 8,658,990	0.38%	\$ 240.96
2014	35,431	\$ 2,566,257,260	\$ 9,114,786	0.36%	\$ 257.25

* Based on US Census Bureau America Community Survey annual population statistics estimating two most recent years.

** Property value information does not include public utility assessments.

*** Includes general obligation bonds issued by governmental funds and proprietary funds, net of original issuance discounts and premiums.

CITY OF COLUMBIA, TENNESSEE
Debt Capacity Information
Direct and Overlapping Governmental Activities Debt

Jurisdiction	Net Total Debt Outstanding *	Percentage Applicable to City	Estimated Share of Overlapping Debt
Direct:			
City of Columbia	\$ 11,577,023	100.00%	\$ 11,577,023
Overlapping:			
Maury County	272,401,259	47.25% **	128,720,356
Total	<u>\$ 283,978,282</u>		<u>\$ 140,297,379</u>

* Excluding debt financed by special assessments and proprietary funds.

**Based upon assessed value of property in the 2022 tax year in:

County	\$ 3,223,382,492
City	\$ 1,523,175,566

CITY OF COLUMBIA, TENNESSEE
Debt Capacity Information
Legal Debt Margin Information, Last Ten Fiscal Years

	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Assessed value	\$ 1,523,175,566	\$ 1,054,472,630	\$ 1,011,747,638	\$ 1,028,588,395	\$ 997,054,270	\$ 777,040,550	\$ 740,688,148	\$ 722,059,087	\$ 705,435,248	\$ 710,987,445
General obligation bonds*	\$ 18,941,622	\$ 21,034,018	\$ 23,045,063	\$ 20,603,526	\$ 22,644,470	\$ 24,454,955	\$ 26,922,639	\$ 18,458,928	\$ 8,658,990	\$ 9,114,786
Debt as a percent of assessed value	1.24%	1.99%	2.28%	2.00%	2.27%	3.15%	3.63%	2.56%	1.23%	1.28%

*Includes general obligation bonds issued by governmental funds and proprietary funds, net of original issuance discounts and premiums.

Note: The City has no legal debt limit.

CITY OF COLUMBIA, TENNESSEE
Debt Capacity Information
Pledged-Revenue Coverage, Last Ten Fiscal Years

SEWER SYSTEM

Year	Gross Revenues*	Operating Expense	Available for Debt Service	Debt Service Requirements			Times Coverage
				Principal	Interest	Total	
2023	#####	\$ 8,934,576	\$ 5,325,390	\$ 1,355,000	\$ 214,757	\$ 1,569,757	3.39
2022	15,236,381	8,705,734	6,530,647	1,285,000	178,554	1,463,554	4.46
2021	12,070,520	7,756,360	4,314,160	1,210,000	235,849	1,445,849	2.98
2020	10,819,190	8,086,669	2,732,521	1,510,000	313,962	1,823,962	1.50
2019	11,218,683	8,056,117	3,162,566	1,485,000	507,825	1,992,825	1.59
2018	11,045,039	7,823,366	3,221,673	1,455,000	377,742	1,832,742	1.76
2017	10,764,359	8,497,325	2,267,034	1,415,000	409,040	1,824,040	1.24
2016	9,622,342	7,814,874	1,807,468	1,250,000	544,838	1,794,838	1.01
2015	8,990,593	7,968,083	1,022,510	1,215,000	722,978	1,937,978	0.53
2014	9,163,048	7,266,166	1,896,882	1,175,000	759,705	1,934,705	0.98

*Operating revenues excludes capital contributions and interest income

POWER SYSTEM

Fiscal Year	Gross Revenues*	Operating Expense	Available for Debt Service	Debt Service Requirements			Times Coverage
				Principal	Interest	Total	
2023	#####	#####	\$ 3,499,154	\$ 950,000	\$ 83,119	\$ 1,033,119	3.39
2022	88,414,574	80,398,117	8,016,457	930,000	66,940	996,940	8.04
2021	79,837,168	71,861,524	7,975,644	910,000	84,846	994,846	8.02
2020	79,176,569	72,024,209	7,152,360	900,000	100,956	1,000,956	7.15
2019	79,127,484	74,166,521	4,960,963	1,036,701	129,800	1,166,501	4.25
2018	78,026,176	71,162,091	6,864,085	910,642	134,078	1,044,720	6.57
2017	74,364,525	69,132,066	5,232,459	1,203,905	388,901	1,592,806	3.29
2016	69,032,354	64,793,830	4,238,524	1,140,000	414,147	1,554,147	2.73
2015	68,708,684	64,361,233	4,347,451	970,000	736,646	1,706,646	2.55
2014	68,708,684	64,361,233	4,347,451	940,000	771,953	1,711,953	2.54

*Operating revenues excludes capital contributions and interest income

WATER SYSTEM

Fiscal Year	Gross Revenues*	Operating Expense	Available for Debt Service	Debt Service Requirements			Times Coverage
				Principal	Interest	Total	
2023	#####	#####	\$ 5,061,463	\$ 1,250,000	\$ 258,650	\$ 1,508,650	3.35
2022	14,700,682	10,745,652	3,955,030	1,265,000	409,217	1,674,217	2.36
2021	13,632,433	10,048,355	3,584,078	1,215,000	501,056	1,716,056	2.09
2020	13,074,181	9,566,948	3,507,233	1,165,000	547,894	1,712,894	2.05
2019	13,238,872	9,413,561	3,825,311	1,125,000	591,656	1,716,656	2.23
2018	12,827,934	9,261,333	3,566,601	1,085,000	631,847	1,716,847	2.08
2017	11,400,802	9,276,703	2,124,099	1,050,000	669,838	1,719,838	1.24
2016	10,172,069	8,310,864	1,861,205	1,010,000	705,288	1,715,288	1.09
2015	10,485,022	7,442,777	3,042,245	975,000	737,488	1,712,488	1.78
2014	10,294,575	7,319,637	2,974,938	950,000	768,638	1,718,638	1.73
2013	9,850,520	7,094,585	2,755,935	1,245,000	870,191	2,115,191	1.30

*Operating revenues excludes capital contributions and interest income

CITY OF COLUMBIA, TENNESSEE
Demographic and Economic Information
Demographic and Economic Statistics, Last Ten Years

Fiscal Year	Population^A	Personal Income^B	Per Capita Income^C	Unemployment Rate ^D
2023	45,792	\$ 1,722,924	\$ 37,625	3.30%
2022	43,340	1,381,376	31,873	4.70%
2021	41,690	1,138,471	27,308	7.70%
2020	40,494	1,040,088	25,685	7.50%
2019	39,475	1,099,458	27,852	3.40%
2018	38,407	1,004,689	26,159	3.80%
2017	37,316	911,891	24,437	3.60%
2016	36,569	859,701	23,509	4.60%
2015	35,935	824,493	22,944	5.80%
2014	35,431	803,362	22,674	6.80%

Compiled and calculated by the City of Columbia, compiled using the sources below.

Sources:

- ^A US Census Bureau America Community Survey annual population statistics estimating two most recent years.
- ^B US Census Bureau America Community Survey annual population statistics estimating two most recent years. Amounts are in 000s.
- ^C US Census Bureau America Community Survey annual population statistics; ESRI estimates for two most recent years.
- ^D City rate was obtained from the Tennessee Dept. of Labor statistics (annual average was used).

CITY OF COLUMBIA, TENNESSEE
Demographic and Economic Information
Principal Employers, Current Year and Nine Years Ago

Employer	2023			2014		
	Employees	Rank	Percentage of Total City Employment	Employees	Rank	Percentage of Total City Employment
Maury Regional Hospital	3,200	1	15.24%	2,135	1	15.33%
Maury County School System	1,886	2	8.98%	1,580	2	11.35%
Tennessee Farm Bureau & Affiliates	698	3	3.32%	625	3	4.49%
Columbia State Community College	636	4	3.03%	250	9	1.80%
Maury County Government	510	5	2.43%	266	7	1.91%
City of Columbia	400	6	1.91%	373	5	2.68%
Wiremasters Inc.	228	7	1.09%			
Kings Daughter's School	220	8	1.05%	180	10	1.29%
NHC Healthcare	133	9	0.63%	255	8	1.83%
Sleep Solutions & Services LLC	123	10	0.59%			
Wal Mart				500	4	3.59%
First Farmers & Merchants National Bank				266	6	1.91%
Total	8,034		38.26%	6,430		46.18%
Total Employment *				Total Employment **		
20,996				13,925		

Source: Source: Number of employees provided by City of Columbia, total employment numbers from U.S. Department of Labor, Bureau of Labor Statistics

* number employed within City of Columbia as of June 30, 2023

**number employed within City of Columbia as of June 30, 2014

CITY OF COLUMBIA, TENNESSEE
Operating Information
Full-time Authorized Positions/City Government Employees by Function/Program, Last Ten Fiscal Years

Function/Program	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
General government										
City Manager*	2	2	4	4	3	3	3	3	3	3
Tourism and Marketing	3	3	-	-	-	-	-	-	-	-
Management Information Systems	4	4	3	3	4	4	4	4	4	4
Emergency Management	0	0	0	0	0	0	1	1	1	1
Finance	5	5	5	5	5	4	4	4	4	4
City Recorder	6	6	6	6	6	7	8	8	8	8
Personnel	3	3	3	3	3	3	3	3	3	3
Police										
Sworn Officers	100	95	91	90	94	90	88	88	88	88
Civilians	13	12	11	13	12	12	11	12	12	12
Fire										
Firefighters and officers	90	89	89	89	89	87	86	86	86	86
Non-Suppression personnel	8	7	8	8	6	6	5	5	5	5
Sanitation	29	29	30	30	27	27	30	30	30	30
Public works										
Development Services	18	18	17	16	16	15	16	16	16	16
Public Works-Streets	46	45	45	43	43	43	44	44	44	44
Parks and recreation	25	25	26	26	24	22	36	21	23	23
Wastewater	50	50	49	48	49	49	48	48	51	51
Total	402	393	387	384	381	372	387	373	378	378

Source: City of Columbia Human Resources Department (authorized positions)

* Includes Tourism and Marketing personnel through FY 2021; Assistant City Manager included in Finance

City of Columbia, Tennessee
Operating Information
Operating Indicators by Function/Program, Last Ten Fiscal Years

Function/Program	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Police										
Calls for service (including traffic stops)	36,665	38,254	40,353	47,420	48,872	46,545	46,307	44,714	43,252	47,627
Custodial arrests	2,512	1,918	1,884	2,758	2,463	2,635	2,584	2,607	2,865	3,237
Traffic violations	1,693	1,951	2,280	1,910	3,108	1,952	1,705	1,892	2,234	3,601
Fire Department										
Emergency responses	5,216	5,134	4,748	4,561	4,273	3,445	3,984	4,266	4,104	4,095
Fires extinguished	105	134	134	137	116	118	160	114	144	135
Inspections	2,400	2,575	2,050	2,437	3,674	2,757	2,904	2,310	1,201	1,420
Sanitation										
Refuse collected (tons per day)	101	101	98	94	92	91	82	85	76	78
Other Public Works										
Streets resurfacing (miles)	<1	<1	<1	16.9	<1	<1	8	<1	11.8	<1
Sidewalks replaced/constructed (blocks)	3	2	6	5	4	4.5	3.5	6	4	3
Parks & Recreation										
Athletic permits issued	13	12	14	14	14	14	13	14	14	14
Community center /ball field admissions	153,320	136,000	121,114	75,000	125,000	117,747	107,043	103,926	98,224	90,237
Facility rentals	4,760	4,250	3,911	2,109	3,906	3,807	3,461	3,361	1,157	1,154
Sewage										
Average daily sewage treatment (thousands of gallons)	7,301	7,689	5,936	7,493	6,359	5,977	6,153	5,229	6,408	5,890

Sources: Various city departments

City of Columbia, Tennessee
Operating Information
Capital Assets Statistics by Function/Program, Last Ten Fiscal Years

Function/Program	Fiscal Year									
	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Police										
Stations	1	1	1	1	1	1	2	2	2	2
Substations	1	1	1	1	1	1	2	2	2	3
Fire Stations	5	5	5	5	5	5	5	5	5	5
Transfer station	0	0	0	0	0	0	0	0	0	0
Other Public Works										
Streets (miles)	235	231	223	221	219	215	214	212	210	200
Street lights	6,561	6,463	6,423	6,214	6,126	5,876	5,850	5,850	5,850	5,846
Traffic signals (signalized intersections)	50	48	48	48	48	47	46	45	45	44
Parks & Recreation										
Acreage	420	380	400	400	400	370	326	326	326	326
Playgrounds	9	9	10	10	10	10	9	9	9	9
Baseball/softball diamonds	16	16	18	19	19	18	17	16	16	16
Soccer/football fields	18	18	18	18	18	28	26	26	26	26
Community centers	3	3	3	3	3	4	4	4	4	4
Sewage										
Sanitary sewers (miles)	331	325	321	317	314	312	309	307	304	304
Storm sewers (miles)	123	42	42	42	42	42	42	42	42	42
Treatment capacity (thousands of gallons)	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000

Sources: Various city departments

City of Columbia, Tennessee
Schedule of Lease Requirements by Year
As of June 30, 2023

GOVERNMENTAL ACTIVITIES

<u>Year Ending June 30</u>	<u>Leases</u>		
	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2024	\$ 24,982	\$ 576	\$ 25,558
2025	13,517	151	13,668
Total	<u>\$ 38,499</u>	<u>\$ 727</u>	<u>\$ 39,226</u>

BUSINESS-TYPE ACTIVITIES

NONE

Sources: Various city departments

Single Audit Section



CITY OF COLUMBIA, TENNESSEE

Schedule of Expenditures of Federal and State Awards

For the Fiscal Year Ended June 30, 2023

FEDERAL AWARDS	Federal Assistance Listing Number	GRANTOR'S NUMBER	ACCRUED (DEFERRED) REVENUE		EXPENDITURES	ACCRUED (DEFERRED) REVENUE	
			JULY 1, 2022	RECEIPTS		JUNE 30, 2023	
U.S. Department of Housing and Urban Development							
<u>Passed through from</u>							
Tennessee Department of Economic and Community Development							
2022 "Small Cities" Grant - CDBG	14.228	33004-36223	\$ -	\$ 50,314	\$ 50,314	\$ -	
Total U.S. Department of Housing and Urban Development			-	50,314	50,314	-	
U.S. Department of Justice							
<u>Direct assistance</u>							
Federal Equitable Sharing-Asset Forfeiture Justice	16.922	N/A	-	806	806	-	
Total U.S. Department of Justice			-	806	806	-	
U.S. Department of Transportation							
<u>Passed through from</u>							
Tennessee Department of Transportation							
Surface Transp Program-US 31/US 412	20.205	PIN 125912.00	-	21,237	21,237	-	
Surface Transp Program-West 7th Street	20.205	PIN 121512.00	-	232,082	232,082	-	
Total Highway Planning and Construction Cluster			-	253,319	253,319	-	
<u>Passed through from</u>							
Governor's Highway Safety Office							
2022 Highway Safety Office Grant	20.600	Z22THS070	-	18,662	18,662	-	
2023 Highway Safety Office Grant	20.600	Z23THS066	-	14,131	14,131	-	
Total Highway Safety Cluster			-	32,793	32,793	-	
Total U.S. Department of Transportation			-	286,112	286,112	-	
U.S. Department of Treasury							
<u>Passed through from</u>							
Tennessee Department of Tourist Development							
TN Hospitality Recovery Fund - ARPA Tourism Funds	21.027	32601-75880	-	69,803	69,803	-	
Total U.S. Department of Treasury			-	69,803	69,803	-	
Environmental Protection Agency							
<u>Direct assistance</u>							
2019 Brownfields Assessment Grant	66.818	N/A	-	87,625	87,625	-	
Total Environmental Protection Agency			-	87,625	87,625	-	
U.S. Department of Homeland Security							
<u>Direct assistance</u>							
Public Assistance Grant	97.083	N/A	-	36,834	36,834	-	
Total U.S. Department of Homeland Security			-	36,834	36,834	-	
Total Federal Awards			\$ -	\$ 531,494	\$ 531,494	\$ -	
STATE FINANCIAL ASSISTANCE							
Tennessee Department of Economic and Community Development							
Mersen FastTrack Grant	N/A	N/A	-	64,517	64,517	-	
JC Ford FastTrack Grant	N/A	33006-17121	(1,500,000)	1,000,000	2,500,000	-	
Total Tennessee Department of Economic and Community Development			(1,500,000)	1,064,517	2,564,517	-	
Total State Financial Assistance			\$ (1,500,000)	\$ 1,064,517	\$ 2,564,517	\$ -	

Note: Schedule was prepared utilizing the accrual basis of accounting.

CITY OF COLUMBIA, TENNESSEE

NOTES TO SCHEDULE OF EXPENDITURES OF FEDERAL AND STATE AWARDS

June 30, 2023

Note 1. Basis of Presentation

The accompanying schedule of expenditures of federal and state awards includes the federal and state grant activity of the City and is presented on the accrual basis of accounting. The information in this schedule is presented in accordance with the requirements of the Uniform Guidance. Therefore, some amounts presented in this schedule may differ from amounts presented in, or used in the preparation of, the basic financial statements.

Note 2. Indirect Cost Rate

The City has elected not to use the 10-percent de minimis indirect cost rate allowed under the Uniform Guidance.

Note 3. Subrecipients

Of the federal expenditures presented in the schedule, the City has not provided any federal awards to subrecipients.

**INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER
FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS
BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED
IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS***

To the Honorable Mayor
and Members of the City Council
City of Columbia, Tennessee

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the City of Columbia, Tennessee (the City) as of and for the year ended June 30, 2023, and the related notes to the financial statements, which collectively comprise the City's basic financial statements, and have issued our report thereon dated December 14, 2023. Our report includes a reference to other auditors who audited the financial statements of the Power System and Water System Funds, as described in our report on the City of Columbia's financial statements. This report does not include the results of the other auditors' testing of internal control over financial reporting or compliance and other matters that are reported on separately by those auditors.

Report on Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the City's internal control over financial reporting (internal control) as a basis for designing procedures that are appropriate in the circumstances for the purpose of expressing our opinions on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control. Accordingly, we do not express an opinion on the effectiveness of the City's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees in the normal course of performing their assigned functions, to prevent, or detect and correct misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the City's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Chattanooga, Tennessee
December 14, 2023

Henderson Hutcherson
& McCullough, PLLC

CITY OF COLUMBIA, TENNESSEE

SCHEDULE OF PRIOR AUDIT FINDINGS

Year Ended June 30, 2023

None reported

DRAFT



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Lindsay Barrier, Sr. Administrative Assistant, lbarrier@columbiatn.com, 931.560.1527

**AGENDA ITEM TITLE: APPROVE CHANGE ORDER TO THE AGREEMENT WITH ADAMS CONTRACTING, LLC
IN THE AMOUNT OF \$225,493.76**

RECOMMENDATION: Approve Change Order.

INFORMATION: The City of Columbia entered into a contract with Adams Contracting, LLC on October 19, 2022. Contract No. E 2022-02 for the South Garden Streetscape Project. The original contract price was \$2,132,231.75. This Change Order is for a net increase of \$225,493.76 to cover additional construction costs incurred. The total Contract Price with approved Change Order will be \$2,357,725.51.

CERTIFICATION: The Chief Financial Officer certifies that \$225,494 will be included in the second consideration appropriation amendment in Capital Projects-South Garden Streetscape.

ATTACHMENTS: Contract No. E 2022-02; Request for Construction Change Order

AGREEMENT

S. GARDEN STREET STREETSCAPE CARMACK BLVD. TO DEPOT ST. CONTRACT #E 2022-02

THIS AGREEMENT is dated as of the 19th day of October in the year 2022
by and between the City of Columbia, Tennessee (hereinafter called **OWNER**) and

Adams Contracting, LLC, 131 Prosperous Place, Suite 19A, Lexington, KY 40509

(Hereinafter called **CONTRACTOR**).

OWNER and **CONTRACTOR**, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the CONTRACT Documents. The WORK is generally described as follows:

The Work to be done consists of the providing labor, materials, equipment, insurance and bonds for new sidewalk, ADA compliant curb ramps, parking areas, curb and gutter, storm drainage, paving, pavement markings, and signing on S. Garden Street from Carmack Blvd. to Depot St. The project also includes installation of lighting, landscaping and hardscape plazas along the corridor. Work also includes construction of a left turn lane on Carmack Blvd.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

S. GARDEN STREET STREETSCAPE
CARMACK BLVD. TO DEPOT ST.
FISCAL YEAR 2022-2023
CONTRACT #E 2022-02

Article 2. ENGINEER.

The CONTRACT has been prepared by the City Engineer who is hereinafter called **ENGINEER** and who is to act as **OWNER'S** representative, assumes all duties and responsibilities and have the rights and authority assigned to **ENGINEER** in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents. The **OWNER** updated these specifications, as needed, to include currently available products and materials.

Article 3. CONTRACT TIMES.

- 3.1 The WORK will be completed and ready for final payment in accordance with Article 14.07 of the General Conditions within **365 days** after the date when the Contract Times commence to run as prescribed in the **NOTICE TO PROCEED**.
- 3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence to this Agreement and that OWNER will suffer financial loss if the WORK is not completed within the time specified in paragraph 3.1 above. They also recognized the delays, expense, and difficulties involved in proving the actual loss suffered by OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER two hundred dollars (\$200.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final pay.

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents and amount in current funds equal to the CONTRACTOR'S Lump Sum Bid Proposal, including all supplies, materials, equipment, labor, insurance, bonds, etc. That amount is:

The Total Unit Item CONTRACT Price of 2,132,231.75
two million, one hundred thirty two thousand two hundred thirty one dollars and 75 cents

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by the ENGINEER as provided in the General Conditions.

Upon completion and acceptance of the WORK in accordance with Article 14.07 of the General Conditions, OWNER shall pay the CONTRACTOR Price as recommended by the ENGINEER as provided in said Article 14.07.

Article 6. INTEREST.

All moneys not paid by OWNER when due to CONTRACTOR shall bear interest at the maximum rate allowed by law, at the place of the Project, when not paid within a reasonable time.

Article 7. CONTRACT DOCUMENTS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has examined and carefully studied CONTRACT Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data".

- 7.2 CONTRACTOR has visited the site and has become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance, and furnishing of the WORK. CONTRACTOR is aware that CONTRACTOR is responsible for taking all measurements and calculating all dimensions used in the preparation of CONTRACTOR'S BID.
- 7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance, and furnishing of the WORK, including any and all permits as required by said Laws and Regulations.
- 7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions, if any, as provided in Article 4 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not CONTRACT Documents and may not be complete for CONTRACTOR'S purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the CONTRACT Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the WORK or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, test, studies or data are necessary for the performance and furnishing of the WORK at the CONTRACT Price, within the CONTRACT Times and in accordance with the other terms and conditions of the CONTRACT Documents.
- 7.5 CONTRACTOR is aware of the general nature of WORK to be performed by CONTRACTOR and others at the site that relates to the WORK as indicated in the CONTRACT Documents.
- 7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the CONTRACT Documents and all additional examinations, investigations, explorations, tests, studies, and data with the CONTRACT Documents.
- 7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR had discovered in the CONTRACT Documents and written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the CONTRACT Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the WORK.

Article 8. CONTRACT DOCUMENTS.

The CONTRACT Documents, which comprise the entire agreement between OWNER and CONTRACTOR concerning the WORK, consist of the following:

- 8.1 This AGREEMENT
- 8.2 PERFORMANCE BOND
- 8.3 DRUG-FREE WORKPLACE AFFIDAVIT
- 8.4 NOTICE TO PROCEED
- 8.5 GENERAL CONDITIONS
- 8.6 SUPPLEMENTARY CONDITIONS

- 8.7 ADDENDA numbers 1 to 2 inclusive.
8.8 CONTRACTOR'S BID PROPOSAL (pages 1 to 3)
8.9 Documentation submitted by CONTRACTOR prior to NOTICE OF AWARD.
8.10 The following, which may be delivered or issued after the Effective Date of the AGREEMENT, and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the CONTRACT Documents.

There are no CONTRACT Documents other than those in this Article 8. The CONTRACT Documents may only be amended, modified or supplemented as provided in Article 3 of the GENERAL CONDITIONS.

ARTICLE 9. MISCELLANEOUS.

- 9.1 Terms used in this CONTRACT, which are defined in Article 1 of the Instructions to Bidders will have the meanings indicated in the Instructions to Bidders.
- 9.2 No assignment by a party hereto of any rights or interests under the CONTRACT Documents will be binding on another party hereto without the written consent of the party sought to be bound: and, specifically but without limitation, moneys that may become due and moneys that are due may be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the CONTRACT Documents.
- 9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the CONTRACT Documents.
- 9.4 Any provision or part of the CONTRACT Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the CONTRACT Documents shall be reformed to replace such stricken provision or parts thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to **OWNER, CONTRACTOR and ENGINEER**. All portions of the Contract Documents have been signed, initialed or identified by **OWNER and CONTRACTOR** or identified by **ENGINEER** on their behalf.

This Agreement will be effective on October 19, 2022 (which is the Effective Date of the Agreement).

OWNER: CITY OF COLUMBIA,
TENNESSEE

By: [Signature]

Title: Mayor

Attest: [Signature] 10-19-22

Title: City Recorder
(Affix City Seal)

CONTRACTOR: Adams Contracting, LLC
131 Prosperous Place, Suite 19A
Lexington, KY 40509

By: [Signature]

Title: Scott Adams, PE, President

Approved as to Legal Form:

By: [Signature]
C. Tim Tisher, City Attorney

SECTION 6, PAGE 4

Business Address:

Adams Contracting, LLC
131 Prosperous Place, Suite 19A
Lexington, KY 40509

License no. 68891

Certification of Authority to Sign (if applicable):

I, Melanie Anderkin certify that I am the Secretary
(printed name) (title)
of the corporation named as CONTRACTOR herein; that Scott Adams, PE
(printed name)
who signed this Agreement on behalf of the CONTRACTOR was then President
(title)
of said corporation that said Agreement was duly signed for and in behalf of said corporation by
authority of its governing body and is within the scope of its corporate powers.



Melanie Anderkin
(Signature)

(Affix corporate seal)

END OF SECTION

Request for Construction
Change Order No.
Final Summary Change
Order

City of Columbia
700 N. Garden Street
Columbia, TN 38401

Contract No.	<u>E 2022-02</u>
Project	<u>S. Garden Street Streetscape</u> <u>Carmack Blvd. to Depot St.</u>

Whereas, we Adams Contracting, LLC entered into a contract with the CITY OF Columbia, on October 19, 2022, for the construction by said Contractor of the above designated contract; and Whereas, certain items of construction encountered are not covered by the original contract, we desire to submit the following additional items of construction to be performed by the Contractor and paid by the City at the prices scheduled therefore below:

Reason for Change Order:

Balancing change order for final payment

Attachments (List documents supporting change):

--

Item No.	Description of Work	Unit	Estimate Quantity	Unit Price	Amount
	SEE ATTACHED EXPLANATION OF FINAL OVERRUN/UNDERRUN				

CHANGE IN CONTRACT PRICE:
Original Contract Price
<u>\$2,132,231.75</u>
Net Increase (Decrease) from previous Change Orders
No. 0 to 0:
\$
Contract Price prior to this Change Order:
<u>\$2,132,231.75</u>
Net increase (decrease) of this Change Order:
<u>\$225,493.76</u>
Contract Price with all approved Change Orders:
<u>\$2,357,725.51</u>

CHANGE IN CONTRACT TIMES:
Original Contract Times:
Substantial Completion: _____
Ready for final payment: _____
Net change from previous Change Orders No. 0 to 1:
<u>Substantial Completion:</u> _____
<u>Ready for final payment:</u> _____
Contract Times prior to this Change Order:
Substantial Completion: _____
Ready for final payment: _____
Net increase (decrease) this Change Order:
Substantial Completion: _____
Ready for final payment: _____
Contract Times with all approved Change Orders:
Substantial Completion: _____
Ready for final payment: _____

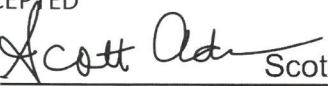
Now, Therefore, We, Adams Contracting, LLC Contractors, hereby agree to this Supplemental Agreement consisting of the above mentioned items and prices, and agree that this Supplemental Agreement is hereby made a part of the original contract and will be performed by this Contractor in accordance with specifications thereof, and that the original contract remain in full force and effect, except in so far as specifically modified by this supplemental Agreement.

RECOMMENDED FOR APPROVAL BY:

By:  By:  Glenn Harper
CEI for City of Columbia CITY PROJECT MANAGER

Date: November 17, 2023 Date: 11/20/23

ACCEPTED

By:  Scott Adams, PE, President
CONTRACTOR (Authorized Signature)

Date: 11/20/2023

APPROVED:

By: _____
OWNER (Authorized Signature)

Date: _____

Approved as to Legal Form:


C. Tim Tisher, City Attorney

EXPLANATION OF FINAL OVERRUN / UNDERRUN

PIN:
 Proj. No.:
 Contract No.: E 2022-03
 Fed. Proj. No.:

Project Description: S. Garden Street Streetscape Carmack Blvd. to Depot St.

Print Date: 11/17/2023

PAY ITEM NO.	DESCRIPTION	OVERRUN UNDERRUN	UNIT	EXPLANATION
202-01.14	REMOVAL OF PIPE (18" RCP, STA. 12+25 LT.)	10.000	L.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
202-08.10	REMOVAL OF CURB (ROADWAY)	1,301.000	L.F.	Contractor provided quantities. CEI could not verify.
				The Road and Drainage excavation was measured in the field and verified by load counts when the material was moved. Adams was careful to quantify this item as we often see this item over or underrun. It would be complicated only to use the plans with the limited information from the typical sections and attempt to come up with a quantity after the fact. However, if you take the 53,031 SF of Asphalt and Concrete removal area at an average depth of eighteen inches, the neat amount equals 2,946.16 CY of Road and Drainage Excavation. Also, at Carmack Blvd, 2,861 SF of Road and Drainage was removed, equaling 158.95 CY. These also do not consider additional areas removed as directed adjacent to the self-storage center and the multiple locations where additional asphalt thicknesses were incurred. The only accurate way to quantify the material is by taking in-field measurements and, as a backup, checking them periodically against load counts, as Adams did throughout the project.
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	888.300	C.Y.	
209-05	SEDIMENT REMOVAL	10.000	C.Y.	Contractor provided quantities. CEI could not verify.
303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	470.320	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
307-01.01	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING A	3.270	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
307-01.08	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2	(0.090)	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
307-02.01	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A	(0.630)	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
307-02.06	ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B	12.180	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	(1.250)	TON	Item not utilized on the project.
402-02	AGGREGATE FOR COVER MATERIAL (PC)	(4.250)	TON	Item not utilized on the project.
411-01.10	ACS MIX(PG64-22) GRADING D	157.920	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
411-02.10	ACS MIX(PG70-22) GRADING D	(2.070)	TON	The bid quantity was an estimate and the quantity used on the project was verified by tickets and used as needed to complete the project.
701-01.01	CONCRETE SIDEWALK (4 ")	1,650.000	S.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
701-01.03	CONCRETE SIDEWALK - 4 " (PLAZA AREA)	38.000	S.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
701-02	CONCRETE DRIVEWAY	(990.000)	S.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
701-02.03	CONCRETE CURB RAMP	(101.000)	S.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.

EXPLANATION OF FINAL OVERRUN / UNDERRUN

PIN:
 Proj. No.:
 Contract No.: E 2022-03
 Fed. Proj. No.:

Project Description: S. Garden Street Streetscape Carmack Blvd. to Depot St.

Print Date: 11/17/2023

PAY ITEM NO.	DESCRIPTION	OVERRUN UNDERRUN	UNIT	EXPLANATION
702-01	CONCRETE CURB	3.000	C.Y.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
702-03	CONCRETE COMBINED CURB & GUTTER	43.200	C.Y.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	10.000	EACH	Contractor needed additional traffic control measures for work along Carmack
712-05.03	WARNING LIGHTS (TYPE C)	10.000	EACH	Contractor needed additional traffic control measures for work along Carmack
712-06	SIGNS (CONSTRUCTION)	130.500	S.F.	Contractor needed additional traffic control measures for work along Carmack
712-08.03	ARROW BOARD (TYPE C)	1.000	EACH	Contractor needed additional traffic control measures for work along Carmack
714-03.01	DIRECT BURIAL CONDUIT (2" PVC, SCHEDULE 40)	303.000	L.F.	Per the contractor "The conduit overran due to the plans not accounting for stub ups and rerouting some conduits around existing utilities."
714-03.03	DIRECT BURIAL CONDUIT (1" PVC, SCHEDULE 40)	245.000	L.F.	Per the contractor "The conduit overran due to the plans not accounting for stub ups and rerouting some conduits around existing utilities."
714-05.05	PULL BOXES (FIBER REINFORCED CONCRETE, 12"X12"X18")	16.000	EACH	The planned quantity was adjusted per plans revisions for pullboxes at each streetlight location.
714-06.03	CABLE (1/C # 10 AWG)	160.000	L.F.	Contractor provided quantities. CEI could not verify.
714-06.04	CABLE (1/C # 8 AWG)	(215.000)	L.F.	Contractor provided quantities. CEI could not verify.
714-06.05	CABLE (1/C # 6 AWG)	(4,430.000)	L.F.	The planned quantity was adjusted per plans revisions.
716-02.03	PLASTIC PAVEMENT MARKING (CROSS-WALK)	(2.000)	L.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-02.04	PLASTIC PAVEMENT MARKING(CHANNELIZATION STRIPING)	(4.445)	S.Y.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-02.05	PLASTIC PAVEMENT MARKING (STOP LINE)	(14.000)	L.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-02.08	PLASTIC PAVEMENT MARKING (8" DOTTED LINE)	20.000	L.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-02.12	PLASTIC PAVEMENT MARKING (8IN LINE)	(0.010)	L.M.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	(0.070)	L.M.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
716-13.02	SPRAY THERMO PVT MRKNG (60 mil) (6IN LINE)	(0.056)	L.M.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
795-09.09	RELOCATE/RECONNECT SERVICE ASSEMBLY	5.000	EACH	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
802-06.03	MULCH (3IN SHREDDED PINE BARK MULCH)	(6.000)	C.Y.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
803-01	SODDING (NEW SOD)	555.000	S.Y.	The new turning lane at Carmack required 164 SY of Sod not called out in the plans. The area behind the sidewalk along South Garden also does not call out sod; however, this area required covering, which took 391 SY.
920-12	SIGN POSTS (ROUND, BLACK)	(130.000)	L.F.	Planned quantities did not match field conditions. The quantity was field measured by the Inspector.
611-ADJUST	DRAIN BOX ADJUSTMENT	(0.420)	LS	Existing conditions did not match plans and adjustments were needed in the field.
714-06.06	CABLE (1/C #4 AWG)	(600.000)	L.F.	The planned quantity was adjusted per plans revisions.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Wanda McClain, wmccclain@columbiatn.com, Human Resource Director, 931-560-1574

AGENDA ITEM TITLE:

APPROVE AND AUTHORIZE THE MAYOR TO EXECUTE A THREE-YEAR CONTRACT EXTENSION WITH SHERRILL MORGAN IN THE AMOUNT OF \$38,500 IN 2024 FOR EMPLOYEE INSURANCE CONSULTING

RECOMMENDATION: Approve.

INFORMATION: This Agreement shall continue for an initial period of three years beginning on January 1, 2024, after which it shall automatically continue on a year-to-year basis until either party provides notice of termination in accordance with the provisions of this Article. The client or Sherrill Morgan may terminate this agreement at any time, with or without cause, provided that 30 days' written notice is given to the other party prior to the effective date of termination. In consideration for the services of Sherrill Morgan, the client shall compensate Sherrill Morgan a fee of \$39,500 in 2024, \$40,500 in 2025, and \$41,500 in 2026. Upon termination under this Article, the Client shall pay a pro rata fee for any work already performed by Sherrill Morgan. Travel and accommodation expenses for Sherrill Morgan staff, when necessary during the contract period, are included in the fees stated in this Article.

CERTIFICATION: The Chief Financial Officer certifies that \$39,500 is available and unencumbered in Health Insurance Fund - Professional Services.

CONSULTING AGREEMENT

THIS AGREEMENT, made this 1st day of January 2024 by and between Sherrill D. Morgan and Associates, Inc., DBA SHERRILL MORGAN, hereinafter called SHERRILL MORGAN, and the City of Columbia, Tennessee, hereinafter called the Client.

WHEREAS, the Client wants to use the services of SHERRILL MORGAN for the purpose of performing an ongoing comprehensive analysis to assist the Client in achieving certain goals regarding its employee benefits programs;

NOW, THEREFORE, it is mutually agreed as follows:

ARTICLE I

Responsibilities of SHERRILL MORGAN; Scope of Work

SHERRILL MORGAN shall provide specific recommendations to the Client on how to achieve the Client's stated goals for its employee benefits programs, and shall provide additional services as set forth in Exhibit A.

ARTICLE II

Responsibilities of Client

The Client shall furnish any and all documents and information that SHERRILL MORGAN deems necessary to complete its responsibilities as stated in Article I, including signed authorizations requesting information from institutions or individuals.

ARTICLE III

Term and Termination; Compensation

This Agreement shall continue for an initial period of three years beginning on January 1, 2024, after which it shall automatically continue on a year-to-year basis until either party provides notice of termination in accordance with the provisions of this Article. The Client or SHERRILL MORGAN may terminate this Agreement at any time, with or without cause, provided that 30 days' written notice is given to the other party prior to the effective date of termination. In consideration for the services of SHERRILL MORGAN, the Client shall compensate SHERRILL MORGAN a fee of \$39,500 in 2024, \$40,500 in 2025, and \$41,500 in 2026. Upon termination under this Article, the Client shall pay a pro rata fee for any work already performed by SHERRILL MORGAN. Travel and accommodation expenses for SHERRILL MORGAN staff, when necessary during the contract period, are included in the fees stated in this Article.

ARTICLE IV

Miscellaneous Provisions

SHERRILL MORGAN shall not accept finders' fees or commissions in connection with this Agreement from any vendor it may recommend to the Client. SHERRILL MORGAN shall not pay finders' fees or commissions in connection with this Agreement to any person or persons who have recommended its services to the Client. With the Client's approval, at the termination of this Agreement SHERRILL MORGAN may market insurance plans to the Client.

This Agreement and all of its terms and conditions shall extend to and be binding upon both parties and their respective heirs, executors, administrators, successors, and assigns.

Neither party shall sell, assign, or otherwise transfer any of its rights under this Agreement without the other party's prior written consent.

This Agreement constitutes the entire agreement between the parties. Any prior communications or agreements are superseded by this Agreement. This Agreement may not be modified or amended without a written Agreement signed by both parties.

The failure of either party to enforce any of the provisions of this Agreement will in no way be construed as a waiver of the provisions of this Agreement and will in no way affect the validity of this Agreement. If any of the provisions of this Agreement are declared invalid or unenforceable for any reason, the validity of other provisions of this Agreement will not be affected by the invalid or unenforceable provision.

The rights and obligations of the parties to this Agreement shall be governed by the laws of the State of Tennessee.

WITNESS the hands of the parties on this the day and date first above written.

CITY OF COLUMBIA, TENNESSEE

BY: _____

Title: _____

SHERRILL D. MORGAN & ASSOCIATES, INC.
DBA SHERRILL MORGAN

BY: Lisa A. Stamm
Vice President, Consulting Services
Sherrill D. Morgan & Associates, Inc.

Approved as to Legal Form:


C. Tim Tisher, City Attorney



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Ginger Adams, Sr. Administrative Assistant, gadams@columbiatn.com, 931-560-1723

AGENDA ITEM TITLE: APPROVE BID AWARD TO BRINDLEY CONSTRUCTION IN THE AMOUNT OF \$4,882,000 FOR RENOVATIONS TO FIRE STATION #1 LOCATED AT 1000 SOUTH GARDEN STREET AND AUTHORIZE THE MAYOR TO EXECUTE ANY RELATED DOCUMENTS

RECOMMENDATION: Approve a bid award to Brindley Construction in the amount of \$4,882,000 for renovations to Fire Station #1 located at 1000 South Garden Street.

INFORMATION: Competitive bids were solicited for the renovation to Fire Station #1, located at 1000 South Garden Street.

Five bids were received, and a decision was made to declare Brindley Construction the apparent low bidder due to their submitted bid envelope and contents being affirmed to comply with the State of Tennessee Board of Contractors, License and Bidding Requirements.

CERTIFICATION: The Chief Financial Officer certifies that \$4,882,000 will be included in the second consideration appropriation amendment in Capital Projects-Fire Administration - Buildings.

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the 4 day of December in the year 2023
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

and the Contractor:
(Name, legal status, address and other information)

Brindley Construction, LLC
747 W. College Street
Pulaski, TN 38478

for the following Project:
(Name, location and detailed description)

Renovations to Fire Station #1
1000 South Garden Street
Columbia, TN 38401

The Architect:
(Name, legal status, address and other information)

Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.

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User Notes:

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TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.

☒ Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

within seven days after written Notice to Proceed of bid.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

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(Check one of the following boxes and complete the necessary information.)

☐ Not later than () calendar days from the date of commencement of the Work.

☒ By the following date: twelve months after commencement of the Work.

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be four million eight hundred eighty-eight thousand (\$ 4,882,000.00), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item

Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item

Price

Conditions for Acceptance

The following alternates are not included in the contract sum:

Alternate #1. Add epoxy floor system to apparatus bay #E13	\$108,000.00
Alternate #2 Add a 5' high aluminum fence as detailed in the Civil Drawings	\$18,000.00
Alternate #3 Add a power operated sliding gate as detailed in the Civil Drawings	\$41,000.00
Alternate #4 Add security fencing indicated on supplemental documents per addendum 1	\$8,000.00

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item

Price

Face brick and mortar (9 bag/thousand)	\$825.00 per thousand
Purchase and install of carpet squares	\$35.00 per square yard
Luxury Vinyl Planking (LVP)	\$7.00 per square foot
Installed (labor & materials) ceramic wall tile	\$11.50 per square foot

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

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User Notes:

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Item	Units and Limitations	Price per Unit (\$0.00)
§ 4.5 Liquidated damages, if any: <i>(Insert terms and conditions for liquidated damages, if any.)</i>		
§ 4.6 Other: <i>(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)</i>		

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the 5th day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 15 day of the same month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than fifteen (15) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™-2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201-2017;

Init.

- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201-2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

five percent (5%)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201-2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201-2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

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Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

5 % five percent per annum

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201-2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker. *(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)*

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201-2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

☐ Arbitration pursuant to Section 15.4 of AIA Document A201-2017

☒ Litigation in a court of competent jurisdiction

☐ Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201-2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

init.

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User Notes:

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Mr. Charles (Chaz) M. Molder, Mayor
City of Columbia
700 North Garden Street
Columbia, TN 38401

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

Ronnie Brindley, President
747 W. College Street
Pulaski, TN 38478
rbrindley@brindleyco.com

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™-2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201-2017, may be given in accordance with AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203-2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- 1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
- 2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds
- 3 AIA Document A201™-2017, General Conditions of the Contract for Construction
- 4 AIA Document E203™-2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

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.5 Drawings

Number	Title	Date
See Exhibit A	Index of Drawings	

.6 Specifications

Section	Title	Date	Pages
See Exhibit B	Specifications Handbook for Proposed Facility Renovation to Fire Station #1 (Table of Contents)	10-30-2023	6

.7 Addenda, if any:

Number	Date	Pages
#1	11-13-2023	14
#2	11-22-2023	25
#3	11-27-2023	7

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™-2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages
-------	------	-------

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

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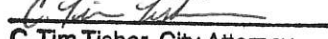
OWNER (Signature)

Charles (Chaz) M. Molder Mayor
(Printed name and title)


CONTRACTOR (Signature)

Ronnie Brindley President
(Printed name and title)

Approved as to Legal Form:


C. Tim Tisher, City Attorney

Init.

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Additions and Deletions Report for **AIA® Document A101® – 2017**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 12:08:31 ET on 12/06/2023.

PAGE 1

AGREEMENT made as of the 4 day of December in the year 2023

...

City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

...

Brindley Construction, LLC
747 W. College Street
Pulaski, TN 38478

...

Renovations to Fire Station #1
1000 South Garden Street
Columbia, TN 38401

...

Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

PAGE 2

[X] Established as follows:

...

within seven days after written Notice to Proceed of bid.

PAGE 3

[X] By the following date: twelve months after commencement of the Work.

...

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be four million eight hundred eighty-eight thousand (\$ 4,882,000.00), subject to additions and deductions as provided in the Contract Documents.

...

The following alternates are not included in the contract sum:

<u>Alternate #1. Add epoxy floor system to apparatus bay #E13</u>	<u>\$108,000.00</u>
<u>Alternate #2 Add a 5' high aluminum fence as detailed in the Civil Drawings</u>	<u>\$18,000.00</u>
<u>Alternate #3 Add a power operated sliding gate as detailed in the Civil Drawings</u>	<u>\$41,000.00</u>
<u>Alternate #4 Add security fencing indicated on supplemental documents per addendum 1</u>	<u>\$8,000.00</u>

...

<u>Face brick and mortar (9 bag/thousand)</u>	<u>\$825.00 per thousand</u>
<u>Purchase and install of carpet squares</u>	<u>\$35.00 per square yard</u>
<u>Luxury Vinyl Planking (LVP)</u>	<u>\$7.00 per square foot</u>
<u>Installed (labor & materials) ceramic wall tile</u>	<u>\$11.50 per square foot</u>

PAGE 4

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the 5th day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 15 day of the same month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than fifteen (15) days after the Architect receives the Application for Payment.

PAGE 5

five percent (5%)

PAGE 6

5 % five percent per annum

...

[X] Litigation in a court of competent jurisdiction

PAGE 7

Mr. Charles (Chaz) M. Molder, Mayor
City of Columbia
700 North Garden Street
Columbia, TN 38401

...

*
Ronnie Brindley, President
747 W. College Street
Pulaski, TN 38478
rbrindley@brindleyco.com

PAGE 8

See Exhibit A

Index of Drawings

...

See Exhibit B

Specifications Handbook 10-30-2023 6
for Proposed Facility
Renovation to Fire
Station #1 (Table of
Contents)

...

<u>#1</u>	<u>11-13-2023</u>	<u>14</u>
<u>#2</u>	<u>11-22-2023</u>	<u>25</u>
<u>#3</u>	<u>11-27-2023</u>	<u>7</u>

PAGE 9

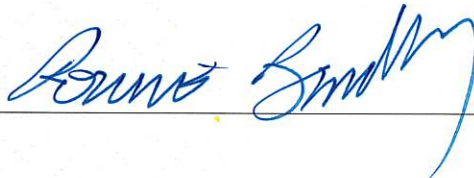
Charles (Chaz) M. Molder Mayor

Ronnie Brindley President

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Ronnie Brindley, President, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 14:39:12 ET on 12/05/2023 under Order No. 4104247122 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A101™ - 2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, other than those additions and deletions shown in the associated Additions and Deletions Report.


(Signed)

President
(Title)

12/8/2023
(Dated)

Exhibit A

SECTION 00 31 13 - INDEX OF DRAWINGS

CIVIL

- C0.01 Existing Conditions and Demo Plan
- C1.00 Site Layout Plan
- C2.00 Grading and Drainage Plan
- C2.01 SWPPP - Stage 1
- C2.02 SWPPP - Stage 2
- C3.00 Site Utility Plan
- C4.00 Civil Details
- C4.01 Civil Details

ARCHITECTURAL

- A0.1 Cover Sheet
- AB1.1 Record Document Information
- AB2.1 Exterior Demolition Photos
- A1.1 Main Level Floor Plan
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Specifications Handbook for PROPOSED FACILITY RENOVATION to FIRE STATION #1

Columbia, Tennessee

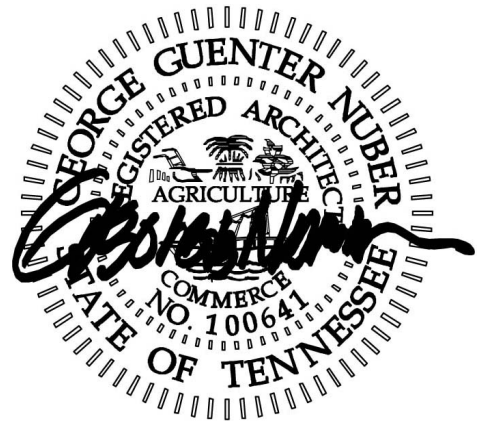
October 30, 2023

CITY OF COLUMBIA



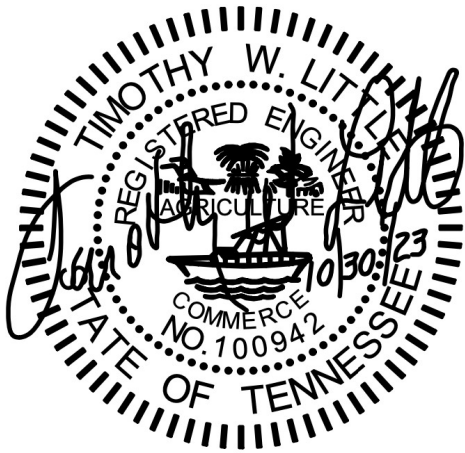
ECCLESIASTICAL PLANNING / DESIGN
COMMERCIAL ARCHITECTURE

1069 Rolling Fields Circle, Columbia, Tennessee 38401
Phone: (931) 540-8045 Cell: (931) 446-1741
E-mail: george@nuberarchitecturellc.com



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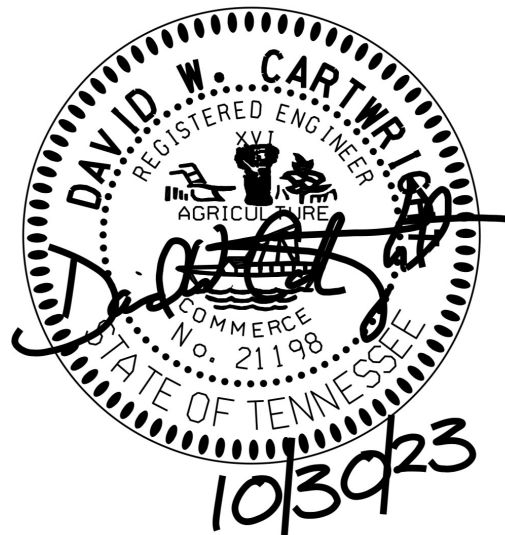


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General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Renovations to Fire Station #1
1000 South Garden Street
Columbia, TN 38401

THE OWNER:

(Name, legal status and address)

City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

THE ARCHITECT:

(Name, legal status and address)

Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

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- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™-2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

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delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

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§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

Init.

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User Notes:

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Additions and Deletions Report for

AIA® Document A201® – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 11:38:40 ET on 12/05/2023.

PAGE 1

Renovations to Fire Station #1
1000 South Garden Street
Columbia, TN 38401

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City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

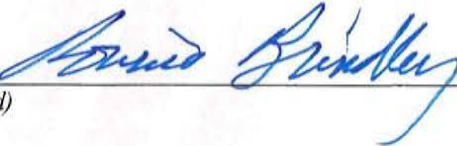
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Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

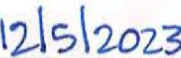
Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Ronnie Brindley, President, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 11:38:40 ET on 12/05/2023 under Order No. 4104247122 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.


(Signed)

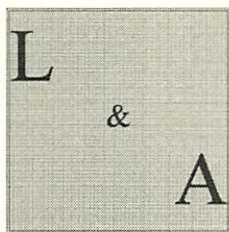

(Title)


(Dated)

COLUMBIA FIRE STATION NO. 1

SCHEDULE OF VALUES
12/5/2023

DESCRIPTION	UNIT	AMOUNT
1. General Conditions	1 Lump Sum	\$355,682.00
2A. Demolition	1 Lump Sum	\$68,289.00
2B. Sitework	1 Lump Sum	\$394,367.00
3. Concrete	1 Lump Sum	\$354,555.00
4. Masonry	1 Lump Sum	\$294,153.00
5. Structural & Miscellaneous Steel	1 Lump Sum	\$139,856.00
6. Rough and Finish Carpentry	1 Lump Sum	\$125,855.00
7. Moisture Protection	1 Lump Sum	\$205,806.00
8. Doors and Windows	1 Lump Sum	\$442,599.00
9. Finishes	1 Lump Sum	\$847,593.00
10. Specialties	1 Lump Sum	\$19,255.00
11. Equipment	1 Lump Sum	\$0.00
12. Furnishings	1 Lump Sum	\$0.00
13. Special Construction	1 Lump Sum	\$0.00
14. Conveying Systems	1 Lump Sum	\$0.00
15A. Fire Protection	1 Lump Sum	\$76,834.00
15B. Plumbing	1 Lump Sum	\$349,641.00
15C. HVAC	1 Lump Sum	\$612,579.00
16. Electrical incuding Fire Alarm	1 Lump Sum	\$594,936.00
TOTAL AMOUNT		\$4,882,000.00



LECROY &
ASSOCIATES, INC.

16 Office Park Circle, Suite 10
Birmingham, AL 35223

Phone: 205-879-4009
Fax: 205-879-0305
Email: lecroyassociates@juno.com

Bonding is Our Business

December 4, 2023

City of Columbia
700 North Garden Street
Columbia, TN 38401

RE: Brindley Construction, LLC – Pulaski, Tennessee
Project: Proposed Facility Renovation to Fire Station #1

To Whom It May Concern:

In our dealings with Brindley Construction, LLC, we have found them to be of high character and well respected. We have known of the performance and reputation of the people involved in Brindley Construction for some time. They act responsibly in all matters and perform high quality work. We would highly recommend Brindley Construction, LLC.

We are the surety bond agency representing Western Surety Company, the surety. Western Surety Company is authorized to do business in all states and has an A.M. Best Rating of A (Excellent) and a Treasury Limit of \$151,103,000 (per the Treasury Circular 570).

At the request of Brindley Construction, LLC and in support of the bid on 11/30/23 for the above noted project for which a bid bond was issued, we have agreed to act as surety on the performance and payment bonds specified in the bid documents. We have been informed that a contract award will be made within days, at which point the bonds will be issued.

Sincerely,

Mike LeCroy
President of LeCroy & Associates, Inc.
Attorney-In-Fact of Western Surety Company



1069 Rolling Fields Circle
Columbia, Tennessee 38401
Phone: (931) 540-8045

BIDDER Tabulation Sheet

Bid Date: Nov. 30th, 2023, 2:00pm C.S.T., 700 North Garden St, Conference Room A, Columbia, TN.

Project No: 2021007

Owner:
City of Columbia
700 North Garden Street
Columbia, Tennessee 38401

Project Name:
Renovation to Fire Station #1

Location:
1000 South Garden Street, Columbia, Tennessee

List of Plan Rooms (not highlighted)
List of Bidders (highlighted in green):

Name	Contact	Phone	Addendum #1	Addendum #2	Addendum #3	BASE BID AMOUNT	License #	E-mail
Drakes Creek Builders	Troy Bishop	615-788-6601	✓	✓	✓	\$4,754,000.00	69599	tbishop@drakescreekbuilders.com
Nabholz Construction	Blake Osteen	615-708-9220	✓	✓	✓	\$5,633,949.00	21993	blake.osteen@nabholz.com
Brindley Construction	J.J. Brindley	931-309-8754	✓	✓	✓	\$4,882,000.00	55945	jjbrindley@brindleyco.com
Paul Varney Construction	Paul Varney	931-286-1513	✓	✓	✓	\$4,847,054.50	53080	jnuberPVC@gmail.com
Southeast Contractors	Will Milburn	615-405-8940	✓	✓	✓	\$5,431,760.00	22182	wmilburn07@bellsouth.net
Builders Exchange of Tennessee (BXTN) 301 S. Perimeter Park Drive, Suite 100 Nashville TN 37211	Kendra Buhlig	615-690-7200	615-690-7201					kendra@bxtn.org
Construct Connect 3825 Edwards Road, Suite 800 Cincinnati, Ohio 45209	Wynne Ypanto	323-602-5079, ext. 75303	866-570-8187					Wynne.Ypanto@ConstructConnect.com



November 13th, 2023

RE: ADDENDUM #1, RENOVATIONS TO FIRE STATION #1, COLUMBIA, TENNESSEE FILE NO. 2021007

ATTENTION ALL APPLICABLE BIDDERS:

Please amend your contract documents and specifications dated October 30th, 2023 (or as specified otherwise herein) as addendum #1. Below are listed the following corrections/changes to be made:

SPECIFICATIONS SECTION AMENDMENTS/CHANGES

1. Specifications Section 10 14 00, SIGNAGE, is amended in the following particulars as follows:
 - a. **Under Paragraph 2.05 A, line 3b, Change "City of Franklin" to "City of Columbia".**
2. Specifications Section 10 44 13, FIRE EXTINGUISHER CABINETS, is amended in the following particulars as follows:
 - a. **Under Paragraph 2.01 B, sub paragraph 1, change first sentence to read "Contractor shall provide five (5) extinguishers and cabinets in location as determined by the Fire Marshal or Architect should the Fire Marshal concede". Please note that the balance of the paragraph will remain as stated.**
3. Specifications Section 32 13 73, PAVEMENT JOINT SEALANT, has been added to the specifications handbook. To clarify, this section was indicated in the Table of Contents, but not included in the body of the handbook. Please reference that section as attached to this addendum.
4. Specifications Section 00 41 00, BID FORM, has been replaced. Please reference new specification section attachment. To clarify, we elected to add Alternate #4 to include security fencing around the project during construction for the protection of the building from unauthorized visits. Reference Security Fence Layout drawings attached to this addendum for general location of security fencing.

GENERAL CLARIFICATIONS

1. A question was asked about potentially reworking the existing main water line under the apparatus bay which services the onsite fire hydrant. After taking the matter under advisement, we have decided to not address this matter until after the bid and will negotiate with the Contractor that is awarded the contract should the Owner wish to rework this water main.
2. For all countertops called for on sheets A3.1 and A3.2 as "Quartz", the Contractor is to assume an allowance cost of \$70 per square foot for materials and installation. The Architect and Owner representative will select a color from this allowance price during construction.
3. Where bullet resistant glazing has been detailed in the drawings (reference sheet A3.3), the glazing is to meet a minimum ballistic level III rating tested to UL 752.
4. With respect to the temporary trailer as called for in Civil sheet C2.02, the Owner will secure the lease and have the trailer delivered to the job site in the location depicted and provide any necessary underpinning. The Contractor will be responsible for connecting water, sewer, and electric to complete the trailer installation as well

as coordinate the necessary temporary electric required for temporary lighting and electrical needs for construction.

5. As a clarification, the City of Columbia will not charge the Contractor for the building permit or any impact fees associated with the project.
6. No rock is to be presumed as part of the excavation of the site to meet the grading requirements of the Civil drawings. Should rock be encountered, we will negotiate a change order for the performance of the work required.

CONSTRUCTION DOCUMENT AMENDMENTS/CHANGES

Please amend the Construction Documents dated October 30th, 2023 (or as specified otherwise herein) as addendum #1. Below are listed the following corrections/changes to be made:

1. Sheet C2.02, dated 11/03/2023, has been updated as revision #1 and all changes to this sheet bubbled accordingly. Reference the attached complete Civil drawings for updates to this sheet.
2. Sheet C3.01, dated 11/03/2023, has been updated as revision #1 and all changes to this sheet bubbled accordingly. Reference the attached complete Civil drawings for updates to this sheet.
3. Sheet C4.04, dated 11/03/2023, has been updated as revision #1 and all changes to this sheet bubbled accordingly. Reference the attached complete Civil drawings for updates to this sheet.
4. Sheet A1.6, dated 11/13/2023, has been updated as revision #1 and all changes to this sheet bubbled accordingly. Reference attached sheet A1.6 to this addendum.
5. Sheet A1.7, dated 11/13/2023, has been added to the construction drawing set at the request of roofing contractors that wanted to have a roof plan for performing their takeoffs.
6. Sheet A3.3, dated 11/13/2023, has been updated as revision #1 and all changes to this sheet bubbled accordingly. Reference attached sheet A3.3 to this addendum.
7. Sheet A4.4, Detail 4, dated 10/30/2023, change note that states "Provide #1 rebar per layout on elevations (embed into 4" CMU) - 12" o.c. each way" to read "Provide #8 rebar per layout on elevations (embed into 4" CMU) - 12" o.c. each way".

END OF ADDENDUM #1

Respectfully Submitted,



George Nuber, Architect
Nuber Architecture LLC

// attachments: BID FORM (Revised Section 00 41 00)
 PAVEMENT JOINT SEALANT (Amended Section 32 13 73)
 REVISED CIVIL DRAWINGS (Revision #1 to C2.02, C3.01, and C4.04)
 Construction Drawing A1.6 (Revision #1)
 Construction Drawing A1.7 (Added to CD set)
 Construction Drawing A3.3 (Revision #1)
 Security Fence Layout - Fire Station #1

SECTION 00 41 00 - BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. City of Columbia (Owner)

1. 700 North Garden Street
2. Columbia, TN 38401

1.02 FOR:

A. Project: Proposed Facility Renovation to Fire Station #1

B. Project Number: 2021007

1000 S. Garden St.
Columbia, TN 38401

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____

1. Address _____

2. City, State, Zip _____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents including drawings and specifications prepared by Nuber Architecture, LLC dated October 30th, 2023, for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. LUMP SUM _____ dollars
(\$ _____), in lawful money of the United States of America.

C. ADD ALTERNATE NO. 1 (Add epoxy floor system to apparatus bay #E13)
_____ dollars
(\$_____).

D. ADD ALTERNATE NO. 2 (Add a 5' high aluminum fence as detailed in the Civil Drawings) _____ dollars
(\$_____).

E. ADD ALTERNATE NO. 3 (Add a power operated sliding gate as detailed in the Civil Drawings) _____ dollars
(\$_____).

F. ADD ALTERNATE NO. 4 (Add security fencing indicated on supplemental documents per addendum 1)
_____ dollars
(\$_____).

G. We have included the required security deposit as required by the Instruction to Bidders.

H. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.

I. All applicable federal taxes are included and State of Tennessee taxes are included in the Bid Sum.

J. All Allowances described in Section 01 21 26 are included in the Bid Sum.

1.06 ACCEPTANCE

A. This offer shall be open to acceptance for forty-five (45) days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:

1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Furnish the required bonds within seven days of receipt of Notice of Award.

3. Commence work within seven days after written Notice to Proceed of this bid.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

B. Complete the Work in a time as negotiated from Notice to Proceed.

1.08 BID FORM UNIT PRICES

(Not Applicable This Project)

1.09 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, the percentage fee will be:

1. 10 percent overhead and profit on the net cost of our own Work;
2. 5 percent on the cost of work done by any Subcontractor.
3. 10 percent overhead and profit on the net cost of Subcontractor Work

B. On work deleted from the Contract, the credit to Owner shall be Architect-approved net cost plus 10 percent of the overhead and profit percentage noted above.

1.10 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

1. Addendum # _____ Dated _____.
2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.

4. Addendum # _____ Dated _____.

1.11 BID FORM SIGNATURE(S)

A. The Corporate Seal of _____
(Bidder - print the full name of your firm)
was hereunto affixed in the presence of:

B. _____
(Authorized signing officer, Title)
(Seal)

C. _____
(Authorized signing officer, Title)

1.12 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS
OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE
APPROPRIATE FORM OR FORMS AS ABOVE.

END OF BID FORM 00 41 00

SECTION 32 13 73 PAVEMENT JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

- A. The work to be performed consists of the furnishing of all tools, supplies, services, labor, and supervision of installation of the joint and crack sealing material.
- B. The item shall consist of providing and installing a resilient and adhesive joint sealing filler capable of effectively sealing joints and cracks in Portland cement and bituminous cement pavement surfaces.

1.02 PAYMENT

- A. Unless otherwise specified in the Proposal or Special Provisions, payment shall be per linear foot and shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.
- B. Payment shall be for both joint sealing and random crack sealing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Joint and crack sealing materials shall meet ASTM 3405 - Joint Sealant, Hot - Poured for Portland Cement Concrete and Asphalt Pavements.
 - 1. Prior to the start of construction, the Contractor shall submit to the Engineer a catalog cut sheet indicating the brand of joint sealant which he/she proposes to use for the project. It shall be approved by the Engineer in writing prior to ordering the material.

PART 3 EXECUTION

3.01 PREPARATION

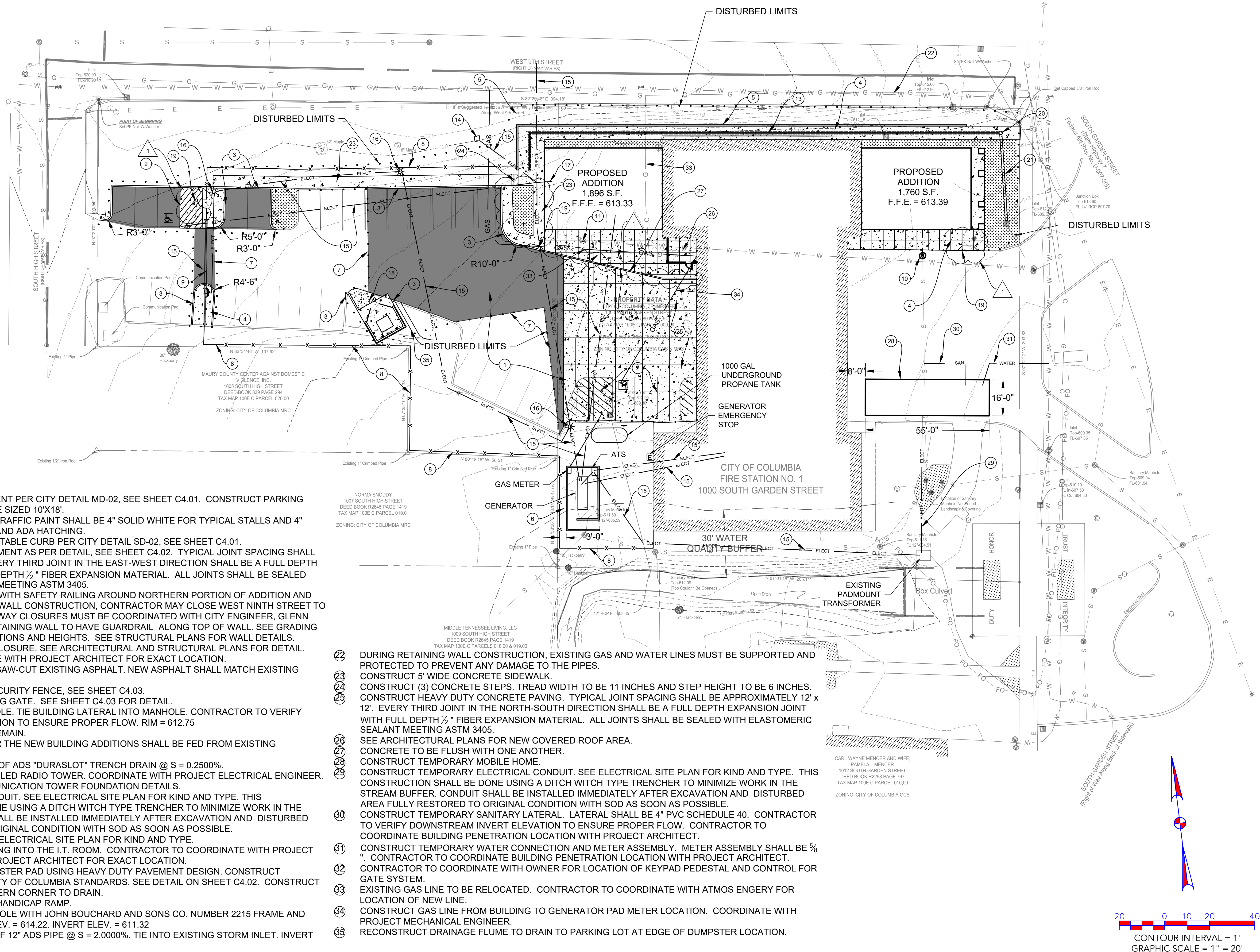
- A. Immediately before sealing, the joints and cracks shall be thoroughly cleaned of all foreign material. The joints and cracks shall be routed to width of 3/8 to 1/2 inch and depth of 1/2 to 1 inch. Upon completion of routing, the joints and cracks shall be brushed and blown with compressed air so that the joints and cracks are surface dry when the sealant is applied. Backer rod shall be used as necessary.

3.02 APPLICATION

- A. The final width of the joint sealant shall be essentially the same width as the crack. An obvious band of sealant on the top surface of the pavements is not acceptable. Any sealant spilled on the surface of the pavement shall be removed immediately.
- B. Installation and heating of the joint and crack sealant shall be as per the manufacturer's recommendations.
- C. The joint sealant shall be applied uniformly solid from the bottom to the top of the crack or joint and shall be filled without formation of any entrapped air voids.

END OF SECTION

NOTE: NEW LANDSCAPE AREAS FROM THIS PROJECT
WILL BE PROVIDED AND INSTALLED BY THE
OWNER UNDER A SEPARATE CONTRACT.



CONSTRUCTION NOTES:

1. CONSTRUCT ASPHALT PAVEMENT PER CITY DETAIL MD-02, SEE SHEET C4.01. CONSTRUCT PARKING STALLS. PARKING STALL TO BE SIZED 10'X18'.
2. CONSTRUCT TRAFFIC PAINT. TRAFFIC PAINT SHALL BE 4" SOLID WHITE FOR TYPICAL STALLS AND 4" SOLID BLUE FOR ADA STALLS AND ADA HATCHING.
3. CONSTRUCT EXTRUDED MOUNTABLE CURB PER CITY DETAIL SD-02, SEE SHEET C4.01.
4. CONSTRUCT CONCRETE PAVEMENT AS PER DETAIL, SEE SHEET C4.02. TYPICAL JOINT SPACING SHALL BE APPROXIMATELY 5' x 5'. EVERY THIRD JOINT IN THE EAST-WEST DIRECTION SHALL BE A FULL DEPTH EXPANSION JOINT WITH FULL DEPTH 1/2" FIBER EXPANSION MATERIAL. ALL JOINTS SHALL BE SEALED WITH ELASTOMERIC SEALANT MEETING ASTM 3405.
5. CONSTRUCT RETAINING WALL WITH SAFETY RAILING AROUND NORTHERN PORTION OF ADDITION AND BUILDING. DURING RETAINING WALL CONSTRUCTION, CONTRACTOR MAY CLOSE WEST NINTH STREET TO THROUGH TRAFFIC. ALL ROADWAY CLOSURES MUST BE COORDINATED WITH CITY ENGINEER, GLENN HARPER, AT (931) 560-1537. RETAINING WALL TO HAVE GUARDRAIL ALONG TOP OF WALL. SEE GRADING PLAN SPOT SHOTS FOR ELEVATIONS AND HEIGHTS. SEE STRUCTURAL PLANS FOR WALL DETAILS.
6. CONSTRUCT GENERATOR ENCLOSURE. SEE ARCHITECTURAL AND STRUCTURAL PLANS FOR DETAIL. CONTRACTOR TO COORDINATE WITH PROJECT ARCHITECT FOR EXACT LOCATION.
7. CONTRACTOR SHALL NEATLY SAW-CUT EXISTING ASPHALT. NEW ASPHALT SHALL MATCH EXISTING DEPTH.
8. CONSTRUCT ORNAMENTAL SECURITY FENCE, SEE SHEET C4.03.
9. CONSTRUCT 24' POWER SLIDING GATE. SEE SHEET C4.03 FOR DETAIL.
10. CONSTRUCT SANITARY MANHOLE. TIE BUILDING LATERAL INTO MANHOLE. CONTRACTOR TO VERIFY DOWNSTREAM INVERT ELEVATION TO ENSURE PROPER FLOW. RIM = 612.75
11. EXISTING FIRE HYDRANT TO REMAIN.
12. ALL UTILITIES NECESSARY FOR THE NEW BUILDING ADDITIONS SHALL BE FED FROM EXISTING STRUCTURE.
13. CONSTRUCT 225 LINEAR FEET OF ADS "DURASLOT" TRENCH DRAIN @ S = 0.2500%.
14. OWNER PROVIDED AND INSTALLED RADIO TOWER. COORDINATE WITH PROJECT ELECTRICAL ENGINEER. SEE STRUCTURAL FOR COMMUNICATION TOWER FOUNDATION DETAILS.
15. CONSTRUCT ELECTRICAL CONDUIT. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE. THIS CONSTRUCTION SHALL BE DONE USING A DITCH WITCH TYPE TRENCHER TO MINIMIZE WORK IN THE STREAM BUFFER. CONDUIT SHALL BE INSTALLED IMMEDIATELY AFTER EXCAVATION AND DISTURBED AREA FULLY RESTORED TO ORIGINAL CONDITION WITH SOD AS SOON AS POSSIBLE.
16. CONSTRUCT LIGHT POLE. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE.
17. CONDUIT SHALL ENTER BUILDING INTO THE I.T. ROOM. CONTRACTOR TO COORDINATE WITH PROJECT ELECTRICAL ENGINEER AND PROJECT ARCHITECT FOR EXACT LOCATION.
18. CONSTRUCT CONCRETE DUMPSTER PAD USING HEAVY DUTY PAVEMENT DESIGN. CONSTRUCT DUMPSTER ENCLOSURE TO CITY OF COLUMBIA STANDARDS. SEE DETAIL ON SHEET C4.02. CONSTRUCT A CURB BREAK AT THE SOUTHERN CORNER TO DRAIN.
19. CONSTRUCT ADA COMPLIANT HANDICAP RAMP.
20. CONSTRUCT CONCRETE MANHOLE WITH JOHN BOUCHARD AND SONS CO. NUMBER 2215 FRAME AND GRATE (DOME GRATE). RIM ELEV. = 614.22. INVERT ELEV. = 611.32
21. CONSTRUCT 40 LINEAR FEET OF 12" ADS PIPE @ S = 2.0000%. TIE INTO EXISTING STORM INLET. INVERT ELEV = 610.54±.

22. DURING RETAINING WALL CONSTRUCTION, EXISTING GAS AND WATER LINES MUST BE SUPPORTED AND PROTECTED TO PREVENT ANY DAMAGE TO THE PIPES.
23. CONSTRUCT 5' WIDE CONCRETE SIDEWALK.
24. CONSTRUCT (3) CONCRETE STEPS. TREAD WIDTH TO BE 11 INCHES AND STEP HEIGHT TO BE 6 INCHES.
25. CONSTRUCT HEAVY DUTY CONCRETE PAVING. TYPICAL JOINT SPACING SHALL BE APPROXIMATELY 12' x 12'. EVERY THIRD JOINT IN THE NORTH-SOUTH DIRECTION SHALL BE A FULL DEPTH EXPANSION JOINT WITH FULL DEPTH 1/2" FIBER EXPANSION MATERIAL. ALL JOINTS SHALL BE SEALED WITH ELASTOMERIC SEALANT MEETING ASTM 3405.
26. SEE ARCHITECTURAL PLANS FOR NEW COVERED ROOF AREA.
27. CONCRETE TO BE FLUSH WITH ONE ANOTHER.
28. CONSTRUCT TEMPORARY MOBILE HOME.
29. CONSTRUCT TEMPORARY ELECTRICAL CONDUIT. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE. THIS CONSTRUCTION SHALL BE DONE USING A DITCH WITCH TYPE TRENCHER TO MINIMIZE WORK IN THE STREAM BUFFER. CONDUIT SHALL BE INSTALLED IMMEDIATELY AFTER EXCAVATION AND DISTURBED AREA FULLY RESTORED TO ORIGINAL CONDITION WITH SOD AS SOON AS POSSIBLE.
30. CONSTRUCT TEMPORARY SANITARY LATERAL. LATERAL SHALL BE 4" PVC SCHEDULE 40. CONTRACTOR TO VERIFY DOWNSTREAM INVERT ELEVATION TO ENSURE PROPER FLOW. CONTRACTOR TO COORDINATE BUILDING PENETRATION LOCATION WITH PROJECT ARCHITECT.
31. CONSTRUCT TEMPORARY WATER CONNECTION AND METER ASSEMBLY. METER ASSEMBLY SHALL BE 3/4". CONTRACTOR TO COORDINATE BUILDING PENETRATION LOCATION WITH PROJECT ARCHITECT.
32. CONTRACTOR TO COORDINATE WITH OWNER FOR LOCATION OF KEYPAD PEDESTAL AND CONTROL FOR GATE SYSTEM.
33. EXISTING GAS LINE TO BE RELOCATED. CONTRACTOR TO COORDINATE WITH ATMOS ENGERY FOR LOCATION OF NEW LINE.
34. CONSTRUCT GAS LINE FROM BUILDING TO GENERATOR PAD METER LOCATION. COORDINATE WITH PROJECT MECHANICAL ENGINEER.
35. RECONSTRUCT DRAINAGE FLUME TO DRAIN TO PARKING LOT AT EDGE OF DUMPSTER LOCATION.

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ESTES AND ESTES ENGINEERING, INC.
AGRICULTURE
10-30-2023

ESTES AND ESTES ENGINEERING, Inc.
6025 Lee Highway Suite 105
Chattanooga, Tennessee 37421
PH: 423-800-7998 | WWW.ESTESANDESTESENGINEERING.COM

DESIGNED BY:
D. ESTES

DRAWN BY:
B. ESTES

CHECKED BY:

APPROVED BY:

NO. 1
DATE
1/2023/11/03

BY
BRE

DESCRIPTION
REVISION 1

COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

SITE PLAN

SCALE: 1" = 20'
DATE: 2023-10-18
C2.02
220198

200
0
10
20
40

CONTOUR INTERVAL = 1'
GRAPHIC SCALE = 1" = 20'

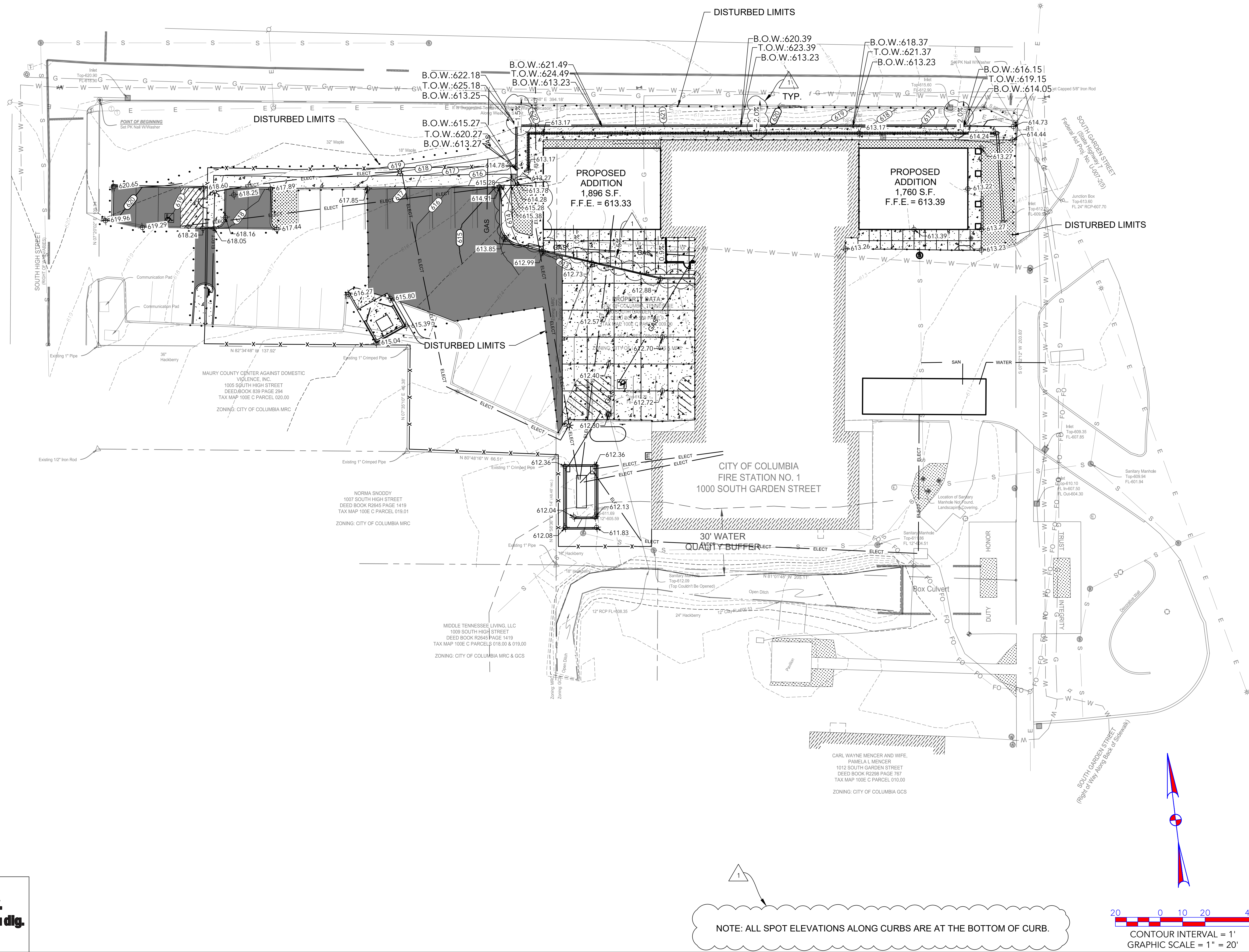
20
0
10
20
40

CONTOUR INTERVAL = 1'
GRAPHIC SCALE = 1" = 20'

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Estes and Estes Engineering, Inc.
6025 Lee Highway Suite 105
Chattanooga, Tennessee 37421
PH: 423-800-7998 | WWW.ESTESANDESSENGINEERING.COM

DESIGNED BY:	D. ESTES
DRAWN BY:	B. ESTES
CHECKED BY:	----
APPROVED BY:	----

NO.	DATE	DESCRIPTION	BY
1	2023-10-18	REVISION 1	BRE

COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

GRADING PLAN

SCALE: 1" = 20'

DATE: 2023-10-18

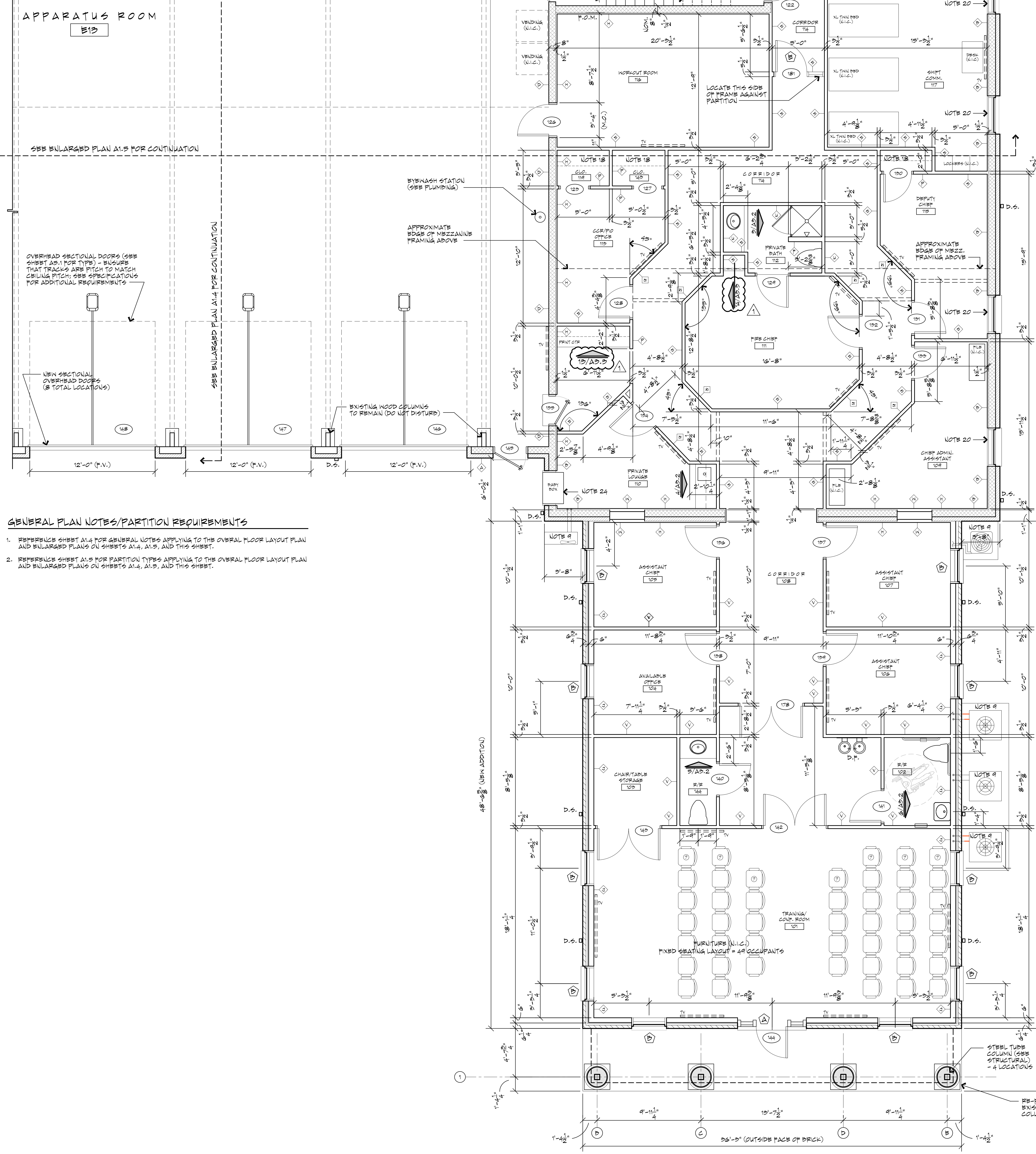
C3.01
220198



Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

A1.6 Enlarged Floor Layout Plan

- WALL PARTITION LEGEND**
- EXISTING CMU (MASONRY BLOCK)
 - EXISTING BRICK MULTI-WYTHE WALL
 - NEW BRICK VENEER/UPFILL BRICK MULTI-WYTHE
 - CONSTRUCTION TO BE DEMOLISHED
 - NEW MASONRY CONSTRUCTION
 - PROPOSED WOOD STUD CONSTRUCTION
 - EXISTING STUD CONSTRUCTION
- PARTITION FIRE RATING LEGEND (WHERE APPLICABLE)**
- ONE HOUR PARTITION
 - TWO HOUR PARTITION
 - FOUR HOUR FIREWALL
 - SMOKE WALL PARTITION (90 MINUTE)



- GENERAL PLAN NOTES/PARTITION REQUIREMENTS**
- REFERENCE SHEET A1.4 FOR GENERAL NOTES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND THIS SHEET.
 - REFERENCE SHEET A1.5 FOR PARTITION TYPES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND THIS SHEET.

ADDITIONAL PARTITION DIMENSIONS WERE INCLUDED FOR CLARITY OF LAYOUT SOLUTION

ENLARGED PLAN
SCALE: 1/4"=1'-0"

This drawing, its design, detail and invention, are the property of Nuber Architecture L.L.C. and shall not be copied in any manner nor disclosed to any outside party without expressed written consent. Failure to comply with these terms may result in criminal prosecution.

Date:	10-30-2023	Revisions:	
Job #:		FOR REVIEW ONLY	
Dr. By:		FOR ESTIMATING/BIDDING ONLY	
Ck. By:	G. Nuber	FOR CONSTRUCTION	
File #:	2021007 A1.6c	DATE: 11/13/23	ADD: Clarification

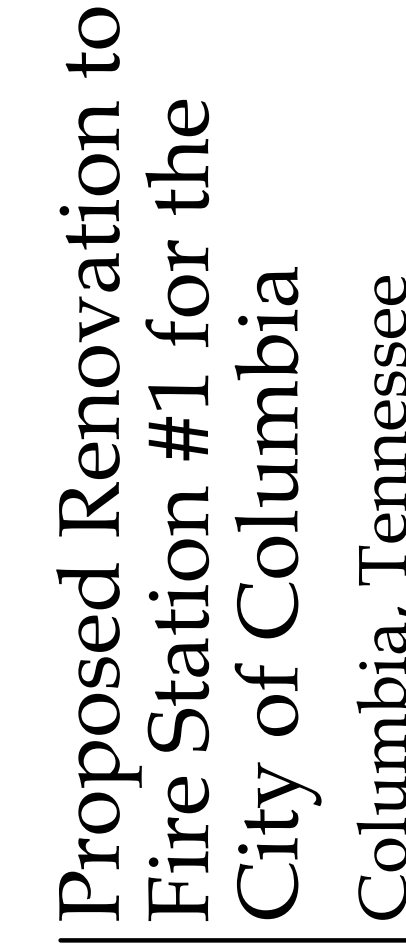


Proposed Renovation to Fire Station #1 for the City of Columbia Columbia, Tennessee

Date:	11-13-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	<u>1</u>
Dr. By:		☐ FOR PERMIT ONLY	<u>1</u>
Check By:	G. Nuber	☐ FOR ESTIMATING/BIDDING ONLY	<u>1</u>
File #:	2021007 A1.7	☒ FOR CONSTRUCTION	<u>1</u>
		DATE: 11/13/23 ISSUED BY: G. Nuber	<u>1</u>

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A3.3 Interior Elevations and Details

THIS DRAWING HAS BEEN ISSUED:

☐ FOR REVIEW ONLY	☒ 1/11/23 "Add Information"
☐ FOR PERMIT ONLY	☐ FOR RECORD ONLY
☐ FOR CONSTRUCTION	☐ FOR CONSTRUCTION

DATE: 1/11/23 ISSUED BY: G. Nuber

Date: 10-30-2023

Job #: _____

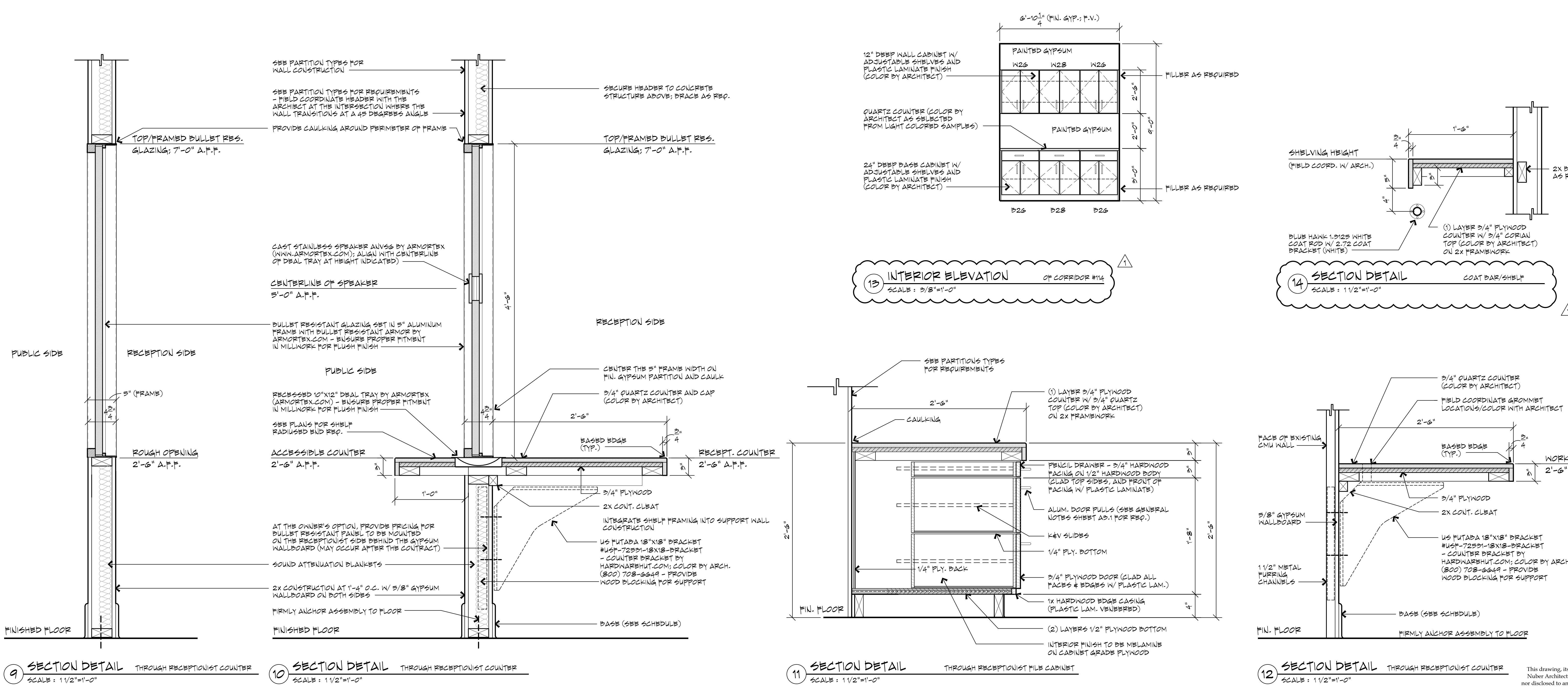
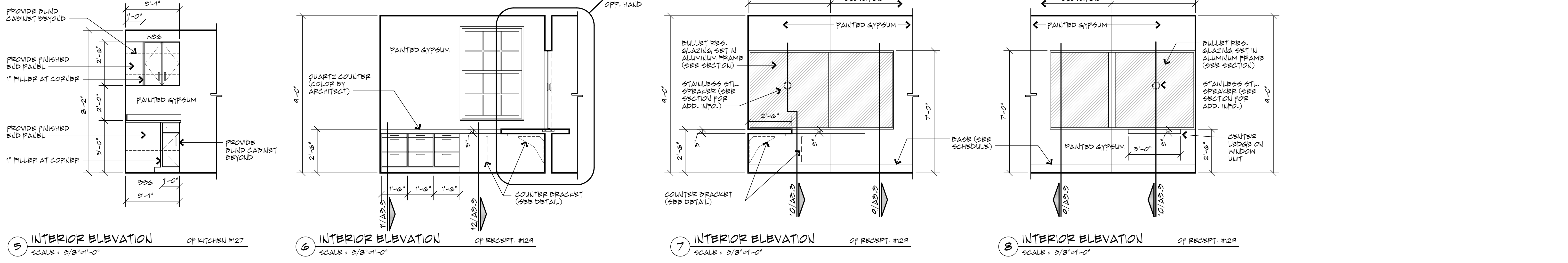
Dr. By: _____

CK: By: G. Nuber

File #: 2021007_A3.3a

Date: 10-30-2023
 Job #: _____
 Dr. By: _____
 Ck. By: G. Nuber
 File #: 2021007_A3.3a

This drawing, its design, detail and invention, are the property of Nuber Architecture L.L.C. and shall not be copied in any manner or disclosed to any outside party without expressed written consent. Failure to comply with these terms may result in criminal prosecution.



NOTE: NEW LANDSCAPE AREAS FROM THIS PROJECT
WILL BE PROVIDED AND INSTALLED BY THE
OWNER UNDER A SEPARATE CONTRACT.

6' Temporary security fence

12' gate location

12' gate location

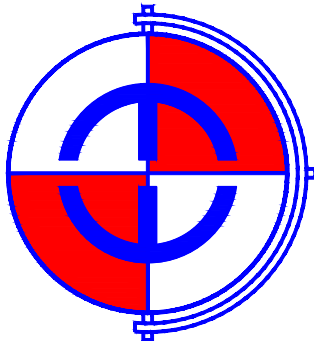
CONSTRUCTION NOTES:

- 1 CONSTRUCT ASPHALT PAVEMENT PER CITY DETAIL MD-02, SEE SHEET C4.01. CONSTRUCT PARKING STALLS. PARKING STALL TO BE SIZED 10'X18'.
- 2 CONSTRUCT TRAFFIC PAINT. TRAFFIC PAINT SHALL BE 4" SOLID WHITE FOR TYPICAL STALLS AND 4" SOLID BLUE FOR ADA STALLS AND ADA HATCHING.
- 3 CONSTRUCT EXTRUDED MOUNTABLE CURB PER CITY DETAIL SD-02, SEE SHEET C4.01.
- 4 CONSTRUCT CONCRETE PAVEMENT AS PER DETAIL, SEE SHEET C4.02. TYPICAL JOINT SPACING SHALL BE APPROXIMATELY 5' X 5'. EVERY THIRD JOINT IN THE EAST-WEST DIRECTION SHALL BE A FULL DEPTH EXPANSION JOINT WITH FULL DEPTH 1/2" FIBER EXPANSION MATERIAL. ALL JOINTS SHALL BE SEALED WITH ELASTOMERIC SEALANT MEETING ASTM 3405.
- 5 CONSTRUCT RETAINING WALL WITH SAFETY RAILING AROUND NORTHERN PORTION OF ADDITION AND BUILDING. DURING RETAINING WALL CONSTRUCTION, CONTRACTOR MAY CLOSE WEST NINTH STREET TO THROUGH TRAFFIC. ALL ROADWAY CLOSURES MUST BE COORDINATED WITH CITY ENGINEER, GLENN HARPER, AT (931) 560-1537. RETAINING WALL TO HAVE GUARDRAIL ALONG TOP OF WALL. SEE GRADING PLAN SPOT SHOTS FOR ELEVATIONS AND HEIGHTS. SEE STRUCTURAL PLANS FOR WALL DETAILS.
- 6 CONSTRUCT GENERATOR ENCLOSURE. SEE ARCHITECTURAL AND STRUCTURAL PLANS FOR DETAIL. CONTRACTOR TO COORDINATE WITH PROJECT ARCHITECT FOR EXACT LOCATION.
- 7 CONTRACTOR SHALL NEATLY SAW-CUT EXISTING ASPHALT. NEW ASPHALT SHALL MATCH EXISTING DEPTH.
- 8 CONSTRUCT ORNAMENTAL SECURITY FENCE, SEE SHEET C4.03.
- 9 CONSTRUCT 24' POWER SLIDING GATE. SEE SHEET C4.03 FOR DETAIL.
- 10 CONSTRUCT SANITARY MANHOLE. TIE BUILDING LATERAL INTO MANHOLE. CONTRACTOR TO VERIFY DOWNSTREAM INVERT ELEVATION TO ENSURE PROPER FLOW. RIM = 612.75
- 11 EXISTING FIRE HYDRANT TO REMAIN.
- 12 ALL UTILITIES NECESSARY FOR THE NEW BUILDING ADDITIONS SHALL BE FED FROM EXISTING STRUCTURE.
- 13 CONSTRUCT 225 LINEAR FEET OF ADS "DURASLOT" TRENCH DRAIN @ S = 0.2500%.
- 14 OWNER PROVIDED AND INSTALLED RADIO TOWER. COORDINATE WITH PROJECT ELECTRICAL ENGINEER. SEE STRUCTURAL FOR COMMUNICATION TOWER FOUNDATION DETAILS.
- 15 CONSTRUCT ELECTRICAL CONDUIT. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE. THIS CONSTRUCTION SHALL BE DONE USING A DITCH WITCH TYPE TRENCHER TO MINIMIZE WORK IN THE STREAM BUFFER. CONDUIT SHALL BE INSTALLED IMMEDIATELY AFTER EXCAVATION AND DISTURBED AREA FULLY RESTORED TO ORIGINAL CONDITION WITH SOD AS SOON AS POSSIBLE.
- 16 CONSTRUCT LIGHT POLE. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE.
- 17 CONDUIT SHALL ENTER BUILDING INTO THE I.T. ROOM. CONTRACTOR TO COORDINATE WITH PROJECT ELECTRICAL ENGINEER AND PROJECT ARCHITECT FOR EXACT LOCATION.
- 18 CONSTRUCT CONCRETE DUMPSTER PAD USING HEAVY DUTY PAVEMENT DESIGN. CONSTRUCT DUMPSTER ENCLOSURE TO CITY OF COLUMBIA STANDARDS. SEE DETAIL ON SHEET C4.02. CONSTRUCT A CURB BREAK AT THE SOUTHERN CORNER TO DRAIN.
- 19 CONSTRUCT ADA COMPLIANT HANDICAP RAMP.
- 20 CONSTRUCT CONCRETE MANHOLE WITH JOHN BOUCHARD AND SONS CO. NUMBER 2215 FRAME AND GRATE (DOME GRATE). RIM ELEV. = 614.22. INVERT ELEV. = 611.32
- 21 CONSTRUCT 40 LINEAR FEET OF 12" ADS PIPE @ S = 2.0000%. TIE INTO EXISTING STORM INLET. INVERT ELEV = 610.54±.

- 22 DURING RETAINING WALL CONSTRUCTION, EXISTING GAS AND WATER LINES MUST BE SUPPORTED AND PROTECTED TO PREVENT ANY DAMAGE TO THE PIPES.
- 23 CONSTRUCT 5' WIDE CONCRETE SIDEWALK.
- 24 CONSTRUCT (3) CONCRETE STEPS. TREAD WIDTH TO BE 11 INCHES AND STEP HEIGHT TO BE 6 INCHES.
- 25 CONSTRUCT HEAVY DUTY CONCRETE PAVING. TYPICAL JOINT SPACING SHALL BE APPROXIMATELY 12' X 12'. EVERY THIRD JOINT IN THE NORTH-SOUTH DIRECTION SHALL BE A FULL DEPTH EXPANSION JOINT WITH FULL DEPTH 1/2" FIBER EXPANSION MATERIAL. ALL JOINTS SHALL BE SEALED WITH ELASTOMERIC SEALANT MEETING ASTM 3405.
- 26 SEE ARCHITECTURAL PLANS FOR NEW COVERED ROOF AREA.
- 27 CONCRETE TO BE FLUSH WITH ONE ANOTHER.
- 28 CONSTRUCT TEMPORARY MOBILE HOME.
- 29 CONSTRUCT TEMPORARY ELECTRICAL CONDUIT. SEE ELECTRICAL SITE PLAN FOR KIND AND TYPE. THIS CONSTRUCTION SHALL BE DONE USING A DITCH WITCH TYPE TRENCHER TO MINIMIZE WORK IN THE STREAM BUFFER. CONDUIT SHALL BE INSTALLED IMMEDIATELY AFTER EXCAVATION AND DISTURBED AREA FULLY RESTORED TO ORIGINAL CONDITION WITH SOD AS SOON AS POSSIBLE.
- 30 CONSTRUCT TEMPORARY SANITARY LATERAL. LATERAL SHALL BE 4" PVC SCHEDULE 40. CONTRACTOR TO VERIFY DOWNSTREAM INVERT ELEVATION TO ENSURE PROPER FLOW. CONTRACTOR TO COORDINATE BUILDING PENETRATION LOCATION WITH PROJECT ARCHITECT.
- 31 CONSTRUCT TEMPORARY WATER CONNECTION AND METER ASSEMBLY. METER ASSEMBLY SHALL BE 3/4". CONTRACTOR TO COORDINATE BUILDING PENETRATION LOCATION WITH PROJECT ARCHITECT.
- 32 CONTRACTOR TO COORDINATE WITH OWNER FOR LOCATION OF KEYPAD PEDESTAL AND CONTROL FOR GATE SYSTEM.
- 33 EXISTING GAS LINE TO BE RELOCATED. CONTRACTOR TO COORDINATE WITH ATMOS ENGERY FOR LOCATION OF NEW LINE.
- 34 CONSTRUCT GAS LINE FROM BUILDING TO GENERATOR PAD METER LOCATION. COORDINATE WITH PROJECT MECHANICAL ENGINEER.
- 35 RECONSTRUCT DRAINAGE FLUME TO DRAIN TO PARKING LOT AT EDGE OF DUMPSTER LOCATION.



Estes and Estes Engineering, Inc.
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PH: 423-800-7998 | WWW.ESTESANDESSENGINEERING.COM



DESIGNED BY: D. ESTES
DRAWN BY: B. ESTES
CHECKED BY: ---
APPROVED BY: ---

NO.	DATE	DESCRIPTION	REVISION
1	2023.11.03	ISSUED FOR PERMIT	1

COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

SITE PLAN
SCALE: 1" = 20'
DATE: 2023-10-18
C2.02
220198



November 22nd, 2023

RE: ADDENDUM #2, RENOVATIONS TO FIRE STATION #1, COLUMBIA, TENNESSEE FILE NO. 2021007

ATTENTION ALL APPLICABLE BIDDERS:

Please amend your contract documents and specifications dated October 30th, 2023 (or as specified otherwise herein) as addendum #1. Below are listed the following corrections/changes to be made:

SPECIFICATIONS SECTION AMENDMENTS/CHANGES

1. Specifications Section 08 71 00, FINISH HARDWARE, is amended in the following particulars as follows:
 - a. **Entire Section has been replaced, but specific changes to this section are as follows:**
 - i. The door schedule calls for openings 157 & 170 to be Hardware Set 27. There is no Hardware set 27 in the specifications. They are called out for Hardware Group 22, but so is opening 144. Hardware Group 22 is for a single door, and 157 & 170 are pairs. Please advise. **Response: These two openings should be in set 27. Both the word document and the PDF show hardware set 27. Reference the attached 08 71 00 specification for correction.**
 - ii. Opening 178 calls out Hardware Group 26 on the Door Schedule, but the specifications stop at Hardware Group 25. Please advise. (also, this opening did not appear under any other group like that above two did) **Response: This opening should be in set 26. Reference the attached 08 71 00 specification for correction.**
 - iii. Openings 179 & 180 do not appear in any Hardware Group in the specifications. The Door Schedule calls out 179 for Hardware Group 08 and 181 for Hardware Group 05. Are those the correct sets for those openings? **Response: Opening 179 is listed in the spec under set 08, Opening 180 is listed in the spec under set 02 and opening 181 is listed in the spec under set 05. Reference the attached 08 71 00 specification for correction.**
 - iiii. Opening 126 on the Door Opening Schedule calls out Door Type 3 (which Door Type 3 calls out to be HM) but is listed as a Wood Door on the schedule. What door type/material is it supposed to be? Please advise. **Door opening 126 should be a wood door with a 3'-0"x7'-2" hollow metal opening. The head height will be 7'-4". Sheet A5.1 will be amended in that particular. A future revision of Sheet A5.1 will be issued after the bid for the record.**

GENERAL CLARIFICATIONS

1. On Sheet A5.1, please note that doors 157 and 170 will need to be 3'-0"x7'-2" openings with a 4" head as each door assembly will be installed in a new CMU infill wall. The doors will be wood with a view lite and the frames will be hollow metal. This correction will supersede the current version of these doors, Sheet A5.1 will be issued after the bid for the record.
2. We learned that the shingle roof we noted on the drawings has been discontinued. As a substitute, please price Owen's Corning, Series: Duration Flex. Color is to be "Estate Gray".

3. We have provided an updated Bidder Information Sheet after learning that not all the companies listed on this document were not General Contractors. The updated Bidder's Information Sheet has been attached for your information.
4. Please be reminded that each Contractor will be required to provide the Architect an A305 Contractor's Qualifications Stated. Please ensure that sections A, D, and E are completely filled out. Section B and C are not required to be filled out. This document will be required to be submitted to the project Architect, George Nuber. The e-mail address is: george@nuberarchitecturellc.com to submit that requested documentation.
5. On 1/S2.4, please change note that reads "Bridge Rail 6" diameter Steel Pipe" to "Bridge Rail 6" diameter Aluminum Pipe". As a clarification, the Contractor has the option of galvanized steel or aluminum depending on local sourcing of these products.
6. With respect to the communication tower foundation and helical piers that have been specified, the loading of those piers are as follows:
 - Vertical (down): 15 kips
 - Vertical (uplift-wind): 36 kips
 - Horizontal (wind): 9 kipo

The above values are service loads, to which ultimate factors can be applied. Please note that if solid rock is encountered directly under the location of this tower foundation, rock anchors may have to be used instead of helical piers. The same loading criteria would be applied to 4 rock anchors located at the same locations within the pile cap.

END OF ADDENDUM #2

Respectfully Submitted,



George Nuber, Architect
Nuber Architecture LLC

// attachments: FINISH HARDWARE (Corrected Section 08 71 00)
BIDDER INFORMATION SHEET (Revised; November 21st, 2023)

REVISED Bidder Information List

Bid Date: Nov. 30th, 2023, 2:00pm C.S.T., 700 North Garden St, Conference Room A, Columbia, TN.

Project No: 2021007

Owner:
City of Columbia
700 North Garden Street
Columbia, Tennessee 38401

Project Name:
Renovation to Fire Station #1

Location:
1000 South Garden Street, Columbia, Tennessee

List of Plan Rooms (not highlighted)
List of Bidders (highlighted in green):

Name	Contact	Phone	Fax	License #	Document Set #	Sent PDF / Confirmed	Payment / Check #	E-mail
KCS Building Group	Steven Blanton	615-693-9133				X	N/A	sblanton@kcsllc.com
Drakes Creek Builders	Troy Bishop	615-788-6601				X	N/A	tbishop@drakescreekbuilders.com
Nabholz Construction	Blake Osteen	615-708-9220				X	N/A	blake.osteen@nabholz.com
Solomon Builders	Huston Parkhurst	615-405-1432				X	N/A	hparkhurst@solomonbuilders.com
Brindley Construction	J.J. Brindley	931-309-8754				X	N/A	jjbrindley@brindleyco.com
Paul Varney Construction	Paul Varney	931-286-1513				X	N/A	jnuberPVC@gmail.com
Southeast Contractors	Will Milburn	615-405-8940				X	N/A	wmilburn07@bellsouth.net
Builders Exchange of Tennessee (BXTN) 301 S. Perimeter Park Drive, Suite 100 Nashville TN 37211	Kendra Buhlig	615-690-7200	615-690-7201					kendra@bxtn.org
Construct Connect 3825 Edwards Road, Suite 800 Cincinnati, Ohio 45209	Wynne Ypanto	323-602-5079, ext. 75303	866-570-8187					Wynne.Ypanto@ConstructConnect.com

SECTION 087100 - FINISH HARDWARE

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Door Hardware, including electric hardware.
2. Storefront and entrance door hardware.
3. Wall or floor-mounted electromagnetic hold-open devices.
4. Cylinders for doors fabricated with locking hardware.
5. Key cabinet.

B. Related Sections:

1. Section 062000 - Finish Carpentry: Finish Hardware Installation.
2. Section 079000 - Joint Sealers – exterior thresholds.
3. Section 081100 - Metal Doors and Frames.
4. Section 081400 - Wood Doors.
5. Section 081500 – Plastic Doors.
6. Section 084000 - Entrances and Storefronts.
7. Section 088000 - Glazed Curtain Walls.
8. Section 102200 - Operable Partitions.
9. Section 210000 - Fire/Life-Safety System.
10. Section 280000 - Security Access Systems.

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Folding partitions, except cylinders where detailed.
8. Sliding aluminum doors, except cylinders where detailed.
9. Access doors and panels, except cylinders where detailed.
10. Corner Guards.
11. Wrought Iron railing, gates and supports.
12. Brass rail and drink rail supports.

1.2 REFERENCES:

- A. Use date of standard in effect as of Bid date.
- B. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- C. ANSI A117.1 – Specifications for making buildings and facilities usable by physically handicapped people.
- D. ADA – Americans with Disabilities Act of 1990
- E. BHMA – Builders Hardware Manufacturers Association
- F. DHI – Door and Hardware Institute
- G. NFPA – National Fire Protection Association

- 1. NFPA 80 – Fire Doors and Windows
- 2. NFPA 101 – Life Safety Code
- 3. NFPA 105 – Smoke and Draft Control Door Assemblies
- 4. NFPA 252 – Fire Tests of Door Assemblies

H. UL – Underwriters Laboratories

- 1. UL10C – Fire Tests of Door Assemblies (Positive Pressure)
- 2. UL 305 – Panic Hardware

- I. WHI – Warnock Hersey Incorporated
- J. SDI – Steel Door Institute
- K. WDI – Wood Door Institute
- L. AWI – Architectural Woodwork Institute
- M. NAAM – National Association of Architectural Metal Manufacturers

1.3 SUBMITTALS & SUBSTITUTIONS

- A. SUBMITTALS: Submit six copies of schedule per Division 1. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

- 1. Type, style, function, size, quantity and finish of hardware items. Use BHMA Finish codes per ANSI A156.18.
- 2. Name, part number and manufacturer of each item.
- 3. Fastenings and other pertinent information.
- 4. Location of hardware set coordinated with floor plans and door schedule.
- 5. Explanation of abbreviations, symbols, and codes contained in schedule.
- 6. Mounting locations for hardware.
- 7. Door and frame sizes, materials and degrees of swing.

8. List of manufacturers used and their nearest representative with address and phone number.
 9. Catalog cuts.
 10. Manufacturer's technical data and installation instructions for electronic hardware.
 11. Date of jobsite visit.
- B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.
 - C. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
 - D. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring/riser diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.
- 1.4 QUALITY ASSURANCE:
- A. Qualifications:
 1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course Work for project hardware consultation to Owner, Architect and Contractor.
 - (1) Responsible for detailing, scheduling and ordering of finish hardware.
 - B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
 - C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
 - D. Fire-Rated Openings: In compliance with NFPA 80. Hardware UL10C/UBC-7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, plus resilient and required intumescent seals. Furnish openings complete.
 1. Note: scheduled seals may exceed selected door manufacturer's requirements. See 2.6.E for clarification.

- E. **Pre-Installation Meetings: Initiate and conduct with supplier, installer and related trades, coordinate materials and techniques, and sequence complex hardware items and systems installation. Convene at least one week prior to commencement of related work.**

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).
 - 1. Permanent keys: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.
- C. Storage: Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc...

1.6 PROJECT CONDITIONS:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.
- B. Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including sized, quantities, and sill conditions material. If conflict between the scheduled material and existing conditions, submit request for directions from Architect. Include date of jobsite visit in the submittal.

1.7 SEQUENCING AND COORDINATION:

- A. Coordinate with concrete.
- B. Reinforce walls.
- C. Coordinate finish floor materials and floor-mounted hardware.
- D. Conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.

- E. Furnish manufacturer templates to door and frame fabricators.
- F. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
 - 1. Confirm that door manufacturers furnish necessary UBC-7-2 compliant seal packages.

1.8 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' warranties:
 - 1. Closers: Ten years mechanical, two years electrical.
 - 2. Exit Devices: Three years.
 - 3. Hinges: Life of Building.
 - 4. Other Hardware: Two years.

1.9 COMMISSIONING:

- A. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
- B. Test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
- C. Test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

<u>ITEM:</u>	<u>MANUFACTURER:</u>	<u>ACCEPTABLE SUB:</u>
Hinges	(IVE) Ives	Bommer, Hager
Key System	(SCH) Schlage Everest 29	None
Locks	(SCH) Schlage	Falcon
Exit Devices	(VON) Von Duprin	None
Closers	(FAL) Falcon	Norton, LCN
Silencers	(IVE) Ives	DCI, Hager

Kickplates	(IVE) Ives	Hager, Rockwood
Stops & Holders	(IVE) Ives	Hager, Rockwood
Overhead Stops	(GLY) Glynn-Johnson	Rixson
Thresholds	(ZER) Zero	National Guard, Reese
Seals & Bottoms	(ZER) Zero	National Guard, Reese
Key Cabinets	(LUN) Lund	TelKee

B. Provide hardware items required to complete the work in accordance with these specifications and manufacturers' instructions.

1. Include items inadvertently omitted from this specification. Note these items in submittal for review.
2. Where scheduled item is now obsolete, bid and furnish manufacturers updated item at no additional cost to the project.

2.2 HANGING MEANS:

A. Conventional Hinges: Hinge open widths minimum, but, of sufficient throw to permit maximum door swing. Steel or stainless steel pins and concealed bearings.

1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height, or any fraction thereof.
2. Extra heavy weight hinges on doors over 3 foot, 5 inches in width.
3. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins.
4. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
5. Provide shims and shimming instructions for proper door adjustment.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

A. Heavy Duty Cylindrical Locks and Latches: as scheduled.

1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
2. Locking Spindle: stainless steel, interlocking design.
3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel or stainless steel.
4. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to face of door.
5. Lock Series and Design: Schlage ND series, "LAT" design.
6. Acceptable Substitution: Falcon T series LAT design
7. Certifications:

- a. ANSI A156.2, 1994, Series 4000, Grade 1
 - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
8. Accepted substitutions: Sargent 6500 line series LP design

2.4 EXIT DEVICES

A. Exit Devices:

- 1. Acceptable manufacturers:
 - a. Von Duprin*
- 2. Characteristics:
 - a. Exit devices to be "UL" listed for life safety. All exit devices for fire rated openings to have "UL" labels for "Fire Exit Hardware."
 - b. All exit devices mounted on labeled wood doors to be mounted on the door per the door manufacturer's requirements.
 - c. All trim to be thru-bolted to the lock stile case. Lever design to match locksets.
 - d. All exit devices to be made of brass, bronze, stainless steel, or aluminum material, powder coated, anodized, or plated to the standard architectural finishes to match the balance of the door hardware.
 - e. Provide glass bead conversion kits to shim exit devices on doors with raised glass beads.
 - f. All exit devices to be one manufacturer. No deviation will be considered.
 - g. All series exit devices to incorporate a fluid damper, which decelerates the touchpad on its return stroke and eliminates noise associated with exit device operation. All exit devices to be non-handed. Touchpad to extend a minimum of 1/2 of the door width and to extend to the height of the cross rail housing for a "no pinch" operation. Plastic touchpads are not acceptable. All latchbolts to be the deadlocking type. Latchbolts to have a self-lubricating coating to reduce wear. Plated or plastic coated latchbolts are not acceptable. Plastic linkage and "dogging" components are not acceptable.
 - h. Lever trim to be solid case material with a break-away feature to limit damage to the unit from vandalism.
 - i. Surface vertical rod devices to be UL labeled for fire door applications without the use of bottom rod assemblies. Where bottom rods are required for security applications, the devices to be UL labeled for fire

doors applications with rod and latch guards by the device manufacturer.

- j. Exit devices to include impact resistant, flush mounted end cap design to avoid damage due to carts and other heavy objects passing through an opening. End cap to be of heavy-duty metal alloy construction and provide horizontal adjustment to provide alignment with device cover plate. When exit device end cap is installed, no raised edges will protrude.
- k. Basis of Design: Von Duprin 98/99 series, LAT trim to match locksets

2.5 CLOSERS

- A. General: One manufacturer for closer units throughout the Work, including surface closers, high security closers, overhead concealed closers, floor closers, low-energy door operators and electromagnetic hold-open closers.
- B. Surface Closers:
 - 1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast aluminum body. Heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
 - 2. ISO 2000 certified. Units stamped with date-of-manufacture code.
 - 3. Thru-bolts at wood doors unless doors are provided with closer blocking. Non-sized, non-handed and adjustable. Place closers inside building, stairs and rooms.
 - 4. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
 - 5. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb.
 - 6. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
 - 7. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
 - 8. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to 0 degrees F, furnish data on request.
 - 9. Non-flaming fluid will not fuel door or floor covering fires.
 - 10. Basis of Design: Falcon SC71A and SC80 series as specified in sets
 - 11. Accepted substitutions: Norton 7500 and 8301 series as noted above, LCN 4050 and 1450 series as noted above

2.6 OTHER HARDWARE

- A. Overhead Stops: Stainless steel (90 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
- B. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- C. Door Stops: Provide stops to protect walls, casework or other hardware.
 - 1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
- D. Seals: Finished to match adjacent frame color. Resilient seal material: solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material's thickness and durability. Proposed substitutions: submit for approval.
 - 1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
 - 2. Non-corroding fasteners at in-swinging exterior doors.
 - 3. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applies seals over bead of sealant.
 - 4. Fire-rated Doors, Resilient Seals: UL10C/UBC-7-2 compliant. Coordinate with selected door manufacturers and selected frame manufacturer's requirements.
 - 5. Fire-rated Doors, Intumescent Seals: Furnish fire-labeled opening assembly complete and in full compliance with UL10C/UBC-7-2. Furnished by selected door manufacturer, these seals vary in requirement by door type and door manufacture. Adhesive applied intumescent strips are not acceptable, use concealed-in-door-edge type or kerfed-in-frame type. Careful coordination required.
- F Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.
- G. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

1. Exteriors: Set in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous ¼ inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
 2. Sound control openings: Set in bed of mastic sealant.
- H. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
- I. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.
- 2.7 FINISH:
- A. Generally BHMA 619.
- B. Door closers: factory powder coated to match other hardware, unless otherwise noted.
- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.
- 2.8 KEYING REQUIREMENTS:
- A. Key System: For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner to determine system keyway(s) and structure, furnish Owner's written approval of the system.
1. New master key system
 2. Construction keying: FSIC construction cores. At substantial completion, remove temporary cores and install permanent cores in Owner's presence; demonstrate consequent non-operability of construction key. Give all removed construction cores and all construction keys to hardware supplier.
 3. Furnish 10 construction keys.
 4. Furnish 2 construction control keys.

- 5 Recombine entire project at no extra expense to Owner if missing construction keys.
- B. Key Cylinders: utility patented, 6-pin FSIC solid brass construction.
- C. Locks and cylinders: keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
- D. Permanent keys: secured shipment direct from point of origination to Owner.
- E. Bitting List: Secured shipment direct from point of origination to Owner upon completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

- A. Factory trained, certified, and carries a factory-issued card certifying that person as a "Certified Installer". Alternative: can demonstrate suitably equivalent competence and experience.

3.2 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
 - 1. Notify Architect of any code conflicts before ordering material.
 - 2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Owner.
 - 1. Patch and fill wood frames and doors with solid wood stock or dowel material before cutting for new hardware. Do not reuse existing screw holes - - fill and re-pilot.
 - 2. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.

3.3 INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation.
 - 1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 - 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
- B. Locate floor stops not more than 4 inches from the wall.
- C. Drill pilot holes for fasteners in wood doors and/or frames.
- D. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

3.4 ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
 - 1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction.
- B. Inspection: Use hardware supplier. Include suppliers with closeout documents.
- C. **Post-installation Inspection: Installer will visit Project with representatives of the manufacturers of the locking devices and door closers, the Owner and the Architect to accomplish following:**
 - 1. **Demonstrate that hardware items have been adjusted according to the manufacturers installations and recommendations.**
 - 2. **Evaluate maintenance procedures and instruct Owner's personnel.**
 - 3. **Identify items that have not been installed according to the manufacturers installation instructions and recommendations.**
 - 4. **Submit written report identifying problems and recommended solutions.**

3.5 DEMONSTRATION:

- A. Demonstrate electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.

3.6 PROTECTION/CLEANING:

- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.

3.7 SCHEDULE OF FINISH HARDWARE

- A. See door schedule in drawings for hardware set assignments.
- B. Manufacturers and their abbreviations used in this schedule:

FAL Falcon Closers
 GLY Glynn-Johnson Hardware
 IVE H. B. Ives
 SCE Schlage Electronics
 SCH Schlage Lock Company
 VON Von Duprin
 ZER Zero Manufacturing

HARDWARE GROUP NO.: 01

For use on Door #(s):

100

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 02

For use on Door #(s):

101	146	147	148	149	150
153	154	155	180		

Provide each RU door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ALL HARDWARE	BY DOOR MANUFACTURER		

HARDWARE GROUP NO.: 03

For use on Door #(s):

102

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	ELEC PANIC HARDWARE	CD-RX-LC-98-EO-SNB	619	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-KP-LAT-J 12/24 VDC	619	SCE
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER
5	EA	DESK MOUNT BUTTON	660-PB	628	SCE

PANEL INTERFACE BOARD, LOW VOLTAGE CABLING, SET-UP, INITIALIZTION TO BE BY
DIVISION 28

PRESENTATION OF VALID CREDENTIAL OR PRESSING REMOTE RELEASE UNLOCKS OUTSIDE
TRIM. TRIM RE-LOCKS AFTER PRESET INTERVAL. RX SWITCH IN PANIC BAR SHUNTS DPS. FREE
EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 04

For use on Door #(s):

103	106	119	129	140	141
164	166	168			

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	619	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 05

For use on Door #(s):

104	105	110	114	115	116
135	181				

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL.FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 06

For use on Door #(s):

111	132	134
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Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	OH STOP	90S	619	GLY
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 07

For use on Door #(s):

108	109
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Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DSHO	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 08

For use on Door #(s):

113 122 179

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 09

For use on Door #(s):

112 120 126

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 10

For use on Door #(s):

158	160	161	163	165	167
169	171	172	173	175	

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 11

For use on Door #(s):

128 131 133 136 137 138
139

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 12

For use on Door #(s):

118

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 13

For use on Door #(s):

107 117

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A HW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL.FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 14

For use on Door #(s):

121 159

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	619	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 15

For use on Door #(s):

123 127

Provide each CO door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CASED OPENING	NO HARDWARE REQUIRED		

HARDWARE GROUP NO.: 16

For use on Door #(s):

142

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
2	EA	PUSH PLATE	8200 6" X 16"	619	IVE
2	EA	PULL PLATE	8303 10" 4" X 16"	619	IVE
2	EA	SURFACE CLOSER	SC81A DS	689	FAL
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MEETING STILE	383AA	AA	ZER
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 17

For use on Door #(s):

125

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 18

For use on Door #(s):

130

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 19

For use on Door #(s):

124 143

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	SC81A DSHO	689	FAL
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MEETING STILE	383AA	AA	ZER
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 20

For use on Door #(s):

145 151 152

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	619	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 21

For use on Door #(s):

156

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-LAT-J 4B	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL.FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 22

For use on Door #(s):

144

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	CD-RX-LC-98-EO-SNB	619	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-300-993R-70-KP-LAT-J 12/24 VDC	619	SCE
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

PANEL INTERFACE BOARD, LOW VOLTAGE CABLING, SET-UP, INITIALIZTION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE TRIM. TRIM RE-LOCKS AFTER PRESET INTERVAL. RX SWITCH IN PANIC BAR SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 23

For use on Door #(s):

162

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-98-EO-SNB	619	VON
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

HARDWARE GROUP NO.: 24

For use on Door #(s):

174

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	OH STOP	90S	619	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 25

For use on Door #(s):

176 177

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-98-L-LAT-SNB	619	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

HARDWARE GROUP NO.: 26

For use on Door #(s):

178

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	ELEC CLASSROOM LOCK	AD-300-CY-70-KP-LAT-J 12/24 VDC	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	SC81A DS	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	MEETING STILE	383AA	AA	ZER

PANEL INTERFACE BOARD, LOW VOLTAGE CABLING, SET UP, INITIALIZATION TO BE BY
DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 27

For use on Door #(s):

157

170

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	ELEC PANIC HARDWARE	CD-RX-LC-98-EO-SNB	619	VON
1	EA	ELEC EXIT DEVICE TRIM	CO-100-993R-70-KP-LAT-J 4B	619	SCE
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	SET	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE TRIM. TRIM RE-LOCKS AFTER
PRESET INTERVAL. FREE EGRESS AT ALL TIMES.

END OF SECTION 087100



November 27th, 2023

RE: ADDENDUM #3, RENOVATIONS TO FIRE STATION #1, COLUMBIA, TENNESSEE FILE NO. 2021007

ATTENTION ALL APPLICABLE BIDDERS:

Please amend your contract documents and specifications dated October 30th, 2023 (or as specified otherwise herein) as addendum #3. Below are listed the following corrections/changes to be made:

SPECIFICATIONS SECTION AMENDMENTS/CHANGES

1. Specifications Section 01 21 26, ALLOWANCES, is amended in the following particulars as follows:
 - a. Under 3.01, Schedule of Allowances, Paragraph C, Replace entire paragraph to read "Allow a unit cost of eight hundred twenty-five (\$825.00) per thousand for the purchase of face brick and mortar (9 bags/ thousand). The two brick selections that the Architect is considering for this project at the above stated price is based on is Pine Hall Brick, Old Colony F/R Modular or Lee Brick modular, #165 Roanoke. The custom mortar will be a light custom color from the Holcim mortar line. Please note that delivery and taxes are not included in the above allowance costs.
2. Specifications Section 00 11 13 - ADVERTISEMENTS FOR BID, under 1.03, TO: POTENTIAL BIDDERS, Replace Paragraph "F" to read, "Bidders will be required to provide a BID SECURITY in the form of a bid bond of a sum no less than **10%** of the Bid Amount." As a clarification, additional information for the bid bond is provided below under General Clarifications, paragraph 3, subparagraph "c".

GENERAL CLARIFICATIONS

1. We have provided an updated Bidder Information Sheet. The updated Bidder's Information Sheet has been attached for your information. To clarify, we have updated the General Contractors bidding the project.
2. Please be reminded that each Contractor will be required to provide to the Architect an A305 Contractor's Qualifications Statement requested in addendum #2. Please ensure that sections A, D, and E are completely filled out where applicable. Section B and C are not required to be filled out. This document will be required to be submitted to the project Architect, George Nuber. The e-mail address is: george@nuberarchitecturellc.com. To clarify, we have not received this documentation from all bidders and this document will need to be submitted by November 29th, 2 pm CST.
3. **CRITICAL BID SUBMITTAL DOCUMENTS:** To ensure that the General Contractor does not miss any information in the bid submittal, please be sure to include all the following when submitting your bid envelope as follows:
 - a. Provide a sealed envelope which is clearly titled, **Renovations to Fire Station #1**. Ensure that the cover of the envelope includes the General Contractor bidding the project and lists all major sub-contractors used in the project. For each company on the cover of the envelope, include company name, license number, expiration dates, and license classification. Ensure that the writing is typed or clearly legible.
 - b. Provide completed Bid Form with all blanks filled in and properly executed and dated. The latest bid form is attached for your convenience. **This document will be included and inside the sealed envelope.**
 - c. Include an AIA A310 Bid Bond Form in the amount of 10% of the Bid Amount, fully executed. **This document will be included and inside the sealed envelope.**

- d. Include with the bid a fully executed "DRUG-FREE WORKPLACE AFFIDAVIT OF PRIME BIDDER" form, as supplied in the specifications handbook. **This document will be included inside the sealed envelope.**
- e. Include with the bid a full executed "IRAN DIVESTMENT ACT" form, as supplied in the specifications handbook. **This document will be included and inside the sealed envelope.**

Understanding of Bid Requirements and Submittals

The successful bidder shall be a licensed contractor in the State of Tennessee and shall meet all legal requirements for conducting business with the City of Columbia.

The General Contractor bidding the project may not submit their bid if it exceeds the limits of their license per Contractor's licensing requirements of the State of Tennessee. Unless otherwise allowable by the State of Tennessee, the licensing limit is based on the cumulative amount of all trades in their submitted bid.

CONSTRUCTION DOCUMENT AMENDMENTS/CHANGES

Please amend the Construction Documents dated October 30th, 2023 (or as specified otherwise herein) as addendum #3. Below are listed the following corrections/changes to be made:

1. Sheet P1.1, is updated as follows: For all references denoting "WC-3", replace with "WC-2". As a clarification, there is no WC-3 in the plumbing fixture schedule on sheet P4.1. Use requirements of WC-2 in these specific locations.

END OF ADDENDUM #3

Respectfully Submitted,



George Nuber, Architect
Nuber Architecture LLC

// attachments: BIDDER INFORMATION SHEET (Revised; November 27th, 2023)
BID FORM (Revised Section 00 41 00)

REVISED Bidder Information List

Bid Date: Nov. 30th, 2023, 2:00pm C.S.T., 700 North Garden St, Conference Room A, Columbia, TN.

Project No: 2021007

Owner:
City of Columbia
700 North Garden Street
Columbia, Tennessee 38401

Project Name:
Renovation to Fire Station #1

Location:
1000 South Garden Street, Columbia, Tennessee

List of Plan Rooms (not highlighted)
List of Bidders (highlighted in green):

Name	Contact	Phone	Fax	License #	Document Set #	Sent PDF / Confirmed	Payment / Check #	E-mail
KCS Building Group	Steven Blanton	615-693-9133				X	N/A	sblanton@kcsllc.com
Drakes Creek Builders	Troy Bishop	615-788-6601				X	N/A	tbishop@drakescreekbuilders.com
Nabholz Construction	Blake Osteen	615-708-9220				X	N/A	blake.osteen@nabholz.com
Brindley Construction	J.J. Brindley	931-309-8754				X	N/A	jjbrindley@brindleyco.com
Paul Varney Construction	Paul Varney	931-286-1513				X	N/A	jnuberPVC@gmail.com
Southeast Contractors	Will Milburn	615-405-8940				X	N/A	wmilburn07@bellsouth.net
Builders Exchangeof Tennessee (BXTN) 301 S. Perimeter Park Drive, Suite 100 Nashville TN 37211	Kendra Buhlig	615-690-7200	615-690-7201					kendra@bxtn.org
Construct Connect 3825 Edwards Road, Suite 800 Cincinnati, Ohio 45209	Wynne Ypanto	323-602-5079, ext. 75303	866-570-8187					Wynne.Ypanto@ConstructConnect.com

SECTION 00 41 00 - BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. City of Columbia (Owner)

1. 700 North Garden Street
2. Columbia, TN 38401

1.02 FOR:

A. Project: Proposed Facility Renovation to Fire Station #1

B. Project Number: 2021007

1000 S. Garden St.
Columbia, TN 38401

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____

1. Address _____

2. City, State, Zip _____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents including drawings and specifications prepared by Nuber Architecture, LLC dated October 30th, 2023, for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. LUMP SUM _____ dollars
(\$ _____), in lawful money of the United States of America.

C. ADD ALTERNATE NO. 1 (Add epoxy floor system to apparatus bay #E13)
_____ dollars
(\$_____).

D. ADD ALTERNATE NO. 2 (Add a 5' high aluminum fence as detailed in the Civil Drawings) _____ dollars
(\$_____).

E. ADD ALTERNATE NO. 3 (Add a power operated sliding gate as detailed in the Civil Drawings) _____ dollars
(\$_____).

F. ADD ALTERNATE NO. 4 (Add security fencing indicated on supplemental documents per addendum 1)
_____ dollars
(\$_____).

G. We have included the required security deposit as required by the Instruction to Bidders.

H. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.

I. All applicable federal taxes are included and State of Tennessee taxes are included in the Bid Sum.

J. All Allowances described in Section 01 21 26 are included in the Bid Sum.

1.06 ACCEPTANCE

A. This offer shall be open to acceptance for forty-five (45) days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:

1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Furnish the required bonds within seven days of receipt of Notice of Award.

3. Commence work within seven days after written Notice to Proceed of this bid.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

B. Complete the Work in a time as negotiated from Notice to Proceed.

1.08 BID FORM UNIT PRICES

(Not Applicable This Project)

1.09 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, the percentage fee will be:

1. 10 percent overhead and profit on the net cost of our own Work;
2. 5 percent on the cost of work done by any Subcontractor.
3. 10 percent overhead and profit on the net cost of Subcontractor Work

B. On work deleted from the Contract, the credit to Owner shall be Architect-approved net cost plus 10 percent of the overhead and profit percentage noted above.

1.10 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

1. Addendum # _____ Dated _____.
2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.

4. Addendum # _____ Dated _____.

1.11 BID FORM SIGNATURE(S)

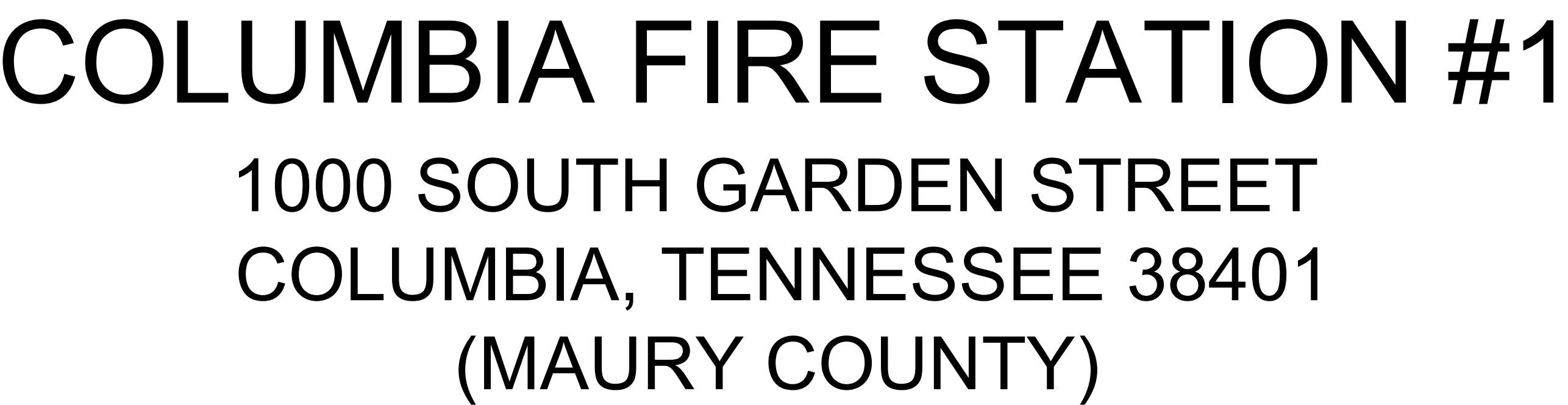
A. The Corporate Seal of _____
(Bidder - print the full name of your firm)
was hereunto affixed in the presence of:

B. _____
(Authorized signing officer, Title)
(Seal)

C. _____
(Authorized signing officer, Title)

1.12 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS
OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE
APPROPRIATE FORM OR FORMS AS ABOVE.

END OF BID FORM 00 41 00



CIVIL ENGINEERING SITE PACKAGE INITIAL SUBMITTAL

[illegible]

1. THE PARENT TRACT BOUNDARY AND TOPOGRAPHIC SURVEYS WERE PERFORMED BY ESSENTIAL LAND SURVEYING & MAPPING, ILL. IN FEBRUARY 2022. ESTES AND ESTES ENGINEERING, INC IS NOT RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF THIS SURVEY.
2. PRIOR TO CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL VERIFY THE EXISTING CONDITIONS SHOWN IN THESE PLANS INCLUDING THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, PIPES, MANHOLES, AND OTHER FEATURES CRITICAL TO THE DESIGN.
3. A MINIMUM OF 72 HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL NOTIFY 811 - CALL BEFORE YOU DIG. EACH EXISTING UTILITY OWNER WHICH ARE NOT MEMBERS OF THE 811 SHALL BE NOTIFIED ALSO.
4. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HIS SUBCONTRACTORS TO COMPLY WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, AND LOCAL REQUIREMENTS. SAID CONTRACTOR SHALL EXERCISE PRECAUTIONS AT ALL TIMES FOR THE SAFETY OF ALL PERSONS, INCLUDING EMPLOYEES, WHILE WORKING ON THIS SITE. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS, THE OWNER, THE OWNER'S REPRESENTATIVES, AND THE ENGINEER FOR ANY AND ALL INJURIES AND / OR DAMAGES TO PERSONNEL, EQUIPMENT, AND EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION OF THIS PROJECT.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY ALL FEDERAL, STATE, COUNTY, AND LOCAL AGENCIES. HE SHALL PERFORM ALL ACTIVITIES IN CONFORMANCE WITH ALL OSHA REQUIREMENTS AND REGULATIONS.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PAY ALL REQUIRED PERMIT FEES PRIOR TO MOBILIZING ON THE SITE.
7. ANY WORK PERFORMED IN THE PUBLIC RIGHTS OF WAY OF ANY STREET SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THIS WORK WITH THE CORRECT AGENCY AND TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC. FOR WORK PERFORMED IN THE RIGHT OF WAYS.
8. ALL WORK SHALL COMPLY WITH THE STATE'S DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROADWAY AND BRIDGE CONSTRUCTION, CURRENT EDITION AND APPLICABLE REVIEWING AGENCY SPECIFICATIONS. WHEN ANY CONFLICTS BETWEEN SPECIFICATIONS ARISES, THE MUNICIPALITY'S SPECIFICATION SHALL CONTROL.
9. ALL WORK PERFORMED BY THE CONTRACTOR SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. SPECIAL CARE SHALL BE TAKEN AT ALL SIDEWALK INTERSECTIONS. CONTRACTOR SHALL USE ADA RAMP AT ALL CROSSINGS.
10. PRIOR TO ANY PIPE WORK, THE CONTRACTOR SHALL EXPOSE AND VERIFY ELEVATIONS AND LOCATIONS ON ANY PIPE CROSSINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE OWNER AND ENGINEER. THE ENGINEER WILL NOT BE LIABLE FOR ANY CONFLICTS THAT ARE NOT REPORTED PRIOR TO PIPE GOING IN THE GROUND.
11. ALL STRIPING, SIGNAGE, AND OTHER TRAFFIC CONTROL DEVICES SHALL BE CONSTRUCTED AS PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
12. ALL TRENCH EXCAVATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL REGULATIONS INCLUDING OSHA 29 CFR PART 1926, SUBPARTS M (FALL PROTECTION) AND P (EXCAVATIONS).
13. DURING THE CONSTRUCTION OF THIS PROJECT, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO ADJOINING PROPERTIES. ANY DAMAGE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE OWNER AND ENGINEER WILL BE HELD HARMLESS. SHOULD THE CONTRACTOR BE REQUIRED TO ENTER ADJACENT PROPERTIES TO COMPLETE WORK ON THE PROJECT SITE, HE SHALL OBTAIN WRITTEN PERMISSION FROM THE APPLICABLE PROPERTY OWNER PRIOR TO ENTERING HIS PROPERTY.
14. THE GENERAL CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR JOB SITE CONDITIONS INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING CONSTRUCTION. THIS REQUIREMENT SHALL BE CONTINUOUS THROUGHOUT THE TERM OF THE CONTRACT AND SHALL INCLUDE ALL TIMES, NOT JUST WHEN WORK IS PROGRESSING DURING NORMAL BUSINESS HOURS. CONTRACTOR SHALL REACT IMMEDIATELY TO REMEDY ANY REPORTED SAFETY ISSUES BROUGHT TO THE ATTENTION BY THE OWNER, THE ENGINEER, AND ANY GOVERNMENTAL AGENCY, INCLUDING POLICE.
15. SAFETY FIRST: THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT OSHA PROVISIONS AND THE MANUAL OF ACCIDENT PREVENTION AND CONSTRUCTION, ISSUES BY THE AGC OF AMERICA, AND ALL SAFETY AND HEALTH REGULATIONS OF THE US DEPARTMENT OF LABOR.
16. WHERE ANY CONFLICT BETWEEN THE CONSTRUCTION DETAILS SHOWN ON THE PLANS AND THE DETAILS IN THE APPLICABLE REVIEWING AGENCY STANDARD SPECIFICATIONS ARISE, THE DETAILS IN THE STANDARD SPECIFICATIONS SHALL GOVERN.
17. THE CONTRACTOR SHALL NOTIFY THE APPLICABLE REVIEWING AGENCY IN ORDER TO SCHEDULE A PRE-CONSTRUCTION MEETING PRIOR TO ANY WORK ON THIS PROJECT.
18. PRIOR TO PRICING, CONTRACTOR SHALL VERIFY ALL SUBSURFACE CONDITIONS.

12. ALL CLEARING LIMITS SHALL BE MARKED IN THE FIELD BY THE CONTRACTOR. PRIOR TO ANY CLEARING OPERATION, THE SITE SUPERINTENDENT SHALL MEET WITH THE NECESSARY STAFF TO ASSURE THEY UNDERSTAND THE EXACT LIMITS OF CLEARING PROPOSED. ONLY THOSE SITES THAT ARE TO BE DIRECTLY WORKED ON SHALL BE CLEARED IN ADVANCE.
13. NO TREES SHALL BE REMOVED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE OWNER'S WRITTEN CONSENT.
14. TREE PROTECTION FENCING SHALL MEET THE REQUIREMENTS OF THE APPLICABLE REVIEWING AGENCY STANDARDS AND DETAIL DRAWINGS. CONTRACTOR SHALL NOT PERMIT EQUIPMENT, MATERIAL STORAGE, VEHICLES, ETC. WITHIN THE DRIP LINE OF TREES SHOWN TO REMAIN ON SITE.
15. THE CONTRACTOR SHALL PROTECT ALL TREES AND VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING, SKINNING OF ROOTS, SKINNING BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN THE TREE'S DRIP LINE. CONTRACTOR SHALL PREVENT EXCESS FOOT TRAFFIC, VEHICLES, PARKING UNDER PROTECTED TREES. PROTECTED TREES ADJACENT TO CONSTRUCTION SHALL BE DELINEATED BY ORANGE CONSTRUCTION FENCING AROUND THE DRIP LINE.
16. ANY DEMOLITION WASTE AND CONSTRUCTION DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY SAID CONTRACTOR AND DISPOSED OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL CODES AND PERMIT REQUIREMENTS. THE CONTRACTOR SHALL EXERCISE CAUTION TO PROTECT UTILITIES THAT ARE TO REMAIN. ANY DAMAGE DONE TO THESE UTILITIES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL UTILITY DISCONNECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND / OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY OR AGENCY. ANY WORK DONE IN ASSOCIATION WITH EXISTING UTILITIES SHALL BE PERFORMED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY OWNER AND / OR AGENCY.
18. BURNING OF CLEARED MATERIALS SHALL BE PROHIBITED UNLESS THE CONTRACTOR HAS OBTAINED WRITTEN PERMISSION FROM THE LOCAL AUTHORITIES, INCLUDING LOCAL FIRE DEPARTMENTS, IN THE EVENT THAT BURNING IS PERMISSIBLE, THE CONTRACTOR SHALL NOT LEAVE A BURN PIT UNATTENDED DURING PERIODS OUTSIDE OF NORMAL BUSINESS HOURS.
19. SHOULD THE CONTRACTOR DISCOVER HAZARDOUS MATERIALS ON THE SITE, HE SHALL HAVE THEM REMOVED BY A LICENSED HAZARDOUS MATERIALS SPECIALIST CONTRACTOR. ANY HAZARDOUS MATERIALS SHALL BE DISPOSED OF CORRECTLY AND IN ACCORDANCE WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL REGULATIONS. IN THE EVENT OF HAZARDOUS MATERIALS BEING DISCOVERED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER.
20. THE CONTRACTOR SHALL PROTECT ALL OUTSIDE BOUNDARY MONUMENTATION. ANY CORNER OR PROPERTY LINE MARKERS DISTURBED BY THE CONSTRUCTION SHALL BE RESET BY A LICENSED LAND SURVEYOR WITH AUTHORIZATION TO PRACTICE IN THE STATE OF TENNESSEE. ANY RESETTING OF MONUMENTATION SHALL BE AT THE EXPENSE OF THE CONTRACTOR AND WILL BE AT NO ADDITIONAL COST TO THE OWNER.
21. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES DESIGNATED TO REMAIN. ANY ITEMS THAT ARE TO REMAIN AND ARE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AND / OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
22. THE CONTRACTOR SHALL PROVIDE ADEQUATE DUST CONTROL MEASURES THROUGHOUT CONSTRUCTION OF THIS PROJECT. HE SHALL PROTECT ADJACENT PROPERTIES, STREETS, ETC. FROM ANY DUST OR SOIL LADEN RUNOFF.

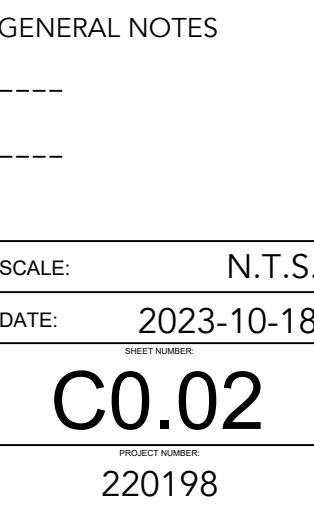
1. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CHECK EXISTING GRADES, AND DIMENSIONS, INCLUDING INVERTS, IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. AT INTERSECTIONS OF STREETS, BETWEEN EXISTING AND PROPOSED, AND WITH ALL NEW CONSTRUCTION, THE CONTRACTOR SHALL ASSURE THAT THE CURBS TRANSITION SMOOTHLY AND EASILY BETWEEN STREETS. CURB LINES SHALL BE CHECKED, PRIOR TO POURING CONCRETE THAT WATER POSITIVELY DRAINS AND FLOWS WITHIN THE GUTTER. FIELD ADJUSTMENT OF CURB RADII IS PERMITTED IN THE FIELD.
3. THE CONTRACTOR SHALL NOT BE ALLOWED TO CUT PERMANENT PAVEMENT. THEREFORE, ALL PIPES, UTILITIES, ETC. SHALL BE IN PLACE PRIOR TO THE PAVING OPERATION.
4. ANY DAMAGE TO EXISTING STREETS AND PAVEMENTS SHALL BE AT THE CONTRACTOR'S EXPENSE.

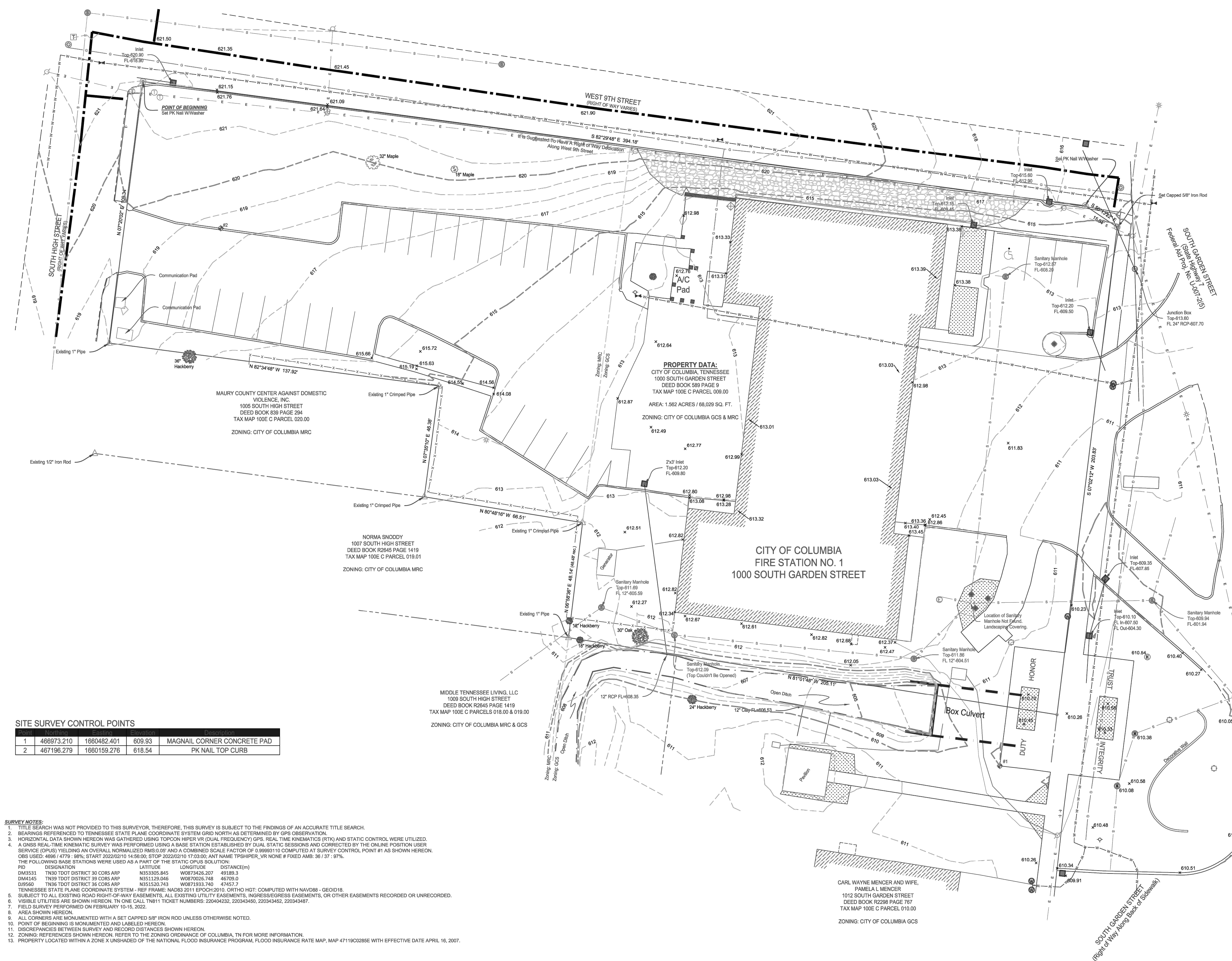
1. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CHECK AND VERIFY ALL GRADES AND DIMENSIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. ALL PROPOSED GRADES SHOWN ON THESE PLANS ARE FINAL GRADES. TOP OF GROUND LEVEL, OR TOP OF PAVEMENT, OR GRATE ELEVATION AT THE DRAINDOWN POINT, UNLESS INDICATED OTHERWISE.
3. TO PREVENT SOIL LAIDEN RUNOFF FROM EXITING THE SITE, THE CONTRACTOR SHALL FOLLOW THE EP&S PLAN. ALL BEST MANAGEMENT PRACTICES SHALL BE CONSTRUCTED PRIOR TO CLEARING THE SITE TO BE GRADED.
4. THE EARTHWORK SHALL INCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING TOPSOIL, MASS GRADING, EXCAVATION, FILLING, UNDER CUT, AND REPLACEMENT AS REQUIRED, AND COMPACTION. THE STRIPPED TOPSOIL SHALL BE REDISTRIBUTED ONCE THE GRADING IS COMPLETE.
5. ALL EARTHWORK SHALL BE MONITORED BY A LICENSED GEOTECHNICAL ENGINEER AUTHORIZED TO PROVIDE SERVICES IN THE STATE OF TENNESSEE. DUPLICATE RECORDS AND REPORTS KEPT BY THE GEOTECHNICAL ENGINEER SHALL BE FORWARDED TO THE OWNER AND THE ENGINEER AS THE WORK PROGRESSES.
6. AREAS DESIGNATED BY THE GEOTECHNICAL ENGINEER AS UNDERCUT SHALL BE REFILLED AND COMPACTED IN LIFTS WITH SUITABLE DRY MATERIAL UNTIL DENSITIES CAN BE REACHED.
7. EXCAVATED SUBGRADES AND EACH LAYER OF FILL SHALL BE OF A QUALITY ACCEPTABLE TO THE OWNER'S REPRESENTATIVE AND SHALL NOT INCLUDE ORGANIC MATERIAL, BOULDERS, DEBRIS, WET MATERIAL, ETC. CUT OR STRIPPED AREAS SHALL BE PROOF ROLLED PRIOR TO ANY FILLING. ALL GRADING ACTIVITY AND PLACEMENT OF MATERIAL SHALL BE MONITORED BY THE GEOTECHNICAL ENGINEER OR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. MATERIAL SHALL MEET OR EXCEED COMPACTION REQUIREMENTS SPECIFIED IN THE SPECIFICATIONS AND REGULATIONS OF THE APPLICABLE REVIEWING AGENCY.
8. ALL STREET SUBGRADE AREAS SHALL BE PROOF ROLLED PRIOR TO ANY MINERAL AGGREGATE PLACEMENT.
9. AREAS WHERE EARTHWORK IS NEARING COMPLETION SHALL BE COVERED WITH TOPSOIL TO A MINIMUM DEPTH OF SIX (6) INCHES. THE TOPSOIL SHALL BE FREE OF CLODS, ROCKS, AND DEBRIS.
10. SLOPES IN NON-PAVED AREAS SHALL BE 3 : 1 UNLESS SHOWN DIFFERENTLY ON THE PLANS.
11. ANY UNPAVED AREA SHALL BE STABILIZED AS PER THE EP&S PLAN AS SOON AS POSSIBLE. IN NO CASE SHALL SLOPES BE LEFT UNSTABILIZED FOR LONGER THAN OF 7 DAYS.
12. ALL FILL AREAS SHALL BE CONSTRUCTED IN LIFTS, EACH COMPACTED TO THE SPECIFIED DENSITY AND CERTIFIED BY THE GEOTECHNICAL ENGINEER.
13. ALL EXCESS SOIL MATERIALS (WASTE) SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OFFSITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL CODES AND PERMIT REQUIREMENTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY BORROW MATERIAL REQUIRED ON THIS PROJECT. IF BORROW MATERIAL IS REQUIRED, THE CONTRACTOR SHALL PROVIDE AT NO ADDITIONAL COST TO THE OWNER OVER THE ORIGINAL BID PRICE.
15. THE CONTRACTOR SHALL ASSURE THAT WATER DRAINS PROPERLY FROM ALL AFFECTED AREAS. HE SHALL PREVENT LOW AREAS WHERE WATER CAN POND DURING PRECIPITATION EVENTS. ANY AREAS SOFTENED BY POOLED WATER MAY REQUIRE UNDERCUTTING. ALL COSTS OF UNDERCUTTING AND REFILL WILL BE AT THE EXPENSE OF THE CONTRACTOR.

1. DISTANCES AND PIPE LENGTHS ARE GENERALLY HORIZONTAL DISTANCES MEASURED FROM THE CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. THE CONTRACTOR SHALL SUBMIT, FOR ACCEPTANCE, CUT SHEETS AND SHOP DRAWINGS FOR THE ENGINEER TO REVIEW PRIOR TO CONSTRUCTION.
3. WHERE EVER POSSIBLE, THE CONTRACTOR SHALL GRADE INDIVIDUAL LOTS TO CONVEY WATER AWAY FROM THE HOME OR BUILDING SITE. THIS GRADING COULD CONSIST OF SUBTLE SVALES CUT ALONG LOT LINES TO CHANNEL WATER AWAY FROM HOUSE SITES EITHER ON THE SUBJECT LOT OR ADJACENT LOTS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING, AND FINAL ACCEPTANCE OF ALL NEW STORM FACILITIES ON THIS PROJECT. THE CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENTS CONCERNING INSTALLATION, INSPECTION, AND APPROVAL OF THE STORM DRAINAGE SYSTEM CONSTRUCTION.
5. ALL STORM FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE FEDERAL, STATE, COUNTY, AND LOCAL ORDINANCES, CODES, AND REGULATIONS.
6. THE CONTRACTOR SHALL CONSTRUCT CURBS, CATCH BASINS, PIES, ETC. AS REQUIRED TO CONVEY THE LAWN AREAS, UNDEVELOPED AREAS, AND PAVED AREAS THROUGH THE SITE.
7. ALL STORM STRUCTURES ARE STATE'S DEPARTMENT OF TRANSPORTATION TYPES UNLESS OTHERWISE NOTED ON THE PLANS.
8. ALL STORM SEWER PIPE SHOWN AS RCP SHALL BE CLASS III REINFORCED CONCRETE PIPE. ALL STORM FACILITIES SHALL BE CONSTRUCTED AND INSTALLED PER THE APPLICABLE REVIEWING AGENCY PUBLIC WORKS REQUIREMENTS AND SPECIFICATIONS.
9. ALL STORM PIPES SHALL BE BEDDED WITH CLEAN GRANULAR MATERIALS. THIS MATERIAL SHALL CONSIST OF ASHTO #57 OR #67 CRUSHED AGGREGATE STONE. BEDDING SHALL BE A MINIMUM OF SIX (6) INCHES BELOW THE BOTTOM OF PIPE AND TWELVE (12) INCHES ON THE SIDES AND TOP. PIPE BEDDING SHALL CONFORM TO THE APPLICABLE REVIEWING AGENCY REQUIREMENTS.

1. THE CONTRACTOR SHALL NOTIFY TDEC AND THE APPLICABLE REVIEWING AGENCY A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION OF ANY PART OF THE SANITARY SYSTEM.
2. ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CURRENT STANDARDS, SPECIFICATIONS, DETAILS, AND REQUIREMENT OF THE APPLICABLE REVIEWING AGENCY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRE LICENSES, PERMITS, AND FEES REQUIRED FOR THE SANITARY SEWER CONSTRUCTION ON THIS PROJECT.
4. SANITARY SEWER CONSTRUCTION PLANS SHALL BE APPROVED BY THE APPLICABLE REVIEWING AGENCY AND TDEC PRIOR TO CONSTRUCTION OF ANY PART OF THE SANITARY SEWER SYSTEM. AN APPROVED SET OF PLANS SHALL BE KEPT ON SITE AT ALL TIMES.
5. THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL SEPARATION BETWEEN ALL SANITARY PIPES AND WATER LINES. WHEN CROSSING LINES, WATER AND SANITARY MUST BE VERTICALLY SEPARATED BY AT LEAST 18 INCHES. THE WATER MUST CROSS ON TOP. THE CONTRACTOR MAY BE REQUIRED TO MAKE MINOR FIELD ADJUSTMENTS TO MAINTAIN SEPARATION.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL SANITARY CONSTRUCTION TO AVOID CONFLICTS WITH OTHER UTILITIES.
7. ALL GRAVITY SEWERS SHALL BE SDR 35 OR SDR 26 PIPE OF 8 INCH DIAMETER.
8. SANITARY SEWER SERVICE LINES SHALL BE 4 TO 6 INCH DIAMETER PVC SCHEDULE 40 (SERVICE MATERIAL SHALL MATCH THE SEWER MAIN MATERIAL) AT MINIMUM SLOPE OF 1/8 INCH PER FOOT. LINES SHALL BE EXTENDED 1 FOOT BEYOND THE EASEMENT, PROPERTY LINE OR SIDEWALK AS SHOWN ON THE PLANS AND PLUGGED AND MARKED AS REQUESTED BY THE APPLICABLE REVIEWING AGENCY. SERVICES CONNECTIONS TO THE MAIN SHALL BE CONSTRUCTED WITH THE INSTALLATION OF AN 8 X 4 X 8 WYE OR TEE FITTING, CUTTING THE MAIN TO INSERT THE SERVICE LINE WILL NOT BE PERMITTED.
9. ALL SANITARY MANHOLES IN THE ROADWAY SHALL BE BACKFILLED WITH CRUSHED #57 OR #67 AGGREGATE STONE. ALL SANITARY MAIN LINES SHALL BE BEDDED AND BACKFILLED WITH THE SAME STONE UNDER ROADWAYS. THE CONTRACTOR SHALL PROVIDE THE CRUSHED STONE FILL MATERIAL (TO SUBGRADE ELEVATION) WHEN SANITARY PIPES AND MANHOLES ARE WITHIN THE ROADWAY.
10. THE CONTRACTOR SHALL MAINTAIN A SET OF "AS BUILT" DRAWINGS SHOWING ALL OF THE UTILITY IMPROVEMENTS ON THIS PROJECT.

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL EXPOSE AND VERIFY ALL UTILITIES. ANY CONFLICTS SHALL BE REPORTED TO THE ENGINEER.
2. ALL GAS, ELECTRIC, TELEPHONE AND CATV SERVICE LINES AND EXTENSIONS ARE TO BE DESIGNED BY OTHERS AND CONSTRUCTED TO THE RESPECTIVE UTILITY COMPANY SPECIFICATIONS. UTILITY DISCONNECTIONS ARE TO BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.
3. WATER LINE AND APPURTENANCE DESIGN AND APPROVAL BY THE APPLICABLE REVIEWING AGENCY. THE CONTRACTOR SHALL REFER TO PLANS PREPARED BY THE APPLICABLE REVIEWING AGENCY FOR INSTALLATION AND CONSTRUCTION OF THE WATER SYSTEM.
4. THE CONTRACTOR IS CAUTIONED THAT THE LOCATION AND / OR ELEVATION OF THE EXISTING UTILITIES SHOWN IN THESE PLANS IS BASED UPON UTILITY COMPANY RECORDS, AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION AND REQUIRED FIELD VERIFICATION OF THE UTILITY LOCATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO RELOCATE ANY EXIST UTILITY THAT CONFLICTS WITH THE IMPROVEMENTS SHOWN ON THESE PLANS IN ACCORDANCE WITH ALL FEDERAL, STATE, COUNTY, AND LOCAL REGULATIONS GOVERNING SUCH OPERATIONS.
5. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
6. ALL UTILITIES SHALL BE CONSTRUCTED PRIOR TO PAVING OF THE ROADWAYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITIES SO THAT WATER LINES, GAS LINES, AND UNDERGROUND ELECTRIC DO NOT CONFLICT WITH SANITARY SEWER OR STORM SEWERS.
7. CONNECTIONS OF ROOF AND FOUNDATION DRAINS TO THE SANITARY SEWER SYSTEM IS PROHIBITED.
8. TRENCH SPOILS LEFT OVER AFTER BACKFILLING SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OFFSITE AT NO ADDITIONAL COST TO THE OWNER. IF THE SPOILS ARE SUITABLE FOR FILL MATERIAL ON ANOTHER SECTION OF THE PROJECT, THEY MAY BE USED THERE.
9. THE CONTRACTOR SHALL PROVIDE "AS BUILT" DRAWINGS FOR THE UTILITY CONSTRUCTION ON THIS PROJECT. THESE DRAWINGS SHALL SHOW ALL IMPROVEMENTS, INCLUDING AT LEAST TWO DIMENSIONS TO EACH VALVE AND MANHOLE FROM KNOWN SITE FEATURES. DRAWINGS SHALL INCLUDE HORIZONTAL AND VERTICAL INFORMATION ON ALL NEW UTILITIES AS WELL AS EXISTING UTILITIES ENCOUNTERED.
10. THE CONTRACTOR SHALL INSTALL CONDUIT SYSTEMS FOR UNDERGROUND ELECTRIC, TELEPHONE, AND CATV IN ACCORDANCE WITH THE UTILITY COMPANIES' REQUIREMENTS, INCLUDING PULLCORDS INSIDE CONDUITS AND HIGHWAY LOAD BEARING PULL BOXES AND MANHOLES.
11. THE CONTRACTOR SHALL PROVIDE TRANSFORMER PADS AND CONDUITS FOR UNDERGROUND ELECTRIC SERVICE IN ACCORDANCE WITH THE ELECTRIC COMPANY'S REQUIREMENTS.
12. ELECTRIC SERVICE CONDUITS SHALL BE MINIMUM SCHEDULE 40 PVC AND / OR IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY.
13. TELEPHONE SERVICE CONDUITS SHALL BE RIGID, NONMETALLIC CONDUITS, NEMA TC 2, SCHEDULE 40 PVC IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY COMPANY. CONTRACTOR TO INSTALL INSULATED WIRE WITH CONDUITS TO FACILITATE LOCATION AFTER CONSTRUCTION.
14. THE LOCATIONS OF EACH CONDUIT SHALL BE COORDINATED AND APPROVED BY THE LOCAL PROVIDER PRIOR TO INSTALLATION.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PAY ANY AND ALL WATER AND SANITARY SEWER INSPECTION FEES.
16. ANY AND ALL FEES, LICENSES, AND PERMITS NECESSARY FOR THIS CONSTRUCTION ARE TO BE OBTAINED PRIOR TO INITIATION OF CONSTRUCTION AND THE COST OF SAME IS TO BE BORNE BY THE CONTRACTOR.
17. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN THE OPERATION OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND ELECTRICAL WIRES AND SERVICES. IF AT ANY TIME, DURING THIS PROJECT, THE CONTRACTOR MUST WORK IN THE CLOSE PROXIMITY OF THE ABOVE NOTED WIRES, THE ELECTRIC COMPANY SHALL BE CONTACTED PRIOR TO THE WORK AND PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD AND UNDERGROUND WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
18. THE CONTRACTOR SHALL ADJUST ALL UTILITY SURFACE FEATURES TO FINAL GRADE. THIS WORK INCLUDES, BUT IS NOT LIMITED TO, ALL CASTINGS, VALVE BOXES, PEDESTALS, CLEANOUTS, MANHOLES, HYDRANTS, ETC.





SITE SURVEY CONTROL POINTS			
1	468973.210	1860482.401	809.93
2	467196.279	1860159.276	618.54
MAGNAIL CORNER CONCRETE PAD			
PK NAIL TOP CURB			

SURVEY NOTES:

- TITLE SEARCH WAS NOT PROVIDED TO THIS SURVEYOR, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
- BEARINGS REFERENCED TO TENNESSEE STATE PLANE COORDINATE SYSTEM GRID NORTH AS DETERMINED BY GPS OBSERVATION.
- HORIZONTAL DATA SHOWN HEREON WAS GATHERED USING TOPCON Hiper VR DUAL FREQUENCY GPS, REAL TIME KINEMATICS (RTK) AND STATIC CONTROL WERE UTILIZED.
- A GNSS REAL-TIME KINEMATIC SURVEY WAS PERFORMED USING A BASE STATION ESTABLISHED BY DUAL STATIC SESSIONS AND CORRECTED BY THE ONLINE POSITION USER SERVICE (OPUS) YIELDING AN OVERALL NORMALIZED RMS 0.05" AND A COMBINED SCALE FACTOR OF 0.9999310 COMPUTED AT SURVEY CONTROL POINT #1 AS SHOWN HEREON. OBS USED: 4689 / 4779 / 1860; START 2022/02/10 14:56:00; STOP 2022/02/10 17:03:00; ANT NAME: TP5SHIPR; VR NONE; FIXED ADJ: 30 / 27 / 37%.
- THE FOLLOWING BASE STATIONS WERE USED AS A PART OF THE STATIC OPUS SOLUTION:
PID DESIGNATION LATITUDE LONGITUDE DISTANCE(m)
DM3531 TN30 TDO DISTRICT 30 CORP ARP N353305.845 W0873426.207 49189.3
DM4145 TN39 TDO DISTRICT 39 CORP ARP N351129.046 W0870026.748 46709.0
DM560 TN36 TDO DISTRICT 36 CORP ARP N351520.743 W0871933.740 47457.7
- TENNESSEE STATE PLANE COORDINATE SYSTEM - REF FRAME: NAD83 2011 EPOCH:2010, ORTHO HGT: COMPUTED WITH NAVD88 - GEOID18.
- SUBJECT TO ALL EXISTING ROAD RIGHT-OF-WAY EASEMENTS, ALL EXISTING UTILITY EASEMENTS, INGRESS/EGRESS EASEMENTS, OR OTHER EASEMENTS RECORDED OR UNRECORDED.
- VISIBLE UTILITIES ARE SHOWN HEREON. TN ONE CALL 781-1111 TICKET NUMBERS: 2204K4232, 2204K4540, 2204K4562, 2204K4587.
- FIELD SURVEY PERFORMED ON FEBRUARY 10-15, 2022.
- AREA SHOWN HEREON.
- ALL CORNERS ARE MONUMENTED WITH A SET CAPPED 5/8" IRON ROD UNLESS OTHERWISE NOTED.
- POINT OF BEGINNING IS MONUMENTED AND LABELED HEREON.
- DISCREPANCIES BETWEEN SURVEY AND RECORD DISTANCES SHOWN HEREON.
- ZONING: REFERENCES SHOWN HEREON, REFER TO THE ZONING ORDINANCE OF COLUMBIA, TN FOR MORE INFORMATION.
- PROPERTY LOCATED WITHIN A ZONE X UNINSURED OF THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, MAP 4719C02285E WITH EFFECTIVE DATE APRIL 16, 2007.

UTILITY NOTE:

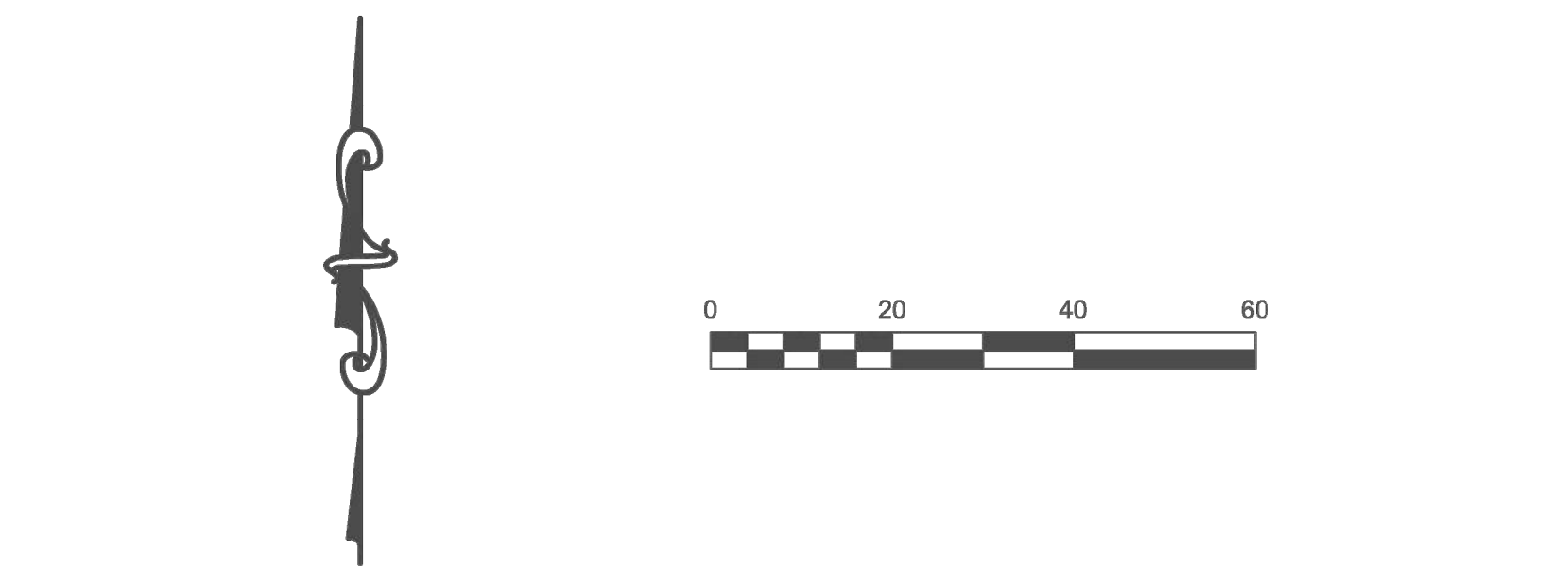
This surveyor has not physically located the underground utilities. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area either in service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. The individual lot owner will have to verify the location of such utilities prior to any construction. In Tennessee it is a requirement, per "The Underground Utility Damage Prevention Act", that anyone who engages in excavation must notify all known underground utility owners, no less than 3 or more than 10 working days prior to the date of their intent to excavate and also to avoid any possible hazard or conflict. Tennessee One Call 800-351-1111.



Certificate of Survey Accuracy
I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this is a class I Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, survey having an unadjusted ratio of precision of greater than 1:10,000'. This survey meets the standards of practice for surveying in the State of Tennessee.

Joseph C. Pugh
Joseph C. Pugh
TN RLS# 5183

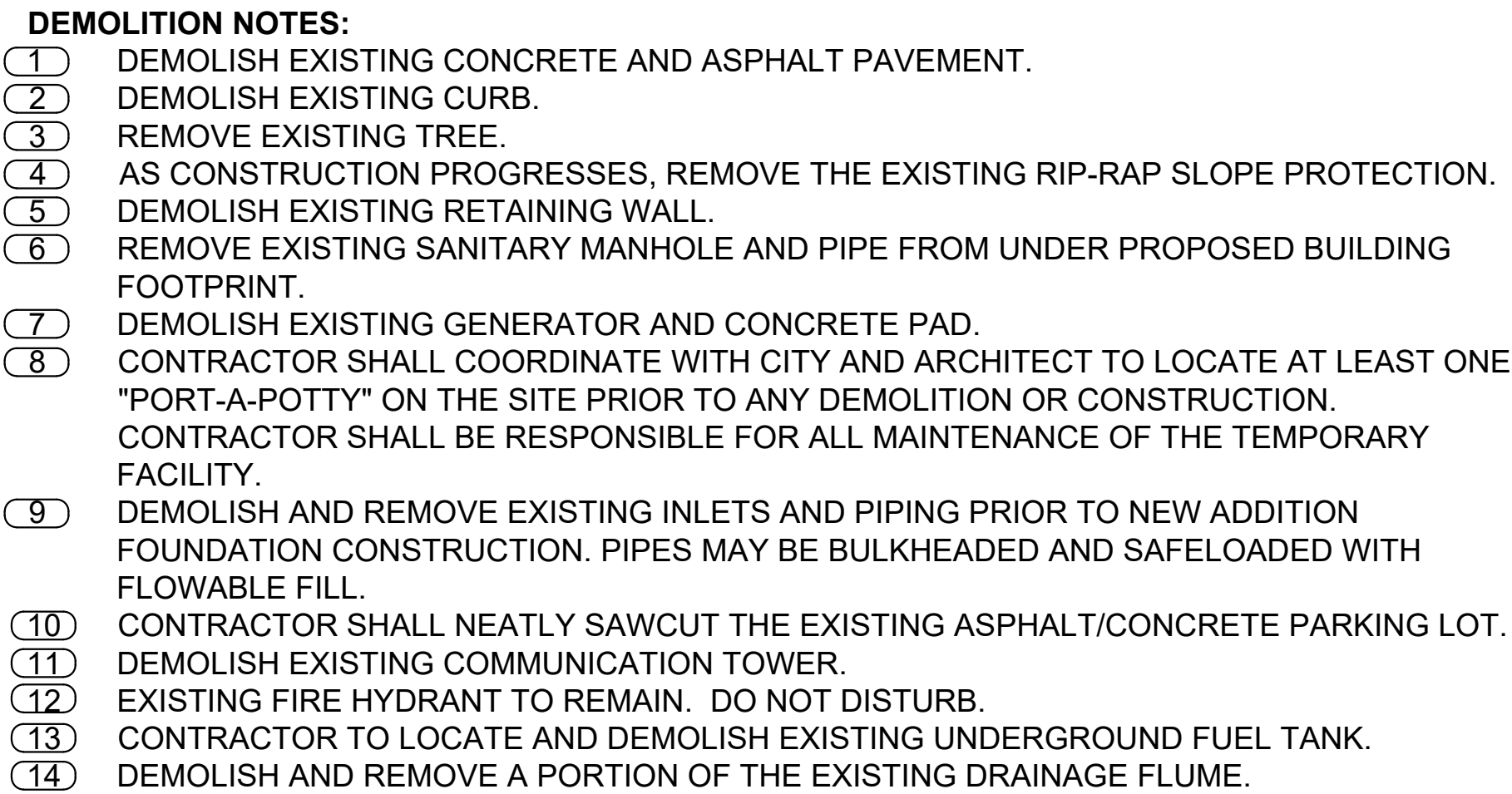
February 15, 2022
Date

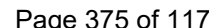


LEGEND

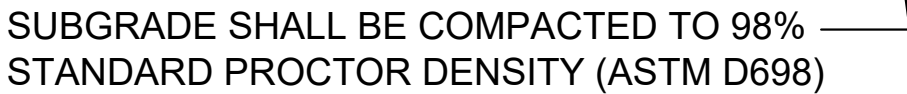
- PROPERTY LINE
- ADJOINING LINE
- EASEMENT LINE
- ELECTRIC LINE
- CENTERLINE
- PAVEMENT EDGE
- FENCE LINE
- WATER LINE
- SANITARY LINE
- GAS LINE
- INDEX CONTOUR LINE
- CONTOUR LINE
- EXISTING MONUMENT
- CONCRETE MONUMENT
- SET MONUMENT
- NO MONUMENT SET
- POWER POLE
- WATER METER
- SANITARY MANHOLE
- LIGHT POLE
- DRAINAGE INLET
- COMMUNICATION VAULT
- GAS VALVE
- TELEPHONE PEDESTAL
- FIRE HYDRANT
- COMMUNICATION ANTENNA
- ELECTRIC PULL BOX
- SURVEY CONTROL POINT
- FLAG POLE

TOPOGRAPHIC & BOUNDARY SURVEY FOR		
FIRE STATION NO. 1		
COLUMBIA, TENNESSEE		
1000 SOUTH GARDEN STREET		
DRAWN BY: JCP	DATE: 2/15/2022	
CHECKED BY: JCP	REVISED:	
SCALE: 1"=100'	JOB #:	220201_ColumbiaFire
	PAGE #:	
ESSENTIAL LAND SURVEYING & MAPPING, LLC		
811 HATCHER LANE, COLUMBIA, TN 38401		
PHONE: 931-286-6483		
EMAIL: CPUGH@ELSM-LLC.COM		





NOT TO SCALE



NOT TO SCALE



1. MATERIALS, CONSTRUCTION AND QUALITY CONTROL OF MASONRY SHALL BE IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE (IBC).
2. MATERIALS USED SHOULD BE CONSISTENT WITH THOSE USED IN THE CONSTRUCTION OF AND ARCHITECTURAL STYLE OF THE PRINCIPAL BUILDING. SHALL BE COMPLIANT WITH THE ZONING ORDINANCE AND ALL OTHER APPLICABLE REGULATIONS.
3. CONCRETE SLAB: FOLLOWS MIN. 6" THICKNESS W/IMBEDDED 6"x6"x20 JOINTS WELDED WIRE FABRIC (W.W.F.), CLASS 4000 P.S.I. CONCRETE FILLED CELLS. WITH 1-1/2 VERTICAL REBAR TIED TO FOOTER STEEL AT EACH CORNER AND EVERY 4'-0".
4. BOLLARD: 3'-6" HIGH, 6" DIAMETER STEEL PIPE BOLLARD FILLED WITH CONCRETE, PAINTED TRAFFIC YELLOW
5. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



STANDARD DETAILS

(NTS)

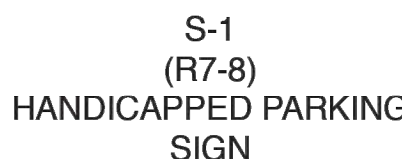
DATE
6/9/2022

MD-01

1. ALL PAINTED PARKING STALL LINES FOR HANDICAPPED PARKING SPACES SHALL BE BLUE 4" WIDE LINES.
2. CROSSHATCHING IN THE ACCESS AISLE SHALL BE 4" WIDE SOLID BLUE LINES, TO EMPHASIZE THAT PARKING IS PROHIBITED IN CROSSHATCHED AREAS.
3. THE ACCESS AISLE MAY BE SHARED BY 2 HANDICAPPED SPACES.
4. ONE OF EVERY 6 HANDICAPPED SPACES AND NO LESS THAN ONE SHALL BE VAN ACCESSIBLE.
5. A SEPARATE SIGN SHALL BE PROVIDED FOR EACH HANDICAPPED PARKING SPACE.
6. MOUNTING HEIGHT FOR SIGN MAY BE REDUCED TO 5' ABOVE GROUND LEVEL IF IT IS LOCATED IN A NON-PEDESTRIAN AREA, SUCH AS ON A BUILDING OR IN A LANDSCAPED AREA.
7. VAN ACCESSIBLE SIGN, WHEN USED, SHALL BE MOUNTED BELOW HANDICAPPED PARKING SIGN.
8. HANDICAPPED PARKING MUST BE PLACED IN THE NEAREST ACCESSIBLE PATHWAY TO ENTRANCE.

Required Minimum Number of Accessible Handicapped Parking Spaces

Total Parking in Lot	Handicapped Spaces Required
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	.2% of Total
1001 to Over	.20 + 1 for each 100 over 1000



S-2

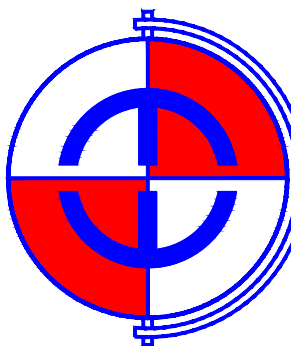
**VAN
ACCESSIBLE**

**GREEN 2" LETTERS ON
WHITE BACKGROUND**

NOT TO SCALE



6025 Lee Highway Suite 105
Chattanooga, Tennessee 37421
PH: 423-800-7998 | WWW.ESTESANDESSTEENGINEERING.COM



DESIGNED BY:
D. ESTES

DRAWN BY: D. C. T. C.

B. ESILES
CHECKED BY:

APPROVED BY: _____

[illegible]

COLUMBIA FIRE STATION #1

1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

DETAILS AND PAVEMENT SECTIONS

■■■■■

SCALE: N.T.

DATE: 2023-10-1

C4.02

220198

SECTION A-A

630.00

620.00

610.00

SAFETY RAILING ON TOP OF RETAINING WALL

TOP OF WALL ELEV:624.49

BTM OF WALL ELEV:621.49

BTM OF WALL ELEV:613.23

9'-8"

PROPOSED ADDITION

GRATE ELEV: 613.17

12" DURASLOT INVERT ELEV:611.76

SECTION B-B

This diagram shows a cross-section of a retaining wall and its drainage system. The wall is 6'-0" thick. The top of the wall is at elevation 623.24, and the bottom is at elevation 620.24. A safety railing is on top of the wall. The bottom of the wall is at elevation 613.23. A grate is located at the bottom of the wall, with an elevation of 613.17. A 12" Duraslot invert is located at the bottom of the wall, with an elevation of 611.58. The existing building is shown to the right of the wall. The ground surface is at elevation 630.00. The diagram includes labels for the following features:

- SAFETY RAILING ON TOP OF RETAINING WALL
- TOP OF WALL ELEV: 623.24
- BTM OF WALL ELEV: 620.24
- BTM OF WALL ELEV: 613.23
- GRATE ELEV: 613.17
- 12" DURASLOT INVERT ELEV: 611.58
- EXISTING BUILDING

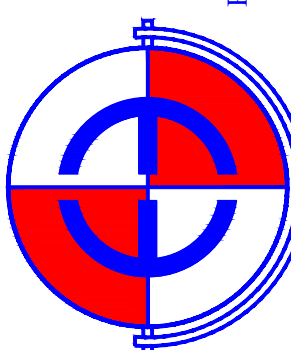
The diagram also shows a 6'-0" dimension for the wall thickness and a 6'-0" dimension for the distance from the wall to the existing building.

The diagram illustrates a cross-section of a bridge wall. The vertical axis shows elevations from 600.00 to 630.00 feet. The horizontal axis shows stationing from 19+90 to 22+55. Key features include:

- Safety Railing:** Located on top of the wall.
- Top of Wall Elevation:** Varies along the length, with specific points labeled: TOP OF WALL ELEV. 624.83, TOP OF WALL ELEV. 623.24, and TOP OF WALL ELEV. 619.15.
- Trench Drain:** A 12" Duraslot trench drain is shown at the base of the wall, sloping at S=0.2500%.

[illegible]

TRAINING WALL TAILS -- --	
DATE:	N.T.S.
DATE:	2023-10-18
SHEET NUMBER C4.04	
PROJECT NUMBER 220198	



DESIGNED BY:	D. ESTES
DRAWN BY:	B. ESTES
CHECKED BY:	----
APPROVED BY:	----

[illegible]

COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

EP&SC COVER

SCALE: 1" = 5'

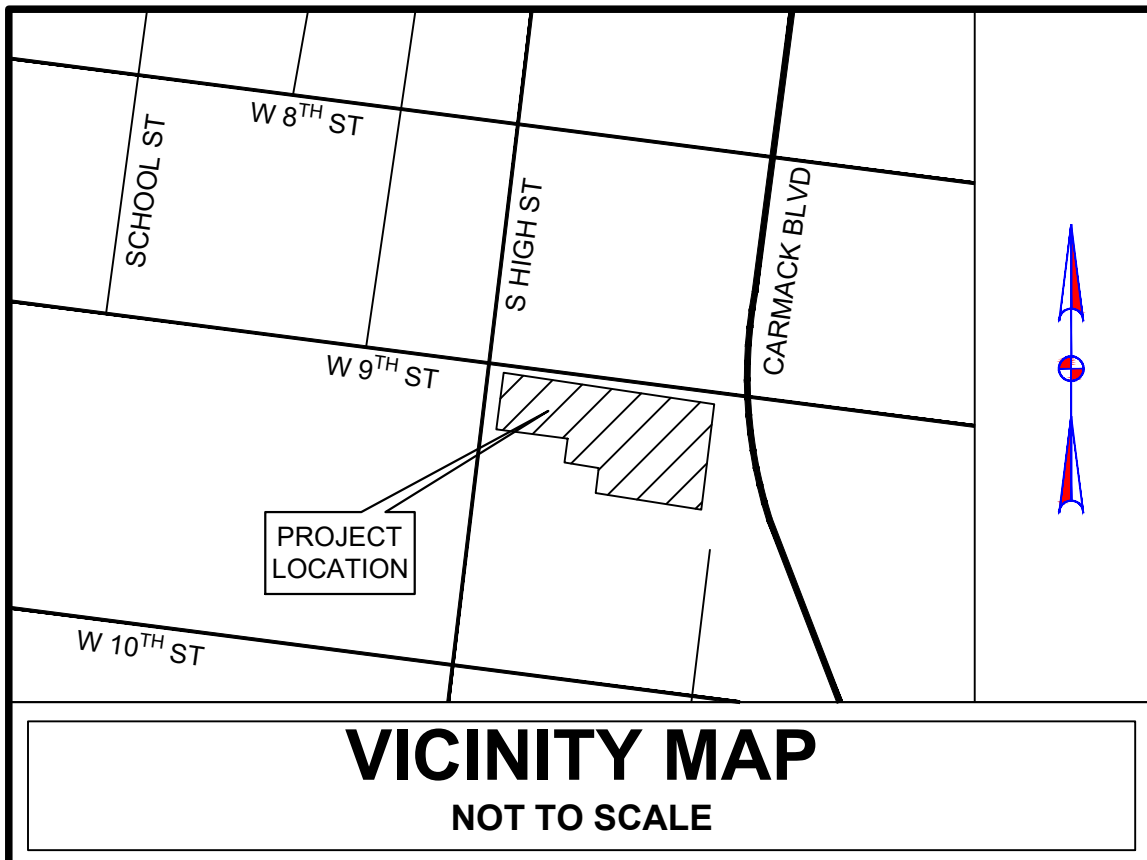
DATE: 2023-10-1

SHEET NUMBER

EC0.01

PROJECT NUMBER

220198



Notice of Intent (NOI) is required for this project.
Total Disturbed Area = 0.53 Acres

Primary Permittee

Name: ----
Address: ----

Telephone: ----

PROJECT NARRATIVE

THIS PROJECT IS LOCATED IN THE CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE AT THE INTERSECTION OF SOUTH GARDEN STREET AND WEST NINTH STREET. IT IS FOR THE EXPANSION OF THE COLUMBIA FIRE STATION #1 AND CONSISTS OF TWO BUILDING ADDITIONS AS WELL AS PARKING LOT EXPANSION AND OTHER MISCELLANEOUS ITEMS OF WORK. THE TWO BUILDING ADDITIONS TOTAL APPROXIMATELY 3,656 SQUARE FEET IN AREA. ONE IS LOCATED ON THE FRONT SIDE OF THE EXISTING STRUCTURE AND THE OTHER IS ON THE WESTERLY MOST END.

A REINFORCED CONCRETE RETAINING WALL IS PROPOSED ALONG WEST NINTH STREET. THE EXISTING RIP-RAP LINING THE SLOPE UP TO THE STREET WILL BE REMOVED BY THE WALL. A SIX FEET WIDE CONCRETE SIDEWALK WILL BE CONSTRUCTED BETWEEN THE PROPOSED WALL AND THE EXISTING FACE OF THE BUILDING. THIS SIDEWALK WILL ALLOW PEDESTRIAN ACCESS TO BOTH THE FRONT AND REAR OF THE BUILDING. IT WILL ALSO SERVE AS A PATH FOR STORM RUNOFF TO FLOW TO THE PROPOSED DURASLO TRENCH DRAIN IN THE CENTER OF THE SIDEWALK. SIX NEW PARKING SPACES WILL BE ADDED TO THE REAR LOT AND A SECURITY FENCE AND CANTILEVERED GATE WILL BE CONSTRUCTED.

STORMWATER MANAGEMENT WILL NOT BE REQUIRED FOR THIS PROJECT AS THE INCREASE IN IMPERVIOUS AREA IS JUST OVER ONE THOUSAND SQUARE FEET.

STAGE I CONSTRUCTION NOTES

1. A CONSTRUCTION EXIT IS NOT REQUIRED FOR THIS PROJECT DUE TO EXISTING ENTRANCES INTO THE SITE. HOWEVER, THE CONTRACTOR SHALL USE CAUTION TO PREVENT ANY MATERIAL FROM BEING TRACKED ONTO THE STREETS LEAVING THE SITE. ANY MATERIAL TRACKED ONTO THE STREETS SHALL BE REMOVED IMMEDIATELY USING SHOVELS, SWEEPERS, WATER, ETC.
2. CONSTRUCT ORANGE BARRIER FENCE AROUND EXISTING TREES. DURING THIS PROJECT, NO EQUIPMENT, MATERIALS, OR VEHICLES ARE TO BE PARKED IN THE VICINITY OF THE TREES.
3. CONSTRUCT WATTLE PROTECTION (SILT TUBES) TO PREVENT ERODED MATERIAL FROM LEAVING THE CONSTRUCTION AREAS. WATTLE PROTECTION SHALL BE MAINTAINED AND REPLACED IF DAMAGED DURING CONSTRUCTION.
4. CONSTRUCT SILT FENCE (WIRE BACKED) IN LOCATIONS TO CATCH SOIL LADEN RUNOFF AND PREVENT IT FROM DEPOSITING SILT ON ADJACENT PROPERTIES.

STAGE II CONSTRUCTION NOTES

1. MAINTAIN ALL BMPS CONSTRUCTED DURING STAGE I. CONTRACTOR SHALL WALK SITE AT LEAST WEEKLY TO INSPECT CONDITION OF EACH BMP. AFTER EACH RAIN EVENT, HE SHALL EVALUATE THE EFFECTIVENESS OF EP&SC CONSTRUCTION. ALL BMPS CONSTRUCTED TO REMOVE SILTATION SHALL BE CLEANED OF ACCUMULATED SILT WHEN THEIR CAPACITY IS HALF FULL.
2. CONSTRUCT INLET PROTECTION OF EACH INLET USING WATTLE PROTECTION (SILT TUBES) OR SILT FENCE WHERE NECESSARY.
3. CONSTRUCT CONCRETE WASHOUT. THE CONCRETE WASHOUT SHALL ONLY BE USED ONLY TO CLEAN SMALL HAND TOOLS SUCH AS RAKES, SCREEDS, TROWELS, SHOVELS, FLOATS, WORKMENS BOOTS, ETC. THE CHUTE OF THE MIXER MAY BE CLEANED IN THE CONCRETE WASHOUT BUT NO DRUM CLEANING IS PERMITTED. EXCESS CONCRETE SHALL BE RETURNED TO THE PLANT WHERE DRUM WASHOUT SHALL OCCUR.
4. CONCRETE APRONS SERVING THE APPARATUS BAYS OF THE BUILDING SHALL BE KEPT CLEAN OF SEDIMENT, DUST AND DEBRIS AT ALL TIMES. COMPET E ACCESS SHALL BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.

STAGE III CONSTRUCTION NOTES

1. CONSTRUCT PERMANENT SEEDING ON ALL LAWN AREAS AFFECTED BY CONSTRUCTION.
2. ONCE A HEALTHY STAND OF GRASS IS ESTABLISHED, THE SEDIMENT CONTROL BMPs SHALL BE REMOVED. AREAS AFFECTED BY SILT FENCE REMOVAL SHALL BE HAND DRESSED AND SEEDED
3. CONTRACTOR SHALL FINAL DRESS THE JOBSITE TO PERFORM ANY MINOR WORK SUCH AS PAVEMENT SWEEPING, TRASH REMOVAL, TOUCH UP SEEDING, ETC. PRIOR TO TURNOVER AND NOC.

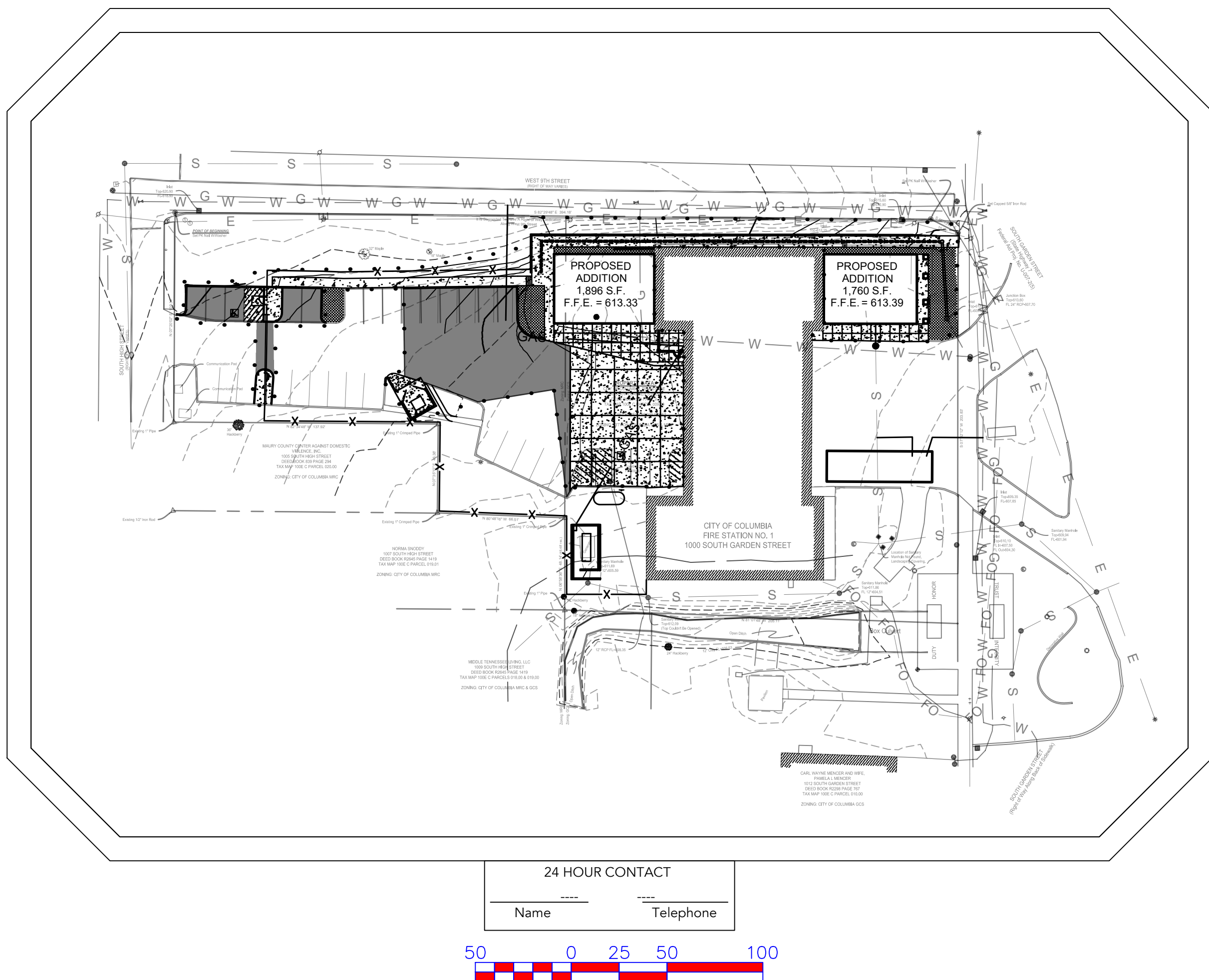
Mid Project Coordinates	
Northing:	3940928.56
Easting:	496692.77
Latitude:	35°36'43.62"N
Longitude:	87° 2'11.46"W

This project has been designed to comply with the Title II Provisions of the Americans with Disabilities Act.

This project has been prepared using the Tennessee State Plane Coordinate System.

SOIL CLASSIFICATIONS

Bk - Braxton silty clay loam, eroded
sloping phase
Ld - Lindell silt loam, 0 to 2 percent
slopes, occasionally flooded
Re - Rockland, Mimosa and Inman
materials, steep



Index to Sheets

EC0.01 Erosion Prevention and Sedimentation Control Plans Cover Sheet

EC1.01 Erosion Prevention and Sedimentation Control Notes

EC1.02 Erosion Prevention and Sedimentation Control Notes

EC1.03 Erosion Prevention and Sedimentation Control Notes

EC1.04 Erosion Prevention and Sedimentation Control Notes

EC1.05 Erosion Prevention and Sedimentation Control Notes

EC2.01 Drainage Area Map

EC3.01 Stage I

EC3.02 Stage II

EC3.03 Stage II

EC4.01 BMP Details and Sections

EC5.01 Soils Map

EC5.02 7.5" USGS Map

EROSION CONTROL NOTES

1. ALL EROSION CONTROL DEVICES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC'S EROSION AND SEDIMENT CONTROL HANDBOOK AND TDEC'S CONSTRUCTION ACTIVITY PERMIT REQUIREMENTS. THE DEVICES SHOWN ON THESE DRAWINGS ARE THE MINIMUM REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL EROSION CONTROL DEVICES AS NEEDED.
2. EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO DISTURBANCE OF EXISTING GROUND COVER. THEY MUST REMAIN IN PLACE AND FUNCTION THROUGHOUT THE CONSTRUCTION PERIOD.
3. APPLY TEMPORARY SEEDING WHENEVER GRADING OPERATIONS ARE TEMPORARILY HALTED FOR OVER 14 DAYS AND FINAL GRADING OF EXPOSED SURFACES IS TO BE COMPLETED WITHIN ONE YEAR. APPLY TEMPORARY SEEDING TO STEEP SLOPES (GREATER THAN OR EQUAL TO 3:1) WHENEVER GRADING OPERATIONS ARE TEMPORARILY HALTED FOR OVER 7 DAYS AND FINAL GRADING OF EXPOSED SURFACES IS TO BE COMPLETED WITHIN ONE YEAR. APPLY TEMPORARY SEEDING TO SOIL STOCKPILES.
4. APPLY PERMANENT SEEDING WHENEVER GRADING OPERATIONS ARE COMPLETED AND ALL CONSTRUCTION OPERATIONS WILL NOT IMPACT THE DISTURBED AREA. APPLY PERMANENT SEEDING TO ALL NON-CONSTRUCTION AREAS THAT SHOW SIGNS OF EXCESSIVE EROSION.
5. PERMANENT SEEDING SHALL BE DROUGHT TOLERANT, HYBRID KENTUCKY 31 (JAGUAR, LANCER, REBEL II, FALCON II, ETC.). SEED AT A RATE OF 6 - 8 POUNDS PER 1,000 SQUARE FEET. USE A SLOW RELEASE STARTER FERTILIZER WITH 1 POUND PER 1,000 SQUARE FEET NITROGEN. IF GRADING IS PERFORMED DURING THE WINTER MONTHS, SEED MIXTURE SHALL BE SUPPLEMENTED WITH A WINTER RYE OR OTHER APPROPRIATE MIXTURE TO ASSURE STABILIZATION DURING THE WINTER SEASON.
6. MULCH WITH STRAW AT A RATE OF 100 POUNDS PER 1,000 SQUARE FEET OVER THE SEEDED AREAS.
7. IF THE ACTION OF VEHICLES AND EQUIPMENT TRAVELING OVER THE CRUSHED STONE CONSTRUCTION EXIT IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT AND MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.
8. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR ONTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF SITE CONSTRUCTION POLLUTION PREVENTION CONTROLS THROUGHOUT THE LIFE OF THIS PROJECT.
10. UPON COMPLETE STABILIZATION OF THE SITE, SILT FENCES AND OTHER TEMPORARY SILT BARRIERS SHALL BE REMOVED OR OTHERWISE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORM WATER DISCHARGES.
11. GENERAL CONTRACTOR SHALL DENOTE ON PLANS THE TEMPORARY PARKING AND STORAGE AREA, THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, CONCRETE TRUCK WASHOUT AREA, OFFICE TRAILERS, AND TOILET FACILITIES.
12. CURRENT VERSIONS OF THIS STORM WATER POLLUTION PREVENTION PLAN, THE NOTICE OF INTENT, AND THE NOTICE OF COVERAGE SHALL BE KEPT ON THE SITE FOR THE DURATION OF THIS PROJECT.
13. ALL UNDISTURBED AREAS INCLUDING ANY ARCHAEOLOGICAL SITES AND STREAM BUFFERS, SHALL BE FIELD MARKED AND KEPT FREE OF CONSTRUCTION EQUIPMENT.
14. CONTRACTOR SHALL NOT WORK IN ANY AREAS OUTSIDE OF SHOWN DISTURBED LIMITS.

IF YES, DESCRIBE AND LIST THE CORRESPONDING PLAN SHEET: _____

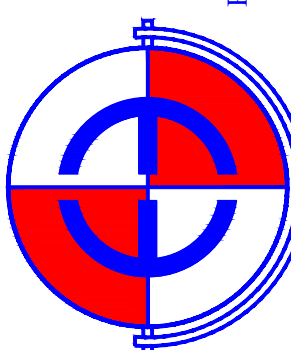
A SEDIMENT BASIN OR EQUIVALENT MEASURE(S) WILL BE PROVIDED FOR ANY
OUTFALL IN A DRAINAGE AREA:

EP&SC NOTES	

SCALE:	N.T.
DATE:	2023-10-1
SHEET NUMBER:	
EC1.01	
PROJECT NUMBER:	
220198	

4.2.2. OF FIVE ACRES OR MORE FOR AN OUTFALL(S) THAT DISCHARGES TO AN IMPAIRED STREAM OR KNOWN EXCEPTIONAL QUALITY WATER (5.4.1.f).

OUTFALL INFORMATION					
OUTFALL LABEL	SLOPE (%)	DRAINAGE AREA (AC)	SEDIMENT BASIN OR EQUIVALENT MEASURE(S) (YES, NO OR N/A)	SUB-OUTFALL (e.g. A, B, C)†	RECEIVING NATURAL RESOURCE NAME OR LABEL
N/A	N/A	N/A	N/A	N/A	TN0604000302 6_0100



DESIGNED BY:
D. ESTES

DRAWN BY:
B. ESTES

CHECKED BY:

APPROVED BY:

[illegible]

COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

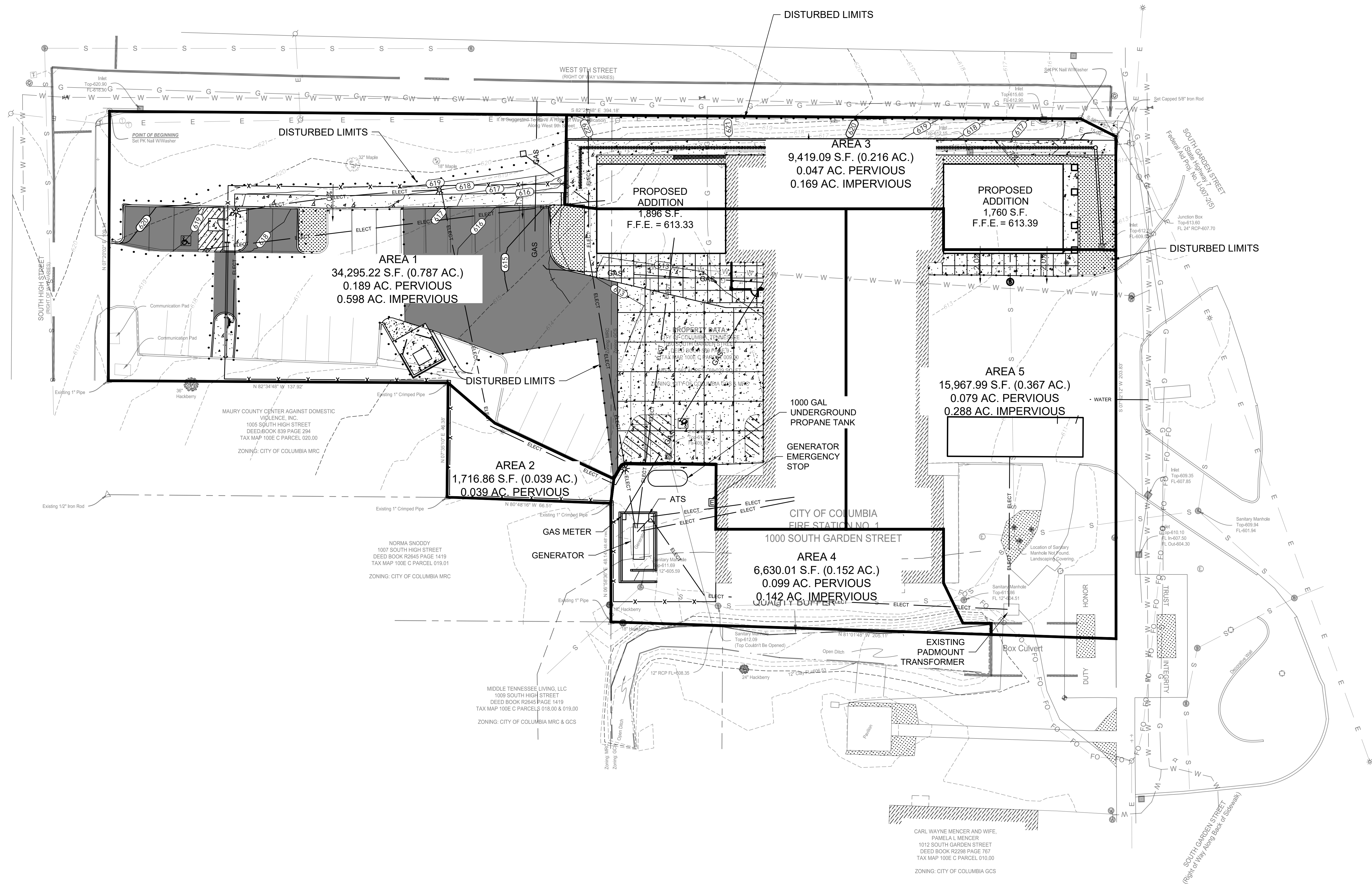
DRAINAGE MAP
POST-DEVELOPMENT

SCALE: 1" = 5'

DATE: 2023-10-1

EC2.02

220198



24 HOUR CONTACT

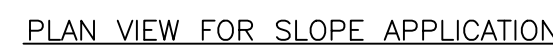
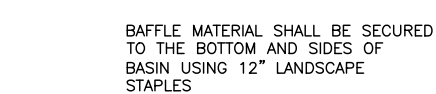
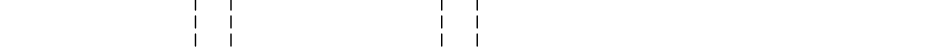
Name _____ Telephone _____



1. MAINTAIN ALL BMPS CONSTRUCTED DURING STAGE I. CONTRACTOR SHALL WALK SITE AT LEAST WEEKLY TO INSPECT CONDITION OF EACH BMP. AFTER EACH RAIN EVENT, HE SHALL EVALUATE THE EFFECTIVENESS OF OF EP&SC CONSTRUCTION. ALL BMPS CONSTRUCTED TO REMOVE SILTATION SHALL BE CLEANED OF ACCUMULATED SILT WHEN THEIR CAPACITY IS HALF FULL.
2. CONSTRUCT INLET PROTECTION OF EACH INLET USING WATTLE PROTECTION (SILT TUBES) OR SILT FENCE WHERE NECESSARY.
3. CONSTRUCT CONCRETE WASHOUT. THE CONCRETE WASHOUT SHALL ONLY BE USED ONLY TO CLEAN SMALL HAND TOOLS SUCH AS RAKES, SCREEDS, TROWELS, SHOVELS, FLOATS, WORKMENS BOOTS, ETC. THE CHUTE OF THE MIXER MAY BE CLEANED IN THE CONCRETE WASHOUT BUT NO DRUM CLEANING IS PERMITTED. EXCESS CONCRETE SHALL BE RETURNED TO THE PLANT WHERE DRUM WASHOUT SHALL OCCUR.
4. CONCRETE APRONS SERVING THE APPARATUS BAYS OF THE BUILDING SHALL BE KEPT CLEAN OF SEDIMENT, DUST AND DEBRIS AT ALL TIMES. COMPET E ACCESS SHALL BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION.

CONTOUR INTERVAL = 1'

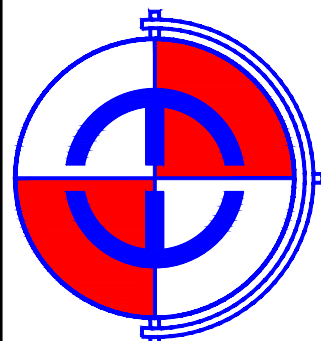
GRAPHIC SCALE = 1" = 20'



NOTES:

① THE DEPTH AND WIDTH OF THE WEIR SECTION OF THE WATTLE SHALL BE DESIGNED TO PASS THE 2yr/24hr OR 5yr/24hr STORM EVENT WITHOUT OVERTOPPING THE CHANNEL.

② STAKE PER MANUFACTURERS RECOMMENDATIONS



DESIGNED BY:
D. ESTE

DRAWN BY:
B. ESTE

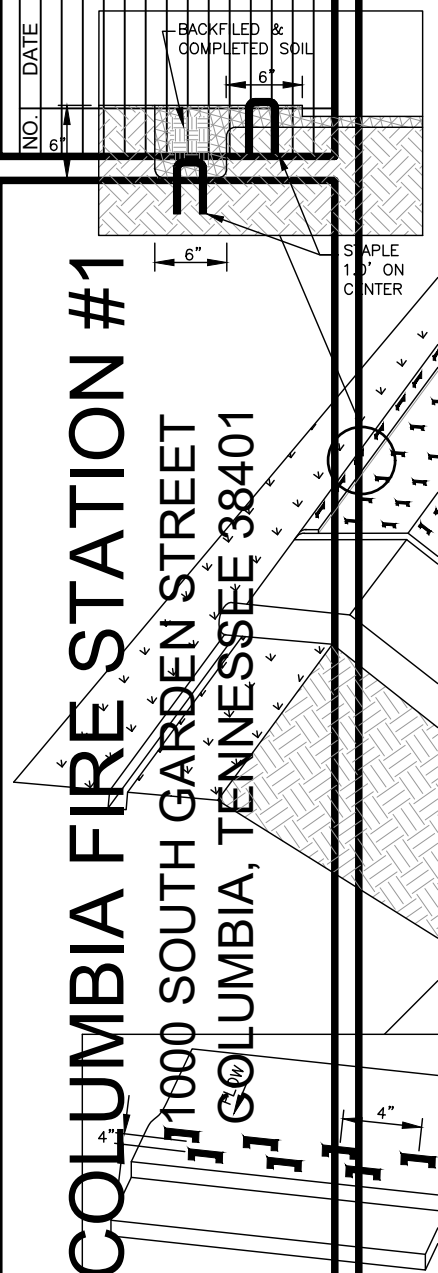
CHECKED BY:

APPROVED BY:

NO.	DATE	REVISIONS		BY
		DESCRIPTION		

ANCHOR TRENCH

ANCHOR TRENCH DET.



COLUMBIA FIRE STATION #1
17000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

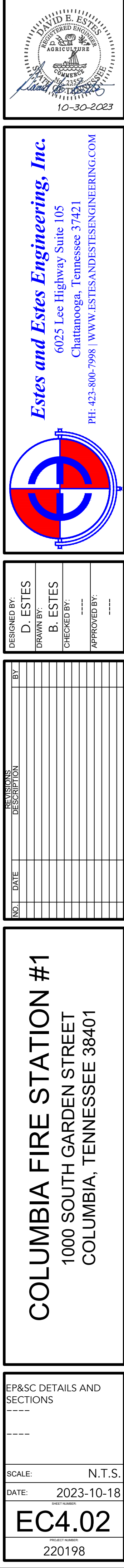
EP&SC DETAILS AND SECTIONS

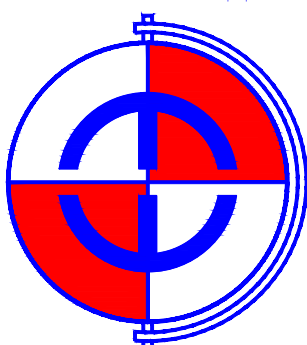
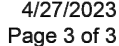
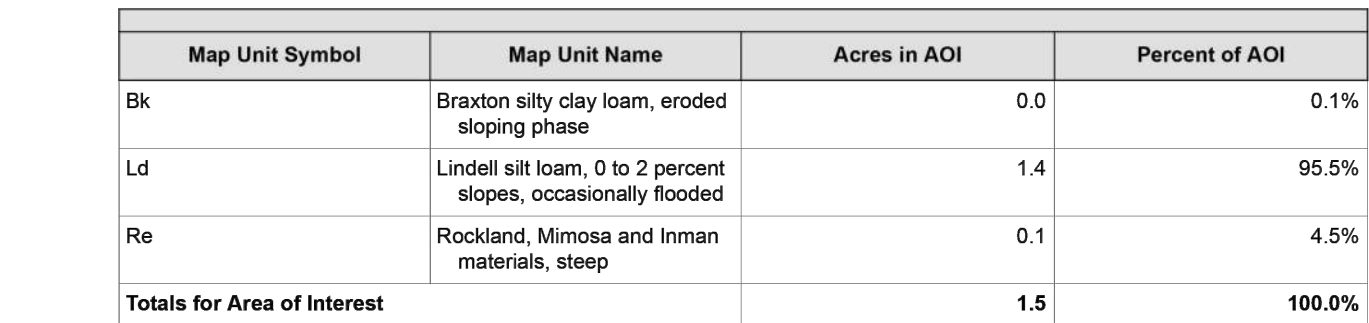
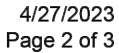
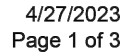
SCALE: N.T.S.

DATE: 2023-10-18

EC4.01

220198





DESIGNED BY:	D. ESTES
DRAWN BY:	B. ESTES
CHECKED BY:	---
APPROVED BY:	

[illegible]

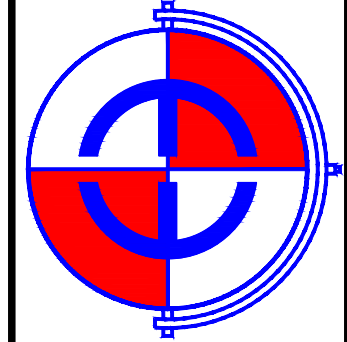
COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

SOILS MAP

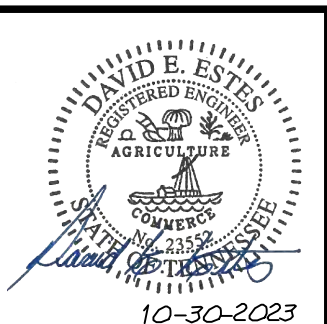
SCALE: N.T.S.

DATE: 2023-10-18

SHEET NUMBER:
EC5.01
PROJECT NUMBER:
220198



Estes and Estes Engineering, Inc.
6025 Lee Highway Suite 105
Chattanooga, Tennessee 37421
PH: 423-800-7998 | WWW.ESTESANDESSENGINEERING.COM



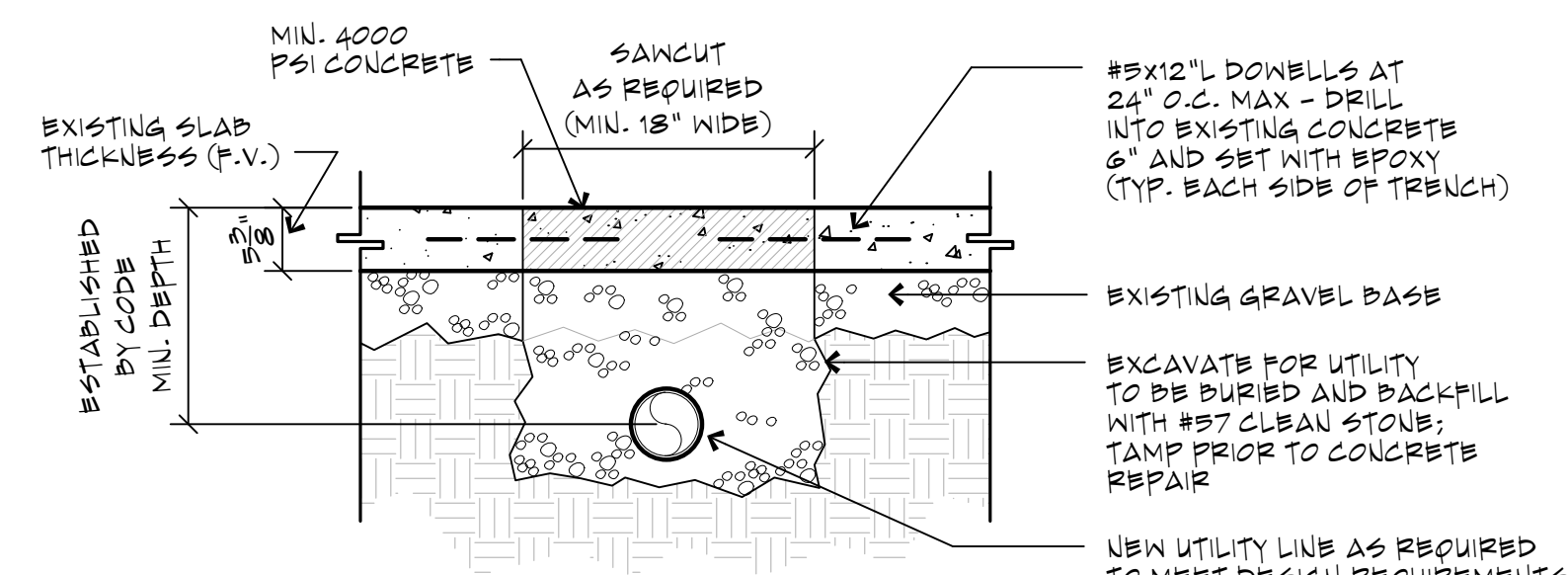
COLUMBIA FIRE STATION #1
1000 SOUTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

7.5" USGS MAP	
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SCALE:	N.T.S.
DATE:	2023-10-18
SHEET NUMBER	
EC5.02	
PROJECT NUMBER	
220198	

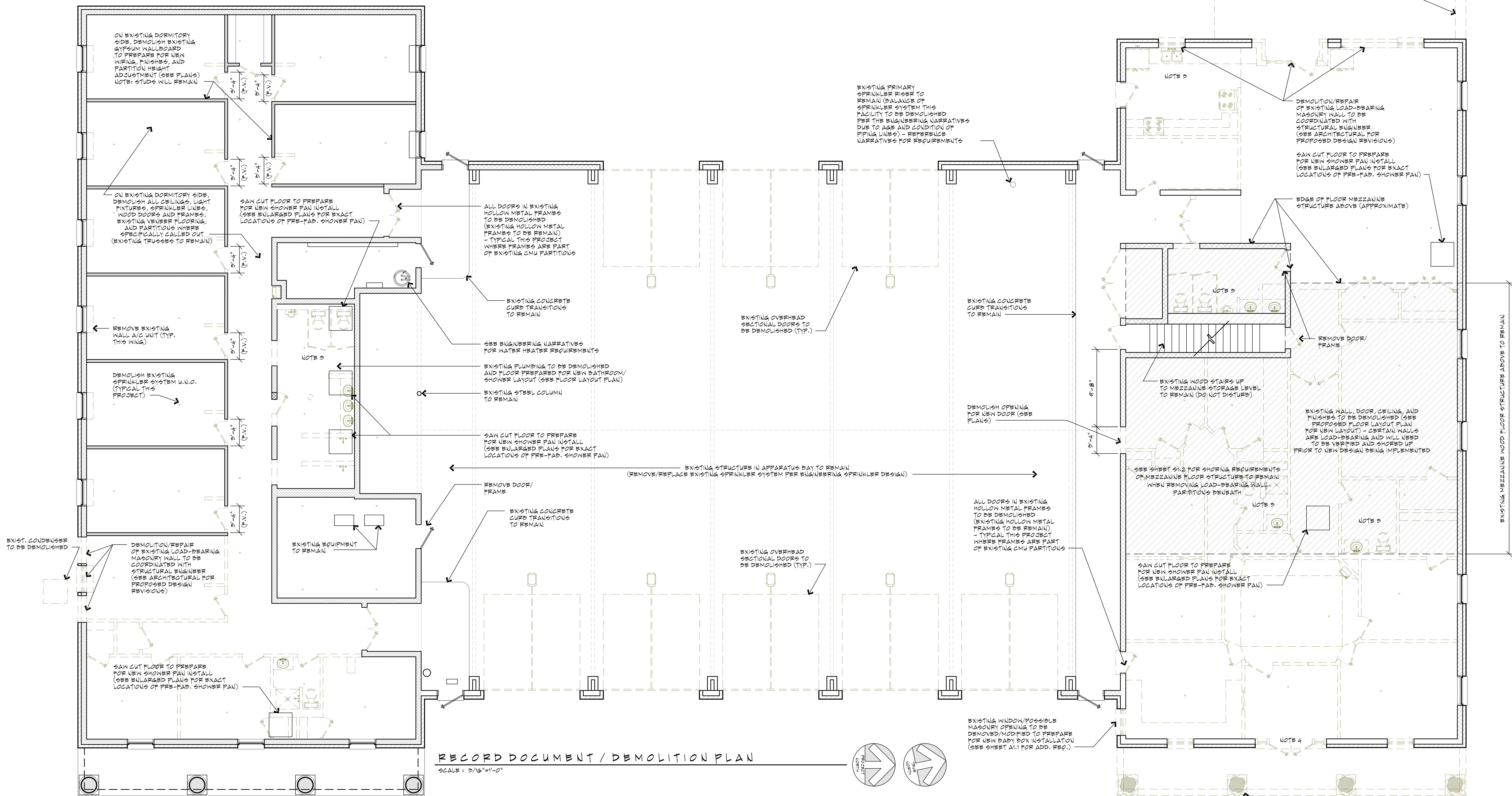
	EXISTING CMU (MASONRY BLOCK)
	EXISTING BRICK MULTI-WYTHE WALL
	NEW BRICK VENEER/FULL BRICK MULTI-WYTHE CONSTRUCTION TO BE DEMOLISHED
	NEW MASONRY CONSTRUCTION
	PROPOSED METAL STUD CONSTRUCTION
	EXISTING STUD CONSTRUCTION

- - - - - ONE HOUR PARTITION
 - TWO HOUR PARTITION
 - - - - - FOUR HOUR FIREWALL
 - - - - - SMOKE WALL PARTITION (30 MINUTE)

1. EXISTING FIELD MEASUREMENTS WERE PREPARED BY BUTCHER DRAFTING, WHILE BELIEVED TO BE ACCURATE, THE CONTRACTOR SHALL BRING TO THE ARCHITECT'S ATTENTION ANY DISCREPANCIES THAT WILL ADVERSELY AFFECT THE DESIGN INTENT SPECIFIED NOTED.
2. ALL DEMOLISHED ITEMS BECOME THE PROPERTY OF THE OWNER, PRIOR TO REMOVAL AND/OR PROPER DISPOSAL, THE OWNER WILL COORDINATE IN WRITING ANY ITEMS THEY WISH TO RETAIN.
3. SEE PLUMBING DRAININGS FOR UNDER FLOOR ROUTING OF NEW GENDER LINES REQUIRED TO FACILITATE NEW DESIGL SAN CUT FLOOR PER DETAIL ON THIS SHEET AND PLACE BACK WATER AND DRAINAGE TO THE EXISTING DRAINAGE LINES BELOW GROUND THAT CAN REMAIN AND PATCH BACK WITH CONCRETE WHEN APPLICABLE.
4. CONTRACTOR SHALL CAREFULLY DISASSEMBLE BUTCHER DOOR UNIT FOR THE PURPOSES OF BUILDING A NEW ENTRANCE UNIT AS DETECTED IN FRAME TYPE OF SHEET 49.1. COORDINATE DETAILS VIA SHOP DRAININGS WITH THE ARCHITECT. THE INTENT IS TO MATCH THE CONSTRUCTION OF THE FRAME, TRIM AND DETAILING, TURN OVER TO THE MILLWORK COMPANY FOR USE IN PREPARING SHOP DRAININGS FOR THE ARCHITECT'S REVIEW.
5. IN ADDITION TO THE SHEET DEMOLITION AS DIRECTED ON THE CIVIL DRAWINGS, BLIGH/BERNARD DRAINAGE AND ARCHITECTURE DRAINAGE DIRECTIVES ON THIS SHEET AND NOTE BLIGH/BERNARD ARCHITECTURAL DRAINAGE, THE CONTRACTOR IS ALSO TO REMOVE EXISTING CEILING SYSTEMS IN ALL AREAS EXCEPT THE APPARATUS BAY.



1 SECTION DETAIL
THROUGH SAW CUT SLAB
FOR NEW UTILITY INSTALLATION
SCALE: 1"=1'-0"



RECORD DOCUMENT / DEMOLITION PLAN
SCALE: 3/16"=1'-0"

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 **Nuber
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Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

AB11 Record Document Floor Plan

Date: 10-30-2023 THIS DRAWING HAS BEEN ISSUED: Revisions:

ob #:	☐ FOR REVIEW ONLY	1
Dr. By:	☐ FOR PERMIT ONLY	2
Clk. By: G. Nuber	☒ FOR ESTIMATING/BIDDING ONLY	3
	☐ FOR CONSTRUCTION	4
File #: 2021007 ABL1c	DATE: 10/30/23 ISSUED BY: G. Nuber	5

WALL PARTITION LEGEND

- EXISTING CMU (MASONRY BLOCK)
- EXISTING BRICK MULTI-WYTHE WALL
- NEW BRICK VENEER/INFILL BRICK MULTI-WYTHE
- CONSTRUCTION TO BE DEMOLISHED
- NEW MASONRY CONSTRUCTION
- PROPOSED WOOD STUD CONSTRUCTION
- EXISTING STUD CONSTRUCTION

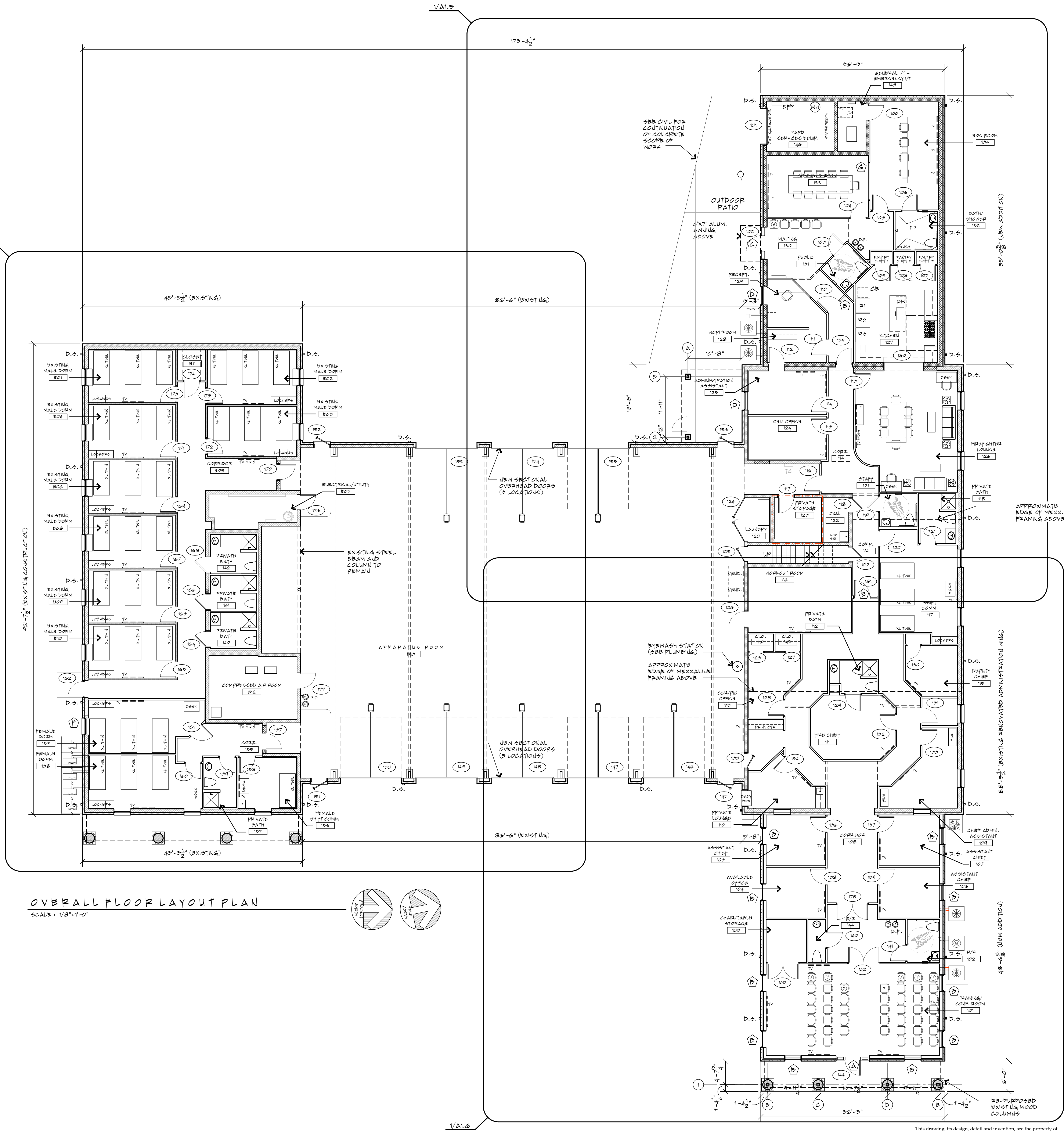
PARTITION FIRE RATING LEGEND
(WHERE APPLICABLE)

- ONE HOUR PARTITION
- TWO HOUR PARTITION
- FOUR HOUR FIREWALL
- SMOKE WALL PARTITION (90 MINUTE)

GENERAL PLAN NOTES/PARTITION REQUIREMENTS

- REFERENCE SHEET A1.4 FOR GENERAL NOTES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND A1.6.
- REFERENCE SHEET A1.5 FOR PARTITION TYPES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND A1.6.

1/A1.4



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Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

A1.1 Overall Floor Layout Plan

Date:	10-30-2023	Revisions:	
Job #:		FOR REVIEW ONLY	☐
Dr. By:		FOR ESTIMATING/BIDDING ONLY	☐
Ck. By:	G. Nuber	FOR CONSTRUCTION	☒
File #:	2021007 A1.1n	DATE: 10/30/23 ISSUED BY: G. Nuber	

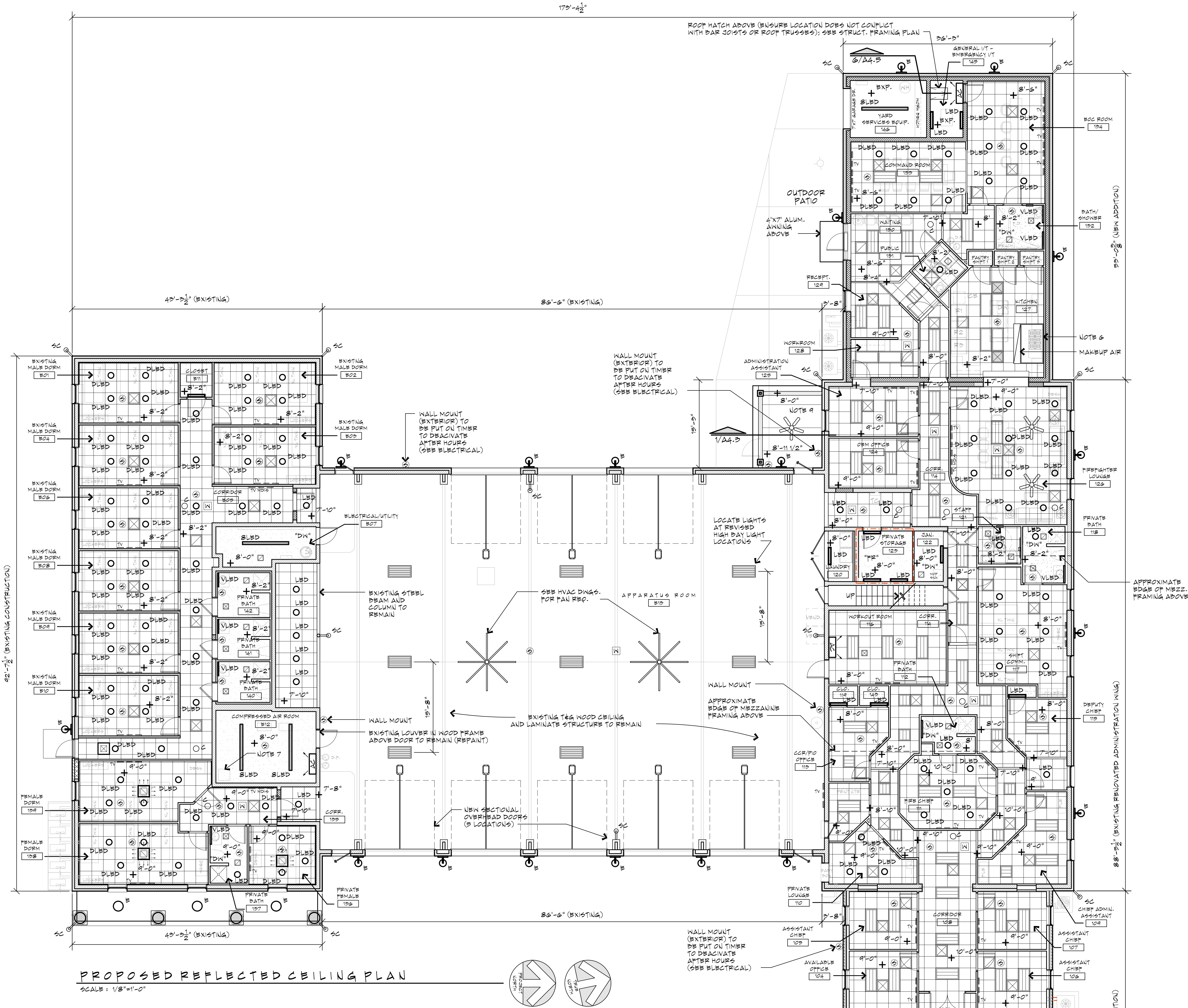
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REFLECTED CEILING PLAN GENERAL NOTES

- UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO FACE OF EXISTING WOOD/MTL. STUD, FACE OF GYPSUM WALLBOARD FEATURES, OR CENTERLINE OF INTERIOR CEILING GRID.
- GYPSUM WALLBOARD CEILINGS OR BULKHEADS SHALL NOT HAVE SPRAY TEXTURED FINISH.
- UNLESS OTHERWISE INDICATED, ALL CEILING ELEVATIONS SHALL BE 8'-0" ABOVE THE FINISHED FLOOR.
- UNLESS OTHERWISE DIMENSIONED, ALL ACOUSTICAL CEILING SYSTEMS SHALL ADHERE TO DESIGN SHOWN AND SHALL BE CENTERED BOTH DIRECTIONS IN ROOM. CONTRACTOR SHALL LAY OUT ROOM PRIOR TO INSTALLATION. ANY GRIDS DETERMINED CLOSER THAN 3' FROM ANY WALL PARTITION MAY BE ADJUSTED AS REQUIRED.
- IT SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO ENSURE THAT SPECIFIC LOCATIONS OF ALL LIGHTING FIXTURES AND MECHANICAL SUPPLY/RETURN GRILLS BE TAKEN FROM THIS PLAN ONLY. ENGINEERING DRAWINGS ARE DIAGRAMMIC AND SHALL NOT BE USED FOR FIXTURE/EQUIPMENT PLACEMENT OF ANY KIND, ANY LIGHTING FIXTURES WHICH ARE NOT DIMENSIONED WILL PERMIT THE ELECTRICAL CONTRACTOR TO ADJUST FOR STRUCTURAL CONFLICTS OF CEILING JOISTS AND OTHER ITEMS IN CONFLICT.
- EXHAUST HOOD. SEE HVAC DRAWINGS FOR REQUIREMENTS.
- OWNER PROVIDED AND INSTALLED DATA SWITCHER. SEE ELECTRICAL FOR POWER REQUIREMENTS. THIS SWITCHER WILL ROUTE ALL WIRE DATA ON SOUTH SIDE OF EAST APPARATUS WALL. THE OWNER WILL RUN A FIBER OPTIC LINE FROM THE SWITCHER TO GENERAL UTILITY ROOM R10.
- UNLESS OTHERWISE DIRECTED IN THE ELECTRICAL DRAWINGS, WIRE MOLDING MAY BE USED WHERE NEW CIRCUITS (POWERS) ARE INSTALLED AGAINST EXISTING WALLS TO REMAIN. WHERE EXISTING OR PROPOSED GYPSUM WALLBOARD PARTITIONS HAVE NEW CONDUIT INSTALLED, COUSAL ALL CIRCUITS IN THESE PARTITIONS. CONTRACTOR SHALL SUBMIT RECOMMENDATIONS FOR ARCHITECT APPROVAL. WHERE ITEMS ARE INSTALLED ON EXTERIOR, JUNCTION BOXES MUST BE RECESSED IN THE BRICK AND WIRE MOLD ROUTED TO INTERIOR OF EXTERIOR WALL.
- SEE SECTION THROUGH OPEN-AIR ROOF FOR CEILING MATERIAL REQUIREMENTS. CENTER 4" WIDE SHEETS AS DEPICTED AND PROVIDE BATTEN STRIPS AT SEAMS.

REFLECTED CEILING PLAN LEGEND
(SEE PLANS FOR APPLICABLE ITEMS THIS PROJECT)

- ALBD 4" CEILING MOUNTED LED LIGHT (SEE ELECTRICAL FOR TYPE)
- SLBD 8" CEILING MOUNTED LED LIGHT (SEE ELECTRICAL FOR TYPE)
- BLBD EXTERIOR LED DOWNLIGHT (SOFFIT MOUNT) - SEE ELEC. FOR TYPE AND EMERGENCY BACKUP REQUIREMENTS
- TV WALL-MOUNTED TV (OWNER TO PROVIDE TV, MOUNT, AND INSTALLATION UNDER SEPARATE CONTRACT) - SEE ELECTRICAL FOR POWER AND DATA REQUIREMENTS ABOVE THE CEILING FOR EACH UNIT; FIELD LOCATE EXACT LOCATION WITH THE OWNER/ARCHITECT - CONTRACTOR SUPPLIES BLOCKING
- HBLD HIGH BAY LIGHT FIXTURE (SEE ELECTRICAL FOR TYPE) FIELD COORDINATE HEIGHT WITH THE ARCHITECT
- 2'x2' / 2'x4' LED TROFFER CENTER BASKET FIXTURES - (SEE ELECTRICAL FOR TYPE, LAMPING REQUIREMENTS, EMERGENCY BACKUP FIXTURE LOCATIONS, AND LENS TYPE)
- 2'x2' / 2'x4' LAY-IN LED EDGE-LIT PANEL LIGHTING FIXTURE (SEE ELECTRICAL FOR REQUIREMENTS AND EMERGENCY BACKUP FIXTURE LOCATIONS)
- DLBD DIMMABLE LED CAN DOWNLIGHT (SEE ELEC. FOR TYPE)
- VLED LED WALL-MOUNTED VANITY LIGHT (SEE ELEC. FOR TYPE)
- LBD LED CAN DOWNLIGHT WITH STANDARD TRIM (SEE ELEC. FOR TYPE)
- ONWER SELECTED FEATURE CEILING FIXTURES (OWNER PROVIDED, CONTRACTOR INSTALLED)
- NALL-MOUNTED LED LIGHT (SEE ELEC. FOR TYPE); COLOR/HEIGHT BY ARCHITECT
- EXTERIOR WALL SCONCE (SEE ELECTRICAL FOR TYPE); REFERENCE BUILDING ELEVATIONS FOR LOCATION; HEIGHT TO BE FIELD DETERMINED
- EXTERIOR SOFFIT MOUNTED CAN LIGHT TO REPLACE EXISTING CAN LIGHT (SEE ELECTRICAL FOR ADDITIONAL REQUIREMENTS)
- INTERIOR WALL SCONCE (SEE ELEC. FOR TYPE) MOUNT AT HEIGHT FIELD DETERMINED WITH THE ARCHITECT UNLESS OTHERWISE NOTED
- EMERGENCY EGRESS LIGHT (SEE ELEC. FOR TYPE) MOUNT AT HEIGHT FIELD DETERMINED WITH THE ARCHITECT UNLESS OTHERWISE NOTED
- 2'x2' ACOUSTICAL CEILING SYSTEM (SEE FINISH SCHEDULE FOR SPECIFIC REQUIREMENTS)
- 8'-0" CEILING ELEVATION ABOVE FINISHED FLOOR
- SPRINKLER HEAD (SEE PLUMBING DNGS. FOR SPRINKLER HEAD TYPE AND DESIGN UTILITY) - SUBMIT SHOP DRAWINGS FOR APPROVAL - NOT INDICATED THIS PLAN
- 2'x2' SUPPLY GRILLS (SEE MECHANICAL DRAWINGS FOR TYPE)
- SUPPLY GRILLS (SEE MECHANICAL DRAWINGS FOR TYPE)
- 2'x2' EXHAUST GRILLS (SEE MECHANICAL DRAWINGS FOR TYPE)
- EXHAUST FAN GRILLS (SEE MECHANICAL DRAWINGS FOR TYPE)
- MINI DUCTLESS SPLIT SYSTEM (SEE MECHANICAL DRAWINGS FOR TYPE)
- CEILING CASSETTE (SEE MECHANICAL DRAWINGS)
- CEILING MOUNTED HEATER (SEE MECHANICAL DRAWINGS)
- DRYNALL CEILING
SEE PROJECT FOR SPECIFIC NOTATIONS AS FOLLOWS:
- "DN" ONE LAYER 5/8" DRYNALL (TAPED, SEALED, AND PAINTED) APPLIED TO MTL. STUD FRAMING SUSPENDED FROM WOOD OR STEEL TRUSSES ABOVE AS REQUIRED
- "BDN" ONE LAYER 5/8" EXTERIOR GRADE DRYNALL (TAPED, SEALED, AND PAINTED) (SEE WALL SECTIONS FOR MOUNTING STRUCTURE)
- "FR" TWO LAYERS 5/8" FIRE CODE GYPSUM WALLBOARD (TAPED, SEALED, AND PAINTED; HUNG FROM SUSPENSION GRID SYSTEM)
- CEILING FAN TYPE BY ARCHITECT; PROVIDE WITH #200 ALLOWANCE PER UNIT (SEE ELECTRICAL FOR VARIABLE FAN SPEED OPERATION)
- SPRINKLER SYSTEM BY OWNER UNDER SEPARATE CONTRACT (CONTRACTOR TO PROVIDE JUNCTION BOX AND CONDUIT TO ABOVE CEILING FOR OWNER TO PULL CABLE AND PROVIDE VOLUME CONTROL) FIELD COORDINATE VOLUME CONTROL LOCATION
- CEILING MOUNT WITH REPEATER; OWNER TO PROVIDE WITH REPEATER AND CABLE PULLING UNDER SEPARATE CONTRACT (SEE ELECTRICAL FOR POWER SOURCE REQUIREMENTS AT EACH WITH REPEATER)
- SECURITY CAMERA TO BE PROVIDED BY OWNER UNDER SEPARATE CONTRACT (SEE ELECTRICAL FOR ADDITIONAL REQUIREMENTS)
- OWNER PROVIDED AND INSTALLED TIME CLOCK. SEE ELECTRICAL FOR DATA AND POWER REQUIREMENTS



PROPOSED REFLECTED CEILING PLAN

SCALE: 1/8"=1'-0"

WALL PARTITION LEGEND

- EXISTING CMU (MASONRY BLOCK)
- EXISTING BRICK MULTI-WYTHE WALL
- NEW BRICK VENEER/UPILL BRICK MULTI-WYTHE
- CONSTRUCTION TO BE DEMOLISHED
- NEW MASONRY CONSTRUCTION
- PROPOSED WOOD STUD CONSTRUCTION
- EXISTING STUD CONSTRUCTION

PARTITION FIRE RATING LEGEND
(WHERE APPLICABLE)

- ONE HOUR PARTITION
- TWO HOUR PARTITION
- FOUR HOUR FIREWALL
- SMOKE WALL PARTITION (30 MINUTE)



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A1.2 Proposed Reflected Ceiling Plan

Proposed Renovation to Fire Station #1 for the City of Columbia
Columbia, Tennessee

Date:	10-30-2023	This Drawing Has Been Issued:	Revisions:
Job #:		FOR REVIEW ONLY	
Dr. By:		FOR ESTIMATING / BIDDING ONLY	
Ck. By:	G. Nuber	FOR CONSTRUCTION	
File #:	2021007 A1.2f	DATE: 10/30/23 ISSUED BY: G. Nuber	

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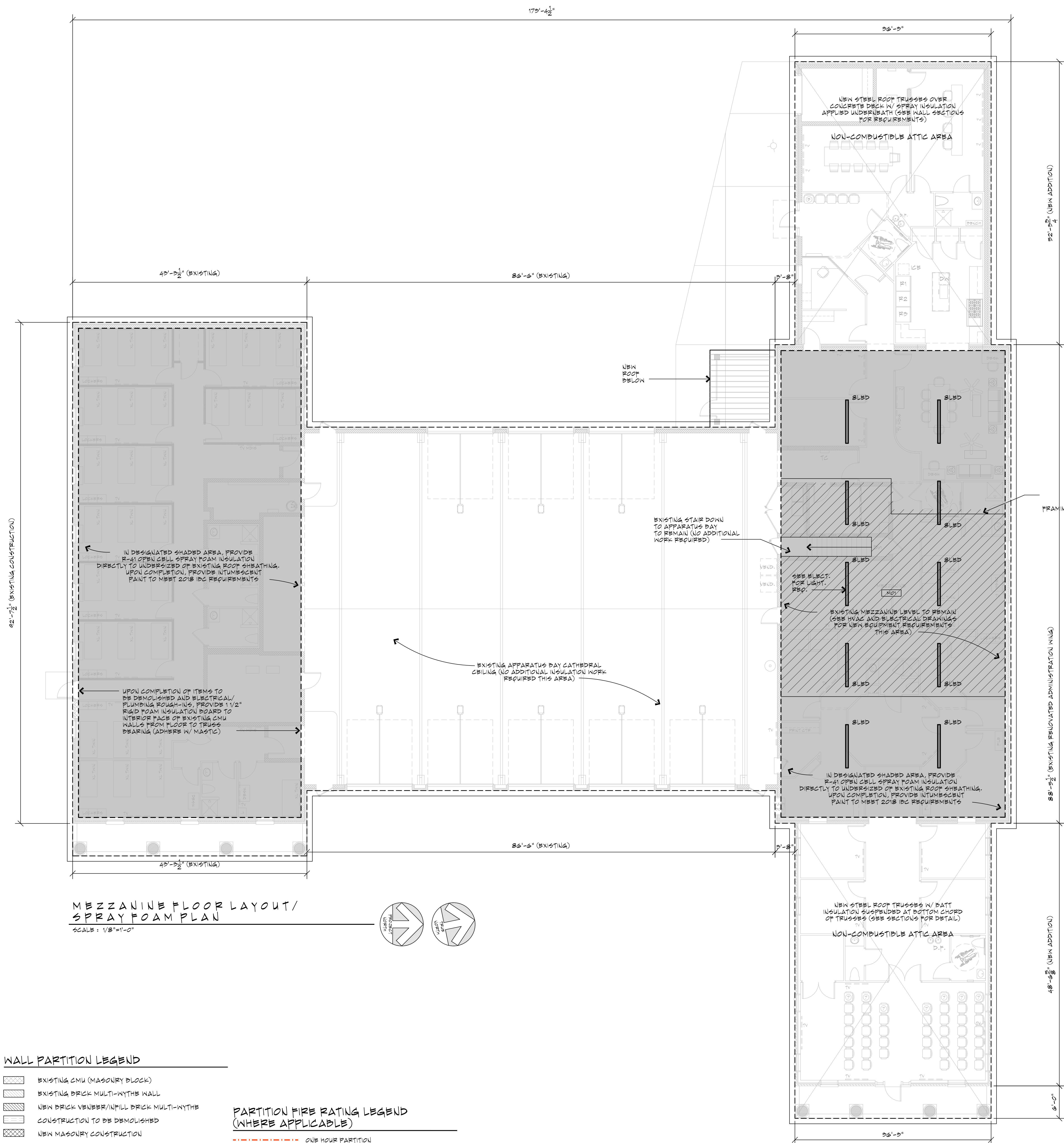


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

A1.3 Mezzanine Layout Plan

Date:	10-30-2023	Revisions:
Job #:		1 FOR REVIEW ONLY
Dr. By:		2 FOR PERMIT ONLY
CK: By: G. Nuber	☒	3 FOR ESTIMATING/BIDDING ONLY
File #: 2021007-A1.3a		4 FOR CONSTRUCTION
		5 DATE: 10/30/23 ISSUED BY: G. Nuber
		6

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MEZZANINE FLOOR LAYOUT/
SPRAY FOAM PLAN

SCALE: $1/8" = 1'-0"$

WALL PARTITION LEGEND

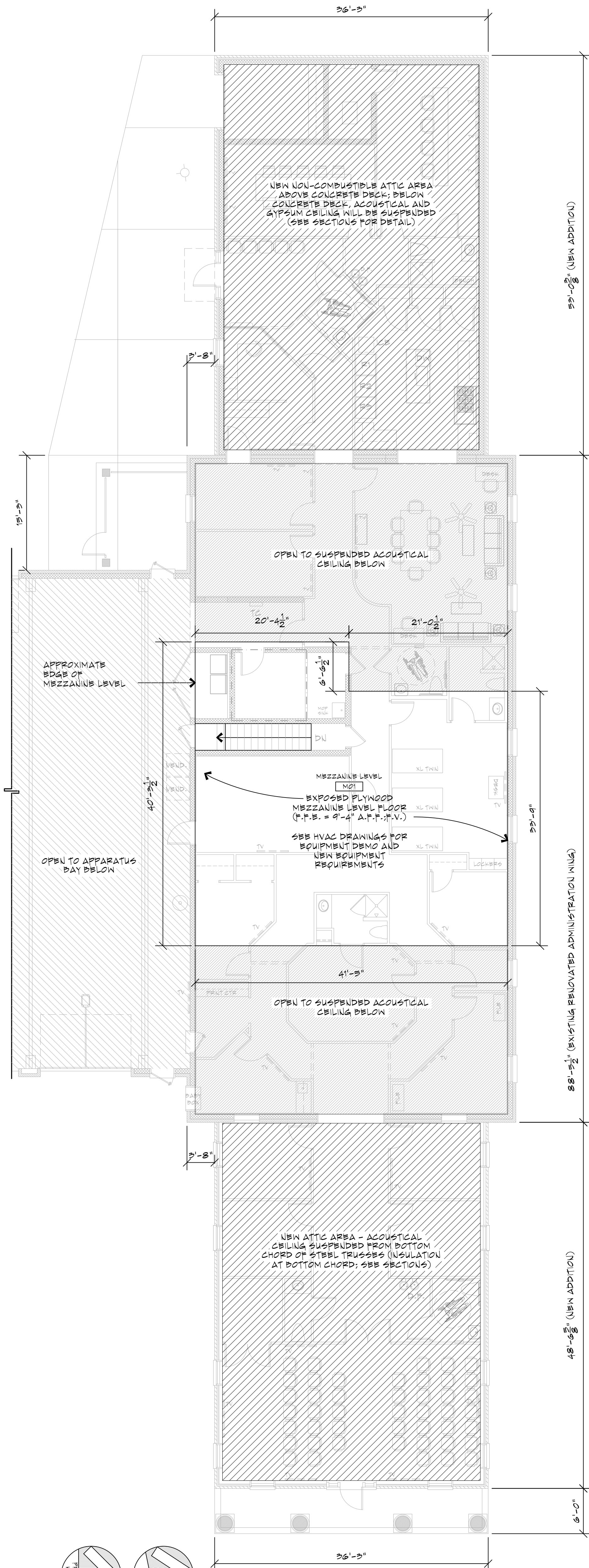
- | | |
|---|---|
|  | EXISTING CMU (MASONRY BLOCK) |
|  | EXISTING BRICK MULTI-WYTHE WALL |
|  | NEW BRICK VENEER/INFILL BRICK MULTI-WYTHE |
|  | CONSTRUCTION TO BE DEMOLISHED |
|  | NEW MASONRY CONSTRUCTION |
|  | PROPOSED WOOD STUD CONSTRUCTION |
|  | EXISTING STUD CONSTRUCTION |

PARTITION FIRE RATING LEGEND
(WHERE APPLICABLE)

- ONE HOUR PARTITION
- TWO HOUR PARTITION
- FOUR HOUR FIREWALL
- SMOKE WALL PARTITION (30 MINUTE)

MEZZANINE FLOOR LAYOUT PLAN

SCALE: $1/8"=1'-0"$



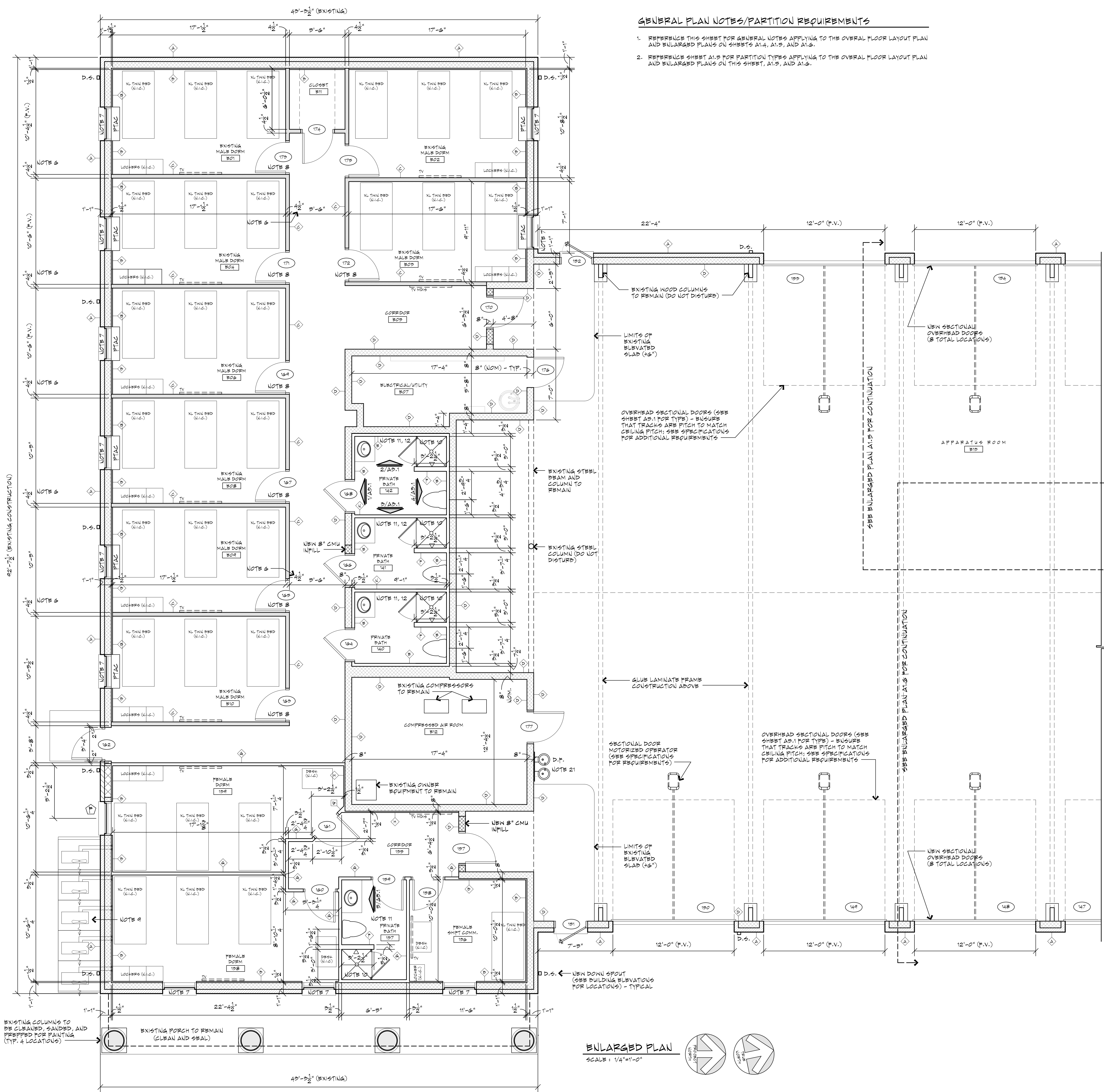


WALL PARTITION LEGEND	
	EXISTING CMU (MASONRY BLOCK)
	EXISTING BRICK MULTI-NYTHE WALL
	NEW BRICK VENEER/WHILL BRICK MULTI-NYTHE
	CONSTRUCTION TO BE DEMOLISHED
	NEW MASONRY CONSTRUCTION
	PROPOSED WOOD STUD CONSTRUCTION
	EXISTING STUD CONSTRUCTION

PARTITION FIRE RATING LEGEND (WHERE APPLICABLE)	
	ONE HOUR PARTITION
	TWO HOUR PARTITION
	FOUR HOUR FIRE WALL
	SMOKE WALL PARTITION (90 MINUTES)

- GENERAL PLAN NOTES/PARTITION REQUIREMENTS**
- REFERENCE THIS SHEET FOR GENERAL NOTES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND A1.6.
 - REFERENCE SHEET A1.5 FOR PARTITION TYPES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON THIS SHEET, A1.5, AND A1.6.

- FLOOR PLAN GENERAL NOTES**
- ALL DIMENSIONS SHOWN ARE TO FACE OF EXISTING/PROPOSED WOOD/MTL. STUD, FACE OF EXISTING GYPSUM WALLBOARD THAT IS REMAINING, EDGE OF SIDEWALL, FACE OF EXISTING/PROPOSED BRICK, OR FACE OF EXISTING/PROPOSED CMU, CENTERLINE OF NEW STL. COLUMN, OR CENTERLINE OF PROPOSED PLUMBING FIXTURE UNLESS OTHERWISE NOTED.
 - FOR COMBUSTIBLE WALL PARTITION ASSEMBLIES: PER 2018 IRC 718.2.2, PROVIDE 2X FIRE BLOCKING SUCH THAT THERE ARE NO CAVITIES THAT EXCEED 10'-0" HORIZONTALLY OR ANY DIRECTION OR AT CEILING ELEVATIONS WHICH MAY BE ENCOUNTERED. THE CONTRACTOR WILL BE REQUIRED TO TAKE ALL INTERIOR WALL STUDS UP TO EXISTING/PROPOSED FLOOR/ROOF ASSEMBLIES AS DEMOTED BY THE WALL PARTITION SCHEDULE.
 - COORDINATE WATER AND SINKER LINES AND ANY OTHER LINES TO BE INSTALLED BELOW THE EXISTING/PROPOSED CONCRETE FLOOR. REFERENCE THE PLUMBING AND DEMOLITION DRAWINGS, SHEET A0.1 FOR REQUIREMENTS.
 - COORDINATE WATER AND SINKER LINES AND ANY OTHER LINES TO BE INSTALLED BELOW THE EXISTING/PROPOSED CONCRETE FLOOR. REFERENCE THE PLUMBING AND DEMOLITION DRAWINGS.
 - ORIGINAL RECORD DOCUMENT PLANS WERE OBTAINED FROM FIELD MEASUREMENTS TAKEN BY BUTCHER DRAFTING COMMISSED BY THE OWNER ON SEPTEMBER 3RD, 2021. THE BASE FLOOR PLAN IS BELIEVED TO BE ACCURATE. AT THE CONCLUSION OF DEMOLITION WORK, THE CONTRACTOR WILL LAY OUT THE ROOMS AS DIMENSIONED ON THE PLAN AND NOTIFY THE ARCHITECT OF ANY SIGNIFICANT DISCREPANCIES THAT WOULD REQUIRE AN ADJUSTMENT TO THE DESIGN.
 - DIMENSION REFERENCES IS MEASURED TO ORIGINAL FINISHED PARTITION.
 - ORIGINAL VINYL WINDOWS TO REMAIN. PROTECT FROM DEMOLITION. REMOVE/REPLACE EXIST. PTAC UNIT PER MECHANICAL DRAWINGS. CLEAN WINDOWS AND MAINTAINANCE FOR PROPER OPERATION. INSTALL 2X2 P.T. GROUND AROUND PERIMETER OF WINDOW AS A GYPSUM ATTACHMENT POINT AND LINE HEAD AND JAMB WITH GYPSUM WALLBOARD TIGHT TO EXISTING MASONRY OPENING. FIELD COORDINATE DESIGN INTENT WITH THE ARCHITECT.
 - UPON DEMOLITION OF EXISTING DOORS/DOOR FRAMES, RE-FRAME OPENING SO NEW HOLLOW METAL JAMB IS TIGHT AGAINST FINISHED WALL PARTITION.
 - SEE HVAC DRAWINGS FOR CONDENSER REQUIREMENTS THIS AREA.
 - SEE A0.1 AND G1.4.5 FOR PREPARATION OF NEW PRE-FABRICATED SHOWER BASIN.
 - SAW CUT EXISTING CONCRETE FLOOR TO PREPARE FOR NEW BELOW SLAB SINKER LINE INSTALLATION. SEE PLUMBING DRAWINGS FOR NEW SANITARY SINKER REQUIREMENTS. CAP EXISTING SINKER THAT IS ABANDONED AND PATCH CONCRETE FLOOR AT ORIGINAL SINKER DISCHARGE LOCATIONS.
 - INTERIOR ELEVATION CALLOUTS FOR PRIVATE BATH #42 ARE SIMILAR FOR PRIVATE BATHS 141 AND 140.
 - EXISTING FIRE SINKER MAIN SERVICE. SEE FIRE PROTECTION DRAWINGS FOR MODIFICATION REQUIREMENTS.
 - EXISTING GAS METER AND PORTION OF EXTERIOR LINES TO BE RELOCATED. SEE BUILDING ELEVATIONS FOR ADDITIONAL INFORMATION.
 - EXISTING FIRE HYDRANT TO REMAIN. EXERCISE CARE TO NOT DAMAGE HYDRANT OR WATER SERVICE LINES. SEE SITE PLAN FOR EXISTING WATER LINE ROUTING. PROTECT DURING CONSTRUCTION.
 - ROOF SCUTTLE ACCESS THROUGH CONCRETE DECK ABOVE. SEE REFLECTED CEILING PLAN FOR CALLOUT AND SECTION DETAILS OPENING REQUIREMENTS.
 - OWNER PROVIDED AND INSTALLED IT/SWITCHER RACK. SEE ELECTRICAL FOR ADDITIONAL REQUIREMENTS IN THE CONTRACTOR'S SCOPE OF WORK WITH RESPECT TO 1/1 INFRASTRUCTURE BOXES AND CONDUIT.
 - PROVIDE (5) 2/4" THICK, PAINTED POPLAR SHELVES, 12" DEEP, ON HEAVY DUTY STANDARDS AND BRACKETS. SHELVING IS TO BE SPACED EQUALLY FROM FLOOR TO 7'-6" A.F.F. SUPPLY BLOCKING AS REQ.
 - SEE PLUMBING DRAWINGS FOR NEW FLOOR DRAINS IN EXISTING CONCRETE FLOOR AND FLOOR DRAINS IN NEW CONCRETE FLOORS NOT INDICATED ON THE ARCHITECTURAL DRAWINGS. SAW CUT EXISTING FLOOR PER DETAIL ON SHEET A1.1.
 - ORIGINAL VINYL WINDOWS TO REMAIN. PROTECT FROM DEMOLITION. CLEAN WINDOWS AND MAINTAINANCE FOR PROPER OPERATION. INSTALL 2X2 P.T. GROUND AROUND PERIMETER OF WINDOW AS A GYPSUM ATTACHMENT POINT AND LINE HEAD AND JAMB WITH GYPSUM WALLBOARD TIGHT TO EXISTING MASONRY OPENING. FIELD COORDINATE DESIGN INTENT WITH THE ARCHITECT.
 - SEE PLUMBING AND ELECTRICAL DRAWINGS FOR NEW DRINKING FOUNTAIN REQUIREMENTS. MOUNT AT HEIGHTS REQUIRED FOR ADA ACCESSIBILITY.
 - NO PAINTING WORK IS REQUIRED IN STAIR OR IN MEZZANINE AREA.
 - CONTRACTOR TO DISASSEMBLE EXISTING COMMUNICATION TOWER. SEE CIVIL DRAWINGS AND ELECTRICAL FOR NEW COMMUNICATION TOWER LOCATION AND UNDERGROUND ROUTING OF COMMUNICATION LINES. REFERENCE THE STRUCTURAL DRAWINGS FOR FOUNDATION DESIGN.
 - THE CONTRACTOR WILL INSTALL THE OWNER PROVIDED BABY BOX IN A MODIFIED OPENING PREVIOUSLY USED FOR A WINDOW UNIT. ESTABLISH THE ROUGH OPENING REQUIREMENTS OF THE BABY BOX AND MODIFY THE OPENING TO RECEIVE THE UNIT. ENSURE THAT THE NEW OUTLET AS INDICATED ON THE ELECTRICAL DRAWINGS IS WITHIN THE SUPPLIED POWER CORD'S REACH. THE OWNER WILL SUPPLY AN I/T CONNECTION TO THIS UNIT TO COMPLETE THE INSTALLATION. ENSURE BRICK OPENING FITS BEHIND THE BABY BOX METAL TRIM AND SEAL OPENING INSIDE AND OUTSIDE.
 - IN ADDITION TO THE REQUIREMENTS OF THIS PARTITION, ADDITIONALLY PROVIDE 1 1/2" RIGID INSULATION AGAINST THE EXISTING CMU FOR THE FULL HEIGHT OF THE CMU WALL.
 - ALL PLUMBING WALLS, IF NOT SPECIFICALLY CALLED FOR IN THE PARTITION TYPES, ARE TO HAVE WATER RESISTANT GYPSUM WALLBOARD UP TO 48" FOR NON SHOWER AREAS AND 72" FOR ALL SHOWER WALLS. COORDINATE WITH THE ARCHITECT FOR ANY INTERPRETATION QUESTIONS OF THIS DIRECTIVE.



WALL PARTITION LEGEND

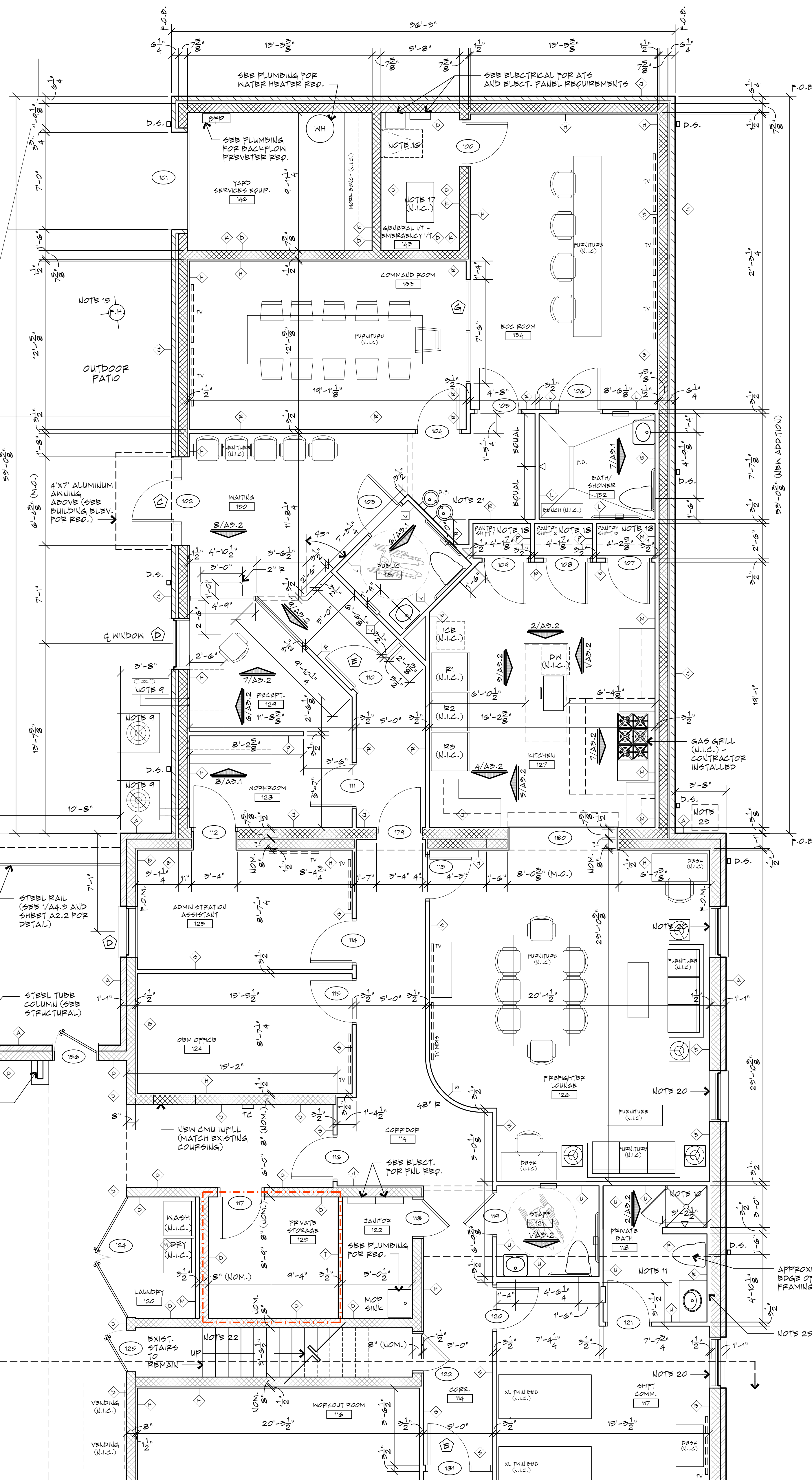
- EXISTING CMU (MASONRY BLOCK)
- EXISTING BRICK MULTI-WYTHE WALL
- NEW BRICK VENEER/WHILL BRICK MULTI-WYTHE
- CONSTRUCTION TO BE DEMOLISHED
- NEW MASONRY CONSTRUCTION
- PROPOSED WOOD STUD CONSTRUCTION
- EXISTING STUD CONSTRUCTION

PARTITION FIRE RATING LEGEND (WHERE APPLICABLE)

- ONE HOUR PARTITION
- TWO HOUR PARTITION
- FOUR HOUR FIREWALL
- SMOKE WALL PARTITION (30 MINUTE)

SEE CIVIL FOR CONTINUATION OF CONCRETE SCOPE OF WORK

SEE SECTION 1/4.5 FOR COLUMN WRAP REQ.



GENERAL PLAN NOTES/PARTITION REQUIREMENTS

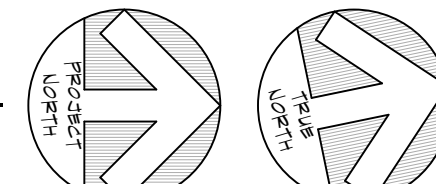
- REFER TO SHEET A1.4 FOR GENERAL NOTES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND THIS SHEET.
- REFER TO THIS SHEET FOR PARTITION TYPES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, THIS SHEET, AND A1.6.

PARTITION TYPES

- EXISTING EXTERIOR BRICK VENEERED CMU WALL TO REMAIN UNLESS OTHERWISE NOTED.
- PROVIDE 1 1/2" METAL FURRING CHANNELS AT 1'-4" O.C. AGAINST EXISTING CMU. UPON COMPLETION OF FLOOR TO TOP OF WOOD TRUSS BEARING PLATE ABOVE. ADHERE WITH MASTIC OR OTHER QUALITY CONSTRUCTION ADHESIVE. METAL FURRING CHANNELS WILL EXTEND TO 3" ABOVE ACOUSTICAL CEILING OR GYPSUM CLG. (SEE RCP FOR CONFIGURATION). RIGID FOAM MUST BE TIGHT AGAINST ALL FURRING CHANNELS AND ELECTRICAL WORK. INSTALL 5/8" GYPSUM WALLBOARD UPON COMPLETION OF ALL FURRING AND ELECTRICAL WORK TO A POINT 3" ABOVE ACOUSTICAL CEILING OR GYPSUM CLG.
- EXISTING 2X4 WOOD STUD PARTITION REMOVED AND SOUND PROTECTED. EXISTING 2X4 WOOD STUD PARTITION TO REMAIN AT TOP OF EXISTING WOOD STUD PARTITION DOUBLE PLATES. EXTEND NEW 2X4 WOOD STUDS AT 1'-4" O.C. TIGHT TO ROOF DECK. PROVIDE BRACING AT UNSUPPORTED PARTITIONS EXCEEDING 10'-0" LONG TO STEPPED DESIGN. INSTALL 5/8" GYPSUM WALLBOARD ON BOTH SIDES FROM FLOOR TO TOP OF PARTITION AT ROOF DECK. PROVIDE SOUND ATTENUATION BLANKETS IN THE PARTITION FOR THE FULL HEIGHT OF THE PARTITION. THIS WORK SHALL BE COMPLETED PRIOR TO INSTALLING SPRAY FOAM ON THE UNDER SIDE OF ROOF DECK AS DIRECTED ON SHEET A1.5. ENSURE THAT ALL MECHANICAL, PLUMBING, AND ELECTRICAL PENETRATIONS ARE SEALED TIGHT TO PREVENT THE PASSAGE OF SOUND.
- REPAIR EXISTING CMU OR PAINT (NEW CMU) PARTITION COLOR AS SELECTED BY THE ARCHITECT. FOR NEW CMU, PREPARE BY APPLYING BLOCK FILLER PRIOR TO FINISH PAINT APPLICATION.
- NEW RATED PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE (WATER RESISTANT BOARD FOR ALL WET AREAS) FROM FLOOR TO GYPSUM CEILING ABOVE. WATER RESISTANT BOARD SHALL BE INSTALLED TO 72" A.P.F. ADDITIONAL FINISH REQUIREMENTS ARE DEDUCTED ON THE SCHEDULE AND INTERIOR ELEVATIONS.
- NEW RATED SOUND PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE (WATER RESISTANT BOARD FOR ALL WET AREAS) FROM FLOOR TO GYPSUM CEILING ABOVE. WATER RESISTANT BOARD SHALL BE INSTALLED TO 72" A.P.F. ADDITIONAL FINISH REQUIREMENTS ARE DEDUCTED ON THE SCHEDULE AND INTERIOR ELEVATIONS. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING.
- PROVIDE 1 1/2" METAL FURRING CHANNELS AT 1'-4" O.C. AGAINST EXISTING CMU (OR BRICK) WITH 5/8" GYPSUM WALLBOARD ON FINISHED ROOM SIDE FROM FLOOR TO 3" ABOVE ACOUSTICAL CEILING OR TO GYPSUM CEILING ABOVE. SEE RCP FOR APPLICATION. AT EXTERIOR WALLS ONLY, PROVIDE 1 1/2" RIGID INSULATION BOARD FOR FULL HEIGHT OF PARTITION. REFER TO WALL SECTIONS FOR ADDITIONAL CLARITY OF INSULATION SCOPE OF WORK.
- SEE WALL SECTIONS FOR CONSTRUCTION REQUIREMENTS AT EXISTING EXTERIOR WALLS AND NEW ADDITION EXTERIOR PARTITIONS. REFER TO SHEET A2.1 AND A2.2 FOR CALLOUTS SPECIFIC TO THE AREAS IN QUESTION.
- 8" MINIMUM CMU WALL FROM FLOOR TIGHT TO CONCRETE DECKING ABOVE. TO COMPLETELY SEAL PARTITION AGAINST CONCRETE DECKING ABOVE. IN PLACES TO PREVENT THE PASSAGE OF SOUND AND SMOKE. PROVIDE BLOCK FILLER AND PAINT WALL PER FINISH SCHEDULE. SEE STRUCTURAL FOR REINFORCING REQUIREMENTS THIS PARTITION.
- NEW RATED SOUND PARTITION TO METAL DECKING: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE (WATER RESISTANT BOARD FOR ALL WET AREAS) FROM FLOOR TIGHT TO METAL DECKING ABOVE. WATER RESISTANT BOARD ON WET WALLS SHALL BE INSTALLED TO 72" A.P.F. ADDITIONAL FINISH REQUIREMENTS ARE DEDUCTED ON THE SCHEDULE AND INTERIOR ELEVATIONS. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING. UNLESS THE GYPSUM WALLBOARD IS CHANNELLED TO CONFORM TO THE DECKING PLATES, ROCKWOOL MAY ALSO BE INSTALLED IN THE METAL DECKING PLATES TO PREVENT THE PASSAGE OF SOUND.
- NEW RATED FURRING PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD ON ROOM SIDE FROM FLOOR TO GYPSUM CEILING OR 3" ABOVE ACOUSTICAL CEILING ABOVE. USE FIRE TREATED LUMBER DIRECTLY BEHIND EXHAUST HOOD.
- NEW RATED SOUND PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE (WATER RESISTANT BOARD FOR ALL WET AREAS) FROM FLOOR TO GYPSUM CEILING ABOVE. WATER RESISTANT BOARD SHALL BE INSTALLED TO 72" A.P.F. ADDITIONAL FINISH REQUIREMENTS ARE DEDUCTED ON THE SCHEDULE AND INTERIOR ELEVATIONS. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING.
- NEW RATED PARTITION (NO SOUND REQUIREMENTS): 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE FROM FLOOR TO GYPSUM CEILING OR 3" ABOVE ACOUSTICAL CEILING (REFER TO RCP FOR VARIATIONS).
- NEW RATED SOUND PARTITION TO METAL DECKING: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE FROM FLOOR TIGHT TO METAL DECKING ABOVE. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING. UNLESS THE GYPSUM WALLBOARD IS CHANNELLED TO CONFORM TO THE DECKING PLATES, ROCKWOOL MAY ALSO BE INSTALLED IN THE METAL DECKING PLATES TO PREVENT THE PASSAGE OF SOUND.
- NEW RATED SOUND PARTITION: 2X4 OR 2X6 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE FROM FLOOR TIGHT TO EXISTING ROOF SHEATHING OR BOTTOM OF MEZZANINE DECKING ABOVE (SEE PLAN FOR LIMITS). PROVIDE SOUND ATTENUATION BLANKETS IN THE PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING.
- NEW RATED SOUND PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" FIRECODE GYPSUM WALLBOARD EACH SIDE FROM FLOOR TIGHT TO 2" OVER RATED GYPSUM CEILING ABOVE. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING.
- NEW RATED SOUND PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD EACH SIDE FROM FLOOR TIGHT TO BOTTOM CHORD OF STEEL TRUSSES. PROVIDE SOUND ATTENUATION BLANKETS IN THIS PARTITION FOR THE FULL HEIGHT OF THE PARTITION. CONTRACTOR SHALL MAINTAIN CONTINUITY IN GYPSUM WALLBOARD FOR SOUND-PROOFING SUCH THAT THERE ARE NO GAPS WHERE SOUND CAN PASS. ANY MECHANICAL, PLUMBING, OR ELECTRICAL PENETRATIONS MUST BE SEALED TIGHT TO PREVENT SOUND FROM PASSING.
- WHILL SOUND PARTITION: 2X4 WOOD CONSTRUCTION AT 1'-4" O.C. WITH 5/8" GYPSUM WALLBOARD ON ROOM SIDE. WHILL EXISTING OPENING AT DEMOLISHED WINDOW. ALIAS PLACE OF STUD WITH FURRING CHANNELS. PROVIDE SOUND ATTENUATION BLANKETS FOR THE UNITS OF THIS WHILL PARTITION.

ENLARGED PLAN

SCALE: 1/4"=1'-0"



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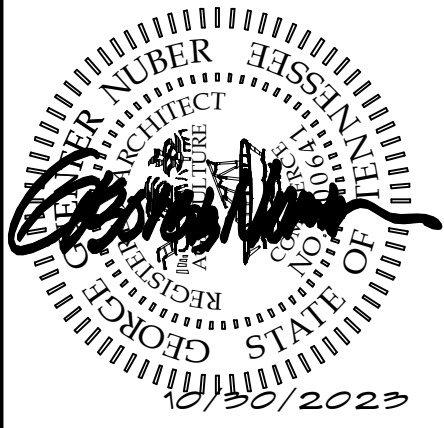
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ECCLASTICAL PLANNING / DESIGN
COMMERCIAL ARCHITECTURE
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**Proposed Renovation to
Fire Station #1 for the
City of Columbia**
Columbia, Tennessee

A1.5 Enlarged Floor Layout Plan

Date:	10-30-2023	Revisions:	
FOR REVIEW ONLY	☐	FOR ESTIMATING / BIDDING ONLY	☐
FOR CONSTRUCTION	☒	DATE: 10/30/23 ISSUED BY: G. Nuber	
Job #:		File #:	2021007 A1.5
Dr. By:	G. Nuber		



Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

A1.6 Enlarged Floor Layout Plan

Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	☐ A
Dr. By:		☐ FOR ESTIMATING / BIDDING ONLY	☐ B
Ck. By:	G. Nuber	☒ FOR CONSTRUCTION	☐ C
File #:	2021007 A1.6b	DATE: 10/30/23 ISSUED BY: G. Nuber	

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WALL PARTITION LEGEND

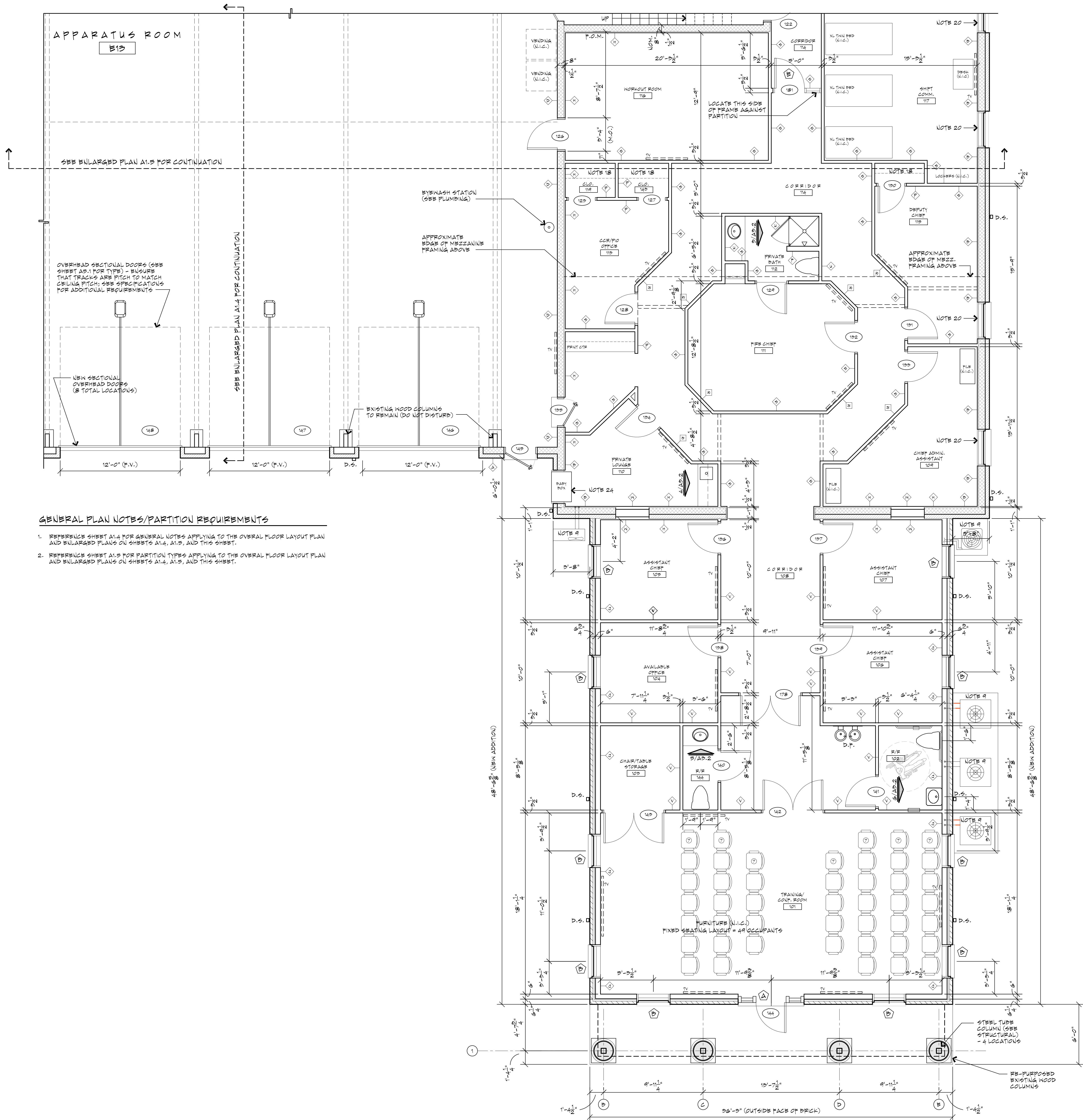
- EXISTING CMU (MASONRY BLOCK)
- EXISTING BRICK MULTI-WYTHE WALL
- NEW BRICK VENEER/UPFILL BRICK MULTI-WYTHE
- CONSTRUCTION TO BE DEMOLISHED
- NEW MASONRY CONSTRUCTION
- PROPOSED WOOD STUD CONSTRUCTION
- EXISTING STUD CONSTRUCTION

PARTITION FIRE RATING LEGEND
(WHERE APPLICABLE)

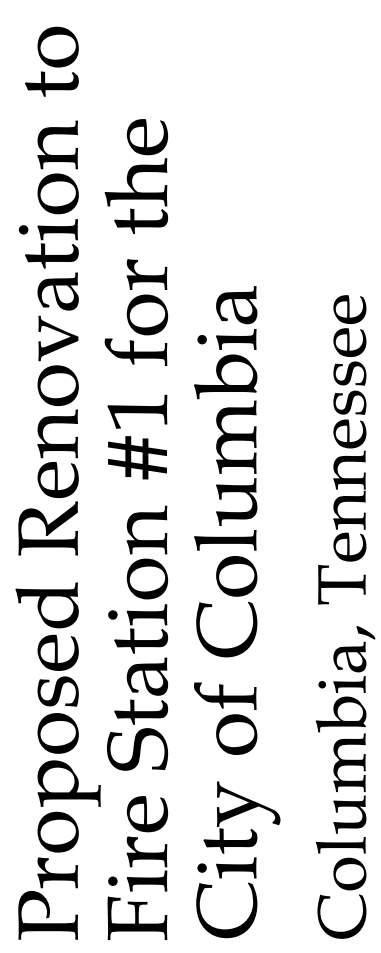
- ONE HOUR PARTITION
- TWO HOUR PARTITION
- FOUR HOUR FIREWALL
- SMOKE WALL PARTITION (90 MINUTE)

GENERAL PLAN NOTES/PARTITION REQUIREMENTS

- REFERENCE SHEET A1.4 FOR GENERAL NOTES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND THIS SHEET.
- REFERENCE SHEET A1.5 FOR PARTITION TYPES APPLYING TO THE OVERALL FLOOR LAYOUT PLAN AND ENLARGED PLANS ON SHEETS A1.4, A1.5, AND THIS SHEET.

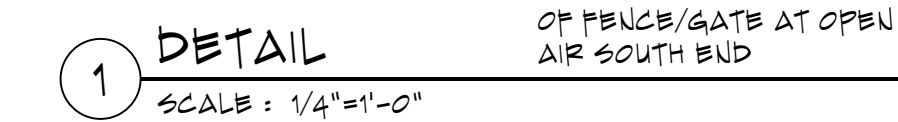
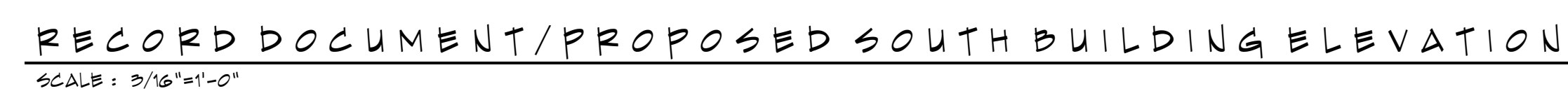
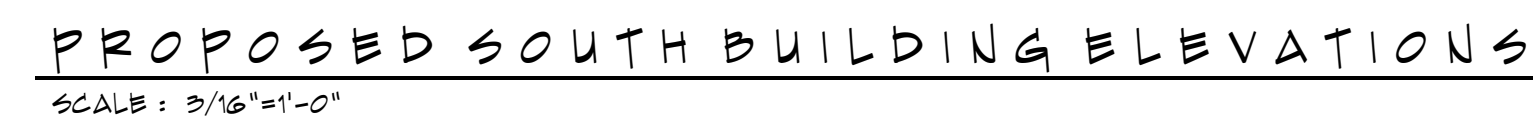
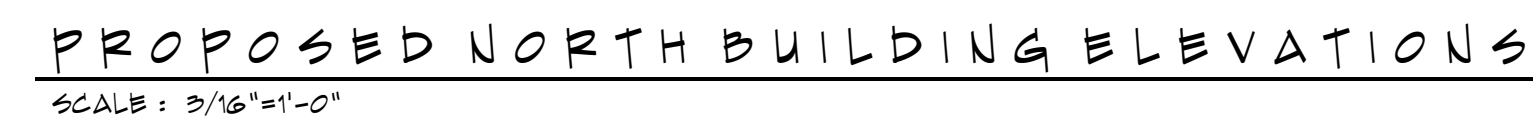






A2.2 Building Elevations and Details

Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	<u>1</u>
Dr. By:		☐ FOR PERMIT ONLY	<u>2</u>
Ck. By: G. Nuber		☒ FOR ESTIMATING/BIDDING ONLY	<u>3</u>
File #: 2021007_A22		☐ FOR CONSTRUCTION	<u>4</u>
		DATE: 10/30/23 ISSUED BY: G. Nuber	<u>5</u>



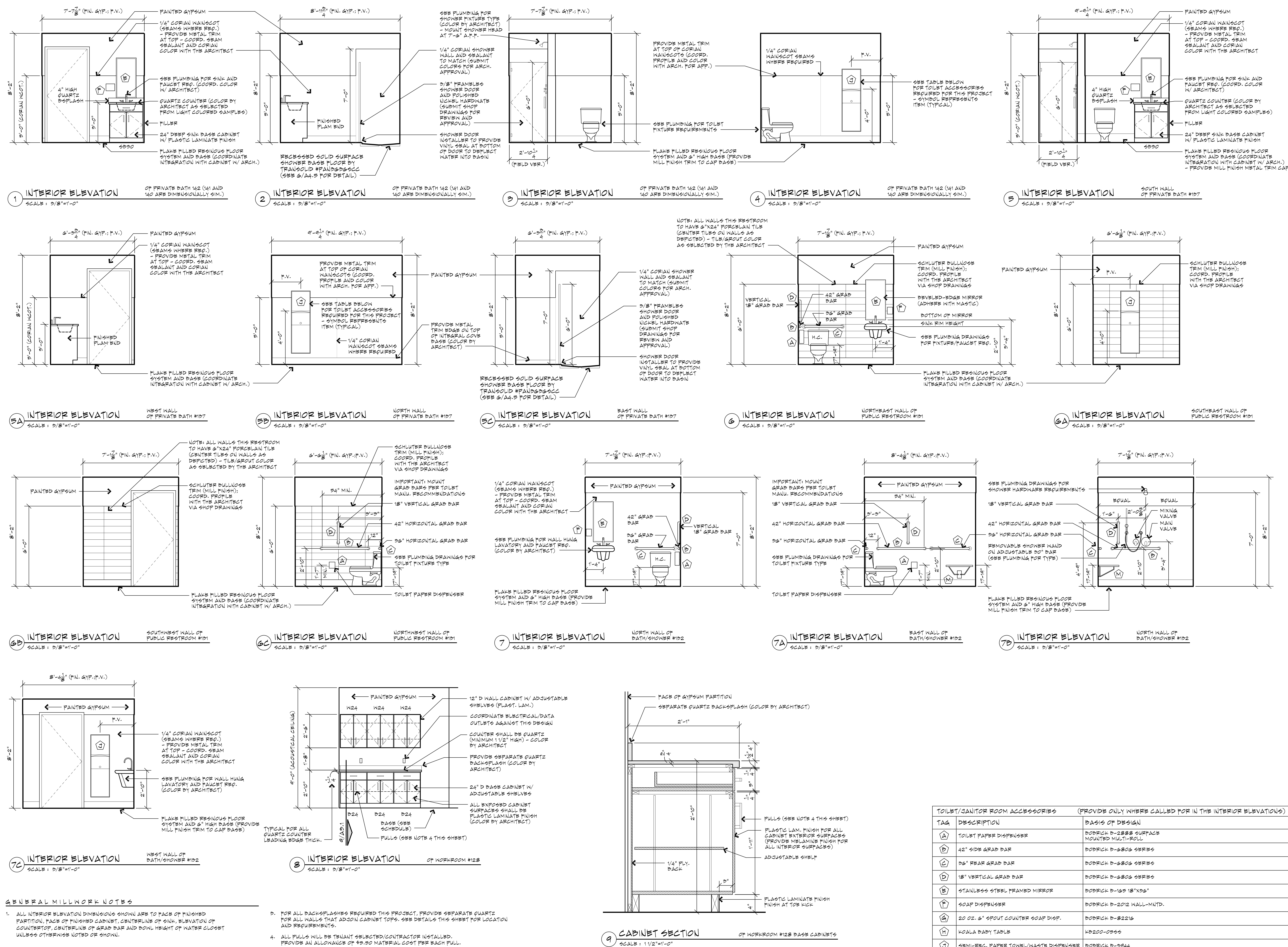
GENERAL NOTES:

1. SEE 1/4.3 FOR FENCE POST, RAILS, AND PICKET CONSTRUCTION.
2. GATE SHALL HAVE HEAVY DUTY SPRING LOADED HINGES.
3. PROVIDE LATCH ON FENCE WITH PAD LOCK OPTION.
4. SHOP PRIME AND PAINT COLOR AS SELECTED BY THE ARCHITECT.



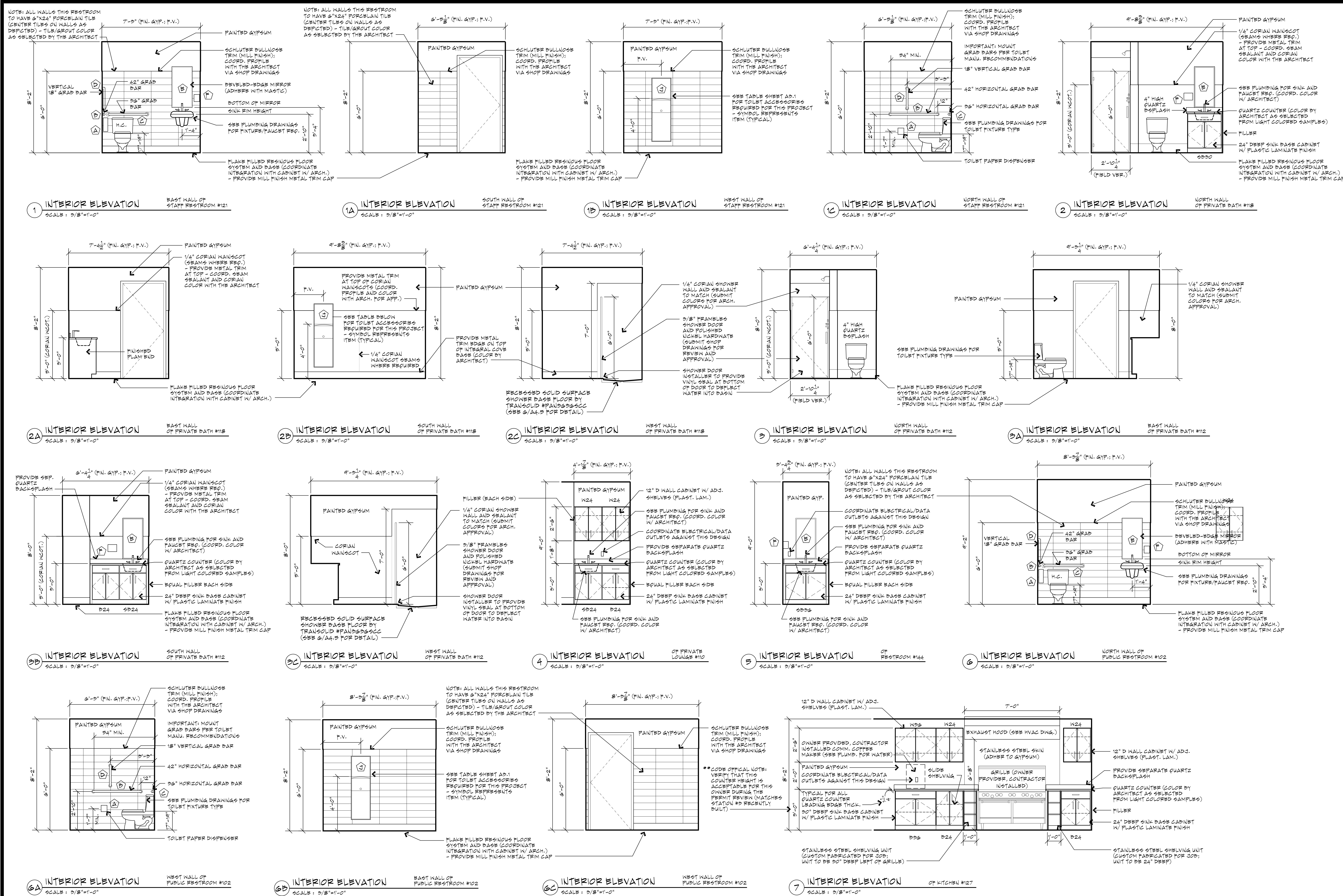
Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

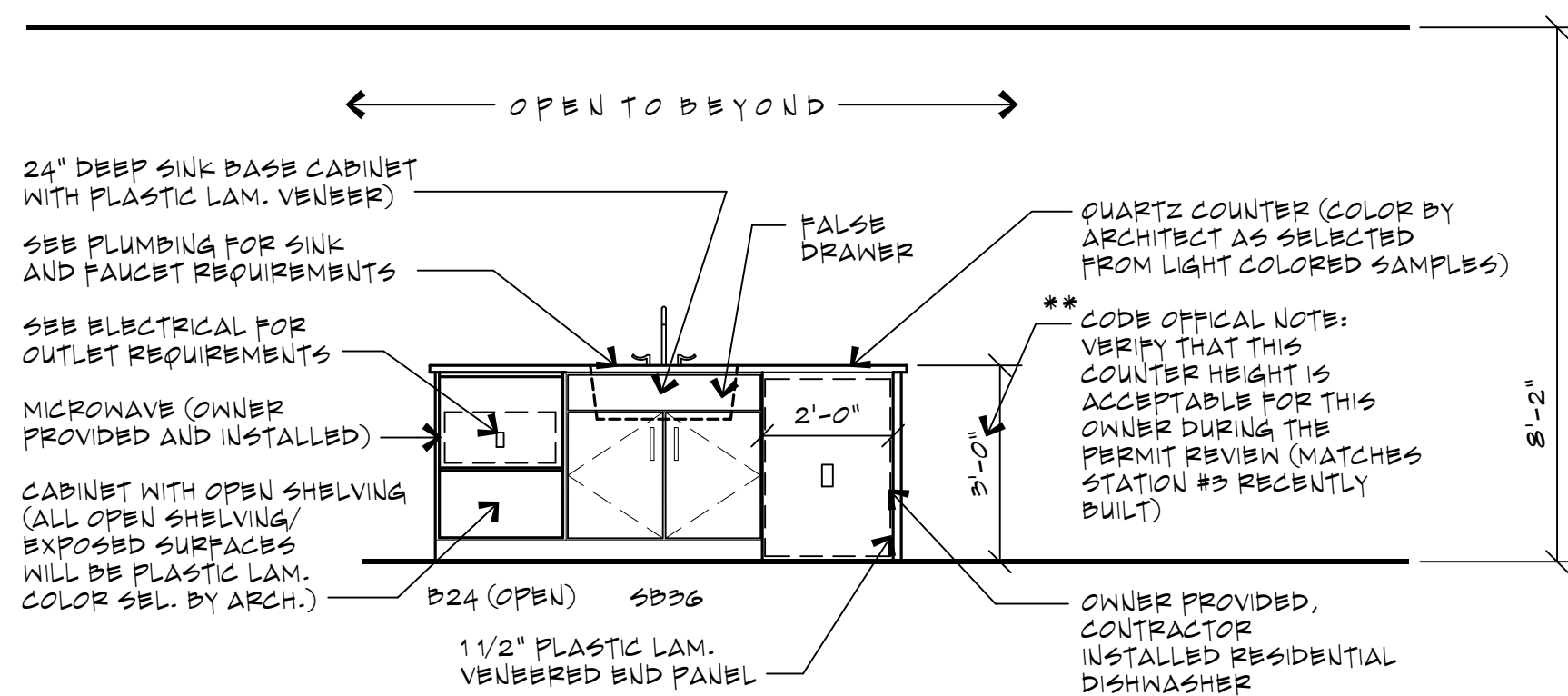
A3.1 Interior Elevations



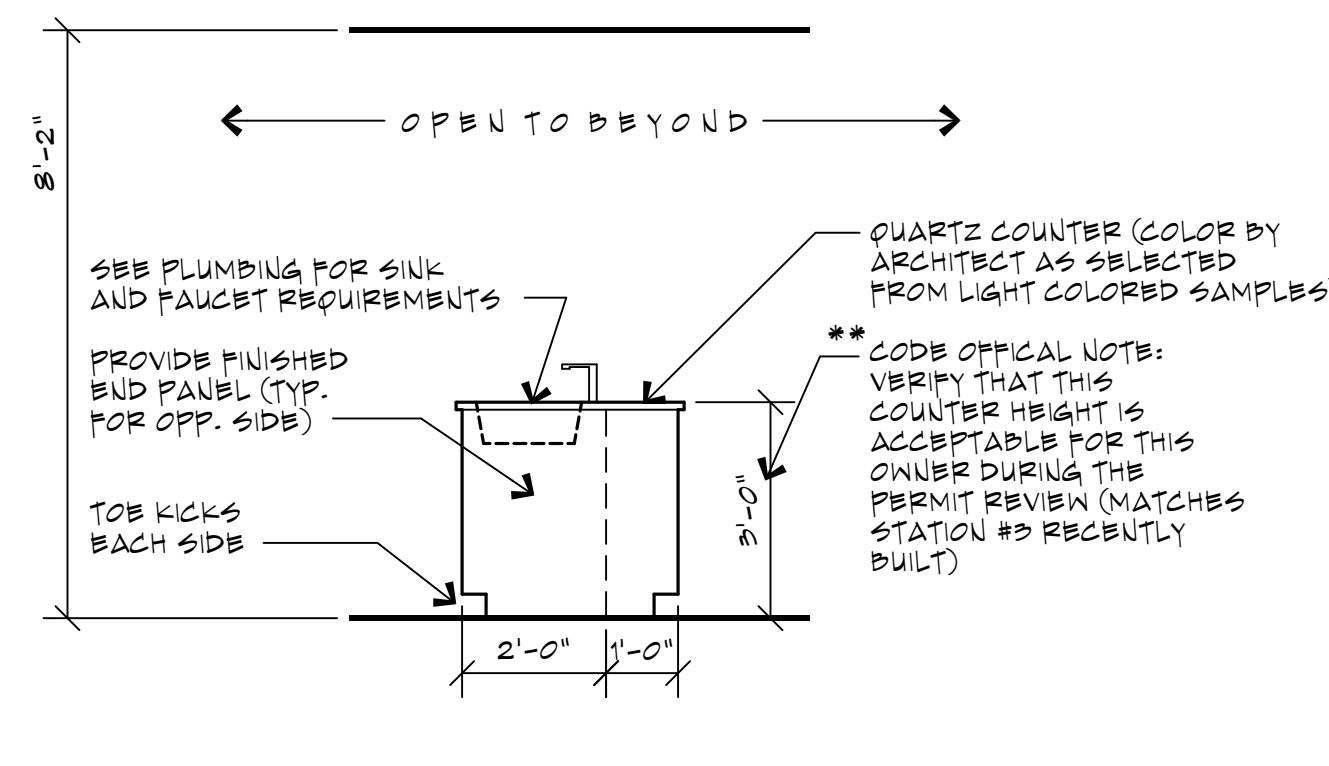
TOILET/JANITOR ROOM ACCESSORIES (PROVIDE ONLY WHERE CALLED FOR IN THE INTERIOR ELEVATIONS)		
TAG	DESCRIPTION	BASIS OF DESIGN
(A)	TOILET PAPER DISPENSER	BOBRICK D-2888 SURFACE MOUNTED MULTI-ROLL
(B)	42" SDB GRAB BAR	BOBRICK D-6806 SERIES
(C)	36" REAR GRAB BAR	BOBRICK D-6806 SERIES
(D)	18" VERTICAL GRAB BAR	BOBRICK D-6806 SERIES
(E)	STAINLESS STEEL FRAMED MIRROR	BOBRICK D-165 18"X36"
(F)	SOAP DISPENSER	BOBRICK D-2012 WALL-MNTD.
(G)	20 OZ. 6" SPOUT COUNTER SOAP DISP.	BOBRICK D-8226
(H)	KOALA BABY TABLE	KB200-0365
(I)	SEMI-REC. PAPER TOWEL/WASTE DISPENSER	BOBRICK D-3944
(J)	MOP AND BROOM RACK	BOBRICK D-225X24 (LOCATE ABOVE MOP SINK IN JANITOR A22)
(K)	ADA FOLDING SHOWER SEAT	BOBRICK D-9181

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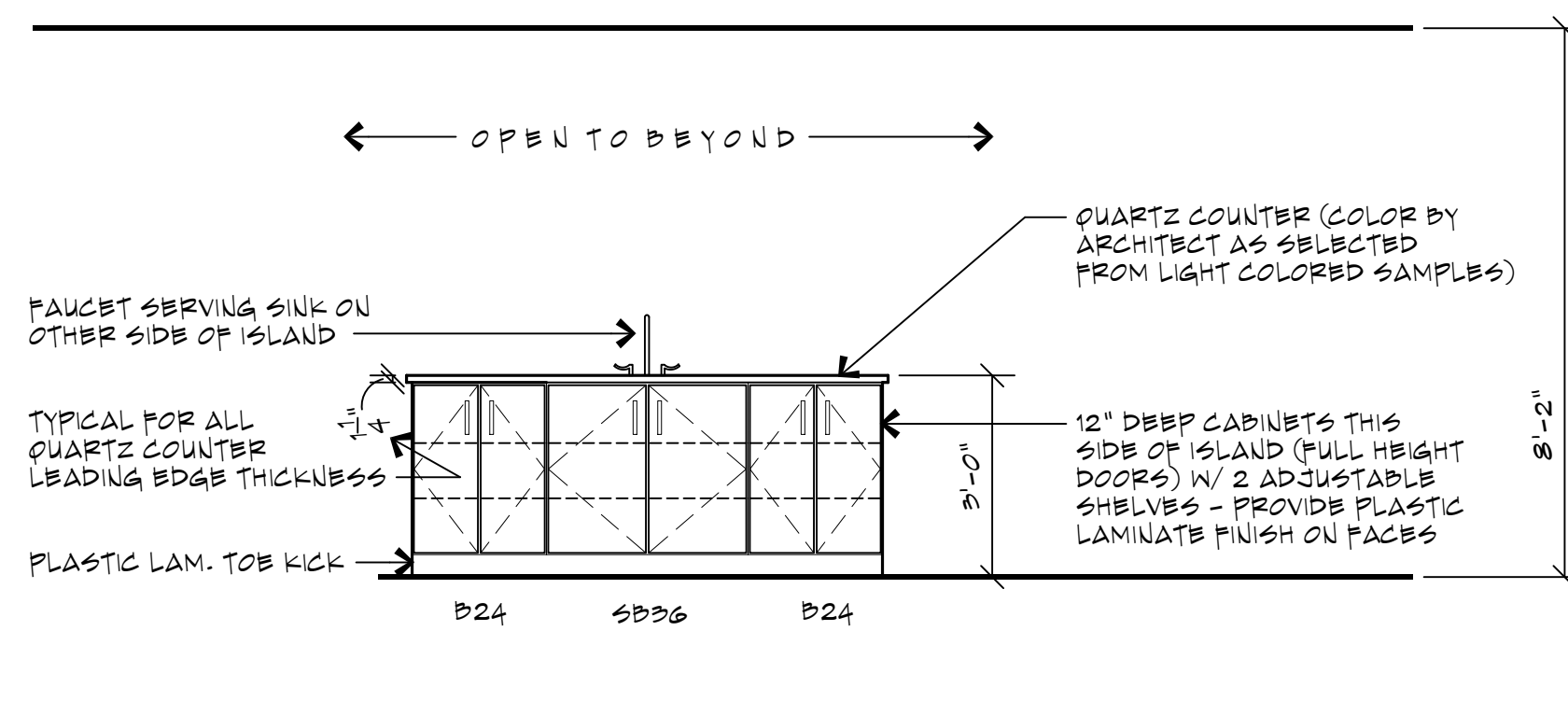




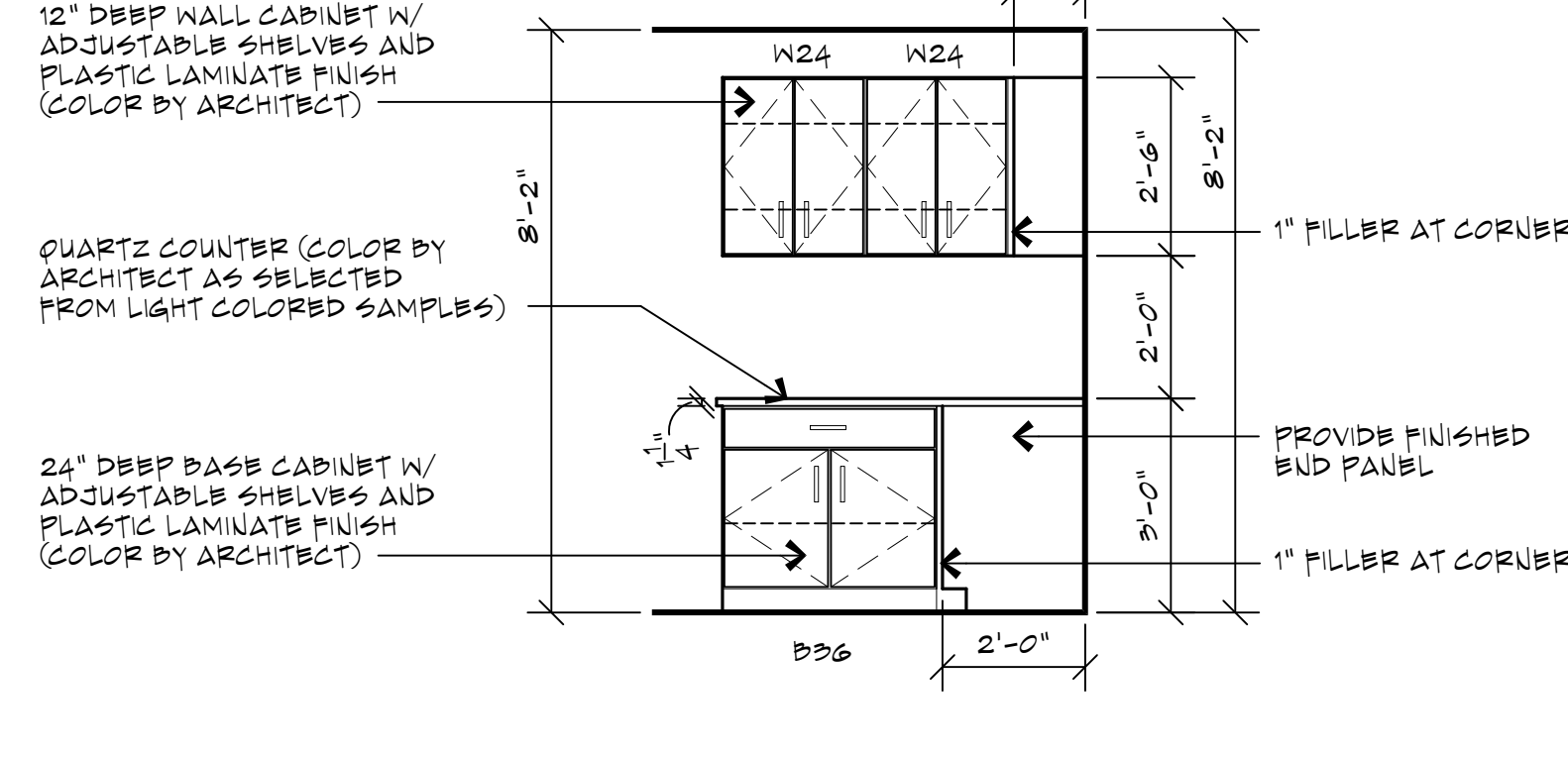
1 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



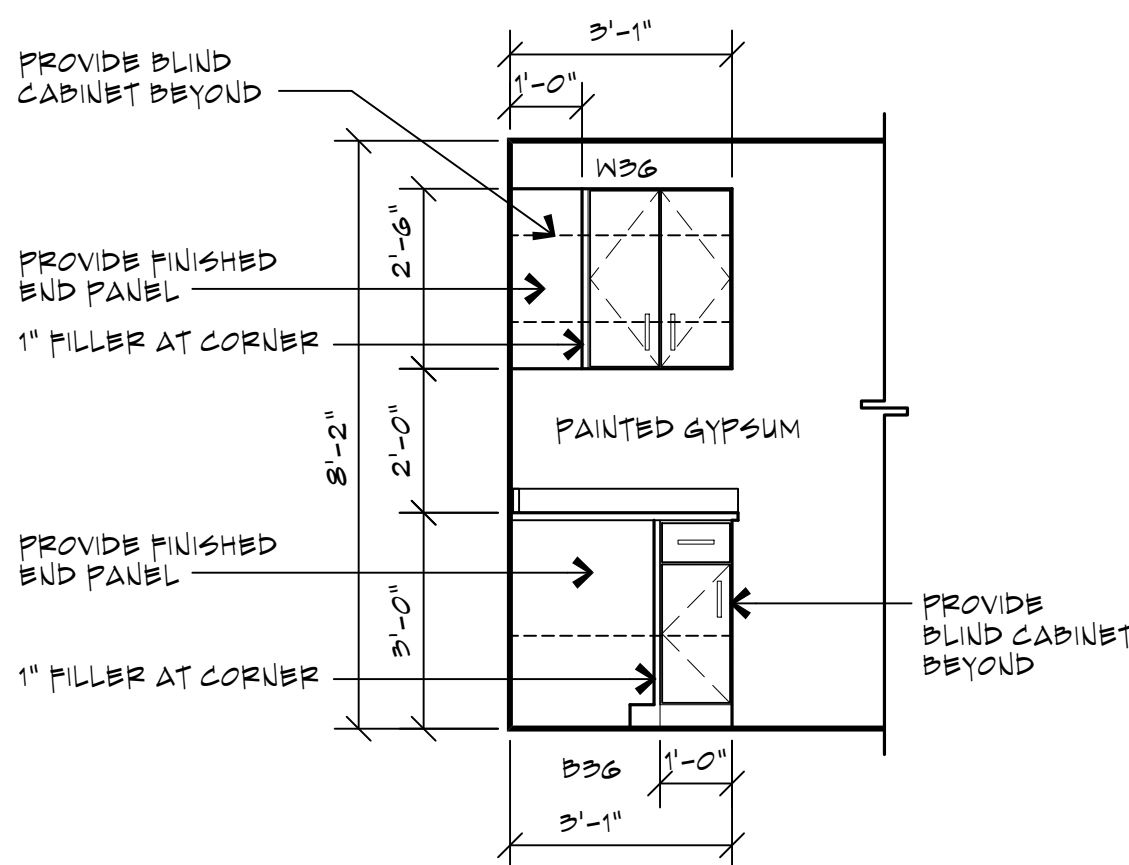
2 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



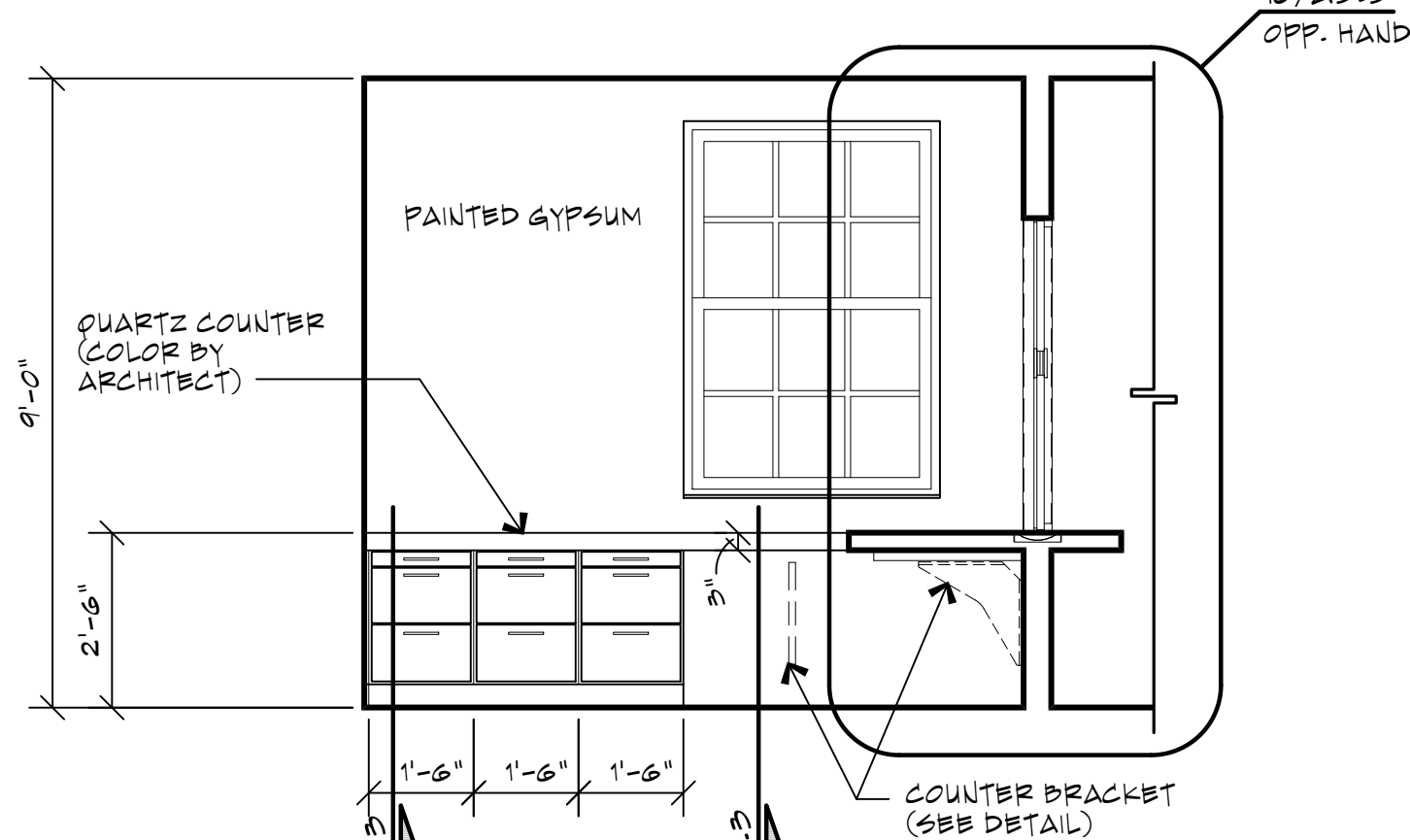
3 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



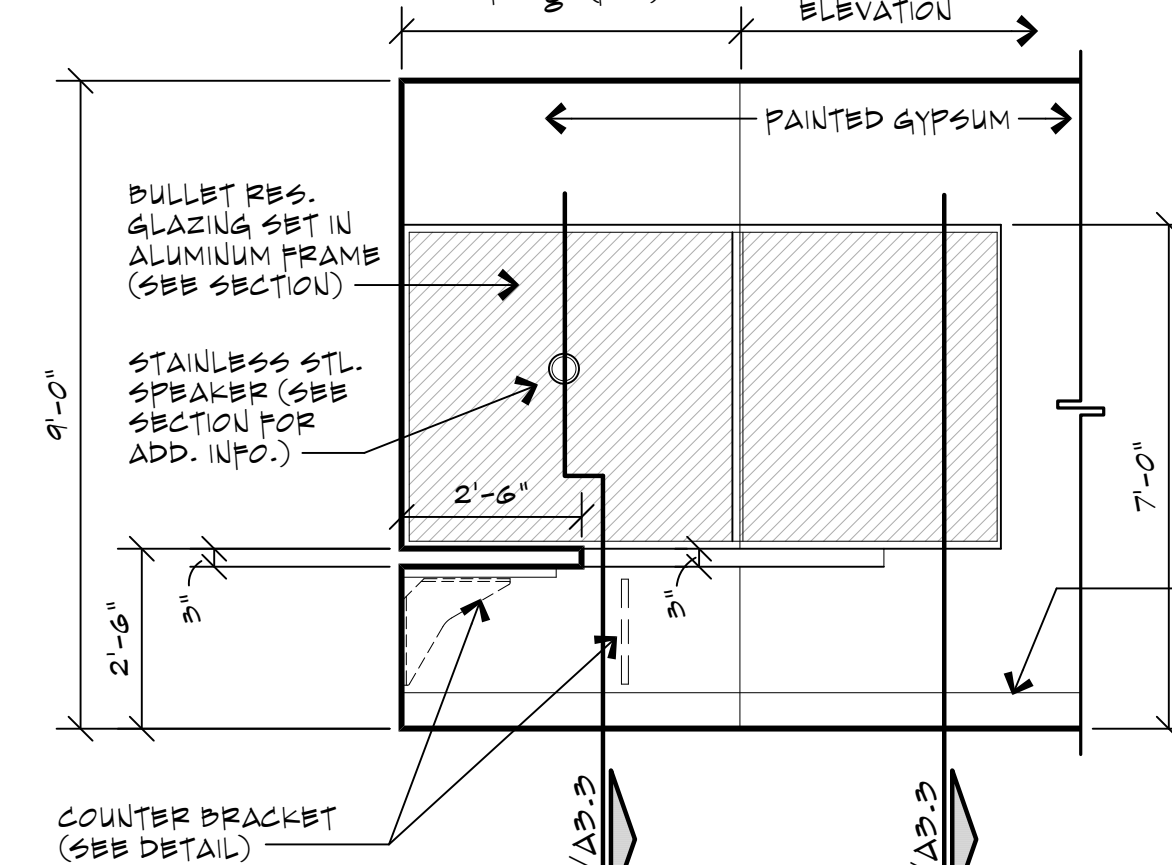
4 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



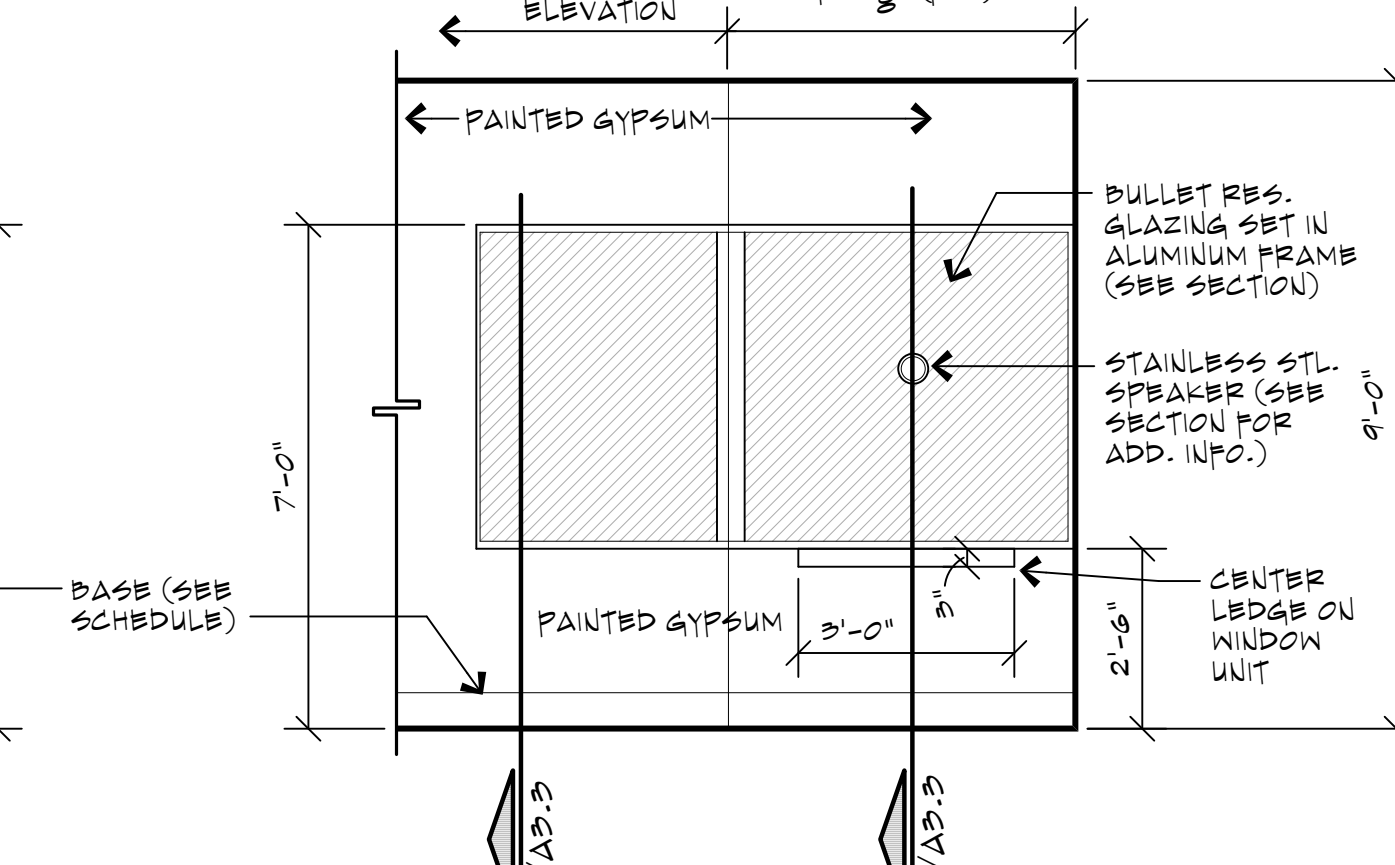
5 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



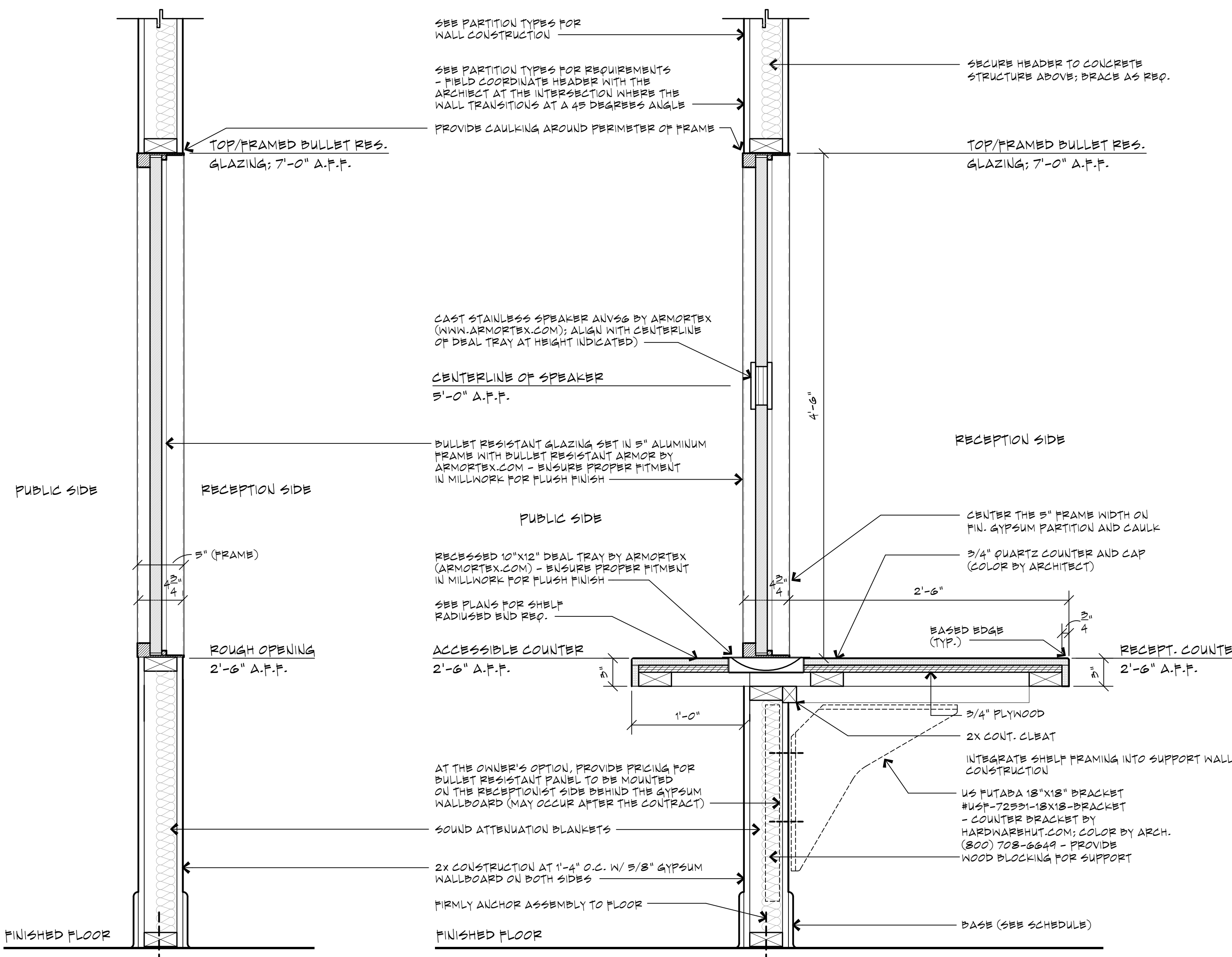
6 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



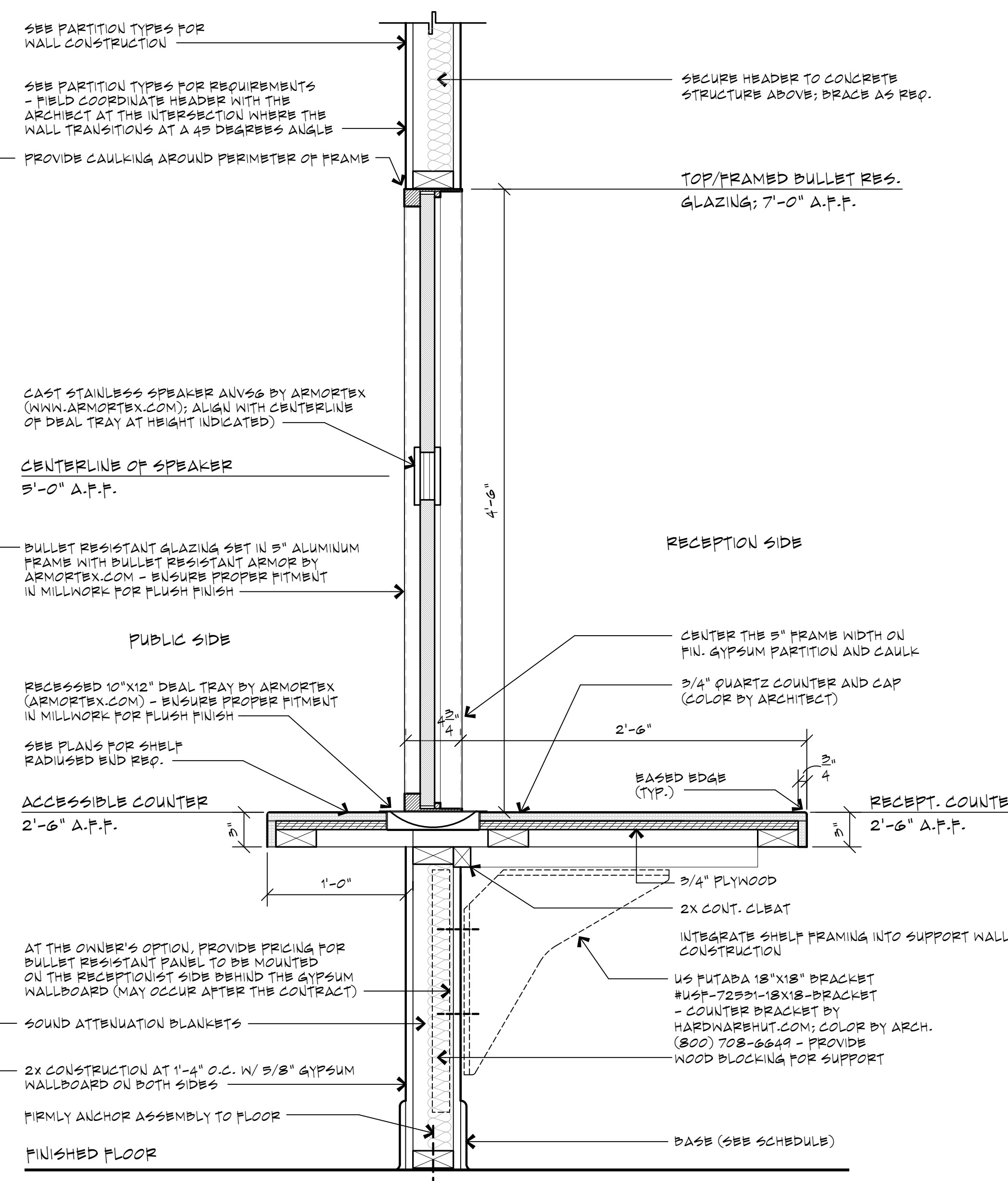
7 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



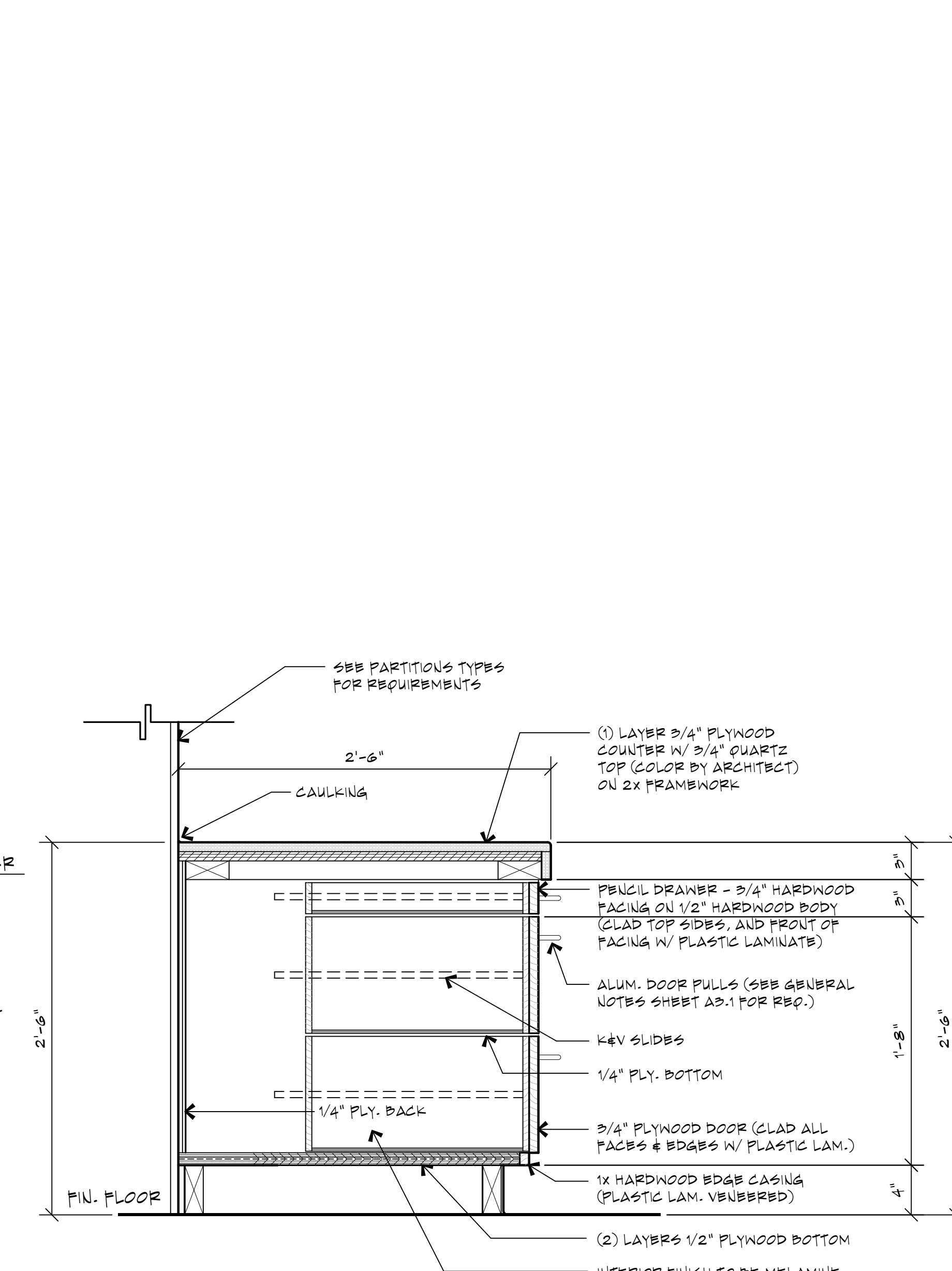
8 INTERIOR ELEVATION
SCALE: 3/8"=1'-0"



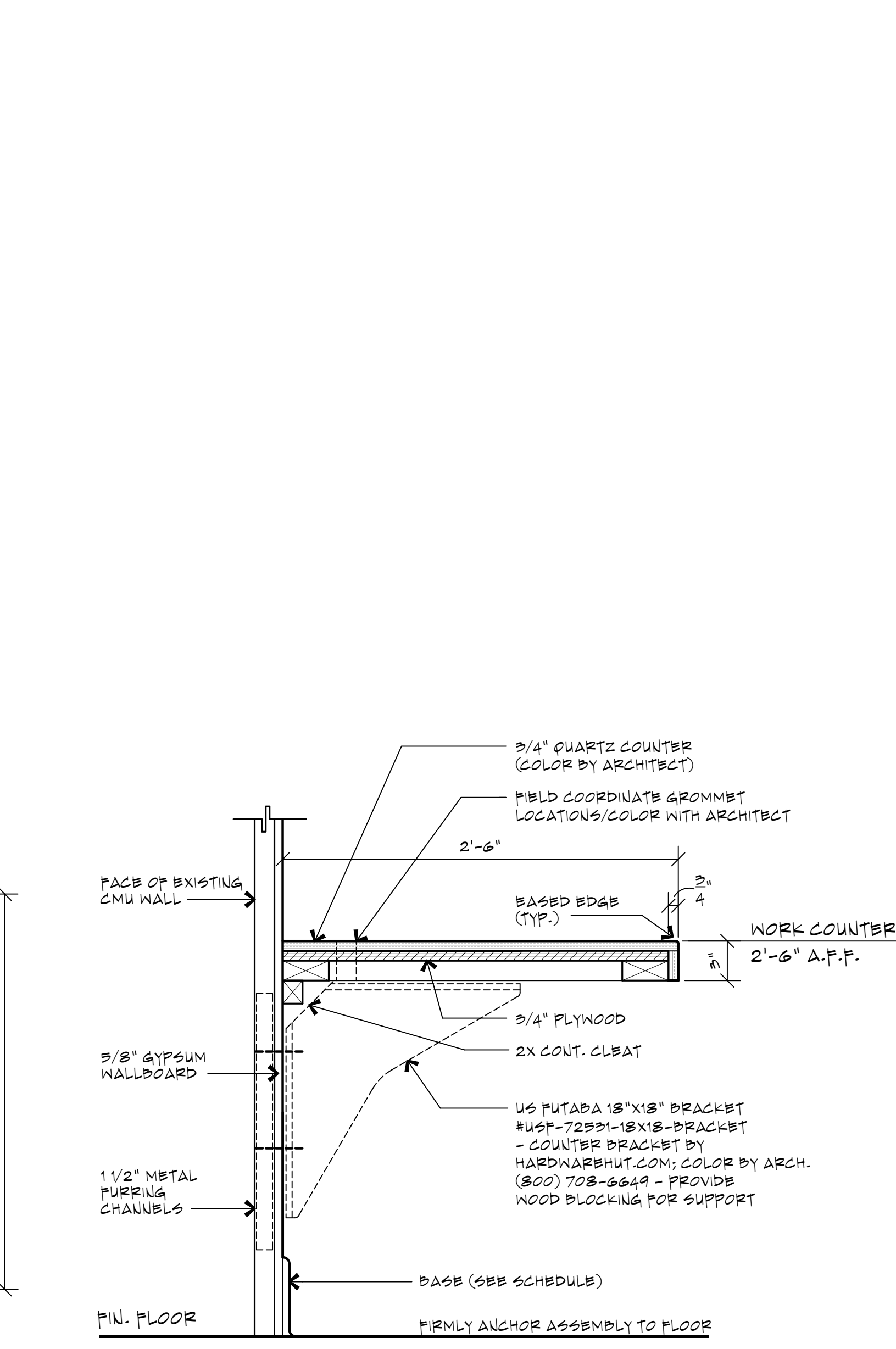
9 SECTION DETAIL
SCALE: 1 1/2"=1'-0"



10 SECTION DETAIL
SCALE: 1 1/2"=1'-0"



11 SECTION DETAIL
SCALE: 1 1/2"=1'-0"



12 SECTION DETAIL
SCALE: 1 1/2"=1'-0"

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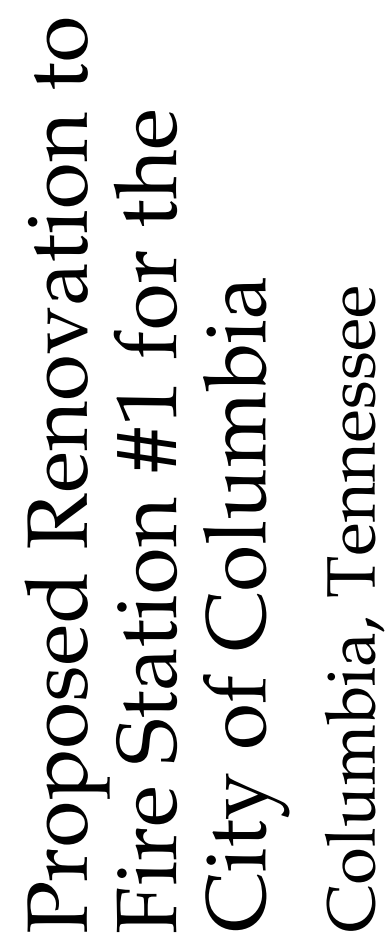
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Proposed Renovation to
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City of Columbia
Columbia, Tennessee

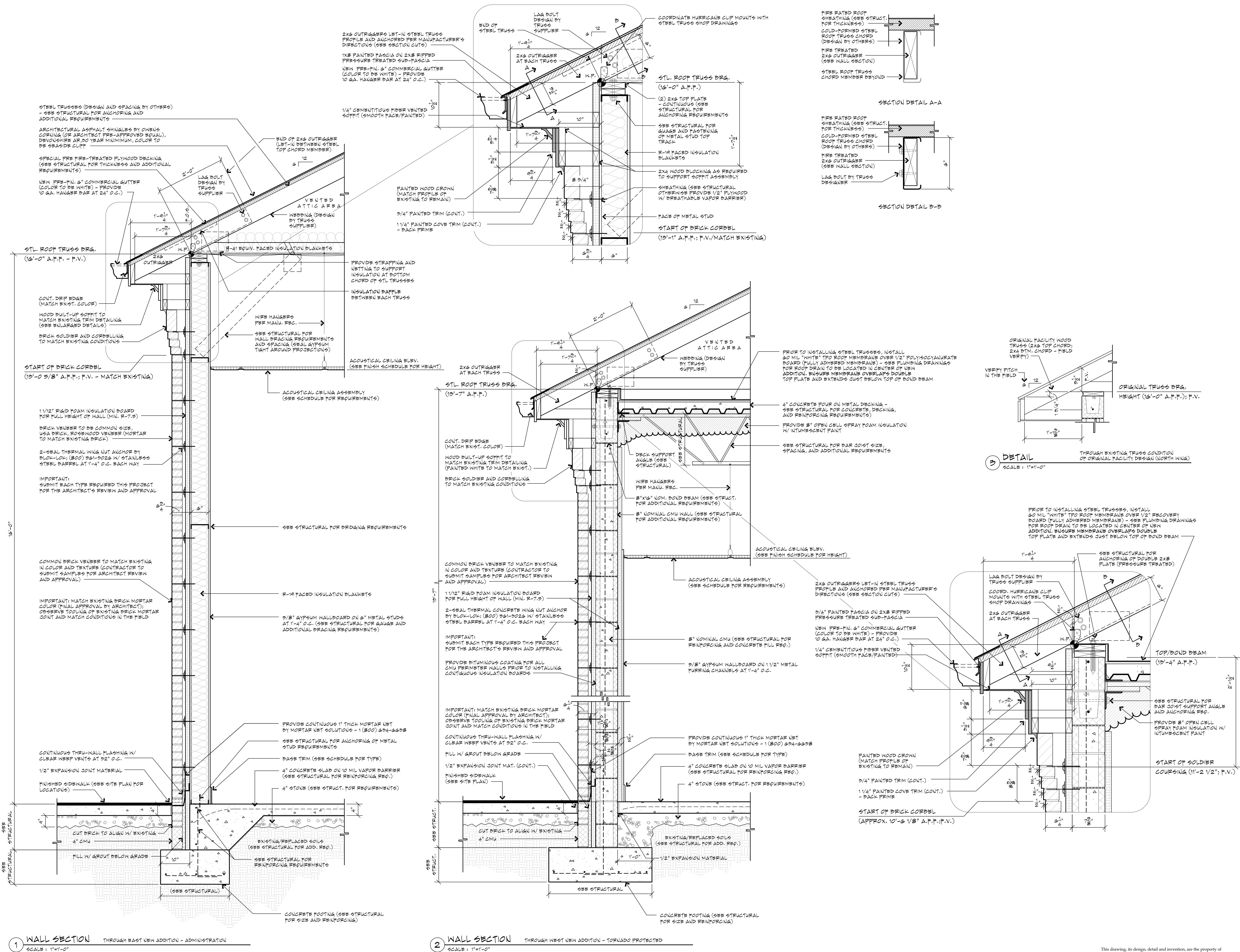
A3.3 Interior Elevations and Details

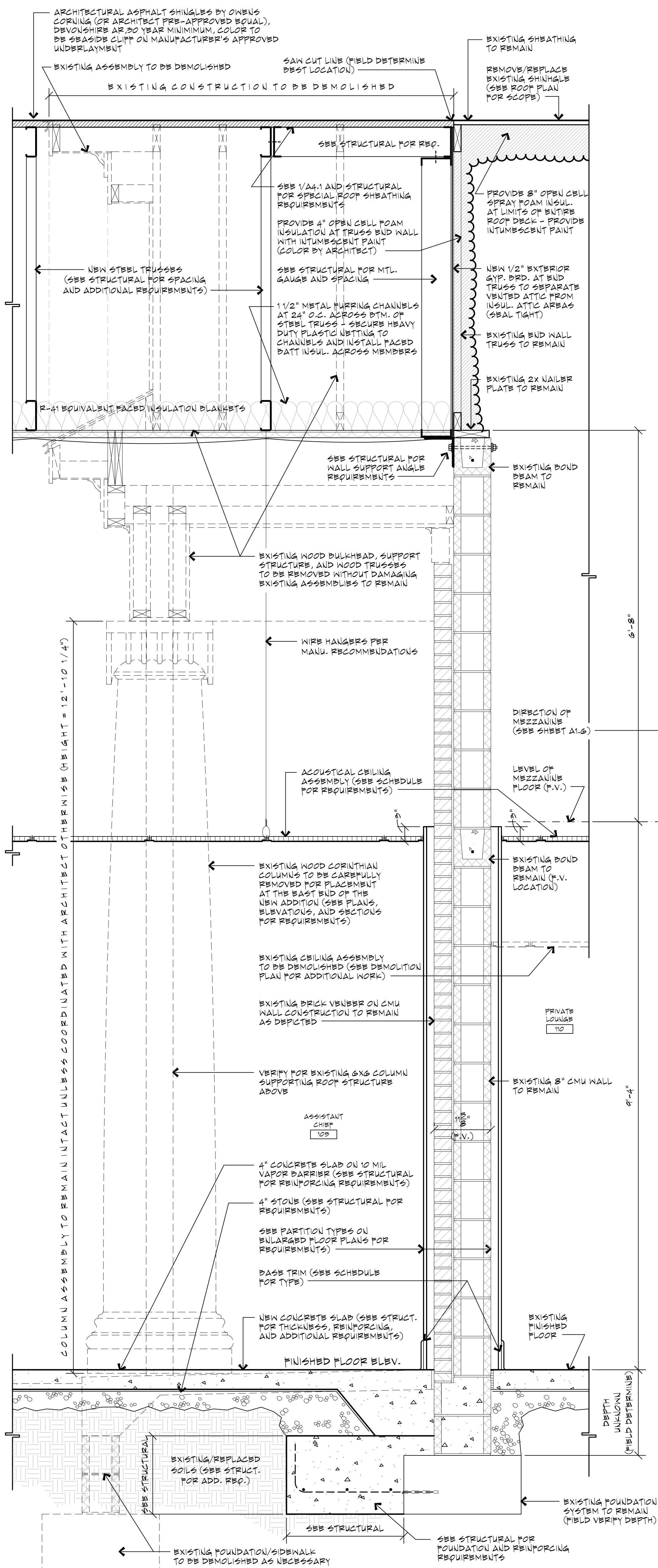
Date:	10-30-2023
Job #:	
Dr. By:	
Ck. By:	G. Nuber
File #:	2021007 A3.3
Revisions:	
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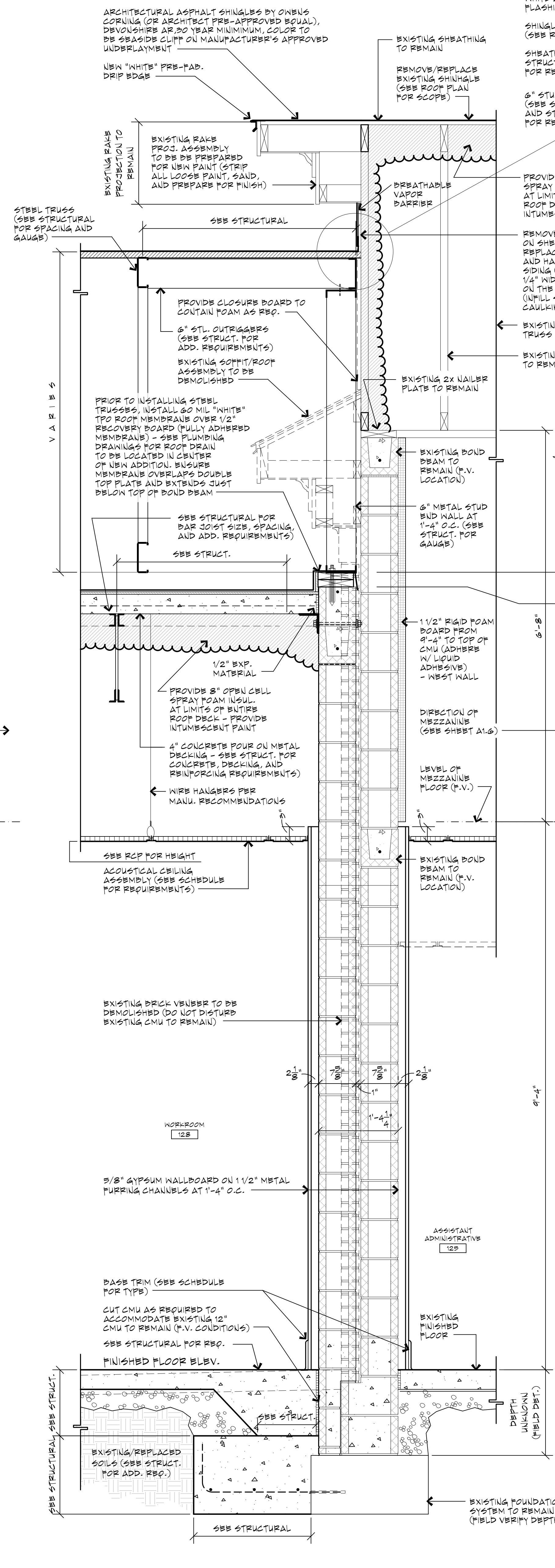
Date:	10-23-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	1
Dr. By:		☐ FOR PERMIT ONLY	2
By:		☐ FOR ESTIMATING/BIDDING ONLY	3
Chk. By:	G. Nuber	☒ FOR CONSTRUCTION	4
File #:	2021007 A4.1a	DATE: 10/30/23 ISSUED BY: G. Nuber	

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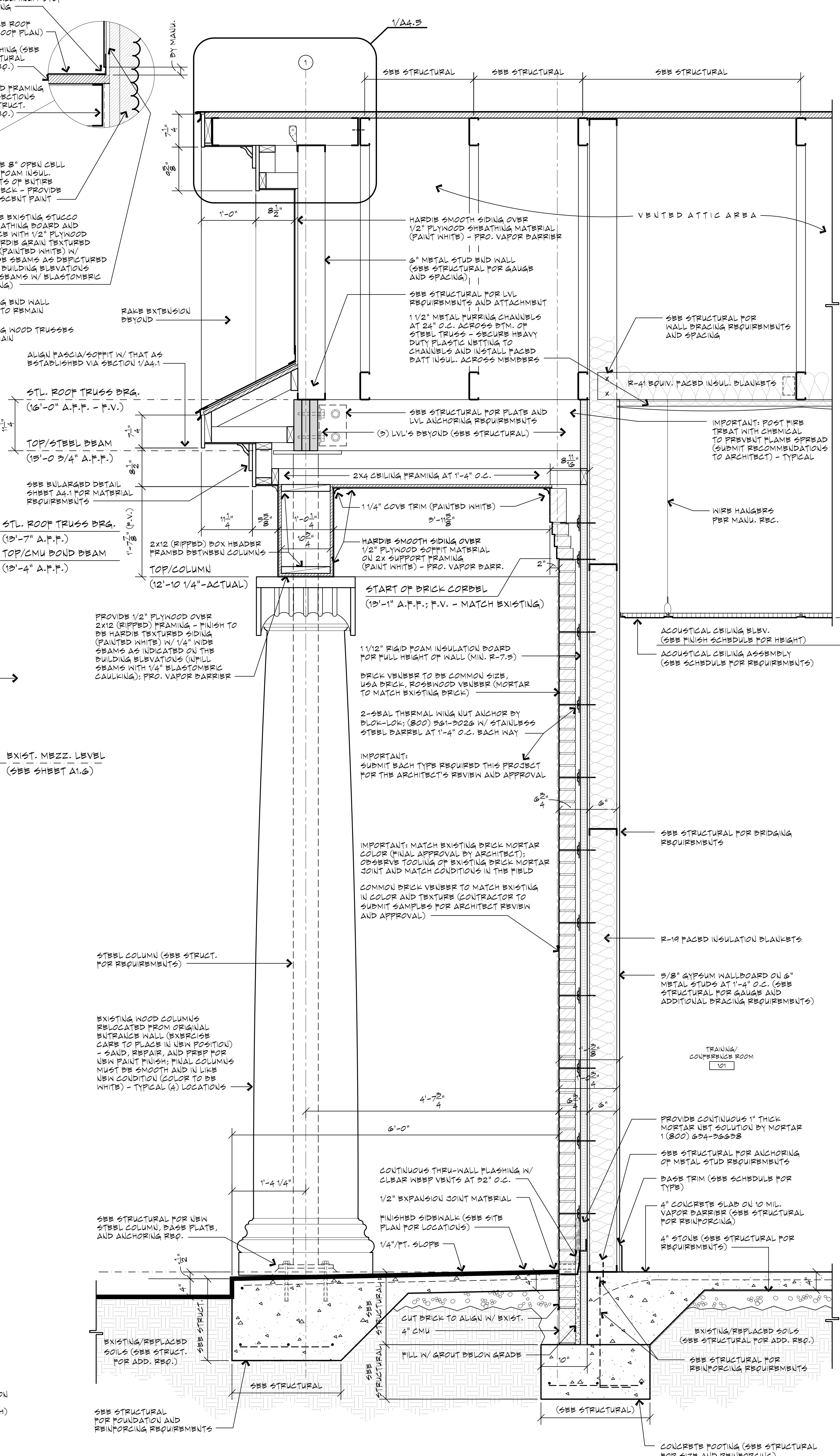




1 WALL SECTION
SCALE: 1/8"=1'-0"



2 WALL SECTION
SCALE: 1/8"=1'-0"



3 WALL SECTION
SCALE: 1/8"=1'-0"

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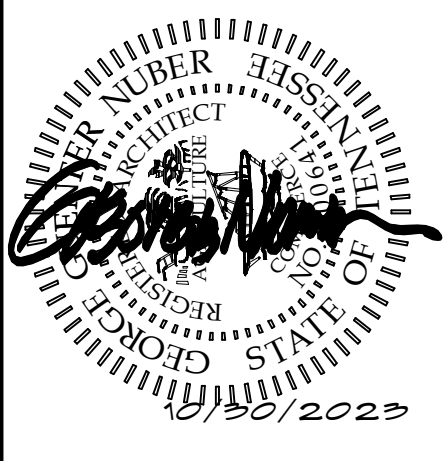
A4.2 Wall Sections

Date:	10-30-2023
Job #:	2021007
Dr. By:	G. Nuber
Ck. By:	G. Nuber
File #:	2021007 A4.2a
Revisions:	
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FOR CONSTRUCTION	☐
DATE: 10/30/23 ISSUED BY: G. Nuber	

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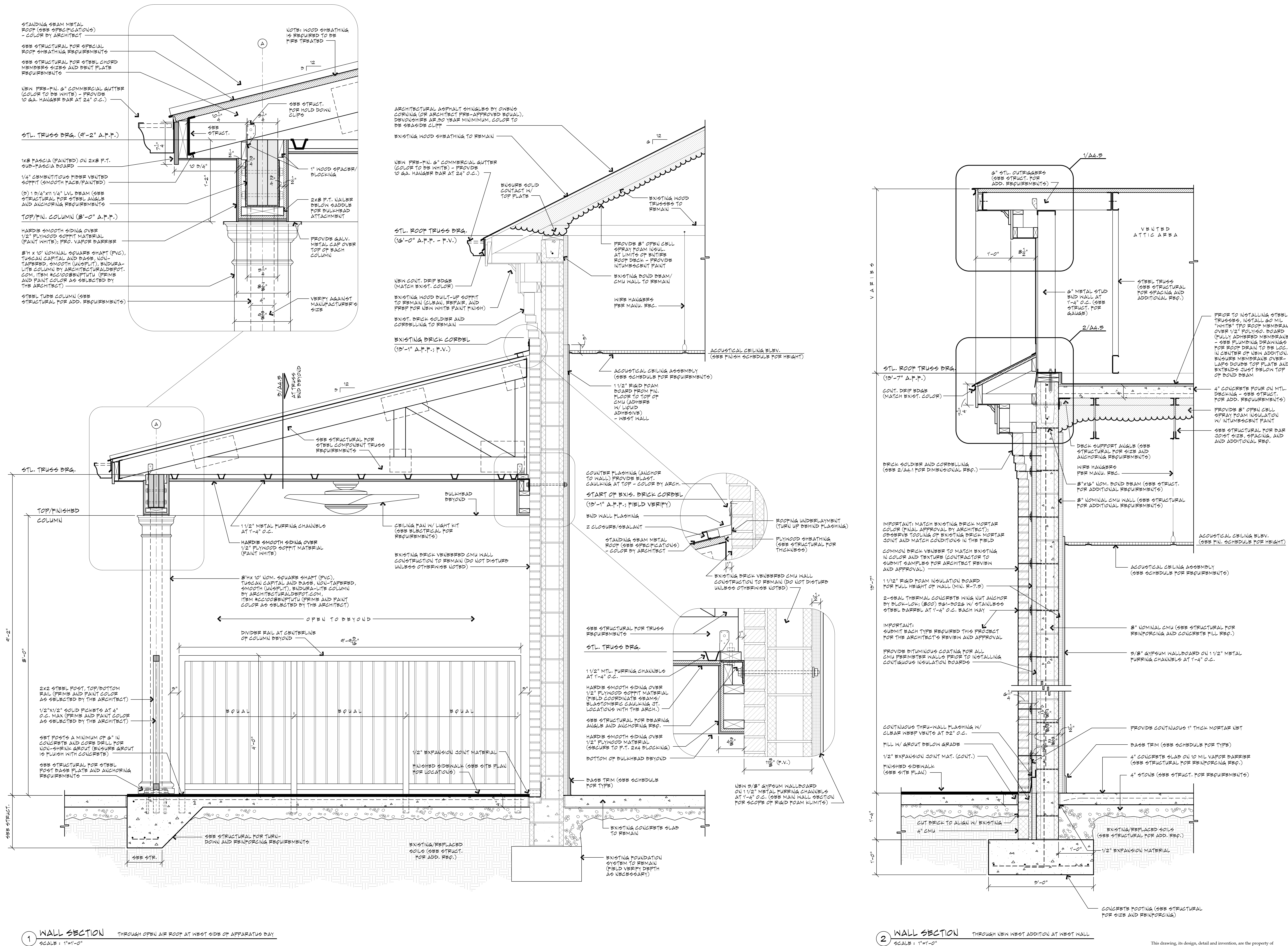


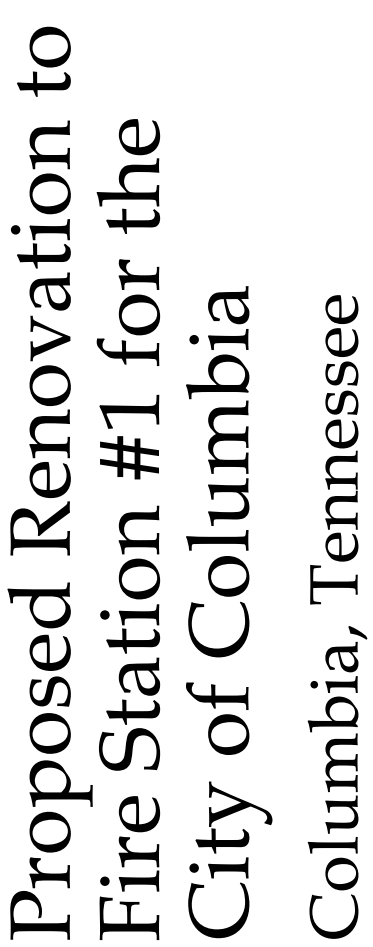
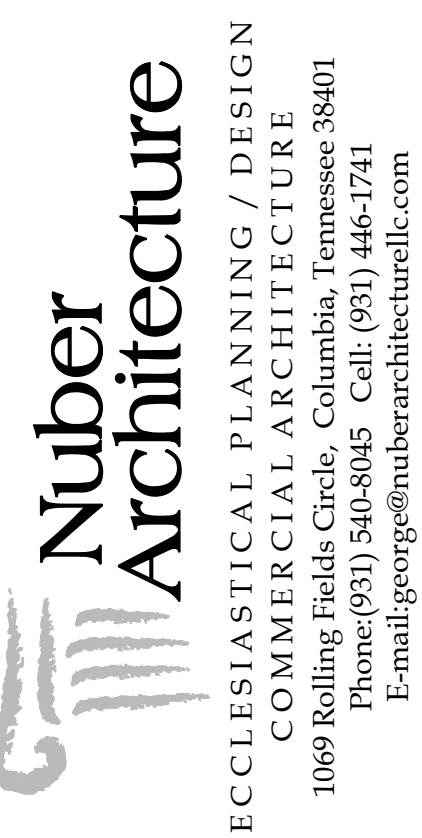
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City of Columbia
Columbia, Tennessee

A4.3 Wall Sections and Details

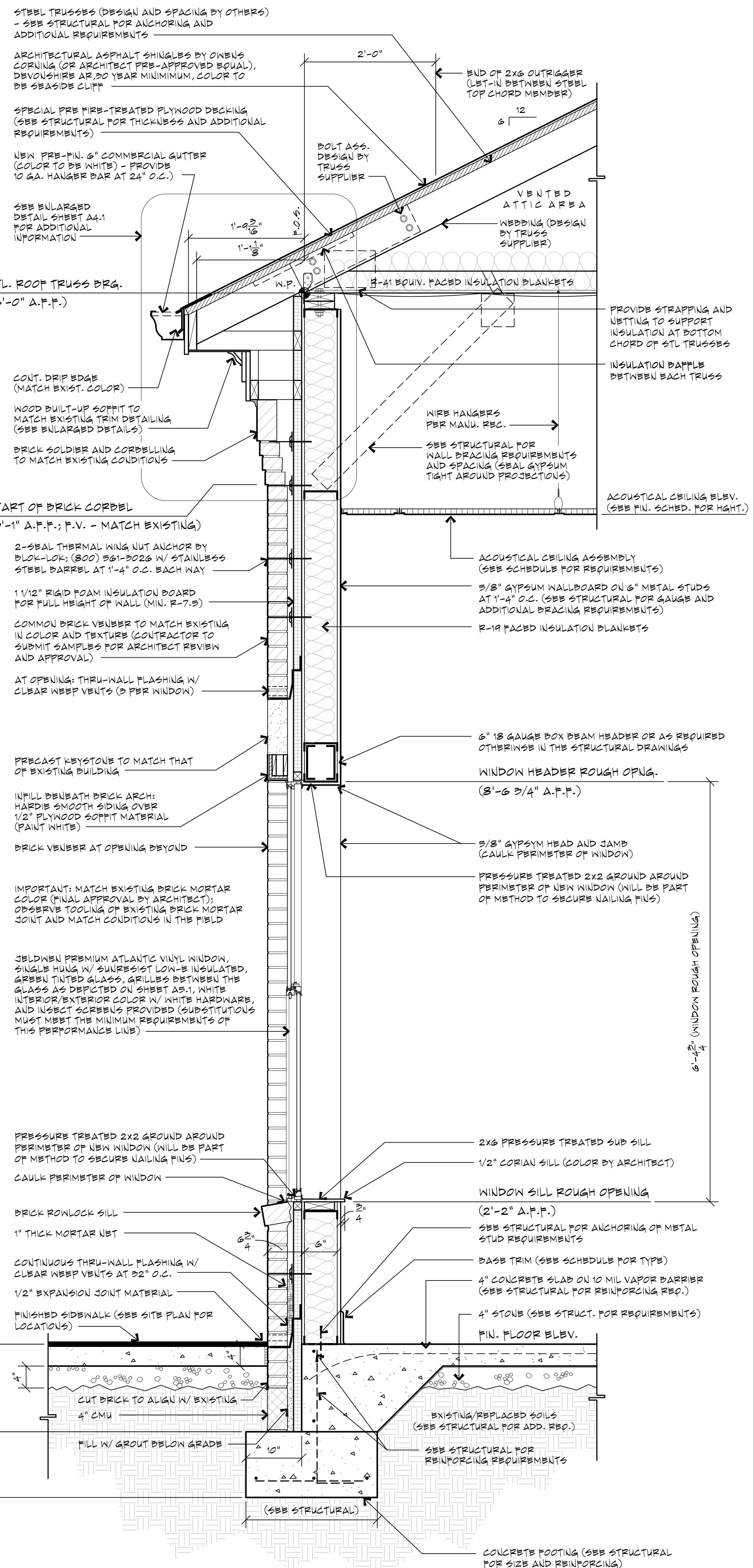
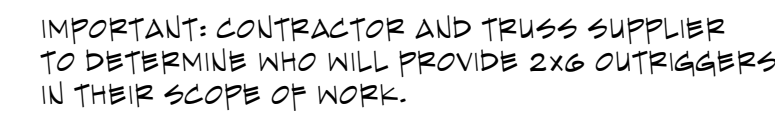
Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED: ☐ FOR REVIEW ONLY ☐ FOR PERMIT ONLY ☒ FOR ESTIMATING/BIDDING ONLY ☐ FOR CONSTRUCTION	Revisions:
Job #:			1
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File #:	2021007 A4.3		4
DATE: 10/30/23 ISSUED BY: G. Nuber			

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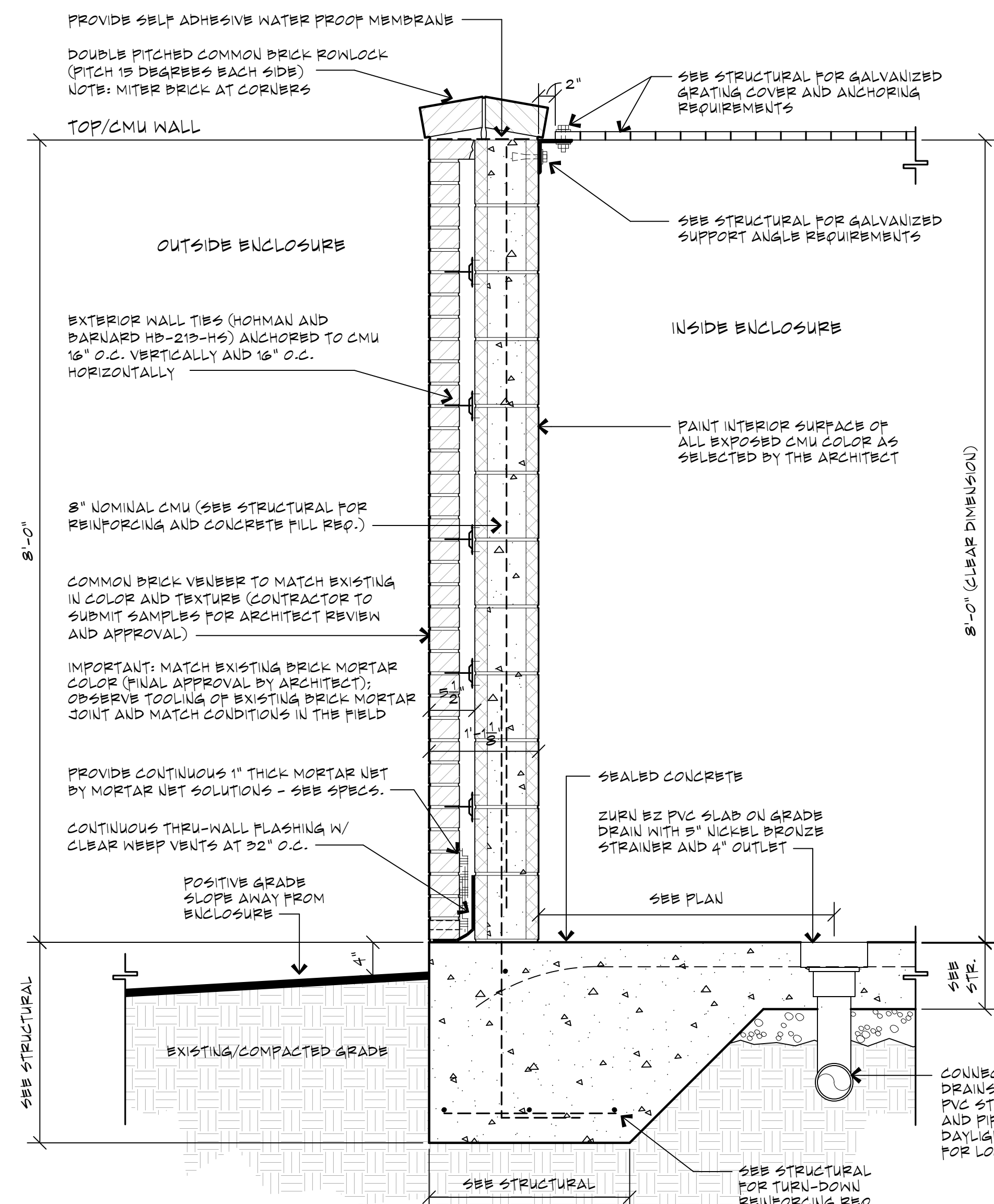


Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
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File #:	2021007_A4.4a	☐ FOR CONSTRUCTION	4
		DATE: 10/30/23 ISSUED BY: G. Nuber	

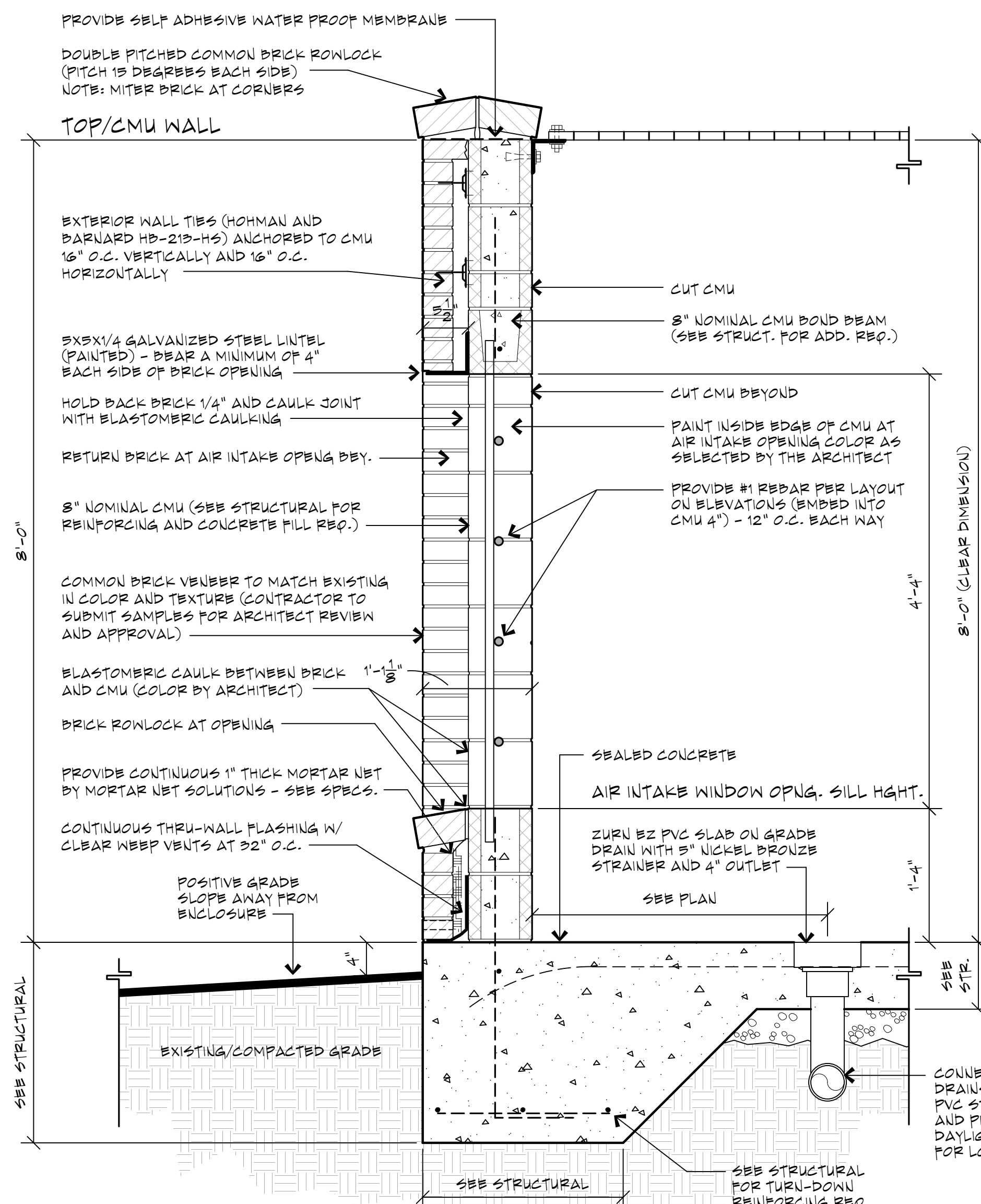


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2 SCALE: $1/4" = 1'-0"$



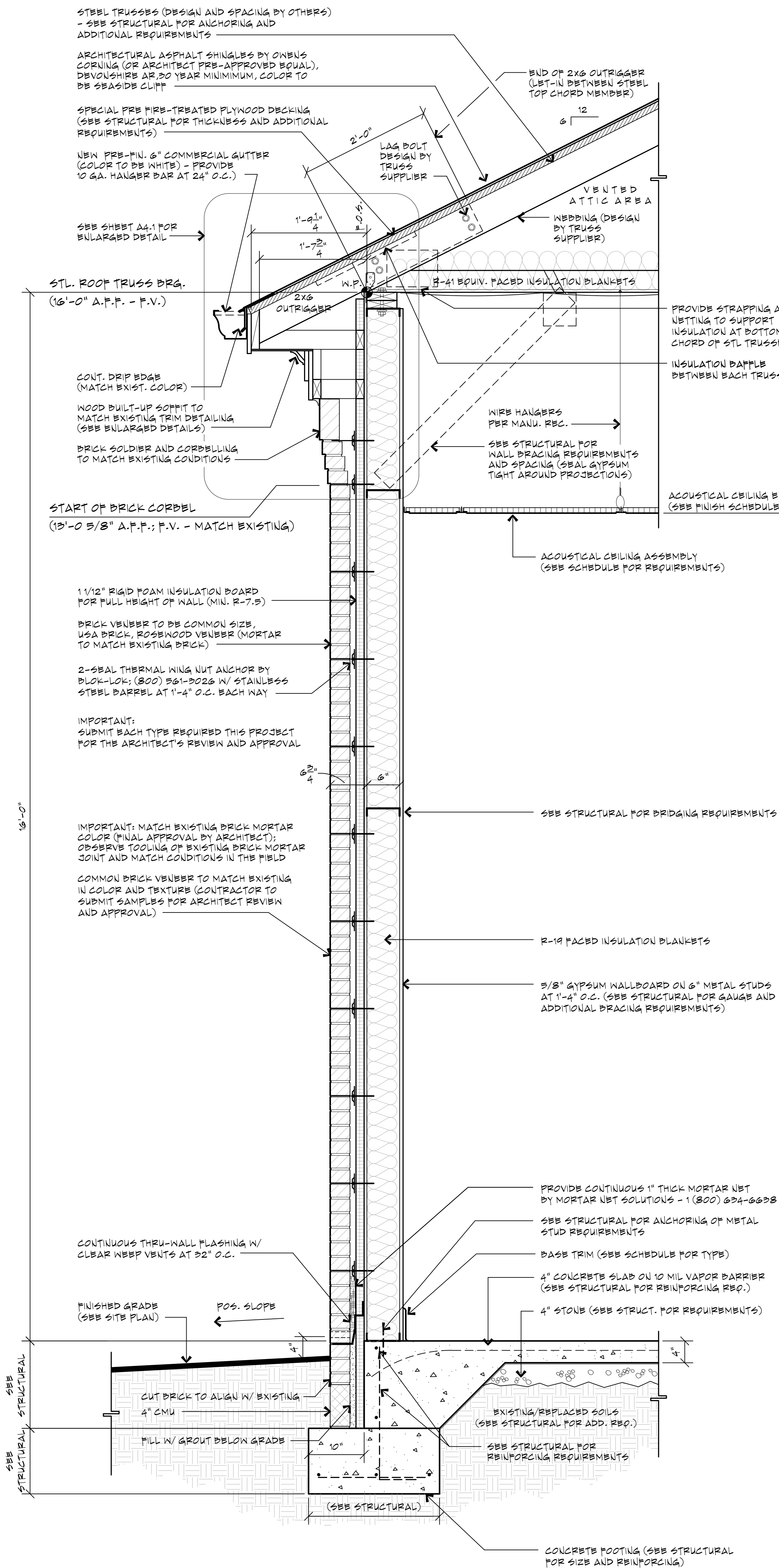
SCALE : 1"=1'-0"



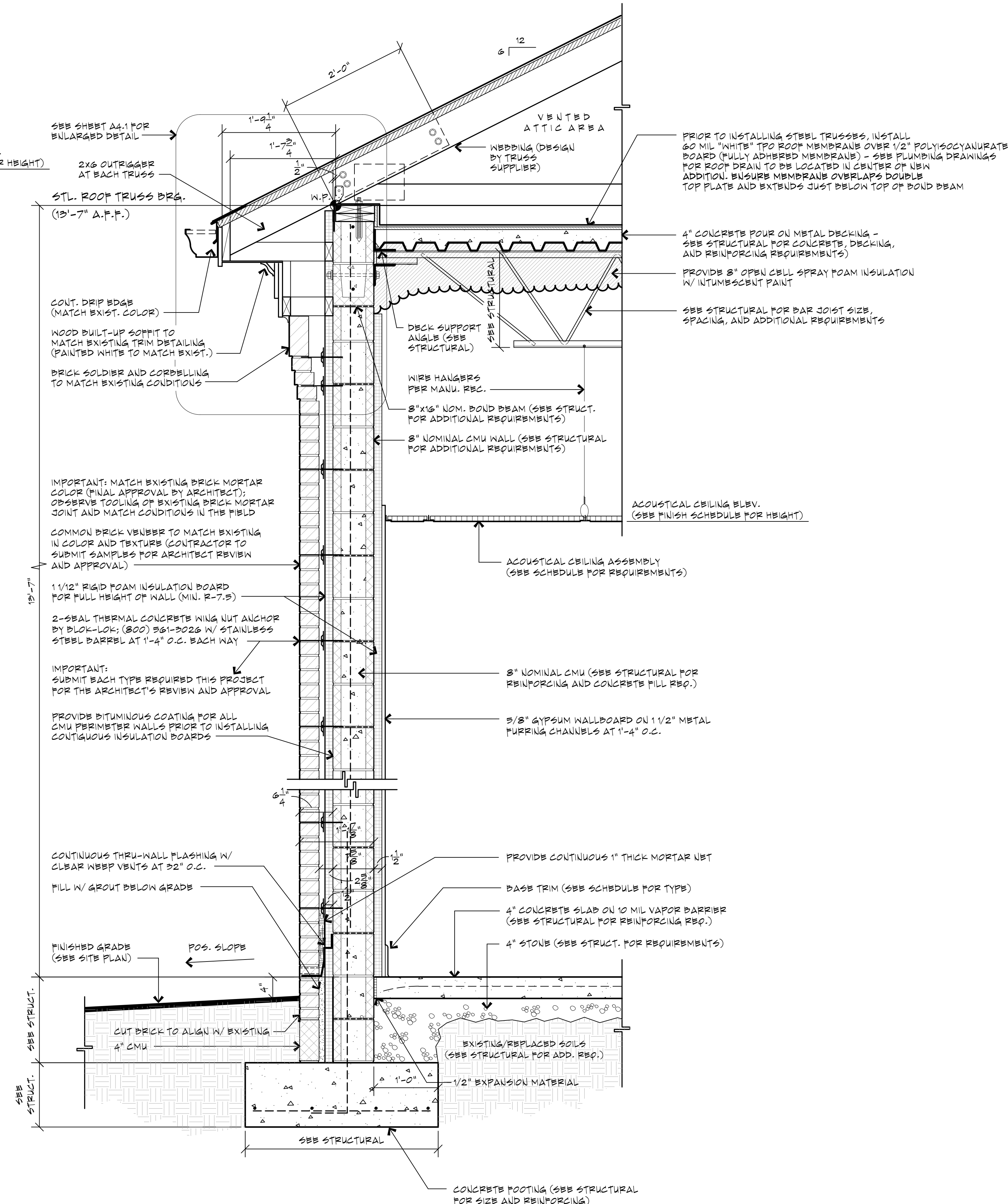
4 SCALE: 1"=1'-0"



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1 WALL SECTION THROUGH EAST NEW ADDITION - NORTH SIDE
SCALE: 1/4"=1'-0"



2 WALL SECTION THROUGH WEST NEW ADDITION - NORTH SIDE
SCALE: 1/4"=1'-0"

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A4.6 Wall Sections and Details

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FOR CONSTRUCTION	☒		
DATE: 10/20/23 ISSUED BY:	G. Nuber		

Proposed Renovation to Fire Station #1 for the City of Columbia

Columbia, Tennessee



Nuber Architecture
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OPENING SCHEDULE														
NO.	DOOR SIZE (N.X.H.T.)	W. F.	TYPE	MATERIAL		DR. PR. LABEL	FRAME			FRAME HT.	LATCH	HDNR.	SBT	NOTES & REMARKS
				DOOR	FRAME		HEAD	JAMB	SILL			NO.	CLOSER	
100	3'-0"x7'-2"x13/4"		1	ND.	H.M.	--	2	2	--	7'-4"	LEVER	01	YES	--
101	7'-0"x7'-0"		6	SLAT	MTL.	--	--	--	--	--	--	02	YES	--
102	3'-0"x7'-2"x13/4"		4	H.M.	H.M.	--	3	3	1	7'-4"	PAUC	03	YES	SEE FRAME TYPE 'C'
103	3'-0"x7'-2"x13/4"		1	ND.	H.M.	--	1	1	--	7'-4"	LEVER	04	YES	--
104	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	NO	--
105	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	06	NO	--
106	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	04	YES	--
107	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	YES	--
108	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	07	YES	--
109	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	YES	--
110	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	4	4	--	7'-2"	LEVER	05	YES	SEE FRAME TYPE 'B'
111	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	YES	--
112	3'-0"x7'-2"x13/4"		3	H.M.	H.M.	--	5	5	--	7'-4"	LEVER	04	YES	--
113	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	08	YES	--
114	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	NO	--
115	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	NO	--
116	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	05	YES	--
117	3'-0"x7'-2"x13/4"		3	H.M.	H.M.	1HR.	6	6	--	7'-4"	LEVER	13	YES	--
118	2'-8"x6'-8" (F.V.)X13/4"		1	ND.	H.M.	--	--	--	--	6'-10"	LEVER	12	YES	NOTE 5
119	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	04	YES	--
120	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	02	YES	--
121	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	14	YES	--
122	2'-8"x6'-8" (F.V.)X13/4"		1	ND.	H.M.	--	--	--	--	6'-10"	LEVER	18	YES	NOTE 5
123	2'-8"x7'-0"		--	--	H.M.	--	7	7	--	7'-2"	--	15	YES	CASSED OPENING
124	4'-0"x6'-8" (F.V.)X13/4"		1	ND.	H.M.	--	--	--	--	6'-10"	LEVER	17	YES	NOTE 7
125	3'-0"x7'-0"x13/4"		3	ND.	H.M.	--	6	6	--	7'-4"	LEVER	04	YES	NOTE 9
126	2'-8"x7'-0"		--	--	H.M.	--	7	7	--	7'-2"	--	15	NO	CASSED OPENING
127	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
128	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	24	YES	--
129	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	18	NO	--
130	2'-8"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
131	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
132	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	08	YES	--
133	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
134	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	06	NO	--
135	2'-8"x6'-8" (F.V.)X13/4"		2	ND.	H.M.	--	--	--	--	6'-10"	LEVER	05	YES	NOTE 7
136	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
137	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
138	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
139	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	11	NO	--
140	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	24	YES	--
141	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	04	YES	--
142	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	16	YES	--
143	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	18	YES	--
144	3'-0"x7'-0"x13/4"		3	ND.	ND.	--	--	--	--	7'-2"	PAUC	22	YES	SEE FRAME TYPE 'A'
145	EXISTING TO REMAIN		--	--	--	--	--	--	--	--	--	--	--	NOTE 4
146	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
147	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
148	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
149	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
150	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
151	EXISTING TO REMAIN		--	--	--	--	--	--	--	--	--	20	NO	NOTE 4
152	EXISTING TO REMAIN		--	--	--	--	--	--	--	--	--	20	NO	NOTE 4
153	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
154	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
155	12'-0"x12'-0" (F.V.)		7	STL.	--	--	--	--	--	14'-8"	--	02	NO	NOTE 6, 14
156	EXISTING TO REMAIN		--	--	--	--	--	--	--	--	--	21	NO	NOTE 4
157	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	2	2	--	7'-0"	LEVER	27	YES	NOTE 7
158	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	YES	--
159	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	14	YES	--
160	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	--
161	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	--
162	3'-0"x7'-0"x13/4"		4	ND.	H.M.	--	3	3	1	7'-4"	LEVER	23	YES	NOTE 12
163	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
164	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	8	8	--	7'-2"	LEVER	04	YES	NOTE 9
165	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
166	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	8	8	--	7'-2"	LEVER	04	YES	NOTE 9
167	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
168	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	8	8	--	7'-2"	LEVER	04	YES	NOTE 9
169	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
170	3'-0"x6'-8"X13/4"		2	ND.	H.M.	--	2	2	--	7'-2"	LEVER	27	YES	NOTE 7
171	3'-0"x6'-8"X13/4"		1	ND.	H.M.	--	1	1	--	6'-10"	LEVER	10	NO	NOTE 5
172	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
173	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
174	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	24	NO	NOTE 5
175	3'-0"x7'-0"x13/4"		1	ND.	H.M.	--	1	1	--	7'-2"	LEVER	10	NO	NOTE 5
176	3'-0"x6'-8" (F.V.)X13/4"		1	ND.	H.M.	--	--	--	--	6'-10"	LEVER	25	NO	NOTE 13
177	3'-0"x6'-8" (F.V.)X13/4"		2	ND.	H.M.	--	--	--	--	6'-10"	LEVER	25	NO	NOTE 13
178	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	1	1	--	7'-2"	LEVER	26	YES	--
179	3'-0"x7'-2"x13/4"		2	ND.	H.M.	--	2	2	--	7'-4"	LEVER	08	YES	--
180	7'-8"x7'-0"		6	SLAT	MTL.	--	--	--	--	--	--	02	NO	NOTE 13
181	3'-0"x7'-0"x13/4"		2	ND.	H.M.	--	4	4	--	7'-2"	LEVER	05	YES	SEE FRAME TYPE 'B'

OPENING SCHEDULE NOTES:

1. REPERCUSS HARDWARE SPECIFICATIONS FOR REQUIREMENTS PERTAINING TO THE DOORS NOTED IN THE OPENING SCHEDULE. THE FINISH OF THE HARDWARE IS TO BE A MANUFACTURER'S USUAL COLOR OR SIMILAR SUBMIT SHOP DWGS. TO THE ARCHITECT FOR FINAL APPROVAL.
2. ALL RATED DOORS MUST HAVE RATED FRAMES, HARDWARE, CLOSERS, ETC.
3. AT ALL REQUIRED TRANSITION STRIPS SEPARATING ALTERNATE PATTERNS AND/OR ALTERNATE FLOOR MATERIALS, ENSURE THAT TRANSITION STRIP IS LOCATED PERMANENTLY CENTER OF DOOR WHEN CLOSED. REPERCUSS FINISH SCHEDULE FOR FLOOR TYPES AND SUPPLY VINYL TRANSITION STRIPS TO BE COORDINATED WITH THE ARCHITECT FOR TYPE AND COLOR IN THE FIELD.
4. SAND REPAINT EXISTING DOOR AND FRAME AND BUGSURE DOOR IS ADJUSTED FOR SMOOTH OPERATION. REPERCUSS EXISTING HARDWARE. SEE HARDWARE SPECIFICATIONS.
5. REMOVE EXISTING WOOD DOOR AND FRAME AND PREPARE EXISTING ROUGH OPENING FOR NEW HOLLOW METAL FRAME (KNOCK DOWN FRAME ACCEPTABLE). INSTALL NEW DOOR ASSEMBLY PER THE SCHEDULE.
6. REMOVE EXISTING OVERHEAD SECTIONAL DOOR AND REPLACE WITH NEW MOTORIZED SECTIONAL OVERHEAD DOOR UNIT PER MANUFACTURER'S REQUIREMENTS. SEE DOOR TYPE 7 AND NOTE 14 FOR ADDITIONAL INFORMATION.
7. EXISTING HOLLOW METAL FRAME TO REMAIN. CLEAN AND REPAINT. PROVIDE NEW DOOR SLAB, HINGES, AND HARDWARE AS CALLED FOR IN THE SCHEDULE. FIELD VERIFY FRAME OPENING SIZE FOR DOOR FITMENT.
8. VERIFY EXISTING OPENING SIZE AND DETERMINE IF HOLLOW METAL FRAME (KNOCK DOWN VERSION) CAN FIT IN EXISTING OPENING AFTER DEMOLISHING DOOR/FRAME ASSEMBLY.
9. SCAUT EXISTING CMU TO PREPARE FOR NEW DOOR/FRAME ASSEMBLY. PROVIDE PRE-PARTICATED UNIT AND INTEGRATE INTO NEW OPENING. INSTALL DOOR ASSEMBLY PER SCHEDULE. SEE DOOR/HEAD JAMB DETAILS FOR ADDITIONAL INFORMATION.
10. CONTRACTOR TO REMOVE DOOR LEADS AND REPLACE EXISTING WOOD VENEER WITH A SOLID STEEL 1/8" SHEET. WELD TO EXISTING FRAME AND PAINT BEFORE RE-INSTALLING. BALANCE OF HARDWARE TO BE CHECKED FOR GOOD OPERATION.
11. EXISTING OVERHEAD SECTIONAL DOORS TO REMAIN. BUGSURE SMOOTH TRACK OPERATION AND REPAIR AS NECESSARY. CLEAN AND REPAINT COLOR AS SELECTED BY THE ARCHITECT.
12. EXISTING DOOR ASSEMBLY. NO FULL HARDWARE REQ. ON THE EXTERIOR OF THE DOOR UNIT. SEE SPECIFICATIONS. PATCH CONCRETE FLOOR AT RENOVATED DOOR INSTALL.
13. REMOVE EXISTING WOOD DOOR AND H.M. FRAME AND PREPARE EXISTING ROUGH OPENING FOR NEW HOLLOW METAL FRAME (KNOCK DOWN FRAME ACCEPTABLE). INSTALL NEW DOOR ASSEMBLY PER THE SCHEDULE.
14. PREP. STANDARD TRACKS FOR NEW SECTIONAL GARAGE DOOR TO EXISTING VERIFIED OPENING WIDTH. AT HEAD, PROVIDE 1/4" WOOD STUD HEADER WITH COMBUSTIBLE SIDING FINISH TO 12'-0" A.P.F. FILLING IN BETWEEN TOP OF NEW OPENING AND EXISTING ARCH OPENING. FIELD COORDINATE ADDITIONAL DETAIL WITH THE ARCHITECT.
15. PREPARE NEW CMU OPENING FOR 7'-8" COIL ROLLUP DOOR AND MANUFACTURER'S CLEARANCE REQUIREMENTS AT HEAD. SUPPLY JAMB TRACKS TO KITCHEN #127 SIDE. BUGSURE FINISHED OPENING TAKES INTO ACCOUNT GYPSUM WALLBOARD VENEER. FIELD COORDINATE ADDITIONAL REQUIREMENTS WITH THE ARCHITECT.

FINISH SCHEDULE NOTES:

1. PROVIDE EPOXY WALL FINISH PAINT THIS ROOM.
2. ALL VINYL BASE THIS PROJECT WILL BE 6" HIGH. MANUFACTURER BY JOHNSONITE OR ARCHITECT APPROVED EQUAL. COLOR BY ARCHITECT.
3. ALL WALLBOARD BEHIND PLUMBING FIXTURES SHALL BE GYPSUMBOARD OR ARCHITECT APPROVED EQUAL. REPERCUSS PARTITION TYPES FOR REQUIREMENTS.
4. THE LUXURY VINYL PLANK (LVP) ALLOWANCE WILL BE ESTABLISHED AT \$7.00/S.F. FOR LABOR AND MATERIALS. ARCHITECT TO SUBMIT SAMPLES FOR CONTRACTOR APPROVAL.
5. PROVIDE CERAMIC TILE WAINSCOT (TOP OF CERAMIC TO BE 6'-0" A.P.F. PROVIDE PAINTED GYPSUM ABOVE THIS ELEVATION. TILE TO BE 6"x24" SIZE. STACHED PATTERN WITH SCHLUTER COVE BASE. INSIDE/OUTSIDE CORNER TRIM, AND BULLNOSE CAP TRIM. COLOR BY ARCHITECT. ALLOWANCE TO BE 11.50/S.F.
6. PER DEMOLITION NOTES. REMOVE EXISTING GYPSUM WALLBOARD EXPOSING EXISTING WOOD STUDS TO REMAIN. INSTALL NEW GYPSUM WALLBOARD OVER EXISTING WOOD STUDS AND NEW GYPSUM WALLBOARD OVER METAL FURNING AT EXTERIOR CMU WALLS. SEE PARTITION TYPES FOR ADDITIONAL REQUIREMENTS.
7. EXISTING CONCRETE FLOOR IN APPARATUS BAY TO REMAIN. FOR ALTERNATE 11, PROVIDE POLYURETHANE FLOOR AND BASE. DEMOTE COSTS ASSOCIATED WITH THIS WORK ON THE BID FORM IN THE APPROPRIATE BLANKS.
8. PROVIDE TRANSITION STRIPS AT ALL LOCATIONS FOR FLOOR MATERIAL TRANSITIONS AND UNDERBATH DOORS WHERE TRANSITIONS OCCUR.
9. PROVIDE 1/4" SOLID SURFACE WAINSCOT AT WBT WALLS IN ALL RESTROOMS. SEE INTERIOR ELEVATIONS.
10. PROVIDE 1/8" PAINTED BASE TRIM FOR ALL LOCATIONS DEMOTING "WOOD" IN THE FINISH SCHEDULE.

ABBREVIATIONS (WHERE APPLICABLE)

ACOUST. 1	- 2'X2'X1/4" SLT EDGE PROFILE ACOUSTICAL (ACT. 1)
ACOUST. 2	- 2'X2'X1/4" SQUARE EDGE PROFILE ACOUSTICAL (ACT. 1)
ALUM.	- LAY-IN CL. SYSTEM, USA #220 (PROVIDE 15/16" GRID; SEE SPECIFICATIONS)
BD. DRD.	- ALUMINUM
FR.	- BEAD BOARD CEILING SYSTEM (SEE SHEET A1.2)
CMU	- FIRE RATED CONCRETE MASONRY UNIT (UNFINISHED)
COUG.	- CONCRETE (CLEAR SEALED; NO STAIN REQUIRED)
POLCOUG	- CONCRETE (POLISHED/STAINED)
C.T.	- CERAMIC TILE (6"x24" TILE JACK ON JACK STYLE)
H.M.	- HOLLOW METAL
PT.	- PAINT
GC	- 5/8" GYPSUM WALL BOARD (PAINTED)
CPT	- SOLID CORE
CPT.1	- CARPET (BROADLOOM)
CPT.2	- CARPET (CUT PILE)
CPT.3	- CARPET SQUARES
V.C.T.	- VINYL COMPOSITION TILE
EXCMU	- EXISTING CMU (PROVIDE BURNISH PAINT FINISH)
RUBBER	- RUBBER ATHLETIC FLOORING SURFACES (SEE SPECS.)
ND.	- WOOD BASE AND/OR WAINSCOT
EXP.	- EXPOSED TO STRUCTURE ABOVE
P.P.	- PUSH/PULL HARDWARE
VINYL	- 6" HIGH VINYL OR RUBBER BASE JOHNSONITE BRAND OR ARCHITECT APPROVED EQUAL
PTPLAST.	- PAINT EXISTING PLASTER
BXT.	- EXISTING
RCOM	- CONCRETE (POLISHED)
PTSCBL	- PAINTED SCORPED C.M.U.
PTBL	- PAINTED C.M.U.
PTCOUG	- PAINTED CONCRETE
TRBX	- TREX WOOD PLANKING (COLOR BY ARCHITECT)
VINYL	- SHEET VINYL FLOOR
RUB.	- RUBBER TRAPDOORS/STAIRS
WDL.	- HARDWOOD FLOORING ON SLEEPERS (SEE DTL.)
WDCD.	- WOOD GLAD
WOOD	- WOOD BASE (SEE FINISH SCHEDULE NOTES)
LVP	- LUXURY VINYL PLANKING
EPOXY	- EPOXY FLOORING FLOOR COATING SYSTEM
EXGIP	- EXISTING GYPSUM WALLBOARD (PATCH, REPAIR, REPAINT)
BRXGIP	- BROKEN GYPSUM FLOOR COATING SYSTEM
SOLID	- 1/4" THICK SOLID SURFACE VENEER OVER GYPSUM

FINISH SCHEDULE											
RM. NO.	SPACE & ROOM	FLOOR	BASE	WAINSCOT	WALLS				CEILING	CEILING HT.	NOTES & REMARKS
					NORTH	SOUTH	EAST	WEST			
501	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	↑	NOTE 6
502	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
503	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
504	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
505	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
506	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
507	ELECTRICAL/UTILITY	EX. CONC.	--	--	PTBL	PTBL	PTBL	PTBL	GYPSPUM		NOTE 6
508	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
509	EXISTING MALE DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
511	CLOSET	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		NOTE 6
512	COMPREHENSIVE AIR ROOM	EX. CONC.	--	--	PTBL	PTBL	PTBL	PTBL	GYPSPUM	NOTE 6	
513	APPARATUS ROOM	EXST. CONC.	--	--	PTBL	PTBL	PTBL	PTBL	EX-STING	NOTE 7	
514	TRAINING/COMPREHENSIVE ROOM	BPXNY	BPXNY 6"	ND. CHAIR	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	↑	NOTE 6
102	RESTROOM (ADA)	BPXNY	BPXNY 6"	C.T. (6'-0")	C.T./GYP.	C.T./GYP.	C.T./GYP.	C.T./GYP.	ACQUST. 1		NOTE 6
103	CHAIR/TABLE STORAGE RM.	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
104	ASSISTANT OFFICE	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
105	ASSISTANT CHIEF	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
106	ASSISTANT CHIEF	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
107	ASSISTANT CHIEF	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
108	CORRIDOR	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
109	CHIEF ADMIN. ASSISTANT	LVP	WOOD	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
110	PRIVATE LOUNGE	LVP	WOOD	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1		--
111	PRIVATE	LVP	WOOD	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
112	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	--	
113	COMPT. OFFICE	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
114	CORRIDOR	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
115	DEPUTY CHIEF	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
116	WORKOUT ROOM	RUBBER	--	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
117	SHIFT COMMANDER	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
118	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	--	
119	CLOSET	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	GYPSPUM	--	
120	LAUNDRY	BPXNY	BPXNY 6"	--	PTBL	PTBL	PTBL	PTBL	ACQUST. 1	--	
121	STAFF RESTROOM	BPXNY	BPXNY 6"	C.T. (6'-0")	C.T./GYP.	C.T./GYP.	C.T./GYP.	C.T./GYP.	ACQUST. 1	--	
122	STAFF	CONC.	--	--	PTBL	PTBL	PTBL	PTBL	GYPSPUM	--	
123	PRIVATE STORAGE	CONC.	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
124	CBM OFFICE	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
125	ADMINISTRATION ASSISTANT	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
126	PRIVATE LOUNGE	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
127	KITCHEN	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 2	--	
128	NOREROOM	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
129	RECEPTIONIST	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
130	MAILING	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
131	PUBLIC RESTROOM	BPXNY	BPXNY 6"	C.T. (6'-0")	C.T./GYP.	C.T./GYP.	C.T./GYP.	C.T./GYP.	ACQUST. 1	--	
132	BATH/SHOWER	BPXNY	BPXNY 6"	SOLID (7')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	NOTE 9	
133	COMMAND ROOM	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
134	EMERGENCY OP. CENTER RM.	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
135	CORRIDOR	BPXNY	BPXNY 6"	--	PTBL	GYP.	GYP.	GYP.	ACQUST. 1	--	
136	PRIVATE MEN'S DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
137	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	NOTE 9	
138	MEN'S DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
139	MEN'S DORM	BPXNY	BPXNY 6"	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
140	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	NOTE 9	
141	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	NOTE 9	
142	PRIVATE BATH	BPXNY	BPXNY 6"	SOLID (9')	SOL./GYP.	SOL./GYP.	SOL./GYP.	SOL./GYP.	GYPSPUM	NOTE 9	
143	CLOSET	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	GYPSPUM	--	
144	RESTROOM	LVP	VINYL	--	GYP.	GYP.	GYP.	GYP.	ACQUST. 1	--	
145	EMERGENCY VIT ROOM	CONC.	VINYL	--	PTBL	PTBL	PTBL	PTBL	EXPOSED	--	
146	YARD SERVICES EQUIPMENT	CONC.	--	--	CNU	CNU	CNU	CNU	EXPOSED	↓	

	 1000 S Garden St, Columbia, Tennessee, 38401 Elevation: 610 ft (NAVD 88) Lat: 35.61604 Long: -89.035865 Standard: ASCE/SEI 7-22 Risk Category IV	 1. NO PROVISION OF ANY REFERENCED STANDARD SPECIFICATION, MANUAL OR CODE (WHETHER OR NOT SPECIFICALLY INCORPORATED BY REFERENCE IN THE CONTRACT DOCUMENTS) SHALL BE EFFECTIVE TO CHANGE THE DUTIES AND RESPONSIBILITIES OF CONTRACTOR, ENGINEER, SUPPLIER, OR ANY OF THEIR CONSULTANTS, AGENTS, OR EMPLOYEES FROM THOSE SET FORTH IN THE CONTRACT DOCUMENTS. NOR SHALL IT BE EFFECTIVE TO ASSIGN TO THE STRUCTURAL ENGINEER OF RECORD OR ANY OF THE STRUCTURAL ENGINEER OF RECORD'S CONSULTANTS, AGENTS, OR EMPLOYEES ANY DUTY OR AUTHORITY TO SUPERVISE OR DIRECT THE FURNISHING OR PERFORMANCE OF THE WORK OR ANY DUTY OR AUTHORITY TO UNDERTAKE RESPONSIBILITIES CONTRARY TO THE PROVISIONS OF THE CONTRACT DOCUMENTS. 2. CONTRACT DOCUMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE STRUCTURAL DOCUMENTS (DRAWINGS AND SPECIFICATIONS), BUT DO NOT INCLUDE SHOP DRAWINGS, VENDOR DRAWINGS, OR MATERIAL PREPARED AND SUBMITTED BY THE CONTRACTOR. 3. REFERENCE TO STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OF LOCAL OR STATE AUTHORITIES, SHALL MEAN THE LATEST STANDARD, CODE, SPECIFICATION OR TENTATIVE SPECIFICATION ADOPTED AT THE DATE OF TAKING BIDS, UNLESS SPECIFICALLY STATED OTHERWISE. 4. CONTRACT DOCUMENTS SHALL GOVERN IN THE EVENT OF A CONFLICT WITH THE CODE OF PRACTICE OR SPECIFICATIONS OF ACI, PCI, ASD, SJI OR OTHER STANDARDS WHERE A CONFLICT OCCURS WITHIN THE CONTRACT DOCUMENTS, THE STRICTEST REQUIREMENT SHALL GOVERN. 5. MATERIAL, WORKMANSHIP, AND DESIGN SHALL CONFORM TO THE REFERENCED BUILDING CODE. 6. CONTRACTOR SHALL COORDINATE THE STRUCTURAL DOCUMENTS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND CIVIL DOCUMENTS. ARCHITECT/STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY OR OMISSION FOR DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS SEE THE ARCHITECTURAL DRAWINGS. 7. CONTRACTOR SHALL OBTAIN AND COORDINATE EDGE OF SLAB DIMENSIONS, OPENING LOCATIONS, COMPRESSED SLAB LOCATIONS AND EXTENTS, SLAB SLOPES, CURB LOCATIONS, AND CMU WALL LOCATIONS. ARCHITECT/STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY OR OMISSION. 8. CONTRACTOR SHALL VERIFY EXISTING DIMENSIONS, ELEVATIONS, AND SITE CONDITIONS BEFORE STARTING WORK. ARCHITECT/STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY. 9. CONTRACTOR SHALL VERIFY THE STRUCTURALLY SUPPORTED MECHANICAL EQUIPMENT WEIGHTS, OPENING SIZES AND LOCATIONS IDENTIFIED ON THE STRUCTURAL DRAWINGS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. 10. CONTRACTOR SHALL VERIFY THAT MISCELLANEOUS FRAMING SHOWN ON THE STRUCTURAL DRAWINGS FOR MECHANICAL EQUIPMENT, OWNER-FURNISHED ITEMS, PARTITIONS, ETC., IS CONSISTENT WITH THE REQUIREMENTS OF SUCH ITEMS. 11. CONTRACTOR HAS SOLE RESPONSIBILITY FOR MEANS, METHODS, SAFETY, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION. 12. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM. TEMPORARY SUPPORTS REQUIRED FOR STABILITY DURING ALL INTERMEDIATE STAGES OF CONSTRUCTION SHALL BE DESIGNED, FURNISHED, AND INSTALLED BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTIBILITY ANALYSIS, AND ERECTION PROCEDURES, INCLUDING DESIGN AND ERECTION OF FALSEWORK, TEMPORARY BRACING, ETC. 13. CONTRACTOR HAS SOLE RESPONSIBILITY TO COMPLY WITH ALL OSHA REGULATIONS. 14. REPRODUCTION OF STRUCTURAL DRAWINGS FOR SHOP DRAWINGS IS NOT PERMITTED. ELECTRONIC DRAWING FILES WILL NOT BE PROVIDED TO THE CONTRACTOR. 15. SUBMIT SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE STRUCTURAL ELEMENTS AND CONNECTIONS SHOWN IN THE CONTRACT DOCUMENTS. REVIEW OF SHOP DRAWINGS SHALL BE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS AND THE CONTRACTOR'S INTERPRETATION OF THE DESIGN LOADS AND CONTRACT DOCUMENT DETAILS. REVIEW OF SUBMITTALS OR SHOP DRAWINGS BY THE ARCHITECT/STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE SOLE RESPONSIBILITY TO REVIEW AND CHECK ALL SUBMITTALS AND SHOP DRAWINGS BEFORE SUBMITTING TO THE STRUCTURAL ENGINEER. REVIEW OF SUBMITTALS OR SHOP DRAWINGS BY ARCHITECT/STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS. 16. WHERE A SECTION OR DETAIL IS SHOWN OR DETAILED FOR ONE CONDITION, IT SHALL APPLY TO ALL SIMILAR AND LIKE CONDITIONS. DETAILS LABELED "TYPICAL" ON THE STRUCTURAL DRAWINGS APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR. THE CONTRACTOR SHALL CONSIDER ALL OF THE CONTRACT DOCUMENTS IN DETERMINING SIMILAR AND LIKE CONDITIONS. 17. STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR THE DESIGN OF STEEL STAIRS, HANDRAILS, BALCONY WINDOW WALL SYSTEMS, COLD-FORMED METAL FRAMING, OR OTHER SYSTEMS NOT SHOWN IN THE STRUCTURAL DOCUMENTS. SUCH SYSTEMS SHALL BE DESIGNED, FURNISHED, AND INSTALLED BY OTHERS AS REQUIRED BY OTHER PORTIONS OF THE CONTRACT DOCUMENTS.	 4. EARTHQUAKE LOADS: Mapped Maximum Considered Earthquake Spectral Response Accelerations: Short Period, SS = 0.48 S1 = 0.17 1-Second Period, SMS = 0.55 + SMS1 * 0.35 SOS = 0.37 + SOS1 * 0.23 Tl = 12 + ROOM * 0.22 V530 = 260 Importance Factor: 1.5 Seismic Design Category: D 5. ESTIMATED DEFLECTIONS (IN INCHES) ARE AS FOLLOWS: LIVE LOAD DEAD + LIVE LOAD ROOF MEMBERS: L/360 OR IN. /L/360 FLOOR MEMBERS: L/240 /L/240 WHERE, L = SPAN LENGTH (IN INCHES) BETWEEN CENTERLINES OF SUPPORTS. (FOR CANTILEVERS, L IS TWICE THE LENGTH OF THE CANTILEVER.) 8. NO PROVISIONS HAVE BEEN MADE FOR FUTURE HORIZONTAL OR VERTICAL EXPANSION. 9. RENOVATION PROJECTS MAY REQUIRE FIELD DIRECTED MODIFICATIONS BASED ON EXISTING STRUCTURAL INFORMATION. PROVIDE MODIFICATIONS OR ADDITIONS TO THE EXISTING STRUCTURE BASED ON FIELD OBSERVATIONS OR REPORTS. THE CONTRACTOR SHALL DOCUMENT ANY FIELD DIRECTED MODIFICATIONS AND SHALL SUBMIT THE NECESSARY DOCUMENTATION TO THE OWNER.
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FOUNDATION

1. IN LIEU OF THE OWNER'S PERGUAGE NOT TO RETAIN A GEOTECHNICAL ENGINEER TO PERFORM A SURFACE SUBSURFACE INVESTIGATION, THE FOLLOWING SOIL PARAMETERS HAVE BEEN ASSUMED:

- ALLOWABLE BEARING PRESSURE = 1500 PSF

- SUBGRADE MODULUS = 100 PCI

2. STRUCTURAL TESTING/INSPECTION AGENCY SHALL CERTIFY THE BEARING MEDIUM.

3. FOOTINGS ~ SOIL BEARING
ALL COLUMN AND WALL FOOTINGS BEARING ON SOIL SHALL BE CAPABLE OF SUPPORTING AN ALLOWABLE BEARING PRESSURE OF 1500 PSF.

3.1 NO FOOTINGS SHALL BEAR ON ROCK, UNDERCUT ROCK A MINIMUM OF 2 FEET BELOW BOTTOM OF FOOTING AND REPLACE WITH STRUCTURAL FILL.

4. PROOFROLL BUILDING AREAS WITH TWO COMPLETE COVERAGES OF A LOADED DUMP/TRUCK OR SCRAPER REPLACE SOFT AREAS WITH COMPACTED STRUCTURAL FILL AS REQUIRED BY THE SPECIFICATIONS.

5. DENSITY BUILDING AREAS AND A MINIMUM OF 10'-0" OUTSIDE THE BUILDING PERIMETER USING A VIBRATORY ROLLER (SEE SPECIFICATIONS).

6. NORTH RETAINING WALL:

a. TEMPORARY SHORING OR SHOTCRETE MAY BE NECESSARY TO STABILIZE THE FACE OF THE EXCAVATION AND THE ROAD DURING CONSTRUCTION.

b. COORDINATE CONSTRUCTION OF WALL WITH CITY ROAD AND EMERGENCY OFFICIALS.

REINFORCEMENT

1. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, UNLESS NOTED OTHERWISE.

2. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 AND HAVE MINIMUM SIDE AND END LAPPS OF 8".

3. SUBMIT SHOP DRAWINGS WHICH ADEQUATELY DEPICT THE REINFORCING BAR SIZES AND PLACEMENT WRITTEN DESCRIPTION OF REINFORCEMENT WITHOUT ADEQUATE SECTIONS, ELEVATIONS, AND DETAILS IS NOT ACCEPTABLE.

4. PROVIDE DOWELS FROM FOUNDATIONS THE SAME SIZE AND NUMBER AS THE VERTICAL WALL OR COLUMN REINFORCING, UNLESS NOTED OTHERWISE.

5. REINFORCING PLACEMENT

5.1 COVER

PERMANENTLY EXPOSED TO EARTH:
CAST AGAINST THE EARTH

3" CLEAR

EXPOSED TO EARTH OR WEATHER:
FOR BARS LARGER THAN A NO. 5 BAR
NO. 5 BARS OR SMALLER

2" CLEAR
1-1/2" CLEAR

NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:
WALLS
SLABS
COLUMN TIES
BEAM/GIRDER STIRRUPS

3/4" CLEAR
3/4" CLEAR
1-1/2" CLEAR
1-1/2" CLEAR

5.3 MASONRY REINFORCING

REINFORCING STEEL SHALL BE PLACED IN THE CENTER OF CMU CELLS, UNLESS NOTED OTHERWISE.

IF REINFORCING STEEL IS NOTED TO BE PLACED OTHER THAN THE CENTER OF THE CELL, PLACE BAR TO ACHIEVE 2" CLEAR COVER BETWEEN REINFORCING AND OUTSIDE FACE OF CMU BLOCK.

6. REINFORCEMENT SHALL BE SPLICED ONLY AT LOCATIONS SHOWN OR NOTED IN THE STRUCTURAL DOCUMENTS. EXCEPT REINFORCEMENT MARKED "CONTINUOUS" CAN BE SPLICED AT LOCATIONS DETERMINED BY CONTRACTOR, SPLICES AT OTHER LOCATIONS SHALL BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. REINFORCING STEEL SPLICES SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

CONCRETE REINFORCEMENT: CLASS B TENSION LAP

MASONRY REINFORCEMENT: 48 BAR DIAMETERS

7. ADHESIVE FOR REINFORCING DOWELS IN EXISTING CONCRETE SHALL BE A HIGH-STRENGTH EPOXY INJECTION SYSTEM EITHER:

HILTI HIT-HY 200

SIMPSON SET-30

RED HEAD (ITW) C6+

POWERS ACIO-C GOLD

INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

MINIMUM EMBEDMENT LENGTH SHALL BE 12 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

CAST-IN-PLACE CONCRETE

1. CONCRETE WORK SHALL CONFORM TO ACI 318 AND CRSI STANDARDS.

2. CONCRETE SHALL HAVE THE FOLLOWING MINIMUM SPECIFIED 28-DAY COMPRESSIVE STRENGTH FOR NORMAL WEIGHT STRUCTURAL CONCRETE = 4000 PSI.

3. PIPES OR DUCTS SHALL NOT EXCEED ONE-THIRD THE SLAB OR WALL THICKNESS UNLESS SPECIFICALLY DETAILED. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION OF SLEEVES, ACCESSORIES, ETC.

4. REFER TO ARCHITECTURAL DRAWINGS FOR MOLDS, GROOVES, ORNAMENTS, CLIPS OR GROUNDS REQUIRED TO BE ENCASED IN CONCRETE AND FOR LOCATION OF FLOOR FINISHES AND SLAB DEPRESSIONS.

5. CONSTRUCTION JOINT LOCATIONS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED EXCEPT THOSE SHOWN ON THE STRUCTURAL DRAWINGS.

6. DEFECTIVE AREAS IN CONCRETE INCLUDING, BUT NOT LIMITED TO, HONEY-COMBING, SPALLS, AND CRACKS WITH WIDTHS EXCEEDING 0.01 INCH SHALL BE REPAIRED. EXTENT OF DEFECTIVE AREA TO BE DETERMINED BY THE STRUCTURAL ENGINEER.

7. CONSTRUCTION JOINTS IN FLOORS SHALL BE LOCATED WITHIN THE MIDDLE THIRD OF SPANS OF SLABS, BEAMS, AND GIRDERS. JOINTS IN GIRDERS SHALL BE OFFSET A MINIMUM DISTANCE OF TWO TIMES THE WIDTH OF INTERSECTING BEAMS.

CONCRETE MASONRY

1. CONCRETE MASONRY WORK SHALL CONFORM TO ACI 530, BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES AND ACI 530.1, SPECIFICATION FOR MASONRY STRUCTURES.

2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE MASONRY SHALL BE F'm = 1,500 PSI.

3. MORTAR SHALL BE TYPE S AND SHALL COMPLY WITH THE BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY.

4. CONCRETE MASONRY UNITS SHALL BE GROUTED WITH 2,500 PSI COARSE GROUT AS SHOWN IN THE STRUCTURAL DOCUMENTS. GROUT SHALL CONFORM TO ASTM C476.

5. PROVIDE HORIZONTAL JOINT REINFORCEMENT WITH NO. 9 GAGE LONGITUDINAL WIRES AT 16" VERTICALLY UNLESS NOTED OTHERWISE. PROVIDE SPECIAL ACCESSORIES FOR CORNERS, INTERSECTIONS, ETC.

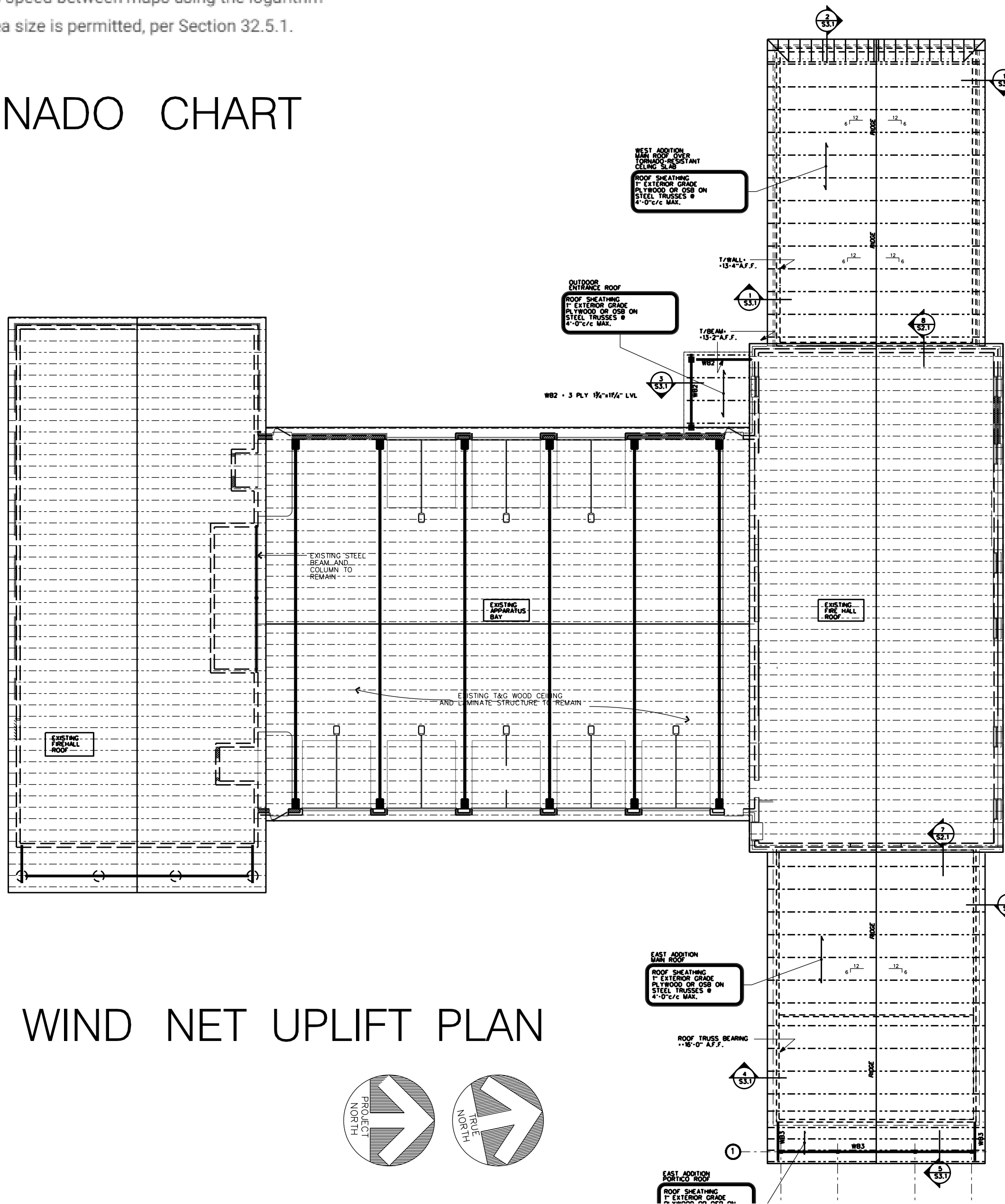
6. PROVIDE OPEN BOTTOM BEAM BLOCK UNITS WITH 3" DEEP MINIMUM WEB OPENINGS AT HORIZONTAL REINFORCEMENT LOCATIONS. A MINIMUM CLEAR SPACE OF ONE

RC = IV					
(MRI =	MRI =	MRI =	MRI =	MRI =	
3,000	10,000	100,000	1,000,000	10,000,000	
years)	years	years	years	years	

Effective Plan Area (ft ²)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)	Tornado Speed (mph)
A _e = 1	V _I = 92	V _I = 121	V _I = 172	V _I = 213	V _I = 253
A _e = 2,000	V _I = 94	V _I = 122	V _I = 173	V _I = 219	V _I = 255
A _e = 10,000	V _I = 96	V _I = 123	V _I = 173	V _I = 220	V _I = 256
A _e = 40,000	V _I = 101	V _I = 131	V _I = 180	V _I = 223	V _I = 261
A _e = 100,000	V _I = 105	V _I = 134	V _I = 182	V _I = 226	V _I = 262
A _e = 250,000	V _I = 112	V _I = 141	V _I = 187	V _I = 231	V _I = 263
A _e = 1,000,000	V _I = 124	V _I = 151	V _I = 194	V _I = 238	V _I = 271
A _e = 4,000,000	V _I = 134	V _I = 162	V _I = 207	V _I = 247	V _I = 282

To select the appropriate tornado hazard map, the effective plan area, A_e, of the building, other structure, or facility, shall be determined in accordance with Section 32.5.4 and shall be rounded up to the next available mapped A_e. Alternatively, linear interpolation of tornado speed between maps using the logarithm of the effective plan area size is permitted, per Section 32.5.1.

TORNADO CHART



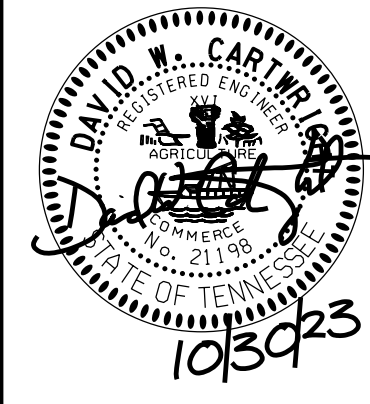
WIND NET UPLIFT PLAN

HARDENED TORNADO SHELTER WING
EF-3 (165 mph)
UPLIFT ON HARD ROOF = -102 psf
NET UPLIFT ON STEEL JOISTS = -59 psf

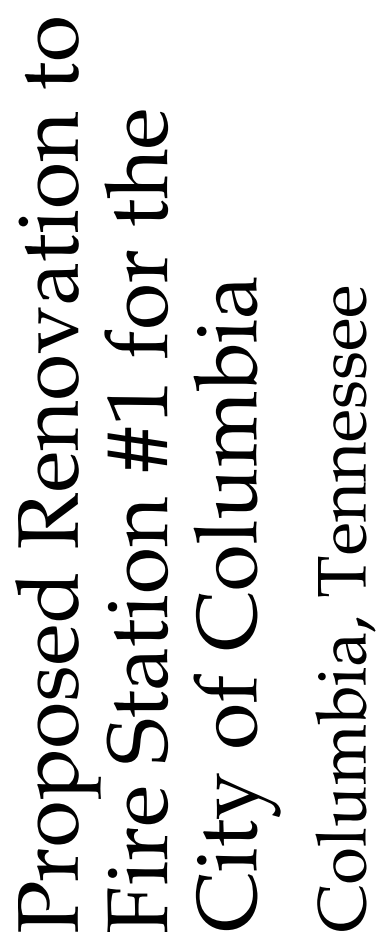
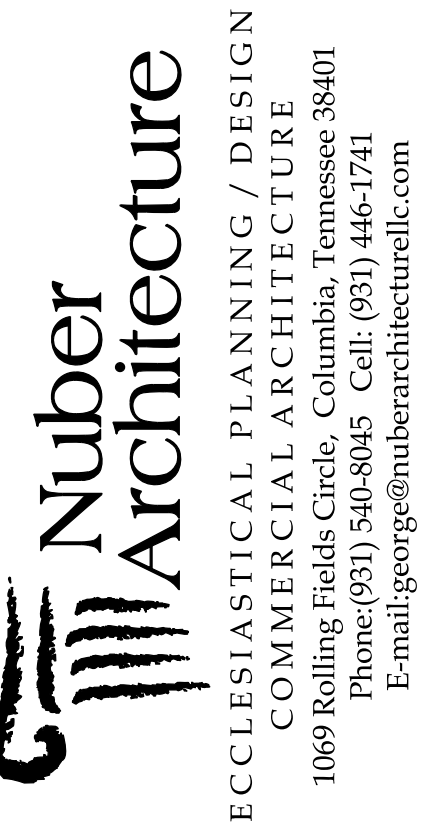
EXISTING 1977 FIREHALL STRUCTURE
(1973 SOUTHERN BUILDING CODE)
Wind Horizontal Pressure = + or - 10 psf
Design Wind Uplift = -12.5 psf

NEW ADDITION WING
DESIGN WIND = 117 mph
NET UPLIFT ON STEEL TRUSSES = 35 psf

SPECIAL INSPECTION/ INDEPENDENT LABORATORY OBSERVATION PROGRAM				
TYPES OF WORK	CONTINUOUS/FULL LAB OBSERVATION	PERIODIC LAB OBSERVATION	NOTIFY ENGINEER (48 HOUR MIN NOTICE)	COMMENTS
SOIL			X	NOTIFY ENGINEER BEFORE FIRST LIFT OF STRUCTURAL FILL
EXISTING SOIL:				
STANDARD PROCTOR		X		1 FOR EACH SOIL TYPE IDENTIFIED BY LAB
IN-SITU MOISTURE CONTENT AND DENSITY		X		1 TEST PER 3,000 SF OF SCARIFIED SUBGRADE (3 MIN.)
SELECT FILL:				
STANDARD PROCTOR		X		1 FOR EACH SOURCE OF SELECT FILL USED
ATTERBERG LIMITS		X		1 FOR EACH SOURCE OF SELECT FILL USED
IN-SITU MOISTURE CONTENT AND DENSITY		X		1 TEST PER 3,000 SF FOR EACH LIFT (3 MIN/LIFT)
CONCRETE			X	NOTIFY ENGINEER BEFORE FIRST SLAB POUR
REBAR SIZE, SPLICE LENGTH, AND LOCATION		X		GENERAL CONFORMANCE -- BEFORE EVERY POUR
VERIFY BATCH TICKETS MATCH APPROVED MIX DESIGN		X		ALL SAMPLED TRUCKS -- BEFORE THEY ARE POURED
5 CYLINDERS, SLUMP, AIR CONTENT, & TEMPERATURE		X		EVERY 50 CUBIC YARDS (AT DISCHARGE POINT)
FORMWORK FOR SHAPE, LOCATION, & DIMENSIONS		X		GENERAL CONFORMANCE -- BEFORE EVERY POUR
STEEL				
ALL MATERIAL VERIFICATION (SIZES, GRADES, LOCATIONS)		X		MANUFACTURER CERTIFICATE OF COMPLIANCE AND CERTIFIED MILL REPORTS TO BE VERIFIED.
EMBEDDED ANCHOR BOLTS		X		POSITION, EMBEDDMENT, PROJECTION, LEVELNESS
EPOXY ANCHOR BOLTS	X			POSITION, EMBEDDMENT, PROJECTION, LEVELNESS SEE NOTE #5
HIGH STRENGTH BOLTING		X		BOLTED MOMENT CONNECTIONS CRITICAL
FIELD WELDING (<3/16" FILLETS)		X		CHECK WELDER CERTIFICATIONS
ROOF DECK ATTACHMENT		X		
OBSERVATION PROGRAM NOTES:				
1. DUTY OF THE BUILDING OFFICIAL: PER THE 2009 INTERNATIONAL BUILDING CODE, IT IS THE RESPONSIBILITY OF THE BUILDING OFFICIAL TO REVIEW THIS PROGRAM FOR CONFORMANCE WITH THE BUILDING CODE AND NOTIFY THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, BEFORE ISSUING A BUILDING PERMIT. IF ANY ADDITIONAL OBSERVATIONS WILL BE REQUIRED.				
2. DUTIES OF THE CONTRACTOR INCLUDE:				
A. PROVIDE A COPY OF THIS PROGRAM TO THE LAB BEFORE THE FIRST VISIT.				
B. NOTIFY THE LAB WHEN WORK IS READY FOR EACH OBSERVATION.				
C. MAKE ALL WORK ACCESSIBLE FOR OBSERVATION.				
D. KEEP A COPY OF ALL PLANS & APPROVED SUBMITTALS ON THE SITE.				
E. NOTIFY THE LAB WHEN THE PROJECT HAS BEEN COMPLETED, AND REQUEST A FINAL REPORT FROM THE LAB.				
3. DUTIES OF THE LABORATORY INCLUDE:				
A. TECHNICIANS SHALL ONLY PERFORM OBSERVATIONS THEY ARE QUALIFIED TO PERFORM.				
B. NOTIFY THE ENGINEER IF DEVIATIONS FROM THE PLANS ARE OBSERVED WHEN IT APPEARS THAT THEY WILL NOT BE CORRECTED.				
C. FURNISH REPORTS FOR EACH OBSERVATION TO THE BUILDING OFFICIAL, ARCHITECT, ENGINEER, AND CONTRACTOR.				
D. SUBMIT A FINAL REPORT STATING ALL REQUIRED OBSERVATIONS HAVE BEEN MADE AND REPORTED.				
4. THE INDEPENDENT LABORATORY SHALL BE HIRED BY THE OWNER				
5. ALL EPOXY ANCHOR BOLTS TO BE CHECKED BY INDEPENDENT TESTING AGENCY PULL TEST 1 BOLT PER 3 SETS TO WORKING LOAD OF 25% OF CAPACITY.				

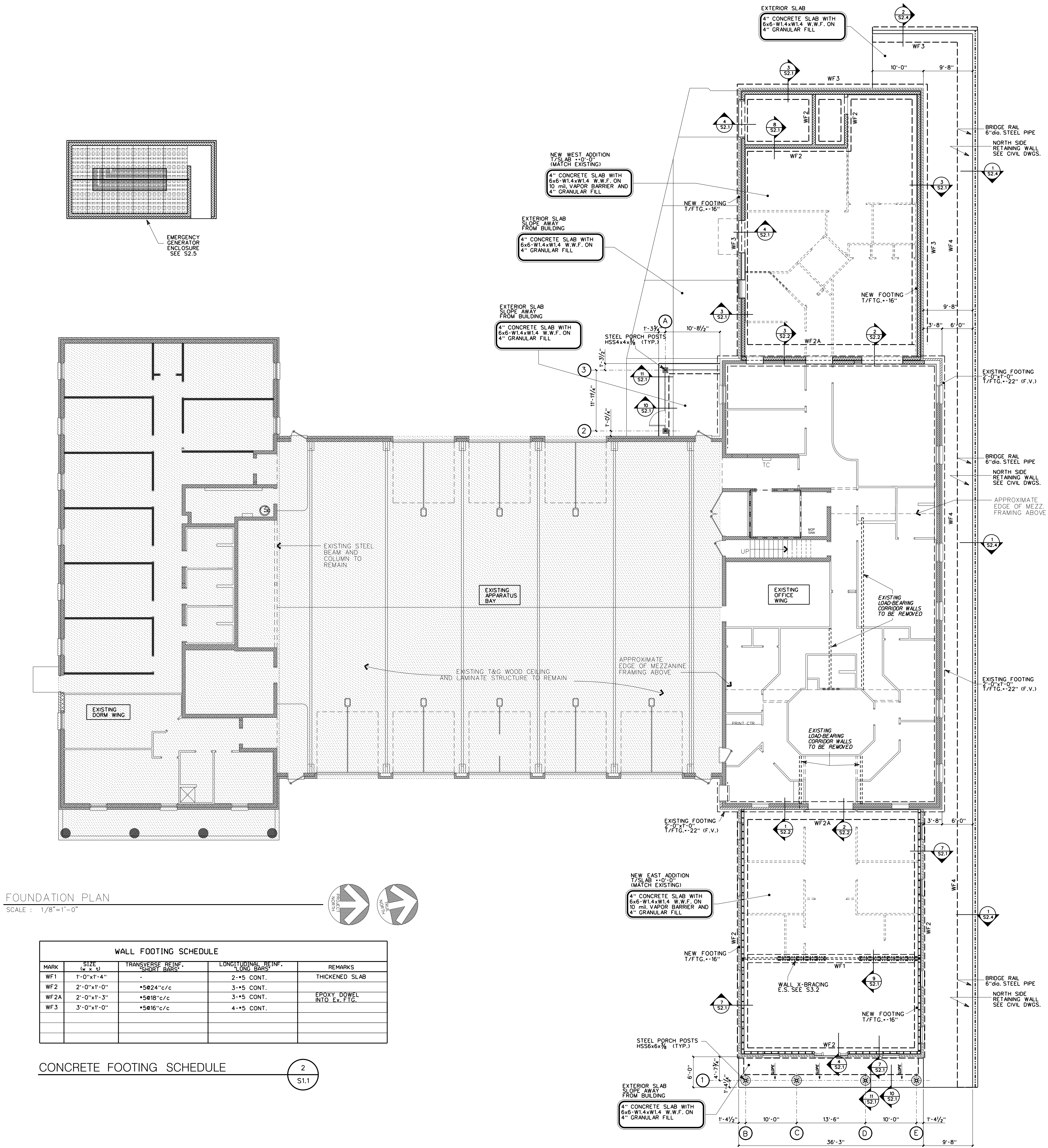


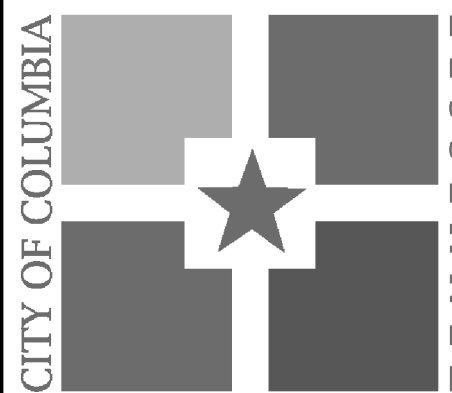
Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #: _____	FOR REVIEW ONLY	1. _____
Dr. By: _____	FOR ESTIMATING/BIDDING ONLY	2. _____
Ck. By: D.Carwright	FOR CONSTRUCTION	3. _____
File #: _____	DATE: 10/30/23 ISSUED BY: Carwright	



S1.1 Foundation Plan

Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
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Ck. By: D.Carwright	☒ FOR ESTIMATING/BIDDING ONLY	3
File #:	☒ FOR CONSTRUCTION	4
	DATE: 10/30/23 ISSUED BY: Carwright	

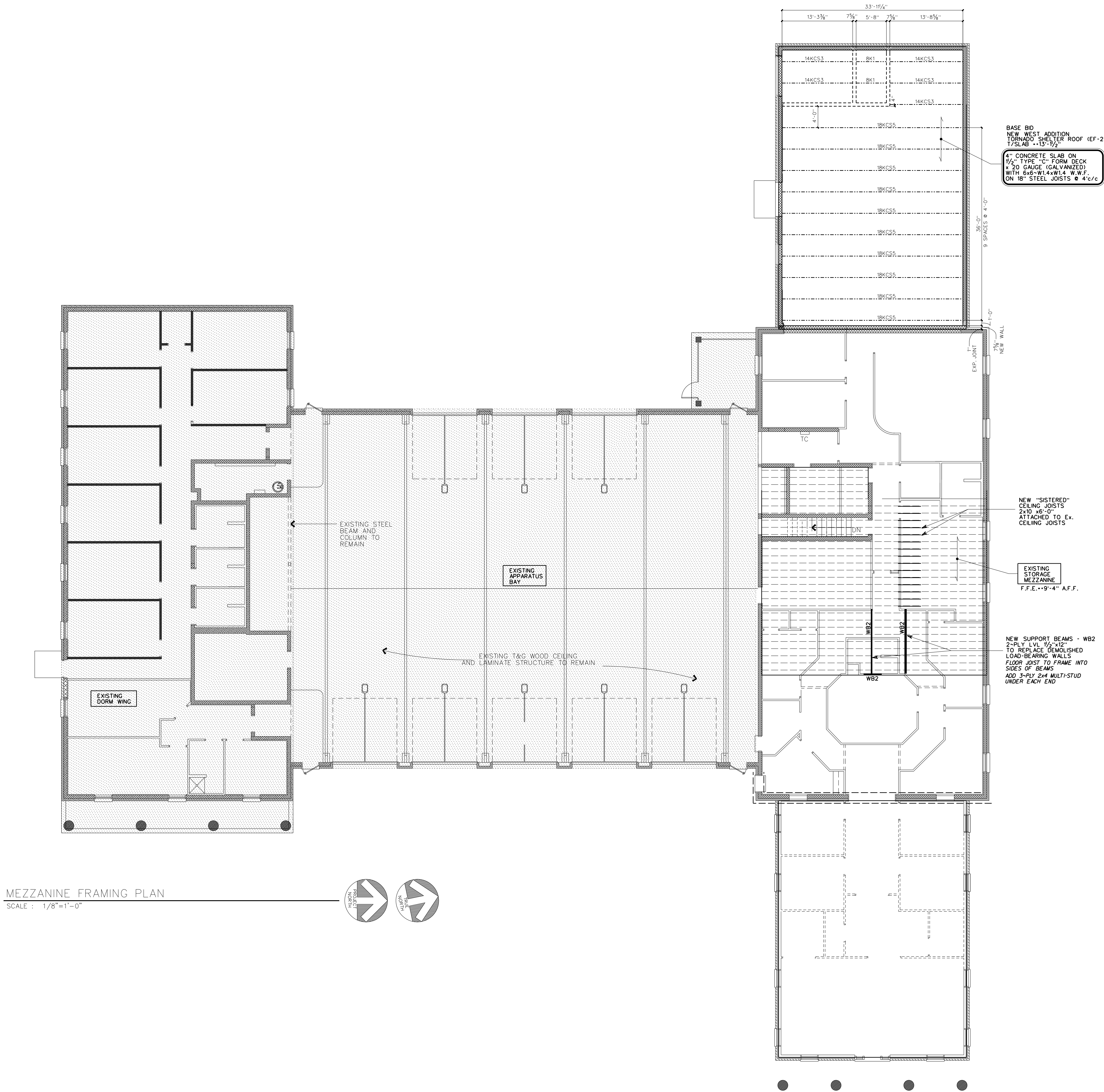




Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

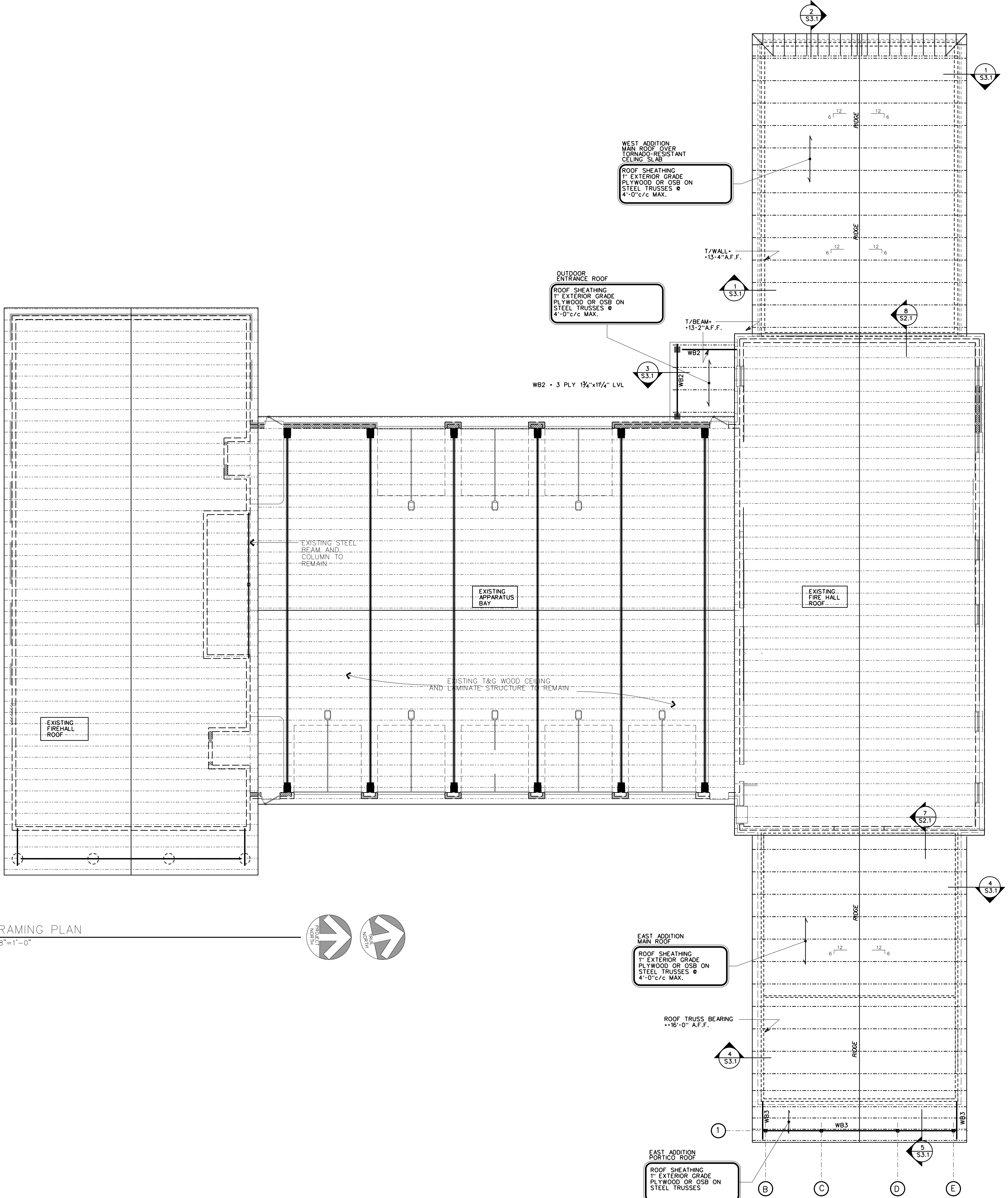
S1.2 Mezzanine Framing Plan

Date:	10-30-2023	Revisions:	
Job #:		☐ FOR REVIEW ONLY	△
Dr. By:		☐ FOR PERMIT ONLY	△
Ck. By: D Carwright		☒ FOR ESTIMATING/BIDDING ONLY	△
		☐ FOR CONSTRUCTION	△
File #:		DATE: 10/30/23 ISSUED BY: Carwright	△



MEZZANINE FRAMING PLAN
SCALE : 1/8"=1'-0"

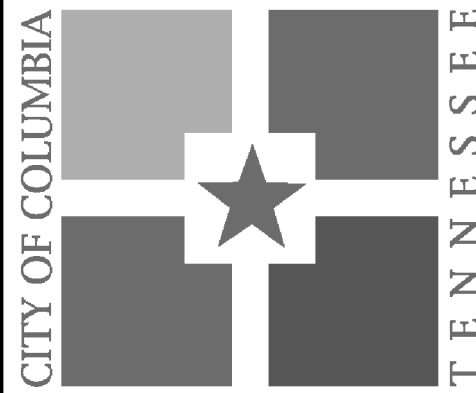
ROOF FRAMING PLAN
SCALE : 1/8"=1'-0"



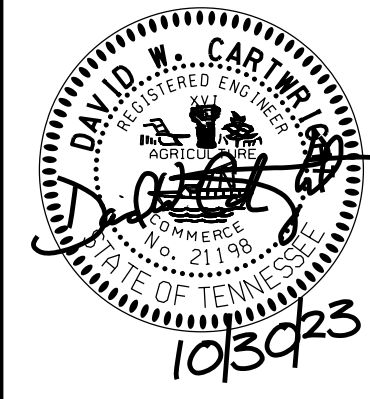
S1.3 Roof Framing Plan

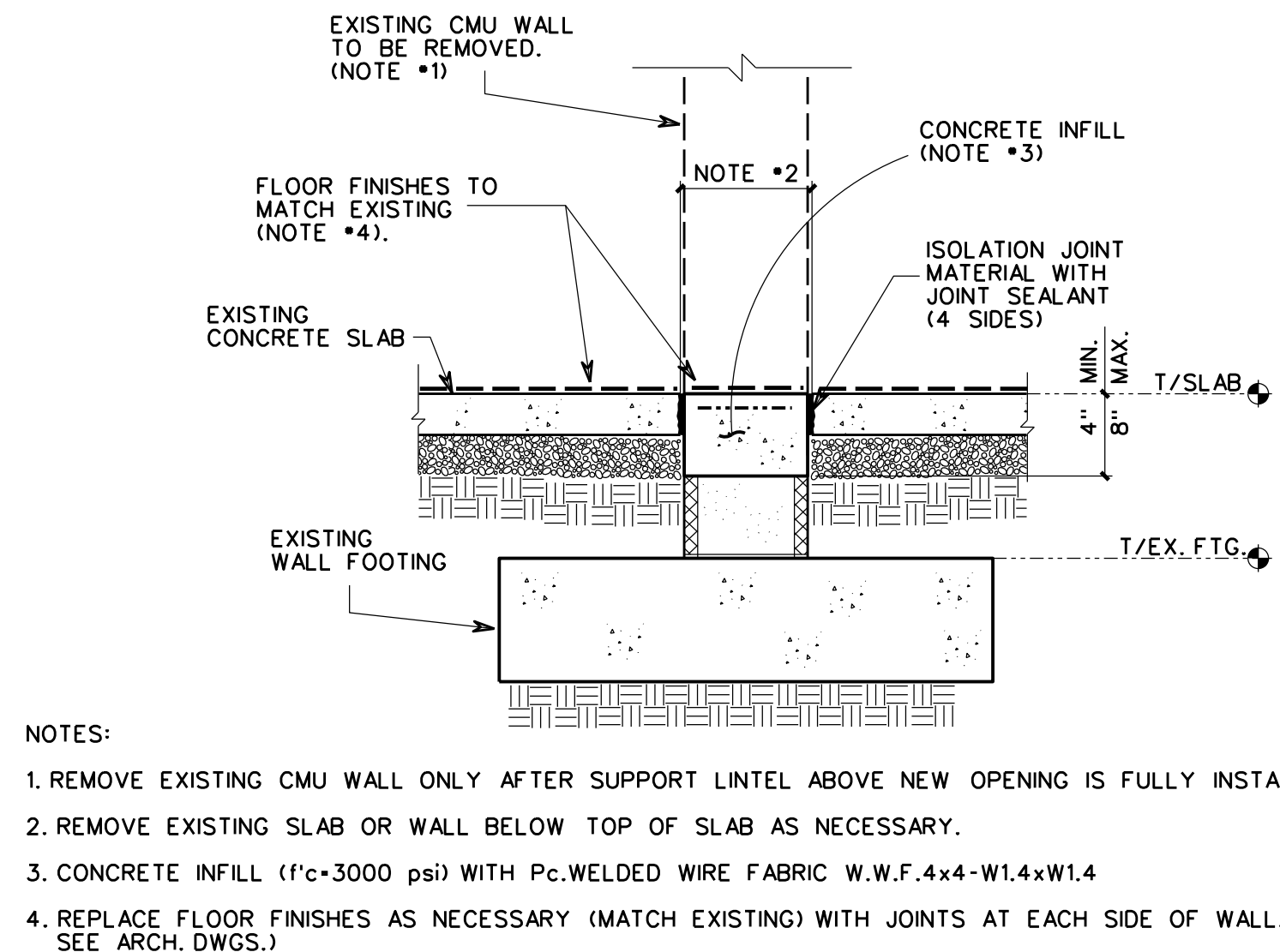
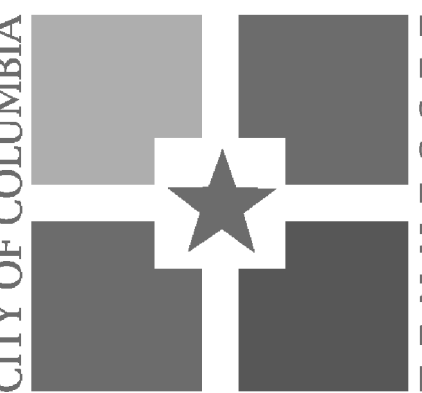
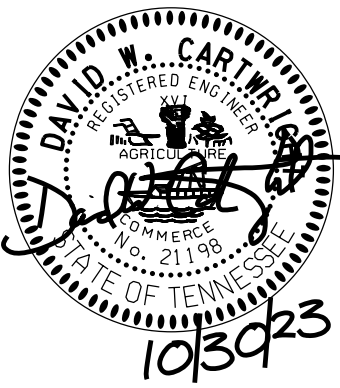
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Job #:		☐ FOR REVIEW ONLY	☐ A
Dr. By:		☐ FOR ESTIMATING/BIDDING ONLY	☐ B
Ck. By:	D.Carwright	☒ FOR CONSTRUCTION	☐ C
File #:		DATE: 10/30/23 ISSUED BY: Carwright	☐ D

Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee



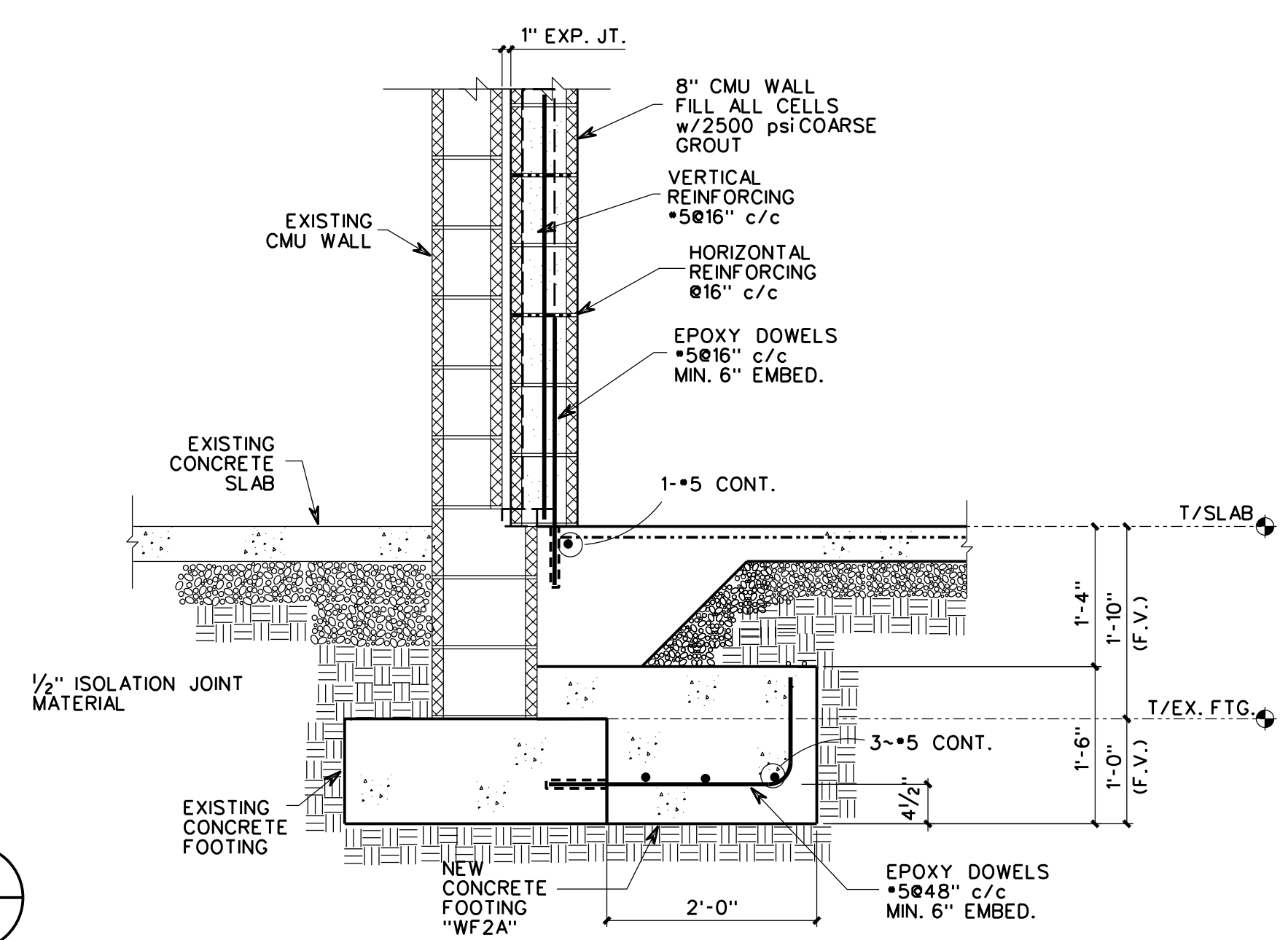
Nuber Architecture
ECCELESTICAL PLANNING / DESIGN
COMMERCIAL ARCHITECTURE
1069 Rolling Fields Circle, Columbia, Tennessee 38401
Phone: (931) 544-8045 Cell: (931) 446-1741
E-mail: george@nuberarchitecturellc.com





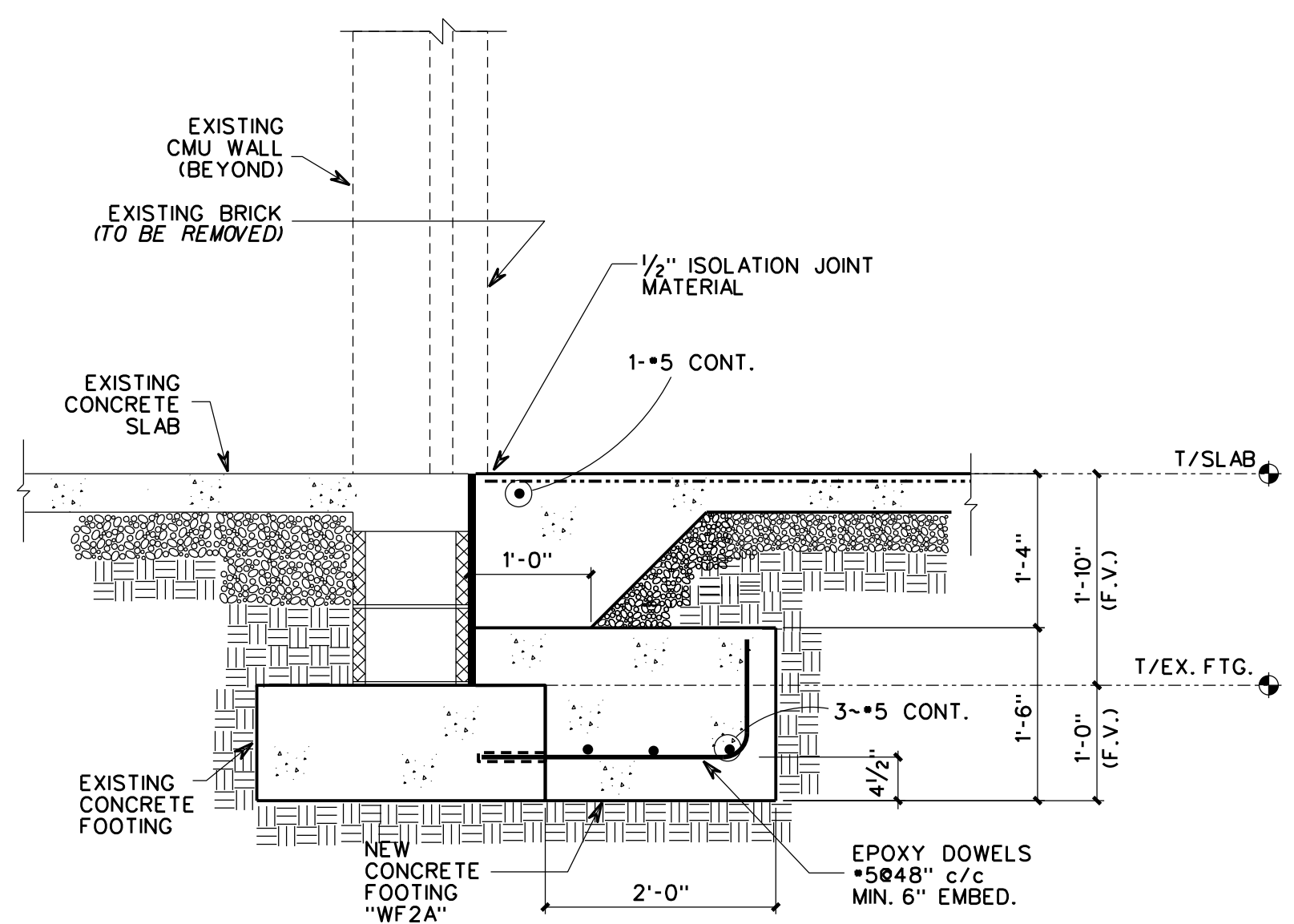
TYPICAL SECTION AT EXISTING BUILDING
AT NEW OPENING IN INTERIOR WALL

8
S2.2



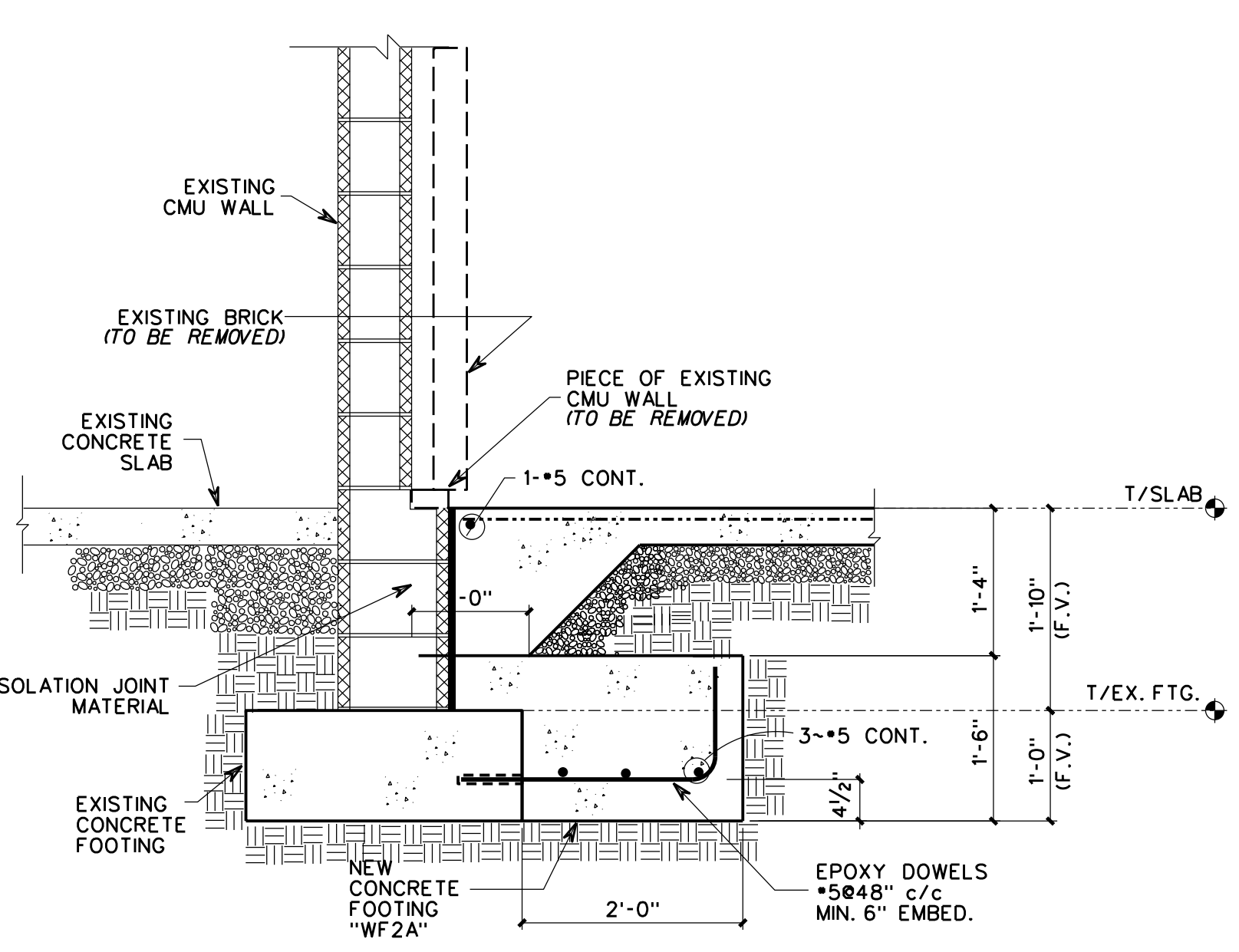
SECTION AT EXISTING BUILDING
WEST SIDE

3
SCALE: 3/4" = 1'-0" S2.2



SECTION AT EXISTING BUILDING
AT DOORWAY

2
SCALE: 3/4" = 1'-0" S2.2



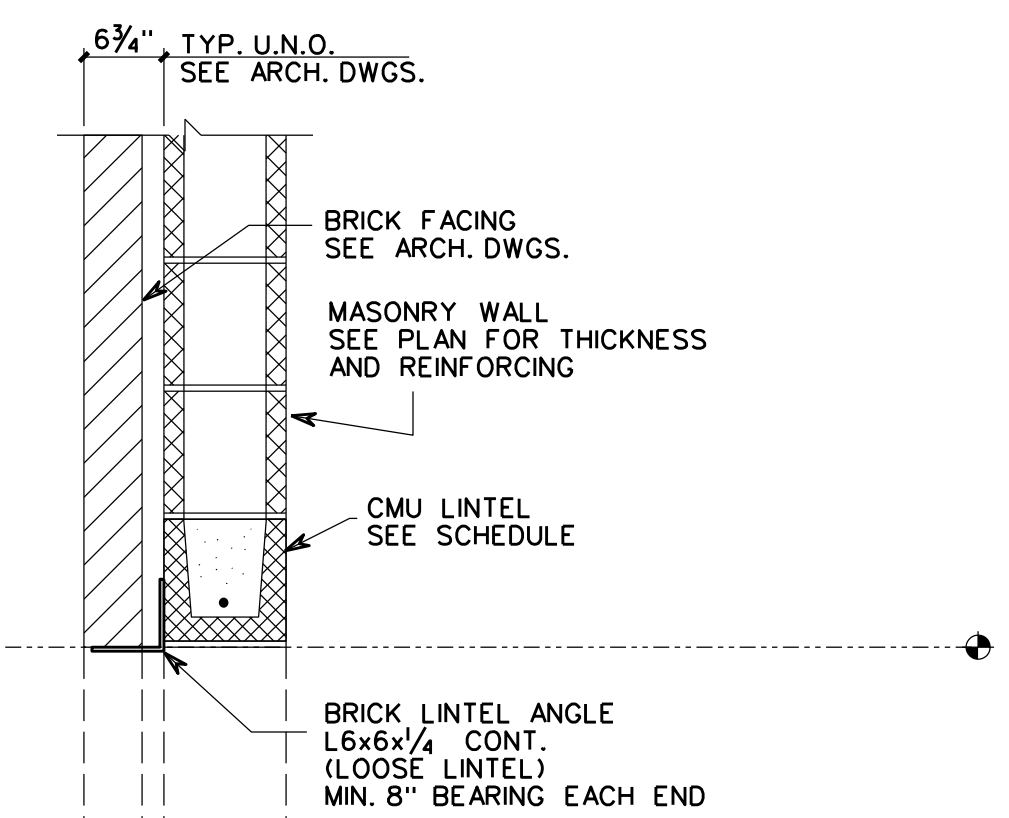
SECTION AT EXISTING BUILDING
EAST SIDE

1
SCALE: 3/4" = 1'-0" S2.2

CMU LINTEL BEAM SCHEDULE			
WALL OPENING WIDTH OR BEAM MARK	LINTEL DEPTH	REINFORCING	MIN. BEARING LENGTH
UP TO 4'-0"	8"	2-#4 BOTTOM	8"
4'-1" TO 6'-0"	8"	2-#5 BOTTOM	8"
6'-1" TO 8'-0"	16"	2-#5 BOTTOM	16"
8'-1" TO 10'-0"	16"	2-#6 BOTTOM	16"
L4	24"	2-#7 BOTTOM	16"

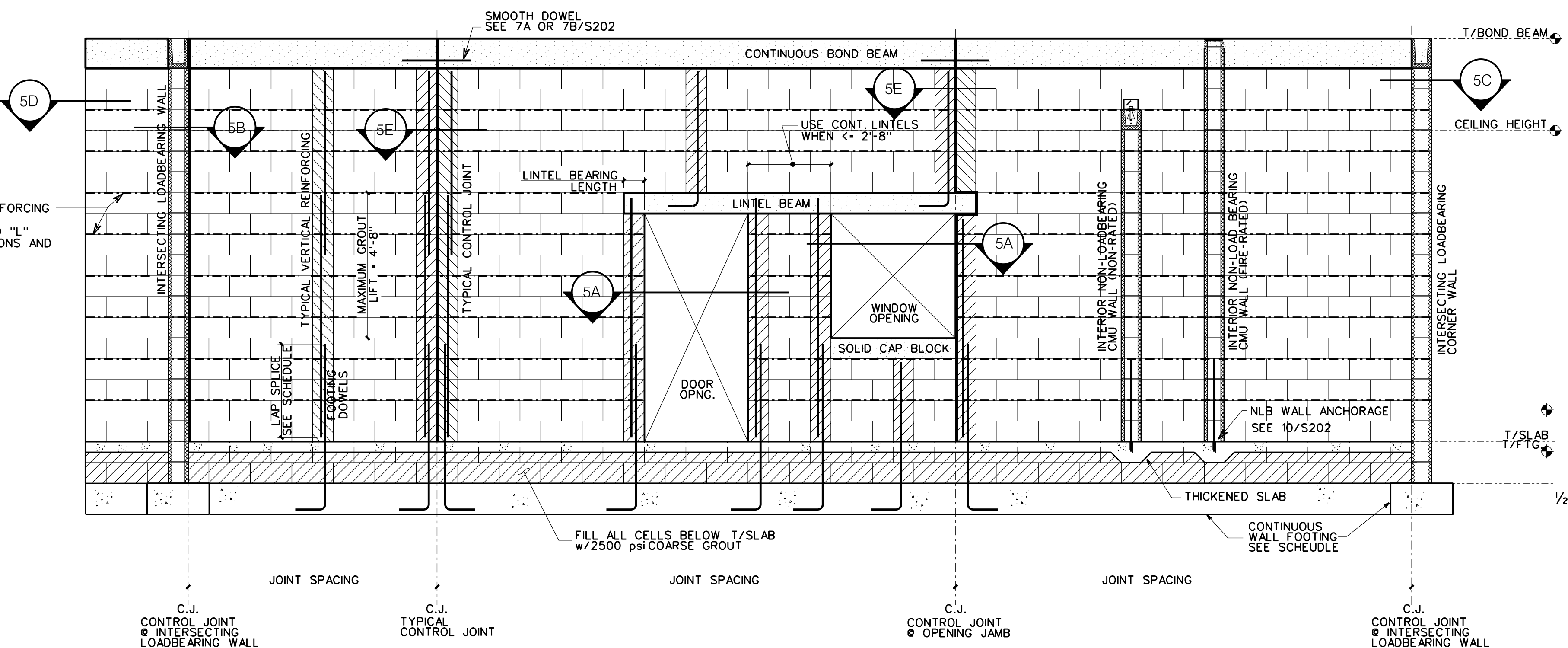
TYP. CMU LINTEL BEAM SCHEDULE

6
S2.2



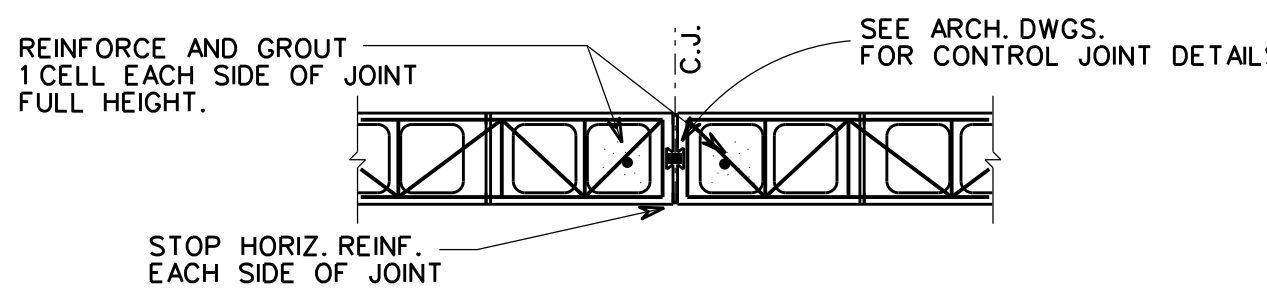
TYPICAL BRICK LINTELS

7
S2.2



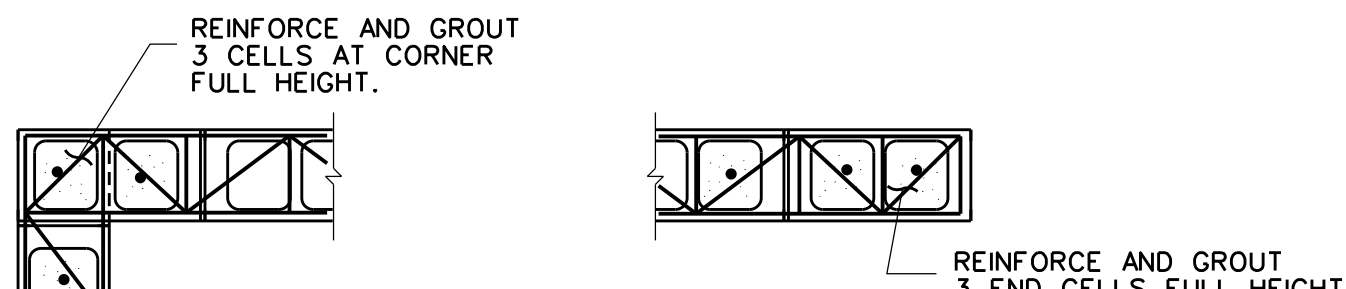
TYPICAL MASONRY WALL REINFORCING

4
S2.2



AT CONTROL JOINTS

5E
S2.2



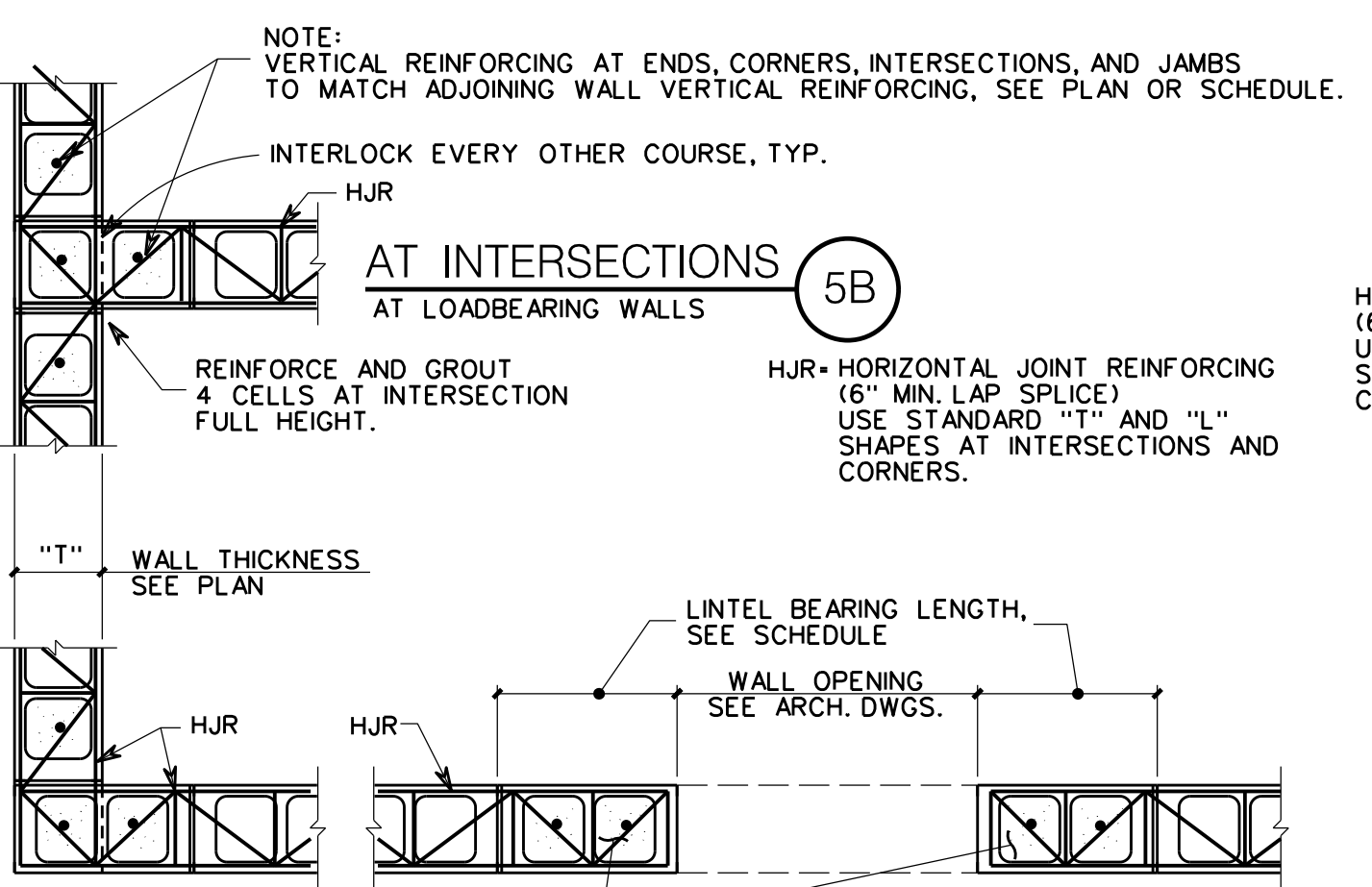
AT CORNERS

5C
S2.2



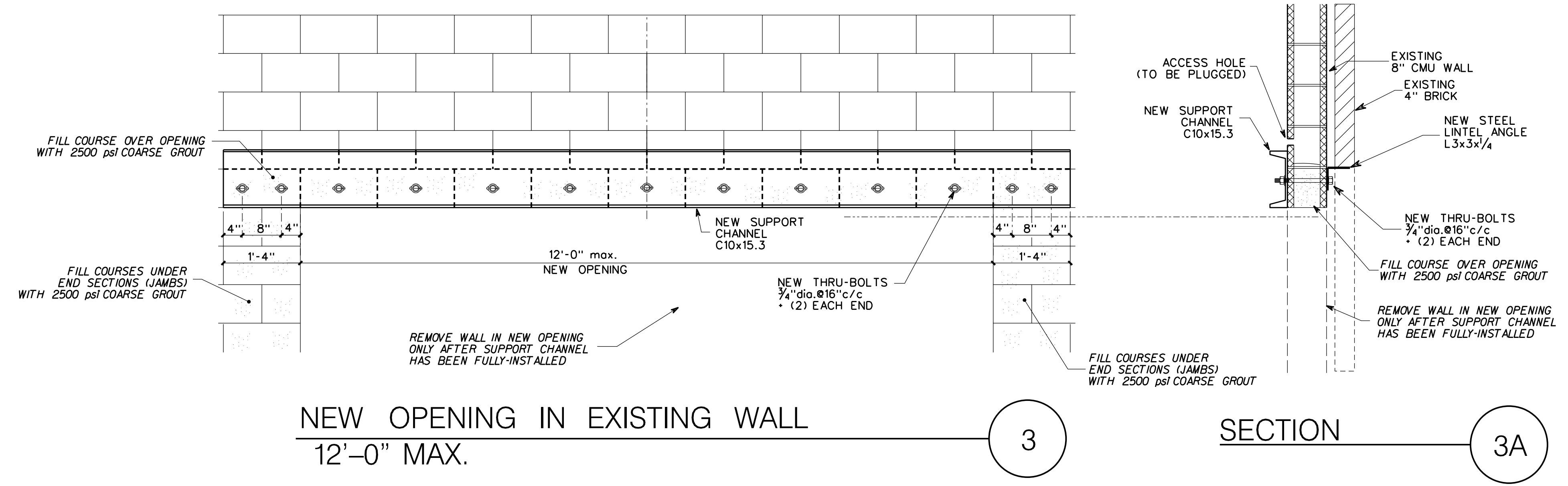
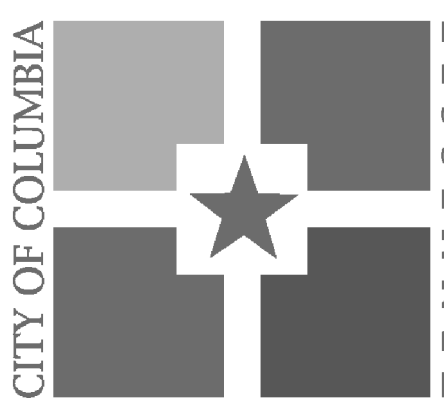
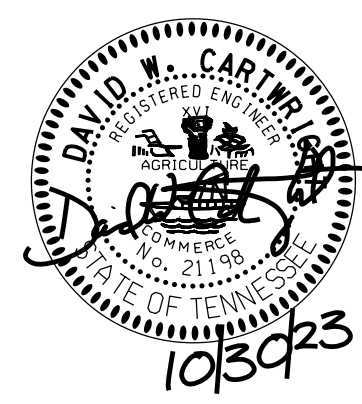
AT ENDS

5D
S2.2

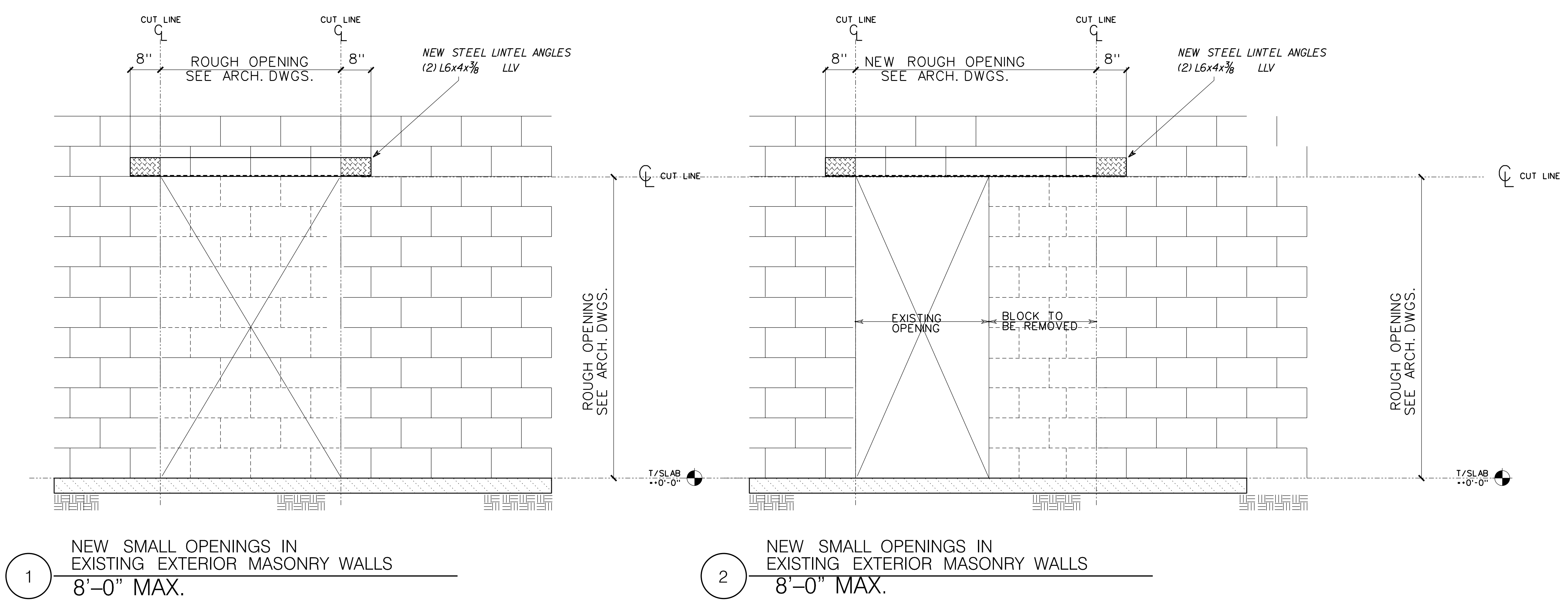


TYPICAL REINFORCING AT
LOADBEARING CMU WALLS

5
S2.2

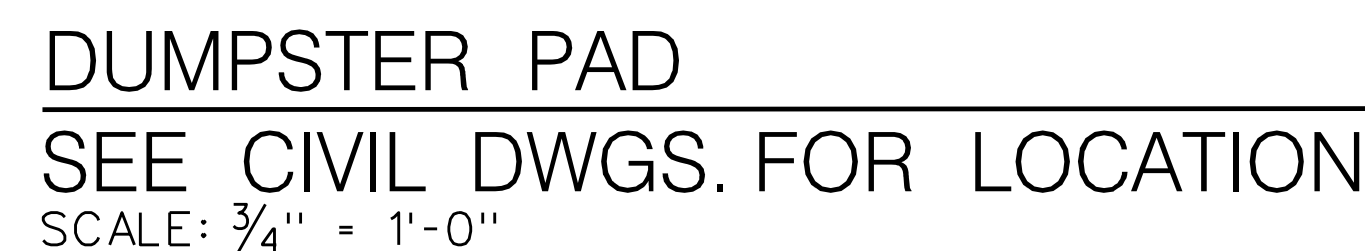


- 1.) CUT LINES 3/8" WIDE x 4" DEEP ALONG HORIZONTAL AND VERTICAL MORTAR JOINTS.
- 2.) INSTALL NEW LINTEL ANGLES
- 3.) REMOVE BLOCK FOR NEW OPENING.
- 4.) INSTALL NEW DOOR FRAME PER MANUFACTURER DWGS.





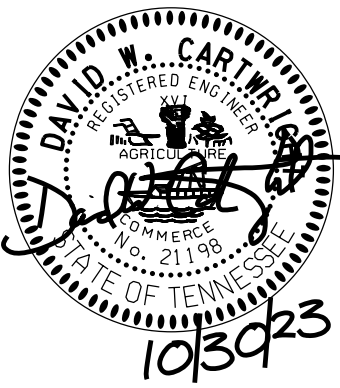
- HELICAL PIERS (4)
(GALVANIZED)



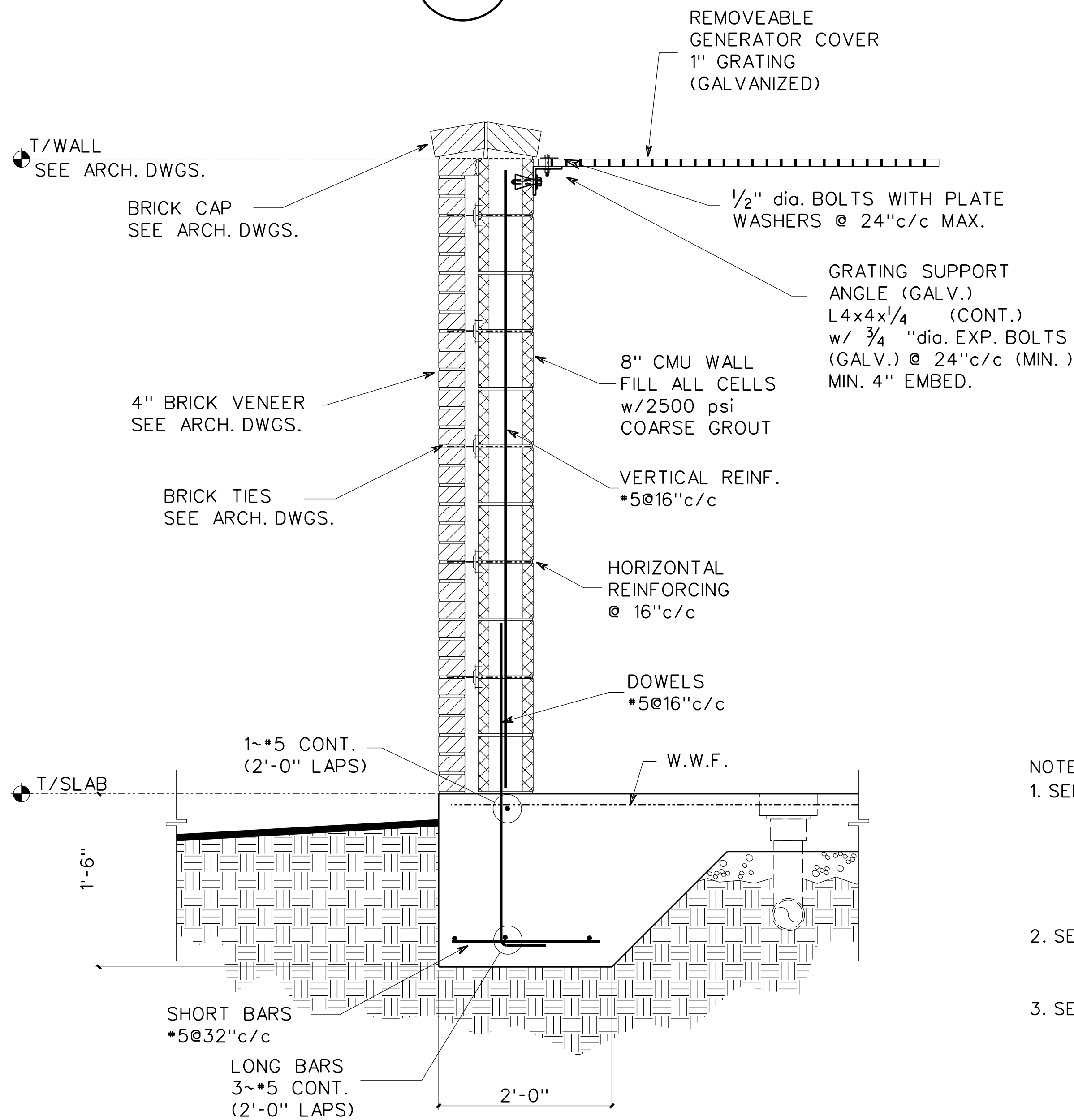
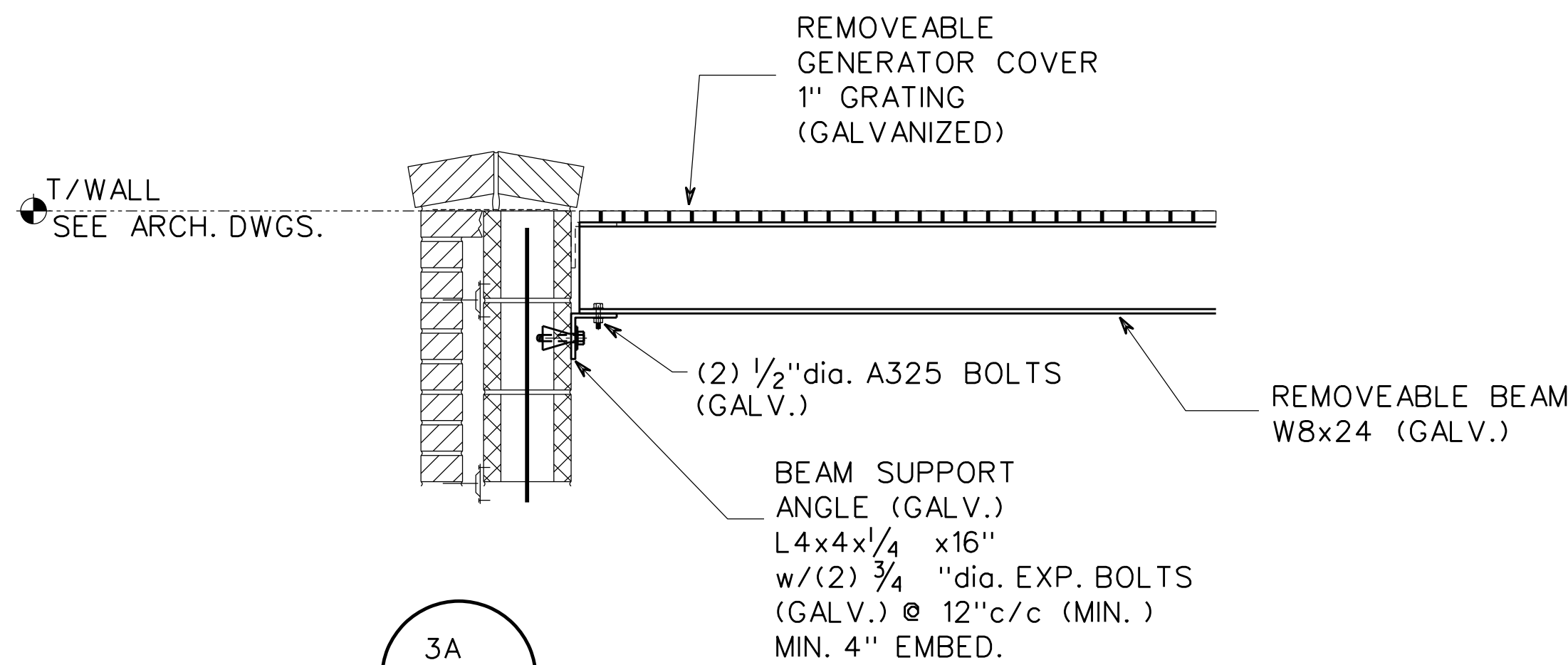
Proposed Renovation to Fire Station #1 for the City of Columbia Columbia, Tennessee

S2.4 Site Structures

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Chk. By:	D.Cawright	☒ FOR BIDDING ONLY	3
File #:		☐ FOR CONSTRUCTION	4
		DATE: 10/30/23 ISSUED BY: Cawright	5



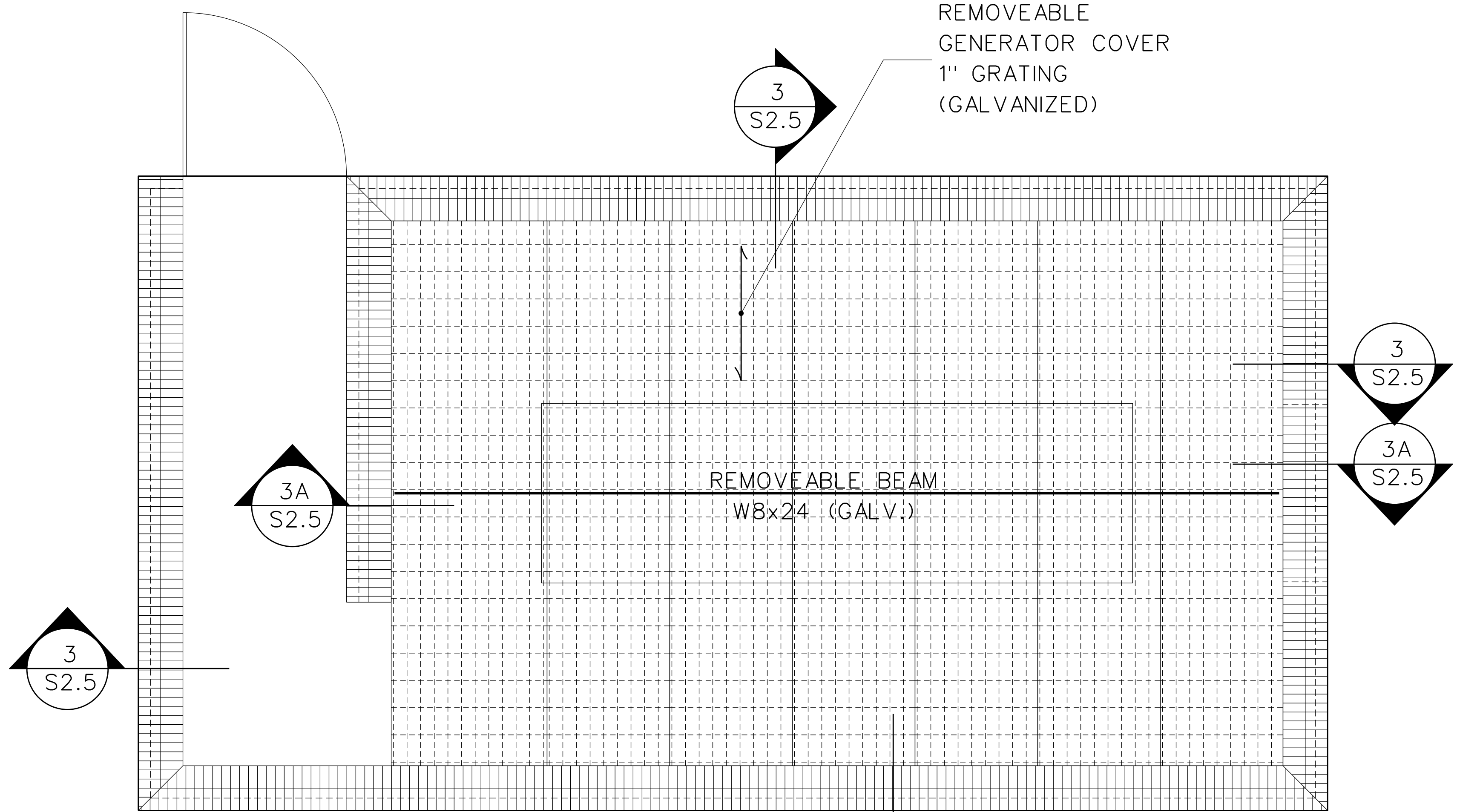
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Job #:		FOR REVIEW ONLY	1
Dr. By:		FOR ESTIMATING / BIDDING ONLY	2
Ck. By:	D.Carwright	FOR CONSTRUCTION	3
File #:		DATE: 10/30/23 ISSUED BY: Carwright	



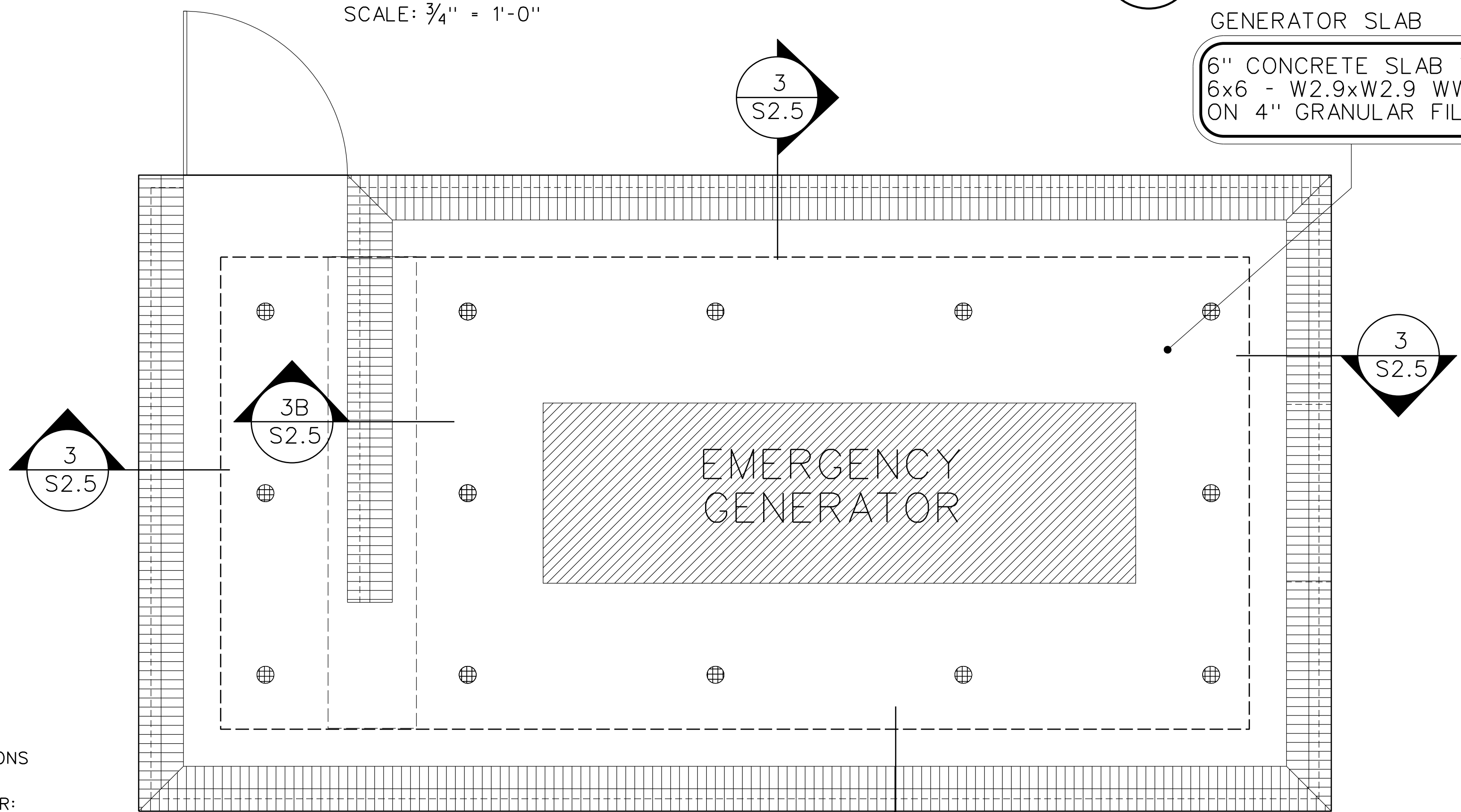
EMERGENCY GENERATOR PAD
SEE CIVIL DWGS. FOR LOCATION
SCALE: 3/4" = 1'-0"

3
S2.5

- NOTES:
- SEE CIVIL DRAWINGS FOR:
 - PAD LOCATION
 - PAD ORIENTATION
 - T/SLAB ELEVATION
 - EXTERIOR GRADE ELEVATIONS
 - SEE ELECTRICAL DRAWINGS FOR:
 - GENERATOR SPECIFICATIONS
 - SEE ARCHITECTURAL DRAWINGS FOR:
 - ALL DIMENSIONS
 - BRICK VENEER DETAILS
 - GATE AND OPEN WINDOW DETAILS
 - GENERATOR SLAB
 - 6" THICK CONCRETE SLAB
 - SLOPE TO DRAINS
 - f'c=4000 psi
 - 6x6~W2.9xW2.9 WELDED WIRE FABRIC
 - BROOM FINISH
 - CLEAR SEALANT/HARDENER

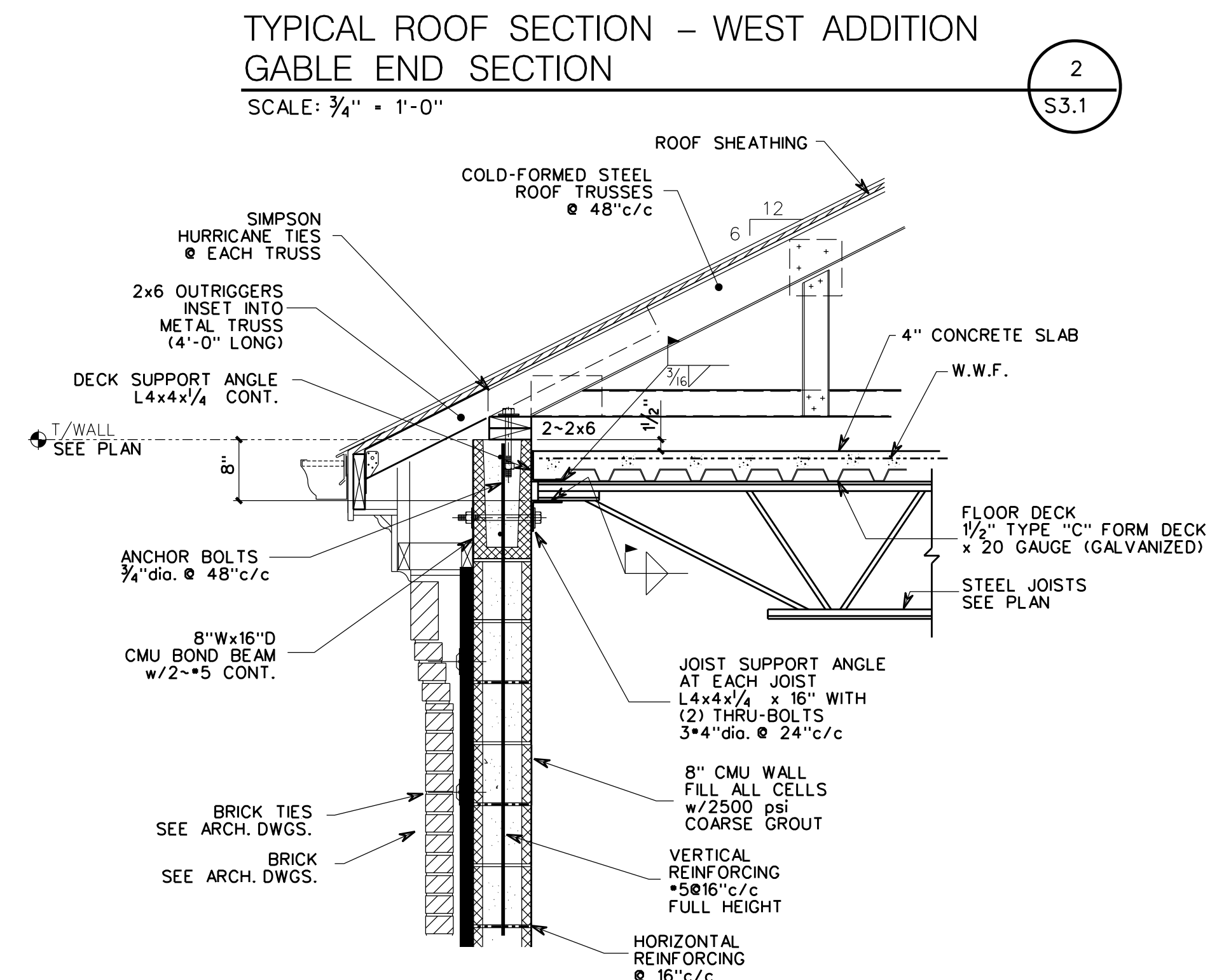
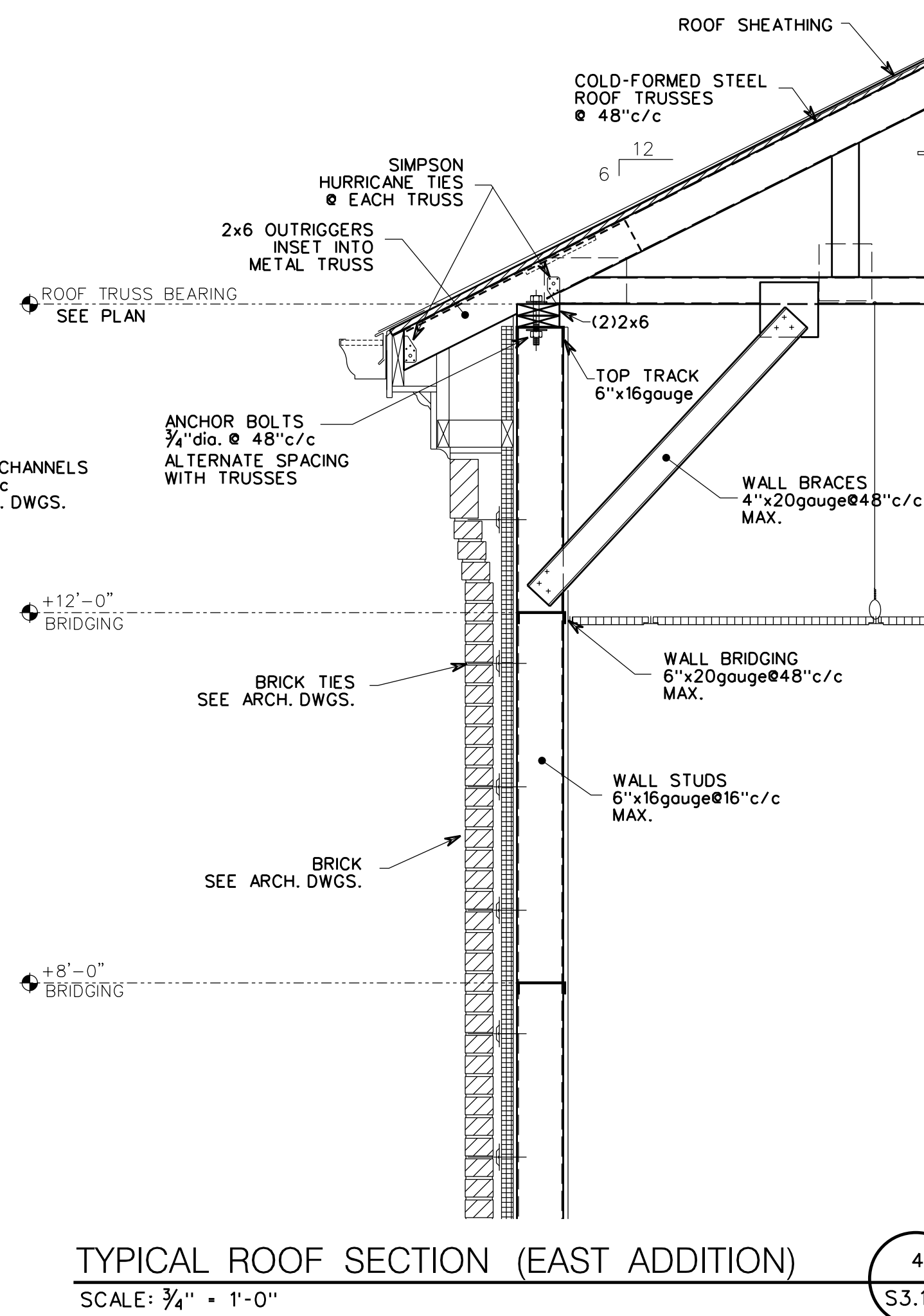
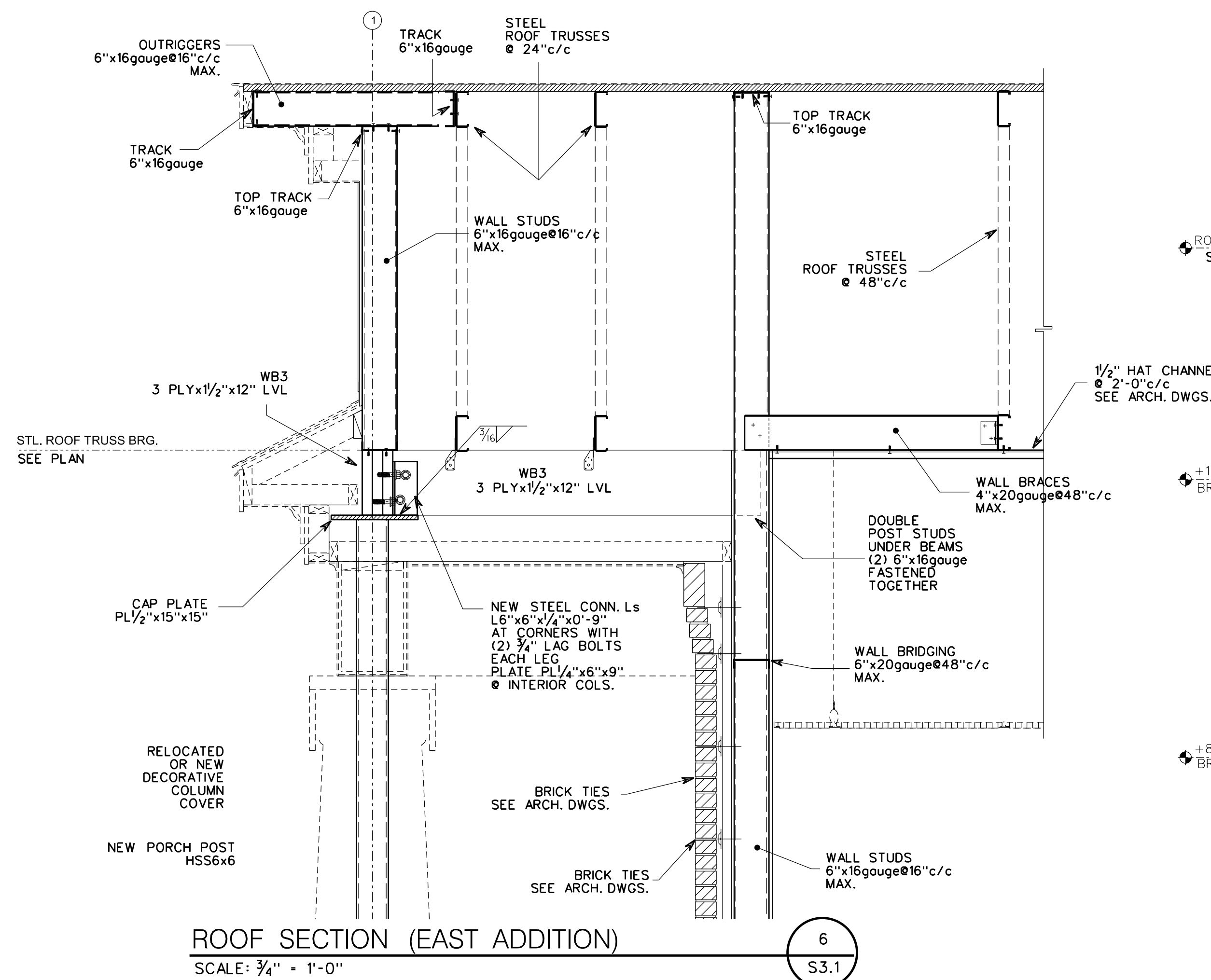
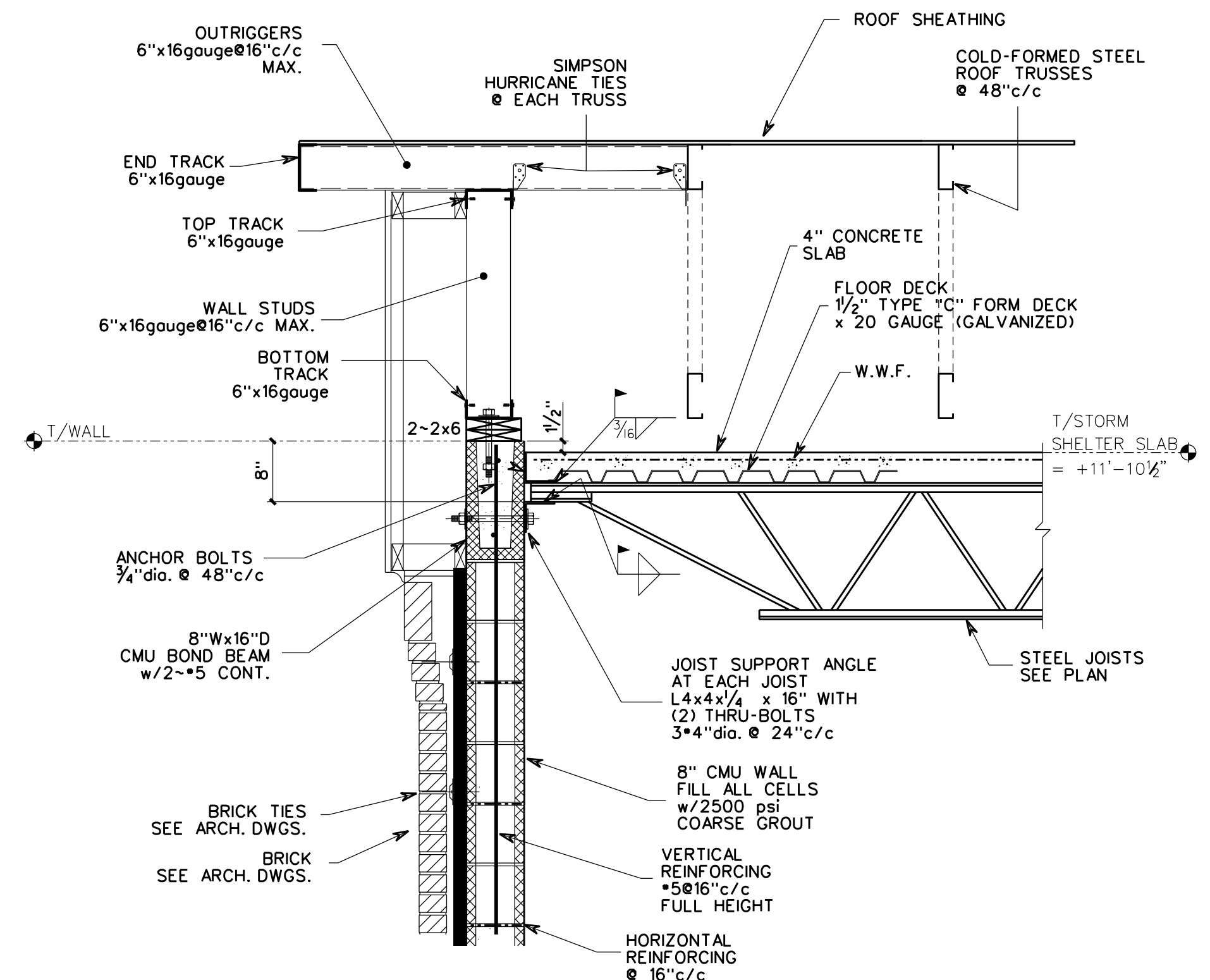
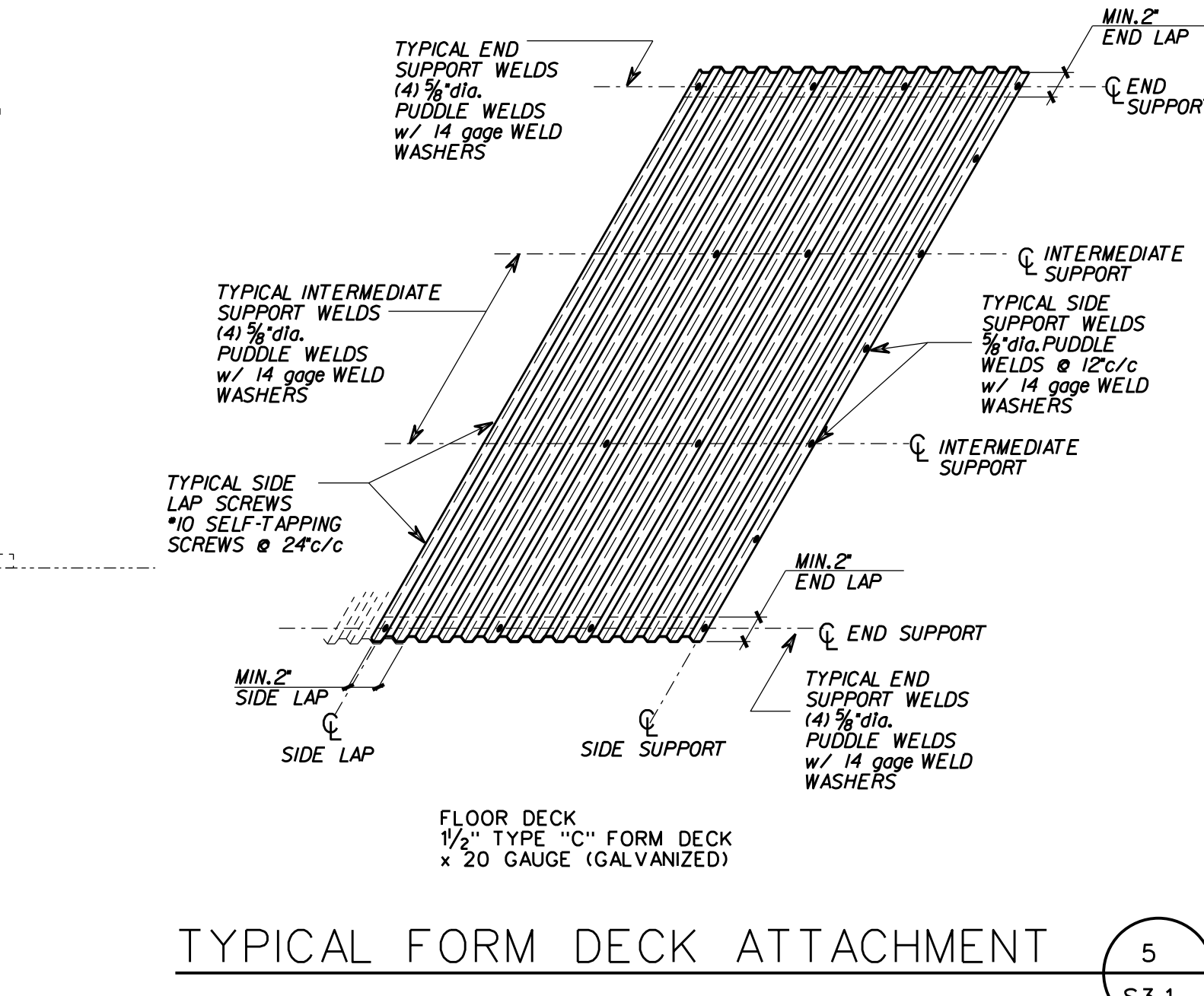
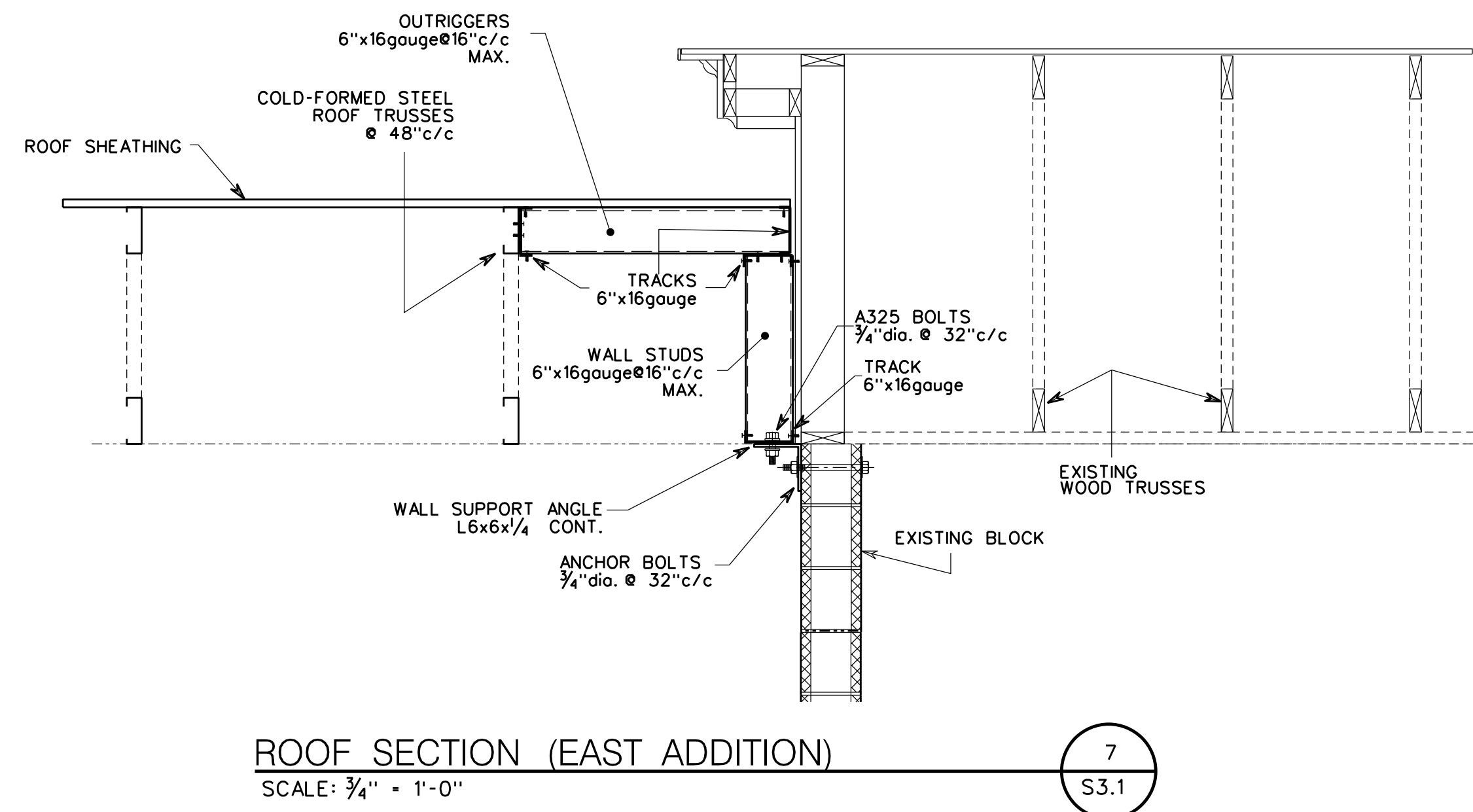
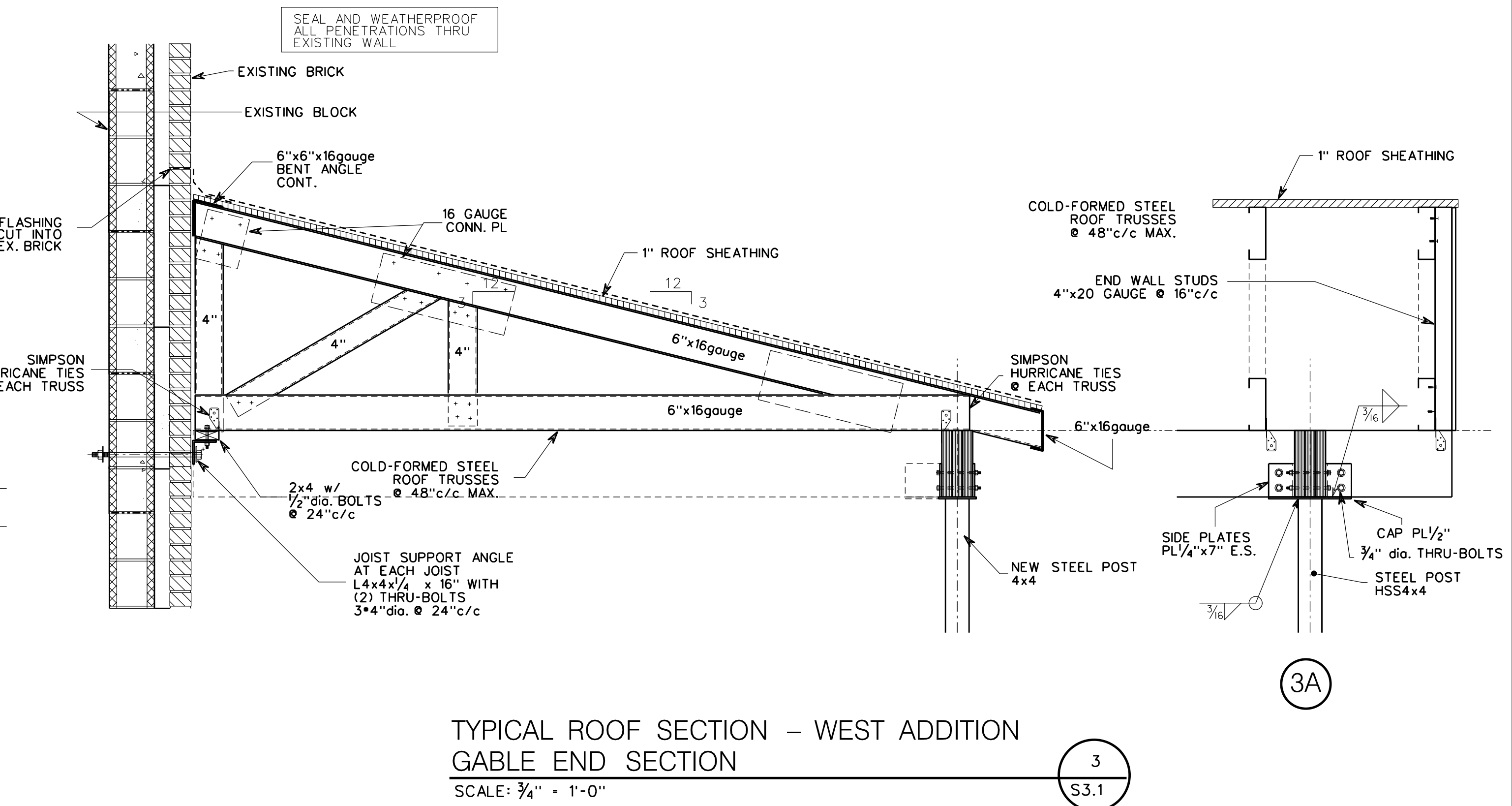
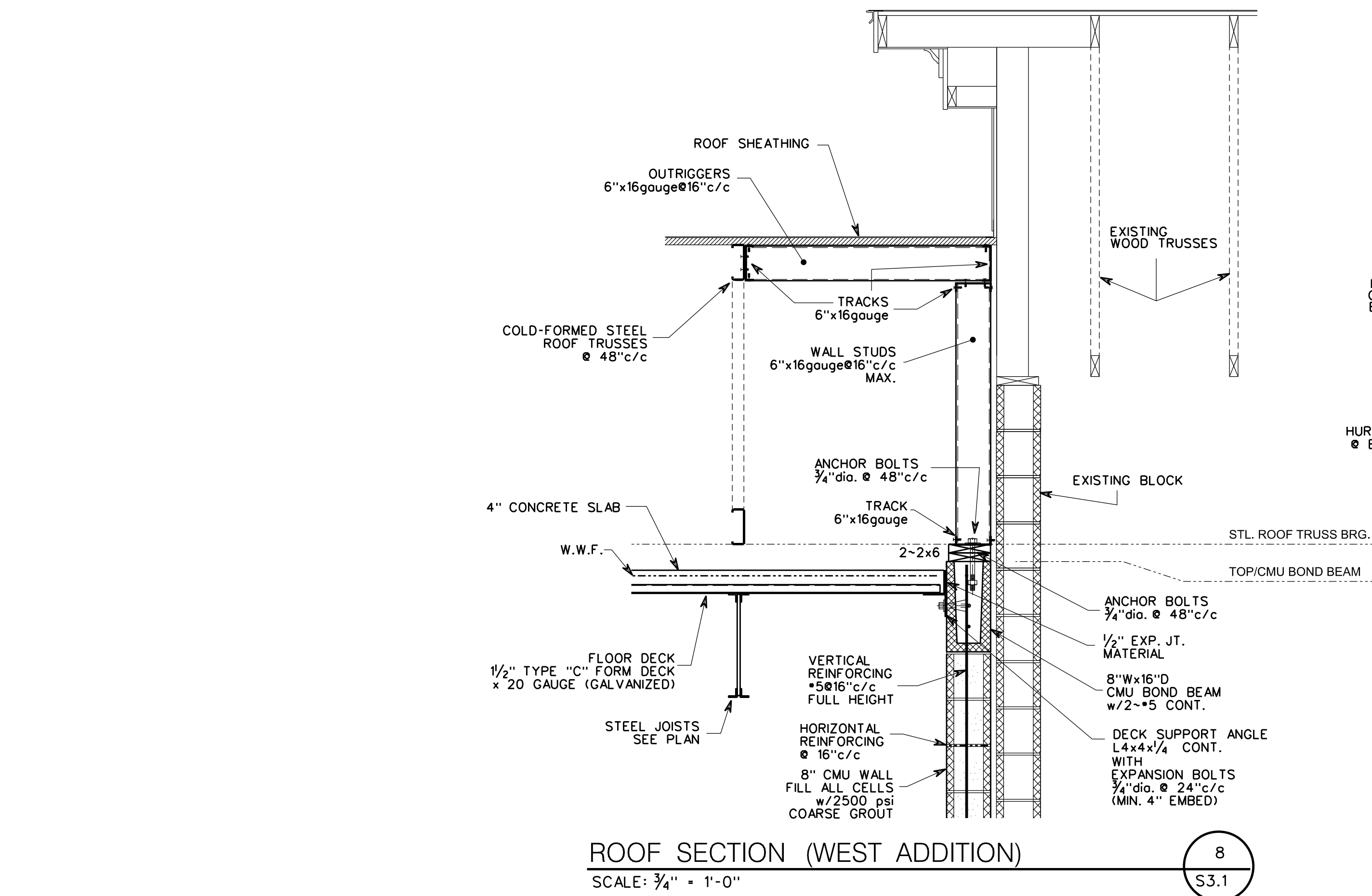
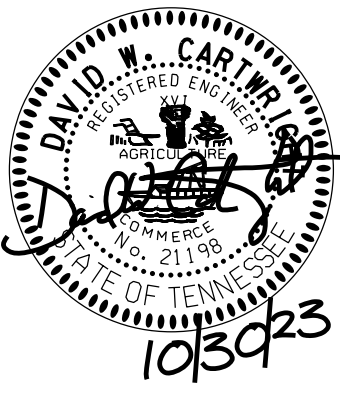


EMERGENCY GENERATOR COVER
SEE CIVIL DWGS. FOR LOCATION
SCALE: 3/4" = 1'-0"

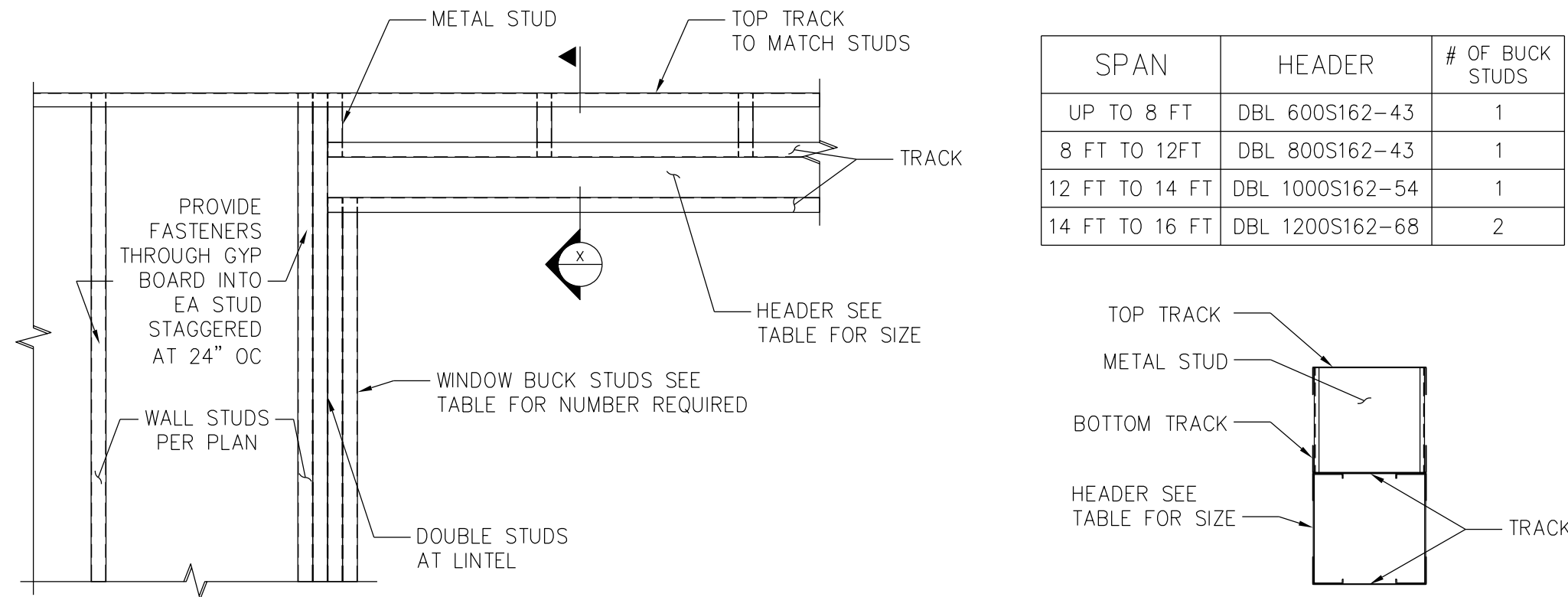


EMERGENCY GENERATOR PAD
SEE CIVIL DWGS. FOR LOCATION
SCALE: 3/4" = 1'-0"

1
S2.5

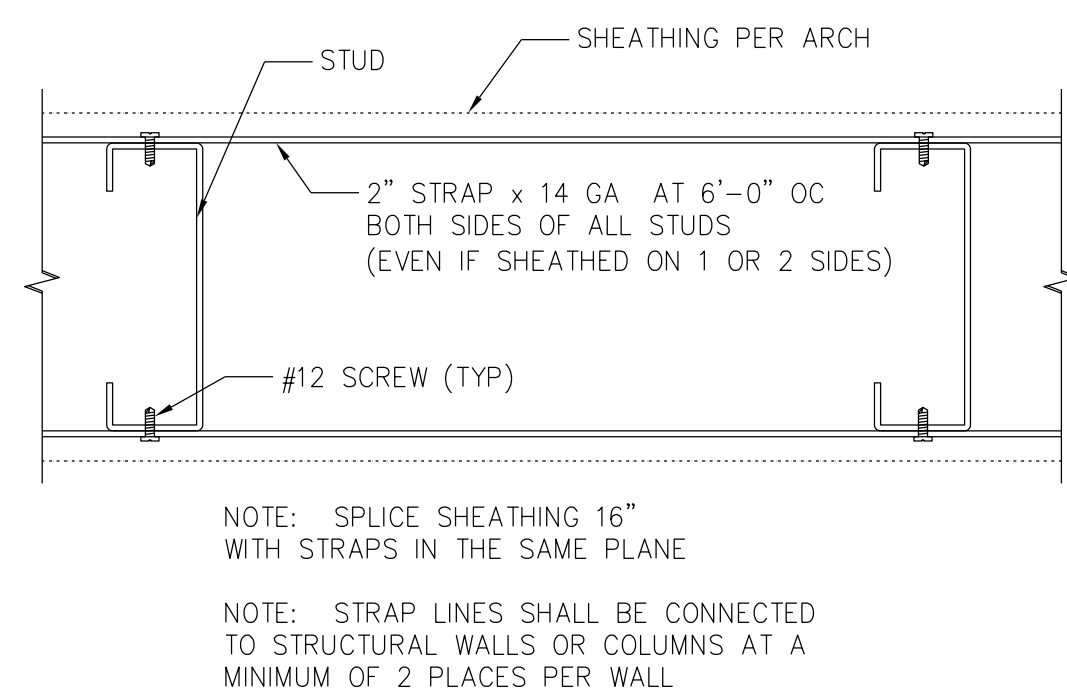


Typical Roof Section - West Addition
EF-3 (V=165 mph) Tornado Rating
Scale: 3/4" = 1'-0"

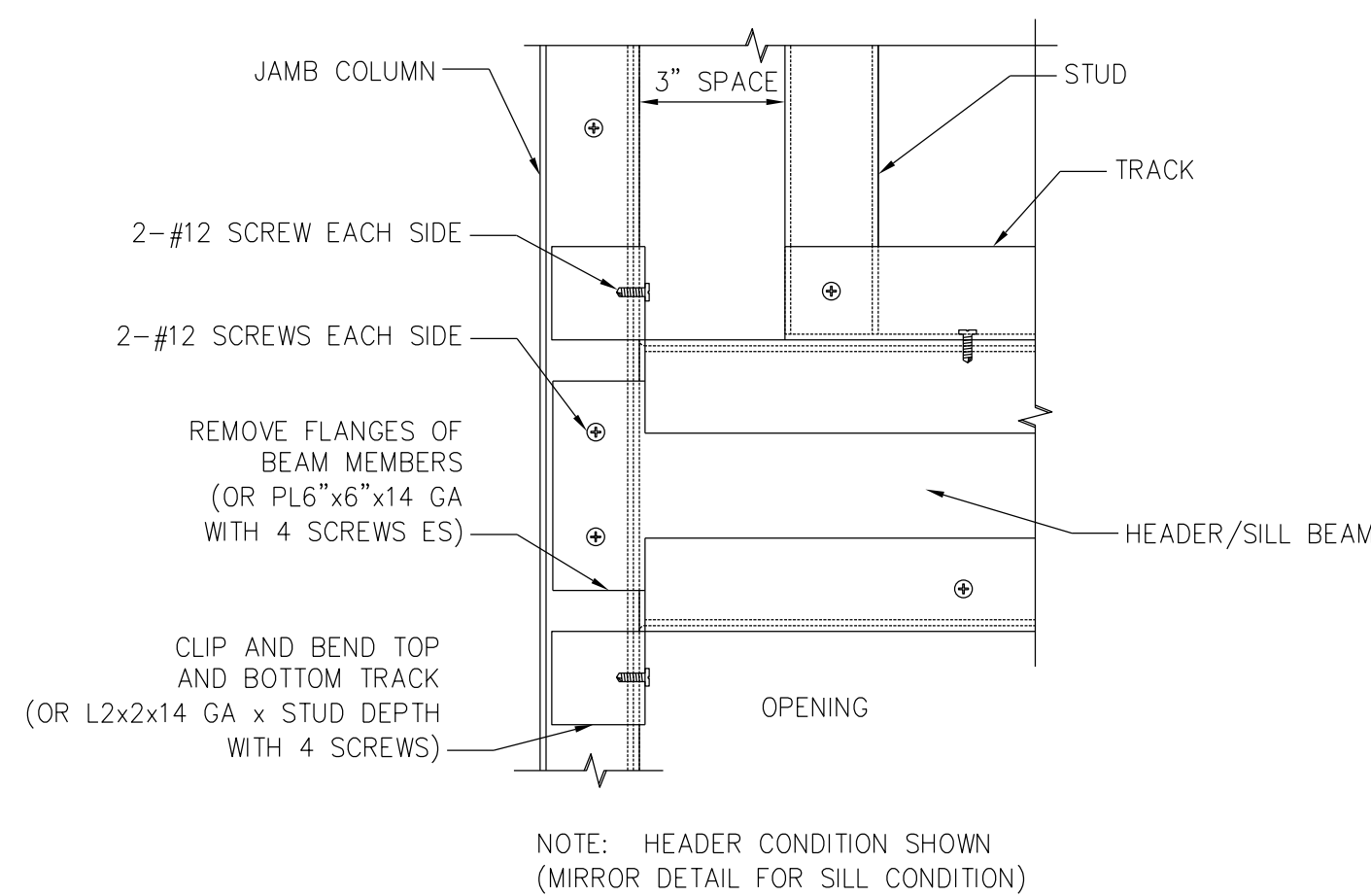


11 TYPICAL LIGHT GAUGE
HEADER DETAIL
SCALE: 3/4"=1'-0"

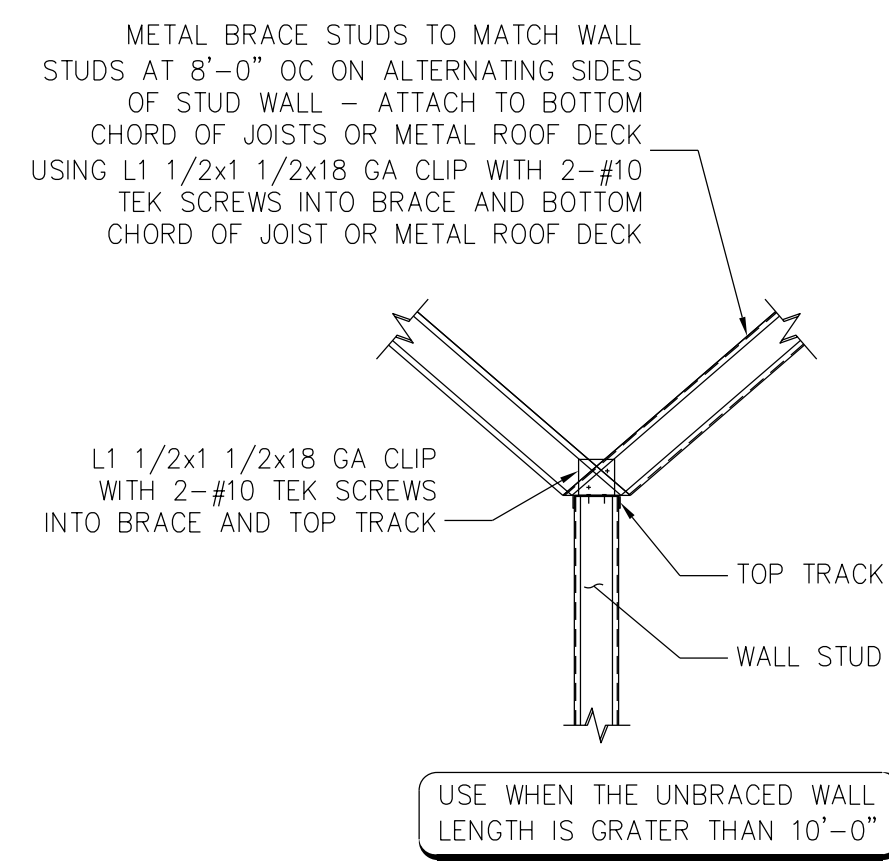
X SECTION
SCALE: 3/4"=1'-0"



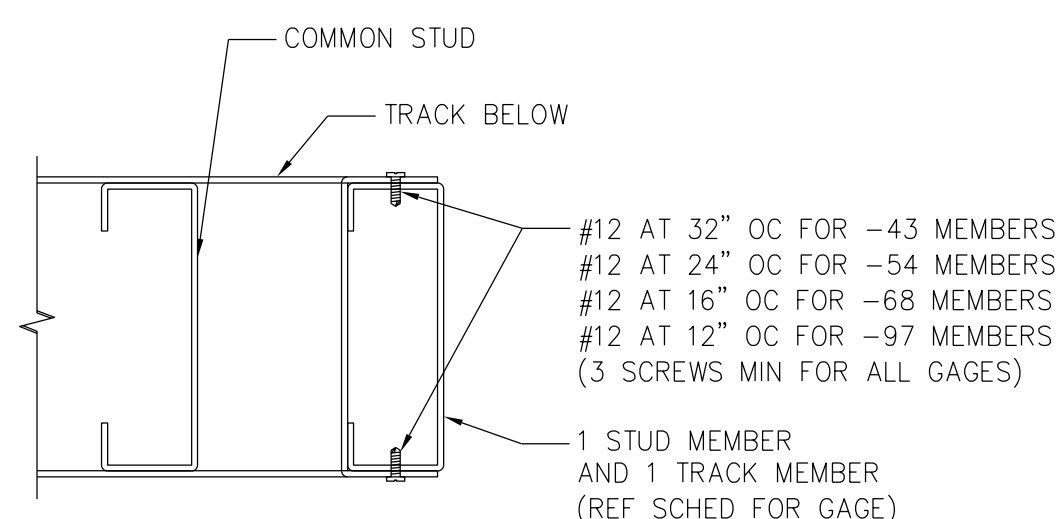
10 STUD BRIDGING
SCALE: 1"=1'-0"
(HORIZONTAL SECTION VIEW)



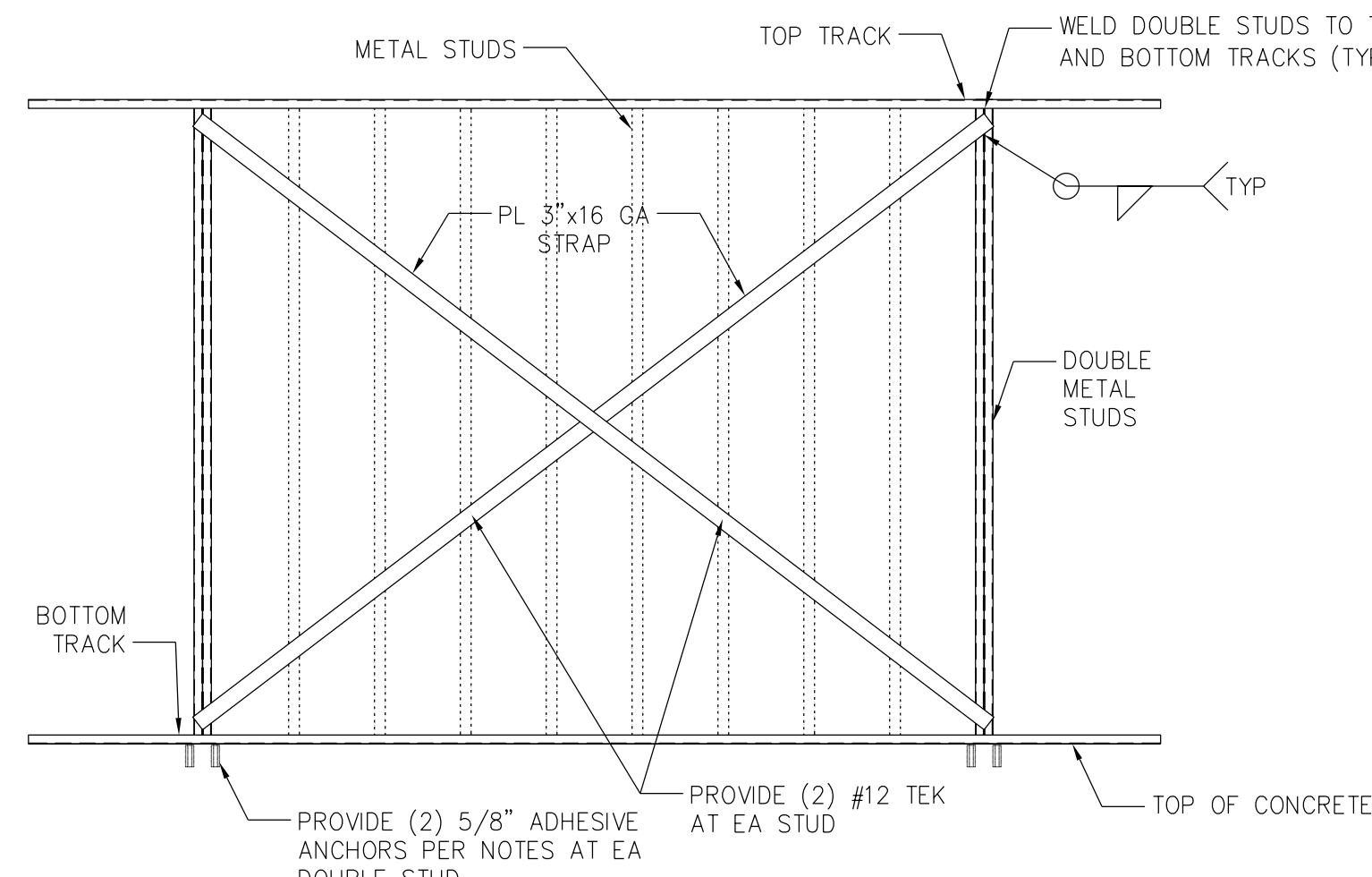
9 BEAM TO COLUMN
SCALE: 1"=1'-0"
(ELEVATION VIEW)



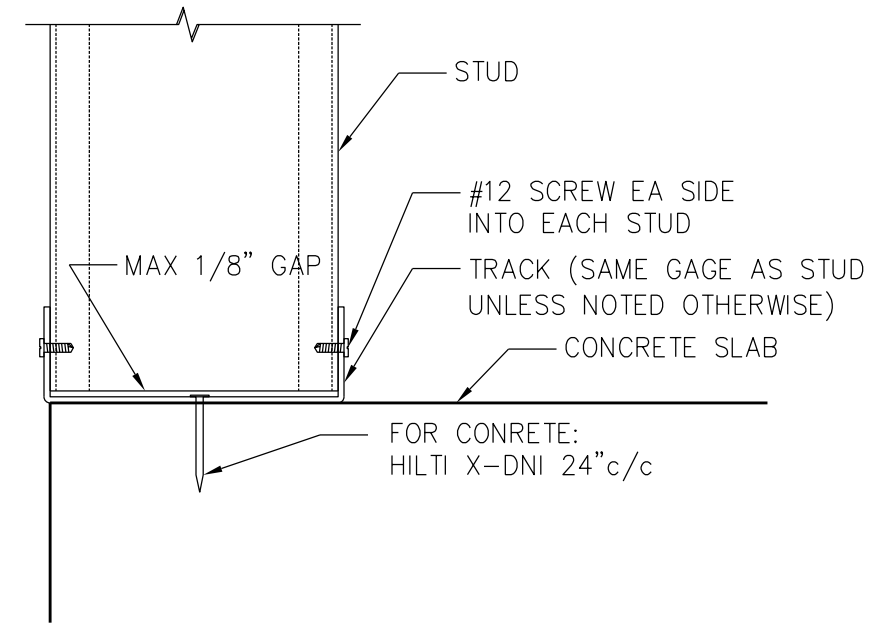
TYPICAL LIGHT GAUGE
NON-LOAD BEARING
INTERIOR WALL BRACING DETAIL
SCALE: 3/4"=1'-0"



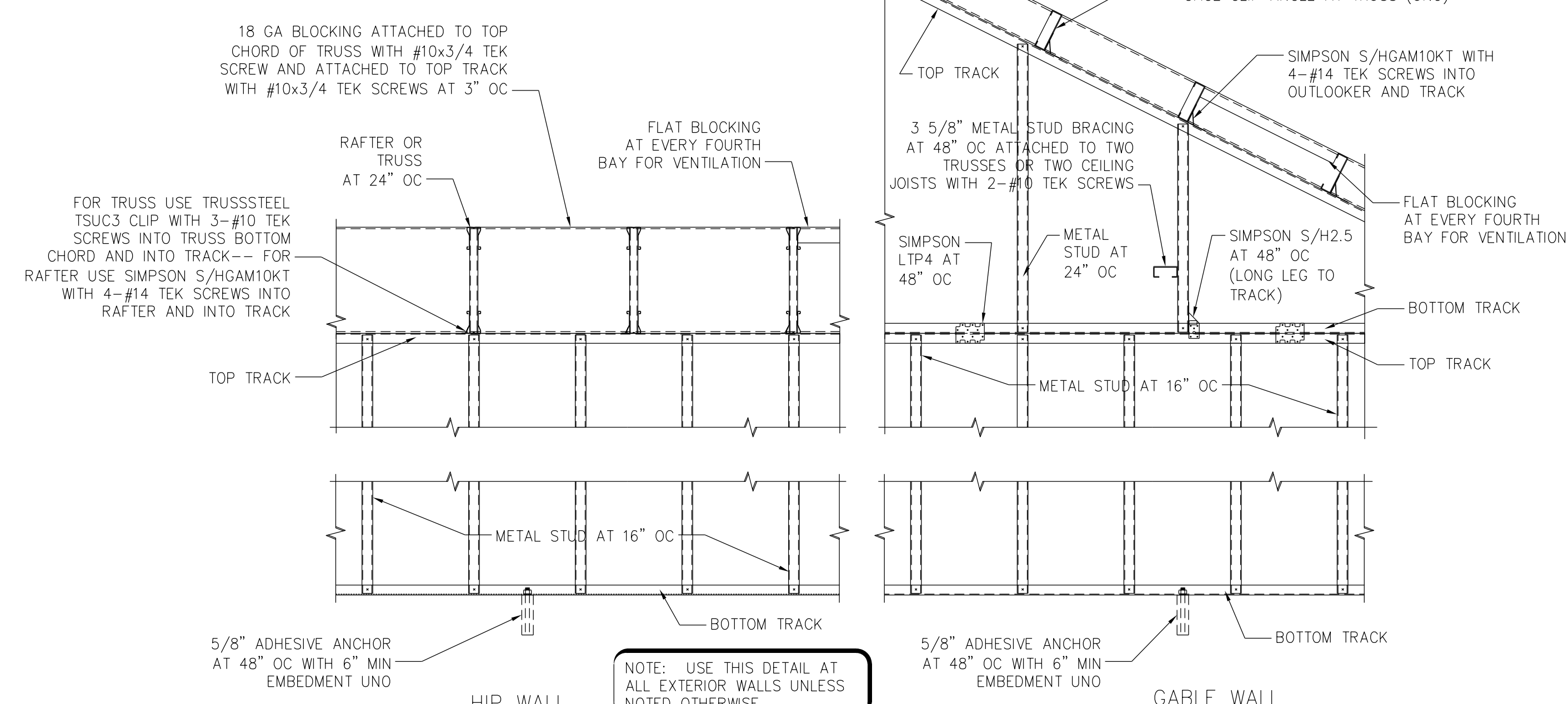
7 TYPICAL JAMB POST OR
COLUMN
SCALE: 1"=1'-0"
(HORIZONTAL SECTION VIEW)



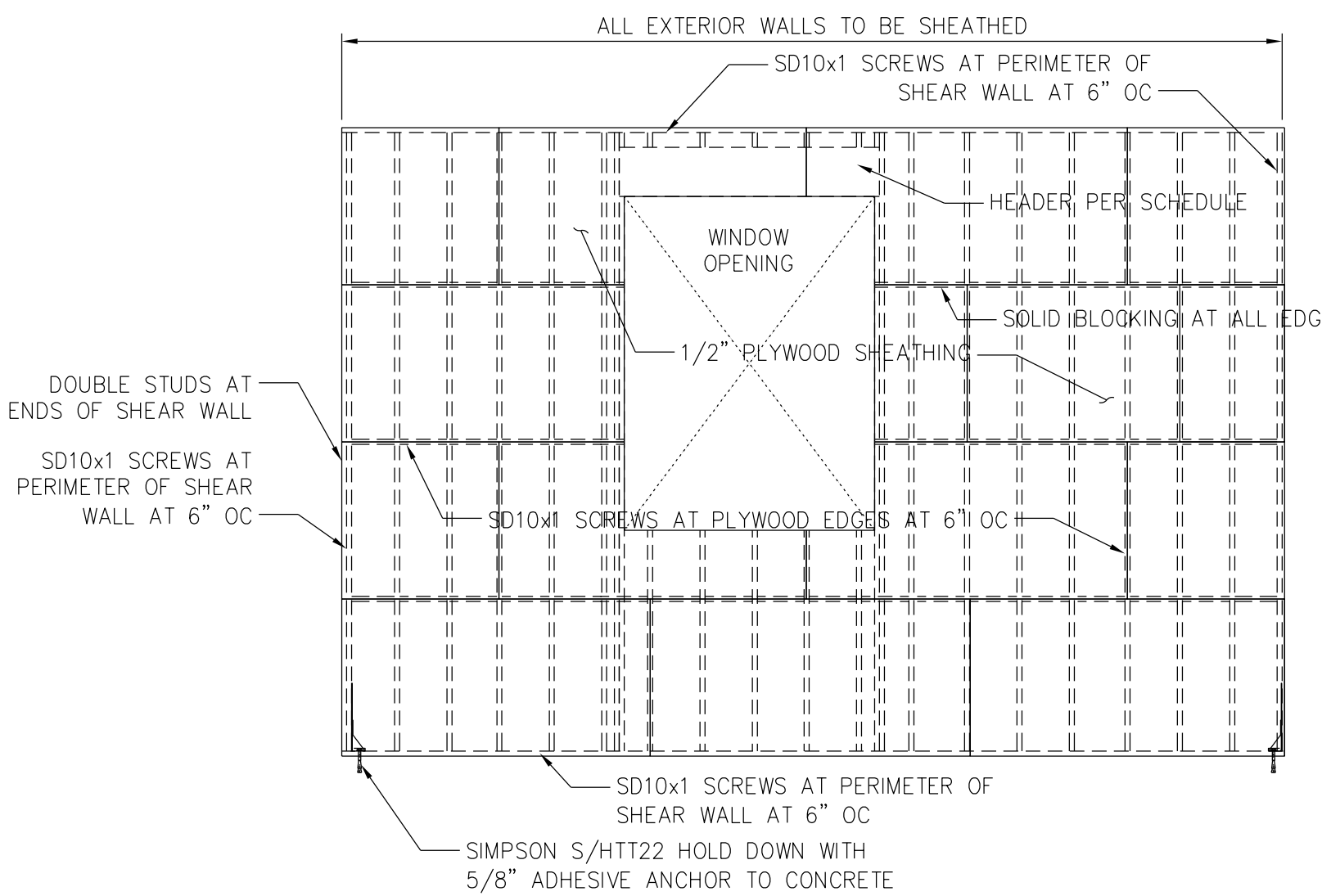
6 TYPICAL COLD-FORMED STEEL
WALL FRAMING DETAIL
SCALE: N.T.S.



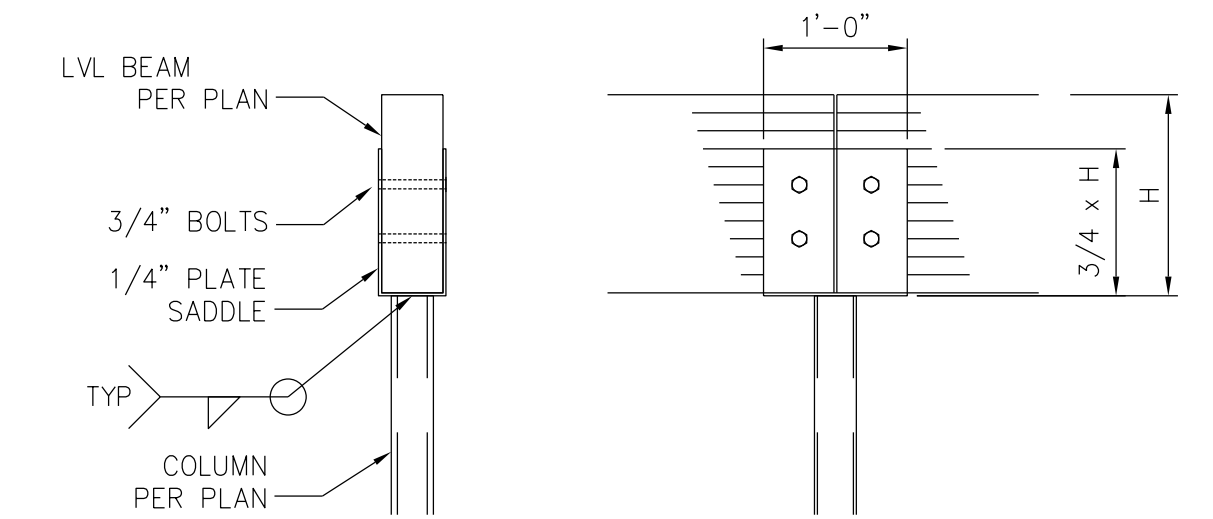
5 BOTTOM OF STUD TO FLOOR SLAB
SCALE: 1"=1'-0"
(VERTICAL SECTION VIEW)



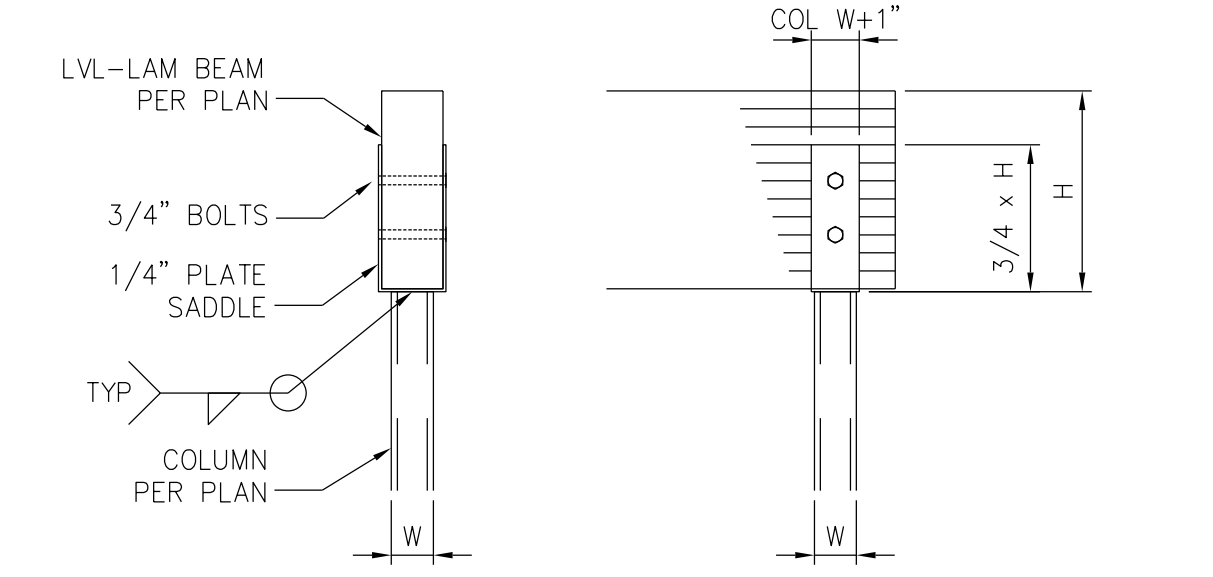
4 TYPICAL WIND RESISTANCE CONNECTORS DETAIL
SCALE: 3/4"=1'-0"



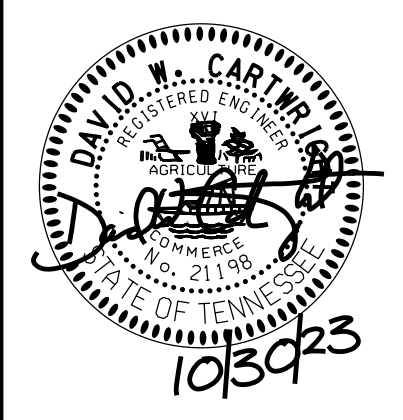
3 TYPICAL COLD-FORMED STEEL
WALL FRAMING DETAIL
SCALE: N.T.S.



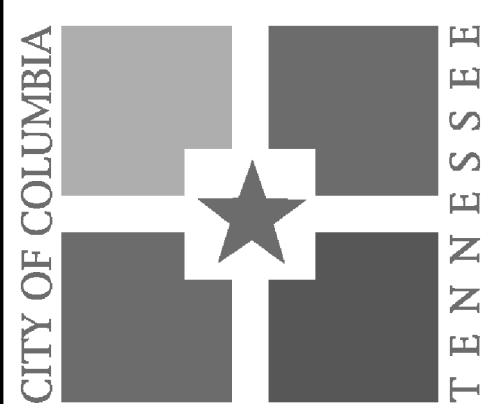
2 TYPICAL INTERIOR SUPPORT SADDLE DETAIL



1 TYPICAL BEAM END SADDLE DETAIL



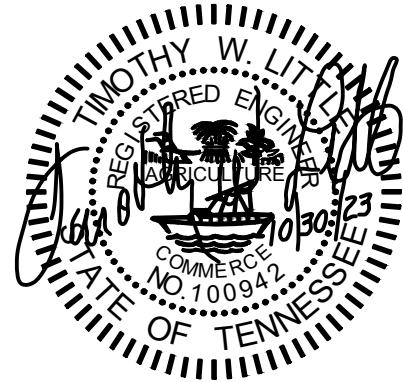
Nuber Architecture
ECCELESTICAL PLANNING / DESIGN
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1069 Rolling Fields Circle, Columbia, Tennessee 38401
Phone: (931) 546-8045 Cell: (931) 446-1741
E-mail: george@nuberarchitecture.com



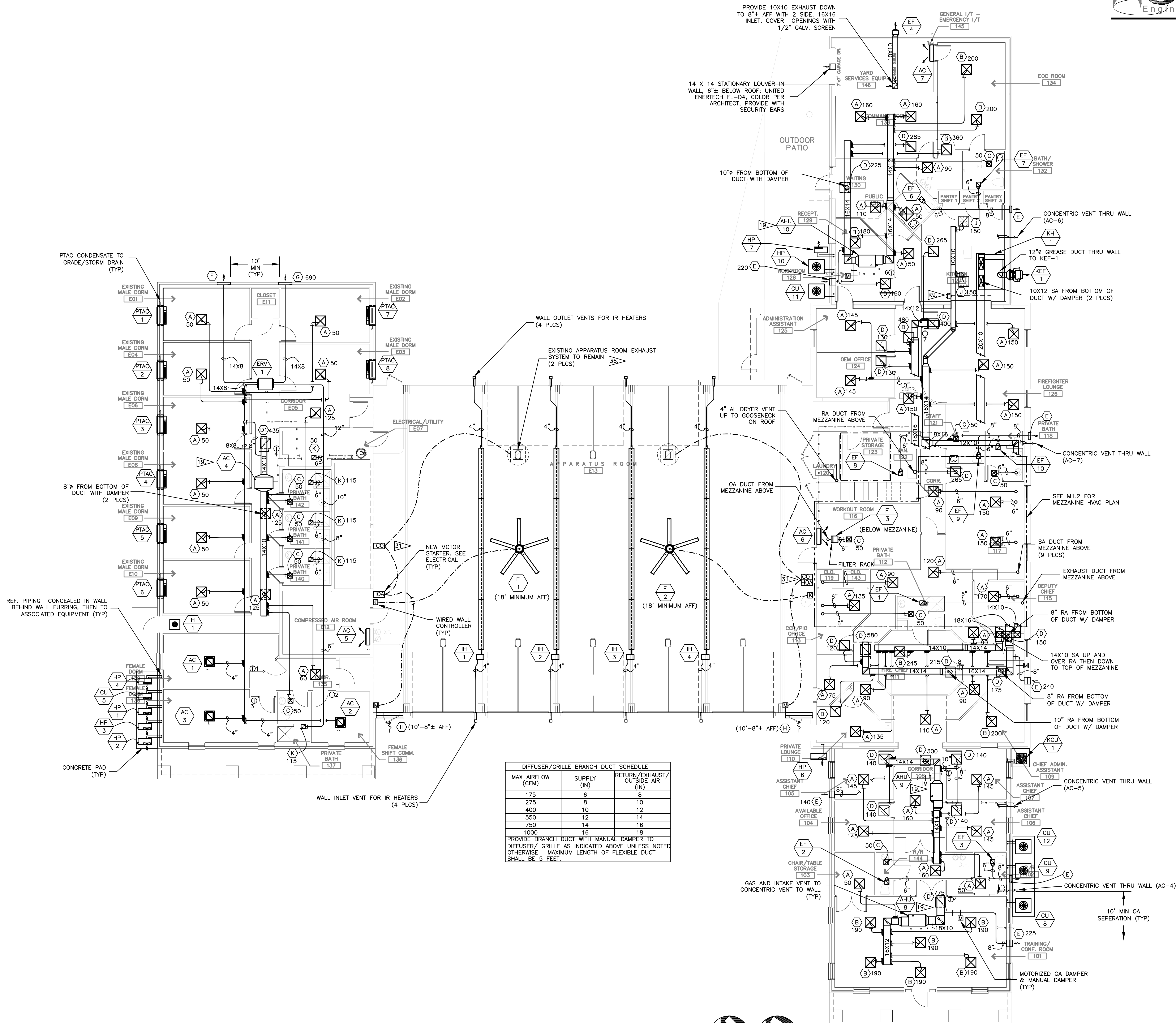
Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

S3.2 Typical Steel Stud Details

Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #: 10-30-2023	FOR REVIEW ONLY	1
Dr. By: D.Carwright	FOR ESTIMATING/BIDDING ONLY	2
Ck. By: D.Carwright	FOR CONSTRUCTION	3
File #: 10-30-2023	DATE: 10/30/23 ISSUED BY: Carwright	4



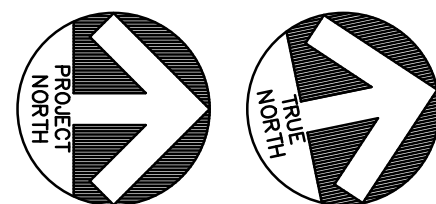
Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee



DIFFUSER/GRILLE BRANCH DUCT SCHEDULE		
MAX AIRFLOW (CFM)	SUPPLY (IN)	RETURN/EXHAUST/OUTSIDE AIR (IN)
175	6	6
275	8	10
400	10	12
550	12	14
750	14	16
1000	16	18

PROVIDE BRANCH DUCT WITH MANUAL DAMPER TO DIFFUSER/GRILLE AS INDICATED ABOVE, UNLESS NOTED OTHERWISE. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 5 FEET.

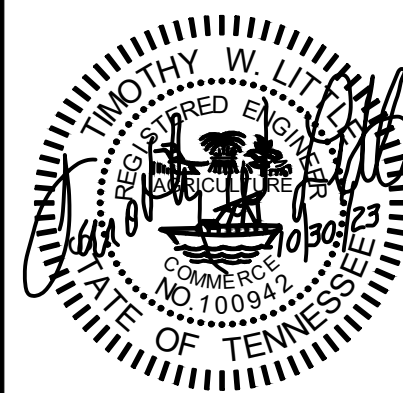
PROPOSED FLOOR HVAC PLAN
SCALE : 1/8"=1'-0"



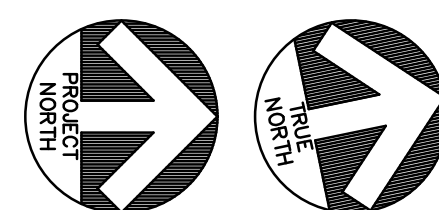
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M1.1 HVAC Plan

Date: 10-30-2023
Job #:
Dr. By: R. Geer
Ck. By: T. Little
File #: 30322 MECH
Revisions:
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FOR CONSTRUCTION
DATE: 10/30/23 ISSUED BY: T. Little



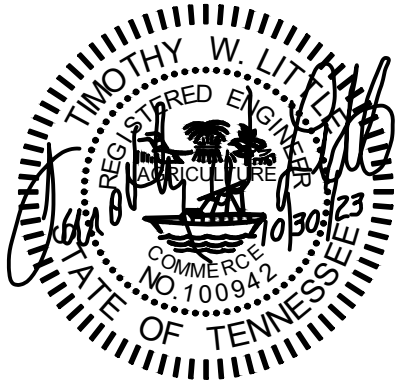
SCALE : 1/4"=1'-0"



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Proposed Renovation to
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Columbia, Tennessee

Date:	10-30-2023				
Job #:					
Dr. By:	R. Geer				
Dr. Ck. By:	T. Little				
File #:	30322 MECH				
DATE: 10/30/23 ISSUED BY: T. Little					
FOR CONSTRUCTION					
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FOR REVIEW ONLY					
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Revisions:					

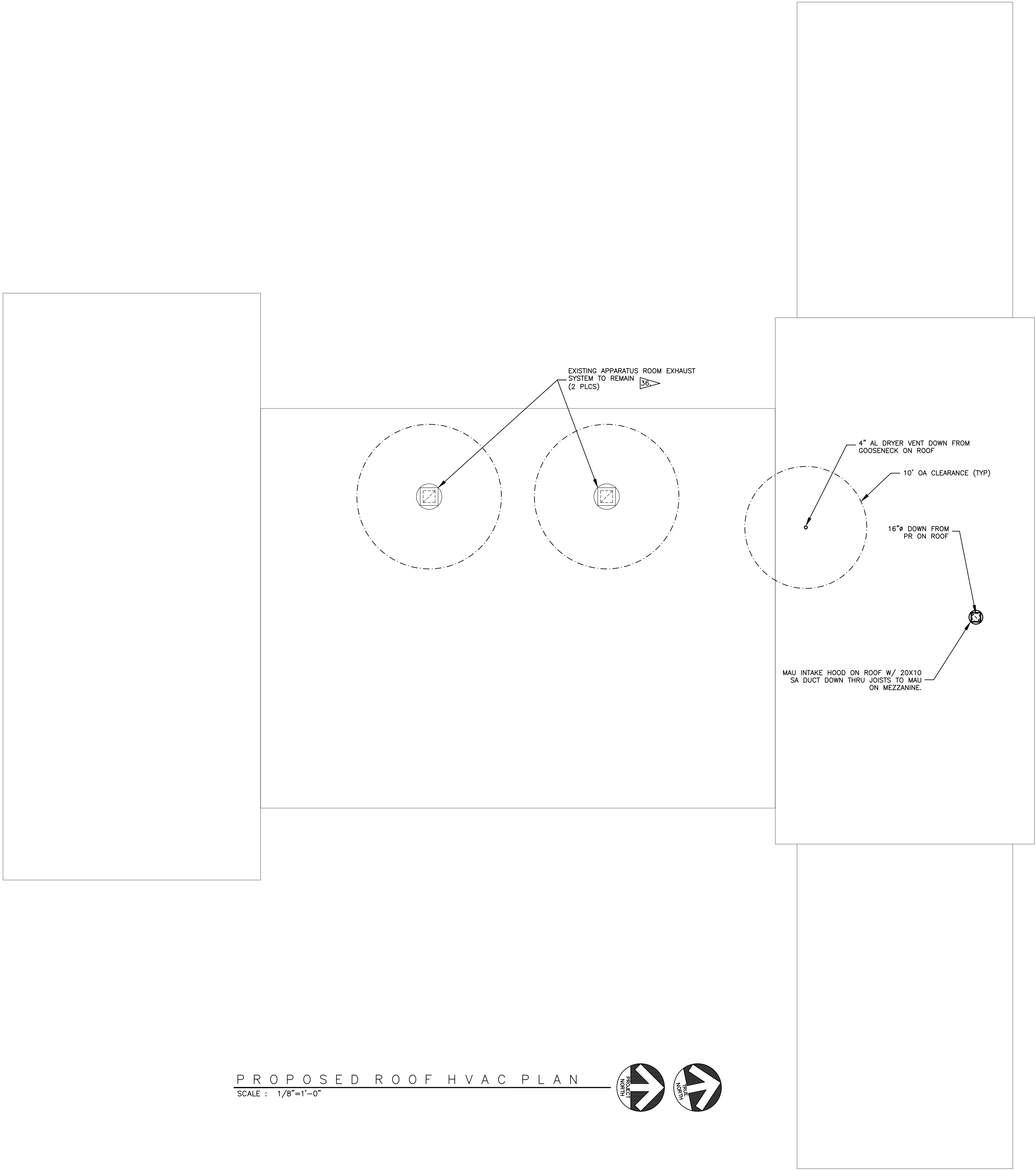


Proposed Renovation to
Fire Station #1 for the
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Columbia, Tennessee

Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
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Ck. By:	T. Little	☒ FOR CONSTRUCTION	3
File #:	30322_MECH	DATE: 10/30/23 ISSUED BY: T. Little	4

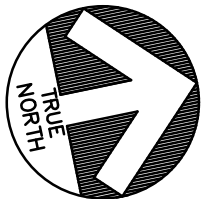
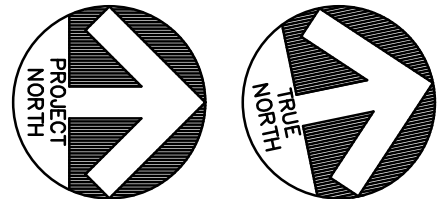
M1.3 HVAC Plan - Roof

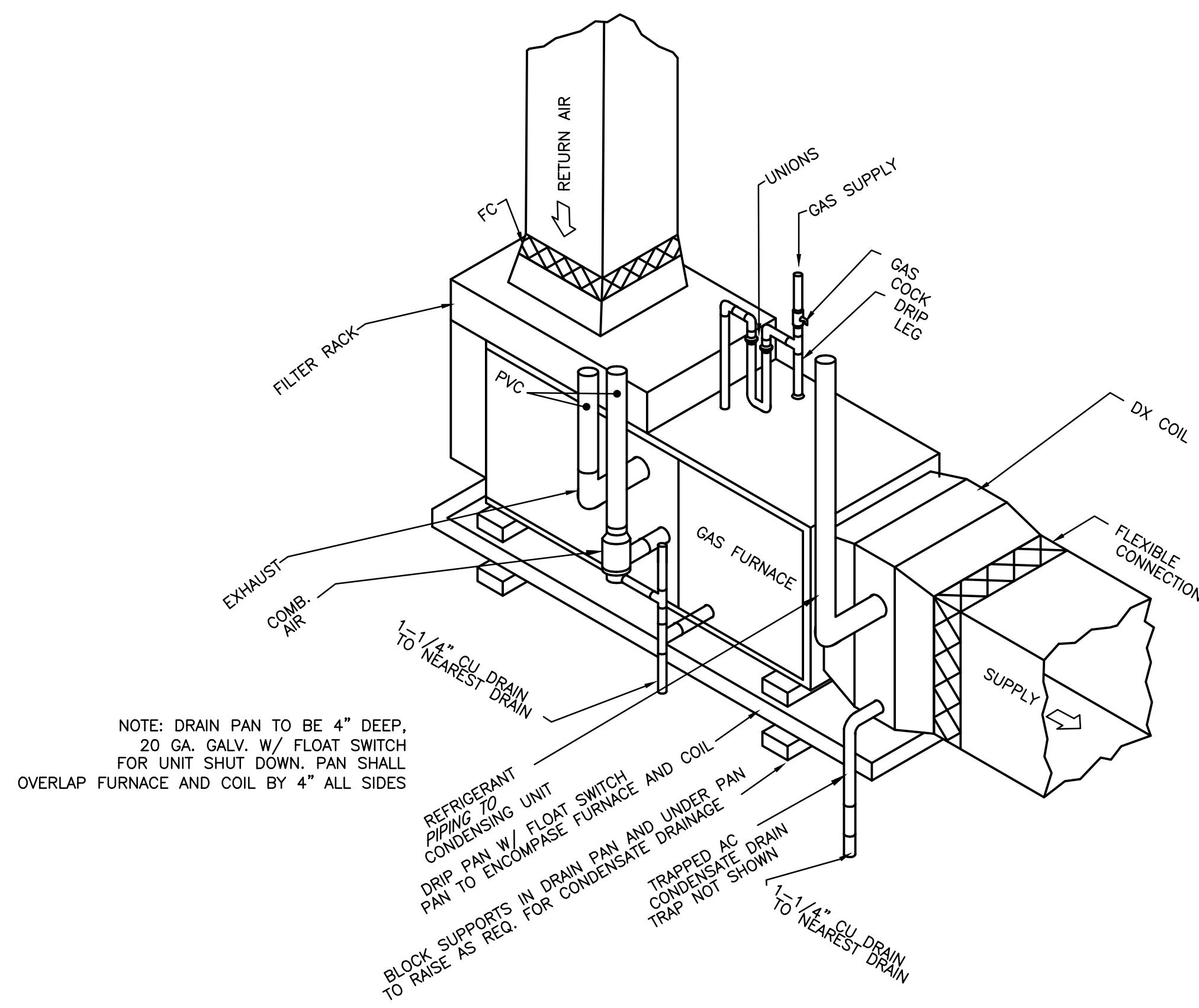
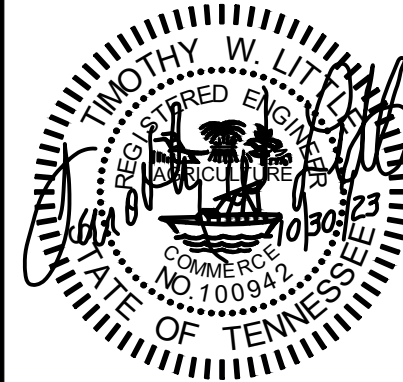
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PROPOSED ROOF HVAC PLAN

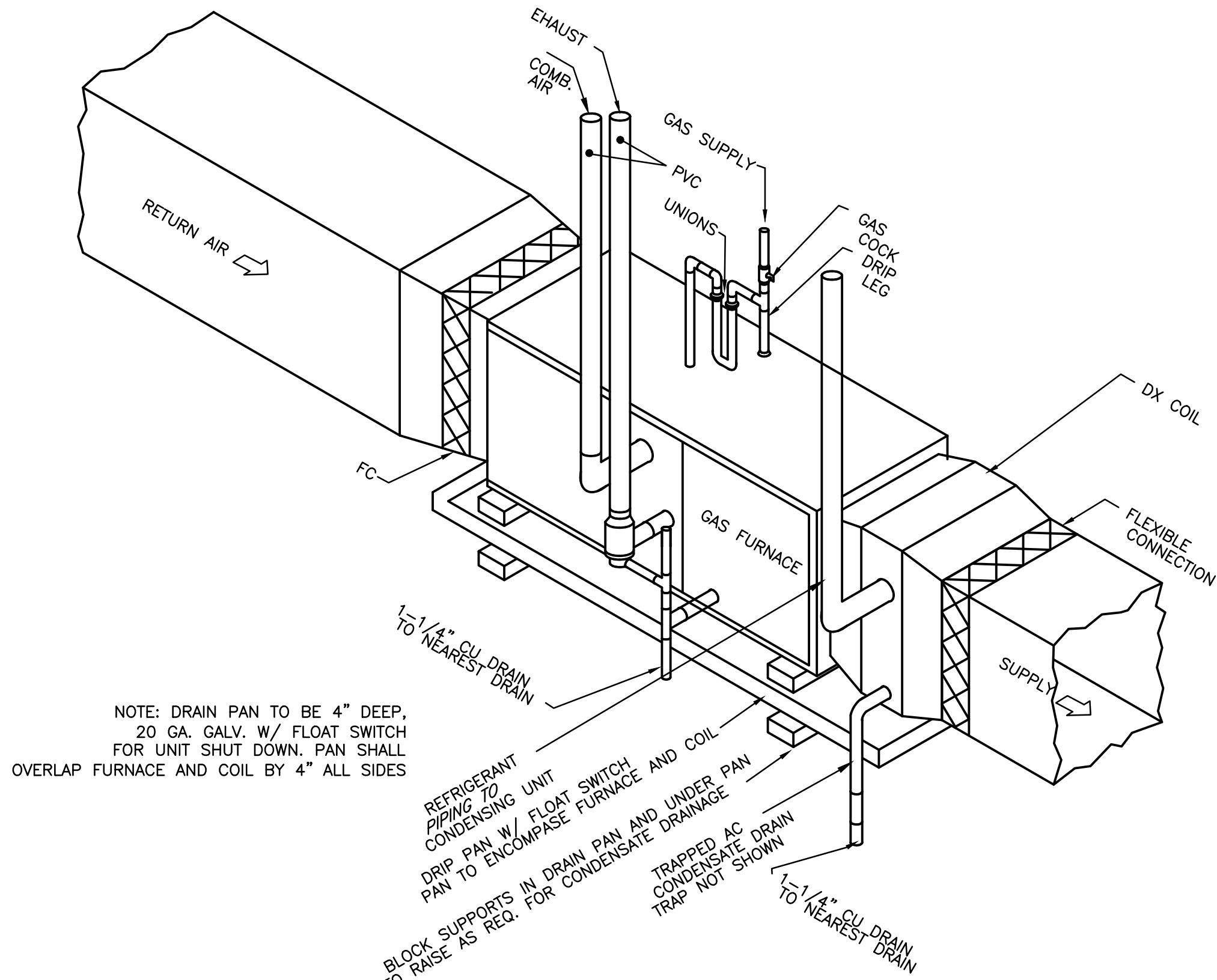
SCALE : 1/8"=1'-0"





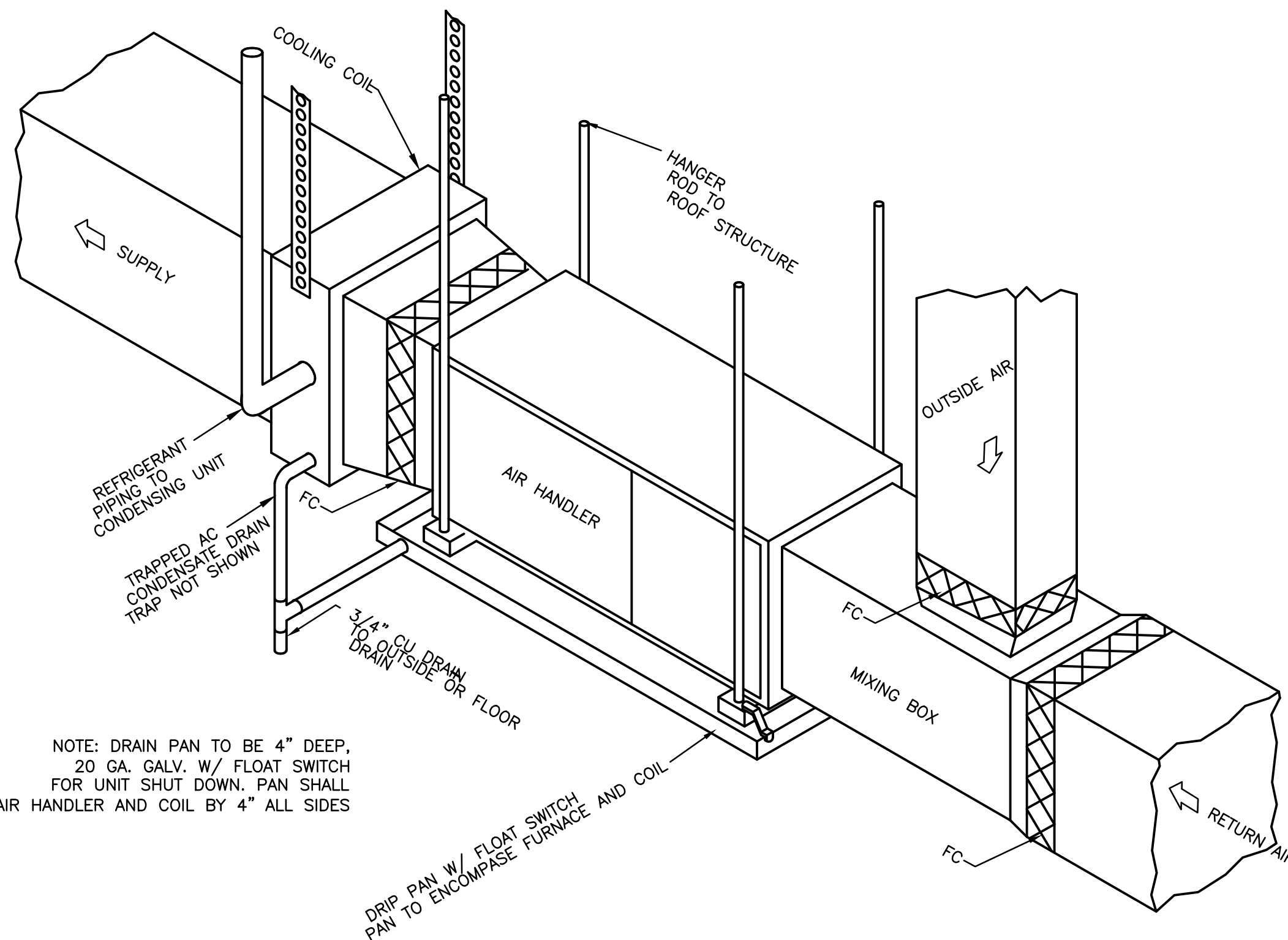
HORIZONTAL FURNACE DETAIL (AHU-11)

NTS



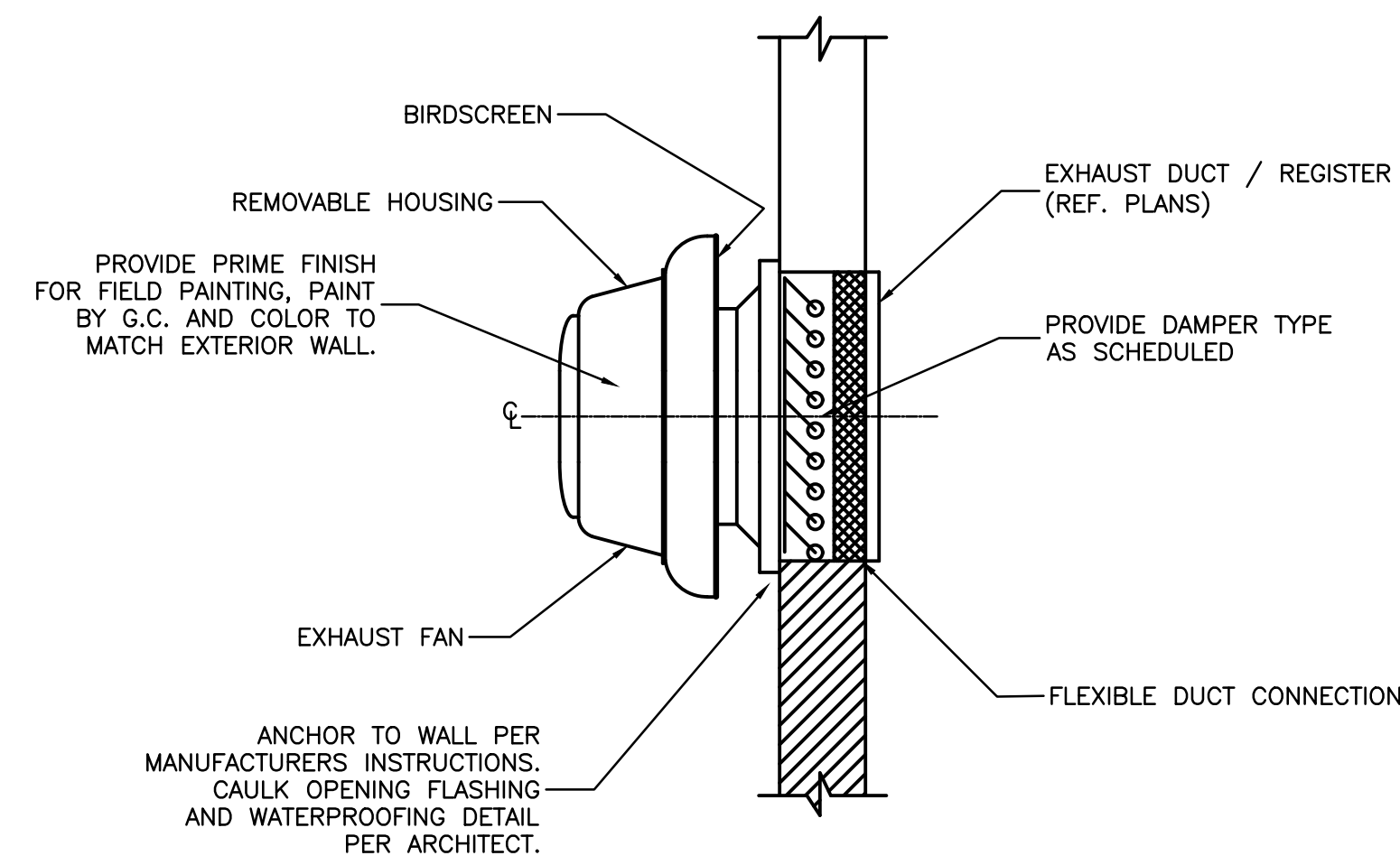
HORIZONTAL FURNACE DETAIL (TYP)

NTS



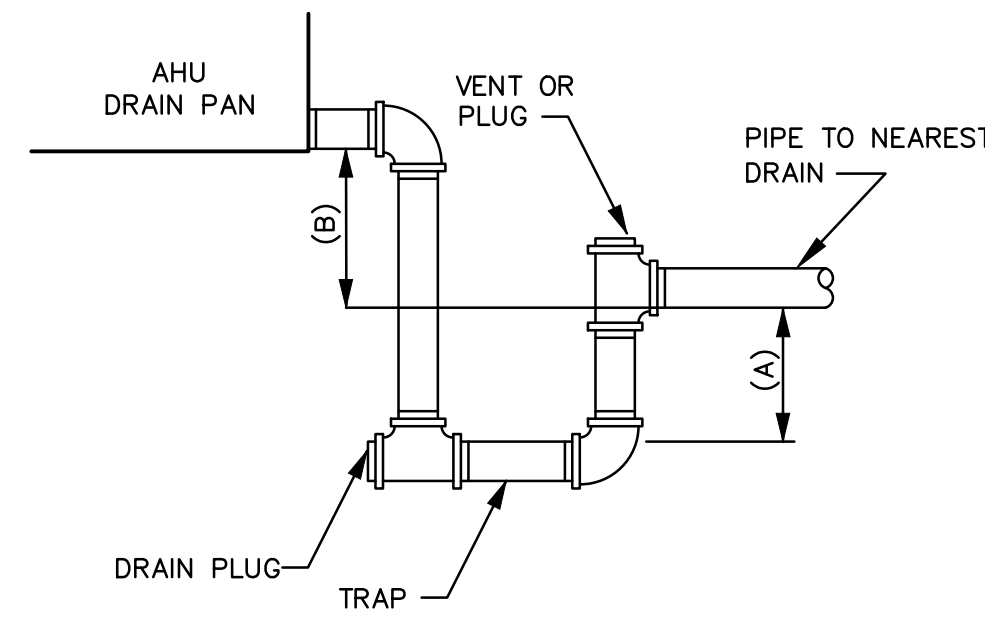
HORIZONTAL AIR HANDLER DETAIL (AHU-10)

NTS



WALL EXHAUST FAN DETAIL

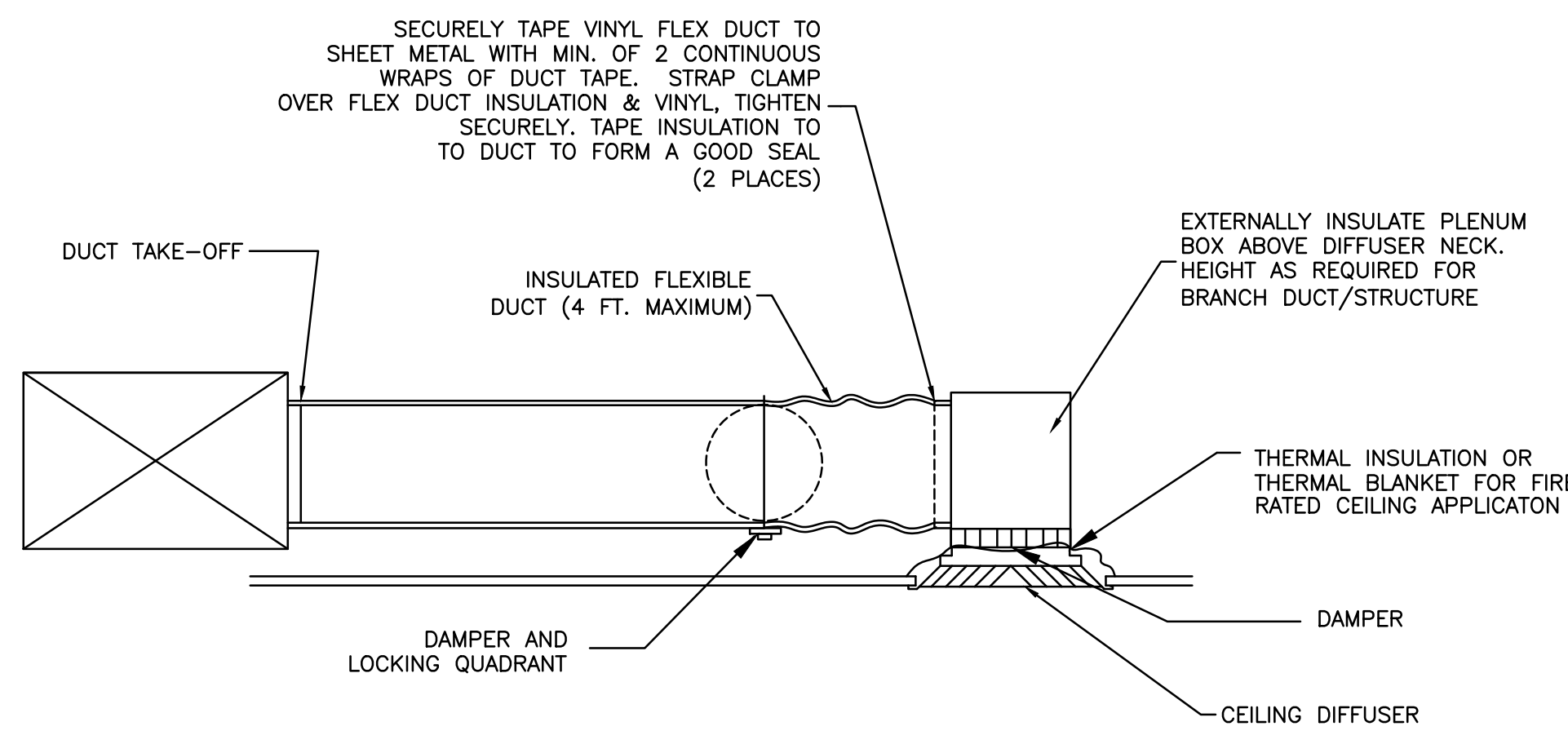
NTS



AHU CONDENSATE DRAIN DETAIL

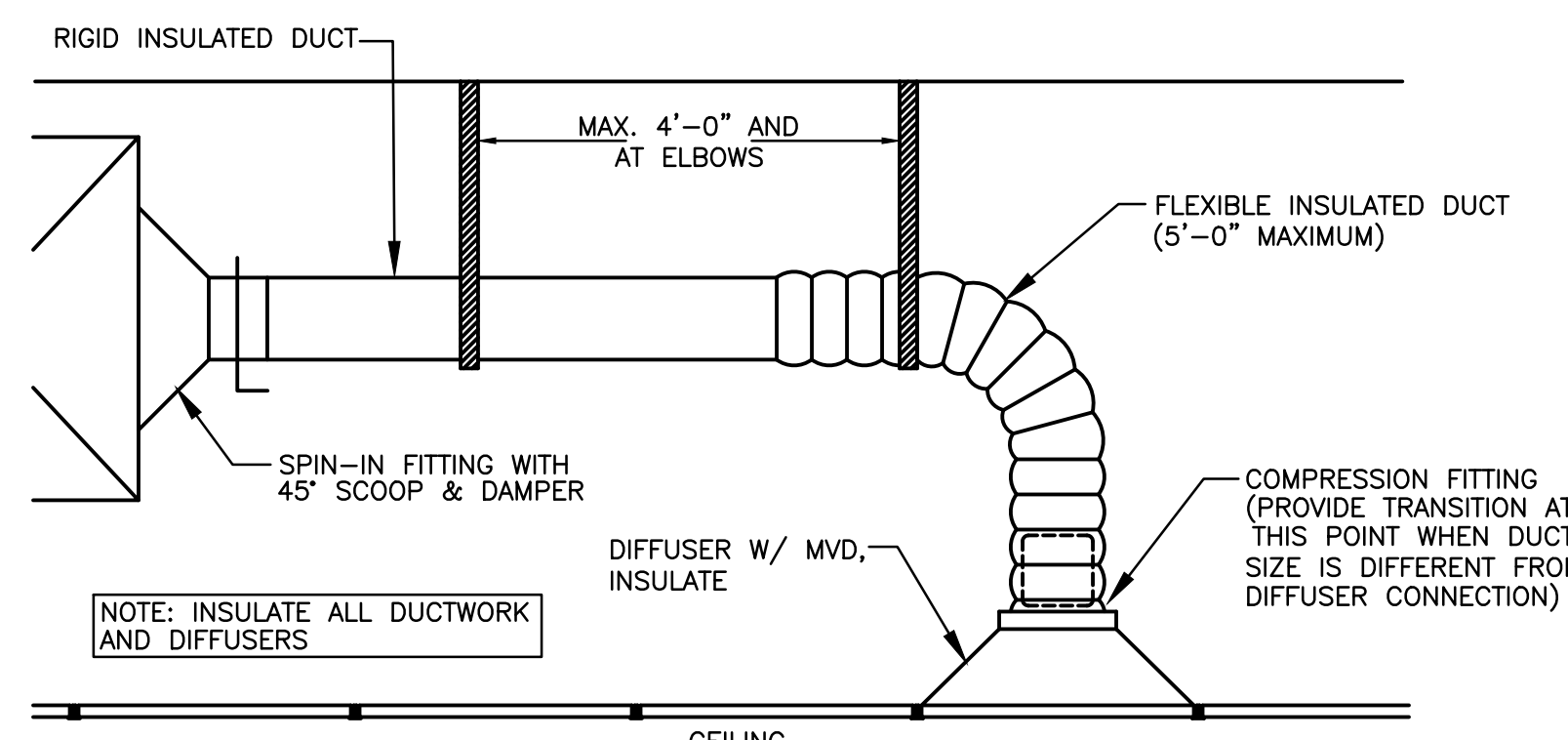
NTS

- BLOW THRU UNITS:**
1. ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET
 2. A = 1/2" + T.S.P.
 3. B = MIN. 1/2"
- DRAW THRU UNITS:**
1. ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET
 2. A = 1/2 OF (B)
 3. B = T.S.P. + 1"



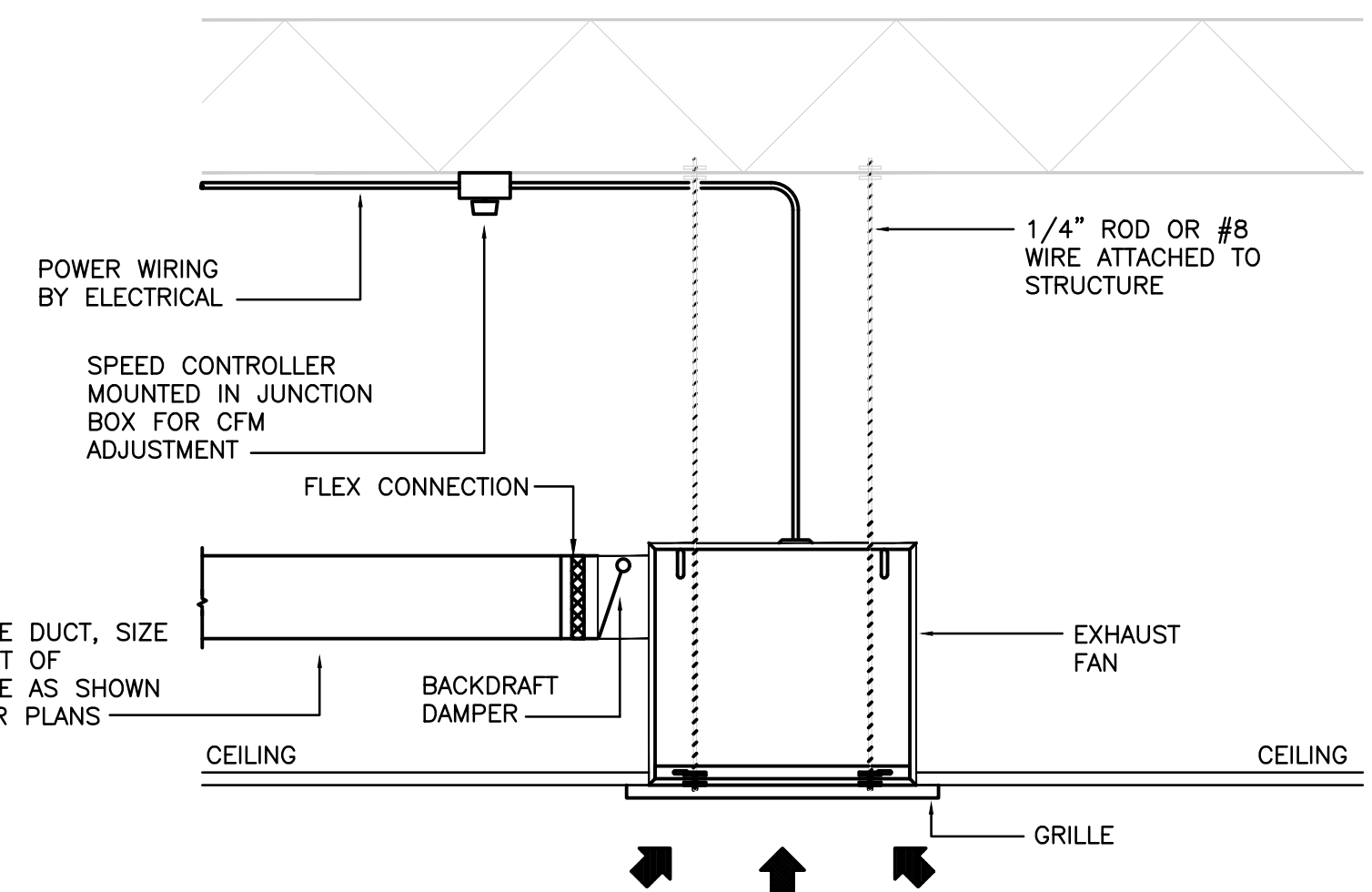
DUCT TAKE OFF (UNDER MEZZANINE)

NTS



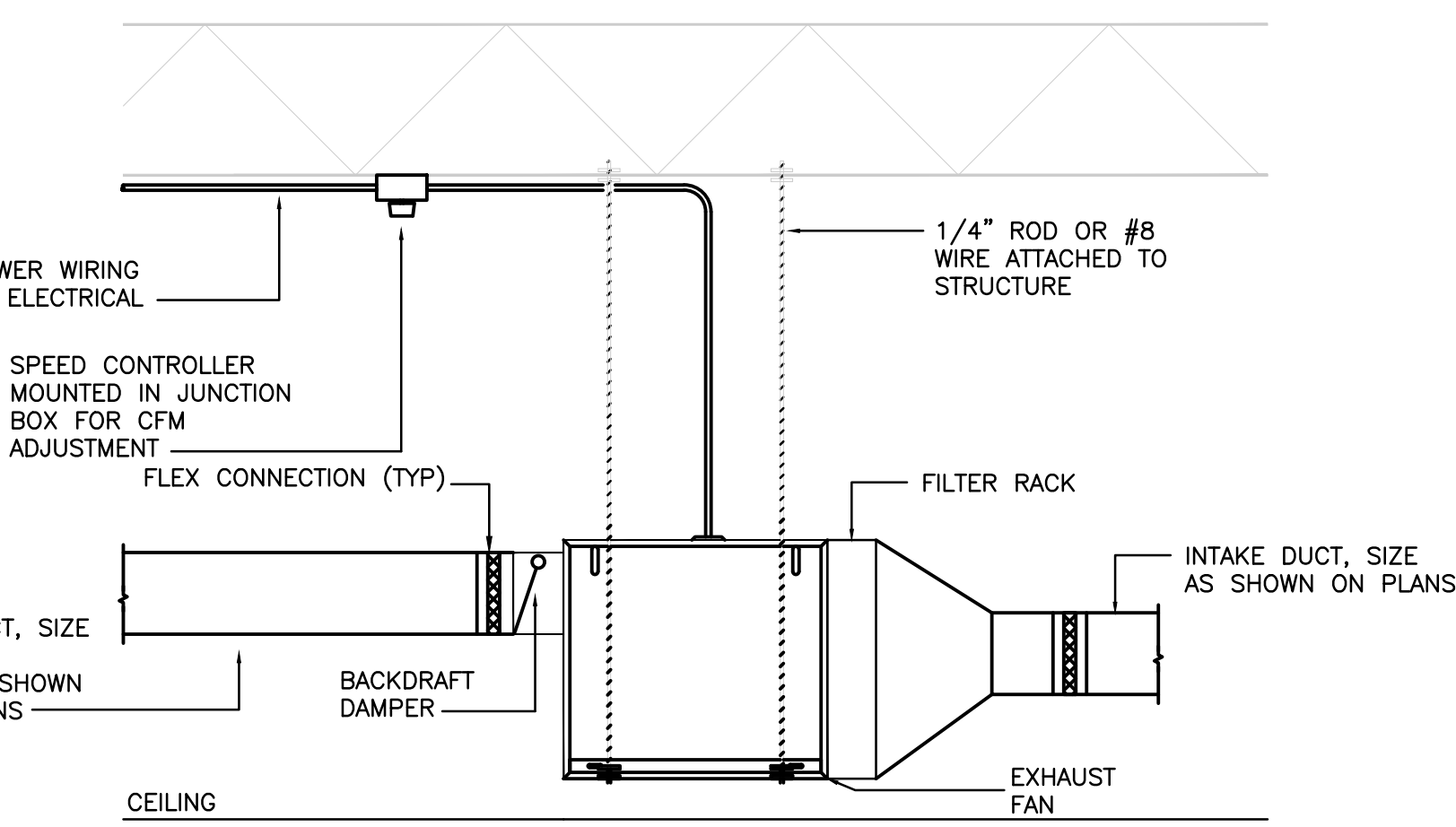
TYPICAL DUCT TAKE-OFF

NTS



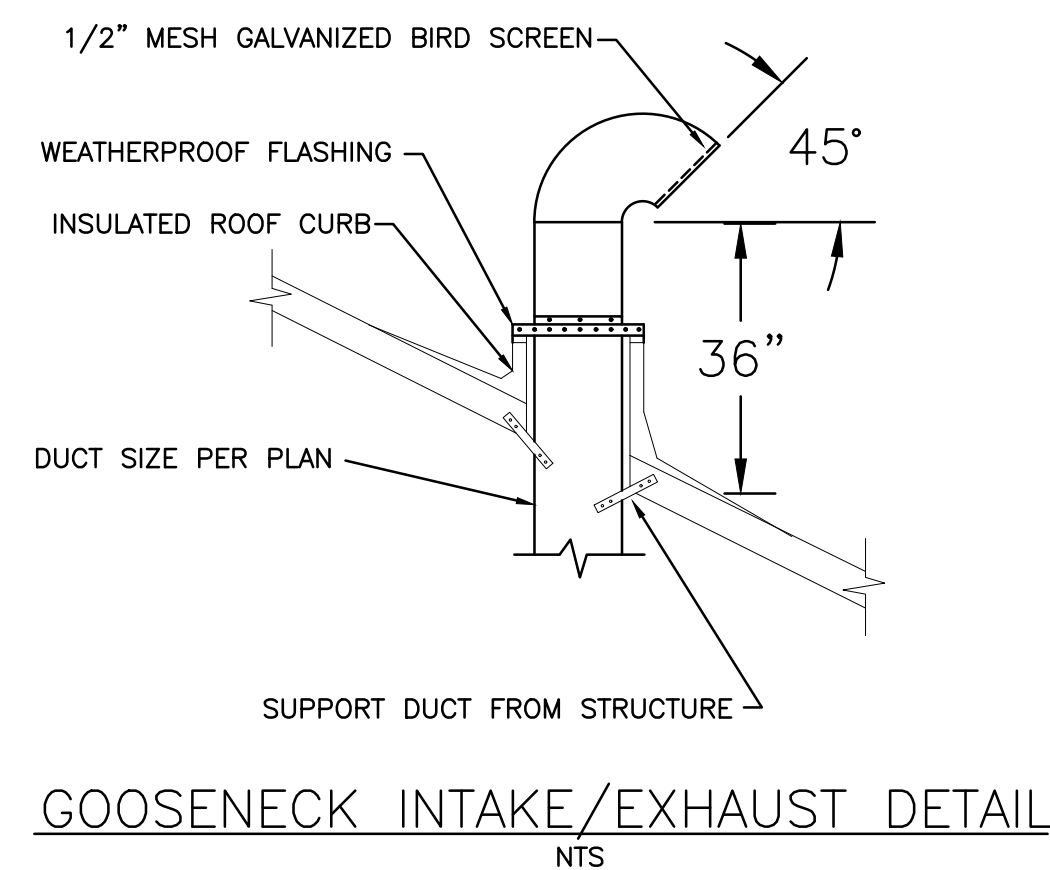
CEILING MOUNTED EXHAUST FAN DETAIL

NTS



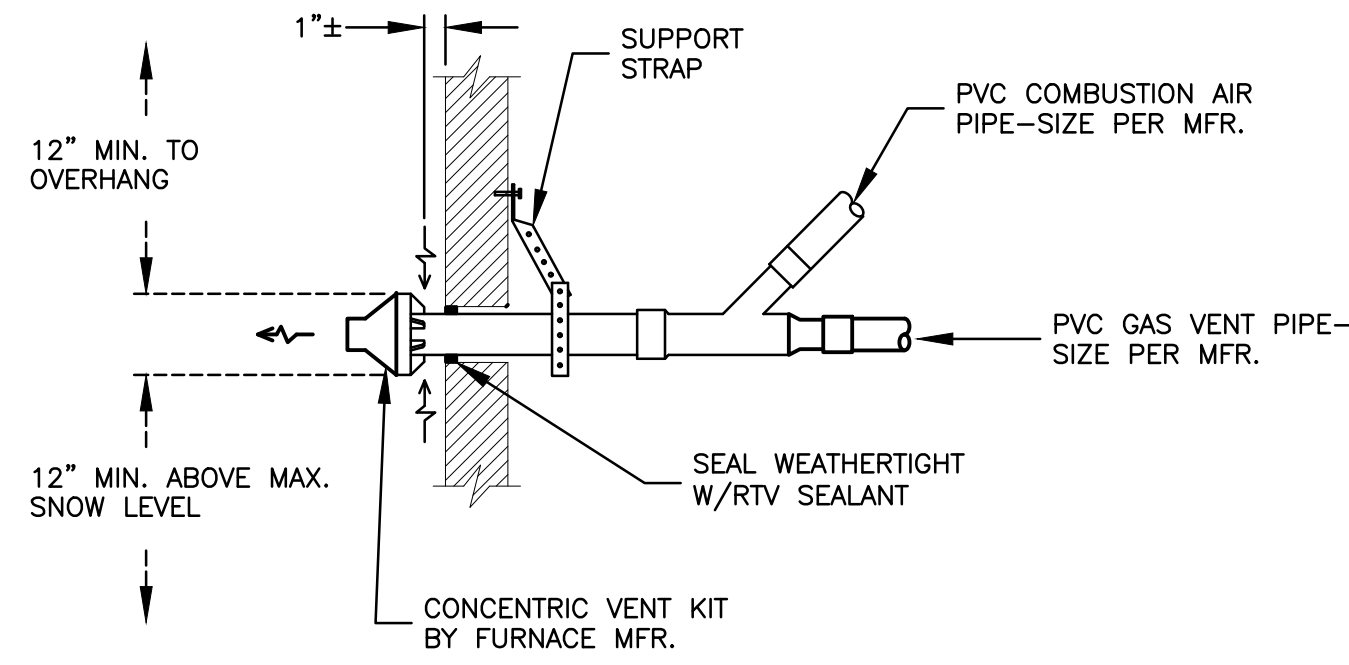
INLINE FAN DETAIL

NTS



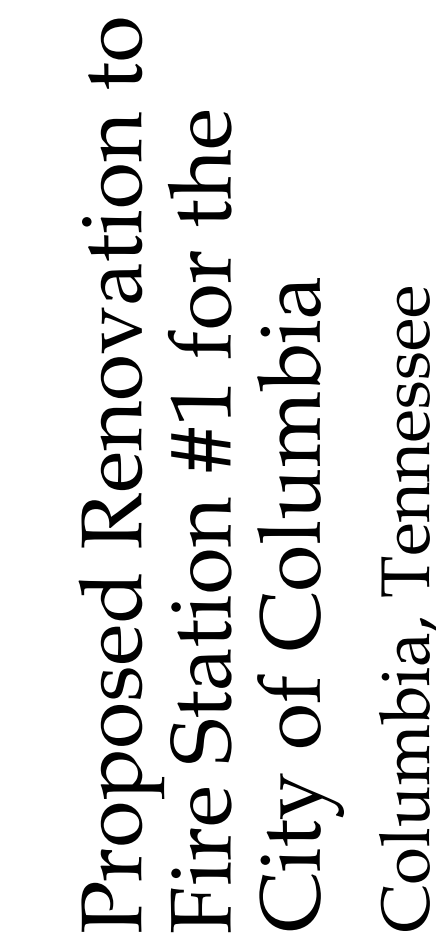
GOOSENECK INTAKE/EXHAUST DETAIL

NTS



SIDEWALL CONCENTRIC GAS VENT DETAIL

NTS



THIS DRAWING HAS BEEN ISSUED:

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File #: 30322_MECH	DATE: 10/30/23 ISSUED BY: T. Little		5

AIR DEVICE SCHEDULE																					
MARK.	NECK SIZE (INCHES)	TYPE				MAXIMUM AIRFLOW (CFM)	MOUNTING				AIR PATTERN	DUTY				AIR THROW (FT@50 FPM)	STATIC PRESSURE DROP AT MAX CFM	PRICE MODEL NUMBER	MAX NC	NOTES	
		DIFFUSER	REGISTER	GRILLE	LOUVER		LAY-IN	SURFACE	WALL	FLOOR		DUCT	ROOF	SUPPLY	RETURN						EXHAUST
A	6	X				175	X						PLAQUE/4-WAY	X			8	0.03	SPD	20	1,3,6,8,12,16,18
B	8	X				275	X						PLAQUE/4-WAY	X			11	0.02	SPD	20	1,3,6,8,12,16,18
C	6	X				150		X					PLAQUE/4-WAY	X			8	0.03	SPD	20	1,3,6,8,11,16,18
D	22X22		X			2000	X						EGG CRATE	X			0.02	80F	20	2,3,6,10,12,16,18	
D1	22X22		X			2000	X						EGG CRATE		X		0.02	80FF	20	2,3,6,10,12,16,18	
E	16X8			X		250		X					LOUVER		X	X	--	NOTE 21	--		2,5,6,8,21
F	32X8			X		550		X					LOUVER		X	--	0.05	NOTE 21	--		2,5,6,8,21
G	32X16			X		800		X					LOUVER		X	--	0.05	NOTE 21	--		2,5,6,8,21
H	64X24			X		6000		X	X				COMBINATION		X	X	0.05	NOTE 25	--		2,4,5,6,8,25
I	NOT USED					--							--				--	--	--		--
J	22X22		X			1500	X						PERFORATED	X			0.15	APDR	20	2,3,6,9,12,16,17,18	
K	10X10		X			475		X					--		X		0.05	80F	25	2,3,6,10,16,18	
L	24X8				X	325			X				LOUVER		X	X	0.05	NOTE 21	--		2,5,6,8,21
AIR DEVICE NOTES (SOME NOTES MAY NOT BE USED ON THIS PROJECT)																					
1. STEEL											18. PROVIDE PLASTER FRAME IN GYP BOARD OR PLASTER CEILINGS AS REQ'D.										
2. ALUMINUM											19. SIGHT TIGHT CHEVRON BLADE DOOR GRILLE W/AUXILIARY FRAME										
3. WHITE FINISH											20. ADJUSTABLE COUNTERBALANCED BACKDRAFT/RELIEF DAMPER; RUSKIN MODEL CBD-2.										
4. PROVIDE COMPATIBLE SECURITY BARS FOR LOUVER											21. 6 INCH DRAINABLE STATIONARY LOUVER WITH BIRD SCREEN; UNITED ENERTECH MODEL FL-D-6										
5. ARCHITECT TO SELECT COLOR											22. 6 INCH DRAINABLE ADJUSTABLE LOUVER WITH BIRD SCREEN AND 120V MOTORIZED OPERATOR WITH SPRING RETURN UNITED ENERTECH MODEL AFL-D-6										
6. FIXED PATTERN											23. NON DUCTED PANEL										
7. ADJUSTABLE PATTERN											24. 4 INCH DRAINABLE STATIONARY BRICK VENT WITH BIRD SCREEN; UNITED ENERTECH MODEL BV SERIES, VERIFY FLANGE RQMTS WITH ARCH.										
8. LOUVERED FACE											25. 6 INCH DRAINABLE COMBINATION LOUVER WITH BIRD SCREEN AND 120V MOTORIZED OPERATOR WITH SPRING RETURN UNITED ENERTECH MODEL CFL-D-6										
9. HINGED, PERFORATED FACE											26. ADJUST FOR FULL VERTICAL DISCHARGE										
10. 1/2 X 1/2 X 1/2 INCH EGGRATE FACE											27. PROVIDE WITH LINED/INSULATED PLENUM BOX										
11. 12 X 12 INCH MODULE											28. VARIABLE FLOW DIFFUSER WITH HEATING AND COOLING THERMOSTAT; ACUTHERM TF-HC SERIES										
12. 24 X 24 INCH MODULE - FULL FACE																					
13. 24 X 24 INCH MODULE - FILLER PANEL																					
14. 48 X 24 INCH MODULE																					
15. 24 X 12 INCH MODULE																					
16. OPPOSED BLADE DAMPER																					
17. SQUARE TO ROUND ADAPTER AS REQUIRED (FIELD FAB OR FACTORY)																					
NOTE: SUBMITTALS FOR AIR DEVICES OTHER THAN THE MANUFACTURER AND MODEL NO. SPECIFIED SHALL INCLUDE ALL APPLICABLE PERFORMANCE DATA (THROW, PRESSURE DROP, INC. ETC.).																					
PROVIDE INSULATED BACK FOR SUPPLY DIFFUSERS																					

GRAVITY VENTILATOR SCHEDULE	
MARK	GV-1
SERVICE	INTAKE
CONSTRUCTION	ALUMINUM
ROOF OPENING	24X24
THROAT DIAMETER (INCHES)	16
MAXIMUM AIRFLOW (CFM)	525
STATIC PRESSURE DROP (IN WC)	0.06
ACCESSORIES	ROOF CURB (COLOR PER ARCHITECT), BACKDRAFT DAMPER, INSECT SCREEN
MANUFACTURER	COOK
MODEL	PR-16

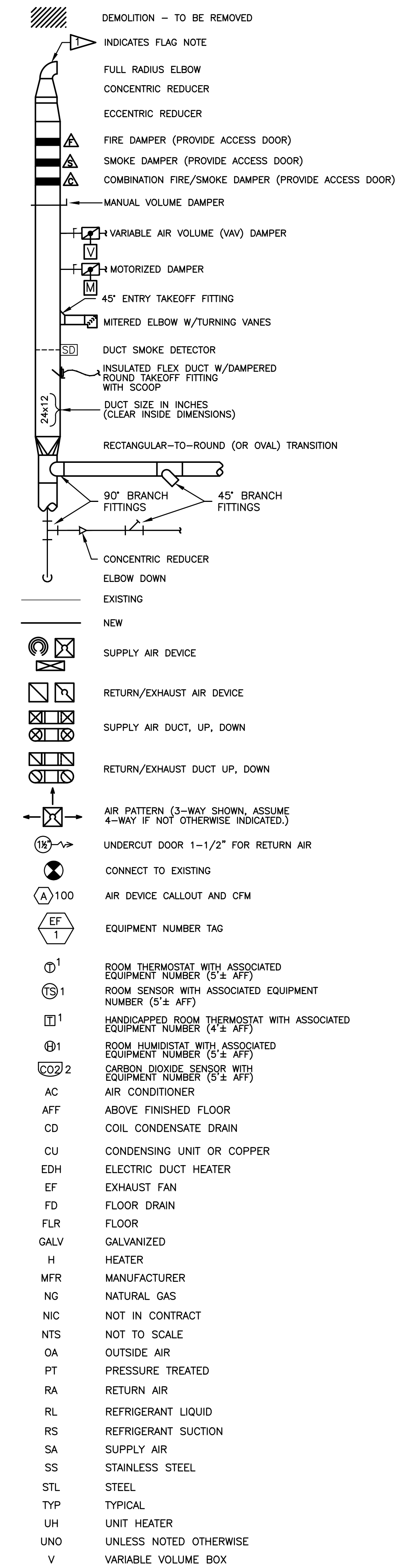
ENERGY RECOVERY VENTILATOR SCHEDULE	
MARK	ERV-1
OUTDOOR AIR DATA	
AIRFLOW (CFM)	690
EXTERNAL SP (IN WC)	0.8
DRIVE TYPE	DIRECT
MOTOR HORSEPOWER	1/4
OUTLET POSITION	LEFT SIDE
EXHAUST AIR DATA	
AIRFLOW (CFM)	510
EXTERNAL SP (IN WC)	0.9
DRIVE TYPE	DIRECT
MOTOR HORSEPOWER	1/4
INLET POSITION	RIGHT SIDE
UNIT DATA	
WHEEL EFFICIENCY (%)	81
ELECTRICAL (VOLTS/PH/Hz)	120/1/60
ACCESSORIES	WIRED WALL CONTROLLER, (2) BACK DRAFT DAMPERS, (2) MERV 8 FILTERS
NOTES	NOTE 1
MANUFACTURER	VENMAR
MODEL	6LC

(1) UNITS ARE TO BE PROVIDED IN MODULES OF SIZES REQUIRED TO FIT INTO ROOMS THROUGH PROVIDED DOORS/CORRIDORS (SEE PLANS) OR PROVIDED WITH CONSTRUCTION SUITABLE FOR KNOCK-DOWN FOR REMOVAL AND REPLACEMENT

SPLIT SYSTEM AIR-CONDITIONING SCHEDULE			
AIR HANDLING UNIT			
MARK	AHU-8 & 9		AHU-11 & 12
SERVICE	TRAINING, ASSISTANT CHIEF		KITCHEN & OFFICES
WEIGHT	225		225
CONFIGURATION	HORIZONTAL		HORIZONTAL
SUPPLY AIR DATA			
AIRFLOW (CFM)	1000		1680, 1600
EXTERNAL SP (IN WC)	0.7		0.7
OUTSIDE AIR (CFM)	225, 140		275, 240
HEATING DATA			
FUEL	NATURAL GAS		NATURAL GAS
COMBUSTION	FAN ASSISTED		FAN ASSISTED
IGNITION	HOT SURFACE		HOT SURFACE
INPUT (BTUH)	77,000		110,000
CAPACITY (BTUH)	73,200		104,500
UNIT DATA			
ELECTRICAL (VOLTS/PH/Hz)	115/1/60		115/1/60
MCA/MOCP	(1) 1/2 Hp MOTOR		(1) 3/4 Hp MOTOR
BLOWER DRIVE	DIRECT		DIRECT
BLOWER MOTOR HORSEPOWER	1/2		3/4
ACCESSORIES	HONEYWELL VISION-PRO 8000T/B8220 SERIES PROGRAMMABLE, THERMOSTAT, CONCENTRIC VENT KIT, TXV, MOTORIZED OA DAMPER		HONEYWELL VISION-PRO 8000T/B8220 SERIES PROGRAMMABLE, THERMOSTAT, CONCENTRIC VENT KIT, TXV, MOTORIZED OA DAMPER
	THROWAWAY		MERV 8
	FURNACE QUANTITY		1 FURNACE
	WIDTH (INCHES)		17.5
MANUFACTURER	TRANE		TRANE
MODEL	TUH1B080		TUH1D120
DIRECT EXPANSION COOLING COIL MODULE			
NET TOTAL (MBH)	29.2		47.1
NET SENSIBLE (MBH)	22		35.2
ENTERING AIR DRY BULB (F)	80		80
ENTERING AIR WET BULB (F)	67		67
MAX PRESS DROP (IN WC)	0.3		0.3
MANUFACTURER	TRANE		TRANE
MODEL	4TXCB004		4TXCD009
CONDENSING UNIT			
MARK	CU-8 & 9		CU-11 & 12
NOMINAL TONS	2.5		4
AMBIENT TEMPERATURE (F)	96		96
REFRIGERANT	R-410A		R-410A
NUMBER OF COMPRESSORS	1		1
EER/SEER	15.3 SEER		14.5 SEER
UNIT DATA			
ELECTRICAL (VOLTS/PH/Hz)	208/1/60		208/1/60
MCA/MOCP	17/25		24/40
ACCESSORIES	LOUVERED CONDENSER COIL GUARDS, LOW AMBIENT COOLING, RAWAL APR VALVES		LOUVERED CONDENSER COIL GUARDS, LOW AMBIENT COOLING, RAWAL APR VALVES
MANUFACTURER	TRANE		TRANE
MODEL	4TTR4031		4TTR4048
REFRIGERANT LINES AND ACCESSORIES: SIZE REFRIGERANT LINES AND PROVIDE REFRIGERANT PIPING ACCESSORIES PER EQUIPMENT MANUFACTURER RECOMMENDATIONS			

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MECHANICAL LEGEND



MECHANICAL NOTES

- THESE DRAWINGS HAVE BEEN DEVELOPED FROM THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL FIELD CONDITIONS, DIMENSIONS, CLEARANCES, LOCATION OF EXISTING UTILITIES, ETC. PRIOR TO BIDDING, FABRICATION, OR INSTALLATION. DO NOT SCALE FROM THESE DRAWINGS.
- COORDINATE INSTALLATION AMONG TRADES TO AVOID INTERFERENCES. WHERE PIPING AND DUCTWORK ARE ROUTED TOGETHER, INSTALL PIPING BELOW DUCTWORK FOR MAINTENANCE ACCESSIBILITY. INSTALL ALL MECHANICAL SYSTEM COMPONENTS TO PERMIT INSTALLATION OF CEILINGS AT HEIGHTS INDICATED ON THE ARCHITECTURAL DRAWINGS.
- INSTALL ALL HVAC EQUIPMENT PER MANUFACTURER RECOMMENDATIONS, INCLUDING REQUIRED MAINTENANCE CLEARANCES. PIPING, DUCTWORK, AND CONDUIT ROUTING SHALL NOT BLOCK REQUIRED ACCESS TO EQUIPMENT DOORS OR PANELS.
- VERIFY THE SLOPE OF THE BUILDING ROOF PRIOR TO ORDERING EQUIPMENT CURBS. USE CURBS RECOMMENDED BY THE EQUIPMENT MANUFACTURER FOR THE ACTUAL ROOF SLOPE TO INSTALL EQUIPMENT PLUMB AND LEVEL. EQUIPMENT SHALL NOT BE PITCHED WITH ROOF.
- DESIGN BASIS FOR HVAC SYSTEMS, INCLUDING ASSOCIATED PIPING AND ELECTRICAL WORK, IS THE SCHEDULED EQUIPMENT. SUBSTITUTION OF OTHER EQUIPMENT MAY REQUIRE CHANGES IN PIPING, ELECTRICAL POWER SUPPLY, MAINTENANCE CLEARANCES, STRUCTURAL SUPPORTS, ETC. ALL SUCH CHANGES SHALL BE COORDINATED THROUGHOUT ALL TRADES, AND SHALL BE PERFORMED WITH NO EXTENSION OF SCHEDULE, AND AT NO ADDITIONAL COST TO THE OWNER.
- ARCHITECTURAL GLAZING USED AS THE DESIGN BASIS FOR HVAC LOADS WAS DOUBLE 1/4-INCH INSULATED GLASS, LOW E TYPE. SUBSTITUTION OF OTHER GLAZING PRODUCTS MAY RESULT IN INADEQUATE COOLING, AND SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR EVALUATION.
- MOUNT OUTDOOR EQUIPMENT INSTALLED AT GRADE ON 4" THICK REINFORCED CONCRETE PADS.
- PROVIDE LOUVERED CONDENSER COIL GUARDS FOR ALL EXTERIOR MOUNTED AC EQUIPMENT.
- FABRICATE NEW HVAC DUCTWORK FROM MILL GALVANIZED STEEL SHEET. MATERIAL GAGES, FABRICATION DETAILS, INSTALLATION AND DUCT SUPPORT SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS. SEAL ALL JOINTS PER SMACNA STANDARDS.
- THE INDICATED DUCT ROUTING AND SIZES ARE DIAGRAMMATIC. DO NOT FABRICATE FROM THESE DRAWINGS. FIELD VERIFY ROUTING AND AVAILABLE CLEARANCES. WHERE REQUIRED BY FIELD CONDITIONS, DUCTWORK MAY BE RE-SIZED UTILIZING ASHRAE/SMACNA EQUIVALENT SIZES. NOTIFY ENGINEER AND OBTAIN APPROVAL FOR REQUIRED ROUTING AND SIZE CHANGES PRIOR TO BEGINNING FABRICATION.
- SMACNA EQUIVALENT ROUND DUCT OR RECTANGULAR DUCT SIZES MAY BE SUBSTITUTED FOR THE DUCT SIZES INDICATED ON THE PLANS. RECTANGULAR SUBSTITUTIONS SHALL MAINTAIN A MAXIMUM OF 3:1 ASPECT RATIO.
- RIGID EXHAUST AND OUTSIDE AIR DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 2 INCH THICK FLEXIBLE FIBERGLASS, MINIMUM R-6. INSULATION SHALL BE PROVIDED WITH FACTORY APPLIED REINFORCED FOIL VAPOR BARRIER. INSULATION AND VAPOR BARRIER SHALL HAVE A FIRE SMOKE RATING OF 25/50. APPLY INSULATION PER SMACNA STANDARDS.
- RIGID SUPPLY AND RETURN DUCTWORK SHALL BE EXTERNALLY INSULATED WITH 2 INCH THICK FLEXIBLE FIBERGLASS, MINIMUM R-6 INSIDE CONDITIONED BUILDING ENVELOPE. DUCTWORK OUTSIDE BUILDING ENVELOPE SHALL BE PROVIDED WITH 2-1/2 INCH THICK INSULATION, MINIMUM R-8. INSULATION SHALL BE PROVIDED WITH FACTORY APPLIED REINFORCED FOIL VAPOR BARRIER. INSULATION AND VAPOR BARRIER SHALL HAVE A FIRE SMOKE RATING OF 25/50. APPLY INSULATION PER SMACNA STANDARDS.
- KITCHEN GREASE EXHAUST DUCT SHALL BE 2-INCH WG PRESSURE CLASS, 16-GAGE (MIN) UNGALVANIZED STEEL SHEET PER ASTM A1008, WITH CONTINUOUS WELD JOINTS OR 18-GAGE (MIN) STAINLESS STEEL WITH CONTINUOUS EXTERNAL WELD JOINTS. FABRICATE PER SMACNA (DCS), SMACNA (KVS), AND NFPA 96 REQUIREMENTS
- PROVIDE DOUBLE THICKNESS TURNING VANES IN ALL MITERED ELBOWS AND TEES.
- INSULATED FLEXIBLE DUCT SHALL BE UL LISTED, CONSTRUCTED OF A CPE INNER LINER, COATED SPRING STEEL WIRE HELIX WITH FIBERGLASS BLANKET, AND VAPOR BARRIER EQUAL TO THERMAFLEX G-KM BY FLEXIBLE TECHNOLOGIES. INSULATION SHALL HAVE A FIRE SMOKE RATING OF 25/50.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE FIVE FEET, UNLESS OTHERWISE INDICATED.
- SECURE FLEXIBLE DUCT CONNECTIONS WITH STAINLESS STEEL WORM GEAR CLAMPS AND DUCT TAPE.
- PROVIDE EMERGENCY DRAIN PANS UNDER SUSPENDED A/C UNITS WITH COOLING COILS PER MECHANICAL CODE REQUIREMENTS. PROVIDE FLOAT SWITCHES IN DRAIN PANS FOR UNIT SHUT-DOWN.
- INSTALL HORIZONTAL INDOOR AIR HANDLERS SUSPENDED FROM STRUCTURE WITH VIBRATION ISOLATION AT EACH SUSPENSION POINT.
- WHERE LAY-IN AIR DEVICES ARE SPECIFIED IN AREAS WITH PLASTER OR GYPSUM BOARD CEILINGS, PROVIDE PLASTER FRAMES.
- SEE REFLECTED CEILING PLAN FOR FINAL LIGHT FIXTURE LOCATIONS AND DIMENSIONS. ADJUST DUCTWORK/DIFFUSER LOCATIONS AS REQUIRED TO SUIT LIGHTING ARRANGEMENT.
- MOTORIZED OUTSIDE AIR DAMPERS SHALL BE GALVANIZED STEEL CONSTRUCTION WITH BRONZE OILITE BEARINGS, LOW LEAKAGE GASKETS, AND 24-VOLT NORMALLY CLOSED, TWO-POSITION, SPRING RETURN ACTUATOR; UNITED ENERTECH MODEL CH-10-R OR APPROVED EQUAL.
- PIPING MATERIALS AND FITTINGS SHALL BE AS FOLLOWS:
REFRIGERANT PIPING SHALL BE TYPE L, HARD DRAWN, COPPER TUBING PER ASTM B88; CLEANED, DEHYDRATED, AND SEALED PER ASTM B280, WITH WROUGHT COPPER SOCKET-JOINT FITTINGS AND SILVER SOLDER.
COIL CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS.
- INSULATE INDOOR COIL CONDENSATE DRAIN AND ALL REFRIGERANT SUCTION PIPING WITH 1/2 INCH CLOSED CELL FOAM, "ARMAFLEX" OR EQUAL. PROVIDE UV PROTECTION FOR OUTDOOR INSULATION.
- PITCH CONDENSATE PIPING TO DRAIN A MINIMUM OF 1/8th INCH PER FOOT. PROVIDE P-TRAPS PER A/C UNIT MANUFACTURER INSTALLATION MANUAL.
- ROUTE AC-1, 2, 3 & 5 CONDENSATE PIPING TO NEAREST FLOOR DRAIN IN THE ROOM "COMPRESSED AIR ROOM-E12". ROUTE AC-4 & ERV-1 CONDENSATE PIPING TO FLOOR DRAIN IN THE ROOM "ELECTRICAL/UTILITY-E07". ROUTE AC-6, AHU-11, AHU-12, & MAU-1 CONDENSATE PIPING TO FLOOR DRAIN IN THE ROOM "JAN-122". ROUTE AC-7 & AHU-8 THRU 10 CONDENSATE PIPING OUT NEAREST EXTERIOR WALL AND DOWN TO EXISTING PERIMETER TO FLOOR DRAIN.
- SUPPORT HORIZONTAL PIPING FROM STRUCTURE WITHIN 1 FOOT OF ELBOWS AND AT THE MAXIMUM INTERVALS SPECIFIED BELOW:
NOMINAL PIPE SIZE DISTANCE BETWEEN SUPPORTS
1/2 TO 1-1/4 INCH 6'-0"
1-1/2 TO 2-1/2 INCH 10'-0"
3 TO 4 INCH 10'-0"
PVC 4'-0"
SUPPORT VERTICAL PIPING WITH RISER CLAMPS WITHIN 1 FOOT OF ELBOWS AND BENDS.
- INSTALL REFRIGERANT PIPING PER ANSI B31.5 AND LOCAL MECHANICAL CODE. CLEAN, DEHYDRATE, TEST, AND CHARGE LINES PER A/C MANUFACTURER INSTALLATION SPECIFICATIONS. ROUTE PIPING FROM CONDENSING UNITS INSIDE EXTERIOR WALL AND ABOVE CEILING TO AC UNITS.
- ALL PIPING PENETRATIONS THROUGH NON-RATED CONSTRUCTION SHALL BE SLEEVED. SEAL PENETRATIONS THROUGH EXTERIOR WALL WEATHERTIGHT WITH SILICONE SEALANT. PROVIDE ESCUTCHEONS AT EXPOSED INTERIOR LOCATIONS. ALL PIPING PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED PER DETAIL. SEE ARCHITECTURAL FOR LOCATIONS OF RATED CONSTRUCTION.
- NEW DUCTLESS UNIT (AC-1 THRU 7) PROGRAMMABLE THERMOSTATS SHALL BE MANUFACTURER STANDARD, LOW VOLTAGE. ALL OTHER NEW PROGRAMMABLE THERMOSTATS SHALL BE HONEYWELL VISION PRO 8000/TH321 SERIES (NO SUBSTITUTIONS). ANY/ALL PROGRAMMABLE THERMOSTATS SHALL BE PROGRAMMED TO PERFORM THE FOLLOWING SEQUENCES OF OPERATION:
UN-OCCUPIED MODE: SYSTEM SHALL CYCLE TO MAINTAIN SET-POINTS OF 80 DEGREES F COOLING AND 65 DEGREES F HEATING. WHERE MOTORIZED OR MODULATING OUTSIDE AIR DAMPERS ARE PROVIDED, DAMPER SHALL CLOSE.
OCCUPIED MODE: FAN SHALL RUN CONTINUOUSLY TO PROVIDE REQUIRED VENTILATION. SYSTEM COOLING AND HEATING SHALL CYCLE AS REQUIRED TO MAINTAIN SET-POINTS OF 74 DEGREES F COOLING AND 70 DEGREES F HEATING. WHERE MOTORIZED OR MODULATING OUTSIDE AIR DAMPERS ARE PROVIDED, DAMPER SHALL MODULATE TO MINIMUM AIRFLOW POSITION OR ECONOMIZER AS EQUIPPED.
- PROVIDE A CO/NO2 DETECTOR WITH THE FOLLOWING FEATURES: MICROPROCESSOR CONTROLLED, ELECTROCHEMICAL SENSORS, FACTORY CALIBRATED, POWER LOSS FAIL-SAFE MODE, 120 VAC POWER, DIGITAL DISPLAY, HIGH AND LOW ALARM LEVELS BUILT-IN SELF TESTING, DRY CONTACT RELAY OUTPUTS, LOCAL ALARM, ETL LISTED; BRASCH MANUFACTURING MODEL GSE-NCM-1 OR APPROVED EQUAL.
WIRE OUTPUT RELAYS IN PARALLEL WITH EF STARTER 'AUTO' TO START ON LOW ALARM, HIGH ALARM SHALL ACTIVATE REMOTE ALARM LIGHT, SEE ELECTRICAL.
- COMPLETE HVAC SYSTEMS SHALL BE BALANCED BY AN INDEPENDENT, TESTING, ADJUSTING, AND BALANCING (TAB), AABC CERTIFIED CONTRACTOR AS APPLICABLE. TAB CONTRACTOR SHALL BE CONTRACTED BY THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER AS APPLICABLE AND SHALL REPORT TO THE ENGINEER/ARCHITECT ON BEHALF OF THE OWNER. CONTRACTOR SHALL PROVIDE AABC NATIONAL PERFORMANCE GUARANTEE.
MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL ADDITIONAL SHEAVES, DAMPERS, ETC. AS REQUIRED FOR TAB CONTRACTOR TO COMPLETE AND PROVIDE BALANCED SYSTEM PER SPECIFICATIONS.
- NEW MECHANICAL EQUIPMENT SHALL NOT BE UTILIZED FOR SPACE CONDITIONING DURING CONSTRUCTION. EQUIPMENT SHALL BE OPERATED ONLY AS REQUIRED TO PROVIDE PROPER START-UP, CHECK-OUT, BALANCE, ETC. IN ORDER TO MEET "SUBSTANTIAL COMPLETION" GOALS AND PROVIDE A COMPLETE WORKING SYSTEM TO TURN OVER TO OWNER.
- MECHANICAL EQUIPMENT SHALL BE AS INDICATED ON THE DRAWINGS. EQUIPMENT OTHER THAN SCHEDULED BRAND AND MODEL MAY BE CONSIDERED PER FULL COMPLIANCE WITH SCHEDULE AND SPECIFICATIONS. MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY CHANGES AND/OR COSTS ASSOCIATED WITH USING PRODUCTS OTHER THAN THOSE SCHEDULED. HVAC SUPPLIER SHALL HAVE AVAILABLE FACTORY SERVICE TECHNICIANS WITHIN 100 MILE RADIUS OF JOBSITE AND OFFER 24 HR/7 DAY SERVICE, MAINTENANCE AND REPAIRS.
EQUIPMENT SUBMITTED, INCLUDING THE SPECIFIED EQUIPMENT SHALL BE FACTORY DIRECT FROM THE MANUFACTURER'S COMMERCIAL SALES OFFICE, INCLUDING FACTORY DIRECT WARRANTY AND SUPPORT. EQUIPMENT SUBMITTED FOR APPROVAL DURING THE SUBMITTAL PROCESS SHALL BE SUBMITTED COMPLETE WITH MANUFACTURER PERFORMANCE DATA AT THE DESIGN CONDITIONS. SUBMITTAL DATA SHALL BE PROVIDED FROM FACTORY AUTHORIZED REPRESENTATIVES. MANUFACTURER CATALOG STANDARD CUT SHEETS ARE NOT ACCEPTABLE. MANUFACTURERS' DESIGNATED DEALERS AND/OR WHOLESALEERS ARE NOT A SUBSTITUTE FOR FACTORY SERVICE AND SUPPORT.
- FIELD VERIFY THAT ANY EQUIPMENT MOUNTED BELOW INFRARED HEATERS MAINTAINS MINIMUM REQUIRED CLEARANCES AS SPECIFIED IN THE HEATER MANUFACTURER INSTALLATION MANUALS.
- EXHAUST SYSTEM IDENTIFIED TO REMAIN, CONTRACTOR SHALL VERIFY PROPER FAN OPERATION BY PERFORMING AT MINIMUM THE FOLLOWING: CLEAN INTERIOR, BLADES, INLET, OUTLET, AND PROVIDE NEW BELTS.

COMcheck Software Version 4.1.5.5
Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Proposed Renovation to Fire Station #1 for the City of Columbia
Location: Columbia, Tennessee
Climate Zone: 4a
Project Type: Addition

Construction Site: 1000 S Garden St
Columbia, TN
Owner/Agent:
Designer/Contractor: Tim Little
OLG Engineering
301 Industrial Blvd
Tullahoma, TN 37388
931.454.9940

Mechanical Systems List

Quantity System Type & Description

- AC-1 & 2 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 11 kBtu/h
Proposed Efficiency = 12.20 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 9.8 kBtu/h
Proposed Efficiency = 22.40 SEER, Required Efficiency: 14.00 SEER
Fan System: TYP CASSETTE-HI-WALL - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 1 Supply, Constant Volume, 350 CFM, 0.3 motor nameplate hp, 0.8 fan efficiency grade
- AC-3 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 13 kBtu/h
Proposed Efficiency = 11.40 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 12 kBtu/h
Proposed Efficiency = 22.00 SEER, Required Efficiency: 14.00 SEER
Fan System: TYP CASSETTE-HI-WALL - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 1 Supply, Constant Volume, 350 CFM, 0.3 motor nameplate hp, 0.8 fan efficiency grade
- AC-4 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 22 kBtu/h
Proposed Efficiency = 12.80 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 18 kBtu/h
Proposed Efficiency = 19.80 SEER, Required Efficiency: 14.00 SEER
Fan System: DUCTED MIN - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 2 Supply, Constant Volume, 635 CFM, 0.3 motor nameplate hp, 0.8 fan efficiency grade
- AC-5 (Single Zone):
Split System, Capacity = 18 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
Proposed Efficiency = 19.80 SEER, Required Efficiency: 13.00 SEER
Fan System: TYP CASSETTE-HI-WALL - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 8 Supply, Constant Volume, 1100 CFM, 1.0 motor nameplate hp, 0.8 fan efficiency grade

Project Title: Proposed Renovation to Fire Station #1 for the City of Columbia
Data filename: W:\2022 Projects\300_22_Govt\30322 Fire Station #1 Renovation - Columbia, TN\Load Calculations\Columbia Fire Station_30322-Mech.cck
Report date: 08/04/23
Page 1 of 3

Quantity System Type & Description

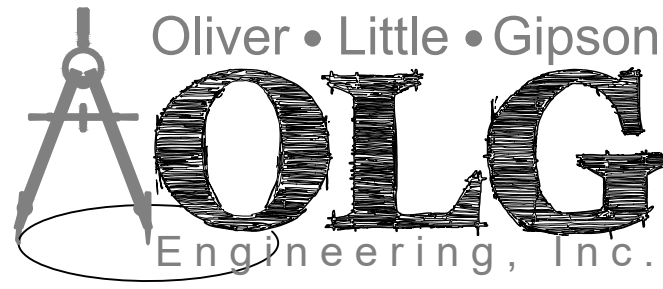
- Fans:
FAN 6 Supply, Constant Volume, 340 CFM, 0.3 motor nameplate hp, 0.8 fan efficiency grade
- H-1 THRU 4 (Single Zone):
Heating 1 each - Radiant Heater, Gas, Capacity = 150 kBtu/h
No minimum efficiency requirement applies
Fan System: None
- H-1 (Single Zone):
Heating 1 each - Unit Heater, Electric, Capacity = 10 kBtu/h
No minimum efficiency requirement applies
Fan System: TYP UNIT HEATER - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 7 Supply, Constant Volume, 600 CFM, 0.3 motor nameplate hp, 0.8 fan efficiency grade
- MAU-1 (Single Zone):
Heating 1 each - Central Furnace, Gas, Capacity = 71 kBtu/h
Proposed Efficiency = 92.00% EL Required Efficiency: 80.00 % EL or 80% AFUE
Cooling 1 each - Split System, Capacity = 36 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
Proposed Efficiency = 15.00 SEER, Required Efficiency: 13.00 SEER
Fan System: MAU SPLIT - Compliance (Motor nameplate HP method) : Passes
Fans:
FAN 8 Supply, Constant Volume, 1100 CFM, 1.0 motor nameplate hp, 0.8 fan efficiency grade

Mechanical Compliance Statement

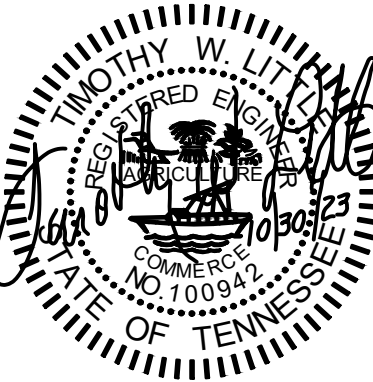
Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Tim W. Little PE
Name - Title Signature Date

Project Title: Proposed Renovation to Fire Station #1 for the City of Columbia
Data filename: W:\2022 Projects\300_22_Govt\30322 Fire Station #1 Renovation - Columbia, TN\Load Calculations\Columbia Fire Station_30322-Mech.cck
Report date: 08/04/23
Page 3 of 3



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Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

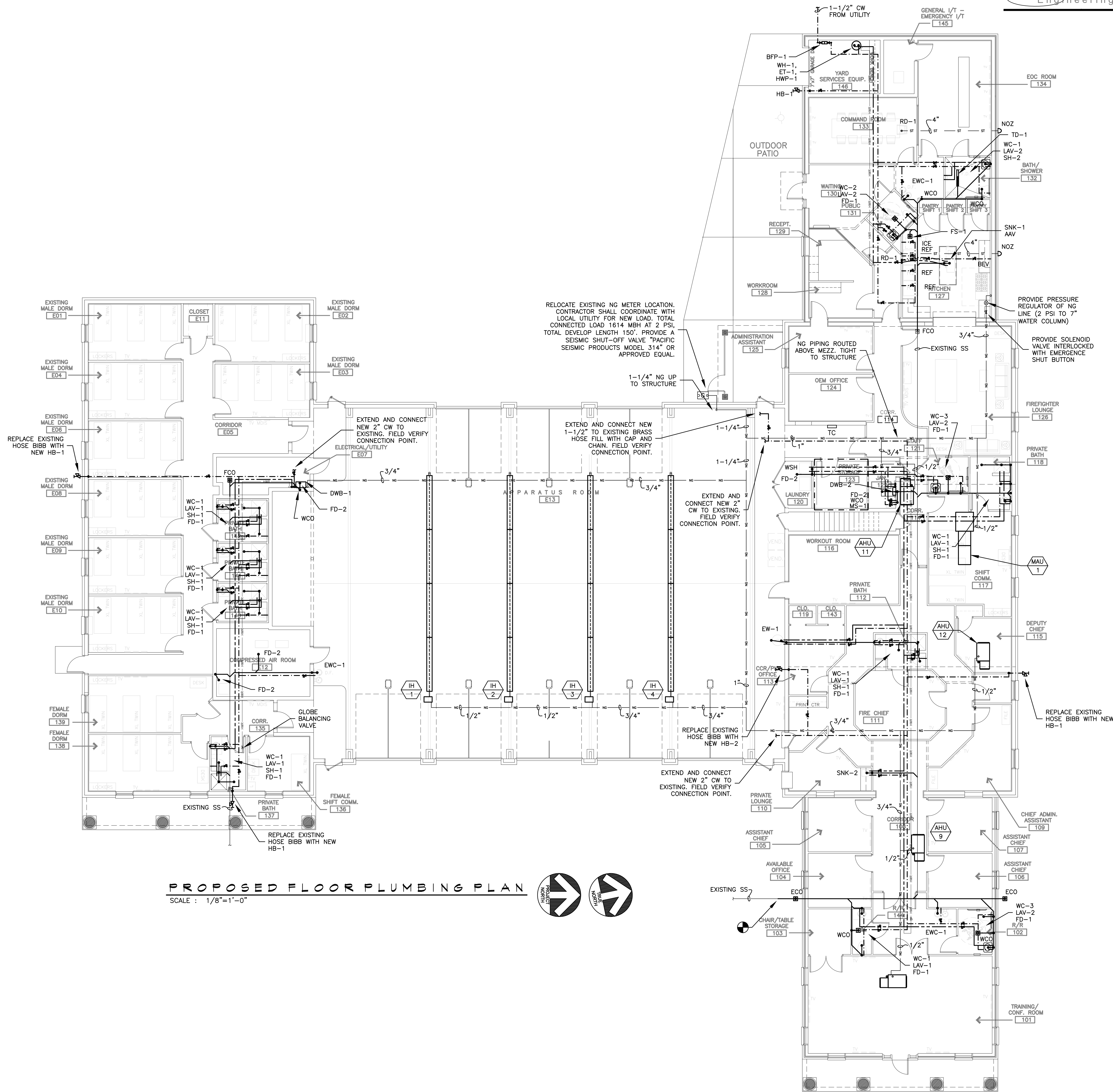
M5.1 HVAC Legend & Notes

Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	
Dr. By:	R. Geer	☐ FOR ESTIMATING / BIDDING ONLY	
Ck. By:	T. Little	☒ FOR CONSTRUCTION	
File #:	30322_MECH	DATE: 10/30/23 ISSUED BY: T. Little	

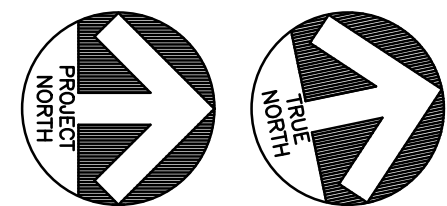
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Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee



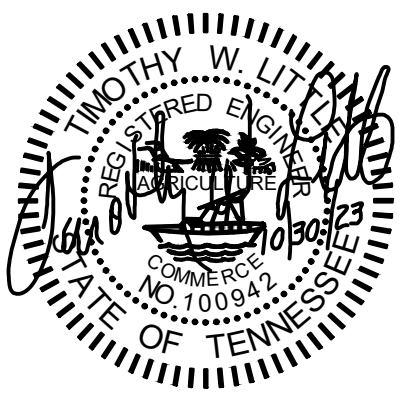
PROPOSED FLOOR PLUMBING PLAN
SCALE : 1/8"=1'-0"



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P1.1 Plumbing Plan

Date:	10-30-2023	Revisions:	
Job #:	30322	FOR REVIEW ONLY	1
Dr. By:	S. Shores	FOR ESTIMATING/BIDDING ONLY	2
Ck. By:	T. Little	FOR CONSTRUCTION	3
File #:	30322_plumb	DATE: 10/30/23 ISSUED BY: A. Gipson	4

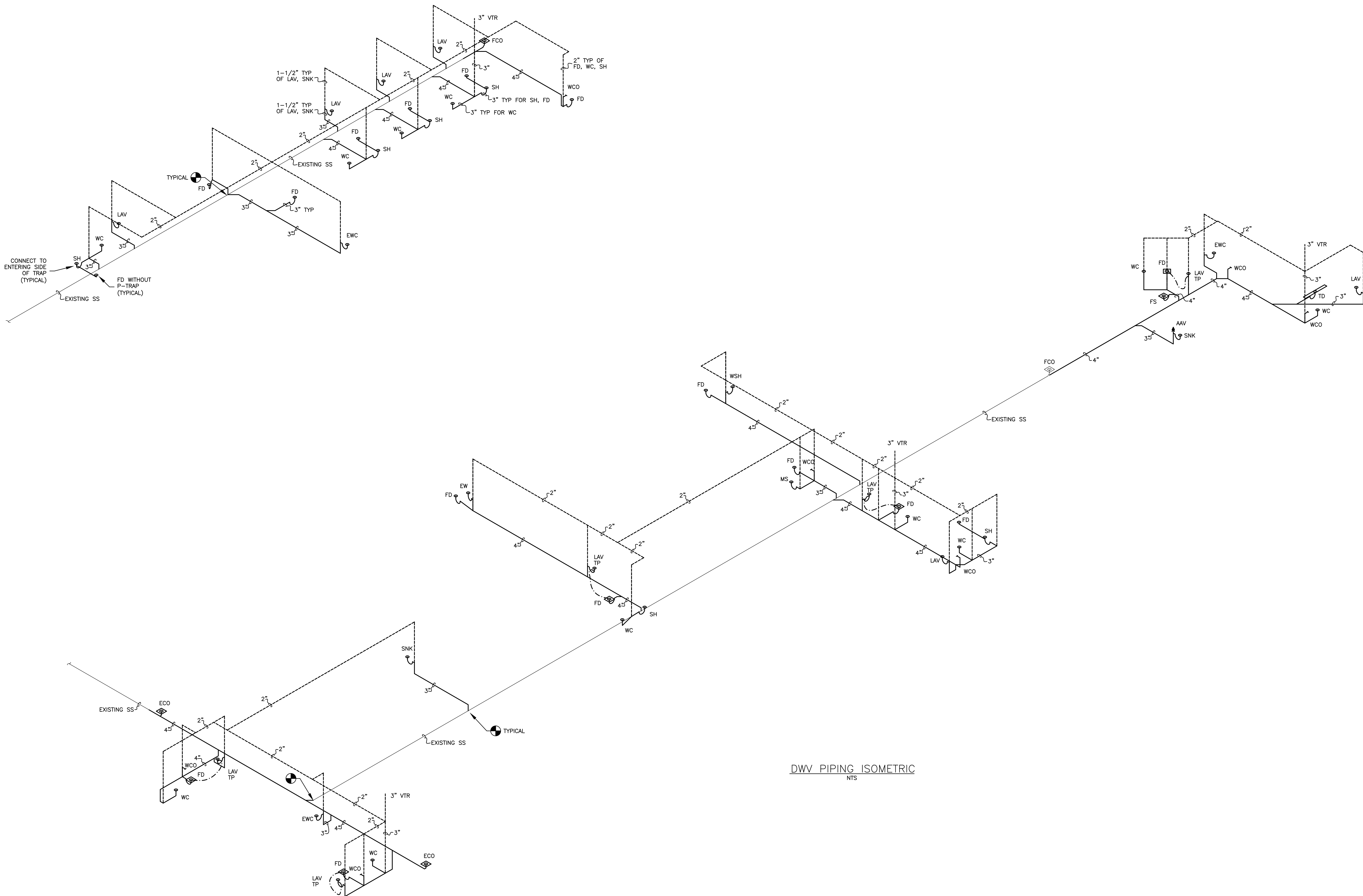


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

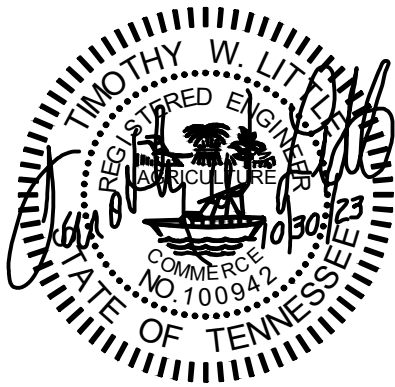
P2.1 Plumbing Isometrics

Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #: _____	☐ FOR REVIEW ONLY	1. _____
Dr. By: S. Shores	☐ FOR ESTIMATING/BIDDING ONLY	2. _____
Ck. By: T. Little	☒ FOR CONSTRUCTION	3. _____
File #: 30322_plumb	DATE: 10/30/23 ISSUED BY: A. Gipson	4. _____

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DWV PIPING ISOMETRIC
NTS

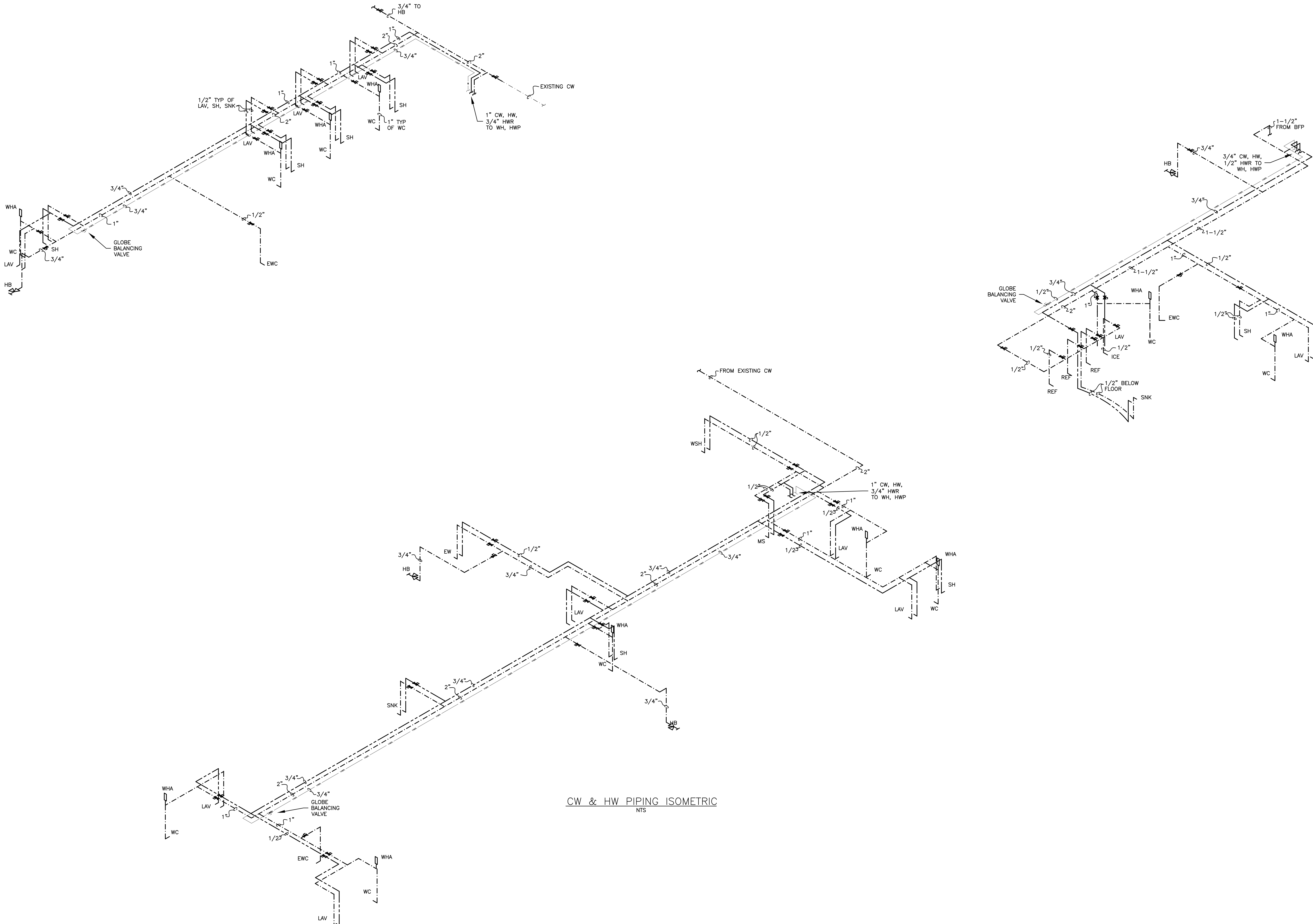


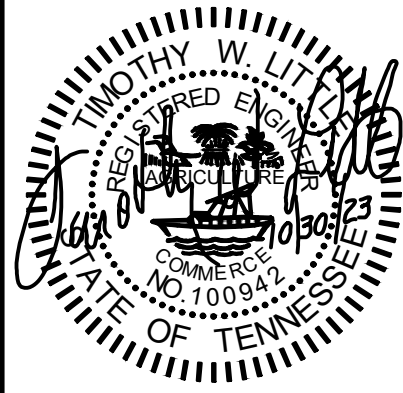
Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

P2.2 Plumbing Isometrics

Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #: _____	☐ FOR REVIEW ONLY	1. _____
Dr. By: S. Shores	☐ FOR ESTIMATING/BIDDING ONLY	2. _____
Ck. By: T. Little	☐ FOR CONSTRUCTION	3. _____
File #: 30322_plumb	DATE: 10/30/23 ISSUED BY: A. Gipson	4. _____

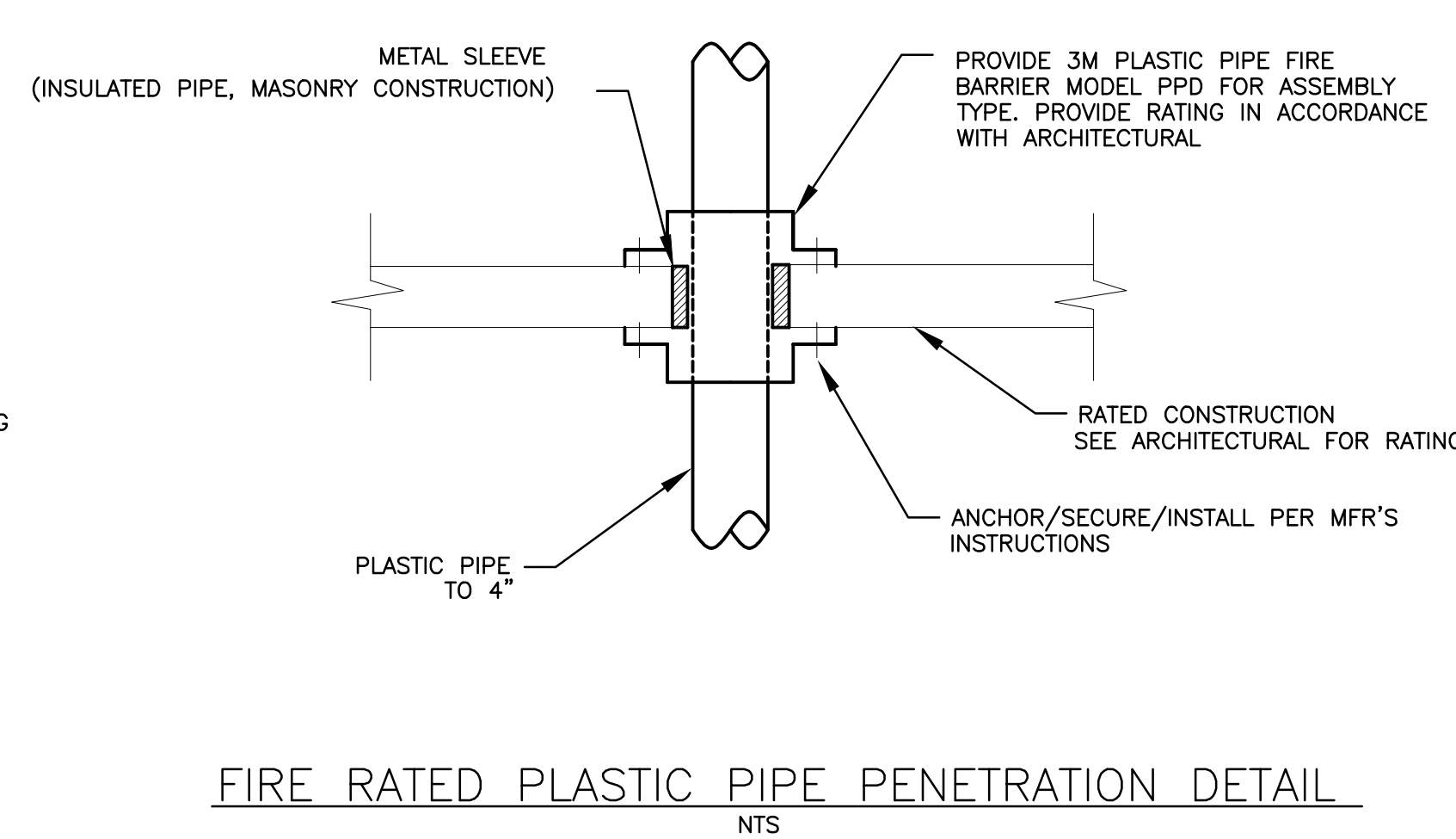
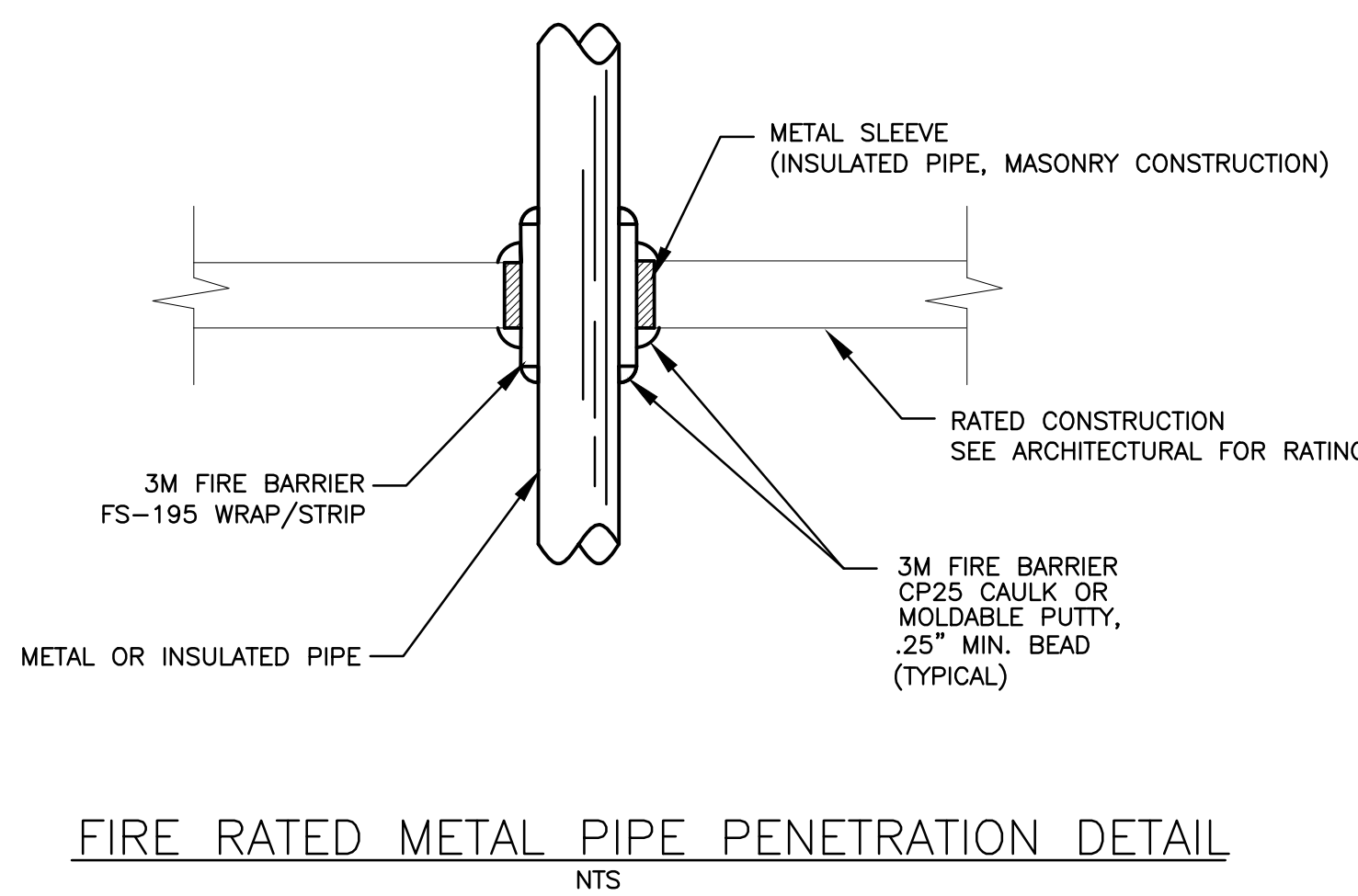
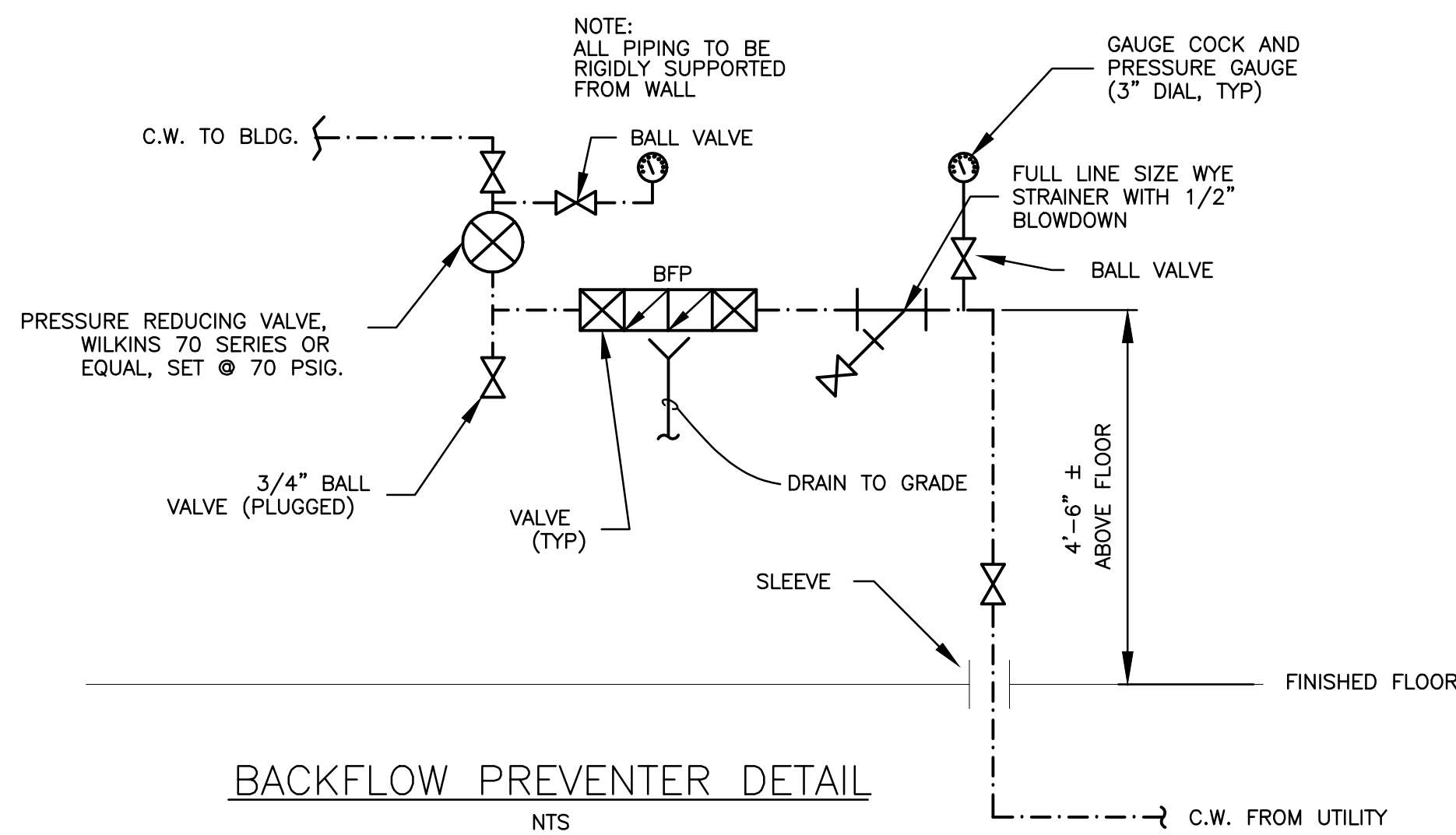
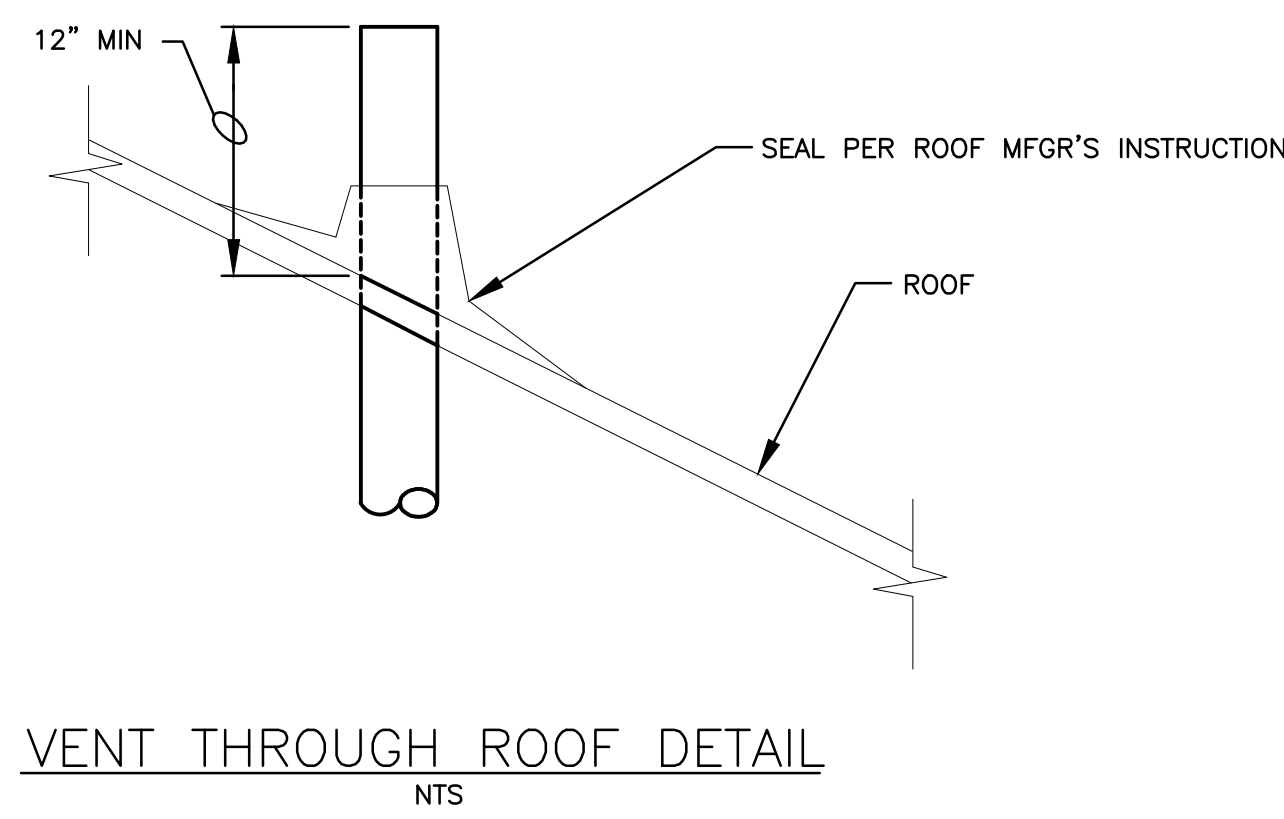
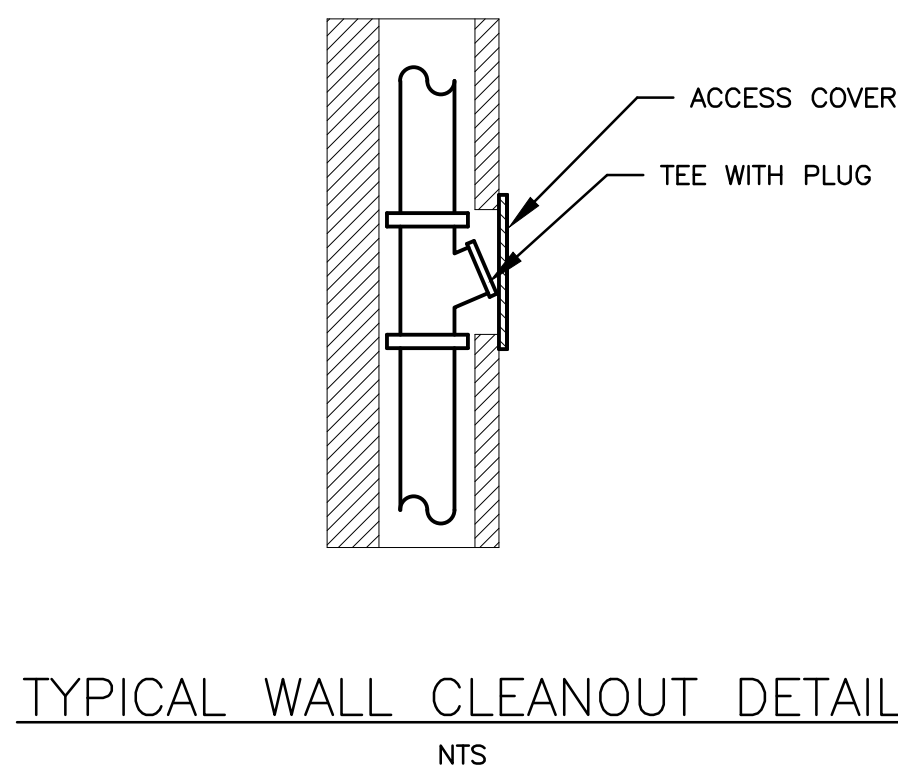
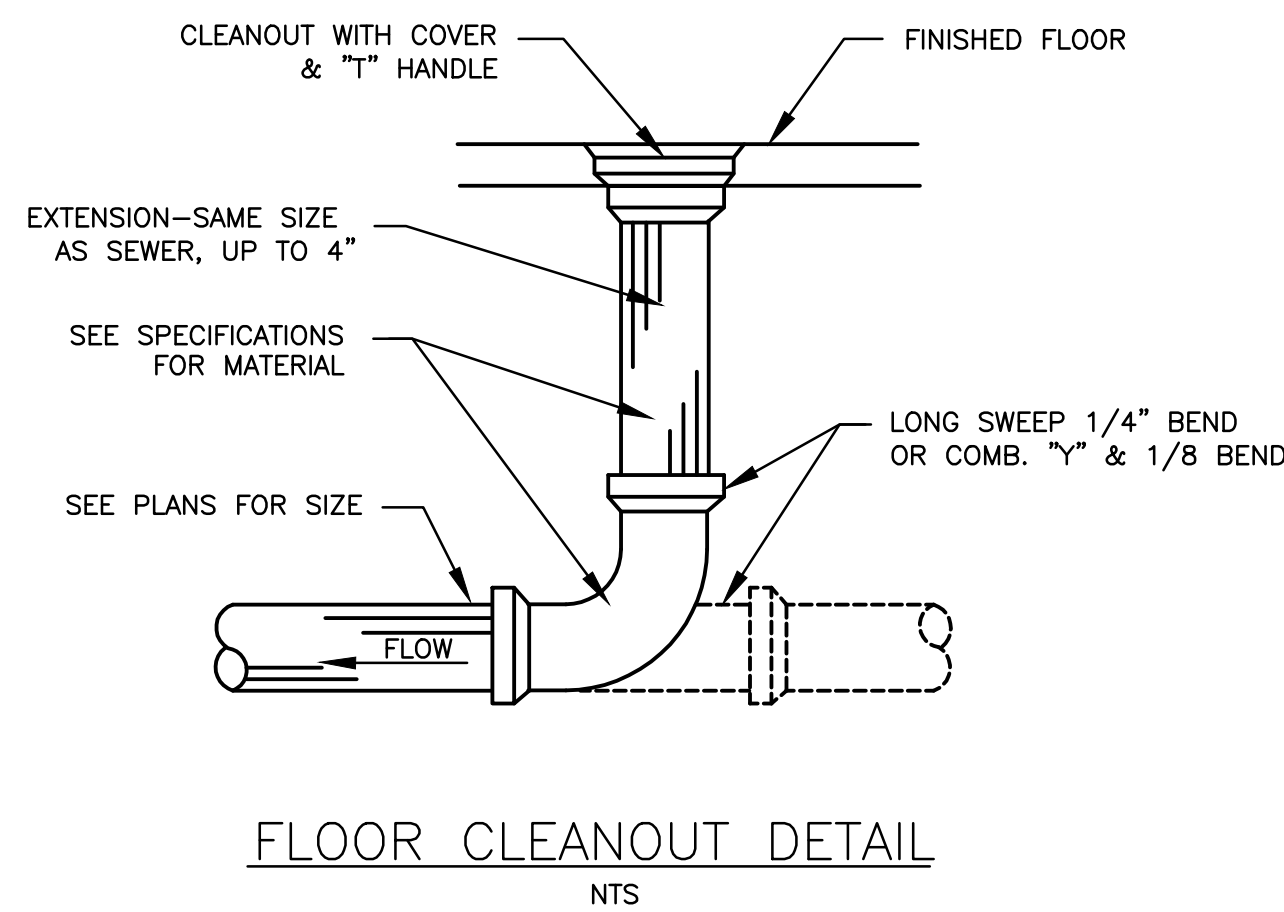
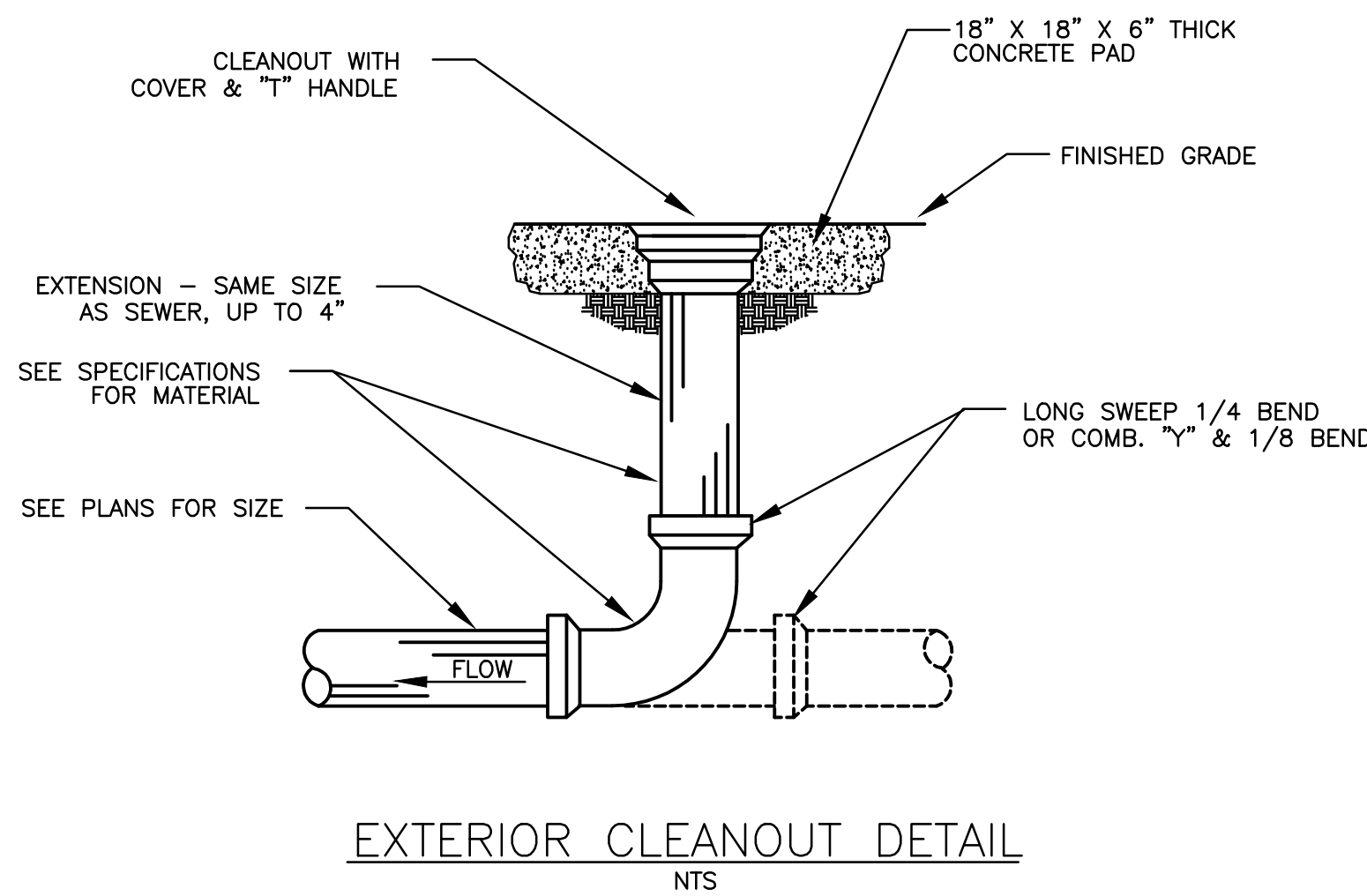
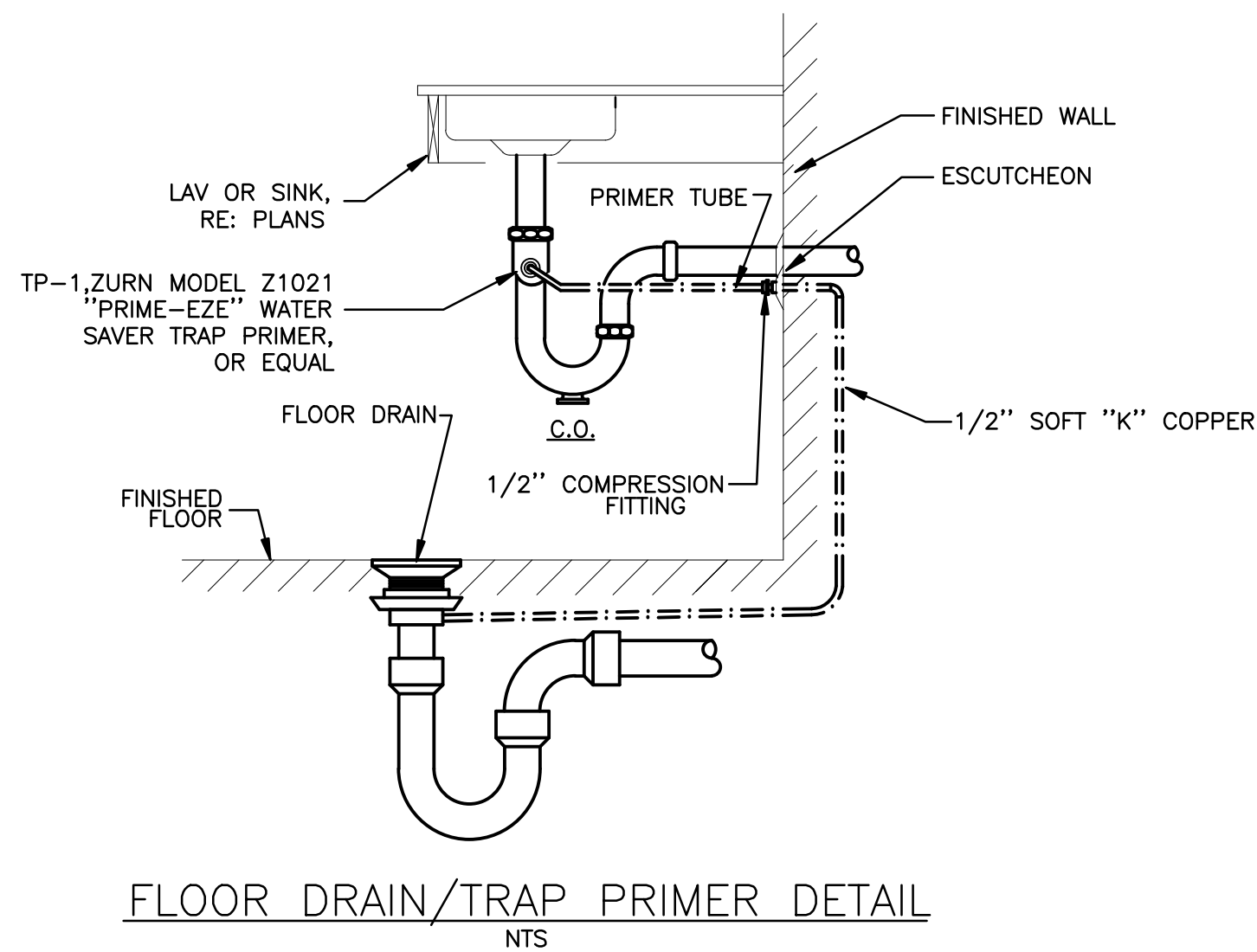
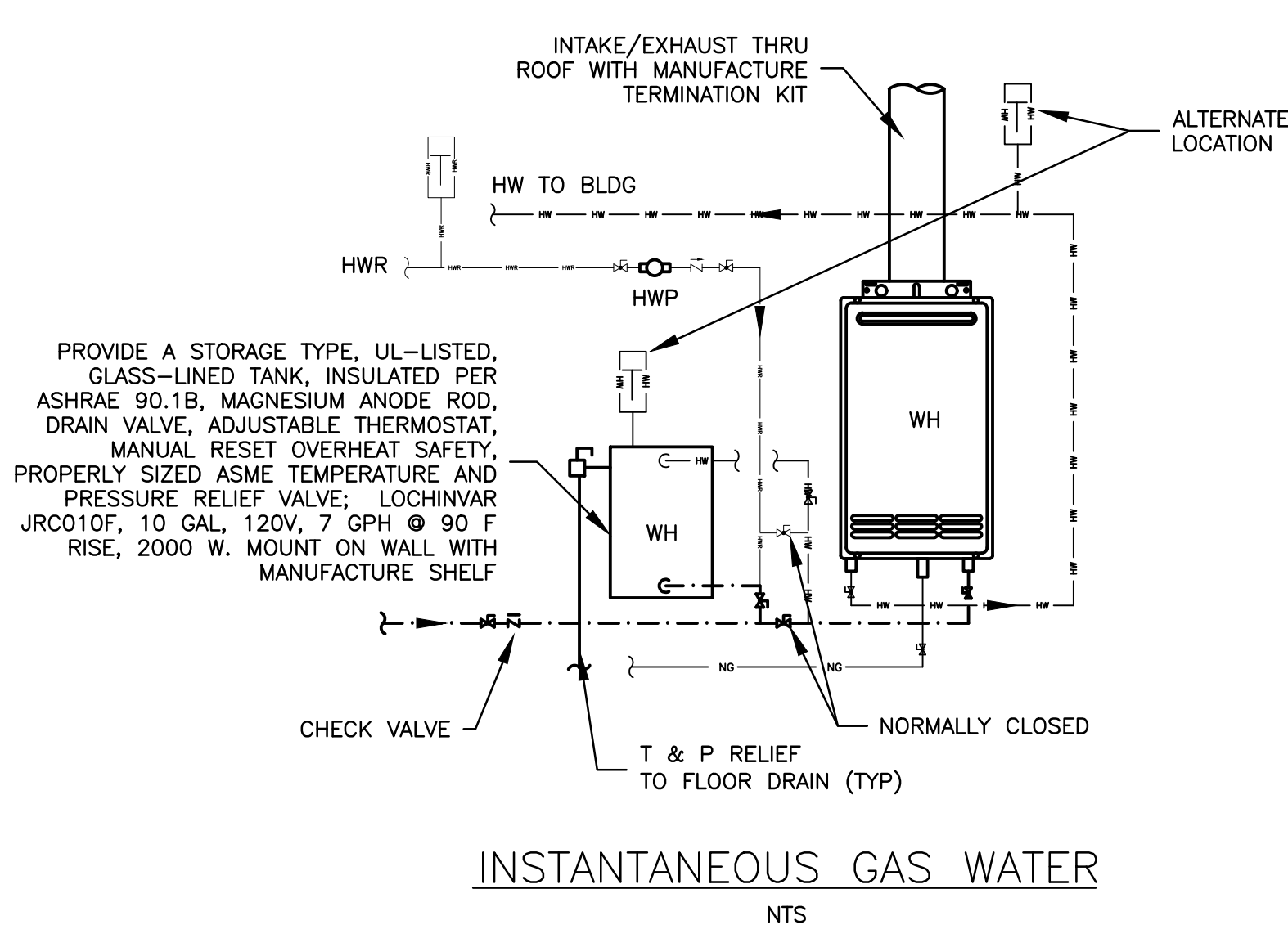
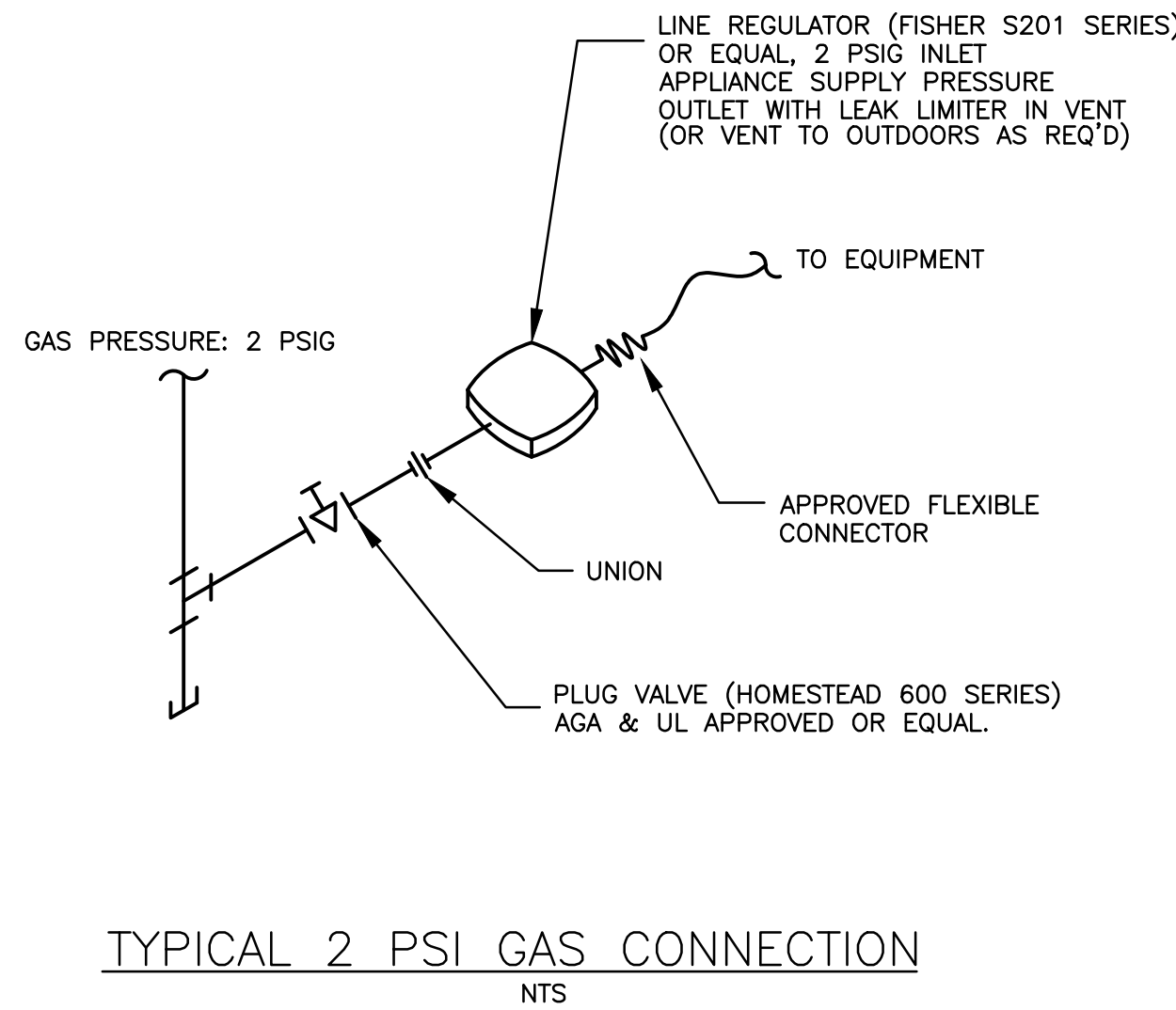
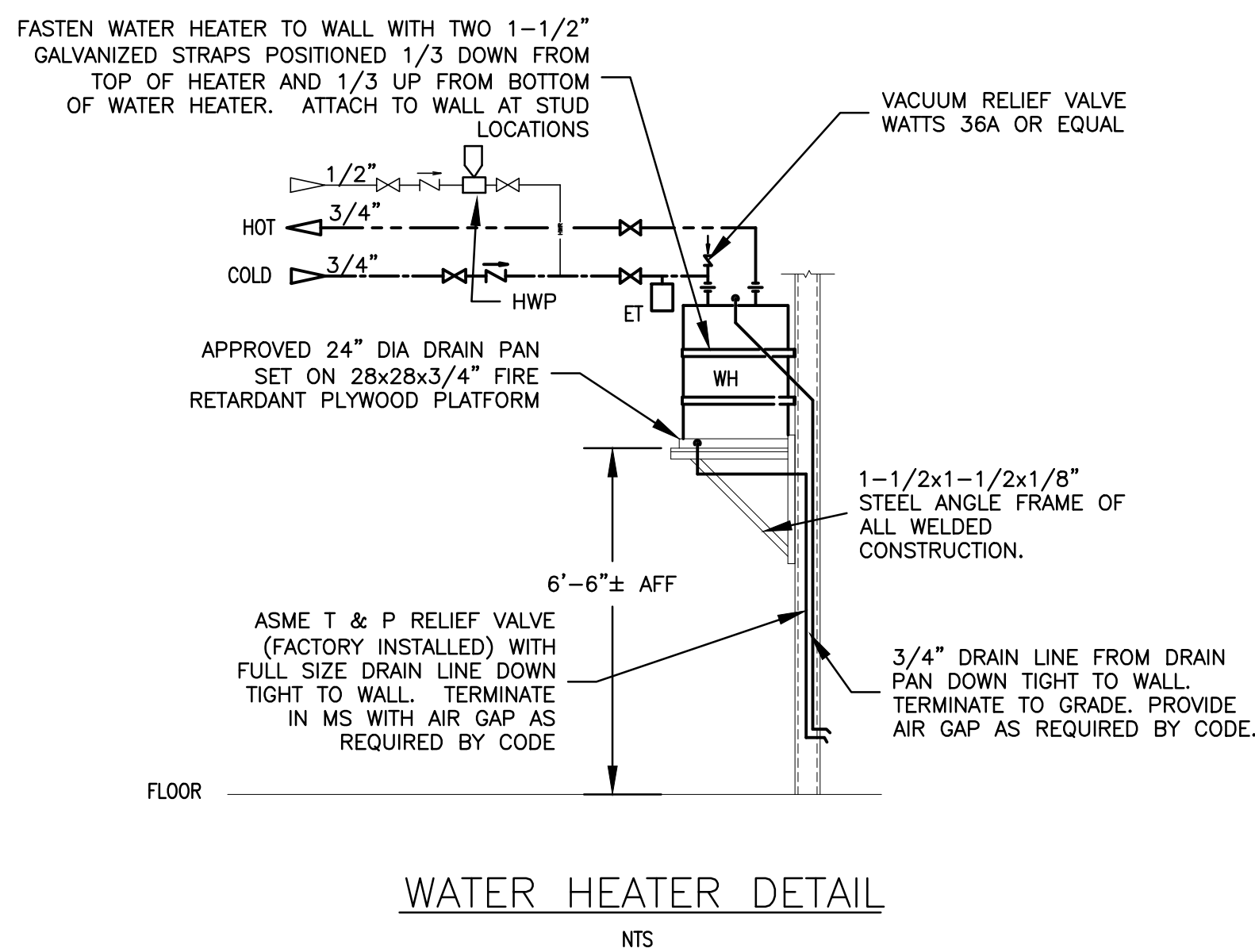
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Proposed Renovation to
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P3.1 Plumbing Details



CONSTRUCTION	PIPE SIZE (IN)	UL SYSTEM NUMBER					
		METALLIC	RATING (HR)	NON-METALLIC	RATING (HR)	INSULATED	RATING (HR)
CONCRETE/MASONRY	UP TO 4"	C-AJ-1044	4	-	-	C-BJ-5003	4
CONCRETE/MASONRY	UP TO 4"	C-AJ-1027	3	C-AJ-2001	2	C-AJ-5001	1-1/2,2,3
GYPSUM	UP TO 4"	W-L-1001	1,2,3,4	W-L-2002	1,1-1/2,2	W-L-5001	1,2
WOOD FLOOR/CEILING	UP TO 4"	F-C-1006	1	F-C-2024	1,2	F-C-5002	1

REFER TO UL SYSTEM DIRECTORY

PLUMBING LEGEND

MARK/SYMBOL	DESCRIPTION
----	COLD WATER (CW)
----	HOT WATER (HW, 110° F)
----	HOT WATER (HW, 140° F)
----	HOT WATER RETURN(HWR)
----	DRAIN/WASTE (D)
----	VENT (V)
----	OIL WASTE (OWS)
----	GREASE INTERCEPTED WASTE (GI)
----	NATURAL GAS (NG)
----	STORM WATER (ST)
----	IRRIGATION/INDUSTRIAL WATER (IW)
----	CONDENSATE DRAIN (CD)
●	BALL VALVE
⌵	BUTTERFLY VALVE
⌵	GATE VALVE
⌵	GLOBE VALVE
⌵	PLUG VALVE
⌵	CHECK VALVE
⌵	PRESSURE REDUCING VALVE (PRV)
⌵	ANCHOR
⌵	RELIEF VALVE
⌵	STRAINER WITH BLOWDOWN VALVE
⌵	UNION
⌵	GAS METER
⌵	WATER METER
⌵	DROP IN PIPE
⌵	RISE IN PIPE
⌵	FLOW DIRECTION ARROW
⌵	CONNECT TO EXISTING
⌵	ABOVE FINISHED FLOOR
⌵	BACKFLOW PREVENTER
⌵	BTUH BRITISH THERMAL UNIT PER HOUR
⌵	DB DOWNSPOUT BOOT
⌵	DF DRINKING FOUNTAIN
⌵	ECO EXTERIOR CLEANOUT
⌵	ELEC ELECTRICAL
⌵	EWC ELECTRIC WATER COOLER
⌵	FCO FLOOR CLEANOUT
⌵	FD FLOOR DRAIN
⌵	FS FLOOR SINK
⌵	GPH GALLONS PER HOUR
⌵	HB HOSE BIBB
⌵	HYD WATER HYDRANT
⌵	ICE ICE MACHINE
⌵	LAV LAV
⌵	MBH BRITISH THERMAL UNIT PER HOUR X 1000
⌵	MECH MECHANICAL
⌵	NIC NOT IN CONTRACT
⌵	PMP PUMP
⌵	REF REFRIGERATOR
⌵	SNK SINK
⌵	SS SANITARY SEWER
⌵	TP TRAP PRIMER
⌵	UR URINAL
⌵	VB VACUUM BREAKER
⌵	VTR VENT THRU ROOF
⌵	WC WATER CLOSET
⌵	WCO WALL CLEANOUT
⌵	WC WATER COLUMN
⌵	WH WATER HEATER
⌵	WHA WATER HAMMER ARRESTOR

NOTE:
ALL OF THE SYMBOLS AND ABBREVIATIONS
INCLUDED ON THIS SHEET MAY OR MAY NOT BE
USED IN THIS SET OF DRAWINGS.

PLUMBING NOTES

- THESE DRAWINGS HAVE BEEN DEVELOPED FROM THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY ALL FIELD CONDITIONS, DIMENSIONS, CLEARANCES, LOCATION OF EXISTING UTILITIES, ETC. PRIOR TO BIDDING, FABRICATION, OR INSTALLATION. DO NOT SCALE FROM THESE DRAWINGS. COORDINATE ALL SUB-UPS AND CONNECTIONS WITH MANUFACTURER INSTALLATION DATA.
- COORDINATE PLUMBING INSTALLATION AMONG TRADES TO AVOID INTERFERENCES.
- PIPING AND FITTINGS SHALL BE AS FOLLOWS:

POTABLE WATER PIPING BURIED BELOW SLAB SHALL BE TYPE K HARD DRAWN COPPER TUBING PER ASTM B88 WITH WROUGHT COPPER OR CAST BRASS FITTINGS AND LEAD-FREE TIN-SILVER SOLDER.

POTABLE WATER PIPING ABOVE GRADE SHALL BE HARD DRAWN COPPER TYPE L PER ASTM B88 WITH WROUGHT COPPER OR CAST BRASS FITTINGS WITH LEAD-FREE TIN-SILVER SOLDER.

SANITARY DRAIN, WASTE, AND VENT PIPING BURIED BELOW AND UNDER SLAB SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS. ABOVE GRADE PIPING SHALL BE SCHEDULE 40 PVC WITH SOLVENT WELD FITTINGS.

NATURAL GAS AND PROPANE PIPING ABOVE GRADE SHALL BE SCHEDULE 40, BLACK CARBON STEEL PER ASTM A53, CLASS 150 THREADED MALLEABLE IRON FITTINGS UP TO 2 INCHES; WELDED FITTINGS FOR 2-1/2 INCHES AND LARGER PER LOCAL GAS CODE REQUIREMENTS.

NATURAL GAS AND PROPANE PIPING UNDERGROUND SHALL BE SCHEDULE 40 BLACK CARBON STEEL PER ABOVE WITH WROUGHT STEEL WELDED FITTINGS AND POLYETHYLENE JACKED OR DOUBLE LAYER HALF-LAPPED 10-MIL POLYETHYLENE TAPE. UNDERGROUND PIPING MAY ALSO BE POLYETHYLENE PIPE PER ASTM D 2513, SDR 10, WITH ASTM D2683 OR ASTM D2513 SOCKET TYPE FITTINGS WITH SILVER WELD JOINTS. VERIFY WITH LOCAL AHA FOR PRIOR APPROVALS PRIOR TO START OF UNDERGROUND WORK.
- ALL FIXTURES SHALL BE EQUIPPED WITH SUPPLY STOPS.
- PROVIDE CARRIERS/HANGERS FOR ALL WALL HUNG FIXTURES.
- INSULATE ABOVE SLAB POTABLE WATER PIPING AND STORM WATER (WHERE INCULDED) WITH 1 INCH FIBERGLASS AND GENERAL SERVICE JACKET. INSULATE UNDERSLAB POTABLE WATER PIPING WITH 1/2 INCH CELLULAR FOAM INSULATION, ARMAFLEX OR EQUAL. PROVIDE PVC PLASTIC JACKET FOR INSULATION INSTALLED IN EXPOSED PUBLIC AREAS. PROVIDE WITH WHITE VINYL JACKET IN EXPOSED AREAS.
- PITCH HORIZONTAL PIPING TO DRAIN AS FOLLOWS:

UP TO 3 INCH-1/4 INCH PER FOOT OF RUN
OVER 3 INCH-1/8 INCH PER FOOT OF RUN
- ALL PIPING SHALL BE INSTALLED PER LOCAL CODES.
- SUPPORT HORIZONTAL PIPING FROM STRUCTURE WITHIN 1 FOOT OF ELBOWS AND AT THE MAXIMUM INTERVALS SPECIFIED BELOW:

NOMINAL PIPE SIZE DISTANCE BETWEEN SUPPORTS
1/2 TO 1-1/4 INCH 6'-0"
1-1/2 TO 2-1/2 INCH 10'-0"
3 TO 4 INCH 10'-0"
- PVC 4'-0"
- SUPPORT VERTICAL PIPING WITH RISER CLAMPS WITHIN 1 FOOT OF ELBOWS AND BENDS.
- USE DIELECTRIC UNIONS (EPCO OR EQUAL) TO MAKE STEEL TO COPPER PIPING AND EQUIPMENT CONNECTIONS.
- PROVIDE CHROMED ESCUTCHEON PLATES WHERE PIPING PENETRATES FINISHED WALLS OR CEILING.
- ALL DRAINAGE CONNECTIONS SHALL BE TRAPPED UNLESS NOTED OTHERWISE ON DRAWINGS.
- ALL ROOF PENETRATIONS FOR PLUMBING PIPING SHALL BE MADE IN ACCORDANCE WITH ROOF SYSTEM MANUFACTURER GUIDELINES. COORDINATE WITH ARCHITECTURAL.
- ALL VENTS THRU ROOF SHALL EXTEND A MINIMUM OF 12 INCHES ABOVE ROOF AND BE MAINTAINED A MINIMUM OF 10 FEET FROM ALL OUTSIDE AIR INTAKES.
- HORIZONTAL VENT PIPING SHALL BE SLOPED TOWARD SEWER 1/8 INCH PER FOOT OF RUN.
- ALL SANITARY BRANCHES TO MAIN CONNECTIONS SHALL BE MADE WITH 45 DEGREE WYE OR WYE AND 1/8 BEND FITTINGS.
- CLEAN NEW PIPING AS FOLLOWS PER LOCAL CODE AND THE REQUIREMENTS OF THE LOCAL UTILITY:

FLUSH NEW POTABLE WATER PIPING WITH A 100 PPM CHLORINE SOLUTION. ALLOW TO STAND IN PIPES FOR TWO HOURS. THEN FLUSH WITH POTABLE WATER BEFORE PLACING IN SERVICE.

FLUSH ALL OTHER PIPING WITH POTABLE WATER TO REMOVE DIRT AND DEBRIS.
- TEST NEW LINES HYDROSTATICALLY AT THE PRESSURES LISTED BELOW; REPAIR LEAKS AND RETEST UNTIL THE PRESSURE HOLDS FOR ONE HOUR.

POTABLE WATER-150 PSIG
DRAIN-5 PSIG
- INSTALL, INSPECT, TEST, AND PURGE NATURAL GAS AND PROPANE PIPING PER NFPA 54, LOCAL GAS CODE, AND THE REQUIREMENTS OF THE LOCAL UTILITY.
- PRIME, PAINT AND LABEL NATURAL GAS AND PROPANE PIPING LOCATED OUTDOORS, AND WHERE EXPOSED INDOORS IN FINISHED LOCATIONS. FINISH PAINT COLOR PER ARCHITECTURAL.
- NEW BALL VALVES SHALL BE BRONZE 2-PIECE BODY, FULL PORT TYPE, THREADED CONNECTIONS, WILKINS, APOLLO, OR APPROVED EQUAL.
- SEE ARCHITECTURAL FOR MOUNTING HEIGHTS OF FIXTURES.
- ALL PIPING PENETRATIONS THROUGH NON-RATED CONSTRUCTION SHALL BE SLEEVED. SEAL PENETRATIONS THROUGH EXTERIOR WALL WEATHERTIGHT WITH SILICONE SEALANT. PROVIDE ESCUTCHEONS AT EXPOSED INTERIOR LOCATIONS. ALL PIPING PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED PER DETAIL. SEE ARCHITECTURAL FOR LOCATIONS OF RATED CONSTRUCTION.
- VENT, HW, AND CW PIPING SHALL BE ROUTED UNDERSLAB, ABOVE CEILING, AND INSIDE WALLS ON HEATED SIDE OF INSULATION TO FIXTURES.
- PRIME AND PAINT ALL EXPOSED PIPING. COLOR PER ARCHITECTURAL.
- INDIVIDUAL CONNECTIONS TO FIXTURES SHALL BE SIZED AS INDICATED IN SCHEDULE UNLESS NOTED OTHERWISE.

ALL UNDERSLAB DRAIN PIPING SHALL BE 4 INCH MINIMUM, UNLESS NOTED OTHERWISE.
- REMOVE EXISTING PLUMBING FIXTURES, DRAINS, PIPING, ETC. COMPLETE. INSTALL NEW PLUMBING PER PLANS. CONNECT NEW PLUMBING TO COLD WATER SUPPLY AND SANITARY SEWER (NEW OR EXISTING AS INDICATED). ALL EXISTING DRAINS, VENTS, AND SUPPLY PIPING SHALL BE REMOVED, COMPLETE TO ABOVE CEILINGS, INSIDE WALLS, AND BELOW FINISHED FLOOR AND CAPPED. PIPING REMAINING SHALL NOT INHIBIT THE USE OF PIPING TO REMAIN.
- WHERE REQUIRED FOR INSTALLATION OF NEW PLUMBING, EXISTING SLAB SHALL BE SAWCUT AND REFILLED TO MATCH EXISTING UPON COMPLETION OF TESTING AND INSPECTION. CONTRACTOR SHALL VERIFY EXISTING UNDERSLAB UTILITIES AND OBSTRUCTIONS PRIOR TO CUTTING, DISRUPTED UTILITIES SHALL AND OTHER OBSTRUCTIONS SHALL BE RESTORED TO MATCH EXISTING PRIOR TO FILLING.
- CONTRACTOR SHALL PROVIDE VIDEO DOCUMENTATION OF THE COMPLETE UNDERSLAB ROUGH IN FROM 8 INCHES ABOVE SLAB TO EXTERIOR CLEANOUT INCLUDING ALL SUB-UPS, MAINS, BRANCHES, ETC. VIDEO SHALL BE PERFORMED JUST PRIOR TO SLAB POURING AT A DATE TO BE CONFIRMED BY THE GC. DOCUMENTATION TO BE PROVIDED TO THE GC UPON COMPLETION, PRIOR TO SLAB POUR TO INCLUDE DRAWING/MAP FOR THE SEQUENCES OF THE ASSOCIATED VIDEOS IN ADDITION TO THE CAMERA FOOTAGE ALONG WITH NOTATIONS OF ANY ABNORMALITIES, THEIR LOCATIONS, AND DETAILS OF THE OCCURRENCE. WHERE REQUIRED, CONTRACTOR SHALL PROVIDE REPAIRS FOR SUCH ABNORMALITIES AS DIRECTED BY THE GC ACCORDINGLY. WHERE MULTIPLE POURS AND CONSTRUCTION SEQUENCES ARE INVOLVED, CONTRACTOR SHALL PROVIDE FOR EACH SEQUENCE AS COORDINATED WITH THE GC CONSTRUCTION SCHEDULE AS REQUIRED.

PLUMBING FIXTURE SCHEDULE

(NOTE: ALL FIXTURES SHALL BE LEAD COMPLIANT PER CURRENT REGULATIONS)

MARK	ITEM	HW	CW	WASTE	VENT	SUPPLY STOP	DESCRIPTION
AAV	AIR ADMITTANCE VALVE	-	-	-	LINE SIZE	-	ONE WAY AIR VENT FOR ADMITTANCE OF FRESH AIR "INTO" THE PLUMBING VENT STACK. VENT TO CLOSE TO AIR BEING DISCHARGED THRU STACK; STUDOR "MAXI-VENT" OR "MINI-VENT"
BEV	BEVERAGE MACHINE	-	1/2"	-	-	CW	EQUIPMENT (COFFEE/BEVERAGE MACHINE) IS OWNER PROVIDED. PLUMBING CONTRACTOR TO PROVIDE ROUGH-IN PLUMBING INCLUDING SHUT-OFF VALVE IN VALVE BOX RECESSED IN WALL. BOX SHALL BE PRO-SET FIRE RATED SERIES WITH BALL VALVE. PROVIDE BACKFLOW PREVENTER IN SUPPLY; WILKINS 740. CONFIGURE BOX FOR SUPPLY DIRECT FROM MAIN.
BFP-1	BACKFLOW PREVENTER	-	LINE SIZE	-	-	-	REDUCED PRESSURE TYPE. INTEGRAL SHUT-OFF VALVES COMPLYING WITH A.S.S.E. 1013; WILKINS 97XLS-AG SERIES WITH INLET WYE STRAINER AND AIR GAP FITTING.
DWB-1, 2	GAS INSTANT WATER HEATER	3/4"	3/4"	-	-	-	INSTANTANEOUS POINT OF USE, ANSI Z21.10.3 COMPLIANT. 15 MBH MINIMUM INPUT, 199 MBH PEAK OUTPUT, NATURAL GAS FUELED, FLAME FAILURE LOCKOUT, 6.7 GPM MINIMUM OPERATING FLOW RATE AT 50 DEGREE RISE, BUILT-IN RECIRCULATION PUMP; NORITZ NRCR111DV. PROVIDE FUEL, 120V CONTROL POWER AND FLUES PER MANUFACTURER RECOMMENDATION. PIPE CONDENSATE DRAIN LINE TO FLOOR DRAIN OR THROUGH EXTERIOR WALL.
ECO	EXTERIOR CLEANOUT	-	-	LINE SIZE	-	-	ROUND POLISHED HEAVY DUTY BRONZE VANDAL PROOF TOP; ZURN MODEL ZN-1400-HD-VP
ET-1	EXPANSION TANK	-	-	-	-	-	DOMESTIC WATER USAGE, VERTICAL STEEL TANK, HEAVY DUTY BUTYL BLEND DIAPHRAM, POLYPROPYLENE LINED DOME, 2.0 GALLON CAPACITY; WILKINS XT-8
EW-1	EMERGENCY EYE/FACEWASH	-	1/2"	1-1/2"	-	-	TWIN SPRAY HEAD, 12" DIA. BOWL, CHROME PLATED BRASS STAY-OPEN BALL VALVE, STAINLESS STEEL PUSH PLATE ACTIVATOR, INDIVIDUAL BALANCE CONTROLS, DUST CAPS, INLINE STRAINER, 0 GPM FULL FACE FLOW MIN., BRADLEY S19-20PW (WALL MOUNT) OR S19-210F (PEDESTAL MOUNT). PROVIDE WITH MIXING VALVE FOR TEPID WATER.
EW-1	ELECTRIC WATER COOLER (HYDRATION STATION)	-	1/2"	1-1/2"	1-1/2"	CW	TWIN UNIT, ONE WHEEL CHAIR ACCESSIBLE, BOTTLE FILLER STATION, FRONT PUSHBARS, SURFACE MOUNT, STAINLESS STEEL TOP, 18" DIA. 18" DIA. 5 YR. REFRIGERATION SYSTEM WARRANTY, LEAD FREE, 120 VAC; ELKAY LZSTL6W8SLK (WITH FILTER), PROVIDE CARRIER/HANGER.
FCO	FLOOR CLEANOUT	-	-	LINE SIZE	-	-	ROUND POLISHED BRONZE VANDAL PROOF TOP; ZURN MODEL ZN-1400-VP. PROVIDE WITH CARPET FLANGE COVER IN CARPETED AREAS AND RECESSED SQUARE TOP IN AREAS WITH TILED FLOOR. PROVIDE WITH ANCHOR FLANGE "K" FOR SUSPENDED FLOOR INSTALLATIONS.
FD-1	FLOOR DRAIN	-	-	LINE SIZE	2"	-	CAST IRON BODY, VERTICAL POST ADJUSTABLE, 6" SQUARE POLISHED BRONZE STRAINER, VANDAL PROOF SCREWS, TRAP PRIMER CONNECTIONS (UNLESS NOTED OTHERWISE), 4 INCH DEEP SEAL TRAP; ZURN ZN-415-SZ1-6S-VP-P. PROVIDE WITH "TRAP GUARD"
FD-2	FLOOR DRAIN	-	-	LINE SIZE	2"	-	CAST IRON BODY, VERTICAL POST ADJUSTABLE, 6" ROUND POLISHED BRONZE STRAINER, VANDAL PROOF SCREWS, 4 INCH DEEP SEAL TRAP; ZURN ZN-415-BZ1-6B-VP. PROVIDE WITH "TRAP GUARD"
FS-1	FLOOR SINK (12X12X8)	-	-	LINE SIZE	2"	-	CAST IRON BODY, 12-12" SQUARE TOP, 8" DEEP, BUCKET STRAINER, 1/2" GRID POLISHED BRONZE GR. SCS, VANDAL PROOF SCREWS, 4 INCH DEEP SEAL TRAP; ZURN Z-1901-K23.
HB-1	HOSE BIBB (FROST PROOF)	-	3/4"	-	-	-	AUTOMATIC DRAINING, 3/4" FPT. BRASS CONSTRUCTION, LOOSE KEY HANDLE, CONFORMING TO A.S.S.E. 1019, VACUUM BREAKER-BACKFLOW PREVENTER CONFORMING TO A.S.S.E. 1011, 3/4" HOSE THREAD NOZZEL, ZURN Z-1321.
HB-2	HOSE BIBB	-	3/4"	-	-	-	3/4", BRASS CONSTRUCTION, WHEEL HANDLE, VACUUM BREAKER; ZURN Z-1341-VB.
HWP-1	HOT WATER PUMP	-	3/4"	-	-	-	FLANGED INLET AND OUTLET, BRONZE BODY, BRASS IMPELLER, 145 PSIG MAXIMUM, 225 DEGREE FAHRENHEIT MAXIMUM, 115 VAC, 1/12 HP, 10 GPM @20 FEET HEAD, GRUNDFOS UP28-99-SFC, STAINLESS STEEL, STAINLESS STEEL FLANGE, CONNECT IN-LINE, SUITABLE FOR DOMESTIC WATER.
ICE	ICE MACHINE	-	1/2"	-	-	CW	EQUIPMENT (ICE MACHINE) IS OWNER PROVIDED. PLUMBING CONTRACTOR TO PROVIDE ROUGH-IN PLUMBING INCLUDING SHUT-OFF VALVE IN VALVE BOX RECESSED IN WALL AND DRAIN TO FLOOR SINK WITH TURN DOWN AND REQUIRED AIR GAP. BOX SHALL BE PRO-SET FIRE RATED SERIES WITH BALL VALVE. PROVIDE BACKFLOW PREVENTER IN SUPPLY; WILKINS 740. CONFIGURE BOX FOR SUPPLY DIRECT FROM MAIN.
LAV-1	LAVATORY (HANDICAP)	1/2"	1/2"	1-1/2"	1-1/2"	HW & CW	COUNTER SET, VITREOUS CHINA, SELF-RIMMING, FRONT OVERFLOW, 20X17" BOWL, FAUCET, CHROME PLATED BRASS WITH 4" SPOUT, 0.5 GPM, SINGLE HANDLE, POP-UP DRAIN; ZURN Z514-119.2.07.28.5 WITH SUPPLY STOPS, TRAP, DRAIN, ADA PIPING PROTECTION, PROVIDE WITH MIXING VALVE (MV-1) SET LEAVING TEMPERATURE 110°F.
LAV-2	LAVATORY (HANDICAP)	1/2"	1/2"	1-1/2"	1-1/2"	HW & CW	WALL HUNG, WHITE VITREOUS CHINA, 19-34X18-5/16", OVERFLOW, CONCEALED ARM CARRIER, KOHLER K-1897-4 WITH PIPING SHROUD K-1998. FAUCET, FAUCET WITH SINGLE HANDLES, SOLID BRASS; 1.2 GPM; DELTA 501F-HOF. GRID DRAIN AND P-TRAP, TWO-PIECE DESIGN, SEMI-CAST, DEARBORN 760-1 AND P9703WBG, ANGLE STOP, QUARTER TURN; ZURN Z8804. PROVIDE WITH CONCEALED ARM CARRIER. PROVIDE WITH MV-1, SET TO 110 DEGREES MAXIMUM.
MS-1	MOP SINK (SQUARE)	1/2"	1/2"	3"	2"	-	MOLDED STONE, 1-PIECE, 24X24X12", 1-1/4" CURB, STAINLESS STEEL CAPS, INTEGRAL DRAIN, STAINLESS STEEL GRID STRAINER; STERN-WILLIAMS SB-900. FAUCET, SERVICE TYPE, VACUUM BREAKER, WALL BRACE, 8" SPOUT, BUCKET HOOK, 3/4" HOSE THREAD; STERN-WILLIAMS T-10-VB. MOP HANGER, STAINLESS STEEL 24X3"; STERN-WILLIAMS T-40.
MV-1	MIXING VALVE	3/8"	3/8"	-	-	-	BRASS BODY THERMOSTATIC MIXING VALVE, 0.5 GPM MINIMUM FLOW, INTEGRAL CHECKSTOPS, SS STRAINER, WALL SUPPORT, COLOR CODED DIAL WITH HANDLE AND DIRECTIONAL INDICATORS, ADJUSTABLE HIGH TEMPERATURE LIMIT STOP, ASSE 1070 COMPLIANT, SYMMONS 7-210-CK
NOZ	DOWNSPOUT NOZZLE	-	-	LINE SIZE	-	-	NICKEL BRONZE BODY, THREADED INLET WITH DECORATIVE FACE WALL FLANGE AND OUTLET NOZZLE; ZURN ZANB-199.
RD-1	ROOF DRAIN	-	-	LINE SIZE	-	-	CAST IRON BODY, ADJUSTABLE EXTENSION SLEEVE, REVERSIBLE COLLAR, FLASHING CLAMP AND GRAVEL STOP, GRATED CAST IRON DOME, UNDER DECK CLAMPS, CAST-100-C.
REF	REFRIGERATOR	-	1/4"	-	-	CW	EQUIPMENT (REFRIGERATOR) IS OWNER PROVIDED. PLUMBING CONTRACTOR TO PROVIDE ROUGH-IN PLUMBING INCLUDING BALL VALVE IN POLYMER VALVE BOX RECESSED IN WALL. PRO-SET FIRE RATED SERIES.
SH-1	SHOWER	1/2"	1/2"	3"	2"	-	FAUCET, OFF-SET CONTROL VALVE, BRASS BODY, ANTI-SCALD, BALANCED PRESSURE, FIELD ADJUSTABLE HOT WATER LIMIT, INTEGRAL SERVICE STOPS, 2.5 GPM @ 80 PSIG FROM SHOWER HEAD, LEVER HANDLE, CHROME SHOWER HEAD, AND ESCUTCHEONS; SYMMONS 1-100-X-VP, 151 FIXED HEAD. PROVIDE WITH SHOWER DRAIN AND TRAP GUARD.
SH-2	SHOWER (HANDICAP)	1/2"	1/2"	3"	2"	-	FAUCET, OFF-SET CONTROL VALVE, BRASS BODY, ANTI-SCALD, BALANCED PRESSURE, FIELD ADJUSTABLE HOT WATER LIMIT, INTEGRAL SERVICE STOPS, 2.5 GPM @ 80 PSIG FROM SHOWER HEAD, LEVER HANDLE, CHROME SHOWER HEAD, AND ESCUTCHEONS; SYMMONS 1-117-FS-X-V-VP-B30-QD-151, HAND SHOWER WITH FLEXIBLE METAL HOSE AND QUICK DISCONNECT, 151 FIXED HEAD, DIVERTER, AND VACUUM BREAKER, AND MOUNTING BAR. PROVIDE WITH TRENCH DRAIN AND TRAP GUARD.
SNK-1	SINK	1/2"	1/2"	1-1/2"	1-1/2"	HW & CW	SINGLE COMPARTMENT, UNDERMOUNT, 33X22X9", 18 GA. STAINLESS STEEL; ELKAY MODEL ECTSR33229TBG. FAUCET, 2 HANDLE, DECK MOUNT, SWING SPOUT, WRIST BLADE HANDLES; ZURN Z-871-C4. DRAIN, 3-1/2" STD STRAINER, STAINLESS STEEL BASKET, PROVIDE 115# GARBAGE DISPOSAL, 3/4 HP, CONTINUOUS FEED AND DISHWASHER CONNECTION; GE GFC100DY. CONNECT SINK, DISHWASHER, AND GARBAGE DISPOSAL PER MANUFACTURER RECOMMENDATION. PROVIDE WITH MIXING VALVE (MV-1) SET LEAVING TEMPERATURE 110°F.
SNK-2	BAR SINK	1/2"	1/2"	1-1/2"	1-1/2"	HW & CW	SINGLE COMPARTMENT, UNDERMOUNT, 15X15X9", 18 GA. STAINLESS STEEL, SELF RIMMING, 3" HOLE, 4" CENTERS; ELKAY MODEL ECTSR15159TBG. FAUCET, 2 HANDLE, DECK MOUNT, GOOSENECK SWING SPOUT, 4" WRIST BLADE HANDLES; ZURN Z-831-C4 WITH ELKAY LK36 SMALL GRID DRAIN STRAINER. PROVIDE WITH MIXING VALVE (MV-1) SET LEAVING TEMPERATURE 110°F.
TD-1	TRENCH DRAIN	-	-	LINE SIZE	2"	-	POLYETHYLENE TRENCH DRAIN, 2-1/2" INCH WIDE BAR STAINLESS STEEL GRATE; ZURN Z-880-SOG, 36 INCH +/- LENGTH.
TP	TRAP PRIMER	-	-	-	-	-	OVERFLOW TYPE, CHROME PLATE CAST BRONZE P-TRAP WITH CLEANOUT PLUG; ZURN Z-1021.
WC-1	WATER CLOSET	-	1"	4"	2"	-	FLOOR MOUNT, MANUAL AQUAVANTAGE FLUSH VALVE, HANDICAPPED, WHITE VITREOUS CHINA, ELONGATED BOWL, 1-1/2" TOP SPUD, SIPHON JET, 1.6 GAL/FLUSH, ELONGATED OPEN FRONT ANTI-MICROBIAL SEAT, NO LID, STAINLESS STEEL CHECK HINGES; ZURN Z5655.001.02.05.00.
WC-2	WATER CLOSET (HANDICAP)	-	1"	4"	2"	-	FLOOR MOUNT, MANUAL AQUAVANTAGE FLUSH VALVE, HANDICAPPED, WHITE VITREOUS CHINA, ELONGATED BOWL, 1-1/2" TOP SPUD, SIPHON JET, 1.6 GAL/FLUSH, ELONGATED OPEN FRONT ANTI-MICROBIAL SEAT, NO LID, STAINLESS STEEL CHECK HINGES; ZURN Z5655.001.02.05.00.
WCO	WALL CLEANOUT	-	-	LINE SIZE	-	-	BRONZE PLUG, STAINLESS STEEL WALL ACCESS COVER PLATE, ZURN Z-1446 TEE WITH ACCESS PLATE.
WH-1	ELECTRIC WATER HEATER	LINE SIZE	LINE SIZE	-	-	-	STORAGE TYPE, UL-LISTED, GLASS-LINED TANK, INSULATED PER ASHRAE 90.1B. MAGNESIUM ANODE ROD, DRAIN VALVE, ADJUSTABLE THERMOSTAT, MANUAL RESET OVERHEAT SAFETY, PROPERLY SIZED ASME TEMPERATURE AND PRESSURE RELIEF VALVE; LOCHINVAR EST030KD, 30 GAL, 208V, 20 GPH @ 90 F RISE, 4500 W.
WHA	WATER HAMMER ARRESTOR	-	-	-	-	-	BELLOWS TYPE, 18-6 STAINLESS STEEL CONSTRUCTION, ALL-WELDED BELLOWS, PRE-CHARGED INERT GAS CUSHION, APPROVED PER A.S.S.E. 1010 AND P.D.I. STANDARD WH201; ZURN MODEL Z-1700.
WSH	WASHING MACHINE	1/2"	1/2"	2"	2"	HW & CW	EQUIPMENT (WASHING MACHINE) IS OWNER PROVIDED. PLUMBING CONTRACTOR TO PROVIDE ROUGH-IN PLUMBING INCLUDING BALL VALVES WITH HOSE THREAD IN POLYMER VALVE BOX RECESSED IN WALL. WITH DRAIN, PRO-SET FIRE RATED SERIES. PROVIDE WITH STAINLESS STEEL END OF HOSE TYPE LINT TRAP WITH 1/2 INCH MAXIMUM OPENING (15 PACK DISPOSABLE); GTM TRADING OR EQUAL.

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P4.1 Schedule, Legend, Notes

Date: 10-30-2023	Revisions:
Job #: 30322_plumb	
Dr. By: S. Shores	
Ck. By: T. Little	
File #: 30322_plumb	

Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

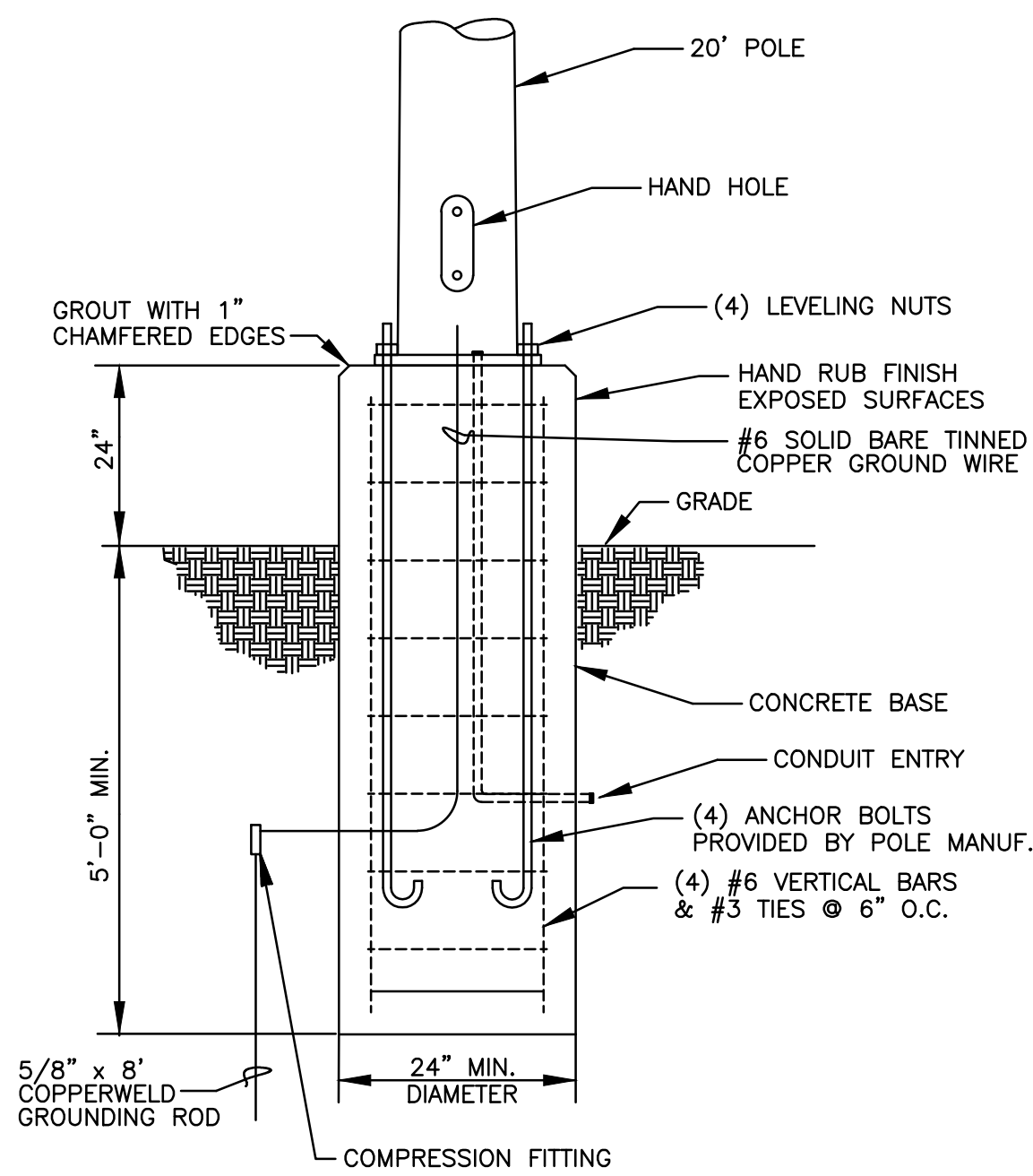


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

ES1.1 Electrical Site Plan

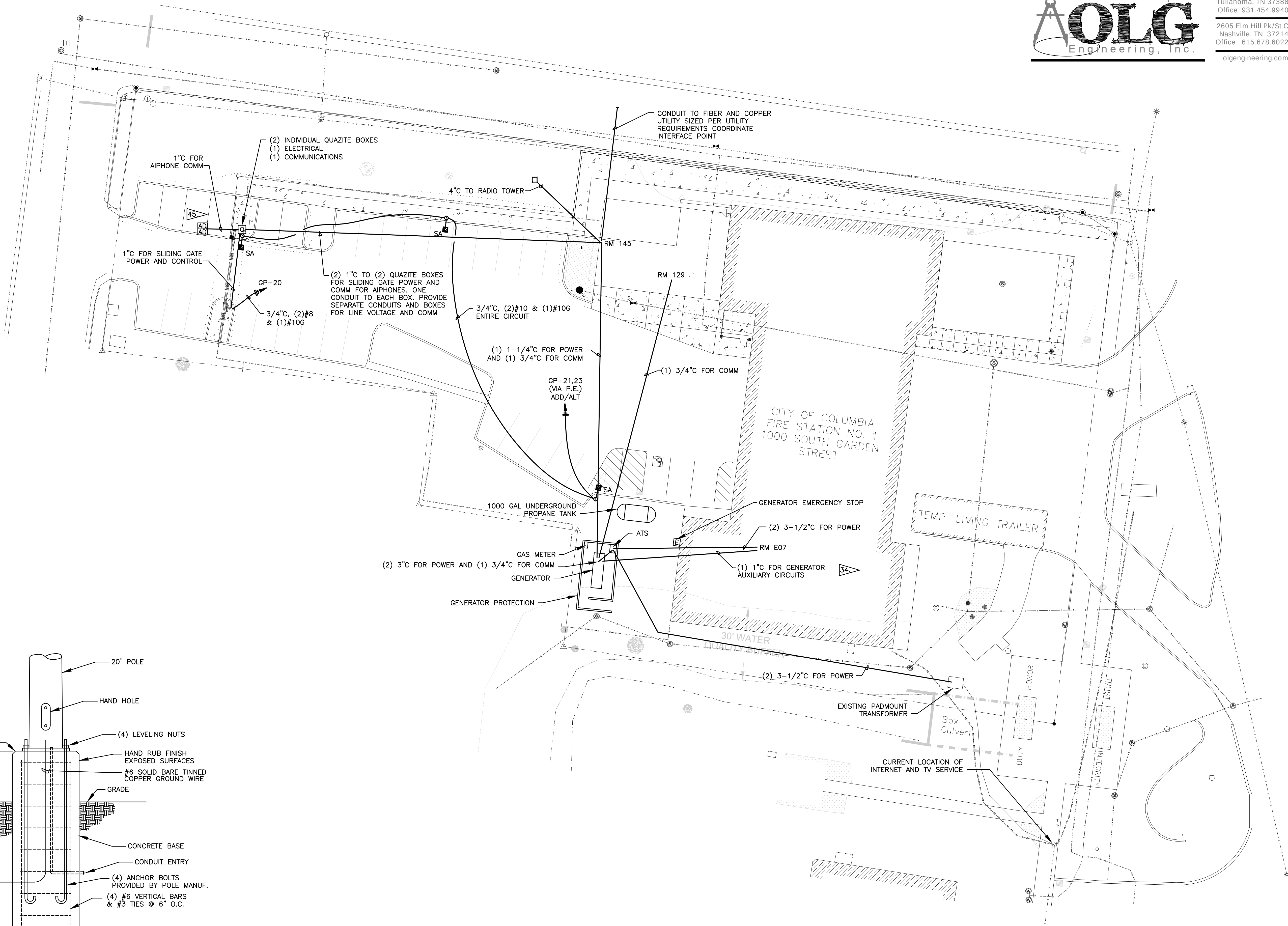
Date:	10-30-2023	Revisions:	
Job #:		FOR REVIEW ONLY	Δ
Dr. By:	T. Smith	FOR ESTIMATING/BIDDING ONLY	Δ
Ck. By:	A. Gipson	FOR CONSTRUCTION	Δ
File #:	30322_Elec	DATE: 10/30/23 ISSUED BY: A. Gipson	Δ

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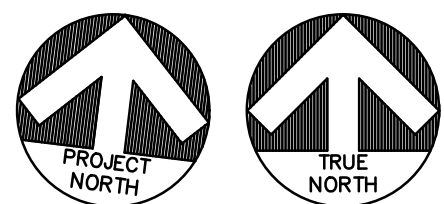


FOUNDATION DETAIL
FOR OUTSIDE LIGHTING
NOT TO SCALE

FIXTURE SCHEDULE					
TYPE	MANUFACTURER	CATALOG #	LAMPS	VOLTAGE	TYPE/REMARKS
SA	VISIONAIRE	VMX-II-T3L-4K-UNV-AM-BK-HDL	201W LED	208	POLE SINGLE HEAD, POLE 20', SQUARE STRAIGHT STEEL P/N SNTS-4S-11-20-9BC-343-S1-BK



ELECTRICAL SITE PLAN
SCALE : 1"=20'-0"

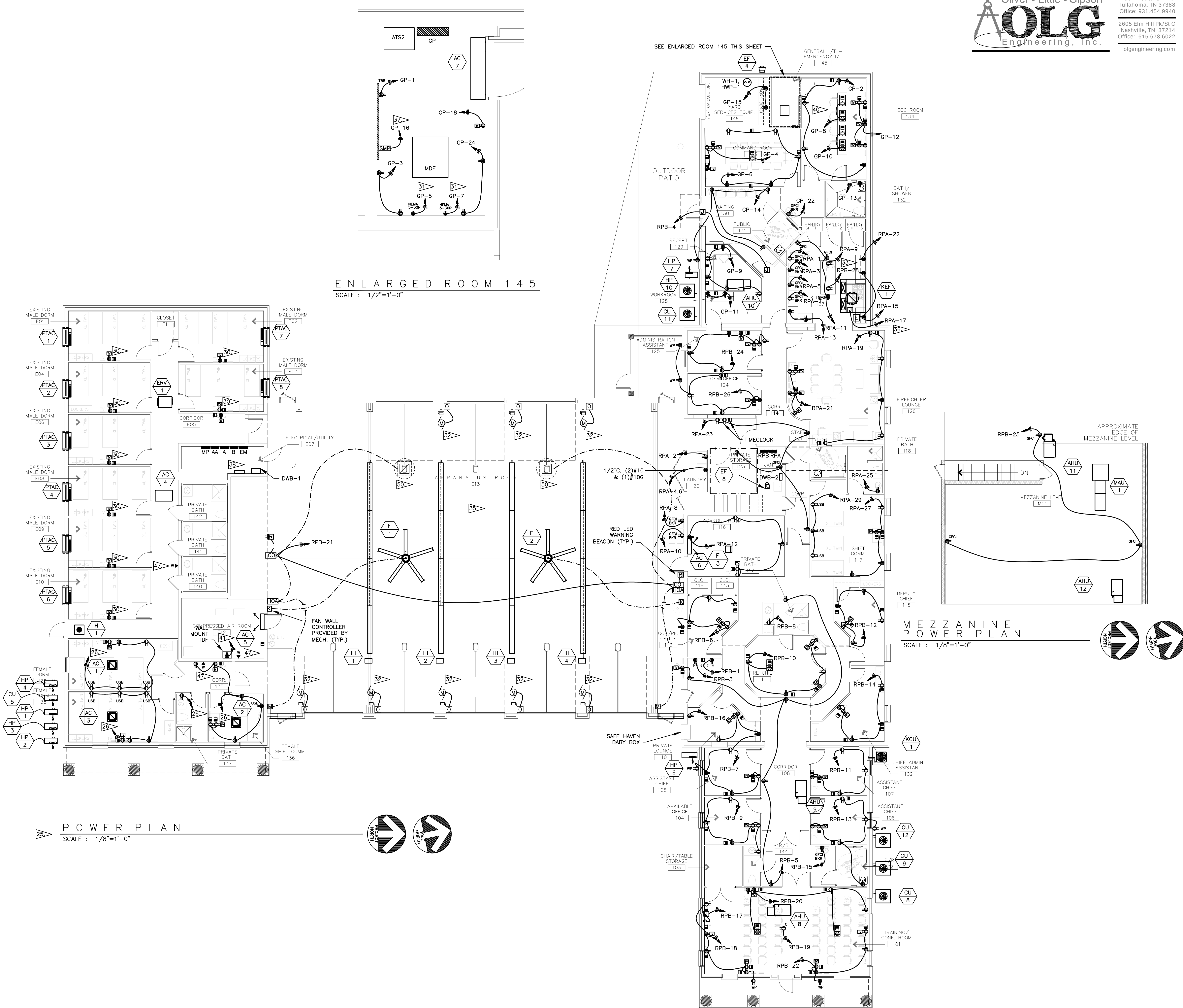


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

E1.1 Power Plan

Date:	10-30-2023	Revisions:	
Job #:		FOR REVIEW ONLY	
Dr. By:	T. Smith	FOR ESTIMATING/BIDDING ONLY	
Ck. By:	A. Gipson	FOR CONSTRUCTION	
File #:	30322_Elec	DATE: 10/30/23 ISSUED BY: A. Gipson	

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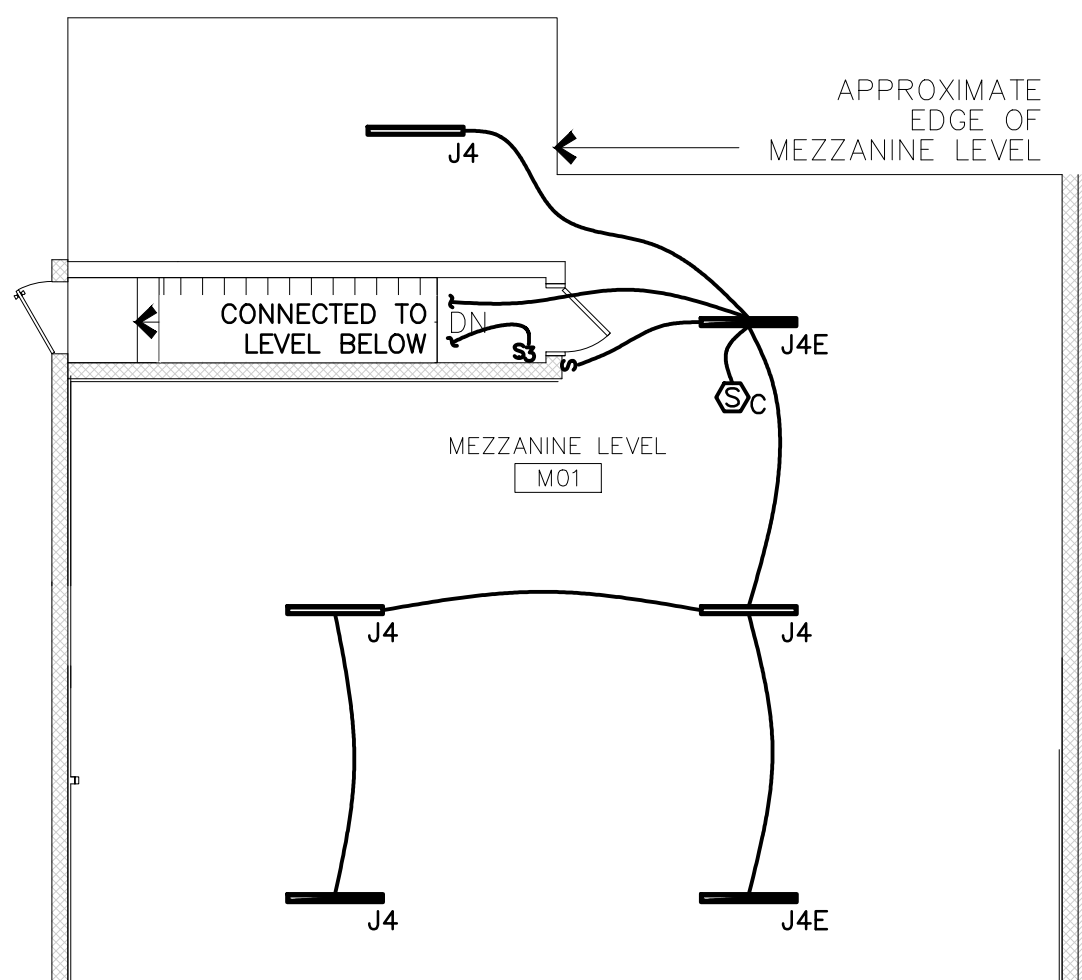
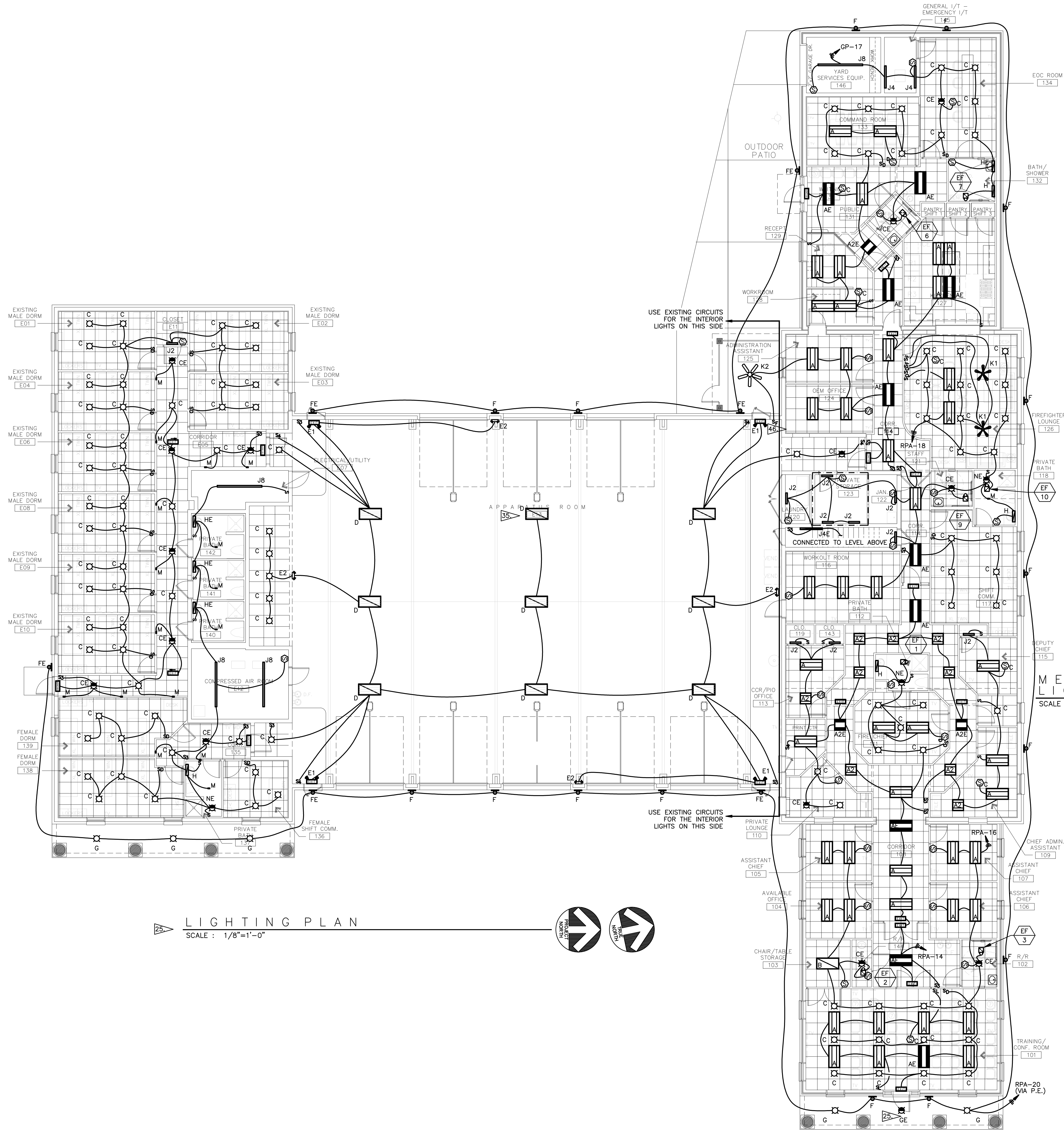


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

E2.1 Lighting Plan

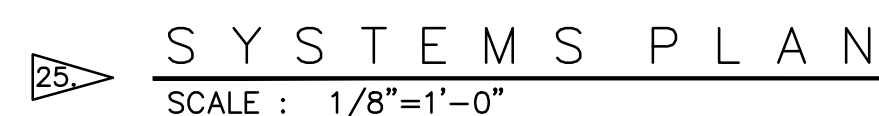
Date:	10-30-2023	Revisions:	
Job #:		FOR REVIEW ONLY	Δ
Dr. By:	T. Smith	FOR ESTIMATING/BIDDING ONLY	Δ
Ck. By:	A. Gipson	FOR CONSTRUCTION	Δ
File #:	30322_Elec	DATE: 10/30/23 ISSUED BY: A. Gipson	Δ

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MEZZANINE
LIGHTING PLAN
SCALE : 1/8"=1'-0"

LIGHTING PLAN
SCALE : 1/8"=1'-0"



F3.1 Systems Plan

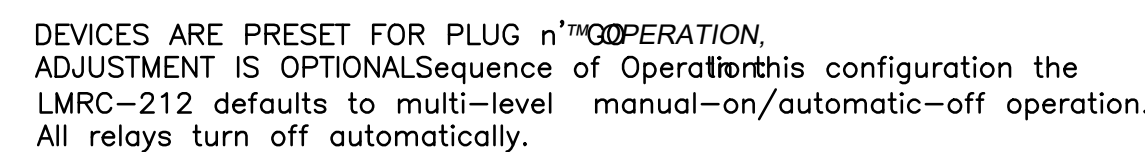
Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED: ☐ FOR REVIEW ONLY ☐ FOR PERMIT ONLY ☒ FOR ESTIMATING / BIDDING ONLY ☐ FOR CONSTRUCTION DATE: 10/30/23 ISSUED BY: A. Gibson	Revisions:
Job #:			1
Dr. By:	T. Smith		2
Check By:	A. Gibson		3
File #:	30322 Elec		4

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PANEL SCHEDULE													
PANEL NUMBER		MP											
LOCATION													
DIRECTORY		CKT. NO.	AMPS/ POLES									CKT. NO.	DIRECTORY
			kW	"A" PHASE	"B" PHASE	"C" PHASE		kW	AMPS/ POLES				
		CU-8	1	25/2	1.41	*		0.75	15/2	2			AC-1/HP-1
		3			1.41	*		0.75		4			
		CU-9	5	25/2	1.41	*		0.75	15/2	5			AC-2/HP-2
		7			1.41	*		0.75		8			
		CU-11	9	40/2	2.00	*		0.75	15/2	10			AC-3/HP-3
		11			2.00	*		0.75		12			
		CU-12	13	40/2	2.00	*		1.16	20/2	14			AC-4/HP-4
		15			2.00	*		1.16		16			
		AC-5/HP-5	17	25/2	0.92	*		0.92	25/2	18			AC-6/HP-6
		19			0.92	*		0.92		20			
		AC-7/HP-7	21	25/2	1.58	*		1.50	20/2	22			H-1
		23			1.58	*		1.50		24			
		MAU-1	25	15/2	0.82	*		0.00	20/1	26			SPARE
		27			0.82	*		0.00	20/1	28			SPARE
		KCU-1	29	30/2	1.51	*		0.00	20/1	30			SPARE
		31			1.51	*		0.00	20/1	32			SPARE
		SPARE	33	20/1	0.00	*		0.00	20/1	34			SPARE
		SPARE	35	20/1	0.00	*		0.00	20/1	36			SPARE
		SPARE	37	20/1	0.00	*		0.00	20/1	38			SPARE
		SPARE	39	20/1	0.00	*		0.00	20/1	40			SPARE
		SPARE	41	20/1	0.00	*		0.00	20/1	42			SPARE
MAIN BREAKER:		MLO		NOTES:				kW PHASE "A"				11.65	
MAIN BUS:		200A						kW PHASE "B"				11.97	
VOLTAGE:		208Y120V						kW PHASE "C"				11.34	
AIC:		22,000											
FRAME:												34.96	
TRIP:													
MOUNTING:													

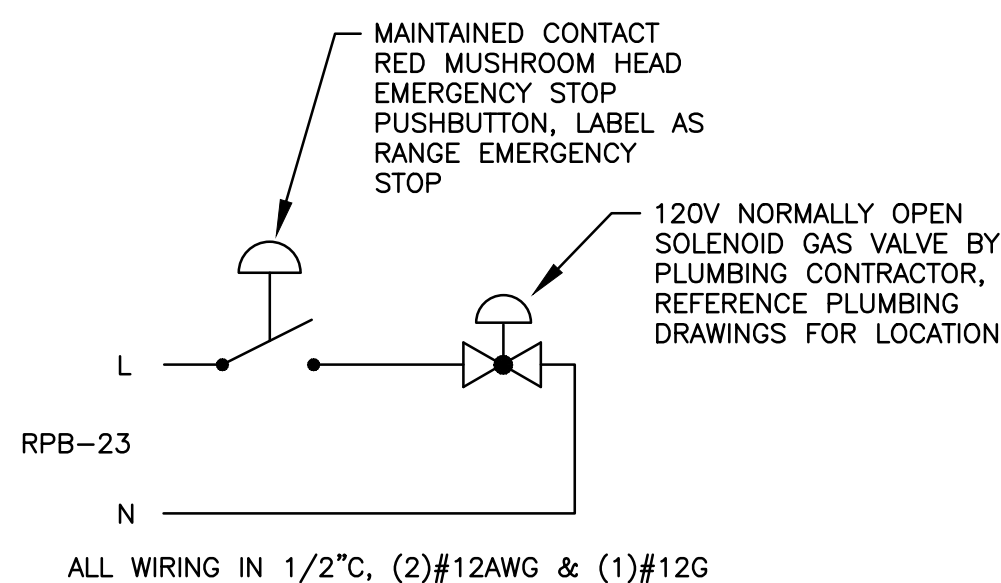
PANEL SCHEDULE													
PANEL NUMBER		RPB											
LOCATION													
DIRECTORY		CKT. NO.	AMPS/ POLES									CKT. NO.	DIRECTORY
			kW	"A" PHASE	"B" PHASE	"C" PHASE		kW	AMPS/ POLES				
		R - CORRIDOR, PRINTER	1	20/1	0.75	*		0.00	20/1	2			SPARE
		R - CORRIDOR, PRINTER	3	20/1	0.75	*		0.50	20/1	4			DOOR POWER
		R - CORRIDOR	5	20/1	1.08	*		1.08	20/1	6			R - CCR/PIO OFFICE
		R - PRIVATE LOUNGE & ASSISTANT CHIEF	7	20/1	1.80	*		0.18	20/1	8			R - PRIVATE BATH, COUNTER
		R - AVAILABLE OFFICE	9	20/1	1.08	*		1.26	20/1	10			R - FIRE CHIEF
		R - ASSISTANT CHIEF	11	20/1	0.80	*		1.08	20/1	12			R - CHIEF ADMIN ASSISTANT
		R - ASSISTANT CHIEF	13	20/1	1.26	*		0.90	20/1	14			R - CHIEF ADMIN ASSISTANT
		R - CORRIDOR, DRINKING FOUNTAIN (GFCI BKR)	15	20/1	0.75	*		0.18	20/1	16			R - SAFE HAVEN BABY BOX
		R - TRAINING CONF. ROOM, PROJECTOR SCREEN	17	20/1	0.20	*		1.08	20/1	18			R - TRAINING CONF. ROOM
		R - TRAINING CONF. ROOM, PROJECTOR	19	20/1	0.75	*		1.08	20/1	20			R - TRAINING CONF. ROOM
		CO/NO2 DETECTORS	21	20/1	0.20	*		0.90	20/1	22			R - TRAINING CONF. ROOM
		STOVE EMERGENCY STOP	23	20/1	0.01	*		1.26	20/1	24			R - ADMIN, ASSISTANT
		R - MEZZANINE	25	20/1	0.54	*		1.26	20/1	26			R - OEM OFFICE
		KEF-1	27	20/1	1.66	*		1.20	20/1	28			R - KITCHEN, MICROWAVE (GFCI)
		IH-3	29	20/1	0.58	*		0.00	20/1	30			SPARE
		IH-4	31	20/1	0.58	*		0.00	20/1	32			SPARE
		DWB-2	33	20/1	0.61	*		0.00	20/1	34			SPARE
		SPARE	35	20/1	0.00	*		0.00	20/1	36			SPARE
		SPARE	37	20/1	0.00	*		0.00	20/1	38			SPARE
		SPARE	39	20/1	0.00	*		0.00	20/1	40			SPARE
		SPARE	41	20/1	0.00	*		0.00	20/1	42			SPARE
MAIN BREAKER:		MLO		NOTES:				kW PHASE "A"				9.10	
MAIN BUS:		100A						kW PHASE "B"				8.49	
VOLTAGE:		208Y120V						kW PHASE "C"				7.27	
AIC:		22,000											
FRAME:												24.86	
TRIP:													
MOUNTING:													

PANEL SCHEDULE													
PANEL NUMBER		RPA											
LOCATION													
DIRECTORY		CKT. NO.	AMPS/ POLES	kW	"A" PHASE	"B" PHASE	"C" PHASE	kW	AMPS/ POLES	CKT. NO.	DIRECTORY		
R - KITCHEN, ICE MACHINE (GFCI BKR)		1	20/1	1.20	*			1.20	20/1	2	R - LAUNDRY, WASHER		
R - KITCHEN, REFRIGERATOR (GFCI BKR)		3	20/1	1.50	*			2.70	30/2	4	R - LAUNDRY, DRYER		
R - KITCHEN, REFRIGERATOR (GFCI BKR)		5	20/1	1.50	*			2.70		6			
R - KITCHEN, REFRIGERATOR (GFCI BKR)		7	20/1	1.50	*			1.00	20/1	8	R - CORRIDOR, VENDING MACHINE (GFCI BKR)		
R - KITCHEN, MICROWAVE (GFCI)		9	20/1	1.20	*			1.00	20/1	10	R - CORRIDOR, VENDING MACHINE (GFCI BKR)		
R - KITCHEN		11	20/1	0.54	*			0.90	20/1	12	R - WORKOUT ROOM		
R - KITCHEN, COUNTER		13	20/1	0.36	*			1.12	20/1	14	LIGHTING		
R - KITCHEN, COUNTER		15	20/1	0.54	*			1.06	20/1	16	LIGHTING		
KITCHEN HOOD		17	20/1	0.01	*			1.33	20/1	18	LIGHTING		
R - FIREFIGHTER LOUNGE		19	20/1	0.90	*			0.70	20/1	20	EXTERIOR LIGHTING		
R - FIREFIGHTER LOUNGE		21	20/1	0.90	*			0.18	20/1	22	R - KITCHEN		
R - CORR, PRIVATE STOR, JAN, & STAFF		23	20/1	1.08	*			0.53	20/1	24	EF-4		
R - PRIVATE BATH, COUNTER		25	20/1	0.16	*			0.03	20/1	26	EF-5		
R - SHIFT COMM.		27	20/1	0.90	*			0.53	20/1	28	F-1 (FIRE ALARM INTERLOCK)		
R - SHIFT COMM.		29	20/1	0.54	*			0.53	20/1	30	F-2 (FIRE ALARM INTERLOCK)		
AHU-8		31	20/1	0.53	*			0.03	20/1	32	F-3 (INTERLOCK WITH WORKOUT RM LIGHTS)		
AHU-9		33	20/1	0.53	*			0.58	20/1	34	IH-1		
AHU-11		35	20/1	0.77	*			0.58	20/1	36	IH-2		
AHU-12		37	20/1	0.77	*			9.10		38			
ERV-1		39	20/1	0.53	*			8.49	100/3	40	PANEL RPB		
DWB-1		41	20/1	0.01	*			7.27		42			
MAIN BREAKER:		MLO		NOTES:				kW PHASE "A"				16.62	
MAIN BUS:		200A						kW PHASE "B"				20.64	
VOLTAGE:		208Y120V						kW PHASE "C"				18.25	
AIC:		22,000											
FRAME:													
TRIP:													
MOUNTING:													
										TOTAL KW		57.55	



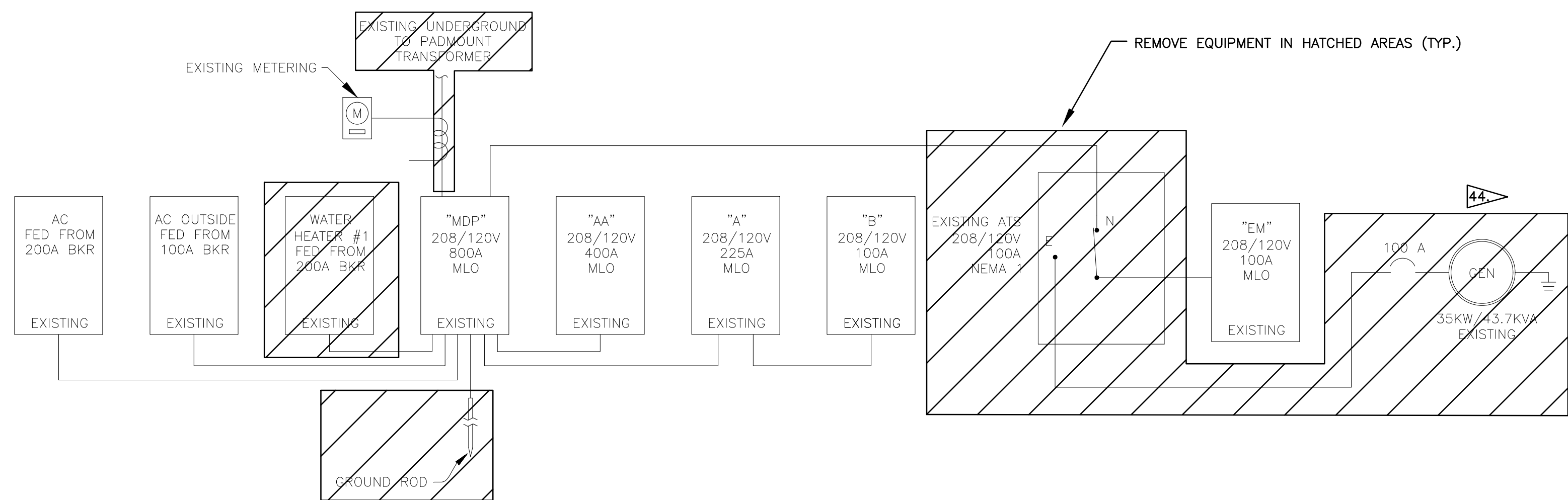
WATTSTOPPER LMRC-212 Dimming Room Controller
Wiring Diagram

CONFERENCE ROOM LIGHTING CONTROL WIRING DIAGRAM

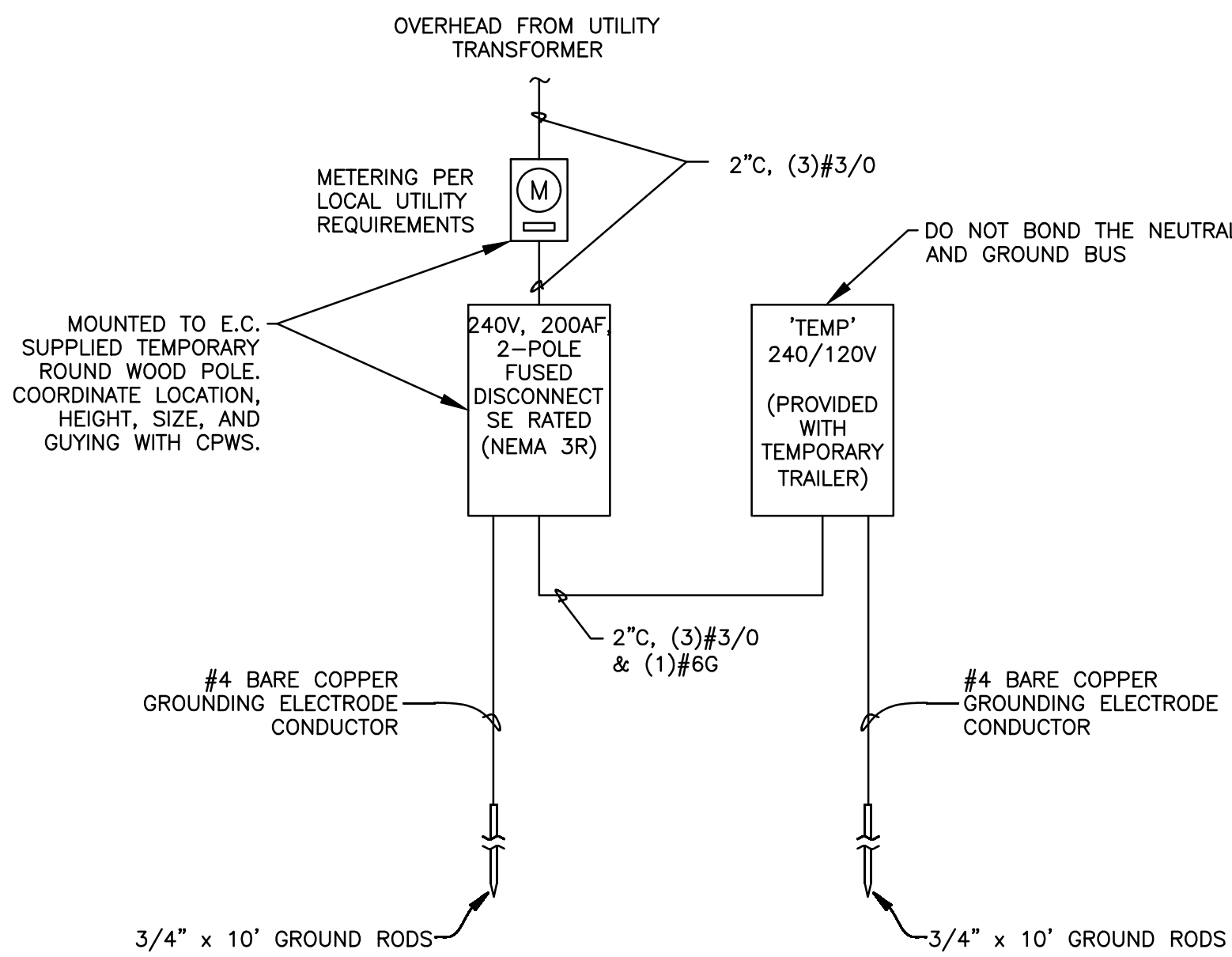


WIRING DIAGRAM: EMERGENCY STOP FOR GAS RANGE SHUT-OFF
SCALE: NONE

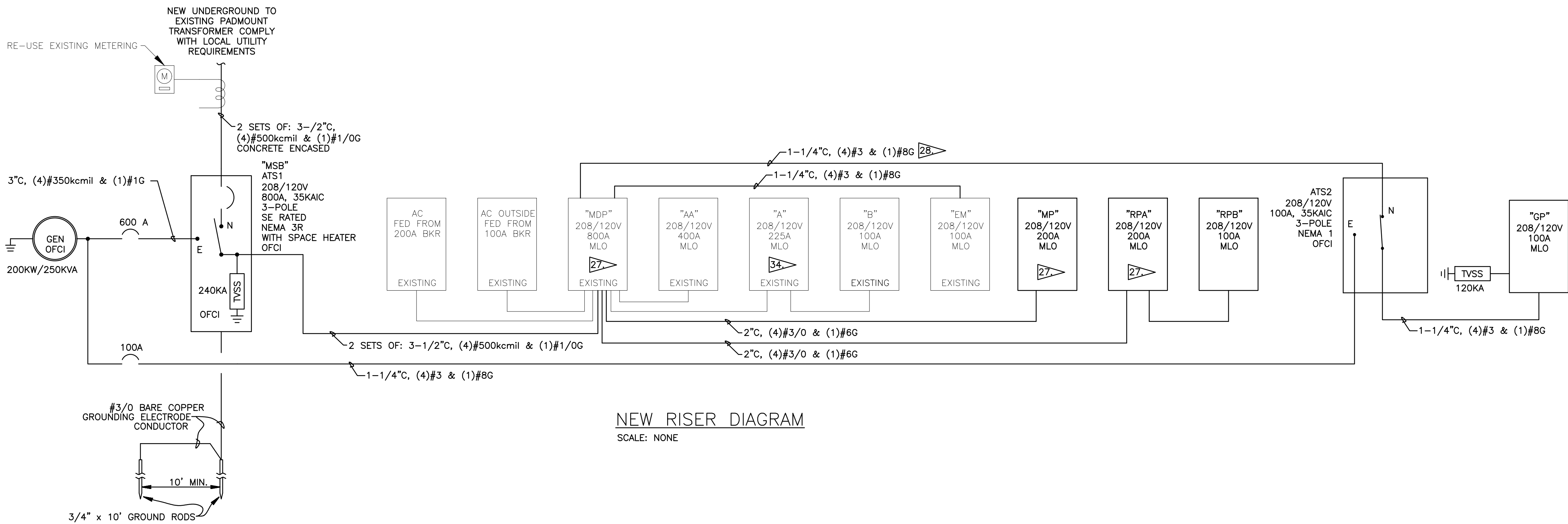
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EXISTING RISER DIAGRAM
SCALE: NONE



TEMPORARY TRAILER RISER DIAGRAM
SCALE: NONE



NEW RISER DIAGRAM
SCALE: NONE

Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

E4.3 Riser Diagrams

Date:	10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #:		☐ FOR REVIEW ONLY	
Dr. By:	T. Smith	☐ FOR ESTIMATING/BIDDING ONLY	
Ck. By:	A. Gipson	☒ FOR CONSTRUCTION	
File #:	30322_Elec	DATE: 10/30/23 ISSUED BY: A. Gipson	

LEGEND:

RECEPTACLES:

(15") ALL RECEPTACLES ARE TAMPER RESISTANT

	OUTLET - UNIPLEX, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - DUPLEX, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - DUPLEX, COUNTER HEIGHT, 120 V, 20 A (8" A.C.T.)
	OUTLET - DUPLEX, COUNTER HEIGHT, GFCI, 120 V, 20 A (8" A.C.T.)
	OUTLET - DUPLEX, CEILING MOUNTED, 120 V, 20 A
	OUTLET - DUPLEX, WEATHER PROOF, GROUND FAULT CURRENT INTERRUPTER, 120 V, 20 A
	OUTLET - DUPLEX, GROUND FAULT CURRENT INTERRUPTER, 120 V, 20 A
	OUTLET - DUPLEX, 120 V, 20 A, PLUGMOLD
	OUTLET - DUPLEX, SWITCHED, 120 V, 20 A
	OUTLET - DUPLEX, 120 V, 20 A, ISOLATED GROUND
	OUTLET - DUPLEX, GENERAL PURPOSE, 120V, 20A ON ARC FAULT CURRENT INTERRUPTING CIRCUIT BREAKER
	OUTLET - DUPLEX, 120 V, 20 A, EXPLOSION PROOF
	OUTLET - COMBO DUPLEX/ISBA/USBC, 120 V, 20 A
	OUTLET - DUPLEX, FLOOR, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - QUADRUPLIX, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - QUADRUPLIX, COUNTER TOP, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - QUADRUPLIX, FLOOR, GENERAL PURPOSE, 120 V, 20 A
	OUTLET - 240 V
	HARD-WIRE CONNECTION POINT
	WIREMOLD SERIES 4000 RACEWAY WITH DEVICES AS INDICATED
	OUTLET - TRIPLEX, RETRACTABLE DROP CABLE, GENERAL PURPOSE, 120 V, 20 A

OTHER:

	PANELBOARD - SURFACE MOUNT
	PANELBOARD - FLUSH MOUNT
	PHOTOELECTRIC CELL
	DIMMER CONTROL SYSTEM WITH HAND-HELD REMOTE, 120V, MULTIPLE ZONE
	MANUAL STARTER, SIZED FOR EQUIPMENT SERVED
	DRY TYPE TRANSFORMER
	DISCONNECT, SIZE AS INDICATED (60")
	OVERHEAD DOOR CONTROL
	OVERHEAD DOOR MOTOR
	LIGHTING CONTACTOR
	JUNCTION BOX
	EXHAUST FAN
	THERMOSTAT (60")
	TELEVISION OUTLET (SEE DETAIL) AND RECEPTACLE FIELD COORDINATE HEIGHT WITH OWNER
	CAD MONITOR OUTLET (SEE DETAIL) AND RECEPTACLE FIELD COORDINATE HEIGHT WITH OWNER
	DURESS SWITCH
	UTILITY METER
	EXIT SIGN (ARROW INDICATES ILLUMINATED FACE) (96")
	TWIN HEAD EMERGENCY BATTERY UNIT
	SWL SWITCH WITH LIGHTS (FOR EXHAUST FANS)
	NL NIGHT LIGHT, CONNECT TO UNSWITCHED CONDUCTOR
	EX EXISTING
	C CEILING MOUNTED
	W WALL MOUNTED
	WP WEATHER PROOF, GROUND FAULT CURRENT INTERRUPTER, 120V, 20A
	OFCI OWNER-FURNISHED, CONTRACTOR INSTALLED
	GAA GENERATOR REMOTE ANNUNCIATOR
	HC HANDICAP POWER ASSIST PUSH BUTTON
	AOR AREA OF REFUGE ILLUMINATED SIGN WITH EMERGENCY BATTERY
	AORA AREA OF RESCUE ASSISTANCE ILLUMINATED SIGN WITH EMERGENCY BATTERY
	AOR CB AREA OF REFUGE CALL BOX
	AOR BS AREA OF REFUGE BASE STATION
	E GENERATOR EMERGENCY STOP PUSH BUTTON
	CO CO/NO2 DETECTOR - BY MECHANICAL
	Q IN-GROUND QUAXITE BOX

SOUND/INTERCOM/PHONE SYSTEM:

	SOUND SPHERE #SS-110 PAGE
	AMPLIFIER
	MICROPHONE OUTLET, FLOOR MOUNTED, FLUSH
	GYMNASIUM SOUND SYSTEM WIRING TO AMPLIFIER
	VOLUME CONTROLS
	SOUND SYSTEM CONTROLLER
	PUBLIC ADDRESS SYSTEM
	TELEPHONE OUTLET
	GANG OF THREE DATA OUTLETS
	WALL PHONE, 60" A.F.F
	DATA/VOICE/TV/CAD COMBINATION OUTLET
	INTERCOM SPEAKER - CEILING MOUNT
	INTERCOM SPEAKER - WALL MOUNT
	SPEAKER/PAGING
	TELEPHONE/INTERCOM CABINET
	TELEPHONE/INTERCOM WIRING TO CABINETS
	INTERCOM CALL BUTTON
	WIRELESS ACCESS POINT
	CONDUIT SLEEVE
	INTERCOM CALL BUTTON

SWITCHES: (44" - UNLESS OTHERWISE NOTED)

	SWITCH - SNAP, 120 V, 20 A, SINGLE POLE
	SWITCH - SNAP, 120 V, 20 A, 3-WAY OPERATION
	SWITCH - SNAP, 120 V, 20 A, 4-WAY OPERATION
	SWITCH - KEY, 277 V, 20 A, SINGLE POLE, HUBBELL 1221L
	DIMMER CONTROL SWITCH, 120V, 20A
	FAN 3-SPEED SWITCH, 120V, 20A
	SWITCH - WITH TIMER, 0-60 MIN. WITH HOLD TORK #A560MH
	WALL MOUNTED DUAL SENSING OCCUPANCY SENSOR
	CEILING MOUNTED, DUAL SENSING OCCUPANCY SENSOR
	SWITCH - LOW VOLTAGE MULTI-BUTTON SWITCH
	CEILING MOUNTED, DUAL SENSING DIRECTIONAL OCCUPANCY SENSOR

NOTE:
ALL OF THE SYMBOLS AND ABBREVIATIONS INCLUDED ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

SECURITY SYSTEM:

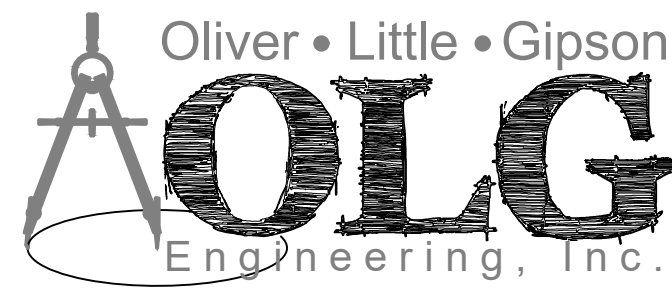
	CEILING MOUNTED MOTION DETECTOR
	WALL MOUNTED MOTION DETECTOR
	MAGNETIC DOOR SWITCH
	CARD READER
	SECURITY DISPLAY PANEL
	SECURITY MAIN PROCESSOR
	WALL MOUNTED VIDEO CAMERA
	CEILING MOUNTED VIDEO CAMERA
	ELECTRIC STRIKE
	KEYPAD/CARD READER
	AIPHONE DOOR STATION WITH CAMERA, INTERCOM AND PROXIMITY READER
	AIPHONE CONTROL STATION
	KEYPAD
	PROXIMITY READER

FIRE ALARM SYSTEM:

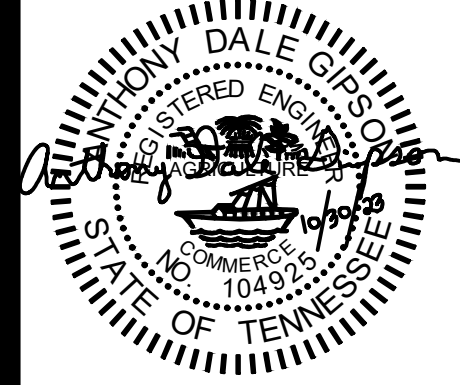
	PULL STATION (48")
	WALL MOUNTED HORN/STROBE (80")
	CEILING MOUNTED STROBE
	CEILING MOUNTED FIRE HORN/STROBE
	CEILING MOUNTED 520 HZ LOW FREQUENCY HORN/STROBE
	WALL MOUNTED STROBE
	WALL MOUNTED FIRE HORN/STROBE
	CEILING MOUNTED SMOKE DETECTOR
	CEILING MOUNTED SMOKE DETECTOR/CARBON DIOXIDE DETECTOR
	HEAT DETECTOR
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR (48")
	DUCT SMOKE DETECTOR
	SPRINKLER BELL
	SPRINKLER FLOW SWITCH
	SPRINKLER TAMPER SWITCH
	POST INDICATOR VALVE

GENERAL NOTES:

- ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70, NATIONAL ELECTRICAL CODE. ALL ITEMS ARE ON AN EQUAL BASIS.
- ALL SINGLE PHASE BRANCH CIRCUITS (RECEPTACLES, LIGHTING, ETC.) ARE 1/2" CONDUIT OR EMT WITH (3)#12 BLACK/WHITE/GREEN, THIN, 90°C WIRING. ALL OTHER CONDUIT AND WIRING SHALL BE AS INDICATED ON THE PLANS. ACTUAL ROUTING AND HOMERUN GROUPINGS ARE TO BE DETERMINED IN THE FIELD.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC EXCEPT FOR DETAILS AND ELEVATIONS. DO NOT SCALE FROM DIAGRAMMATIC DRAWINGS. EXACT LOCATIONS OF DEVICES AND PANELS ARE TO BE DETERMINED AND ROUGHED-IN DURING CONSTRUCTION TO AVOID INTERFERENCE, TO MEET USER REQUIREMENTS, TO PROVIDE ADEQUATE MOUNTING, AND TO MEET NEC LINEAR ACCESS AND CLEARANCE REQUIREMENTS.
- CIRCUIT BREAKER FOR WATER HEATERS TO BE PROVIDED WITH THE MEANS TO BE LOCKED IN THE OPEN POSITION.
- VERIFY EXACT LOCATION OF ALL MOTORS AND EQUIPMENT BEFORE ROUGHING IN.
- FINAL CONNECTIONS TO ALL AIR-HANDLERS, CONDENSING UNITS, EXHAUST FANS, AND OTHER EQUIPMENT DEVICES WHICH VIBRATE, SHALL BE MADE WITH FLEXIBLE SEALITE AND APPROPRIATE WIRING.
- ELECTRICAL DRINKING FOUNTAIN RECEPTACLES SHALL BE LOCATED AS REQUIRED TO CONCEAL RECEPTACLE BEHIND THE WATER COOLER ASSEMBLY.
- BACK TO BACK MOUNTING OF RECEPTACLES IS NOT PERMITTED.
- IN ADDITION TO THE NEC REQUIREMENTS FOR GFCI RATED RECEPTACLES, THE FOLLOWING RECEPTACLES SHALL ALSO BE GFCI RATED:
9.1.ALL RECEPTACLES LOCATED WITHIN 6 FEET OF A SINK.
9.2.ALL RECEPTACLES WHICH ARE PROVIDED FOR CONVENIENCE IN SERVICING HVAC EQUIPMENT REGARDLESS OF LOCATION.
9.3.ALL RECEPTACLES IN AREAS THAT ARE DEFINED BY THE NEC AS KITCHENS.
EITHER INDIVIDUAL GFCI DEVICES OR GFCI CIRCUIT BREAKERS ARE ACCEPTABLE BUT RECEPTACLES PROVIDED BY CIRCUIT BREAKERS OR OTHER GFCI DEVICES SHALL BE CLEARLY MARKED AS GFCI AND THE SOURCE OF PROTECTION SHOWN.
- PROVIDE A LAMICOID NAMEPLATE (WHITE LETTERS ON BLACK BACKGROUND) ON EACH PANELBOARD, MOTOR STARTER, CONTACTOR, TRANSFORMER, ETC. LETTERS SHALL BE 0.75 INCH MINIMUM.
- CIRCUIT BREAKERS FOR HVAC EQUIPMENT SHALL BE HACR RATED.
- MINIMUM HORIZONTAL SEPARATION BETWEEN BOXES ON OPPOSITE WALLS OF FIRE RATED WALL SHALL BE 24 INCHES.
- VERIFY ALL DOOR SWINGS WITH ARCHITECTURAL BEFORE ROUGHING IN LIGHT SWITCHES.
- CONTRACTOR SHALL INSTALL THE UNDERGROUND SERVICE LATERAL TO THE UTILITY PROVIDED TRANSFORMER(S). TRANSITION TO RIGID GALVANIZED STEEL CONDUIT FROM THE UNDERGROUND PVC CONDUIT IS REQUIRED EXITING ABOVE GRADE CONCRETE ENCASE CONDUITS. SERVICE MUST COMPLY WITH ALL REQUIREMENTS OF THE LOCAL ELECTRIC UTILITY.
- TRADE NAMES ARE GIVEN TO CLARIFY TYPE OF PRODUCT AND QUALITY DESIRED.
- CONTRACTOR SHALL CUT AS REQUIRED TO INSTALL ELECTRICAL EQUIPMENT. REPAIR OF FLOOR OR WALLS SHALL BE COORDINATED WITH GENERAL CONTRACTOR. CONTRACTOR SHALL ALSO REPAIR ALL OPENINGS LEFT DUE TO EQUIPMENT REMOVAL.
- CONDUCTORS ARE AWG#12 COPPER UNLESS OTHERWISE SHOWN. ALL CONDUCTORS LARGER THAN #10 SHALL BE STRANDED. RUNS IN EXCESS OF 90'-0" (ONE WAY) SHALL BE SIZED PER THE NATIONAL ELECTRICAL CODE MAXIMUM 2% VOLTAGE DROP.
- PANELBOARDS SHALL CONTAIN A TYPEWRITTEN DIRECTORY WITH A PLASTIC COVER AFFIXED TO THE INSIDE DOOR. UPDATE PANEL SCHEDULES IN EXISTING PANELS TO REFLECT NEW CONDITIONS.
- ALL FIXTURES, DEVICES, CONDUIT, AND EQUIPMENT SHALL BE SECURED WITH APPROVED HANGERS AND ANCHORS AND IN ACCORDANCE WITH APPROVED STANDARDS OF INSTALLATION.
- ALL BREAKERS SHOWN IN THE PANELBOARD SCHEDULE SHALL BE RATED AS SHOWN FOR BOTH CIRCUIT CAPACITY AND FAULT CURRENT INTERRUPTING CAPACITY.
- TELEPHONE SERVICE CONDUIT SHALL BE SCHEDULE 40 PVC, SIZED PER THE UTILITY, TURNED UP AT A TELEPHONE BACKBOARD. LOCATION OF TELEPHONE INTERFACE TO BE COORDINATED WITH THE LOCAL TELEPHONE UTILITY.
- FOR PHONE AND/OR DATA DROPS, INSTALL JUNCTION BOX WITH (2) TWO 1" CONDUITS STUBBED INTO ACCESSIBLE CEILING SPACE, SEE DETAIL.
- ALL PANELBOARDS, DISCONNECT SWITCHES, MOTOR STARTERS, AND CONTACTORS SHALL BE NEMA 1 UNLESS OTHERWISE NOTED.
- IN ACCORDANCE WITH ARTICLE 250-52 NEC, BOND GROUNDING ELECTRODE SYSTEM TO ALL OF THE FOLLOWING IF AVAILABLE:
24.1. BUILDING STEEL
24.2. FOUNDATION REBAR
24.3. BUILDING COUNTERPOISE
24.4. UNDERGROUND METAL COLD WATER PIPE
- FOR THE ADMIN INTERIOR RENOVATION AREA, REMOVE ALL LINE AND LOW VOLTAGE ELECTRICAL DEVICES, LIGHTING, WIRING, AND CONDUIT BACK TO THE SOURCE. FOR ALL OTHER INTERIOR RENOVATION AREAS, REMOVE ALL LIGHT SWITCHES, LOW VOLTAGE DEVICES, LIGHTING, CONDUIT, AND WIRE BACK TO THE SOURCE, AND FOR WALLS THAT ARE TO BE REMOVED, REMOVE LINE VOLTAGE DEVICES. IF THE REMOVAL OF RECEPTACLES CAUSES OTHER DEVICES TO REMAIN TO BECOME INOPERABLE, RE-ROUTE WIRING TO MAKE THEM FUNCTIONAL. REMOVE ALL EXTERIOR LIGHTING CONDUIT, AND WIRE BACK TO THE SOURCE. REFERENCE THE ARCHITECTURAL DEMOLITION DRAWINGS. TURN OVER ALL LOW DEVICES TO THE OWNER.
- INSTALL A NEW 120V, 20/1 BREAKER IN PANEL B. AIC RATING TO MATCH EXISTING.
- INSTALL (2) NEW 208V, 200/3 BREAKERS IN PANEL MDP TO FEED PANELS MP AND RPA. AIC RATING TO MATCH EXISTING.
- RUN NEW CONDUIT AND WIRE BETWEEN PANEL MP AND PANEL EM AND RE-USE EXISTING 100/3 BREAKER.
- PUT ALL OUTDOOR SPEAKERS ON AN ASTRONOMICAL PROGRAMMABLE TIMER.
- CONNECT TO EXISTING RECEPTACLE CIRCUIT IN ROOM.
- RUN 1/2", (2)#10 & (1)#10G.
- CONNECT TO EXISTING CIRCUIT. PROVIDE NEW 240V, 30A, NON-FUSED DISCONNECT.
- COORDINATE MICROWAVE RECEPTACLE HEIGHT WITH ARCHITECTURAL ELEVATIONS.
- INSTALL (4) NEW 120V, 20/1 BREAKERS IN EXISTING PANEL A TO POWER GENERATOR BLOCK HEATER, BATTERY HEATER, BATTERY CHARGER, AND LIGHTS AND RECEPTACLE. AIC RATING TO MATCH EXISTING. RUN ALL CIRCUITS IN 1", (2)#10 & (1)#10G FOR EACH.
- PROVIDE A TEMPORARY SERVICE OR GENERATOR TO POWER THE EXISTING APPARATUS BAY DOORS, LIGHTS, RECEPTACLES, AND HEAT, AS WELL AS POWER FOR THE SLEEPING PORTABLE DURING CONSTRUCTION.
- TIE THE KITCHEN HOOD SUPPRESSION SYSTEM INTO THE FIRE ALARM SYSTEM. ACTIVATION OF THE KITCHEN HOOD FIRE SUPPRESSION SHALL INITIATE THE FIRE ALARM. VERIFY THAT ALL KITCHEN EQUIPMENT UNDER THE HOOD SHUTS OFF UPON ACTIVATION OF THE FIRE ALARM.
- DEDICATED BABY BOX SECURITY SYSTEM THAT REPORTS TO CENTRAL MONITORING STATION. FOR MONITORING THE FOLLOWING CONTACTS; POWER OFF, DOOR OPEN, AND OBJECT PRESENT. RUN WIRING RECOMMENDED BY VENDOR IN 1/2".
- REMOVE EXISTING AUTOMATIC TRANSFER SWITCH.
- WIRELESS ACCESS POINTS ARE OFCI. PROVIDE AND INSTALL (1) CAT5E CABLE TO THE APPROPRIATE MDF OR IDF PATCH PANEL.
- FIRE STATION RECEIVER STATION IS OFCI. MAKE AND MODEL TBD, LOCATED IN EDC 134. CONNECT TO THE MDF PATCH PANEL USING (1) CAT5E CABLE. PROVIDE 70V SPEAKERS, HOWEVER, THIS MUST BE COORDINATED WITH THE ACTUAL STATION RECEIVER PROVIDED. CONNECT THE SPEAKERS WITH SPEAKER WIRE AND RUN TO THE STATION RECEIVER. WIRE GAGE TO BE DETERMINED BY THE LENGTH OF THE RUNS, SPEAKER TAPS, SYSTEM IMPEDANCE, ETC.
- INSTALL A NEW 120V, 20/1 BREAKER IN EXISTING PANEL B. AIC RATING TO MATCH EXISTING.
- THE MATV AND MDIS CAD SYSTEM IS EXISTING. RE-USE AS MUCH OF THE SYSTEM AS POSSIBLE AND ADD NEW AMPLIFIERS, TAPS, SPLITTERS, FILTERS, TRAPS, ATTENUATORS, MAIN AND BRANCH CABLE AS NECESSARY. RUN (2) TWO NEW MAIN DISTRIBUTION CABLES, FROM THE HEAD-END IN ELECTRICAL/UTILITY E07 TO THE IT ROOM 145. (1) FOR THE TV'S AND (1) ONE FOR THE MDIS SYSTEM. RUN ALL NEW BRANCH CABLE TO TV'S/MDIS SYSTEMS ON THE ADMIN SIDE OF THE BUILDING.
- THE CAMERAS ARE TO BE PROVIDED AND INSTALLED BY OTHERS. THE E.C. IS TO INSTALL (1) ONE CAT5E WIRING FROM THE CAMERA LOCATIONS TO THE APPROPRIATE MDF OR IDF PATCH PANEL.
- REMOVE THE EXISTING GENERATOR AND ALL WIRING AND CONDUIT BACK TO THE SOURCE AND TURN OVER GENERATOR TO THE OWNER.
- CONSTRUCT A STAINLESS STEEL STRUCTURE TO MOUNT (2) AIPHONES ON AT DIFFERENT HEIGHTS. ONE LEVEL IS TO BE AT CAR HEIGHT, THE OTHER LEVEL IS TO BE AT FIRE TRUCK HEIGHT. CONSTRUCT STAINLESS STEEL SUN VISOR OVER EACH ONE. PROVIDE A CONCRETE PAD FOR THE STRUCTURE.
- LABEL SWITCH AS OUTDOOR FAN.
- FOR THE WALL MOUNT PHONES, RUN A CAT5E CABLE TO THE IDF PATCH PANEL.
- PROVIDE 2" CONDUIT SLEEVES THROUGH WALLS FOR ALL LOW VOLTAGE WIRING EXCEPT THE MDF AND IDF. FOR THE MDF AND IDF, PROVIDE 4" CONDUIT SLEEVES IN THE WALLS. QUANTITIES AS NEEDED BASED ON THE NUMBER OF CABLES. PROVIDE (1) SPARE 4" SLEEVE AT BOTH THE MDF AND IDF.
- GROUP CAT5 CABLES AT PATCH PANELS ACCORDING TO THE SYSTEM THEY SERVE.
- EXISTING EXHAUST FANS. PROVIDE NEW 240V, 30A, COMBO DISCONNECT, HOA. WIRE TO CO DETECTOR CONTACTS AND INTERLOCK WITH LOUVERS. PROVIDE A WALL MOUNTED LED WARNING BEACON. WIRE CO HIGH ALARM CONTACT TO WARNING BEACON. REFERENCE MECHANICAL DRAWINGS FOR CONTROL SEQUENCE.



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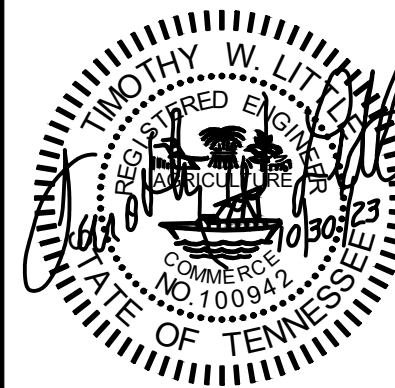


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

E5.1 Legend & Notes

Date: 10-30-2023	THIS DRAWING HAS BEEN ISSUED:	Revisions:
Job #: 2300000000	FOR REVIEW ONLY	1
Dr. By: T. Smith	FOR ESTIMATING/BIDDING ONLY	2
Ck. By: A. Gipson	FOR CONSTRUCTION	3
File #: 30322_Elec	DATE: 10/30/23 ISSUED BY: A. Gipson	4

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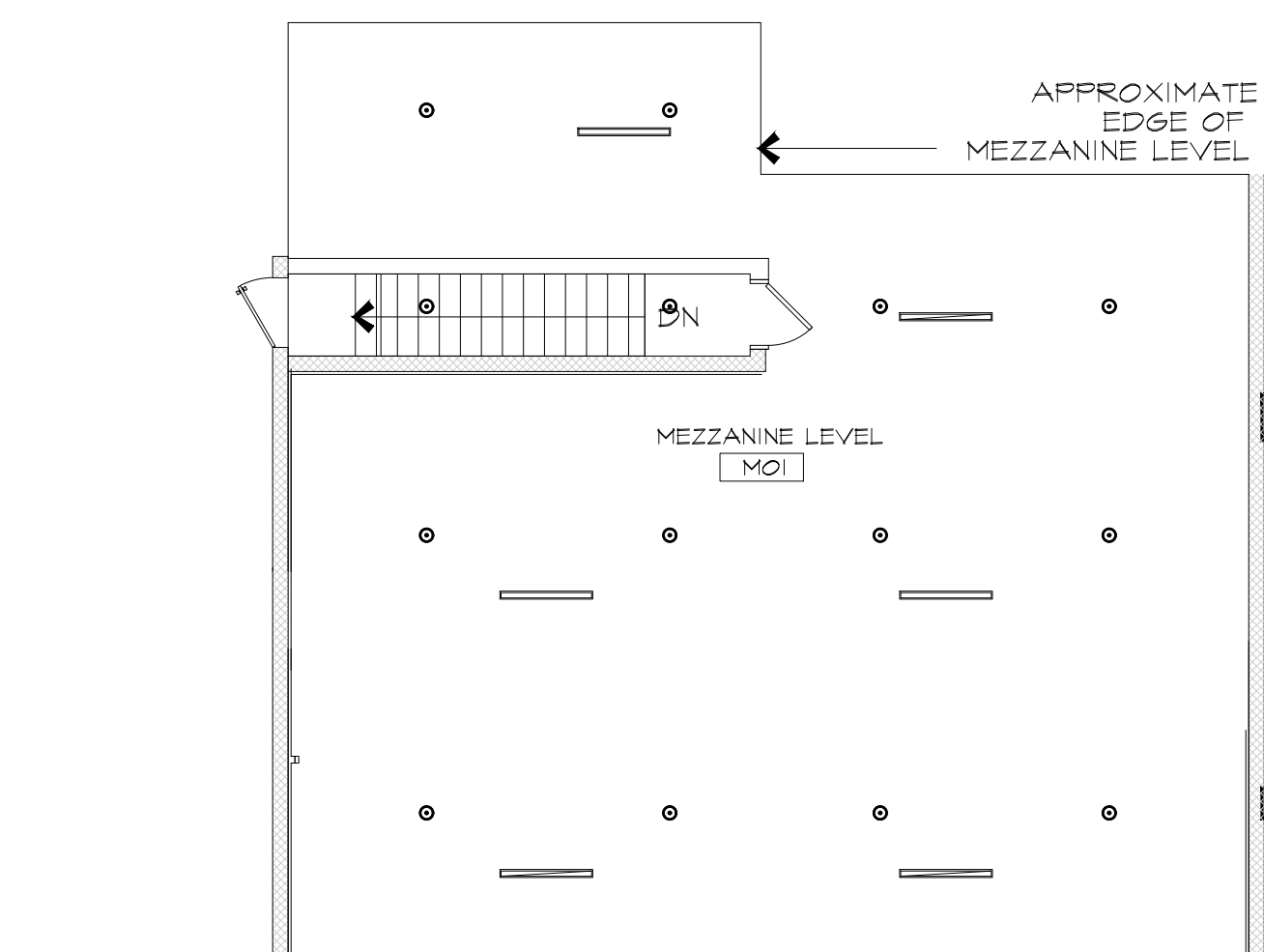


Proposed Renovation to
Fire Station #1 for the
City of Columbia
Columbia, Tennessee

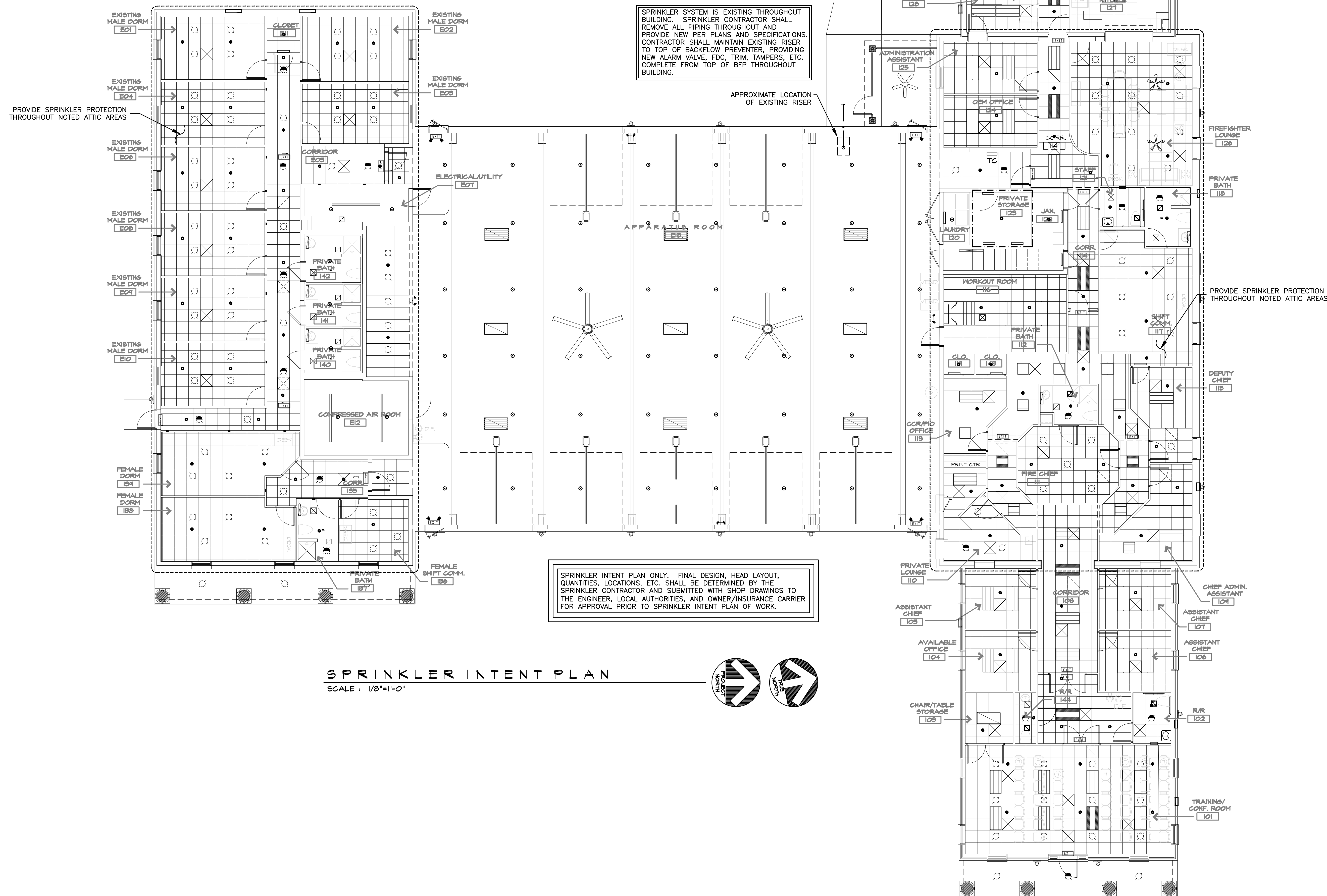
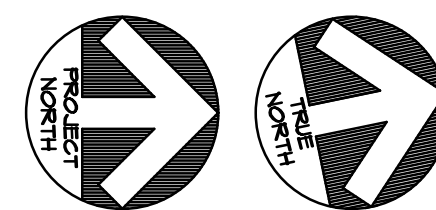
FP1.1 Sprinkler Intent Plan

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		DATE: 10/30/23 ISSUED BY: T. Little	<u>5</u>

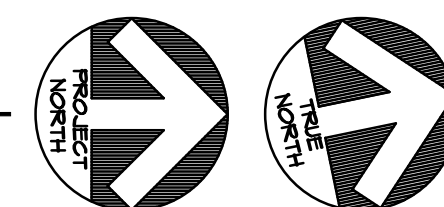
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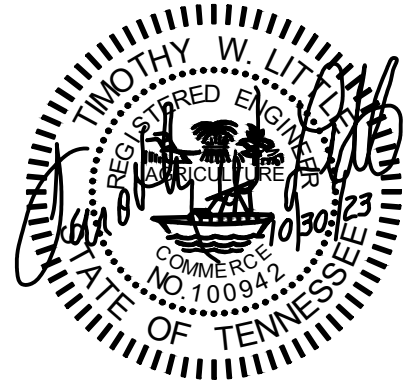


SCALE : 1/8"=1'-0"



SCALE : 1/8"=1'-0"

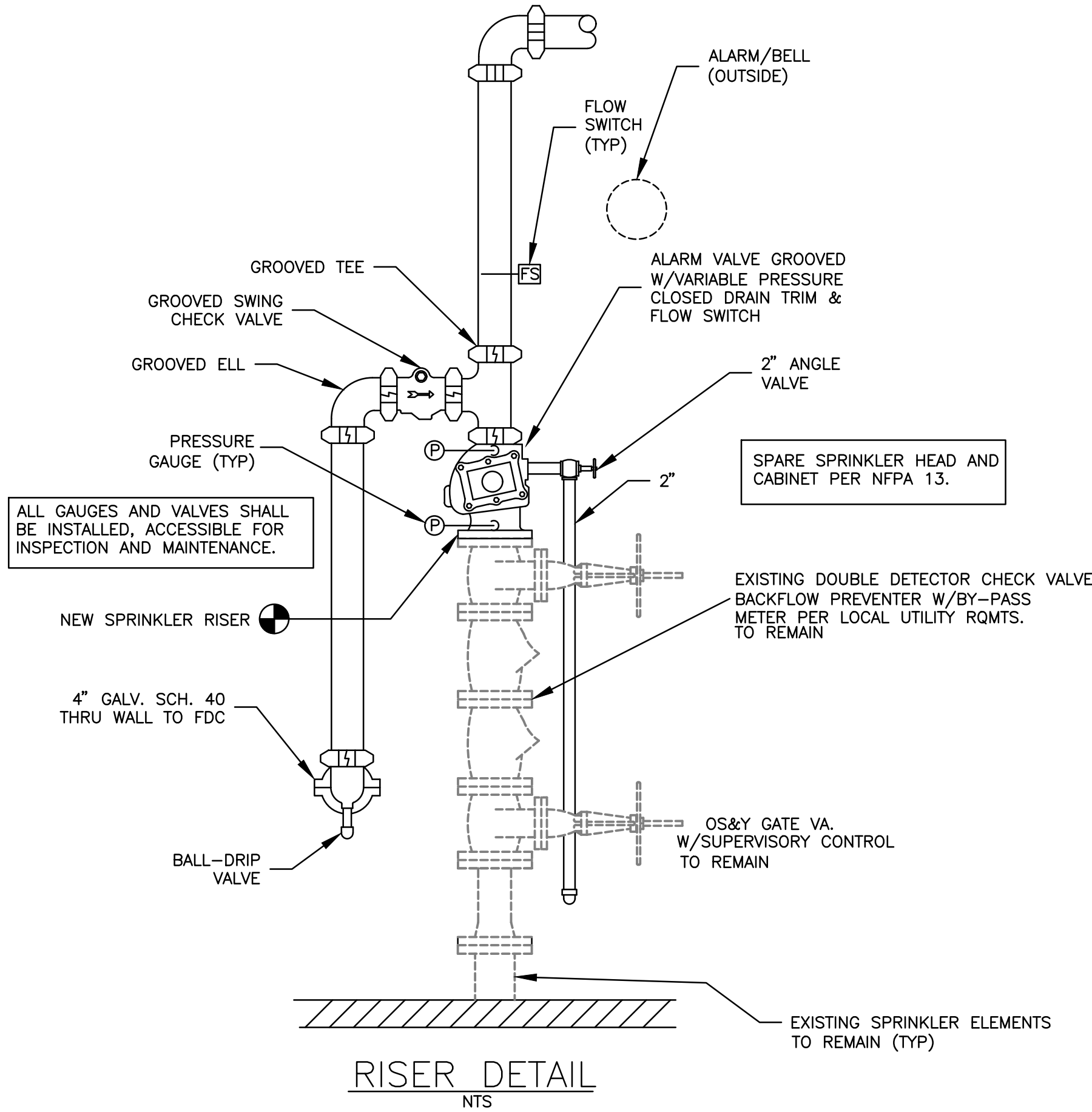




SPRINKLER INTENT LEGEND

- SPRINKLER PIPING
--- FIRE PROTECTION CRITICAL LIMIT
--- FIRE PROTECTION REMOTE ZONE
--- FIRE PROTECTION HOSE LAY
● RECESSED SPRINKLER HEAD
⊕ CONCEALED SPRINKLER HEAD
○ UPRIGHT SPRINKLER HEAD
○ CURTAIN SPRINKLER HEAD
● PENDANT SPRINKLER HEAD
▽ SIDEWALL SPRINKLER HEAD
▽ SIDEWALL CURTAIN HEAD
▽ EXTERIOR DRY SPRINKLER HEAD
▽ OS & Y VALVE WITH TAMPER SWITCH
■ FLOW SWITCH
■ BACKFLOW PREVENTER
■ FDC FIRE DEPARTMENT CONNECTION
GPM GALLONS PER MINUTE
PIV POST INDICATOR VALVE
PSIG POUNDS PER SQUARE INCH – GAUGE

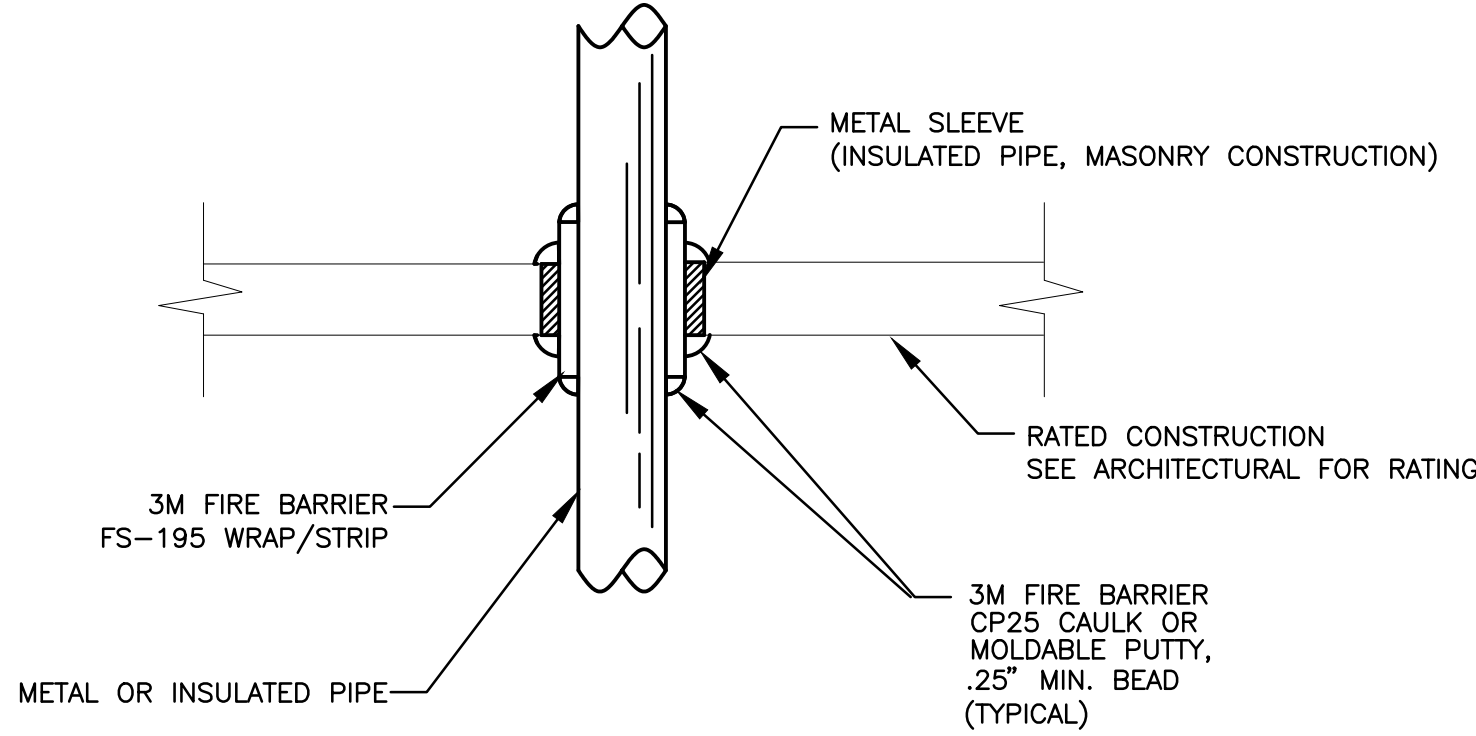
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ALL OF THE SYMBOLS AND ABBREVIATIONS INCLUDED ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.



- SPRINKLER INTENT NOTES
- SPRINKLER CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS NECESSARY TO PROVIDE A COMPLETE AND ACCEPTABLE SPRINKLER SYSTEM COMPLIANT WITH ALL APPLICABLE STATE AND LOCAL CODES.
 - SPRINKLER PIPING SHALL BE COORDINATED WITH DUCTWORK, CONDUIT, LIGHTS, PLUMBING, STRUCTURE AND OTHER RELATED TRADES TO INSURE ALL INTERFERENCES HAVE BEEN RESOLVED PRIOR TO INSTALLATION.
 - SPRINKLER SYSTEM SHALL BE HYDRAULICALLY CALCULATED PER NFPA 13 AND ALL APPLICABLE STATE AND LOCAL CODES.
 - ALL SPRINKLER HEADS SHALL BE LOCATED SYMMETRICALLY IN ROOMS AND CENTERED IN CEILING TILES.
 - ALL SHUT-OFF/CONTROL VALVES MUST BE SUPERVISED PER NFPA.
 - ABOVEGROUND SPRINKLER SYSTEM PIPING SHALL BE SHALL BE BLACK CARBON STEEL PER NFPA 13. EXPOSED PIPING SHALL BE PRIMED AND PAINTED WITH FINISH COAT AS SELECTED BY ARCHITECT. INDIVIDUAL BRANCH PIPING TO HEADS MAY BE RIGID STEEL PER ABOVE OR BRAIDED FLEXIBLE STAINLESS STEEL DROP COMPLIANT WITH NFPA 13 WHERE APPROVED BY LOCAL AUTHORITIES.
 - REFER TO THE SITE FIRE PROTECTION LAYOUT FOR LOCATIONS OF CITY WATER MAIN, NEW FIRE MAIN, FIRE HYDRANT, AND HYDRAULIC DATA, ETC..
 - SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SUBMITTED TO OWNER'S INSURANCE UNDERWRITER AND AUTHORITIES HAVING JURISDICTION FOR APPROVAL PRIOR TO COMMENCING WORK. PROVIDE PROOF OF APPROVAL TO ENGINEER'S OFFICE.
 - SPACES SUCH AS DORMITORIES, OFFICES, CORRIDORS, ETC., SHALL BE HYDRAULICALLY CALCULATED TO PRODUCE 0.10 GPM OVER THE MOST REMOTE 1500 SQ. FT. (1950 SQ. FT. FOR ATTIC) HEAD COVERAGE SHALL BE 225 SQ. FT./HEAD MAXIMUM. 100 GPM HOSE DEMAND WITH 60 MINUTE DURATION.
KITCHEN 127 AREA SHALL BE HYDRAULICALLY CALCULATED TO ORDINARY GROUP 1 REQUIREMENTS TO DELIVER 0.15 GPM OVER THE MOST REMOTE 1500 SQ. FT. HEAD COVERAGE SHALL BE 130 SQ. FT. MAXIMUM. 250 GPM HOSE DEMAND WITH 60 MINUTE DURATION.
APPARATUS BAY SHALL BE HYDRAULICALLY CALCULATED TO ORDINARY GROUP 2 REQUIREMENTS TO DELIVER 0.2 GPM OVER THE MOST REMOTE 1500 SQ. FT. (2,350 SQ. FT. FOR ATTIC) HEAD COVERAGE SHALL BE 130 SQ. FT. MAXIMUM. 250 GPM HOSE DEMAND WITH 60-90 MINUTE DURATION.
 - PROVIDE SEISMIC RESTRAINTS AND CONNECTIONS (IN ACCORDANCE WITH IBC 1613) AND REQUIRED CLEARANCES AROUND PIPING AT PENETRATIONS FOR FIRE PROTECTION PIPING. SEE STRUCTURAL FOR SEISMIC DESIGN DATA.
CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINTS TO ALL SPRINKLER ELEMENTS, ELEMENTS SHALL MAINTAIN EQUIPMENT, PIPING, ETC. IN A CAPTIVE POSITION. RESTRAINTS SHALL BE DESIGNED AND SELECTED TO MEET SEISMIC REQUIREMENTS AS IDENTIFIED ON STRUCTURAL DRAWINGS AND AS DEFINED IN THE LATEST EDITION OF THE LOCAL BUILDING CODE. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE PROPOSED SEISMIC RESTRAINT DESIGN. A SEISMIC DESIGN ERRORS AND OMISSIONS INSURANCE CERTIFICATE MUST ACCOMPANY SUBMITTALS FROM SEISMIC DESIGN ENGINEER. MANUFACTURER'S PRODUCT LIABILITY INSURANCE CERTIFICATES ARE NOT ACCEPTABLE. CONTRACTOR SHALL PROVIDE SEISMIC CALCULATIONS, SIGNED AND STAMPED BY A QUALIFIED LICENSED PROFESSIONAL ENGINEER SHOWING ADEQUACY OF SIZING AND TYPES OF RESTRAINTS FOR SEISMIC DESIGN. SEE DRAWING DRAWING 55.0 FOR SEISMIC CHARACTERISTICS, SPRINKLER PIPING TO HAVE COMPONENT IMPORTANCE FACTOR $I_p=1.5$ PER ASCE 7-05 13.1.3(1.).
 - UNDERGROUND FIRE MAINS SHALL BE INSTALLED WITH A MINIMUM DEPTH OF BURY OF 3 FEET.
 - SPRINKLER PIPING FROM THE 'POINT OF SERVICE' INCLUDING UNDERGROUND PIPING SHALL BE INSTALLED BY A REGISTERED SPRINKLER CONTRACTOR AND SHALL BE ONE SPRINKLER CONTRACTOR. SITE UTILITIES CONSTRUCTION SHALL NOT BE PROVIDED BY A SEPARATE LICENSED SPRINKLER CONTRACTOR OR SITE UTILITIES CONTRACTOR.
 - ALL SYSTEM GAUGES AND VALVES MUST BE ACCESSIBLE FOR INSPECTION AND MAINTENANCE IN ACCORDANCE WITH NFPA 13.8.1.2.
 - CONTRACTOR SHALL PROVIDE SIGNAGE AND LABELS FOR ALL SPRINKLER COMPONENTS (VALVES, PIPING, TAMPER SWITCHES, FLOW ALARMS, ETC.) PER NFPA 13.3.-8.3 AND LOCAL REQUIREMENTS.
 - CONTRACTOR SHALL ROUTE ALL PIPING CONCEALED INSIDE WALLS, ABOVE CEILING, INSIDE SOFFITS, ETC. WHERE AVAILABLE. ALL EXPOSED PIPING SHALL BE COORDINATED WITH AND LOCATION APPROVED BY ARCHITECT PRIOR TO FABRICATION AND ROUGH-IN. CONTRACTOR SHALL REROUTE AND RELOCATE PIPING TO LESS CONSPICUOUS LOCATIONS AS REQUIRED.
 - ALL PIPING PENETRATIONS THROUGH NON-RATED CONSTRUCTION SHALL BE SLEEVED. SEAL PENETRATIONS THROUGH EXTERIOR WALL WEATHERTIGHT WITH SILICONE SEALANT. PROVIDE ESCUTCHEONS AT EXPOSED INTERIOR LOCATIONS. ALL PIPING PENETRATIONS THROUGH RATED CONSTRUCTION SHALL BE SEALED PER DETAILS AS INDICATED ON DRAWING UL DETAIL DRAWINGS ACCORDINGLY. SEE PLANS FOR LOCATIONS OF RATED CONSTRUCT

CONSTRUCTION	PIPE SIZE (IN)	UL SYSTEM NUMBER			
		METALLIC	RATING (HR)	INSULATED	RATING (HR)
CONCRETE/MASONRY	UP TO 4"	C-AJ-1044	4	C-BJ-5003	4
CONCRETE/MASONRY	UP TO 4"	C-AJ-1027	3	C-AJ-5001	1-1/2,2,3
GYP SUM	UP TO 4"	W-L-1001	1,2,3,4	W-L-5001	1,2
WOOD FLOOR/CEILING	UP TO 4"	F-C-1006	1	F-C-5002	1

REFER TO UL SYSTEM DIRECTORY



FIRE RATED METAL PIPE PENETRATION DETAIL
NTS

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File #:	30322_FP		

Specifications Handbook
for
PROPOSED FACILITY RENOVATION
to
FIRE STATION #1

Columbia, Tennessee

October 30, 2023

CITY OF COLUMBIA

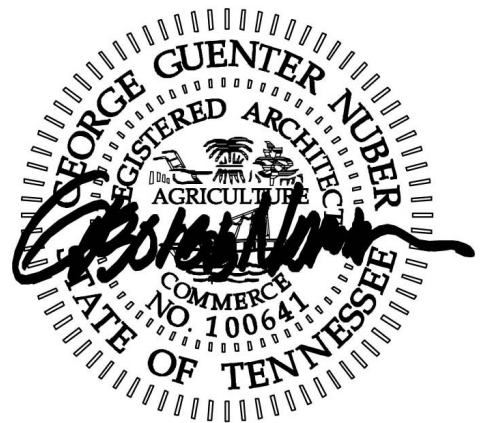


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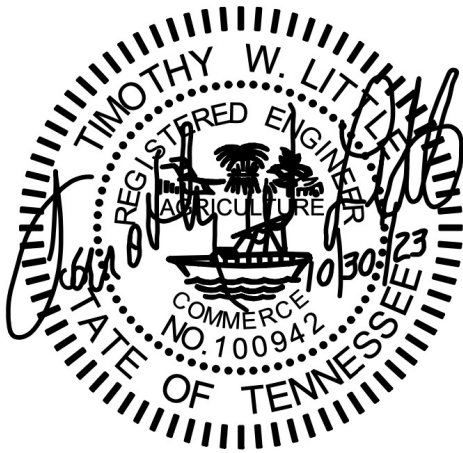
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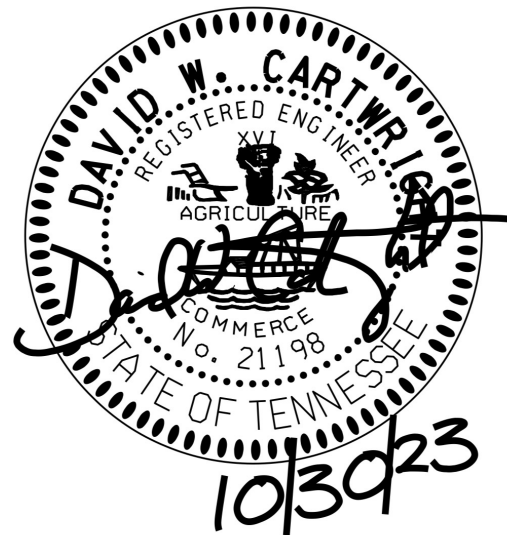


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DRUG-FREE WORKPLACE AFFIDAVIT OF PRIME BIDDER

State of _____

County of _____

Come the affiant having been duly sworn and testifies as follows:

1. My name is _____. I hold the principal office of _____ for _____.
(Name of Office) (Name of Bidding Entity)

2. _____ has submitted a bid to the City of Columbia Tennessee
(Name of Bidding Entity)

For the construction of _____.

3. _____ employs more than five (5) employees.
(Name of Bidding Entity)

4. In accordance with Tennessee Code Annotated §50-9-113, this is to certify that

_____ has in effect at the time of its submission of a bid
(Name of Bidding Entity)

to perform the construction of the City of Columbia project identified above, a drug-free workplace program that complies with Title 50 , Chapter 9 of the Tennessee Code Annotated.

5. The affidavit is made on personal knowledge.

Further that affiant saith not this _____ day of _____, 20____.

Signature

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires : _____

Notary Public

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DRUG-FREE WORKPLACE

All bidders must execute the enclosed Drug Free Workplace Affidavit to verify compliance with TCA 50-9-113 and return same with bid response. Failure to comply with this requirement will declare that bid non-responsive.

SECTION I - PURPOSE OF THE DRUG & ALCOHOL TESTING PROGRAM

To provide a safe, healthy, productive, and drug-free working environment for its employees to properly conduct the public business, the City of Columbia has adopted a policy which is intended to comply with: (1) the Drug-Free Workplace Act of 1988, which ensures employees the right to work in an alcohol and drug-free environment and to work with persons free from the effects of alcohol and drugs; (2) Federal Highway Administration (FHWA) rules, which require drug and alcohol testing for persons required to have a commercial driver's license (CDL) in order to perform functions of their City job; and (3) the Omnibus Transportation Employee Testing Act of 1991, which requires alcohol and drug testing of safety-sensitive employees and related U.S. Department of Transportation (DOT) rules which specify procedures for urine drug testing and breath alcohol testing, and the Tennessee Drug Control Act of 1989 as amended to date or as amended in the future.

To comply with TCA Title 50 Chapter 9 Part 1, all bidders and/or those proposing to do service with the City must have a testing program of the same or better than the requirements of the City of Johnson City.

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IRAN DIVESTMENT ACT

12-12-111. Statement of noninvestment required for competitive bidding.

(a) On or after July 1, 2016, every bid or proposal made to a political subdivision of the state or any public department, agency, or official thereof where competitive bidding is required by statute, rule, regulation, or local ordinance or resolution, for work or services performed or to be performed or goods sold or to be sold, shall contain the following statement subscribed by the bidder and affirmed by such bidder as true under the penalties of perjury: "By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to § 12-12-106."

(b) Notwithstanding subsection (a), the statement of noninvestment in the energy sector of Iran may be submitted electronically.

(c) A bid shall not be considered for award nor shall any award be made where the condition set forth in subsection (a) has not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification, the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefor. A political subdivision may award a bid to a bidder who cannot make the certification pursuant to subsection (a), on a case-by-case basis, if:

(1) The investment activities in Iran were made before July 1, 2016, the investment activities in Iran have not been expanded or renewed on or after July 1, 2016, and the person has adopted, publicized, and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or

(2) The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

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IRAN DIVESTMENT ACT

A person engages in investment activities in Iran if:

(1) The person provides goods or services of twenty million dollars (\$20,000,000) or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or

(2) The person is a financial institution that extends twenty million dollars (\$20,000,000) or more in credit to another person, for forty-five (45) days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list, created pursuant to § 12-12-106, as a person engaging in investment activities in Iran as described in this section.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to Tennessee Code Annotated § 12-12-106."

Vendor Name:

Vendor Signature: _____

Date:_____

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TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

It is the policy of the City of Columbia to ensure compliance with Title VI of the Civil Rights Act of 1964, as amended; 42 USC 2000(d); related statutes and regulations to the end that no person shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

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SECTION 570.611 - CONFLICT OF INTEREST

Conflicts prohibited. The general rule is that no persons described in paragraph (c) of this section who exercise or have exercised any functions or responsibilities with respect to CDBG activities assisted under this part, or who are in a position to participate in a decisionmaking process or gain inside information with regard to such activities, may obtain a financial interest or benefit from a CDBG-assisted activity, or have a financial interest in any contract, subcontract, or agreement with respect to a CDBG-assisted activity, or with respect to the proceeds of the CDBG-assisted activity, either for themselves or those with whom they have business or immediate family ties, during their tenure or for one year thereafter. For the UDAG program, the above restrictions shall apply to all activities that are a part of the UDAG project, and shall cover any such financial interest or benefit during, or at any time after, such person's tenure.

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SECTION 00 11 13 - ADVERTISEMENT FOR BIDS

FROM:

1.01 THE OWNER (HEREINAFTER REFERRED TO AS OWNER):

A. City of Columbia

B. Address:

700 North Garden Street

Columbia, TN 38401

1.02 AND THE ARCHITECT (HEREINAFTER REFERRED TO AS ARCHITECT):

A. Nuber Architecture, LLC

B. Address:

1069 Rolling Fields Circle

Columbia, TN 38401

1.03 TO: POTENTIAL BIDDERS

A. Your firm is invited to submit an offer under seal to the Owner for construction of a facility located at 1000 S. Garden, Columbia, TN 38401 before 2:00 pm local standard time on the 30th day of November, 2023, for FIRE STATION #1.

B. Project Description: The project will consist of renovating an existing fire station of approximately 13,675 s.f. with two proposed additions totaling 1,896 s.f. for the west facility addition (rated for an F-3 tornado shelter) and 1,759 s.f. for the east facility addition. Spaces shall include administrative areas, dormitory, kitchen, emergency operations room, command room, training room, public waiting room, exercise room, and renovated apparatus bay. The exterior features include retaining walls, fenced rear yard enclosure, power gate access, generator enclosure area, new 60' communication tower, and additional public parking. The entire existing facility will be cleared out during construction, but will have one company on site in a portable trailer on the front of the facility with single apparatus vehicle on standby. The facility will feature a dual fuel backup generator which will provide emergency power for the entire facility. A new architectural shingle roof and new sectional custom overhead doors for the apparatus bay will be part of the scope of work.

C. Mandatory Pre-Bid Conference: To be determined at a later date.

D. Bid Documents for a Stipulated Sum contract may be obtained beginning November 1st from the office of the Design Professional free of charge electronically in PDF.

- E. Documents may be obtained only by general contract Bidders. Others may view the Bid Documents as made available to Plans Rooms or Builders Exchange.
- F. Bidders will be required to provide Bid security in the form of a Bid Bond of a sum no less than 5 percent of the Bid Amount.
- G. Refer to other bidding requirements described in Document 00 21 13 - Notice to Bidders.
- H. Submit your offer on the Bid Form provided. Bidders may supplement this form as appropriate.
- I. Your offer will be required to be submitted under a condition of irrevocability for a period of 60 days after submission.
- J. The Owner reserves the right to accept or reject any or all offers.

END OF SECTION 00 11 13

SECTION 00 21 13 - NOTICE TO BIDDERS

SUMMARY

1.01 DOCUMENT INCLUDES

A. Invitation

1. Bid Submission
2. Intent
3. Work Identified in the Contract Documents
4. Contract Time

B. Bid Documents and Contract Documents

1. Definitions
2. Contract Documents Identification
3. Availability
4. Examination
5. Inquiries/Addenda
6. Product/Assembly/System Substitutions

C. Site Assessment

1. Site Examination
2. Prebid Conference

D. Qualifications

1. Qualifications
2. Subcontractors/Suppliers/Others

E. Bid Submission

1. Submission Procedure
2. Bid Ineligibility
3. Submission Procedure

F. Bid Enclosures/Requirements

1. Security Deposit
2. Performance Assurance
3. Insurance
4. Bid Form Requirements
5. Fees for Changes in the Work
6. Bid Form Signature
7. Additional Bid Information
8. Selection and Award of Alternates

G. Offer Acceptance/Rejection

1. Duration of Offer
2. Acceptance of Offer

H. General Terms and Conditions

1.02 RELATED DOCUMENTS

- A. Document 00 11 13 - Advertisement for Bids.
- B. Document 00 41 00 - Bid Form.

INVITATION

2.01 BID SUBMISSION

- A. Bids signed and under seal, executed, and dated will be received at the office of City of Columbia - City Hall at Conference Room A; 700 North Garden Street; Columbia, TN 38401 before 2:00p.m. local standard time on the 30th day of November 2023.
- B. Offers submitted after the above specified date and time shall be considered late and will be returned to the bidder unopened.
- C. All pricing must be completed on the Bid Form. Bid pricing quotes shall be City of Columbia' final actual cost and shall include all materials, labor, permits, equipment, and/or any other activities for the completion of the project.
- D. Offers will be opened publicly immediately after the time for receipt of bids.

- E. Bidders must follow all State law requirements for bid and bid submission procedures.
- F. **TENNESSEE CONTRACTOR'S, MECHANICAL & HVAC SUBCONTRACTOR (EXCESS OF \$25,000), ELECTRICAL SUBCONTRACTOR (EXCESS OF \$25,000), PLUMBING SUBCONTRACTOR (EXCESS OF \$25,000), ROOFING SUBCONTRACTOR (EXCESS OF \$25,000), AND MASONRY SUBCONTRACTOR (EXCESS OF \$100,000) NAMES, LICENSE NUMBERS, EXPIRATION DATES, AND LICENSE CLASSIFICATIONS PERTAINING TO THIS BID IS REQUIRED ON THE OUTSIDE OF THE BID ENVELOPE.**
- G. Amendments to the submitted offer will be permitted if received in writing prior to bid closing and if endorsed by the same party or parties who signed and sealed the offer.

2.02 INTENT

- A. The intent of this Bid request is to obtain an offer to perform work to complete RENOVATIONS TO FIRE STATION #1, located at 1000 S. Garden St., Columbia, TN for a Stipulated Sum contract, in accordance with the Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises building construction, including general construction Work.
- B. All construction shall be made according to plans, details, and specifications.
- C. All bids must meet or exceed the enclosed specifications. All items supplied by the successful bidder shall be as specified. Items delivered not meeting these requirements shall be subject to return and replaced at no additional cost to City of Columbia. Any exception to the specifications must be clearly noted and documented.
- D. Successful bidder shall furnish all labor, materials, tools, permits, and equipment for a complete job.
- E. All work shall be performed in a neat and workman like manner. Any and all cleanup of debris is the responsibility of the contractor.
- F. The successful vendor(s) will be responsible for obtaining any and/all necessary permits in conjunction with the project.
- G. The General Terms and Conditions, Project Manual, and Drawings (not to scale) listed in this bid constitute the total terms and conditions that will be acceptable.

2.04 CONTRACT TIME

- A. Contract Time identified in the Bid Form as substantial completion at a date to be determined. The completion date in the Agreement shall be the Contract Time added to the commencement date.

2.05 WARRANTY

- A. One (1) full year labor and material (Manufacturer's Standard) warranty. Warranty shall include all labor, material and equipment required to complete the project. Warranty period shall begin from the date of acceptance by City of Columbia.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 DEFINITIONS

- A. Bid Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Bid Form Bid securities identified.
- B. Bid, Offer, or Bidding: Act of submitting an offer under seal.
- C. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as Project Number 2021007, as prepared by Architect who is located at 1069 Rolling Fields Circle, Columbia, TN 38401, and with contents as identified in the Table of Contents.

3.03 AVAILABILITY

- A. Bid Documents may be obtained at the office of Architect upon request.
- B. Bid Documents can be obtained by general contract bidders free of charge electronically in PDF.
- C. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

3.04 EXAMINATION

- A. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.
- B. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

3.05 INQUIRIES/ADDENDA

- A. Direct questions to George Nuber, Project Architect, telephone (931) 446-1741. Email: George @nuberarchitecturellc.com

- B. Addenda may be issued during the bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.
- C. Verbal answers are not binding on any party.
- D. Clarifications requested by bidders must be in writing not less than 7 days before date of bid opening. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients .

3.06 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

- A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 10 days before receipt of bids unless the specifications stated in the project manual are noted as "No Substitutions."
- B. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.
- C. The submission shall provide sufficient information to determine acceptability of such products.
- D. Provide complete information on required revisions to other work to accommodate each proposed substitution.
- E. Provide products as specified unless substitutions are submitted in this manner and accepted.
- F. See Section 01 30 00 - Product Requirements for additional requirements.

SITE ASSESSMENT

4.01 SITE EXAMINATION

- A. Examine the project site before submitting a bid. The Bidder shall be responsible for visiting the site and fully investigating the site conditions.

4.02 MANDATORY PREBID CONFERENCE

- A. A bidders conference will be scheduled at a later date.
- B. All general contract bidders and suppliers are invited.
- C. Representatives of Architect will be in attendance.
- D. Attendance is required at Pre-Bid Conference by all General Contractors bidding. Attendance will be recorded.

- E. Summarized minutes of this meeting will be circulated to attendees. These minutes will form part of the Contract Documents.
- F. Information relevant to the Bid Documents will be recorded in an Addendum, issued to Bid Document recipients.

QUALIFICATIONS

5.01 EVIDENCE OF QUALIFICATIONS

- A. The successful bidder shall be a licensed contractor in the State of Tennessee and shall meet all necessary legal requirements for conducting business with the City of Columbia.
- B. Bidder must have a minimum of five (5) years' experience. Bidder shall submit a list of three (3) references for projects completed within the last five (5) years. References shall be for projects of similar size. References shall include: company name, address, telephone number, contact name, email address, and date project was completed.

5.02 SUBCONTRACTORS/SUPPLIERS/OTHERS

- A. Owner reserves the right to reject a proposed subcontractor for reasonable cause.
- B. Refer to ACS General Terms and Conditions for Construction Contracts.

BID SUBMISSION

6.01 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside. **Bidders shall also identify all required State and Local bid laws information on the bid envelope.**
- C. Improperly completed information, irregularities in security deposit, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.

6.02 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

- A. Bids shall be accompanied by a security deposit as follows:
 - 1. Bid Bond of a sum no less than 10 percent of the Bid Amount on AIA A310 Bid Bond Form.
- B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.
- C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.
- D. Include the cost of bid security in the Bid Amount.
- E. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

- A. Include the cost of performance assurance bonds in the Bid Amount.
- B. Accepted Bidder: A notarized Performance, Materials and Labor Bond shall be required by the Owner. The notarized Performance, Materials and Labor Bond must be from an insurance company licensed in the State of Tennessee for 100% of the contract amount awarded.

7.03 INSURANCE

- A. Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of the Contract Documents.
- B. The successful bidder must carry insurance as specified in General Conditions. Proof of insurance must be submitted prior to beginning any of the work on the project or at the time of execution of the contract, whichever occurs first.

7.04 BID FORM REQUIREMENTS

- A. Complete all requested information in the Bid Form and Appendices.

7.05 FEES FOR CHANGES IN THE WORK

- A. Include in the Bid Form, the overhead and profit fees on own Work and Work by subcontractors, applicable for Changes in the Work, whether additions to or deductions from the Work on which the Bid Amount is based.
- B. Include in the Bid Form, the fees proposed for subcontract work for changes (both additions and deductions) in the Work. Contractor shall apply fees as noted, to the subcontractor's gross (net plus fee) costs on additional work.

7.06 BID FORM SIGNATURE

- A. The Bid Form shall be signed by the bidder, as follows:

1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.
2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature. Affix seal to each signature.
3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-laws or resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.

7.07 SELECTION AND AWARD OF ALTERNATES

- A. Indicate variation of bid price for Alternates listed on the Bid Form. Unless otherwise indicated, indicate Alternatives as a difference in bid price by adding to or deducting from the base bid price.
- B. Bids will be evaluated on the total of the base bid price and all of the Alternates. After determination of the successful bidder, consideration will be given to which Alternates will be included in the Work.

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

- A. Bids shall remain open to acceptance for a period of forty-five (45) days after the bid closing date.

8.02 ACCEPTANCE OF OFFER

- A. Owner reserves the right to accept or reject any or all bids, waive defects or informalities in bids, and to make awards as deemed to be in its best interest. If awarded, awards will be made to the lowest and or best vendor.
- B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Notice To Proceed.

END OF SECTION 00 21 13

SECTION 00 31 13 - INDEX OF DRAWINGS

CIVIL

- C0.01 Cover Sheet
- C0.02 General Notes
- C1.01 Existing Topographic Survey and Utilities
- C2.01 Demolition Plan
- C2.02 Site Improvement Plan
- C3.01 Contour Grading Plan
- C4.01 Details and Pavement Sections
- C4.02 Details and Pavement Sections
- C4.03 Details
- C4.04 Retaining Wall Details
- C4.05 Trench Drain Details
- EC0.01 Erosion Prevention and Sedimentation Control Plans Cover Sheet
- EC1.01 Erosion Prevention and Sedimentation Control Notes
- EC1.02 Erosion Prevention and Sedimentation Control Notes
- EC1.03 Erosion Prevention and Sedimentation Control Notes
- EC1.04 Erosion Prevention and Sedimentation Control Notes
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- EC2.02 Drainage Map Post Development
- EC3.01 Stage I
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- EC5.01 Soils Map
- EC5.02 7.5 USGS Map

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- A1.1 Overall Floor Layout Plan
- A1.2 Reflected Ceiling Plan
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- A1.4 Enlarged Floor Layout Plan
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- A2.1 Proposed Building Elevations
- A2.2 Proposed Building Elevations
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- A3.2 Interior Elevations
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- S2.3 Existing Wall Sections and Details
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- P2.1 Plumbing Isometrics
- P2.2 Plumbing Isometrics
- P3.1 Plumbing Details
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ELECTRICAL

- ES1.1 Electrical Site Plan
- E1.1 Power Plan
- E2.1 Lighting Plan
- E3.1 Systems Plan
- E4.1 Schedules
- E4.2 Wiring Diagrams and Details
- E4.3 Riser Diagrams
- E5.1 Legend & Notes

FIRE PROTECTION

FP1.1 Sprinkler Intent Plan

FP2.1 Legend, Details, and Notes

END OF SECTION 00 31 13

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SECTION 00 41 00 - BID FORM

THE PROJECT AND THE PARTIES

1.01 TO:

A. City of Columbia (Owner)

1. 700 North Garden Street
2. Columbia, TN 38401

1.02 FOR:

A. Project: Proposed Facility Renovation to Fire Station #1

B. Project Number: 2021007

1000 S. Garden St.
Columbia, TN 38401

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____

1. Address _____

2. City, State, Zip _____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents including drawings and specifications prepared by Nuber Architecture, LLC dated October 30th, 2023, for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. LUMP SUM _____ dollars
(\$ _____), in lawful money of the United States of America.

C. ADD ALTERNATE NO. 1 (Add epoxy floor system to apparatus bay #E13)
_____ dollars
(\$_____).

D. ADD ALTERNATE NO. 2 (Add a 5' high aluminum fence as detailed in the Civil Drawings) _____ dollars
(\$_____).

E. ADD ALTERNATE NO. 3 (Add a power operated sliding gate as detailed in the Civil Drawings) _____ dollars
(\$_____).

F. We have included the required security deposit as required by the Instruction to Bidders.

G. We have included the required performance assurance bonds in the Bid Amount as required by the Instructions to Bidders.

H. All applicable federal taxes are included and State of Tennessee taxes are included in the Bid Sum.

I. All Allowances described in Section 01 21 26 are included in the Bid Sum.

1.06 ACCEPTANCE

A. This offer shall be open to acceptance for forty-five (45) days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:

1. Execute the Agreement within seven days of receipt of Notice of Award.
2. Furnish the required bonds within seven days of receipt of Notice of Award.
3. Commence work within seven days after written Notice to Proceed of this bid.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

B. Complete the Work in a time as negotiated from Notice to Proceed.

1.08 BID FORM UNIT PRICES

(Not Applicable This Project)

1.09 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, the percentage fee will be:

1. 10 percent overhead and profit on the net cost of our own Work;
2. 5 percent on the cost of work done by any Subcontractor.
3. 10 percent overhead and profit on the net cost of Subcontractor Work

B. On work deleted from the Contract, the credit to Owner shall be Architect-approved net cost plus 10 percent of the overhead and profit percentage noted above.

1.10 ADDENDA

A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.

1. Addendum # _____ Dated _____.
2. Addendum # _____ Dated _____.
3. Addendum # _____ Dated _____.
4. Addendum # _____ Dated _____.

1.11 BID FORM SIGNATURE(S)

A. The Corporate Seal of _____
(Bidder - print the full name of your firm)
was hereunto affixed in the presence of:

B. _____
(Authorized signing officer, Title)
(Seal)

C. _____
(Authorized signing officer, Title)

1.12 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS
OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE
APPROPRIATE FORM OR FORMS AS ABOVE.

END OF BID FORM 00 41 00

SECTION 00 51 00 - NOTICE TO PROCEED

DATE: _____

TO: _____

PROJECT: _____

You are hereby notified to commence WORK in accordance with the Agreement dated _____, 2023, on or before _____, 2023, and you are to complete the project within _____ consecutive calendar days thereafter. The date of completion of all WORK is therefore _____, 2024.

OWNER: _____

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

_____ this the _____ day of _____, 2023.

BY: _____

TITLE: _____

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SECTION 00 52 13 - OWNER/CONTRACTOR AGREEMENT FORM

The Contract for this project shall be AIA Document A101, "Standard Form of Agreement Between Owner and Contractor", Stipulated Sum, 2017 edition as printed by the American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006, are hereby made a part of this agreement.

A copy of the referenced AIA Document is on file at the office of Nuber Architecture, LLC located at 1069 Rolling Fields Circle, Columbia, TN 38401. All persons intending to provide goods or services in connection with Work as applicable are advised to read and understand the referenced AIA Document before proceeding.

END OF SECTION 00 52 13

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**SECTION 00 52 15 - GENERAL CONDITIONS OF THE CONTRACT FOR
CONSTRUCTION**

The Owner has indicated an intention to use AIA Document A201, "General Conditions of the Contract for Construction", 2017, as part of the Contract Documents for this Work.

A copy of the referenced AIA Document is on file at the office of Nuber Architecture, LLC located at 1069 Rolling Fields Circle, Columbia, TN 38401. All persons intending to provide goods or services in connection with Work as applicable are advised to read and understand the referenced AIA Document before proceeding.

END OF SECTION 00 52 15

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SECTION 00 65 10 - CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General Provisions of the Contract and General and Supplementary Conditions apply to this section.

1.02 CLEANING UP

- A. Debris shall not be thrown from windows.
- B. To the maximum extent that is reasonably possible, keep the building and/or project work area free of combustible material.
- C. Debris and/or waste materials not claimed by the Owner prior to the Notice to Proceed shall become the property of the Contractor and shall be promptly removed by him from the project site before the start of construction.
- D. Debris, waste and excess earth shall not be dumped on other property without prior permission of the property owner as applicable.
- E. Burning of waste material on the site will not be permitted.
- F. In addition to the cleaning specified in subparagraph 3.15 - Cleanup of the General Conditions, and the more specific cleaning that may be required in various section of the Specifications, the building (as project Work scope relates) shall be prepared for occupancy by a thorough cleaning throughout. This includes the washing (or cleaning by other approved methods) of surfaces on which dirt or dust has collected and by washing glass (both sides). Wash exterior glass using a window cleaning contractor specializing in such work. Provide and maintain adequate runner strips of non-staining polyethylene on finished floors as required for protection. Leave equipment in an undamaged, bright, clean and polished condition. Recleaning will not be required after the work has been inspected and accepted unless later operations of the Contractor make recleaning of certain portions necessary.
- G. Upon completion of the work, remove temporary buildings and structure, fences, scaffolding, surplus materials, and rubbish of every kind from the site of the work (as project Work scope relates).

1.03 SUBSTANTIAL COMPLETION

- A. When the Contractor considers the WORK to be substantially complete, he shall submit to the Architect:
 - 1. A written notice that the WORK is substantially complete in accordance with the Conditions of the Contract.

2. A list of items to be completed or corrected and dates scheduled for completion or correction of each item.
- B. Upon receipt of such notice, the Architect will schedule an inspection meeting with the Contractor, the Owner's representative(s) and his consultants to determine the status of completion.
- C. Should the Architect determine that the WORK is not substantially complete, he will promptly notify the Contractor in writing, stating the reasons. The Contractor shall remedy the deficiencies in the WORK and send a second written Notice of Substantial Completion to the Architect. The Architect will schedule a reinspection meeting.
- D. When the Architect concurs that the WORK is substantially complete, he will prepare a Certificate of Substantial Completion on AIA Document G704, in accordance with the Conditions of the Contract.

1.04 FINAL INSPECTION

- A. When the Contractor determines the WORK is complete, he shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. The WORK has been inspected by a qualified person authorized by the Contractor for compliance with Contract Documents.
 3. The WORK has been completed in accordance with the Contract Documents.
- B. Should the Architect consider the WORK incomplete or defective, he will promptly notify the Contractor in writing, listing all incomplete and/or defective work. The Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification that the WORK is complete. The Architect will schedule a reinspection meeting.
- C. When the Architect finds the WORK acceptable under the Contract Documents, he shall request the Contractor to make close-out submittals.

1.05 CONTRACT CLOSE-OUT PACKAGE

- A. The Contractor shall submit the following Close-Out Documents to the Architect as a single package.
 1. Release of liens from all Subcontractors and Material Suppliers.
 2. The final application for payment accompanied by a statement of accounting. The statement shall reflect all adjustments to the Contract Sum.
- B. The Architect will submit to the Owner the Contract Close-Out Package and the signed final Change Order (if required) with a cover letter certifying that, to the best of his

knowledge, the completion of the project is in compliance with the Contract Documents and the balance shown is due and payable.

END OF SECTION 00 65 10

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SECTION 00 73 26 - SUPPLEMENTARY GENERAL CONDITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The General Conditions of the Contract for Construction, AIA Document A201, Sixteenth Edition, 2017, Articles 1 through 14 inclusive, is a part of this Contract, and is incorporated herein as fully as if here set forth.
- B. The following supplements modify, change, delete from or add to the General Conditions of the Contract for Construction AIA Document A201, Sixteenth Edition, 2017. Where any article of the General Conditions is modified or any paragraph, subparagraph or clause thereof is modified or deleted by these supplements, the unaltered provisions of that article, paragraph or clause shall remain in effect. In the case of conflict between these supplements and the General Conditions identified above, the more stringent clause, as determined by the Owner, shall govern.

1.02 MODIFICATIONS/HEADING TO ARTICLE 1 GENERAL PROVISIONS

A. 1.1 BASIC DEFINITIONS

1. Subparagraph 1.1.1 THE CONTRACT DOCUMENTS

Add the following subparagraphs:

- a. The Contract Documents shall apply to the Contractor and all subcontractors, and it is their responsibility to become familiar with these Documents. In the case of conflict among these Documents, the more stringent requirement, as determined by the Owner, shall govern.

2. Add Subparagraph 1.1.8 THE SURETY

Add the following subparagraphs:

- a. The Surety shall be defined as the corporate body which is bound with and for the Contractor and which engages to be responsible for his acceptable performance of the Work and for his payment of all debts pertaining to the Work, and which body is licensed to do business within the State in which this Project is located.

The Surety shall be listed with the United States Department of the Treasury.

b. 1.1.9 APPROVED

The word "approved" shall be defined as the written approval by the Owner, except as otherwise modified. The terms "directed," "required," "permitted," or words of like import, shall be considered as similarly

defined as to the party directing, requiring, permitting, or similarly instructing the Contractor.

c. 1.1.10 PROVIDE OR PROVIDED

The works "provide" or "provided" shall be defined as both furnishing and installing a thing, product, system, assembly, material, or the like.

d. 1.1.11 ALL

"All" is implied throughout the Trade Sections of the Specifications and shall mean to do or accomplish all things under the contract, except where other provisions are specified. Hence, the use of the word, "All" is limited, in general, to the general parts of the Work, and the work included in the Scope of each and every Trade Section, or to residuary legate clauses requiring the doing of the things expect those sequentially listed as excluded.

e. 1.1.12 PRODUCT

Wherever the word "product" appears within the Contract Documents, it shall be understood to mean materials, equipment, assembly, manufacturers, brands, trade names, items of similar description as applicable.

f. 1.1.13 TRADE

The word "Trade" (with initial capital letter) is used herein to designate a Section title and not a trade or craft as set up for labor jurisdiction in an area.

B. Paragraph 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1. Subparagraph 1.2.2

Add the Following:

- a. Extra payments will not be authorized for work that could have been reasonably inferred from the contract documents. Coordination of the respective trades to perform the complete scope of the Work will be the responsibility of the General Contractor.

2. Subparagraph 1.2.4.

Add the following:

- a. Scope paragraphs of the Sections present a brief indication of the principal work included primarily in that Section, but do not limit work to subjects specifically mentioned nor do they purport to itemize all work

that may be included.

3. At the end of Paragraph 1.2.

Add the following subparagraph:

- a. 1.2.5 Large scale details shall, in general, govern and take precedence over small scale details, which they are intended to amplify. Do not obtain dimensions by scaling. In cases of discrepancy between Drawings and Specifications, consult the Architect before proceeding with the work. Should the Architect fail to be notified prior to commencement of the work, the responsibility for the work shall be that of the Contractor.

1.03 MODIFICATIONS TO ARTICLE 3 CONTRACTOR.

1. Paragraph 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

Add the following subparagraphs:

- a. 3.3.4 The Contractor shall layout all the Work as required by the Drawings and be held responsible for damage, if any is incurred, due to incorrect layout of Work. The Contractor shall establish all building lines, bench marks, and labels from which all trades can work, and take necessary measures to keep the marks in visible evidence throughout all stages of the Work.
- b. 3.3.5 In order to insure proper progress to Work, the Contractor shall be prepared to guarantee to each of his Subcontractors the dimensions which they may require for proper fitting of their work to all adjacent or adjoining work.
- c. 3.3.6 The Contractor shall verify all measurements at buildings and premises, and where necessary measurements cannot be secured at the Project when required, the matter shall be referred to the Architect.

2. Subparagraph 3.12.5

- a. In the first line, delete the word, "approve" and substitute "stamp with his approval".

1.04 MODIFICATIONS TO ARTICLE 5 SUBCONTRACTORS

1. Subparagraph 5.2.1

At the end of the subparagraph, add the following:

- a. No work shall be commenced until the names of the Subcontractors have been given in writing to the Owners. If required, the Contractor shall furnish evidence satisfactory to the Owners showing that any or all

proposed Subcontractors are competent to execute the various parts of the Work covered by their subcontract.

1.05 MODIFICATIONS TO ARTICLE 9 PAYMENTS AND COMPLETION

1. Subparagraph 9.2.1

After this subparagraph, add the following:

- a. The schedule of values of the various portions of the Work shall be submitted on AIA form G703 shall be filled out in full as directed.

2. Subparagraph 9.3.3

After this subparagraph, add the following subparagraphs:

- a. 9.3.1.4 Unless otherwise stated in the Agreement, the Owner will retain 10% of the amount due the Contractor on account of progress payments.
- b. 9.3.1.5 Starting with the second Application for Payment, the Contractor shall verify that he has paid all Subcontractors and major material suppliers that amount drawn on the previous payment for their respective areas.

3. Subparagraph 9.10.2

At the end of this subparagraph, add the following:

- a. Forms for release shall be AIA G706 and G706A.

1.06 MODIFICATIONS TO ARTICLE 11 INSURANCE AND BONDS

1. Subparagraph 11.1.2

After this subparagraph, add the following:

- a. 11.1.2.1 The contractor shall maintain, throughout the life of the Contract, insurance satisfactory to the Owner providing not less than the following minimum coverage:

Workmen's Compensation Insurance: Workmen's Compensation as required by Statutory law and Including Employer's Liability (Coverage B) with limits not less than \$500,000.00.

- b. Public Liability Insurance:

A. Comprehensive General Liability Insurance - This is the basic insurance which covers the Contractor for his negligent acts, errors, and omissions.

B. Contractor's Protective Liability Insurance - This insurance protects a contractor from Liability arising from the negligent acts of his subcontractors.

C. Blanket Contractual Liability Insurance - This is an extension of the regular general liability policy to cover any written contract entered into by the insured contractor.

D. Completed Operations Liability Insurance - This form of insurance extends the time limit of the general liability policy to cover claims that may arise after work has been completed and turned over to the Owner.

Contractor's Comprehensive Liability Insurance including Automobile. Combined single limit or equivalent split limits:

Bodily Injury: Each person	\$1,000,000.00
Each occurrence	\$1,000,000.00
Annual Aggregate	\$2,000,000.00

Property Damage including completed Operations Broad Form

Each occurrence	\$1,000,000.00
Annual Aggregate	\$2,000,000.00

Automobile Liability - Owned, non-owned and hired:

Bodily injury each person	\$ 500,000.00
Bodily injury each occurrence	\$1,000,000.00
Property damage each occurrence.	\$ 500,000.00

XCU coverage: The certificate of insurance shall state that the XCU exclusions have been eliminated.

2. Subparagraph 11.1.3

Delete the first two sentences and add the following:

- a. 11.1.4 Each policy shall provide EITHER IN THE BODY OF THE POLICY OR BY APPROPRIATE ENDORSEMENT (RIDER) TO THE POLICY, that such policy cannot be altered or canceled in less than twenty (20) consecutive calendar days after receipt by the Owner of such written notice.
- b. 11.1.5 The Contractor shall furnish a certificate of Insurance certifying that the insurance requirements, as set forth herein, have been included in the insurance policies. This Certificate of Insurance shall state the amounts of insurance and shall contain the clauses set forth herein. The Certificate of Insurance must be approved by the Owner prior to the commencement of the Work.
- c. 11.1.6 The Contractor shall name the Owner and Architect as additionally

insured on all policies and shall so state on Certificate of Insurance.

3. Paragraph 11.4 PROPERTY INSURANCE

Add the following:

11.4.1 The insurance coverage to be provided by the Owner will be as follows:

Property Insurance: All-risk written on a completed value form basis. The contractor and the Owner, as their interest may appear, shall be the named insured for the full insurable value of the Work.

11.5.1 In the event a bond for the Project is required by the Owner, the following will apply:

a. The bond shall be in the amount of 100% of the Contract amount, will be required by the Owner.

a. 11.5.3 Each Bond shall provide either in the body of the Bond or by appropriate endorsement (Rider) to the Bond that: This obligation shall remain in full force and effect for any and all duly authorized modifications of said Contract and that may hereinafter be made, except that no change will be made which increases the total Contract Sum more than twenty percent in excess of the original Contract Sum without notice to the Surety.

b. 11.5.4 All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department.

END OF SECTION 00 73 26

SECTION 00 73 27 - SUPPLEMENTARY CONDITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. The specifications entitled SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION are intended to amend or supplement the Supplementary General Conditions. Where any variance or discrepancy occurs, the Supplemental Conditions shall take precedence over the General Conditions.

1.02 BIDS

- A. Before submitting his proposal, each sub-contractor shall carefully examine the plans and specifications, visit the site of work as applicable, inform himself fully concerning the existing conditions, and shall make his proposal to carry out the work or construction in strict accord with the plans and specifications. Should a bidder find discrepancies or omissions from the plans and specifications or shall he be in doubt as to their meaning, he shall at once notify the Architect through the General Contractor, who will send out written instructions to the General Contractor on the point(s) in question for distribution.
- B. Neither the Owner nor the Architect will be responsible for any oral instructions or statements.
- C. Addenda may be issued during the time of the preparation of the bids. Such addenda shall be covered in the proposals and will become part of the contract.

1.03 GENERAL CONTRACTORS LICENSE

- A. All sub-contractors must be licensed as required by Public Chapter 6 of the Contractor's Licensing Act of 1991 and subsequent amendments thereto. The sub-contractor's name, license number, expiration date, description of license classification and limit must be shown on the bid method as directive by the General Contractor. Any bid not meeting this requirement could be rejected at the discretion of the General Contractor.
- B. A subcontractor doing work in HVAC, Plumbing or Electrical classifications where the subcontract is equal to or exceeds \$25,000.00, must be licensed in accord with the Contractor's Licensing Act of 1991, Chapter 6 and amendments thereto.

1.04 PAYMENTS

- A. Payments to the General Contractor will be made on the basis of monthly estimates submitted to the Architect on or before the fifth day of each calendar month during the execution of the contract and shall cover the period up to the first day of that month. Five percent (5%) of the amount of each estimate will be retained by the Owner as a guarantee until time of payment of the final estimate. Payment to the Contractor will be made by the Owner by the fifteenth day of the month in which the estimate is made. Final settlement will be made within fifteen (15) days after final acceptance of the

contract by the Owner, complete, as covered by and provided for in these specifications and plans. Estimates shall include all labor and materials delivered and stored at the site, but shall not include materials or equipment stored elsewhere, except as described in Article 9.3.2 of the General Conditions.

1.05 INSURANCE

- A. The Contractor shall obtain at least five (5) days prior to starting work all insurance required under this paragraph and such insurance must be approved by the Owner, and the Contractor shall not allow any Subcontractor to commence work on his subcontract until the insurance required of the Subcontractor has been so obtained and approved.
- B. COMPENSATION INSURANCE: The Contractor shall procure and shall maintain during the life of this contract Workmen's Compensation Insurance as required by the applicable State of Territorial Law for all of his employees to be engaged in work at the site of the project under this contract and, in case of any such work sublet, the Contract shall require the Subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work, unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this contract shall provide and shall cause each subcontractor to provide adequate Employer's Liability Insurance for the protection of such of his employees not otherwise protected.
- C. CONTRACTOR'S AND SUBCONTRACTOR'S COMPREHENSIVE GENERAL LIABILITY AND PROPERTY DAMAGE INSURANCE AND VEHICLE LIABILITY INSURANCE: The Contractor's comprehensive general liability insurance and automobile liability insurance required by subparagraph 11.1.1 shall be in an amount not less than One Million Dollars (\$1,000,000.00) for injuries, including accidental death to any person and subject to the same limit for each person in an amount not less than Five Hundred Thousand Dollars (\$500,000.00) on account of one occurrence. The Contractor's Property Damage Liability Insurance shall be in an amount not less than Five Hundred Thousand Dollars (\$500,000.00) aggregate. The Contractor shall either (1) require each of his subcontractors to procure and to maintain, during the life of his subcontract, Subcontractor's Comprehensive General Liability, Automobile Liability and Property Damage Liability of the type and in the same amounts as specified in this subparagraph, or (2) insure the activity of his subcontractors in his own policy. The Contractor's and his subcontractor's liability insurance shall include adequate protection against the following special hazards.
- D. BUILDERS RISK INSURANCE (FIRE AND EXTENDED COVERAGE): Until the project is completed and accepted by the Owner, the Owner will maintain Builder's Risk Insurance (fire and extended coverage) on a 100% completed value basis on the insurable portion of the project.
- E. PROOF OF CARRIAGE OF INSURANCE: The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificates shall also contain substantially the

following statements: "The insurance covered by this certificate will not be canceled or materially altered, except after twenty (20) days written notice has been received by the Owner."

1.06 OMISSIONS

- A. The drawings and specifications are intended to cooperate. Anything shown on the drawings, but not mentioned in the specifications or vice versa, or anything not expressly set forth in either, but which is reasonably implied, shall be furnished as though specifically shown or mentioned in both, without extra charge.

1.07 INTERPRETATIONS, DIMENSIONS, ETC.

- A. These specifications and the accompanying drawings are to be interpreted according to their full intent, meaning and spirit whether taken together or separately. Taken together, they shall be deemed to mutually explain each other and to be descriptive of the work to be performed under the contract, but should there be any discrepancy between the drawings and the specifications or between the figures on the drawings and the scale set forth on the drawings designating the materials, the work of the specifications shall take precedence in all cases.
- B. The figures on the drawings shall take precedence over the scale. The details or large-scale drawings shall take precedence over the smaller-scale drawings.
- C. All dimensions and conditions of existing work shown on drawings are for the design. The Contractor shall verify them at job site before proceeding with the work. Any variations that would materially affect the work shall be called to the Architect's attention.
- D. The Contractor is not to make alterations or corrections in the drawings or specifications, but should any error appear, it shall be referred to the Architect for corrections before bids are submitted or the work proceeded with.

1.08 "OR EQUAL" CLAUSE

- A. Whenever a material or article is specified or shown on plans by using the name of the proprietary product of a vendor, any material or article of similar quality, workmanship, and materials which will perform adequately the duties imposed by the general design and requirements will be considered satisfactory or equal upon approval of the Architect. Any substitutions used without Architect's prior approval will be at the Contractor's own risk, and cost of changes will be borne by the Contractor.
- B. The Contractor shall furnish sufficient data to fully describe material proposed for substitution.

1.09 AWARD OF SUBCONTRACTS

- A. As soon as practicable after bids are received, and not later than ten (10) days after award of the contract, the General Contractor shall furnish to the Architect in writing for

acceptance by the Owner and Architect a list of the names of Subcontractors and Material Vendors proposed for the work. The Architect and Owner reserve the right to disqualify a proposed Subcontractor or other person or Material Vendor for insufficient proof of ability of compliance with the work. In the even of disqualification by the Architect or Owner, the Contractor shall submit an acceptable substitute without increase in the contract sum. This paragraph supersedes Article 5.2.1, 5.2.2, 5.2.3, & 5.2.4 of the General Conditions.

- B. The Contractor may utilize the services of specialty subcontractors on those parts of work which, under normal contracting practices, are performed by specialty subcontractors.
- C. The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.
- D. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- E. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the contract by the terms of the General Conditions and other contract documents insofar as applicable to the work of Subcontractors, and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the contract documents.
- F. Nothing contained in this contract shall create any contractual relation between Subcontractor and the Owner.

1.10 DRAWINGS

- A. The general character of the detailed work is shown on the drawings, but minor modifications may be made in the large scale details. The Contractor shall notify the Architect if additional drawings will be necessary and the date when such drawings are required. The Architect will endeavor to supply these drawings so as not to delay the construction. The Contractor shall not attempt to execute any part of the work requiring such drawings until he has received some. All drawings changes must be approved and signed by the Architect and/or Owner.

1.11 ARCHITECT'S AUTHORITY

- A. The Architect shall determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Architect's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any questions shall arise between the parties hereto relative to said contract or specifications, the determination or decision of

the Architect shall be a condition precedent to the right of the Contractor to receive any money or payment for such work under this contract affected in any manner or to any extent by such question.

- B. The Architect shall, at his sole discretion, decide the meaning and intent of any portion of the specifications, plans or drawings where the same may be found obscure or may be in dispute. Any differences of conflicts in regard to their work may arise between the Contractor under the contract and other Contractors performing work for the Owner shall be adjusted and determined by the Architect.

1.12 CONTRACTOR

- A. Only one (1) contractor is recognized as a party to the contract, and where the term "Contractor" is used, the General Contractor is referred to as deemed practical to this project.
- B. For convenience, the specifications have been divided into separate headings and divisions to cover the various trades represented in the work, and where other subcontractors are referred to, it has been for convenience only.
- C. It is understood that, except as otherwise specifically stated in the contract documents, the Contractor shall provide any pay for all materials, labor, permits, fees, tools, equipment, transportation, superintendence, temporary construction of every nature, all other services, facilities, and cost of every other nature whatsoever necessary to execute and complete the entire work to be done under the contract documents and deliver it complete in every respect.

1.13 SEQUENCE OF CONSTRUCTION

- A. The Contractor shall start construction of the work immediately after award of the contract, but shall do no work on the premises that would cause any interruption to the Owner's activities, as applicable, except under the direct instructions or approval of the Owner or Architect.

1.14 CONSTRUCTION SCHEDULE

- A. The Contractor shall submit to the Architect and Owner, as soon after award of contract as possible, a progress schedule of construction in form as approved by the Architect. The schedule shall show the proposed dates of starting and completion of each branch of the work, and the estimated delivery date of materials and equipment.

1.15 GENERAL GUARANTEE

- A. Neither the final certificate of payment nor any provision in the contract documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for all damage to other work resulting therefrom, which shall appear within a period of one (1)

year from the date of final acceptance of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

1.16 CONSTRUCTION TIME

- A. The General Contractor must agree to commence work on or before a date to be specified in a written "Notice To Proceed" by the Owner and to fully complete the project as negotiated in writing at a later date.

END OF SECTION 00 73 27

SECTION 01 11 13 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK UNDER THIS CONTRACT

- A. The work included under these specifications and the accompanying drawings consist of providing all items, articles, materials, operations, or methods listed, mentioned, or scheduled on the drawings and/or herein, including all labor, materials, services, equipment, and incidentals necessary for their completion.
 - 1. To provide all materials, systems, labor and equipment as called out on the Plans and Specifications for THE PROPOSED RENOVATION TO FIRE STATION #1 for the CITY OF COLUMBIA, TN.

1.02 WORK PERFORMED UNDER SEPARATE CONTRACTS (AS APPLICABLE)

- A. Work denoted as "Not in Contract" (NIC) will be furnished and installed by the Owner or by others under separate contracts as applicable. Contractor shall rough-in and make connections of mechanical and electrical services as required for work not in contract.

1.03 WORK BY OTHERS

- A. Cooperate with other contractors or Owner's work crews for work on this project in the arrangement for storage of materials and the detailed work of these separate contractors and notify the Architect immediately of lack of progress or defective workmanship on their part where such delay or such defective workmanship will interfere with Contractor's own operations. Contractor's failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with Contractor's own work.

1.04 APPLICABLE CODES

- A. Major codes to date governing this project are:

REFERENCE MASTER COVER SHEET IN THE CONSTRUCTION DRAWINGS FOR CODES PERTAINING TO COLUMBIA, TN AND THE STATE FIRE MARSHAL'S OFFICE RESPECTIVELY.
- B. In case of conflict, the most stringent requirements shall apply. Coordinate code applications with the State Fire Marshal's field inspector.
- C. All references to codes, specifications, and standards in the specification sections and on the drawings shall mean, and are intended to be, the latest edition, amendment to revisions of such reference standard in effect as of the date of these contract documents.

1.05 COORDINATION OF WORK

- A. As applicable, the General Contractor and Subcontractors shall review other sections of

work applicable to their work and ascertain requirements in other sections applicable to their own work. Each shall be held responsible for coordination and inclusion of the work indicated as if it were in the particular subcontractor's section. The Architect shall be advised of any discrepancies or conflicts at the earliest moment.

- B. All subcontractors, suppliers, etc., shall be responsible for knowing what information is given on all sheets of the plans and specifications concerning his particular work. If an item or piece of work is shown on the architectural and not on the mechanical, electrical or structural drawings, it shall be included in the contract. The reverse condition shall also apply.

1.06 CONTRACTOR'S USE OF PREMISES

- A. Before construction is started, the Contractor shall confer with the Architect and the Owner and arrange for available trucking and storage space for the delivery of materials, storage space for materials and equipment, and parking space for his workmen.
- B. Construction operations and storage of materials and equipment shall be restricted to areas of the site mutually agreed upon and in such a manner as not to block access of fire fighting equipment to the building.

1.07 SCAFFOLDING, STAGING, ETC.

- A. As required, provide, install and maintain for the duration of the work, all scaffolds, staging, trestles, and planking necessary for the work in strict conformity with applicable laws and ordinances, and so as not to interfere with or obstruct the work of others. Provide all forms of protection necessary to keep the work of other trades free from damage.

1.08 WEATHER PROTECTION

- A. Provide protection to building and site as may be required to allow the work to continue without interruption due to weather or temperature, so as to allow completion and occupancy by the contract completion and occupancy by the contract completion date. Extras for heating, housing, and any other form of weather protection will not be honored.

1.09 GENERAL BUILDING PERMIT

- A. The General Contractor will make application for the building permit as required to facilitate the project's construction. No cost will be associated with the building permit.

1.10 WARRANTY AND CORRECTION OF WORK

- A. The Contractor shall, prior to final inspection, deliver the Owner, all written guarantees and warranties called for in the specifications.

1.11 ASBESTOS

A. Do not incorporate asbestos bearing materials in any of the work of this contract.

END OF SECTION 01 11 13

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SECTION 01 21 26 - ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.
 - 1. The Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the allowance.
- B. Coordinate allowance work with related work to ensure that each section is completely integrated and interfaced with related work.

1.02 DESCRIPTION OF REQUIREMENTS

- A. Definitions and Explanations: Certain requirements of the work related to each allowance are shown and specified in contract documents. The allowance has been established in lieu of additional requirements for that work, and further requirements thereof (if any) will not be issued by change order. All cost shall be included in the allowance.
- B. Types of allowances scheduled herein for the work included the following:
 - 1. Unit-cost allowances.
- C. Selection and Purchase: At earliest feasible date after award of Contract, advise Architect of scheduled date when final selection and purchase of each product or system described by each allowance must be accomplished in order to avoid delays in performance of the work.
 - 1. Purchase products and systems as specifically selected (in writing) by the Architect.
- B. Change Order Data: Where applicable, include in each change order proposal both the quantities of products being purchased and unit costs, along with total amount of purchases to be made. Where requested, furnish survey-of-requirements data to substantiate quantities. Indicate applicable taxes, delivery charges, and amounts of applicable trade discounts.
 - 1. For unit cost type allowances, submit a substantial survey of quantities of materials, as shown in the "Schedule of Values," revised where necessary, and corresponding with change order quantities.
- B. Unit Cost Allowances: Each change order amount for unit cost type allowance shall be based solely on the difference between the actual unit purchase amount and the unit allowance, multiplied by the final measure or count of work-in-place, with

reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.

1. When requested, prepare explanations and documentation to substantiate the margins as claimed.
 2. Prepare and submit substantiation of a change in the scope of work (if any) claimed in the change orders related to unit cost type allowance.
- C. Change Order Mark-Up: Except as otherwise indicated, comply with provisions of General Conditions. For each allowance, Contractor's claims for increased costs (for either purchase order amount or Contractor's handling, labor, installation, overhead and profit), because of a change in scope of nature of the allowance work as described in contract documents, must be submitted within 30 days of initial change order authorizing work to proceed on that allowance: otherwise, such claims will be rejected.
1. As a procedural restriction on Paragraph 3.8.2.3 of General Conditions, no mark-up (increase or decrease) shall be included in the change order amount for the Contractor's increase or decrease in handling, labor installation, overhead profit unless purchase order amount varies from allowances by 20% or more.
- B. Excess Materials: Submit invoices or delivery slips to indicate actual quantities of materials delivered to site for use in fulfillment of each allowance.
1. Where economically feasible, and when so requested by the Architect, return unused materials to the manufacturer/supplier for credit to the Owner, after the installation has been completed or accepted.
 2. Where it is not economically feasible to return unused material for credit and when so requested by Architect, prepared unused material for the Owner's storage, and deliver to Owner's storage space as directed. Otherwise disposal of the excess material is the Contractor's responsibility.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.01 SCHEDULE OF ALLOWANCES

- A. Allow a unit cost of \$35.00 per square yard for the purchase and installation of carpet squares as selected by the Architect.
- B. Allow a unit cost of \$7.00 per square foot of Luxury Vinyl Planking (LVP) as selected by the Architect.
- C. Allow a unit cost of five-hundred, sixty dollars (\$560.00) per thousand, F.O.B. Job site, for purchase of face brick and Mortar (8 bags / Thousand). See Section 042613 – 2.01.
- D. Allow a unit cost of \$11.50 per square foot installed (Labor and Materials) for the installation of ceramic wall tile as defined and specified in Section 09310. Reference Finish Schedule Notes for Additional Requirements.

END OF SECTION 01 21 26

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SECTION 01 26 46 - CONSTRUCTION CHANGE DIRECTIVES

PART 1 - GENERAL

1.01 SUPPORTING DOCUMENTATION FOR PROPOSALS OR CLAIMS

- A. Propose changes to work in writing, specifically describing proposed change, or briefly describing the proposed change with specific reference to a completely descriptive attachment.
- B. Propose changes in Contract Sum in writing, stating briefly the reason for change, and summarizing material, equipment, labor, overhead, and profit factors for Contractor, Subcontractors, and Sub-subcontractors. The Contractor will be allowed 10% for profit and overhead for changes for work by his own force and 5% for work by his subcontractor and sub subcontractor. Attach itemization of values of direct cost on form which provides information citing:
 - 1. Materials: units, costs, quantities, totals
 - 2. Equipment: hours, rates, totals
 - 3. Labor: hours, rates, totals
- C. Propose changes in Contract Time in writing: fully describe the reasons for the change and effect of the change on the construction schedule, and attach a revised Progress Schedule.

1.02 FORM FOR CHANGE ORDERS AND CONSTRUCTION CHANGE DIRECTIVES

- A. The form shall be AIA Document G701, a copy of which follows this section. Complete description of change in work shall be included in the body of the form or in referenced attachment. Change in Contract Sum and Contract Time shall be expressed in the body of the form.

1.03 SIGNATURES:

- A. Form shall be signed by authorized representatives of each of the entities required by Conditions of the Contract.
- B. Proposed Change Orders will be prepared by Contractor and submitted to the Architect. Contractor shall be first to sign an acceptable proposed Change Order, and shall deliver proposed Change Order to the Architect. Architect shall sign an acceptable proposed Change Order second, and deliver to Owner. Owner shall sign an acceptable proposed Change Order last, and deliver to Architect for further transmittal to Contractor and Architect.

END OF SECTION 01 26 46

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SECTION 01 26 49 - WEATHER DELAYS

PART 1 - GENERAL

1.01 EXTENSIONS OF CONTRACT TIME

- A. If the basis exists for an extension of time in accordance with Paragraph 8.3 of the General Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed as the Standard Baseline for that month.

1.02 STANDARD BASELINE FOR AVERAGE CLIMATIC RANGE

- A. The Owner has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the State of Tennessee.
- B. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.
- C. Standard Baseline is as follows:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
12	11	8	7	7	6	7	5	4	5	6	11

1.03 ADVERSE WEATHER AND WEATHER DELAY DAYS

- A. Adverse Weather is defined as the occurrence of one or more of the following conditions which prevents exterior construction activity or access to the site within twenty-four (24) hours:
1. Precipitation (rain, snow, or ice) in excess of one-tenth inch (0.10") liquid measure.
 2. Temperatures which do not rise above 32 degrees F. by 10:00 a.m.
 3. Temperatures which do not rise above that specified for the days construction activity by 10:00 a.m., if any is specified.
 4. Sustained wind in excess of twenty-five (25) m.p.h.
 5. Standing snow in excess on one inch (1.00").
- B. Adverse Weather may include, if appropriate, "dry-out" or "mud" days when all the following conditions are met:

1. For rain days above the standard baseline.
 2. Only if there is a hindrance to site access or site work, such as excavation, backfill, and footings.
 3. At a rate no greater than 1 make-up day each day or consecutive days of rain beyond the standard baseline that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the Designer.
- C. A Weather Delay Day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the contractor's scheduled work day, including a weekend day or holiday if Contractor has scheduled construction activity that day.

1.04 DOCUMENTATION AND SUBMITTALS

- A. Submit daily job site work logs showing which and to what extent construction activities have been affected by weather on a monthly basis.
- B. Submit actual weather data to support claim for time extension obtained from nearest NOAA weather station or other independently verified source approved by Designer at beginning of project.
- C. Use Standard Baseline data provided in this Section when documenting actual delays due to weather in excess of the average climatic range.
- D. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods, and submit in accordance with the procedure for Claims established in paragraph 4.3 of the Conditions.
- E. If an extension of the Contract Time is appropriate, it shall be effected in accordance with the provisions of Article 7 of the General Conditions, and the applicable General Requirements.

END OF SECTION 01 26 49

SECTION 01 26 57- PAYMENT AND CHANGE ORDER PROCEDURE

PART 1 - GENERAL

1.01 APPLICATION FOR PROGRESS PAYMENT:

A. Form:

1. The form for application for payment shall be AIA Document G702 Application and Certificate for Payment, accompanied by AIA Document G703 Continuation Sheet.
2. Itemize the continuation sheets with the line items and values of the Schedule of Values accepted by the Architect.

B. Submittal:

1. Submit the original and five (5) copies of each application to the Architect with required attachments and accompanying submittals, in accordance with the schedule established by the Agreement.

C. Stored Materials:

1. Materials stored on-site but not yet incorporated into the work may be claimed for payment.
2. Materials suitable stored off-site may be claimed for payment provided that the following is attached to each copy of the application:
 - a. A statement identifying where the materials are stored and that the materials are tagged to identify them for use in the project.
 - b. Copies of bills of sale for materials claimed.
 - c. A certificate of insurance covering materials claimed.

D. Retainage:

1. Attach to each copy of each application wherein retainage, as a percentage of the total completed and stored to date, is less than was provided in the previous application, shall have attached a copy of the Consent of Surety, using AIA Document G707A or a similarly formed letter, attaching the original of which to the original of the application.

E. Attachments and Accompanying Submittals:

1. Attach the following to each copy of each application:
 - a. Continuation sheets.
 - b. Consent of Surety if applicable for reduction in the retainage.
 - c. Documents required for materials stored off-site.

2. Submit three (3) copies of the following with the application as deemed necessary by the Architect:
 - a. Visitor Log for the period covered by the application.
 - b. Progress Schedule, updated and current, indicating the progress through the period covered by the application and the schedule progress through completion of the work.
 - c. Shop Drawing Log for the entire project through the period covered by the application, if required.

F. Approval and Payment:

1. If the Architect agrees with the amounts claimed in an application, he may, at his discretion, either return the application to the Contractor for revision and re-submittal or mark-up the application indicating the corrections he considers appropriate.
2. When the Architect finds the application complete and correct he will certify the application forwarding one copy to the Contractor indicating his action.

1.02 APPLICATION FOR PAYMENT AFTER SUBSTANTIAL COMPLETION:

- A. After the Architect has certified that the work is Substantially Complete, Contractor shall submit application for payment, including appropriate reduction in retainage, with the following attachments:
 1. Continuation sheets described in 1.01.A.2.

1.03 APPLICATION FOR FINAL PAYMENT:

- A. Upon completion of the entire work, and submittal of the Contract Close-Out Package, the Contractor may submit an application with the following attachments:
 1. Contractor's Affidavit of Payment of Debts and Claims, using AIA Documents G706.
 2. Contractor's Affidavit of Release of Liens, using AIA Document A706A.

1.04 CHANGE ORDER:

A. Form:

1. The form shall be AIA Document G701 Change Order.

B. Submittal:

1. Change Orders will be prepared by the Contractor and will be submitted to the Architect for signing and attachment of supporting documentation, if any is needed.

C. Attachments and Accompanying Submittals:

1. Attached to each copy of each change order shall be the following:
 - a. Referenced documentation describing and justifying the change in the work, the Contract Sum and the Contract Time.
 - b. Itemization of values of direct cost to the Contractor or Subcontractors, as apply, citing:
 - (1) Materials: units, costs, quantities, totals
 - (2) Equipment: hours, rates, totals
 - (3) Labor: hours, rates, totals
 - c. If a weather related delay, comparative data by the National Oceanic and Atmospheric Administration, obtained by the Contractor as an impartial basis for determining justifiable extensions, or daily work logs which describe actual local weather conditions and impact, subject to approval by the Architect.

END OF SECTION 01 26 57

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SECTION 01 29 73- SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 FORM AND APPROVAL

- A. The form for schedule of values shall be AIA Document G703 Continuation Sheet.
- B. If objected to by Architect, revise and resubmit to Architect's satisfaction prior to submitting application for payment.

1.02 ALLOCATION OF VALUES

- A. Provide a single line item to account for mobilization and general administration, and fulfilling General Requirements of Project.
- B. Account for modifications with a line item for each.

END OF SECTION 01 29 73

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SECTION 01 30 00 - PRODUCTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General provisions of the Contract, and General and Supplementary Conditions apply to this section.

1.02 TRANSPORTATION AND HANDLING

- A. Materials, products, and equipment shall be properly containerized, packaged, boxed and protected to prevent damage during transportation and handling.
- B. More detailed requirements for transportation and handling are specified under the technical sections.

1.03 STORAGE AND PROTECTION

- A. Provide suitable temporary weather-tight storage facilities as may be required for materials that will be damaged by storage in the open.
- B. Available storage space at the job site is limited to the site. Any additional off-site space required is the responsibility of the Contractor.
- C. Allocate the available storage areas and coordinate their use by the trades on the job. Maintain a current list showing all items and where they are stored.
- D. Store and protect materials delivered at the site from danger. Do not use damaged materials on the work.

1.04 INSTALLATION REQUIREMENTS

- A. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the respective manufacturers, unless otherwise specified.

1.05 IDENTIFYING MARKERS

- A. Name plates and other identifying markings shall not be affixed on exposed surfaces of manufactured items installed in finished areas.

1.06 PRODUCT APPROVAL STANDARDS

- A. Definitions:
 - 1. The term "Product" shall include material, equipment, assembly methods, manufacturer, brand, trade name, or other description.

2. References to "approved equal" or "similar" terms mean that approval of the Architect is required.
- B. Proof of Compliance: Whenever the Contract Documents require that a product be in accordance with Federal Specification, ASTM designation, ANSI Specification, or other associated standard, the Contractor shall present an affidavit from the manufacturer certifying that the product complies therewith. Where requested or specified, submit supporting test data to substantiate compliance.

1.07 SUBSTITUTIONS

A. Policy:

1. Wherever in the Specifications or on the drawings a material or article is specified or shown by using the name of a proprietary product of a manufacturer or vendor, the item name is intended to set standard of design, substance, performance and quality for such material or article.
2. Contractors may propose equal substitutions for all products called for in any section of these specifications whether or not the section so states, they are encouraged to do so when a substitution would result in a savings to the Owner with no sacrifice of quality or design intent.
3. Substitute products shall not be ordered or installed without written acceptance.
4. Substitutions will not be considered unless submitted to the Architect. The Architect's decision shall be final concerning the acceptability of all substitutions.

B. Procedure Regarding Substitutions:

1. Should the Contractor wish to substitute some product other than the one previously approved, he shall request permission in writing from the Architect. The following information should be included in his letter of request:
 - a. The name and manufacturer of product specified.
 - b. The name and manufacturer of product he wishes to substitute.
 - c. Complete descriptive and specification data, illustrations, etc., of the product he wishes to substitute and the reasons for substitution.
2. In the consideration of proposed substitution, the Contractor shall supply the Architect with all information which may be requested.
3. The Architect will approve or disapprove the proposed within the provisions of the Contract Documents.
4. The burden of proof shall rest with the Contractor to prove that the proposed substitute is equal to the material or article specified.

END OF SECTION 01 30 00

SECTION 01 31 13 - PROJECT COORDINATION

PART 1 - GENERAL

Contractor is responsible for coordination of all work. Contractor is responsible for coordinating work with the Architect, Owner's representative, Soils Engineer, Tennessee Department of Economic and Community Development, and its regulatory agencies.

Road cuts and utilities connections, tapping fees, meters and temporary shut down shall be coordinated with Columbia, Tennessee, Development Services, Engineering Department and/or their affiliates, and adjacent property owner. This is solely the responsibility of the Contractor.

END OF SECTION 01 31 13

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SECTION 01 31 19 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 SCHEDULING AND ATTENDANCE

- A. The Architect, in cooperation with the Owner and the Contractor, will schedule and administer a Pre-Construction Conference, periodic Progress Meetings, and other specially called or required meetings as warranted, requested, and/or applicable.
- B. Representatives of the Owner, Contractor and Architect will attend.
- C. Representatives of the Contractor, subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. A Pre-Construction Conference will be scheduled and conducted at the project site prior to the issuance of the Notice to Proceed as warranted, requested, and/or applicable.
- B. The Pre-Construction Conference shall be attended by the Contractor's:
 - 1. (Office) Job Manager
 - 2. (Field) Job Superintendent
 - 3. Major subcontractors' representatives
 - 4. Major suppliers' representatives
 - 5. Others, as desired

The Pre-Construction Conference is intended to be an opportunity for the Contractor to review administrative, and procedural requirements of the Contract Documents, and to ask questions concerning the work. At least one English speaking representative from each company desiring to attend must be present.

1.03 PROGRESS MEETINGS

- A. Progress Meetings will be scheduled and conducted at the project site prior to the Contractor's submittal of an application for payment, or when deemed advisable by the Architect.
- B. Progress Meetings shall be attended by the Contractor's:
 - 1. (Office) Job Manager
 - 2. (Field) Job Superintendent
 - 3. Subcontractors' representatives, as befits the agenda
 - 4. Suppliers' representatives, as befits the agenda
 - 5. Others, as appropriate
- C. Progress Meetings are intended to be a monthly opportunity for the Contractor to review and submit applications for payment, and attachments, and for a general review

of the progress of the work, aimed at identifying and mitigating impediments to timely completions. At least one English speaking representative from each company desiring to attend must be present.

END OF SECTION 01 31 19

SECTION 01 33 00 - SHOP DRAWING SUBMITTALS

PART 1 - GENERAL

1.01 CONSTRUCTION SCHEDULES

- A. See General Conditions, Paragraph 5, for submission of a progress schedule.

1.02 PROGRESS REPORTS

- A. Daily Reports: Progress reports shall be kept on a daily basis to cover each facet of the work. These reports shall be kept on file at the field office, and shall be made available to the Architect's or his representative's review upon request.
- B. Monthly Reports: Submit a monthly report to the Architect in which the progress is reported on each area of work being undertaken.

1.03 SURVEY DATA (AS REQUIRED BY THE PROJECT)

- A. Be responsible for properly laying out the work, and for lines and measurements for the work executed under the contract documents. Verify the figures shown on the drawings before laying out the work, and report errors or inaccuracies in writing to the Architect before commencing work. The Architect or his representative will in no case assume the responsibility for laying out the work.
- B. Establish necessary reference lines and permanent bench marks from which building lines and elevations shall be established. Engage a registered land surveyor for this purpose to layout the work. Establish not less than two (2) such bench marks in widely separated locations. Be responsible for the proper location and level of the work and for the maintenance of the reference lines and bench marks. Establish bench marks and axis lines at each floor showing exact floor elevations and other lines and dimensional reference points as required for the information and guidance of all trades; field checking of the structure and surveys thereof as may be required by the technical sections of the specifications; the marking and layout of walls and partitions; and the taking of settlement readings as hereinafter specified.
- C. The mechanical and electrical trades shall be responsible for the layout of the ductwork, piping and conduit based on the reference lines and bench marks established.

1.04 SHOP DRAWINGS

- A. The Contractor shall submit shop drawings and samples for all items called for in the detail specifications and drawings. Submit digitally prepared shop drawings, brochures, and two minimum samples as appropriate. The Architect and their sub consultants will digitally review/approve the submittals and send back with one approved sample to be kept at the job trailer. No shop drawing or sample, other than those stamped "Approved" shall be in the job site trailer for any purpose whatsoever, and work installed incorrectly shall not change the contract price.

- B. In checking shop drawings and samples, the Architect and their sub-consultants shall not be required to check dimensions, quantities, electrical characteristics, specific capacities, or coordination with other trades, these being the responsibility of the Contractor. The Contractor shall attest, either in writing or by stamp or signature, that all shop drawings and samples submitted for approval have been checked for compliance with the drawings and specifications prior to submission to the Architect, otherwise, they will be returned unchecked. No shop drawing or sample shall be submitted directly to the Architect from a manufacturer or subcontractor. The Contractor will be required to submit a digital transmittal with each digital shop drawing requested for review and approval.
- C. The stamp of the Architect on returned shop drawings and samples shall be interpreted as follows:
 - 1. Reviewed: No correction, proceed with the work.
 - 2. Furnish as Corrected: Items noted for correction must be fabricated or furnished with corrections as noted.
 - 3. Rejected: The item is rejected as not in accordance with the contract requirements or for other justified cause.
 - 4. Revise and Resubmit: Items noted for correction must be fabricated or furnished with correction as noted. All items bearing this stamp must be resubmitted for further checking and approval.
 - 5. Submit Specified Items: Items are in accordance with the contract requirements. Submit further documentation to clarify the intent as specifically noted in the review submittal.

1.05 SCHEDULE OF VALUES

- A. Submit schedule of values as required by Section 01 29 73.

1.06 LIST OF SUBCONTRACTORS

- A. Submit list of subcontractors as required by the General Conditions.

1.07 PROJECT RECORD DOCUMENTS

- A. Submit project record documents as required by the General Conditions and Specifications.

1.08 OTHER SUBMITTALS

- A. Submit all other information required by the contract documents.

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01, Specification Sections, apply to this section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Section. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by revisions of this Section.
 - 4. Specific test and inspection requirements are not specified in this Section.
- C. Related Requirements:
 - 1. Section 01 21 06 "Allowances" for testing and inspecting allowances.
 - 2. Division 02 through 33 Sections for specific test and inspection requirements.

1.03 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of 5 previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- D. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
1. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements or as part of permanent construction, consisting of multiple products, assemblies, and subassemblies.
 2. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop, to conceal anchorage.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

- K. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.04 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Shop Drawings: Submit digital shop drawings for fabrication and erection of toilet partition assemblies not fully described by product drawings, templates and instructions for installation of anchorage devices built into other work.

1.05 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.06 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
 - 1. Indicate manufacturer and model number of individual components.
 - 2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

- B. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.7 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality control activities and responsibilities.
- B. Qualification Data: Submit resume and experience for approval by owner of proposed QC/QA Manager. USACE CQM Certification preferred.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
 - 1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
 - 2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.

- 9. Unique characteristic of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspections reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan not less than 5 days prior to reconstruction conference. Submit in format acceptable to Owner. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspections: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections."
 - 3. Owner-performed tests and inspections indicated in the Contract Documents.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results grouped by the definable features of work.

Include work Architect/Owner has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

A. A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Section. Include the following:

1. Date of Issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking, testing, and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspection.
14. Provide documentation verifying deficiency has been corrected.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.

3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports. Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirement of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, and NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Reconstruction Testing: Where testing agency is indicated to perform reconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. When test is complete, remove test specimens, assemblies, and mockups; do

not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect 7 days in advance of dates and times when mockups will be constructed.
 3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.
 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow 7 days for initial review and each re-review of each mockup.
 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 7. Demolish and remove mockups when directed unless otherwise indicated.
- L. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings and as indicated on Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials.

1.11 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made from testing and inspecting allowances,

as authorized by Change Orders.

3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify the the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform additional quality-control activities , whether specified or not, to verify and document that the Work complies with requirements.
 2. Engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless a g r e e d to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 5. Testing and inspecting requested by Contractor and required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether

tested and inspected work complies with or deviates from requirements.

4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00, "Shop Drawing Submittals."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in reinstallation conferences, examination of substrates and conditions, verification of material, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.
 1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.12 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect, Owner, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having

jurisdiction.

4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 ACCEPTABLE TESTING AGENCIES

- A. As selected by the Owner and Contractor.

3.02 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.
 1. Submit log at Project closeout as part of Project Record Documents.

3.03 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.

- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 41 13 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 CODES AND REGULATIONS

- A. The Regulatory Requirements that are to be used for projects are listed below. Other codes and regulations may also apply. This list is provided as a convenience to the Contractor and is not to be considered all inclusive of codes and regulations that may apply. The Contractor shall comply with all pertinent codes, standards, regulations and laws.

1. International Building Code 2018 Edition
2. International Fire Code 2018 Edition
3. International Energy Conservation Code 2018 Edition
4. International Plumbing Code 2018 Edition
5. International Mechanical Code 2018 Edition
6. International Electric Code (Reference CPWS Standards)
7. International Fuel Gas Code 2018 Edition
8. Accessible and Usable Building and Facilities (2009 ICC A117.1)
9. For portions of project that are existing, the 2018 International Existing Building Code and companion codes as adopted by the City of Columbia will prevail.

END OF SECTION 01 41 13

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SECTION 01 45 23 - TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General provisions of the contract, and General and Supplementary Conditions apply to this section.

1.02 DESCRIPTION OF WORK

- A. The Owner shall employ and pay for the services of American Geotechnical and Environmental Inc., P.O. Box 681237, Franklin, TN 37068-1237, to perform specified services and testing to include but not limited to testing of all concrete and make weekly or as deemed necessary site visits during the major excavation of the site to observe the placement of engineered fill. Upon completion of excavation perform soil compaction test as required and specified. Employment of laboratory does not relieve Contractor's obligation to perform the work of the Contract.
- B. The Owner will coordinate and pay for inspections and testing required by law, ordinance, rules, regulations, orders, or approvals of public authorities as required by the Contract Documents. The Contractor shall endeavor to use the Geotechnical Engineers' time wisely and not exceed the allotment of services as provided in the "Construction Testing Estimate." Should conditions require the Geotechnical Engineer to invest additional time and services, the Contractor shall notify the Architect in writing requesting approval well in advance of the services to be performed.

1.03 QUALIFICATIONS OF LABORATORY

- A. The lab shall meet "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories, and Basic Requirements of ASTM E 329 "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."
- B. The lab shall be authorized to operate in the State of Tennessee.
- C. Submit copies to the Architect of the report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection with the memorandum of remedies of any deficiencies reported by the inspection.
- D. Approval of the laboratory shall be obtained from the Architect.

1.04 LABORATORY DUTIES

- A. The lab shall perform specified inspections, sampling, and testing of materials and methods of construction and promptly submit five copies of the written report of each test and inspection to the Architect.

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. The laboratory is not authorized to release, revoke, alter or enlarge on requirements of the Contract Documents, approve or accept any portion of the work, or perform any duties of the Contractor.

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Furnish copies of Products Test reports as required.
- B. Furnish incidental labor and facilities to facilitate inspections and tests and for storage and curing of test samples.
- C. Notify the lab sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
- D. Make arrangements with lab and pay for additional samples and tests required for Contractor's convenience.
- E. Notify Architect in writing, as necessary, per 1.02 B.

END OF SECTION 01 45 23

SECTION 01 52 13 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. General provisions of the contract, and General and Supplementary Conditions apply to this section.

1.02 DESCRIPTION OF WORK

- A. The Contractor will arrange for and provide temporary facilities and controls as necessary for the proper and expeditious prosecution of the work. The Contractor will pay all cost, except as otherwise specified, until final acceptance of the work unless the Owner makes arrangement for the use of completed portions of the work after substantial completion in accordance with the provisions of the General Conditions.

1.03 TEMPORARY OFFICE

- A. The Contractor will provide a temporary field office sized as required to carry on the work. Adequate space and facilities shall be provided in the field office for convenient use and storage of contract documents and specifications, approved shop drawings and field reports. All temporary structures shall be structurally sound, neat and workmanlike in appearance.

1.04 TEMPORARY SHEDS

- A. Provide watertight and secure storage sheds as necessary to hold materials to be protected while stored on the site.

1.05 TEMPORARY TOILET FACILITIES

- A. The Contractor will provide adequate temporary toilet and hand washing facilities for the use of all workmen, conforming to all applicable laws, ordinances and regulations. Maintain these facilities in sanitary condition and remove upon completion of the work.

1.06 TEMPORARY ENCLOSURES

- A. Provide temporary weather tight enclosures or coverings for exterior openings in the building when required to permit the use of temporary heat or to protect the finished work from damage by the elements, and when necessary for security or safety protection.

1.07 PROTECTION

- A. Provide and maintain all fencing, planking, bridges, bracing, shoring, sheet piling, lights, barricades, warning signs, and guards as necessary for the protection of streets, sidewalks, landscaping, bridges, piers, buildings, and property, both on and off the site, from construction damage.

- B. Should any damage occur, the Contractor shall restore such to its original condition in a manner acceptable to the Owner.
- C. Take adequate precautions against fire; keep flammable material at an absolute minimum, and ensure that such material is properly handled and stored. Except as otherwise provided herein, do not permit fires to be built or open salamanders to be used in any part of the work.

1.08 WATER AND SNOW CONTROL

- A. Keep the site and the project area free from accumulation of water, and supply, maintain, and operate all necessary pumping and bailing equipment.
- B. Remove snow and ice as necessary for the protection and prosecution of the work, and protect the work against weather damage.

1.09 EXISTING AND TEMPORARY FACILITIES

- A. Water and electric power required for construction purposes will be paid by the Owner. Coordinate temporary electric service provision with the Owner's Representative prior to the start of construction.
- B. Furnish and install all temporary piping and wiring required or the use of water and electric power for construction and other purposes, and upon completion of work remove all temporary piping and wiring. Temporary utility lines are not specifically shown on the drawings, but shall be routed as required by conditions at the site.
- C. Existing utility lines which are to remain permanently or temporarily in service shall be carefully protected from damage or dislocation and any damage to these lines shall be made good at no additional cost to the Owner. Existing utility lines that are shown or noted shall be abandoned and removed, removed and relocated, or abandoned and replaced with new lines, as specifically shown on the drawings or noted in the specifications.
- D. The term "Utility Lines" shall be understood to include but not limited to: water lines, gas lines, power lines, communications lines and appurtenances such as manholes, catch basins, fire hydrants, valves, junction boxes, and switches.
- E. In general, all work outlines in this sub-section shall be performed by the trade in which jurisdiction it falls, but each trade shall fully cooperate and all work shall be carefully coordinated by the Contractor so that the work involved will be performed at the proper time and completed in accordance with the intent of the contract.

1.10 TEMPORARY TELEPHONES

- A. Furnish one field telephone for the use of the Contractor. Telephone service shall be maintained from start to completion of work. The cost of the telephone service shall be paid by the Contractor.

1.11 TEMPORARY HEATING (AS REQUIRED)

- A. Provide heat, fuel and services as necessary to protect all work and materials against injury from damages and cold until final acceptance of all work and material in the contract. The Contractor shall provide heat as follows:
 - 1. At all times during the placing, setting and curing of concrete, provide sufficient heat to insure the heating of the space involved to not less than 50 degrees Fahrenheit.
 - 2. For a period of ten (10) days previous to the installation of interior finishing, varnishing, painting, spackling, etc., and until final acceptance of the work or until full occupancy by Owner, provide sufficient heat to produce a temperature of not less than 70 degrees Fahrenheit.
- B. Provide temporary heat by approved heating apparatus which will not endanger or damage work in place. Do not use unvented open flame heaters to heat or dry out freshly placed concrete.

1.12 MAINTENANCE OF TRAFFIC AND CIRCULATION

- A. Maintain circulation of traffic, both pedestrian and vehicular, and access to all parts of the site by fire fighting apparatus during construction.

1.13 VERMIN CONTROL

- A. During construction, the Contractor shall keep the building and the area of the construction free from food scraps and similar organic matter that would attract vermin, and shall take other preventive measures necessary to prevent infestation of the building. If, at the time of final inspection or within six months after occupancy, the building is found to be infested by rodents or vermin, the Contractor shall bear the expense of extermination.

1.14 REMOVAL

- A. Temporary facilities shall be removed promptly as each is no longer required.

1.15 PROJECT SIGN

- A. The Contractor shall furnish a sign for the project, size four feet by eight feet (4' x 8'), three-fourths inch (3/4") exterior grade plywood with edge banding, and necessary frame supports and located as directed. Design shall contain information to be furnished by the Architect prior to the start of construction. Paint field and border in colors selected by the Architect. All lettering shall be done by a professional sign painter. In general, the sign will include the name of the project, name of the Owner, name and address of the Architect, Engineers, Construction Manager, and Contractor. The sign shall be maintained in good condition until construction is complete and field coordinated with the Owner and Architect.

END OF SECTION 01 52 13

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SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. This Section establishes general requirements pertaining to cutting (including excavating), fitting and patching of the work required to:
 - 1. Make the several parts fit properly.
 - 2. Uncover work to provide for installation, inspection, or both, of ill-timed work.
 - 3. Remove and replace work not conforming to requirements of the Contract Documents.
 - 4. Remove and replace defective work.

1.02 RELATED WORK

- A. In addition to other requirements specified, upon the Architect's request, uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.
- B. Do not cut or alter work performed under separate contract without the Architect's written permission.

1.03 QUALITY ASSURANCE

- A. Perform all cutting and patching in strict accordance with pertinent requirements of these Specifications, and in the event no such requirements are determined, in conformance with the Architect's written direction.

1.04 SUBMITTALS

- A. Prior to cutting which affects structural safety, submit written request to the Architect for permission to proceed with cutting.
- B. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission to proceed.
- C. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of cost reimbursement before proceeding with cutting and patching.
- D. Submit written notice to the Architect designating time the work will be uncovered, to provide for the Architect's observation.

PART 2 - PRODUCTS

2.01 CONDITIONS

- A. Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.
- B. After uncovering the work, inspect conditions affecting installation of the new work.
- C. If uncovered conditions are not as anticipated, immediately notify the Architect and secure needed directions.
- D. Do not proceed in areas of discrepancy until all such discrepancies have been fully resolved.
- E. Provide all required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work.

END OF SECTION 01 73 29

SECTION 01 74 23 - CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1, Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Final cleanup encompasses the removal of all debris, waste material and rubbish from the job site. Also included in final cleanup is the removal of all temporary facilities (i.e., offices, storage areas, fencing, barricades, temporary toilet facilities, etc.) and the restoration of the job site to specified condition. Restoration includes reseeding of grass and replanting of damaged shrubs, replacement and/or repair of any portion of the facility damaged during the progress of work to the complete satisfaction of the Owner and the Architect.
- B. This final cleaning does not relieve the contractor of his responsibility for cleaning specified by the trade sections.

END OF SECTION 01 74 23

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SECTION 01 78 21 - CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 DATA BINDERS GENERALLY

- A. Provide two complete sets. Provide commercial quality three ring binders with durable plastic covers. Identify project and type of data on face and side of binder. If multiple binders are required, identify as consecutively numbered volumes, identifying original documents as set number one. Provide information required by Contract Documents organized as outlined below. Include related documents under the heading to which each is most closely related.
- B. Provide introductory information:
 - 1. Cover sheet giving complete project title and number, Contractor's name, address, phone number, name of project superintendent, and related general information.
 - 2. Table of Contents to generally identify material in Binders. Reference and bind separately any over-size documents that cannot be neatly folded and included in this binder

1.02 OPERATING & MAINTENANCE DATA BINDERS

- A. Provide Product Data as outlined below:
 - 1. Detailed Table of Contents for this part.
 - 2. For each system or product: names, addresses, and telephone numbers of supplier, installer, and maintenance service company; drawing and specification reference; building location; manufacturer and model number.
 - 3. Description of unit and component parts, clearly identifying the specific product or part installed. When manufacturer's cut sheets are used for product identification, plainly mark specific items included in Work.
 - 4. Related information required by Contract Documents, or furnished with items included in Project, that Owner may use for maintenance, operation, repair, renovation, or additions to Work.
- B. Provide Operating and Maintenance Data as outlined below for mechanical and electrical systems, equipment, and products:
 - 1. Detailed Table of Contents for this part.
 - 2. Manufacturer's printed operating and maintenance instructions supplemented with drawings and text to clearly illustrate proper operation and a logical sequence of maintenance procedures.

3. Servicing and lubrication schedule with list of lubricants.
4. Manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
5. As-installed control diagrams by controls manufacturer.
6. Installers' coordination drawings with as-installed color coded piping diagrams and wiring diagrams.
7. Charts of valve tag numbers with the location and function of each valve.
8. Circuit directories of panel boards.
9. Instructions for care, with a list of manufacturer's recommended types of cleaning agents and methods.
10. List materials and parts furnished for the Owner's use.

1.03 PROJECT DATA BINDERS

- A. Add to introductory information a complete listing of subcontractors and material suppliers, including company name, address, phone number, contact person and local representative.
- B. Provide certificates and acceptance information (as applicable):
 1. Detailed Table of Contents for this part.
 2. Certificate of Substantial Completion.
 3. Use and Occupancy Permits
 4. Certificates(s) of Inspection or letter(s) of acceptance from:
 - a. Fire Marshal
 - b. Department of Labor for boilers, pressure vessels, or elevators
 - c. Public Health Authorities
 - d. Other governing authorities as apply
- C. Guarantees, Warranties, Bonds (as applicable), Certifications, and Related Documents
 1. Detailed Table of Contents for this part
 2. Contractor's warranty of work
 3. Guarantees, warranties, and bonds, executed by the respective vendors, manufacturers, suppliers, and subcontractors

4. Certifications
5. Maintenance Agreements and service contracts
6. Complete information for each item:
 - a. Product or work item, and scope of installation
 - b. Name of provider, with name of responsible principal, address and telephone number
 - c. Beginning date and duration
 - d. Information about instances which might affect validity, and proper procedure in case of failure.

1.04 CONSTRUCTION RECORD DOCUMENTS

- A. The record copy of Contract Documents required by Paragraph 3.11 of the Conditions shall be kept in good condition for submittal to Architect upon completion of construction activity. In the course of the Work, the Contractor shall legibly mark these documents to record actual conditions of Work, including: location, depth, and identification of new and existing underground items, location by dimension and identification of utilities, valves, tap points, equipment, service access, test points, and related features, field changes in dimensions and detail, changes by addenda, change orders, and construction change directives, description and details of features for maintenance, service, replacement, or expansion of the Work.

END OF SECTION 01 78 21

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SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Removal and disposal of designated foundations, pavements, concrete, curbs, culverts, utilities and other structures.

1.02 RELATED WORK

- A. Section 31 50 00: Excavation Support and Protection

1.03 QUALITY ASSURANCE

- A. Contractor Qualifications: Minimum of 5 years experience in demolition of comparable structures.
- B. Requirements of Regulatory Agencies:
 - 1. Comply with requirements of local codes
 - 2. Comply with requirements of Maury County and the applicable jurisdiction and Local Public Health Authority.
 - 3. Comply with local utility companies and/or utility districts.

1.04 SUBMITTALS

- A. Certificates of severance of utility services.
- B. Permit for transport and disposal of debris.
- C. Demolition procedures and operational sequence for review by Owner's Representative.

1.05 JOB CONDITIONS

- A. Protection:
 - 1. Erect barriers, fences, guard rails, enclosures, and shoring to protect structures, and utilities remaining intact.
 - 2. Protect designated trees and plants from damage.

1.06 MAINTAINING TRAFFIC

- A. Ensure minimum interference with roads, street, driveways, sidewalks, and adjacent facilities.

- B. Do not close or obstruct streets, sidewalks, alleys or passageways without permission from authorities having jurisdiction and affected property owners.
- C. If required by governing authorities, provide alternate routes around closed or obstructed traffic ways.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

3.01 PREPARATION

- A. Prepare adjacent areas to prevent injury, movement or settlement of structures which are to remain.
- B. Arrange for, and verify termination of utility services to include removing meters and capping lines
- C. Remove items scheduled to be salvaged for Owner, and place in designated storage area.
- D. The contractor shall coordinate a meeting with the owner and the architect prior to any demolition work. At that meeting, the contractor shall review the exact limits of demolition with the owner to confirm the limits.

3.02 DEMOLITION

- A. Remove concrete pavement, base, curbs, gutters, sidewalks, driveways, etc. And dispose of as follows:
 - 1. Dispose of items which are not more than two feet below subgrade elevation.
 - 2. Break items more than two feet below existing or final subgrade elevation into sizes not to exceed twelve inches in maximum dimension and leave in place, unless it interferes with succeeding items of construction.
 - 3. Stockpile ballast, gravel other pavement materials when required.
- B. Coordinate removal and relocation of power poles, street lighting, telephone lines and site lighting, with the local electric utility.
- C. Remove existing water services, sanitary sewer and storm drainage pipe and structures as indicated and as necessary to facilitate new construction.
- D. Remove old foundations, cisterns, etc., which may be encountered within the building area. Cap any existing wells in accordance with state and local regulations.

- E. Remove all existing fences, gates, rock piles and other various farming structures. Dispose of this material in accordance with state and local regulations.

3.03 DEBRIS REMOVAL

- A. Promptly remove demolition debris from site.
 - 1. Do not store debris on site
- B. Obtain permission from applicable regulatory authority for disposal of debris to waste disposal site.
- C. Obtain permission from applicable regulatory authority for burning of debris materials on site.

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SECTION 02 60 0
SANITARY SEWER, STORM SEWER, AND APPURTENANCES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The work to be done under this contract shall include the furnishing of all material, labor, tools, and equipment to construct, complete and in place, the sewer and all appurtenances as shown on the drawings and as specified herein and in accordance with all pertinent requirements of the City of Lawrenceburg, the State of Tennessee, and TDEC.
- B. The Contractor shall perform the excavating of all kinds of materials encountered, furnish or compact foundations where required, furnish and install all timbering, sheeting and bracing necessary or proper to safely support all work, remove all water, protect, repair, relocate, maintain and restore all sub surfaces, surface and overhead structures directly or indirectly disturbed, injured or affected by his/her operations, backfilling and furnish all other appurtenant items and services necessary or specified.

1.02 METHODS OF MEASUREMENT AND PAYMENT

- A. Reinforced Concrete Sewer Pipe in Place- Reinforced concrete sewer pipe for all classes shall be paid for at the contract price per lineal foot, for each diameter of pipe furnished and according to the depth zone classification.
- B. Polyvinyl Chloride Pipe (PVC)- Sewer pipe shall be paid for at the contract price per lineal foot, for each diameter of pipe furnished, and according to depth zone classification.
- C. Corrugated Polyethylene Pipe- Sewer pipe shall be paid for at the contract price per lineal foot, for each diameter of pipe furnished, and according to depth zone classification.
- D. Ductile Iron Sewer Pipe- Ductile iron pipe shall be paid for at the contract price per lineal foot for each diameter of pipe furnished and according to depth zone classification.

Unit prices shall include excavation, pumping, sheeting, pipe completely installed, and backfilling. All measurements shall be made along the centerline of the pipe and from center of manhole to center of manhole or center to center of appurtenant structures. Depth zone classification shall be based on total depth of trench from the surface of the ground to the invert of the sewer, except where the Engineer orders extra depth to assure firm foundation for the pipe, in which case payment shall be made at the unit price according to the depth of trench of the upper limit but not of the lowest limit. As an example: 8'-10' classification shall be taken from 8.01' to 10.00' inclusive. No deduction in depth shall be made for rock encountered in the trench above the designated grade.

- E. Manholes- Manholes and Catch Basins shall be paid for, on this project, as a unit price of "EACH". The unit price shall include all precast structures, laid up masonry structures, frames, lids, grates, and all other necessary appurtenant items. Each structure, regardless of whether precast or masonry shall have a grout poured bench hand floated to provide for unobstructed flow through the structure. No additional payment shall be made for the work required for the bench construction. The unit price for Manholes and Catch Basins shall include all required excavation for the structure. No additional payment shall be made for rock excavation.
- F. Frame Seals and Extensions- All costs for furnishing and installing the external seals and adjusting rings shall be incidental and included in the unit price bid for each casting, casting assembly, adjustment, or other bid item as appropriate.
- G. Drop Section for Drop Manholes- The drop section for outside drop manholes shall consist of a

PVC bend, PVC tee, and length of SDR 26 PVC pipe as required, including concrete base and pipe support. Payment shall be at the contract unit price for vertical feet of drop section from center of incoming line to center of outlet of 90 degree bend. All drops shall be strapped to the manhole wall with 14 gauge stainless steel straps, 2' on center. All straps and hardware within the manhole shall be stainless steel. A full length of SDR 26 PVC pipe shall be installed from the tee so as to lay on undisturbed earth. Payment shall be at the contract unit price for lineal feet of PVC at the appropriate depth class.

- H. Connection to Existing Drop Sections- A connection to an existing drop section shall consist of completing a drop section as described hereinbefore, by core drilling into the existing manhole and furnishing a tee completely installed and shall be paid for at the contract unit price.
- I. Rock Excavation- No additional payment will be made for Rock Excavation on this project. The contractor shall make his own determination as to the material and shall prepare his bid accordingly.
- J. Material for Stabilizing Pipe Foundation- Material used for refilling to pipe foundation grade to assure firm foundation for pipe shall be paid for at the unit price for the pipe. No additional payment shall be permitted for stabilization or pipe bedding – it shall be included in the Contractor's price per Linear Foot of Pipe.
- K. Piling- Pile bents shall be paid for at the contract unit price.
- L. Sheeting- Sheeting ordered left in place shall be paid for at the contract unit price per thousand board feet for wood sheeting and square feet as measured/sheet installed for steel sheeting. This shall include all overlapping sheets. No payment shall be made for installing any sheeting.
- M. Special Sections- Special sections shall be paid for at the contract price on a lump sum basis for all work and material necessary for the complete installation or construction.
- N. Wyes, Tees and Special Fittings- Wyes, tees and special fittings shall be paid for at the contract unit price for each unit furnished of the size and classification specified on the proposal.
- O. Pipe Bedding- Pipe bedding shall be paid in the unit price per linear foot of Pipe.
- P. Adjusting Casting- All castings and valve boxes shall be adjusted to bituminous base course grade prior to placing the bituminous base course and adjusted to final wear course grade prior to placing the final wear course. These interim adjustments of appurtenances located within the street shall be to 1/4" and 1/2" below the pavement surface. Interim adjustments are required on all appurtenances located in areas where the permanent wear course may not be paved until the following construction season. All interim adjustments are considered incidental.
- Q. Project As-builts- No additional payment will be authorized for the preparation of Project As-builts. This work, though required, shall be considered incidental to the contract and no additional payment will be made.
- R. Cementitious Manhole Liner- Cementitious Manhole Liner shall be measured on a per linear foot basis from the invert of the manhole to the bottom of the lowest plastic adjusting ring. Where lining overlaps on a precast element, measurement shall be from the invert of the manhole to the top of the 1-foot overlap.

Payment of Cementitious Manhole Liner shall include all labor, equipment, and materials associated with installing a monolithic, fiber-reinforced, structurally enhanced, cementitious-based liner material by spray application to the wall and bench surfaces of a manhole to prevent infiltration.
- S. Connect to Existing Storm Sewer- Connect to Existing Storm Sewer shall be measured on a per each basis.

Payment for Connect to Existing Storm Sewer shall include, but not limited to, all labor, equipment, and materials associated with connecting new storm sewer pipe or new drainage structures to existing storm sewer pipe or storm sewer structures to complete the work.

Subsurface drains and sump connections to existing storm sewers are considered incidental to the installation unless otherwise noted in the plans and are not paid under this item.

- T. Sanitary Sewer Spot Repair- Sanitary Sewer Spot Repairs shall be measured on a linear foot basis and shall include all equipment, materials, and labor associated with removal and disposal of the existing sanitary sewer trunk or service pipe, bypass pumping, installation of new PVC sanitary sewer pipe, connections to the existing main pipe, reestablishment of flow, and backfill of excavation to proper compaction.

Whether or not a spot repair occurs at a manhole, the work shall include the removal and disposal of the existing pipe and if necessary the connection of the replacement pipe directly to the manhole.

Services and trunk pipe that are damaged by negligence shall be repaired by the Contractor at the Contractor's expense. Damage to property due to sewer backup while controlling sewage flow will be the responsibility of the Contractor. Any special equipment required, such as pumps and bypass piping shall be the responsibility of the Contractor. This work shall be considered incidental to the contract and no additional payment will be made.

PART 2 – PRODUCTS

2.01 MATERIALS AND TESTING

- A. The materials required for this work shall be new material conforming to the requirements for class, kind, type, grade, size and other details indicated in the Contract for materials as specified below. The Contractor shall submit in writing a list of materials to be furnished showing the manufacturer and designation of all items, said list to be reviewed by the Engineer prior to installation. If any options are provided for, as to type, grade, or design of the material, the choice shall be limited as may be stipulated in the Plans, Specifications, or Special Provisions.
- B. All manufactured products shall conform in detail to such standard design drawings as may be referenced or furnished in the Plans. Otherwise, the Owner may require advance approval of material suppliers, product design, or other unspecified details as it deems desirable for maintaining adopted standards.
1. Reinforced Concrete Pipe- Reinforced concrete pipe ("RCP") shall conform to the requirements of TDOT Standard Specification for Reinforced Concrete Pipe with joints sealed in accordance with TDOT Standard Specifications.

Pipe Cover	Pipe Class
0-3'	CL-V
3'-4'	CL-IV
4'-5'	CL-III
5'-10'	CL-II
10-16'	CL-III
16'-26'	CL-IV

26' & Over	CL-V or Special as Required
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Table 1. RCP Pipe Strength-Depth Classification

NOTE: All RCP 18" diameter or less shall be CL-V. For RCP sizes greater than 18" diameter, the first 3 classifications in the Table 1 shall apply to RCP installed in the roadway. However, if not under heavy loads & installed out of the roadway limits, CL-II pipe may be used for 0-10' depth of cover. All RCP shall be a minimum of eight feet (8') in length. All RCP shall be clearly marked with markings showing in the proper position when laid.

Pipe strength classifications may only be used with the cover and depth brackets described in Table 1, listed on the Proposal Form and shown on the plans if the trench width is in strict accordance with Article No. 7 "Excavation and Preparation of Trench" of these Specifications.

- C. Reinforced Concrete Bends- Both long and short radius reinforced concrete bends shall conform to the requirements of the Standard Specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, ASTM Designation C76 for Classes III, IV and V.

Class III bends shall be used wherever there is sixteen feet (16') or less of cover over the top of pipe; Class IV bends shall be used wherever there is more than sixteen feet (16') but less than twenty-six feet (26') of cover over the top of pipe; and Class V bends shall be used wherever there is more than twenty- six feet (26') of cover over the top of pipe.

Pipe strength classifications may only be used with the cover and depth brackets described above, listed on the Proposal Form and shown on the plans if the trench width is in strict accordance with Article No. 7. "Excavation and Preparation of Trench" of these Specifications.

- D. Corrugated Polyethylene Pipe Sewer- This work shall consist of furnishing and installing dual-wall, smooth interior, corrugated polyethylene pipe and fittings in accordance with the Plans, TDOT Standard Specifications, AASHTO M294, Section 12 of the AASHTO LRFD Bridge Design Specifications, and the following:

Corrugated polyethylene (CP) shall be allowed for use only for storm sewer outside of the paved roadway limits as designated in the Plans.

(CP) pipe and fittings shall be manufactured from high-density polyethylene (HDPE) virgin compounds. Clean reworked HDPE materials from the manufacturer's own production may be used by the manufacturer of HDPE pipe, provided that the pipe and fittings produced meet all the requirements of these Special Provisions, AASHTO M294 and Section 12 of the AASHTO LRFD Bridge Design Specifications.

Couplings and Connections shall be made with bell and spigot joints. Bell and spigot joints shall use a gasket if necessary to make the joint soil-tight.

When a watertight joint is specified in the Plans, it shall be required that the joint meet the requirements of ASTM D3212 except as modified. The internal pressure test shall be performed at 68 kPa (10 psi) (minimum) with the pipe in straight alignment. The vacuum test is not required. The Engineer shall be provided a laboratory certification that the pipe coupler for each size of pipe meets or exceeds these requirements. The Engineer shall also be furnished shop drawings of each pipe coupler.

Each pipe shall be identified with the manufacturer's name, trade name, or trademark and code from plant location, machine and date of manufacture; nominal pipe size in inches; Ring Stiffness Constant Classification; and ASTM F894.

- E. Polyvinyl Chloride Pipe and Fittings (PVC)- Smooth walled polyvinyl chloride pipe and fittings shall conform with the requirements of ASTM D-3034 for the size, standard dimension ratio (SDR), and strength requirements indicated on the Plans, Specifications, and Special

Provisions. The grade used shall be resistant to aggressive soils or corrosive substances in accordance with the requirements of ASTM D-543.

Unless otherwise specified, all pipe and fittings shall be SDR 35 or approved equal, and connections shall be push-on with elastomeric gasketed joints which are bonded to the inner wall of the gasket recess of the bell socket.

Corrugated polyvinyl chloride pipe and fittings with smooth interior shall conform with the requirements of ASTM F-949 for the size and wall thickness indicated on the Plans, Specifications, and Special Provisions.

Unless otherwise specified, all pipe and fittings shall be push-on with snug fit elastomeric joints meeting tightness requirements of ASTM 3212.

F. High Density Extra-High Molecular Weight Polyethylene (HDPE) Pipe

1. Thermal Butt-Fusion Method of joining.
2. NSF: Standard No. 14
3. PPI Designation: PE 3408
4. Cell Classifications: ASTM D3350-PE 345444C
5. Material Description: ASTM D3350-Type III, Grade PE 34
6. Color: Black
7. Continuously mark pipe with the following information
 - i. Size and dimensions
 - ii. Name of manufacturer
 - iii. Cell class
 - iv. ASTM basis
 - v. Pipe test category
 - vi. Plant identification
 - vii. Production data
 - viii. Operator number
 - ix. Resin supplier code
8. Manufacturer
 - i. All HDPE pipe shall be as manufactured by Rinker Materials "CSR PolyPipe", Gainsville, Texas; Phillips "Driscopipe", Richardson, Texas; Chevron "Plexco", Bensenville, Illinois, or approved equal.

G. Deflection Test

Deflection tests shall be performed on all plastic gravity sewer pipes. The test shall be conducted after the sewer trench has been backfilled to the desired finished grade and has been in place for 30 days.

PVC Pipe deflection testing shall be performed by the Contractor using a nine- point mandrel approved by the Engineer. The deflection test shall be performed by pulling a rigid nine-pointed mandrel through the pipe without the aid of mechanical pulling devices. The line used to pull the mandrel shall be rated no more than 150-pound tensile strength. The mandrel shall have a minimum diameter equal to 95% of the actual inside diameter of the pipe. The maximum allowable deflection shall not exceed five percent of the pipe's internal diameter. The

time of the test, method of testing, and the equipment to be used for the test shall be subject to the approval of the Engineer. Pipe through which the mandrel does not pass shall be considered unacceptable.

Corrugated Polyethylene Pipe Deflection testing shall be performed by the Contractor using a nine-point mandrel approved by the Engineer. The diameter of the mandrel shall be as shown on Table 2. The mandrel must be pulled through the pipe by non-mechanical means. Pipe through which the mandrel does not pass shall be considered unacceptable.

PIPE DIAMETER		MANDREL DIAMETER	
mm	(Inches)	mm	(Inches)
300	(12)	285	(11.40)
375	(15)	360	(14.25)
450	(18)	430	(17.10)
600	(24)	575	(22.80)
750	(30)	720	(28.50)
900	(36)	865	(34.20)

Table 2. Corrugate Polyethylene Pipe Sewer Mandrel Diameter Criteria

All testing shall be performed by the Contractor at his/her expense without any direct compensation being made therefore, and he/she shall furnish all necessary equipment and materials required.

- H. Test Failure and Remedy- In the event of test failure on any test section, the section shall be replaced, with all repair work subject to approval of the Engineer. New pipe or deformed pipe that is not damaged shall be re-laid. The replaced section shall be retested for leakage and deflection in conformance with the specifications contained herein. The re-laid pipe shall be retested for deflection after no less than five days. All repairs, replacement, and retesting shall be at the Contractor's expense.
- I. Sanitary Sewer Leakage Testing- All sanitary sewer lines, including service connections, shall be watertight and shall be tested for leakage upon completion and before connections are made to the service by others. Each test section of the sewer shall be subjected to exfiltration testing, either by hydrostatic or air test method as described below. The requirements set forth for maximum leakage shall be met as a condition for acceptance of the sewer section represented by the test.

If the ground water level is greater than three feet above the invert elevation of the upper manhole and the Engineer so approves, infiltration testing may be allowed in lieu of the exfiltration testing, in which case the allowable leakage shall be the same as would be allowed for the Hydrostatic Test.

All testing shall be performed by the Contractor without any direct compensation being made therefore, and the Contractor shall furnish all necessary equipment and materials, including plugs and standpipes as required.

- J. Low Pressure Air Test Method- The sewer pipe section under test shall be clean at the time of

testing but the pipe may be wetted. Pneumatic balls or inflatable plugs shall be used to plug the pipe ends at manholes. Low pressure air shall be introduced into the plugged line until the internal air pressure reaches 5.0 psi greater than the average back pressure of any ground water pressure that may submerge the pipe. At least two minutes shall be allowed for the air temperature to stabilize before readings are taken and the timing started. During this time the Contractor shall check all plugs with soap solution to detect plug leakage. If plugs are found to leak, air shall be bled off, the plugs shall be retightened, and the air shall be reintroduced into the line.

At no time during the low pressure air testing, shall any personnel enter a manhole where pipe is being tested. It shall be imperative that the pressurized pipe be checked by multiple staff to assure the pressure has been bled to ambient atmospheric pressure prior to deflating the plugs.

The sewer section under test shall be accepted as having passed the air leakage test if it does not lose any pressure within the 5 minutes under test pressures. The gauge used for air testing shall have a 4" minimum face diameter with a 270 degree sweep. The graduations on the gauge face shall be marked in 0.01 psi increments. Total range shall be 0 to 10 psi.

- K. Hydrostatic Test Method- After bulkheading the test section, the pipe shall be subjected to a hydrostatic pressure produced by a head of water at a depth of three feet above the invert elevation of the sewer at the manhole of the test section. In areas where ground water exists, this head of water shall be three feet above the existing water table.

The water head shall be maintained for a period of one hour during which time it shall be presumed that full absorption of the pipe body has taken place, and thereafter for an extended period of one hour the water head shall be maintained as the test period. During the one-hour test period, the measured water loss within the test section, including service stubs, shall not exceed the Maximum Allowable Loss (in Gallons Per Hour per 100 Feet of Pipe) as shown in Table 3 for the applicable Main Sewer Diameter.

Main Sewer Diameter (In Inches)	Maximum Allowable Loss* (In Gallons Per Hour Per 100 Feet)
6	.25
8	.30
10	.40
12	.50
15	.60
18	.70
21	.85
24 & Larger	.95

Table 3. Hydrostatic Test Allowable Loss

*Based on 50 Gallons Per Day Per Pipe Diameter Inch Per Mile

If measurements indicate exfiltration within a test section is not greater than the allowable maximum, the section shall be accepted as passing the test.

- L. Test Failure and Remedy- In the event of test failure on any test section, testing shall be continued until all leakage has been detected and corrected to meet the requirements. All repair work shall be subject to approval of the Engineer. Introduction of sealant substances by means of test water shall not be permitted.

Unsatisfactory repairs or test results may result in an order to remove and replace pipes as the Engineer considers necessary for test conformance. All repair and replacement work shall be at the Contractor's expense.

- M. Televising- Sewer line televising shall be required by the Engineer, at the cost of the Contractor, if visual inspection, leakage testing, or deflection testing indicate the sewer has not been constructed in accordance with these specifications and the requirements of the Plans, Specifications, and Special Provisions or the sewer line has been damaged prior to final acceptance of the job and/or any of the referenced tests were unable to be performed fully and adequately as determined by the Engineer.

Contractor shall televise any section of pipe that has been improved by sanitary sewer spot repair, sanitary sewer replacement, pipe joint repairs or any other technique used in the field. At the end of all sanitary sewer work, the contractor shall deliver 1 DVD to the Engineer showing the improvements done in the field at least 48 hours prior to paving the bituminous wearing course. The DVDs shall become the property of the owner.

- N. Ductile Iron Pipe- Ductile Iron Pipe used on this project shall be made in accordance with ANSI Specification A21.51 (AWWA C153-1A21.53).

If requested by the Engineer, the pipe manufacturer shall furnish to the Engineer a certified copy of all tests run on the pipe. All tests shall be observed and certified by an independent testing laboratory. Such laboratory shall be a member of the American Council of Independent Laboratories, Inc. The Engineer must approve the pipe based on the test results before any pipe may be shipped to the job. The decision of the Engineer shall be final with regard to the approval or disapproval of the test reports.

The cost of conducting the above tests, the observing and certification of same by an independent laboratory shall be paid for by the owner.

Ductile Iron pipe shall be cut only by sawing, milling or torch cutting in accordance with the manufacturer's recommendations.

Ductile iron pipe shall be class 150 and conform to the requirements of Federal Specifications WW-P-421 b with wall thickness in conformance with the requirements of ANSI Specification A21.1 for the laying condition and depth of cover required. All joints shall be mechanical joints in accordance with ANSI Specifications A21.11 with plain rubber gaskets.

- O. Ductile Iron Pipe Fittings- Ductile iron fittings shall be a minimum of Class 350 for sizes up to and including twelve inches (12") and Class 150 for sizes fourteen inches (14") and larger. Fittings shall conform to the requirements of ANSI Specification A21.53 (AWWA C153).

D.I.P. fittings shall be ductile iron with dimension tolerances, joints and linings as specified in ANSI Specification A21.53 (AWWA-C153) and ANSI Specification A21.4 (AWWA/ANSI C104). The Ductile Iron pipe shall be cement lined, mechanical joint or slip joint.

Cor-Blue T-bolts with Protecto Caps shall be used on all mechanical joints. No other type of bolts shall be allowed unless approved by the Engineer.

All pipe and fittings shall be coated inside and outside for corrosion resistance. Mastic spray is to be used on the outside of the pipe, where any uncoated pipe or fitting is exposed such as welds, megalugs, scraped coating, etc.

- P. Jointing Materials

Clay Pipe- Clay pipe joints shall be made with materials having resilient properties in conformance with ASTM Designation C425 for Type 1 and Type III.

Concrete Pipe- Reinforced concrete pipe shall have o-ring R-4 joint gaskets. The rubber gaskets shall be designed in accordance with ASTM Designation C443.

Ductile Iron Pipe- Joint material shall be mechanical joint with plain rubber gasket or slip joint.

- Q. Precast Concrete Manholes- All manholes, catch basins and drop inlets shall be precast reinforced concrete. Precast concrete manhole sections shall be manufactured to standards at least equal to or greater than the requirements of the Standard Specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, ASTM Designation C478, the internal diameter shall be forty-eight inches (48") or as specified in the Plans. Precast top and lower sections for manholes shall conform to requirements as shown on detail drawings. Shallow structures may require that the structure be precast with an over depth and the over depth sump filled in with cement grout to satisfy this requirement. This over depth and grout shall be considered incidental.

Joints and all manhole riser sections shall be gasketed in accordance with ASTM Designation C443. All manholes shall have gaskets.

- R. Precast Manhole Bases- Precast manhole bases shall be used and shall conform to requirements as shown on detail drawings. Depending upon soil conditions, 1/4 cy concrete grout may be required by Engineer. Cost is incidental to manhole.
- S. Manhole Castings- Castings for manhole frames and covers shall be manufactured in accordance with TDOT Standard Specifications and shall be free from all injurious defects and flaws in conformance with Federal Specification AA-1-652. All castings shall conform to the dimensions shown on the detail drawings and the total unit weight shall not be less than the minimum weight specified on said drawings. All covers must fit closely in the rings in any and all positions, and, when placed in the rings, must fit to the ring solidly in all positions, so there will be no rocking from pressure applied on any point on the cover. Covers shall bear the word "Storm or Sanitary" on top. All sanitary sewer castings shall be Neenah Type R-1728 or R-1733 (based on manhole opening) with a "self- sealing" solid cover (two (2) concealed pick holes), or approved equal.
- T. External or Internal Frame Seal- All castings, rings, and adjustments shall include furnishing and installing an external seal or internal inflow and infiltration barrier on all sanitary manholes. The permanent seal shall externally or internally seal the adjustment ring area and joint sections of the manhole. Sealing systems shall be installed per manufacturer's specifications. The Contractor shall use an Infi-Shield or approved equal external sealing method and shall include an integral seal with the casting assembly and structure joint below the adjustment rings or Eull's Manhole Shield or approved equal manhole adjusting system.
- U. Adjusting Rings- Concrete adjusting rings of the same size as the cone or slab opening shall be used. Concrete adjusting rings shall be used on storm and sanitary structures. HDPE adjusting rings are not authorized for use.

All casting assembly & install casting shall include total replacement of the existing rings and interim adjustment to bring the casting to finish grade.

Castings shall be brought to bituminous base course grade no sooner than 48 hours prior to paving. All castings shall be protected with a Type I barricade with a functioning flasher facing the direction of traffic. It is the responsibility of the Contractor to protect the raised castings from damage and to protect the manhole from debris at no cost to the Owner.

Castings shall be brought to final wear course grade no sooner than 24 hours prior to paving final wear course by utilizing cast iron manhole adjusting rings manufactured by Neenah Enterprises Inc. R-1979 Series Manhole Adjusting Rings or an approved equal. Casting and ring shall be cleaned with a grinder or wire brush to remove tar, dirt, rust, and foreign material and then brushed clean with a whisk broom. Apply a 3/8" bead of EBS Super Glue around the edge of the frame and bearing surface. Center the adjustment ring on the frame and replace the manhole cover. Keep traffic off the manhole for a minimum of 8 hours.

All material removed to adjust manhole rings and/or casting will be removed of and disposed of by the contractor. The area will be backfilled with Class 5 or Class 7 aggregate material and compacted to 100 percent density. No additional compensation will be made for any costs associated with the removal and replacement of the roadbed material.

- V. Cementitious Manhole Liner- This work shall consist of installing a monolithic, fiber-reinforced, structurally enhanced, cementitious-based liner material by spray application to the wall and bench surfaces of a brick/block manhole with a 1-foot overlap on precast elements to prevent infiltration. Liner will not be applied to precast elements except for overlap. Water used for mixing shall be clean and potable.

Materials shall be from a single manufacturer and be compatible with the manhole substrate and with each other. Manufacturer shall be BASF SP15 or approved equal. The liner material shall be a fiber-reinforced, spray applied, cementitious mortar with the following properties:

1. Minimum Compressive Strength, ASTM C 109: 9,000 psi at 28 days
2. Minimum Tensile Strength, ASTM C 496: 700 psi at 28 days
3. Minimum Flexural Strength, ASTM C 78: 1000 psi at 28 days
4. Shrinkage, ASTM C596: 0 percent at 28 days, 90 percent relative humidity
5. Minimum Bond, ASTM C882: 2250 psi at 28 days
6. Applied Density: 133 plus or minus 5 pounds per cubic foot
7. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles, no visible damage
8. Factory Blended: Requires only addition of water at site.

PART 3 - EXECUTION

3.01 CONSTRUCTION STAKES, ALIGNMENT AND GRADES

- A. All work under this contract shall be constructed in accordance with lines and grades shown on the drawings and as established by the Engineers. These lines and grades may be modified by the Engineers as provided in the Contract. The Contractor shall furnish at his/her own expense such materials and render such assistance as may be required for setting lines and grade stakes, batter boards, templates, patterns, platforms, reference points, or other marks or points of line or grade.

The Contractor shall give the Engineer 48 hour notice of the Contractor's need for the establishment of line and grade. After lines and grades for any part of the work have been given by the Engineer, the Contractor shall be held responsible for the proper execution of the work to such lines and grades and all stakes or other marks given shall be protected and preserved by the Contractor until authorized removal by the Engineer. The Contractor shall at his/her own expense, correct any mistakes that may be caused by their unauthorized disturbance or removal. The Engineer may require that work be suspended at any time when for any reason such marks cannot be properly followed.

No additional compensation shall be allowed the Contractor for any claims of crews being held up because of lack of line and grade stakes.

Any utility conflicts discovered by the Contractor, on this project shall immediately be brought to the attention of the Engineer. All crossings, connections, etc. shall be potholed prior to actual excavation. It shall be the responsibility of the Contractor to field verify each existing utility and / or crossing.

2. EXCAVATION AND PREPARATION OF TRENCH

- A. In all cases where the sewer alignment is located so that space and access is very limited with respect to the safety and welfare of adjoining buildings, such as a property line between houses, the Contractor shall discontinue open trench excavation and shall jack the pipe in place for an adequate length to safeguard settlement and damage to these adjacent structures

at no extra compensation.

The trench widths at the top of the excavation may vary depending upon the depth of trench and the nature of the material encountered. However, the maximum allowable width of trench at the level of the top pipe in place shall be as indicated in Table 4.

Pipe Sizes - Inside Diameters	Width of Trench at Top of Pipe
33" and Less	Outside diameter of pipe + 16"
36" and Larger	Outside diameter of pipe + 24"

Table 4. Trench Excavation Width for Sewer Pipe

For trench widths at the top of pipe greater than specified in the paragraph above, the Contractor may propose alternate strength of pipe to depth of cover relationships other than those specified under Article No. 5 "Materials for Sewers" of these Specifications, listed on the Proposal Form or shown on the plans. Such proposals must be submitted to the Engineer for approval in writing and with pertinent pipe strength and soil weight data and proposed trench width at the top of pipe at least fourteen (14) days prior to the desired construction date. No extra compensation shall be allowed for any increase in material or construction costs created by alternate plans.

The trench shall have a bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil, cut true and even so that the barrel of the pipe will have a bearing for its full length. If excavation is made below grade, it shall be backfilled with well tamped pit run sand or fine gravel as approved by the Engineer at no additional expense to the Owner.

Bell holes shall be dug at the ends of each length of pipe to permit proper jointing. Excavations for manholes and other structures shall have one-foot minimum clearance on all sides.

The Contractor shall provide without additional compensation suitable temporary channels for any water that may flow along or across the site of the work. The excavated material shall be placed on one side of the trench except when permitted by the Engineer to use both sides. All material shall be so placed as not to obstruct any drain or gutter, or to unnecessarily obstruct any passageway.

When existing sewers have to be taken up and removed, the Contractor shall at his/her own cost and expense provide and maintain temporary outlets and connections for all private or public drains and sewers. The Contractor shall also maintain all sewage and drainage which will be received from these drains and sewers; and for this purpose the Contractor shall provide and maintain, at his/her own expense, adequate pumping facilities and temporary outlets or diversions. The Contractor at his/her own expense shall construct such troughs, pipes, or other necessary structures, and be prepared at all times to dispose of drainage and sewage received from these temporary connections until such time as the permanent connections are built and in service. The existing sewers and connections shall be kept in service and maintained under the contract except where specified or ordered to be abandoned by the Engineer. All water or sewage shall be disposed of in a satisfactory manner so that no nuisance is created and so that the work under construction shall be adequately protected.

All surplus material shall be removed by the Contractor and disposed of at no additional compensation.

3.03 PIPE FOUNDATIONS

- A. Prior to construction, the Contractor shall satisfy himself as to the existing conditions to be encountered on this project. If the Contractor encounters unstable soil not suitable for bedding of pipe, the Contractor shall remove and replace all unstable material with stabilization material as may be ordered by the Engineer. The Contractor shall not be paid extra for such additional excavation, or for additional base stabilization material at the unit price bid. Material for base stabilization shall be two-inch (2") binder stone or pit run gravel as determined by the Engineer.

If the Engineer considers that the specified pipe, as shown on the plans, is not suitable for the sub-grade soil condition, the Engineer may order the Contractor to install ductile iron pipe in lieu of the specified pipe to be placed on rock stabilized sub grade.

3.04 PUMPING, BAILING AND DEWATERING

- A. The Contractor shall, at his/her own expense, pump or otherwise remove any water which may exist in the trenches and shall form all dams or other works necessary for keeping the excavation clear of water during progress of the work. This work may be required to proceed for 24 hours as directed by the Engineer.

The dewatering item shall only be used for additional dewatering needs above and beyond normal construction practices as described herein. Normal construction practices include use of up to two 3" trash pumps in the excavation in crushed rock sumps. The dewatering item shall only include the additional pumps, well points, manifolds, and other materials required. The contractor shall follow TDEC guidelines and regulations regarding the pumped water. At no time will the Contractor be allowed to discharge soil laden water onto the ground or into watercourses on or near the project.

3.05 ROCK EXCAVATION

- A. When the trench is carried through rock, the depth of excavation shall be 6" below the outside barrel of the pipe, fittings, and other appurtenances. Adequate clearance for properly jointing pipe laid in rock trenches shall be provided at bell holes. Sand shall be backfilled and tamped to proper grade before the pipe is laid. Width of excavation shall be computed on a basis of a uniform width 9 inches greater than the outside diameter of the hubs or bells of pipe.

Rock excavation shall be defined as removal of all boulders larger than one (1) cubic yard in volume and of ledge rock, concrete, or masonry structures that require an air hammer or blasting to remove.

Loose, soft or disintegrated shale or rock in its natural state, masonry or concrete which can be economically removed without air hammer or blasting shall be classified as "loose rock" and no additional compensation shall be provided for excavation of this character.

3.06 UNFORESEEN UNDERGROUND OBSTRUCTIONS

- A. The removal of old timber, artificial loose stone or concrete fill or other man-made obstructions that hinders the normal progress of the excavation, other than utility lines, shall be classified as "Removing Unforeseen Obstructions". The removal shall be considered incidental to the contract as no additional payment shall be made.

3.07 SUBSURFACE DRAINS

- A. Sub-surface drains shall be constructed in accordance with the provisions of the current and applicable building codes, local regulations, and shall meet the requirements of the Clean Water Act in Tennessee.

All subsurface drains will be terminated at a storm structure. Drilled or preformed holes in the drainage structure are required for all connections to minimize structure damage. In addition, the joint is to be mortared using Spec Mix Type S mortar both inside and outside of the structure wall where the drainpipe goes into the structure. Rodent screens will be provided at

all open ends (i.e. in structures) of the pipe drain. Connecting the subsurface drain to new or existing structures shall be considered incidental.

3.08 SHEETING AND BRACING

- A. The Contractor, to prevent the disturbing or settlement of adjacent road surfaces, foundations, structures, or railroad tracks or other improvements, shall furnish and place all sheeting and bracing necessary to good working conditions acceptable to the Engineer and to prevent damage and delay to the work. The Contractor shall be responsible for the strength and sufficiency of all sheeting and bracing. Prior to placement, the Contractor shall furnish the Engineer a set of bracing plans prepared and stamped by a licensed Professional Engineer. Should the Engineer decide that the sheeting and bracing at any point is inadequate or improperly constructed, the Engineer may order additional sheeting or bracing to be placed at the Contractor's expense.

Bracing shall be so arranged as to provide ample working space and so as not to interfere with the work and so as not to place any strain on the structures being constructed until such structures are, in the opinion of the Engineer, of ample strength to withstand such strain. All sheeting and bracing, unless otherwise specified or ordered to be left in place by the Engineer, shall be installed and removed from the work at no additional compensation. No sheeting and bracing shall be removed until the construction has proceeded far enough to provide ample strength in the opinion of the Engineer.

Any damage to the work under this contract or to adjacent structures or property caused by settlement, water or earth pressures, slides, caves or other causes due to failure or lack of sheeting and bracing or improper bracing or through negligence or fault of the Contractor in any manner shall be repaired by the Contractor without delay at his/her expense.

Where the trench is not located near existing utilities, buildings or other structures and where water and other conditions permit, the Contractor may with the approval of the Engineer, omit sheeting and bracing of the excavation. In this event, the Contractor shall excavate a space of sufficient size to provide adequate space for the construction work so as to prevent sliding or caving of the banks into the area within the lines of structures.

No sheeting and bracing which is within 3 feet of the surface of the ground may be left in place in the trench without written permission from the Engineer. When sheeting and bracing have been ordered left in place, payment for same shall include the upper 3 feet or "cut-off" section of the sheeting. This upper three feet (3') or "cut-off" shall be Contractor's responsibility to dispose of at no additional cost.

3.09 TEMPORARY BRIDGES AND CROSSINGS

- A. The Contractor shall construct and maintain temporary bridges and crossings, complete with flaggers, wherever necessary to expedite the work or to maintain traffic. Temporary bridges or crossing shall be of ample size to safely carry the load which may come upon them as determined by the Engineer. The cost of all labor, material, tools and equipment for temporary bridges and crossings shall be borne by the Contractor, and no separate or additional payment shall be made therefore. All traffic control devices shall be approved, prior to placement, by the applicable roadway owner. All flaggers must be DOT certified and trained.

3.10 INSTALLATION OF SEWER AND APPURTENANCES

- A. Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work.

Pipe and other materials shall be unloaded and distributed on the job in a manner approved by the Engineer. In no case shall materials be thrown or dumped from the truck. All materials unloaded in an unsatisfactory manner shall be rejected and work shall be stopped until such materials have been examined by the Inspector and approved. The Contractor shall furnish the necessary assistance in such examination of materials.

Sewer materials shall be carefully lowered into trench piece by piece by means of suitable tools or equipment, in such a manner as to prevent damage to materials and protective coatings and lining. Under no circumstances shall sewer materials be dumped into the trench.

1. Laying and Bedding of Pipe and Fittings- Before lowering and while suspended, the pipe shall be inspected for defects and rung with a light hammer to detect any cracks. Any defective, damaged or unsound pipe shall be rejected.

All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and shall be kept clean during and after laying. All openings along the line of the sewer shall be securely closed as directed. In the suspension of work at any time, suitable stoppers shall be placed to prevent earth or other substances from entering the sewer.

All pipes shall be bedded as per Class C Bedding, unless otherwise directed by the Engineer. Class C is that method of bedding trench pipes in which the pipe is placed with ordinary care in an earth foundation, shaped to fit the lower part of the pipe exterior with reasonable closeness for a width of at least 50% of the pipe breadth. The remainder of the pipe is surrounded to a height of at least twelve inches (12") above its top by granular materials, shovel placed and shovel tamped, to fill completely all spaces under and adjacent to the pipe. The fill is tamped thoroughly on each side and under the pipe as far as practicable in layers not exceeding six inches in thickness.

In the event that suitable, fine granular and granular material is not encountered during the normal excavation of the sewer trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the pipe as required for Class C Bedding, the Contractor shall provide and place such approved Granular Borrow material (sand fill) as required at the unit price bid.

Pipe laying shall proceed upgrade with the tongue or spigot ends pointed in the direction of the flow. No pipe shall be laid in water or when the trench conditions are unsuitable for such work, except by permission of the Engineer.

The Contractor shall make all of the connections of pipe to the manholes that have previously been constructed. The Contractor shall receive no extra compensation for connections to capped stubs or cutting into existing manholes unless specifically indicated otherwise in the Proposal. For completing drop sections for drop manholes Contractor shall be paid as per unit price bid.

Connections to existing manholes shall be core drilled with rubber boots.

Sanitary sewer spot repair work includes installing less than 50-feet of new PVC sanitary sewer trunk pipe or service pipe of compatible interior diameter to the existing pipe and connecting the new pipe to the existing pipe with Fernco 5002 Series Strong Back (RC) couplings except at PVC to PVC connections. The sanitary sewer work shall be coordinated with the Engineer and property owners prior to removal. To effectively perform the repairs, it may be necessary to provide for by-pass pumping of storm water or sewage flows.

2. Jointing of Pipe and Fittings Concrete Pipe

Concrete Pipe- Reinforced concrete pipe shall have R-4 Joint Gaskets per ASTM C443.

Ductile Iron Pipe- Ductile iron pipes shall be jointed with mechanical joints using rubber gaskets. Jointing shall be done in accordance with "Notes on Method of Installation" included in ANSI Specification A21.11 for a mechanical joint or slip joint pipe (see water main specifications for jointing procedure).

PVC- Connections shall be push-on with elastomeric gasket joints which are bonded to

the inner wall of the gasket recess of the bell socket. Unless otherwise specified, all pipe and fittings shall be push-on with snug fit elastomeric joints meeting tightness requirements of ASTM 3212.

Corrugated Polyethylene (HDPE)- Couplings and Connections shall be made with bell and spigot joints. Bell and spigot joints shall use a gasket if necessary to make the joint soil-tight. When a watertight joint is specified in the Plans, it shall be required that the joint meet the requirements of ASTM D3212 except as modified. The internal pressure test shall be performed at 68 kPa (10 psi) (minimum) with the pipe in straight alignment. The vacuum test is not required. The Engineer shall be provided a laboratory certification that the pipe coupler for each size of pipe meets or exceeds these requirements. The Engineer shall also be furnished shop drawings of each pipe coupler.

3. House Services- It shall be the duty of the Contractor to cooperate with the City and keep an accurate record of service connections as to location, depth to top of connection, type of connection provided, etc. Location shall be made in respect to the nearest manhole center down grade from the service. This record shall be kept jointly by the Contractor and Engineer. Sewer services shall be located at least 10 feet, measured horizontally, away from existing water services and for the most convenience to the benefited property.

At all service locations, unless otherwise designated on the plans or by the Engineer, the Contractor shall construct services from the following approved materials: Ductile iron, or SDR 26 PVC in either 6" or 4" size as required or as indicated on the plans. The Contractor shall extend services to the property line unless otherwise directed.

Wherever possible, house connections shall be kept to a minimum depth of ten feet (10') over the top of the pipe in the street and not less than nine feet (9') over the top of the pipe at the curb line and shall extend on a straight line grade to the property line unless otherwise directed by the Engineer.

Where the depth of cover over the top of the sewer pipe in the street is twelve feet (12') or more, the Contractor shall construct the service connections up the side of the trench with a 45 degree bend and riser pipe to a minimum depth of cover over top of pipe of ten feet (10') and extend the service horizontally to the property line with minimum depth of cover over top of pipe of nine feet (9'), at the curb line as described above. No horizontal bends greater than 45 degrees shall be installed.

All house connections shall be capped with a plug sealed firmly in place or other method approved by the Engineer which will prevent any water entering the sewer until the connection is placed in service.

The Contractor shall provide all necessary wyes or crosses for connecting services to clay sewer pipe, cast iron sewer lines, and reinforced concrete sewer lines, etc. This work shall be considered incidental unless otherwise indicated in the Plans and Contract. The Contractor shall provide bends to bring services to the proper location and elevation.

At the end of all house connections, the Contractor shall install at no additional compensation steel fence posts set vertically to within 3 inches of the ground surface on a developed lot or at least 3 feet above ground on an undeveloped lot.

4. Manholes- Excavation shall be to a depth and size to provide for construction of the manhole as shown in detail on the plans.

If approved by the Engineer, a cast-in-place, reinforced concrete base for manhole construction shall be of size and depth as shown on detail drawings. Concrete used for this purpose shall be 3000 p.s.i., air-entrained sand and gravel concrete. Material used for this purpose shall be subject to the approval of the Engineer. Base shall be poured

on undisturbed earth. All manhole walls shall consist of precast concrete.

All manhole frames and covers shall be installed using concrete adjusting rings and an internal or external seal in accordance with Articles 5.19 and 5.20. Manhole frames and covers shall be set to the designated elevation in a full mortar bed where concrete adjusting rings are approved for use. Mortar shall be Spec Mix type S. Provide a minimum quantity of rings to achieve the designated elevation. Rings may be of varying depth. The contractor shall notify Engineer if the total height of adjusting rings needed exceeds 2-feet.

The bottom of all junction manholes shall be shaped to conform to the pipe so as to allow a free, uninterrupted flow of sewage.

5. Drop Manholes- Wherever drop manhole sections are left for future construction, the drop shall terminate at the vertical stack (no tee) approximately 12 feet below the road surface. These drop sections and all stubs shall be tightly capped with an approved cap. Drop manhole sections to be immediately connected under this contract or those requiring capped stubs, as noted on the plans, shall be constructed complete with tee section as detailed.
6. Submittals for all Manhole Frame Seals- The manufacturers of all manhole frame seals shall submit certification to the Engineer stating that their product meets the design life, performance and applicable material requirements of this specification.
7. Sump Drain, Sump Drain Cleanout, and Sump Drain Inlet- This shall include all work necessary to provide sump pump drains as indicated in the plan. This work shall include, but not be limited to all equipment, labor, and materials necessary to complete the work as specified.

Cleanouts shall be installed at all dead ends and locations in lengths of pipe greater than 300-ft for maintenance purposes. When the cleanouts are in the catch basin or manhole a rodent guard that swivels up to allow trash to pass through shall be installed.

Services installed under roadways shall be insulated with 4" insulation (4'x8'x2" sheets). Granular bedding shall be used under the insulation where clay soils exist.

Service tees, when directed by the Engineer, shall include a 1.5' stub beyond the sump drain pipe and be capped and marked. Services shall include the tee, pipe, bends, cap and marker.

Any tees or bends installed with the main line piping shall be incidental mainline pipe drain.

Tracer wires shall be laid with the pipe and shall be Copperhead High Strength Tracer Wire, part # 1230-HS, direct burial #12 AWG Solid (0.0808" diameter), 21% conductivity copper-clad hard drawn high carbon steel extra high strength horizontal directional drill tracer wire, 452 pound average tensile break load, with a 30mil HDPE insulation, or approved equal as approved by the Engineer.

For horizontal directional drill operations, tracer wire shall be Copperhead Extra High Strength steel #12 AWG copper clad steel part #1245-EHS, minimum 45mil HDPE insulation thickness with minimum breaking strength of 1,150 pounds, or approved equal as approved by the Engineer. The conductor insulator shall consist of a high molecular weight-high density green polyethylene jacket complying with ASTM-D-1248, 30 volt rating.

Termination of the tracer wire shall be at all clean outs and storm sewer structures. Connectors shall be DryConn 3-way direct-bury lug part #3WB-01, Copperhead 3-way locking connector part #LSC1230* or approved equal. The tracer wire shall be incidental to the sump drain installation.

The terminations shall be installed 3" below finish grade elevation. When connecting near a catch basin, the termination cap will be directly behind the back of curb line and in the middle of the 2x3 casting. The Contractor will provide tracer wire access box or approved equal as approved by the Engineer. This work shall be considered incidental.

Tracer Wires shall be tested for electrical continuity. The electrical test shall be made after the entire sewer has been installed and connected at both ends. If the test is a failure the contractor shall make the corrected measures as directed by the engineer and be at no cost to the owner. Any damage that has occurred during the installation of the tracer wire shall be repaired at no cost to the owner.

Drilled or preformed holes in the drainage structure are required for all connections to minimize structure damage. In addition, the joint is to be mortared using Spec Mix Type S both inside and outside of the structure wall where the drainpipe goes into the structure. Rodent screens will be provided at all open ends (i.e. in structures) of the pipe drain. This work shall be considered incidental.

8. Polystyrene Insulation- This work shall consist of furnishing and installing four inch (4") thick insulation board above the watermain and sewer pipe at the locations designated in the Plan. This work shall be performed in accordance with the details shown in the Plans, the applicable TDOT Standard Specifications, and the following:
 - i. The insulation board shall be rigid expanded polystyrene conforming to the material requirements of TDOT Standard Specifications. Styrofoam S.M. and Styrofoam TG brand insulation is an approved insulation material.
 - ii. The insulation material shall be furnished in panels 50 mm [2 inch] thick and shall be placed on a smooth level foundation in a staggered manner that will provide joint overlaps a minimum of 150 mm [6 inches] on the underlying sheets and the edges shall be trim and square. A minimum of two (2) wood skewers per board in each layer driven flush with the surface of the material shall be utilized to hold the insulation material in place during the backfill operations.
 - iii. The placement of the backfill material over the insulation board and compaction thereof shall be accomplished in a manner that will preclude damage to the insulation material. Construction equipment of any kind shall not operate directly on the insulation board. Sections of insulation board damaged by the Contractor's construction operations shall be replaced at the Contractor's own expense.
 - iv. Measurement will be made by the area insulated as specified. Payment will be made under Item 4" Polystyrene Insulation at the Contract bid price per square meter [square yard], which shall be compensation in full for all costs incidental thereto.

9. Cementitious Manhole Liner- The Contractor shall submit the manufacturer's product data, including physical properties, surface preparation, repair, application, curing, and field quality control. The Contractor shall submit a minimum of 3 previous rehabilitation projects including contact information, and project data. The Contractor shall submit the applicators qualifications such as operator name, experience, and training in the application of the specified products along with reference contact information.

Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer. Materials shall be stored in accordance with manufacturer's instructions.

Materials shall not be applied if ambient temperature is below 40 degrees F and if surfaces are frozen or expected to freeze within 24 hours after application. Mix temperature shall be kept below 90 degrees F at time of application and water temperature shall not exceed 80 degrees F.

The Contractor shall prepare the surfaces in accordance with the manufacturer's instructions. Covers shall be placed over the invert to prevent extraneous material from entering sewer lines during cleaning and spraying of manhole walls. Manhole walls and bench shall be cleaned using a minimum of 1,500 psi water spray to remove contaminants, dirt, debris, and other foreign materials and loose, unsound, and protruding brick, mortar, and concrete.

The Contractor shall stop active leaks prior to liner application using a chemical grout. The grout shall be applied according to the manufacturer's instructions. All grouting to stop active leaks shall be incidental to the cementitious liner.

All voids and surface defects greater than ½-inch deep shall be repaired using a high strength non-shrink hydraulic cement prior to liner application. All repairs of defects greater than ½-inch shall be incidental to the cementitious liner.

The Contractor shall install the cementitious liner before the placement of the bituminous wear course. The Contractor shall get approval from the Engineer to line following the placement of the bituminous wear course.

The liner material shall be applied in accordance with manufacturer's instructions using approved equipment, designed and manufactured by the material manufacturer for the specific application.

Liner material shall be spray applied by hand (no machine spinning) in 1 or more passes from bottom of wall up to and including all cementitious adjusting rings to form a structurally enhanced monolithic liner minimum total thickness of ½ inch. Spray bench of manhole with liner material to produce a gradual slope from walls to invert and with uniform radiuses at the intersection of the wall and bench.

Core Samples shall be taken from 2 percent of lined manholes completed. If minimum thickness is not achieved, another ½ inch shall be applied to all structures at the Contractors expense.

Sprayed liner material shall be troweled to a relatively smooth finish without over troweling and a brush finish applied to the finished surface.

Materials shall be cured in accordance with the manufacturer's instructions. Minimize exposure of applied materials to sunlight and air movement to 15 minutes before covering or closing access and allow a minimum of 8 hours cure time before subjecting manholes to flows. Visually verify absence of leaks following curing.

The Contractor shall provide four (4) 2-inch cubes to be submitted to the Engineer for compressive strength testing.

3.11 PIPE JOINT REPAIR

- A. Intent- The intent of this section is the elimination of infiltration into sewers that are otherwise structurally sound. The Contractor is responsible for any cleaning or root cutting prior to any pipe joint repair.
- B. Equipment- The basic equipment shall consist of a closed circuit television system, necessary chemical sealant containers, pumps, regulators, valves, hoses, etc., and joint sealing packers for the various sizes of sewer pipes. The packer shall be cylindrical and have a diameter less than the pipe size and have cables attached at each end to pull it through the line. The packer device shall be constructed in a manner to allow a restricted amount of sewage to flow. Generally, the equipment shall be capable of performing the specified operations in lines where flows do not exceed the maximum line flows for joint sealing. Jetting or driving pipes from the surface that could damage or cause undermining of the pipe lines shall not be allowed. Uncovering the pipe by excavation shall not be allowed.
- C. Chemical Sealing Materials- The chemical grout shall be of a type which has a documented

record of satisfactory performance in sewer usage.

All grouting materials shall be delivered to the job site in the original, labeled, and unopened containers. The chemical grout(s) selected by the Contractor is subject to approval of the Engineer. Grouts shall be one of the following types:

1. Acrylic base gel chemical sealing material - Avanti AV-122 or equal
2. Urethane base gel chemical sealing material - Avanti AV-310 or equal
3. Acrylamide Base Gel Sealing Material – In accordance with ASTM F 2304-03

Contractor will also need to use a root retardant at the very end of the job to ensure help with keeping roots out of the sanitary sewer system.

- D. Joint Sealing Procedure- Pre-cleaning of the sewer lines for mineral deposits and root buildup at the joints shall be the responsibility of the Contractor.

The sewer lines shall be jet cleaned immediately by the Contractor prior to testing/sealing as required to remove solids and allow for proper seating of the sealing packer and operation of the televising camera. Water required for cleaning shall be provided by the Owner.

The packer shall be positioned over the joint by means of a measuring device and the closed-circuit television camera in the line. It is important that the procedure used by the Contractor for positioning the packer be accurate to avoid over pulling the packer and thus not effectively testing and sealing the intended joint. The packer ends (end elements, sleeves) shall be expanded using controlled air pressure. The expanded ends shall seal against the inside periphery of the pipe to form a void area at the joint, now completely isolated from the remainder of the pipe line. Into this isolated area, sealant materials shall be pumped through the hose system at controlled pressures which are in excess of groundwater pressures. The pressure device shall accurately show p.s.i. to the nearest one tenth (0.1) pound and shall instantly respond to and record any change in the void pressure. The joint shall be tested with a gauge pressure of one-half ($\frac{1}{2}$) p.s.i. per foot of depth of sewer as measured by the deeper of the two manholes between which the sewer section is located, or a minimum of four (4) p.s.i., whichever is larger. The pumping unit, metering equipment, and the packer device shall be designated so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being tested or sealed.

The grout sealant shall be applied until it is determined that the pressure cannot be built up in this void or until the test pressure is reached as recorded by the void pressure monitor. When either of these conditions is reached, the grout sealant supply shall be shut off. If no pressure can be built up, the joint will have failed the test. The joint will also have failed the test if the pressure drops more than one (1) p.s.i. in 15 seconds or two (2) p.s.i. in 30 seconds. Any joint failing the test shall be sealed and retested utilizing the same method and procedures until it does pass the test. The cost of retesting sewer joints shall be considered incidental and included in the cost of sealing sanitary sewer joints.

For the unit price bid for "Pipe Joint Repair", the Contractor shall furnish all materials, labor, and equipment to complete all work as specified. The diameter of the sewer line to be sealed is as listed in the Proposal. The Contractor shall be paid for all joints successfully sealed and retested that initially failed the pressure testing.

It is realized that this test and seal method may only be used on sewer pipe sections in sound physical condition. When bell cracks or chips are evident from pipe section offset, sealing may be undertaken where the offset is small enough to allow proper seating of the sealing packer on both sides of the joint to be sealed.

- E. Circular Cracks- Circular cracks in the sewer pipe shall be sealed using the same procedures specified for sealing joints. Payment for sealing of circular cracks shall be the same as for testing and sealing joints.
- F. Joint Sealing Verification- Upon completing the sealing of each individual failed joint, the

packer shall be deflated until the void pressure meter reads zero pressure, and then re-inflated and the joint retested. Should the void pressure meter not read zero, the Contractor shall clean his equipment of residual grout material or make the necessary equipment repairs/adjustments to produce accurate void pressure readings. Joints that fail to meet the specified test criteria shall be resealed and retested until the test criteria can be met in order to receive payment.

- G. Residual Sealing Material- Residual sealing materials that extend into the pipe, reduce the pipe diameter, or restrict the flow shall be removed from the joint and disposed of by the Contractor at an approved site. The sealed joints shall be left reasonably "flush" with the existing pipe surface. If excessive residual sealing materials accumulate in the line (and/or if directed by the Owner/Engineer), the manhole section shall be cleaned to remove the residual materials.
- H. Flow Control- To effectively conduct sealing operations, it may be necessary to provide for flow control or pumping of sewage flows. The Contractor shall be responsible for providing the means and equipment for such flow control or pumping. The Contractor shall be responsible for damages to property due to sewer backup while controlling sewage flow. All costs for flow control, temporary pumping, etc., shall be considered incidental and included in the unit prices bid for other items.

When sewer line flows are above the minimum requirements (generally not more than 1/4 of the pipe diameter) or inspection of the complete periphery of the pipe is necessary to effectively conduct the sealing operations, one or more of the following methods of flow control shall be used at no extra cost to the Owner.

Plugging or Blocking. A sewer line plug shall be inserted into the line at a manhole upstream from the section to be tested and/or sealed. The plug shall be so designed that all or any portion of the sewage flows can be released. Flows shall be restored to normal or not more than 1/3 of the pipe diameter during the joint testing and joint sealing operation.

Pumping and Bypassing. Where pumping is required, in the opinion of the Engineer, to assure completion of the sealing work, the Contractor will be required to furnish pumping equipment, pipes, etc. Under no circumstances will bypassing of untreated wastewater to any storm drainage facility or surface water course be allowed.

- I. Records- Complete records shall be kept of joint sealing performed in each section. The records shall identify the section in which the sealing was done, the location of each joint sealed, and the joint sealing verification results. Two neatly bound set of these records shall be delivered to the Owner at project completion.
- J. Re-Test- Pressure test 10% of the sewer joints which have been previously sealed. Testing shall be done no sooner than 90 days but within one year after joints were originally sealed. Sections of sewers to be tested will be selected by the Owner. Joints that fail the re-test will be re-sealed. If 10% or more of the re-tested joints fail, an additional 10% of the entire project will be re-tested and re-sealed as needed. If more than 10% fail the second re-test then all joints involved in the project will be re-tested and sealed as necessary at no additional cost to the owner.
- K. Guarantee- All sewer pipes joint sealing work performed shall be guaranteed against faulty workmanship and/or materials for a period of one year after the completion of the work. A televised inspection will be made at the end of all sanitary improvements, spot repairs and joint repairs to make sure all debris is out of the sanitary mainline.

3.12 BACKFILLING AND GRADING

- A. Backfilling and grading shall be performed in accordance with the provisions of TDOT and as amended and modified herein.

All excavation in trenches shall be backfilled to the original ground surface or to such grades as specified or shown on the drawings. The backfilling shall begin as soon as practical after

the pipe has been placed and shall thereafter be carried on as rapidly as the protection of the balance of the work shall permit.

Backfilling shall be done as completely as possible to prevent settlement. The materials shall be compacted using the best materials available for this purpose, free from boulders or stones. Depositing of the backfill shall be done so the falling material will not damage the structure. Grading over and around all parts of the work shall be done as directed by the Engineer.

The lower portion of the trench around the pipe shall be backfilled in accordance with the requirements for Class C Bedding. Granular material, free from rocks and boulders, shall be carefully placed by hand simultaneously on both sides of the pipe to a height of at least one-foot (1') above the top of the pipe to completely fill all spaces under and adjacent to the pipe. Backfill shall be tamped thoroughly on each side and under the pipe as far as practicable in layers not exceeding six inches (6") in thickness. In the event that suitable, granular material is not encountered during the normal excavation of the sewer trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the conduit as required above, the Contractor shall provide and place such approved Granular Borrow material (sand fill) as required at the unit price bid. All clay and plastic pipes shall be bedded in sand six inches (6") under and to each side, and one-foot (1') above the top of pipe.

Succeeding layers of backfill may contain coarse materials, but shall be free from pieces of rock, frozen material, concrete, roots, blacktop chunks, stumps, rubbish and other similar articles whose presence in the backfill, in the opinion of the Engineer would cause settlement of the trench, or damage to the pipe. No black dirt, loam or other unsuitable materials shall be used as backfill in the top four feet (4') of the sewer trenches lying in the paved portion of the street. Under no condition shall lumps of broken blacktop or other such material of a size larger than two inches (2") in diameter be placed in the upper one-foot (1') of the finished grade.

Backfilling of trenches in the traveled portions of the streets and under the curbs shall be accomplished in one-foot (1') lifts. Where there is granular soil, compaction shall be obtained in each lift using a vibratory compactor. Where there are cohesive soils, the compaction of each lift shall be obtained using a sheep's foot roller. No peat or other organic soils shall be backfilled under the traveled portions of streets.

Backfilling of all trenches other than the traveled portions of streets shall be accomplished in a maximum of three-foot (3') layers or lifts. Compacting shall be obtained using the appropriate type of compactor depending on the type of soil encountered. Compaction shall continue on each lift until no further settlement occurs.

Where, in the opinion of the Engineer, the native soil is unsuitable for backfill materials, it shall be the Contractor's responsibility to excavate the trench, haul away all unsuitable backfill material offsite, and backfill the trench in accordance with the specifications with all acceptable excess material which may be obtained from other trenches or excavations within the project area. Unsuitable material that is loaded in trucks and hauled offsite shall be incidental to the Granular Borrow contract unit price bid. If unsuitable material is backfilled with on-site soils, unsuitable material that is loaded in trucks and hauled away to the dump areas shall be paid for at the contract unit price bid for subgrade excavation. There shall be no pay for unsuitable material that is excavated and wasted in the immediate area.

All backfill material around manholes, catch basins, pipe or any other structures used in the plans shall be compacted by mechanical tampers approved by the Engineer. Rubber-tired equipment shall be used to backfill trenches where other equipment will damage existing bituminous surfaces or sod. Absolutely no bucket tamping will be allowed in any trench or backfilling any structure.

Cleanup shall occur immediately after backfilling. Should the Contractor, in the Engineer's opinion, fail to diligently pursue the backfilling and cleanup, all work will cease on the project until all deficiencies are corrected. The amount of open trench at any one time shall be limited

to 300 LF and the amount of work on which complete cleanup has not been accomplished shall be limited to 600 LF. The Contractor shall have sufficient equipment on the job to ensure timely backfill and cleanup at all times. No trenches shall be left open overnight. The Contractor shall take full responsibility for any mishaps that might occur for non-compliance of this requirement.

In addition to the blading and maintenance requirements specified under this article, the Contractor shall also be required to adequately control dust on the streets after compaction and grading when directed by the Engineer. When so directed by the Engineer, the Contractor shall provide one tank truck of adequate size with spray bar or other suitable equipment for sprinkling streets which shall be available at all times for street maintenance. If in the opinion of the Engineer, the Contractor is not maintaining adequate dust control with one tank truck, the Contractor shall provide additional tank trucks at no additional compensation.

All deficiencies in the quantity of material for backfilling the trenches, or for filling depressions caused by settlement, shall be supplied by the Contractor. Any excess material shall be hauled away and deposited where directed by the Engineer at no additional compensation.

The Engineer may designate areas where excess material could be hauled within the City limits.

The Contractor shall remedy at his/her own expense any defects that appear in the backfill, and anything affected by the defect, for a period of one year following completion.

When the trench excavation for the sewer and appurtenances is within the right-of-ways of State or County, the backfilling of the trench, compaction of materials and subgrade preparation shall be done in strict accordance with the existing requirements and specifications of the State or County Highway Department at no additional compensation.

The Contractor shall provide one motor grader which shall be available at all times for surface maintenance. If in the opinion of the Engineer, the Contractor is not maintaining the street surface sufficiently with one motor grader, the Contractor shall provide additional motor graders at no additional compensation.

In all cases, the Contractor shall grade the roadway after the trench has been backfilled, so that it shall provide full and adequate drainage and shall be passable to traffic at all times. Existing roadway material shall be adequately salvaged, stockpiled, placed and graded to cap off the backfilled areas for purposes of maintaining access and providing a drivable surface free of rutting and ponding of water. Segregating soils during these operations is a specific requirement to prevent contamination of the soils that are needed for these purposes. The Contractor shall maintain the roadway in a condition acceptable to the Engineer at all times until final acceptance of the entire work by the City. This work shall be considered incidental.

Additional import material needed for purposes of maintaining traffic shall only be authorized and used for the specific purpose of maintaining traffic when full and proper measures have been taken to salvage and use the existing roadway base materials and all on-site material has been exhausted. Payment for additional material shall only be upon specific approval by the Engineer and shall be included for payment under the bid item of similar material.

3.13 PROJECT ASBUILTS

A. This work shall consist of the Contractor providing as-built project documentation to the Owner.

a. Survey Quality Locates

i. Survey quality XYZ locates of sanitary wyes, connection points with the existing sanitary sewer service pipe, and sanitary clean-outs installed at grade or cut off below grade, each end of each abandoned pipe, and storm sewer sump drain services and clean-outs prior to backfilling operations.

- ii. Locates must be shot using ground-based survey equipment with a tolerance of 1 foot. Horizontal and vertical control will be provided by the Engineer.
 - iii. Project deliverable includes a .txt or .csv file including the point number, northing, easting, elevation, and description.
- b. Digital Photos
 - i. Property address and date of work will be included in photo.
 - ii. Sanitary sewer service including connection to existing service and connection to the main.
 - iii. Any other pertinent sewer or service connection.
- c. Sanitary Service Report
 - i. Includes the date, name of crew foreman, sketch showing plan and elevation view of service, material types (existing and new), appurtenances, north arrow, street names, etc.

3.14 RESTORATION OF GROUND AND ROAD SURFACES

- A. Wherever the surface of the ground is removed or disturbed by the Contractor's operations the Contractor shall restore, replace or rebuild all such surfaces to a condition at least equal to its condition at time of removal. Maintenance of streets and traffic shall comply with Section 5.6 "Traffic Control and Maintenance of Traffic" of the General Contract Conditions.

Unless otherwise specified or shown on the plans, the Contractor shall not be required to replace bituminous paving on City streets or State and County Highways when the alignment of the sewer and its appurtenances, as shown on the plans, is alongside or parallel to a paved roadway, but the proximity of such alignment to the paving does not warrant any damage or removal of such paving, the Contractor shall replace or repair the paving which the Contractor has removed or damaged at no additional compensation.

3.15 GAS SERVICE

- A. Whenever, during excavation for the sewer, a house gas service line, which is part of the gas system, is encountered, the cost of cutting said service, providing temporary service and reconnecting house service shall be borne by the Contractor.

The Contractor shall cooperate with the local gas utility on this phase of the work. If any expense is incurred by the local gas utility in connection with such cutting and replacement of gas service lines it shall be chargeable to the Contractor.

It shall be the Contractor's responsibility to notify the local gas utility sufficiently in advance of the Contractor's proposed construction. The Owner shall not be responsible for any delay that the Contractor may encounter due to the failure on the part of the local gas utility to promptly do the necessary work.

The Contractor shall be held liable for any damage to gas mains and house services because of carelessness or negligence on the Contractor's part.

3.16 WORKMANSHIP AND CLEANUP

- A. Upon completion of the contract, the Contractor shall dismantle and remove all construction plant, equipment, appliances, barricades and surplus materials; shall clean the sewers and other structures and all streets or other services used by the Contractor; and shall do such incidental work as may be necessary to leave the work or any premises occupied by the Contractor in a neat workable condition. This work shall be done with a minimum of inconvenience to the public or public travel.

When defective work on utilities; watermain, storm and sanitary that is a danger to the public's wellbeing or health has been noticed, the Contractor has 4 hours to respond to the Engineer

with detailed information on how and when they are going to fix the defective work. If the contractor does not repair the defective work within 24 hours of written or verbal notice, the City has the right to repair and bill the contractor for the work. If the City deems the defective work a public hazard, the City has the right to immediately repair the defective work and bill the contractor.

[End of Sanitary Sewer, Storm Sewer and Appurtenances]

SECTION 03 10 00 - CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 20 00 - Concrete Reinforcing.
- B. Section 03 30 00 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
- B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute.
- D. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in Tennessee.
- B. Maintain one copy of each installation standard on site throughout the duration of concrete work.

PART 2 - PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
- D. Comply with relevant portions of ACI 347, ACI 301, and ACI 318.

2.02 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Colorless mineral oil that will not stain concrete.
- C. Dovetail Anchor Slot: Galvanized steel, 22-gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- D. Flashing Reglets: Galvanized steel, 22-gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Nails, Spikes, Lag Bolts, Through Bolts, and Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- F. Waterstops: Modified bentonite clay

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.
- F. Coordinate this section with other sections of work that require attachment of components to formwork.
- G. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect before proceeding.

3.03 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.04 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Install waterstops in accordance with manufacturer's instructions,
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.05 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.06 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117.
- B. Construct and align formwork for elevator hoistway in accordance with ASME A17.1.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

3.08 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION 03 10 00

SECTION 03 20 00 - CONCRETE REINFORCING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 10 00 - Concrete Forming and Accessories.
- B. Section 03 30 00 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ASTM A615 / A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A1064 / A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- C. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

PART 2 - PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615 / A615M Grade 60 (420).
 - 1. Deformed billet-steel bars.
 - 2. Unfinished, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement: ASTM A1064 / A1064M, deformed type.
 - 1. Coiled Rolls or Flat Sheets.
 - 2. Mesh Size and Wire Gage: As indicated on drawings.

C. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gage.
2. Chairs, Bolsters, Bar Supports, and Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide stainless steel, galvanized, plastic, or plastic-coated steel components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted.
- C. Locate reinforcing splices not indicated on drawings at point of minimum stress.
 1. Review locations of splices with Engineer of Record.

PART 3 - EXECUTION

3.01 PLACEMENT

- A. Place, support, and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Conform to applicable code for concrete cover over reinforcement.
- E. Bond and ground all reinforcement to requirements of Section 26 05 26.
- F. Clean reinforcement of loose rust and mill scale.
- G. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. At lap splices, lap a minimum of 2 squares. Secure lap splices with metal tie wire.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 40 00, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Section includes cast-in-place concrete work indicated in the Contract Documents or otherwise required for proper completion of the work.

1.02 RELATED SECTIONS

- A. Section 03 10 00 - Concrete Formwork.
- B. Section 03 20 00 - Concrete Reinforcement.

1.03 REFERENCES

- A. ACI 214 - Recommended Practice for Evaluation of Strength Test Results of Concrete.
- D. ACI 233R - Ground Granulated Blast-Furnace Slag as a Cementitious Constituent in Concrete.
- F. ACI 301 - Specifications for Structural Concrete for Buildings.
- G. ACI 302.1 - Guide for Concrete Floor and Slab Construction.
- H. ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete.
- I. ACI 305 - Hot Weather Concreting.
- J. ACI 306 - Cold Weather Concreting.
- K. ACI 308 - Standard Practice for Curing Concrete.
- L. ACI 309 - Guide for Consolidation of Concrete.
- M. ACI 318 - Building Code Requirements for Structural Concrete.
- N. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- O. ASTM C33 - Standard Specification for Concrete Aggregates.
- P. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- Q. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
- R. ASTM C138 - Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.

- S. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.
- T. ASTM C150 - Standard Specification for Portland Cement.
- U. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
- V. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- W. ASTM C230 - Standard Specification for Flow Table or Use in Tests of Hydraulic Cement.
- X. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- Y. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

1.04 NOTICE

- A. Notify Designer and Structural Testing/Inspection Agency not less than 48 hours prior to placing concrete.

1.05 QUALITY ASSURANCE

- A. Structural Testing/Inspection Agency shall perform the following quality related items:
 - 1. Examine concrete in truck to verify that concrete appears properly mixed.
 - 2. Perform a slump test as deemed necessary for each concrete load. Record if water or admixtures are added to the concrete at the job site. Perform additional slump tests after job site adjustments.
 - 3. Mold four specimens per set for compressive strength testing; one set for each 75 cubic yards of each mix design placed in any one day. For each set molded, record:
 - a. Slump
 - b. Air content
 - c. Unit weight
 - d. Temperature, ambient and concrete
 - e. Location of placement
 - f. Any pertinent information, such as addition of water, addition of admixtures, etc.

Perform one 7-day and two 28-day compressive strength tests. (Use one as a spare to be broken as directed by the Designer if compressive strengths do not appear adequate.)

4. Report in writing, as directed by the Designer, on the same day that tests are performed. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing agency, concrete design compressive strength, location of concrete placement in structure, concrete mix proportions and materials, compressive breaking strength and type of break.
- B. The ready-mixed concrete plant shall be certified for conformance with the requirements of the National Ready Mix Concrete Association.

1.07 CONCRETE MIX DESIGN

- A. Establish concrete mix design proportions in accordance with ACI 318, Chapter 5.
- B. Submit concrete mix designs. Include the following:
 1. Type and quantities of materials.
 2. Slump.
 3. Air content.
 4. Fresh unit weight.
 5. Aggregates sieve analysis.
 6. Design compressive strength.
 7. Location of placement in structure.
 8. Method of placement.
 9. Method of curing.
 10. Seven-day and 28-day compressive strengths.
- C. Concrete supplier shall submit certifications that the materials used meet applicable ASTM Specifications. Mix designs not conforming to the above will be rejected.

1.10 FRESH UNIT WEIGHT

- A. Normal weight concrete shall have a fresh unit weight of 140 to 152 pcf.

1.11 AIR CONTENT

- A. For normal weight concrete, no entrained air content is required in concrete placed in the foundation, or for slabs and columns with interior exposure.
- B. For normal weight concrete, entrained air content shall be five percent plus or minus one and one-half percent, unless specified otherwise.
- C. For normal weight concrete with required compressive strength equal to or greater than 5000 psi, entrained air content shall be three percent plus or minus one percent.

1.12 WATER/CEMENT RATIO

- A. Concrete elements shall have a maximum water cement ratio of the following, unless noted otherwise.

Compressive StrengthW/C

3000 psi	0.55 UNO
4000 psi	0.50 UNO
5000 psi or greater	0.48 UNO

- B. For slabs on grade, provide a maximum water/cement ratio of .48.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials designated by specific manufacturer's trade names are approved, subject to compliance with the quality and performance indicated by the manufacturer. Instructions and specifications, published by the manufacturer of such materials are included in and are a part of these specifications. Upon request, provide certification from manufacturer or supplier that materials designated by reference to ASTM and ACI standards meet the requirements of these standards.

2.02 CONCRETE STRENGTH

- A. Provide concrete strengths indicated on the Structural Drawings.

2.03 CEMENT

- A. Portland cement shall conform to ASTM C150, Type I, unless noted otherwise. Use one brand only.

2.04 AGGREGATE

- A. Fine aggregate shall conform to ASTM C33.
- B. Coarse aggregate of gravel or crushed stone shall conform to ASTM C33. Size coarse aggregate in accordance with ACI 318.

2.05 WATER

- A. Water shall be potable and free of deleterious substances in accordance with ACI 318.

2.06 AIR ENTRAINING AGENT

- A. Air entraining agent shall conform to ASTM C260.

2.07 WATER REDUCER

- A. Water reducing agent shall conform to ASTM C494.
- 2.08 HIGH-RANGE WATER REDUCER
 - A. High-range water reducers (superplasticizers) shall conform to ASTM C494.
- 2.09 CHLORIDE
 - A. Use no chlorides of any form in concrete.
- 2.10 CURING COMPOUND
 - A. An acrylic cure compound with a minimum solid content of 20 percent may be used at the Contractor's option in accordance with ASTM C309, and in compliance with these specifications.
- 2.11 FLY ASH
 - A. Fly ash shall be Class F fly ash with a loss on ignition of less than five percent or Class C fly ash with a loss on ignition of less than one percent in accordance with ASTM C618.
 - B. Maximum fly ash content shall be limited to 20% of the total cementitious material weight.
 - C. Fly ash shall not be used in exterior or exposed surface applications.
- 2.12 GROUND GRANULATED BLAST-FURNACE SLAG (GGBFS).
 - A. Ground Granulated Blast-Furnace Slag (GGBFS) shall conform to ACI 233.
 - B. Maximum GGBFS content shall be limited to 50% of the total cementitious material weight. Maximum total combined GGBFS plus Fly ash shall be limited to 50% of the total cementitious material weight.
- 2.13 ACCELERATORS
 - A. Non-chloride accelerators shall conform to ASTM C494.
- 2.14 RETARDERS
 - A. Retarders shall conform to ASTM C494.
- PART 3 EXECUTION
- 3.01 HIGH-RANGE WATER REDUCERS
 - A. High-range water reducers are to be added at dosage recommended by the manufacturer. The slump of the concrete shall be one to four inches at the time the high-range water reducers are added. Do not permit fresh concrete

containing superplasticizers to come in contact with fresh concrete not containing superplasticizers.

3.03 ADDITION OF WATER AT JOB SITE

- A. Water may be added to the batch only if neither the maximum permissible water/cement ratio nor the maximum slump is exceeded.

3.04 PLACEMENT OF CONCRETE

- A. Deposit concrete as near as practical to final position. Maximum free fall shall be six feet.
- B. Do no flowing of concrete with vibrators.
- C. Place floors and slabs in accordance with ACI 302.
- D. Do not use aluminum equipment in placing and finishing concrete.
- E. Place thickened slabs for partitions integral with floor slabs.
- F. Prepare place of deposit, mix, convey, place, and cure concrete in accordance with ACI 301, ACI 304, and ACI 318. Wet forms before placing concrete.
- G. Place concrete on properly prepared granular subbase. Vapor barrier is installed above granular subgrade.

3.05 TIME LIMIT

- A. Deposit concrete within one and one-half hours after batching.

3.06 VIBRATION

- A. Consolidate concrete in accordance with ACI 301 and ACI 309.

3.07 CURING

- A. Begin curing procedures immediately following the commencement of the finishing operation.
- B. Cure concrete in accordance with ACI 308. Keep the concrete surface moist. If an acrylic curing compound is used, apply in accordance with manufacturer's recommendations to surfaces of concrete not protected for five days by formwork. Do not use curing compounds in areas to receive material that does not adhere to concrete cured with a curing compound unless the curing compound is water soluble.
- D. Moist cure concrete elements within aggressive environments as follows:
 - 1. Place burlap and polyethylene curing blankets on the surface and keep them continuously moist with sprinklers for seven days.

2. In hot weather or wind conditions, prevent rapid mix water evaporation and possible plastic shrinkage cracking by using evaporation retarders or fog sprays.
3. In cold weather, follow recommended procedures in ACI 306 and ACI 308.
4. After the curing blankets are removed, if a sealer is not specified to be applied, spray on a two-coat application of liquid membrane curing compound. If a sealer is to be applied a curing compound is not required.

3.08 SLAB ON GRADE

- A. Concrete used in slabs on grade shall exhibit ultimate shrinkage strain no more than 0.05 percent. If tests were required to meet this criteria, concrete shrinkage tests shall be performed in accordance with ASTM C 157 on specimens moist-cured for one day. Tests shall be performed by an ACI certified technician in an ACI certified laboratory.

3.09 ENVIRONMENTAL PROVISIONS

- A. Perform cold weather concreting in accordance with ACI 306.
- B. Perform hot weather concreting in accordance with ACI 305.
- C. Protect concrete from drying and excessive temperature for the first seven days.
- E. Protect fresh concrete from wind.

3.10 CONTRACTION JOINTS

- A. Obtain Designer's approval for location of contraction joints.
- B. Do not place contraction joints in framed floors or composite slabs.
- C. Place contraction joints in slabs-on-grade as indicated on the Drawings.
- D. Provide contraction joints in concrete walls at approximately 20-foot centers; coordinate location with Designer. Contraction joints shall be formed as a V-groove on both faces of the wall, 3/4-inch minimum depth.

3.11 CUTTING CONCRETE

- A. Obtain Designer's written approval prior to cutting concrete for installation of other work.

3.12 PATCHWORK AND REPAIRS

- A. Notify Designer of any defective areas in concrete to be patched or repaired. Repair and patch defective areas with non-shrink grout. Cut out defective areas over two inches in diameter to solid concrete, but not less than a depth of one inch. Make edges of cuts perpendicular to the concrete surface.

3.13 DEFICIENT CONCRETE COMPRESSIVE STRENGTH

- A. In the event that concrete tests indicate a 3-day, 7-day, or 28-day strength below that which was expected or specified, the Contractor with the agreement of the Designer shall have the mix adjusted so that subsequent concrete will comply with the minimum strength requirements. The Owner may require core specimens to be taken and tested, at the Contractor's expense. If core tests fall below minimum requirements, as determined by the Designer, the concrete in place will be deemed to be defective. This concrete shall be removed and replaced or strengthened in a manner acceptable to the Owner and Designer, at the Contractor's expense. Any demolition or repair of other materials or systems as a result of repair or replacement of defective concrete shall be at the Contractor's expense.

3.14 CONCRETE FINISHES

- A. Finish concrete in accordance with ACI 301, ACI 117, AND ACI 302.1.
- B. Finish concrete slabs to flatness and levelness tolerances which correspond to $F_F 25/F_L 20$ minimum overall for composite of all measured values per placement and $F_F 17/F_L 15$ minimum for any individual floor section.
- C. For concrete slabs to receive wood flooring, finish to flatness and levelness tolerances which correspondence to $F_F 45/F_L 30$ minimum overall for composite of all measured values per placement and $F_F 30/F_L 20$ minimum for any individual floor section.
- D. For concrete slabs to receive owner furnished equipment, finish to floor flatness and floor levelness tolerances stated in the equipment manufacturer's recommended guidelines.
- E. For shored construction, F_L values do not apply if slab is tested after shoring is removed.
- E. For unshored construction, F_L does not apply.
- G. Slabs which do not meet the flatness and levelness criteria shall be repaired or replaced.

END OF SECTION 03 30 00

SECTION 04 22 00 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete Block.
- B. Mortar and Grout.
- C. Reinforcement and Anchorage.
- D. Lintels.
- E. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 20 00 - Concrete Reinforcing: Reinforcing steel.
- B. Metal Fabrications: Loose steel lintels. See Structural Sheet S0.1
- C. Section 06 10 53 - Carpentry Work: Nailing strips built into masonry.
- D. Section 07 21 16 - Blanket Insulation: Rigid expanded polystyrene (EPS) insulation into grouted masonry.
- E. Section 07 62 00 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
- F. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- B. ASTM A36/ A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A153/ A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- D. ASTM A580/ A580M - Standard Specification for Stainless Steel Wire; 2016.
- E. ASTM A615/ A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- F. ASTM A641/ A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).

- G. ASTM A1064/ A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- H. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016.
- I. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- J. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2014a.
- K. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2016.
- L. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- M. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- N. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
- O. ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
- P. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- Q. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- R. ASTM C303 - Standard Test Method for Dimensions and Density of Preformed Block and Board- Type Thermal Insulation.
- S. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar; 2015.
- T. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- U. ASTM C476 - Standard Specification for Grout for Masonry; 2016.
- V. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2016a.
- W. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- X. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013.
- Y. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).

Z. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.

AA.ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.

BB.UL (FRD) - Fire Resistance Directory; current edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Samples: Submit four samples of each type of unit to illustrate color, texture, and extremes of color range.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

E. Manufacturer's Certificate: Certify that water-repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water-repellent admixture in the manufacture of concrete block.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of the contract documents.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least 5 years of documented experience.

1.07 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, and flashings (with lap joint, corner, and end dam) in mock-up.

B. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 - PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and a nominal depth of 6, 8, or 12 inches.
 - 2. Load-Bearing Units: ASTM C90, lightweight, with a density of masonry unit not to exceed 105 pounds per cubic foot.
 - a. Hollow block.
 - 3. Non-Loadbearing Units: ASTM C129.
 - a. Hollow block.

2.02 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91/C91M
- B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
- C. Mortar Aggregate: ASTM C144.
- D. Grout Aggregate: ASTM C404.
- E. Water: Clean and potable.
- F. Accelerating Admixture: Non-chloride type for use in cold weather.
- G. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.
- H. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - a. Type: Types as scheduled in this section.
 - b. Color: Standard gray.
 - c. Water-repellent mortar for use with water repellent masonry units.

- I. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing Type O mortar in accordance with ASTM C270 with the addition of water only.
 - a. Color: Standard gray.

2.03 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: As specified in Section 032000; size as indicated on drawings; uncoated finish.
- B. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483-inch side rods with 0.1483-inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- C. Multiple Wythe Joint Reinforcement: Truss type; fabricated with moisture drip; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1483-inch side rods with 0.1483-inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
- D. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center and fabricated with moisture drip; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
 - 1. Vertical adjustment: Not less than 2 inches.
 - 2. Seismic Feature: Provide lip, hook, or clip on extended leg of wall ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483-inch diameter.
- E. Strap Anchors: Bent steel shapes configured as required for specific situations, 1-1/4 in width, 0.105 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, corrugated for embedment in masonry joint, hot dip galvanized to ASTM A 153/A 153M, Class B.
- F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
 - 1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1-inch width x 0.024 in thick, with trapezoidal wire ties 0.1875-inch-thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

2. Steel frame: Crimped wire anchors for welding to frame, 0.25-inch-thick, with trapezoidal wire ties 0.1875-inch-thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
- G. Wall Ties: Corrugated formed sheet metal, 7/8-inch-wide by 0.05-inch-thick, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
- H. Two-Piece Wall Ties: Formed steel wire, 0.1875-inch-thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.
- I. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075-inch-thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
 2. Wire ties: Manufacturer's standard shape, 0.1875-inch-thick.
 3. Vertical adjustment: Not less than 2 inches.
 4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483-inch diameter.

2.04 FLASHINGS

- A. Metal Flashing Materials: As specified in Section 07 62 00.
- B. Concealed Flashing: Provide concealed flashings as follows:
1. Through Wall Flashing: Fabricate through wall metal flashings with deformations in both directions for integral mechanical mortar bond.

2.05 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints. Shore A durometer hardness of 60 to 80, designed to fit standard sash block and maintain lateral stability in masonry wall, size, and configuration as indicated.
- B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self-expanding; in maximum lengths available.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.

1. Full-Height Airspace Maintenance and Drainage Material: Mesh panels, fitted between masonry ties.
- D. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 10 00.
- E. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.
- F. Weeps:
1. Type: Polyethylene tubing. 1/4inch round by 4-inch-long medium density unless indicated otherwise.
- G. Drainage Fabric: Polyester or polypropylene mesh. 042200- 6
- H. Expanded polystyrene (EPS) rigid insulation inserts:
1. Type: C-shaped, 1 inch-thick EPS insulation insert
- I. Multicomponent Cavity Wall Drainage System: Combination mortar diverter, flashing and weep system.
1. Membrane Type: Thermoplastic vinyl.
 2. Drip Edge: Galvanized steel with factory applied, high-performance organic coating.
 3. Drip Edge Color: Selected by Architect from manufacturer's standard custom range.
 4. Termination Bar: Polyvinyl chloride (PVC)
- J. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 LINTELS

2.07 MORTAR AND GROUT MIXES

- A. Mortar for Unit Masonry: using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type M.
 2. Exterior, loadbearing masonry: Type S.
 3. Exterior, non-loadbearing masonry: Type N.
 4. Interior, loadbearing masonry: Type S.
 5. Interior, non-loadbearing masonry: Type N.

- B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
- D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- E. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.
- B. Cold Weather Construction: relevant for ambient temperatures below 40 degrees F (4 degrees C).
- C. Hot Weather Construction: relevant for ambient temperatures above 90 degrees F (32 degrees C).

3.04 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:

1. Bond: Running.
2. Mortar Joints: Concave.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting, or high-pressure cleaning methods.
- F. Interlock intersections and external corners.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Isolate masonry partitions from vertical structural framing members with a control joint.
- J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 WEEPS/CAVITY VENTS

- A. Install weeps in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 CAVITY MORTAR CONTROL

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
- B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
- C. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions. Verify that airspace width is no more than 3/8 inch greater than panel thickness. Install horizontally between joint reinforcement. Stagger end joints in adjacent rows. Fit to perimeter construction and penetrations without voids.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.09 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

- A. Install horizontal joint reinforcement 16 inches on center.
- B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.
- C. Place continuous joint reinforcement in first and second joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.
- E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.10 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
- B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.

3.11 LINTELS

- A. Install precast concrete or masonry lintels over openings as scheduled.
- B. Provide masonry lintels where shown and wherever openings of more than 1'-0" are shown without structural steel or other supporting lintels. Provide precast or formed in place masonry lintels. Thoroughly cure precast lintels before handling and installation. Temporarily support formed in place lintels. Provide an 8-inch-deep masonry lintel reinforced with (1) No. 5 bottom bar over openings less than 6'-0"-wide in non-load bearing hollow concrete masonry unit walls.

- C. U Shaped Lintels: For hollow concrete masonry unit walls, use specially formed U-shaped lintel units with reinforcing bars placed as shown and filled with grout of consistency required to completely fill space between reinforcing bars and masonry unit.
- D. Maintain minimum 8-inch bearing on each side of opening.

3.12 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Form expansion joint as detailed on Architectural drawings.

3.14 BUILT-IN WORK

- A. Install built-in items plumb, level, and true to line.
- B. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
 - 1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
- C. Do not build into masonry construction organic materials that are subject to deterioration.

3.15 CUTTING AND FITTING

- A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.16 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.

3.17 CLEANING

- A. Remove excess mortar and mortar droppings.
- B. Replace defective mortar. Match adjacent work.
- C. Clean soiled surfaces with cleaning solution.

3.18 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION 04 22 00

SECTION 04 26 13 - UNIT MASONRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of each type of masonry work is indicated on drawings and schedule.
- B. Types of masonry work required include:
 - 1. Concrete unit masonry. Refer to Section 04 22 00 "Concrete Unit Masonry" which will supersede the requirements of this section in those particulars.
 - 2. Face Brick.

1.03 QUALITY ASSURANCE

- A. Single Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color or a uniform blend within the ranges accepted for these characteristics from one (1) manufacturer for each different product required for each continuous surface or visually related surfaces.
- B. Single Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one (1) manufacturer for each cementitious component and from one (1) source and producer for each aggregate.
- C. Field Constructed Work Mock-Ups: Prior to installation of masonry work, erect sample wall panels to further verify selection made for color and textural characteristics, under sample submittals of masonry units and mortar, and to represent completed masonry work for qualities of appearance, materials and construction. Build mock-ups to comply with the following requirements:
 - 1. Locate mock-ups on site in locations indicated or, if not indicated, as directed by Architect.
 - 2. Build mock-ups for the following types of masonry in sizes of approximately four (4) feet long by four (4) feet high by full thickness, including face and back-up wythes as well as the accessories as applicable.
 - 3. Retain mock-ups during construction as the standard for judging completed masonry work. When directed, demolish mock-ups and remove from site.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements.
- B. Shop Drawings: Submit cutting and setting drawings for stone trim showing sizes, profiles and locations of each unit required.
- C. Samples for Initial Selection Purposes: Submit samples of the following materials:
 - 1. Unit masonry samples in a form showing full extent of colors and textures available for each type of exposed masonry unit required.
 - 2. Colored masonry mortar samples showing the full extent of colors available.
- D. Samples for Verification Purposes: Submit the following samples:
 - 1. Unit masonry samples for each type of exposed masonry unit required standard and split face (if applicable); include in each set, the full range of exposed color and texture to be expected in completed work.
 - 2. Colored masonry mortar samples, for each color required, showing the full range of color which can be expected in the finished work. Label samples to indicate what type and amount of colorant used.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver masonry materials to project in undamaged condition.
- B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.
 - 1. Limit moisture absorption of concrete masonry units during delivery and until the time of installation to the maximum percentage specified for Type 1 units.
- C. Store cementitious materials off the ground, under cover and in dry location.
- D. Store aggregates where grading and other required characteristics can be maintained.
- E. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

1.06 PROJECT CONDITIONS

- A. Protection of Work: During erection, cover top of walls with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.
- B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

- C. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.
- D. Do not apply concentrated loads for at least three (3) days after building masonry walls or columns.
- E. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout or mortar in contact with such masonry.
- F. Protect base of walls from rain splashed mud and mortar splatter by means of covering spread (straw) on ground and over wall surface.
- G. Protect sill, ledges and projections from droppings of mortar.
- H. Cold Weather Protection:
 - 1. Do not lay masonry units which are wet or frozen.
 - 2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
 - 3. Remove masonry damaged by freezing conditions.
- I. For clay masonry units with initial rates of absorption (suction), which require them to be wetted before laying, comply with the following requirements:
 - 1. For units with surface temperatures above 32 degrees Fahrenheit, wet with water heated to above 70 degree Fahrenheit.
 - 2. For units with surface temperatures above 32 degrees Fahrenheit, wet with water heated to above 130 degrees Fahrenheit.

PART 2 - PRODUCTS

2.01 FACE BRICK

- A. Module cored & solids, ASTM C216, Class SW, Type FBS. Color and texture as selected by the Architect.
 - 1. Size 3-5/8" x 3-5/8" x 7-5/8" (reference Section 01 21 26 for Allowances of Face Brick)

2.02 STRUCTURAL GLAZED MASONRY

- A. Not Applicable.

2.03 CONCRETE MASONRY UNITS

- A. General: Comply with referenced standard and other requirements indicated below applicable to each form of concrete masonry unit required.
 - 1. Provide special shapes where required for lintels, sash, corners, jambs, control joints, headers, bonding & other special conditions.
 - 2. Provide bullnose CMU units at all exterior corners and jambs where applicable.
- B. Units shall conform to ASTM C90-75, Grade N-1 with the following exceptions:
 - 1. Maximum concrete unit weight shall be 105 pounds per cubic feet. Units shall be placed in the wall with not more than 49% of total water absorption.
 - 2. Aggregate for concrete masonry units shall conform to ASTM C331-81.
- C. All exterior concrete units shall contain ACME shield water retardant as manufactured by ACME Hardesty Company per Manufacturer's specifications.

2.04 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C-150, Type I.
- B. Masonry Cement: ASTM C-91.
 - 1. Use premixed colored masonry cements of formulation required to produce color selected from the manufacturer's standard formulations by the Architect.
 - a. Products: Subject to compliance with requirements or Architect's pre-approved equal, provide one (1) of the following:
 - b. "Atlas Custom Color Masonry Cement"; Lehigh Portland Cement Co."; "Flamingo Color Masonry Cement"; The Riverton Corporation.
 - c. "Coosa Masonry Cement"; National Cement Company of Alabama.
 - 2. Mortar shall contain "ACME Shield" water retardant as manufactured by ACME - Hardesty Company as per manufacturer's specifications.
- C. Hydrated Lime: ASTM C-207, Type S.
- D. Aggregate for Grout: ASTM C-404, Size No. 8.
- E. Sand: Manufactured sand conforming to ASTM C144-81.
- F. Water: Clean, potable and free of elements which might adversely affect mortar.

2.05 JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES (Unless not specifically addressed elsewhere in the Contruction Documents):

- A. Ties for metal stud back-up: Ty-Wal No. 800 (16 gauge) with No. 510 (3/16") ties or Dur-O-Wal No. D/A 213 assembly. Units shall be mill galvanized.
- B. Horizontal Wall Reinforcing: ASTM A82, Truss Type, Plain Steel, No. nine (9) gauge side rods and cross rods. Furnish pre-fabricated corners and ties as required. Equal to Dur-O-Wall D/A 320 Ladur.
- C. Dovetail Slots: Furnish dovetail slots, with filler strips, of slot size indicated, fabricated from 0.0336" (22 gauge) sheet metal.
- D. Dovetail Anchors: 22 gauge, galvanized corrugated steel, 7/8" wide.
- E. Adjustable masonry wall ties: Equal to Dur-a-wall D/A 300, Adjustable CRT.

2.06 CONCEALED FLASHING MATERIALS

- A. Vinyl Sheet Flashing: Flexible sheet flashing especially formulated from virgin polyvinyl chloride with plasticizers and other modifiers to remain flexible and waterproof in concealed masonry application, black in color and of thickness indicated: Thickness - 20 mils.
- B. Adhesive for Flashing: Of type recommended by manufacturer of flashing material for use indicated.
- C. Products: Subject to compliance with requirements, provide one (1) of the following:
 - 1. Vinyl Sheet Flashing:
 - "Vi-Seal Plastic Flashing"; Afco Products, Inc.
 - "BFG" Vinyl Water Barrier; B.F. Goodrich Co.
 - "Nuflex"; Sandell Manufacturing Co., Inc.
 - "Wascoseal"; York Manufacturing, Inc.

2.07 MISCELLANEOUS MASONRY ACCESSORIES (Unless specified otherwise in the Construction Documents):

- A. Non-metallic Expansion Joint Strips: Premoulded, flexible cellular neoprene rubber filler strips complying with ASTM C1056, Grade RE41E1, capable of compression up to 35%, of width and thickness indicated.
- B. Premoulded Control Joint Strips: Material as indicated below, designed to fit standard sash block and to maintain lateral stability in masonry wall. Size and configuration as indicated.
 - 1. Polyvinyl chloride complying with ASTM D-2287, General Purpose Grade, Designation PVC - 63506.
- C. Bond Breaker Strips: Asphalt saturated organic roofing felt complying with ASTM D226, Type I (No. 25 asphalt felt.)

2.08 MASONRY CLEANERS

- A. Job-Mixed Detergent Solution: Solution of trisodium phosphate (one-half (½) cup dry measure) and laundry detergent (one-half (½) cup dry measure) dissolved in one (1) gallon of water.
- B. Acidic Cleaner: Manufacturer's standard strength general purpose cleaner designed for new masonry surfaces of type indicated; composed of blended organic and inorganic acids combined with special wetting systems and inhibitors; expressly approved for intended use by manufacturer of masonry units being cleaned.

2.09 MORTAR AND GROUT MIXES

- A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellant agents, anti-freeze compounds or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- B. Mixing: Combine and thoroughly mix cementitious, water and aggregate in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.
- C. Mortar for Unit Masonry:
 - 1. Limit cementitious materials in mortar to Portland cement lime.
 - 2. Use Type S mortar for reinforced masonry and masonry below grade.
 - a. Mix for Type S Mortar: One-half (½) part Portland cement, one (1) part masonry cement & four (4) parts sand by volume.
 - 3. Use Type N mortar for face brick.
 - a. Mix for Type N. Mortar: One (1) part colored masonry cement and three (3) parts sand by volume.
- D. Grout for Unit Masonry: Comply with ASTM C-476 for grout for use in construction of reinforced and nonreinforced unit masonry. Use grout of consistency indicated or if not otherwise indicated, of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout.
 - 1. Use fine grout in grout spaces less than two (2) feet in horizontal direction, unless otherwise indicated.
 - 2. Use coarse grout in grout spaces two (2) feet or more in least horizontal dimension, unless otherwise indicated.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. Wetting Clay Brick: Wet brick made from clay or shale which have ASTM C-67 initial rates of absorption (suction), of more than 30 grams per 30 square inches per minute. Use wetting methods which ensure each clay masonry unit being nearly saturated but surface dry when laid.
- B. Do not wet concrete masonry units.
- C. Cleaning Reinforcing: Before placing, remove loose rust, ice and other coatings from reinforcing.
- D. Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness shown. Build single-wythe walls (if any) to the actual thickness of the masonry units, using units of nominal thickness indicated.
- E. Build chases and recesses as shown or required for the work of other trades. Provide not less than eight (8) inches of masonry between (1) chase or recess and jamb of openings and (2) between adjacent chases and recesses.
- F. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.
- G. Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining work. Use full size units without cutting where possible.
- H. Do not lay masonry when air temperature is below 40 degrees Fahrenheit, forecasted to go below 40 degrees Fahrenheit within 24 hours or when it is raining.
- I. Realignment of masonry shall not be permitted after a higher or following course has been laid. Any masonry which is disturbed after the mortar has stiffened shall be removed and relaid with fresh mortar.

3.02 CONSTRUCTION TOLERANCES

- A. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed one-quarter (1/4) inch in ten (10) feet, or three-eighths (3/8) inch in a story height not to exceed 20 feet, nor one-half (1/2) inch in 40 feet or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed one-quarter (1/4) inch in any story or 20 feet maximum, not one-half (1/2) inch in 40 feet or more. For vertical alignment of head joints, do not exceed plus or minus one-quarter (1/4) inch in ten (10) feet, one-half (1/2) inch maximum.

- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed one-quarter ($1/4$) inch in any bay or 20 feet maximum, not one-half ($1/2$) inch in 40 feet or more. For top surface of bearing walls do not exceed one-eighth ($1/8$) inch between adjacent floor elements in ten (10) feet or one-sixteenth ($1/16$) inch within width of a single unit.
- C. Variation of Linear Building Line: For position shown in plain and related portion of columns, walls and partitions, do not exceed one-half ($1/2$) inch in any bay or 20 feet maximum, nor three-quarter ($3/4$) inch in 40 feet or more.
- D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus one-quarter ($1/4$) inch nor plus one-half ($1/2$) inch.
- E. Bed Joints and head joints shall be nominal three-eighths ($3/8$) inch thick with slight variations allowed ($5/16$ " to $7/16$ ") to adjust coursing and to avoid cutting. Standard coursing for brick: Three (3) bricks and three (3) mortar joints shall equal eight (8) inches.

3.03 LAYING MASONRY WALLS (WHERE APPLICABLE TO THE WORK SCOPE THIS PROJECT)

- A. Refer to structural drawings and the general notes on the structural drawings for size and location of wall reinforcing. Reinforcement in the second bed joint above and below all openings shall extend two (2) feet beyond the jambs. Side rods shall be lapped six (6) inches minimum at splices. Reinforcement shall be placed so as to assure a $5/8$ " mortar cover measured from outside face of mortar joint.
- B. Where vertical cells are filled with grout and reinforced, cells shall be aligned to provide clear openings. Cross webs adjacent to vertical cores, which are to be filled with grout, shall be fully bedded in mortar to prevent leakage of grout. Cut off face of blocks, wherever splices occur, to provide cleanout and inspection ports. When reinforcing bars have been installed, mortar in new faces on cut block to match other block.
- C. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate opening, movement type joints, returns and offsets. Avoid the use of less than half-size units at corners, jambs and wherever possible at other locations.
- D. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.
- E. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not indicated on drawings otherwise, lay in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than two (2) inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal four (4) inches horizontal face dimensions at corners or jambs.
- F. Stopping and Resuming Work: Rack back one-half ($1/2$) unit length in each course. Do

not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required), and remove loose masonry units and mortar prior to laying fresh masonry.

G. Built-in Work: As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items.

1. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise directed.
 - a. At exterior frames, insert extruded polystyrene board insulation around perimeter of frame, in thickness indicated, but not less than 3/4", to act as a thermal break between frame and masonry.
 - b. Where built-in items are to be embedded in the cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
 - c. Fill cores in hollow masonry units with grout three (3) courses (24 inches) under bearing plates, beams, posts, lintels and similar items, unless otherwise directed.

3.04 MORTAR BEDDING AND JOINTS

- A. Lay solid brick-size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- C. Set stone units in full bed of mortar with all vertical joints slushed full. Fill dowel, anchor and similar holes solid. Wet stone joint surface thoroughly before setting. For stone surfaces which are soiled: clean bedding and exposed surfaces with fiber brush and sap powder followed by thorough rinsing with clear water.
- D. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.
- E. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise directed.
- F. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise directed.
- G. Remove masonry units disturbed after laying. Clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required: (1) remove units (2) clean off mortar and (3) reset in fresh mortar.

3.05 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY

- A. Use continuous horizontal joint reinforcement installed in horizontal mortar joints for bond tie between wythes. Install at no more than 16 inches on center vertically.
- B. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.
 - 1. For horizontally reinforced masonry, provide continuity at corners with prefabricated "L" units, in addition to the masonry bonding.
- C. Intersecting Load-Bearing Walls: If carried up separately, block or tooth vertical joint with eight (8) inches maximum offsets and provide rigid steel anchors spaced not more than four (4) feet on center vertically OR omit blocking and provide rigid steel anchors at not more than two (2) feet on center vertically. Form anchors of galvanized steel not less than 1-1/2" x 1/4" x 2'-0" long with ends turned up not less than two (2) inches or with cross-pins. If used with hollow masonry units, embed ends in mortar-filled cores.

3.06 CAVITY WALLS

- A. Keep cavity clean of mortar dropping and other materials during construction. Strike joints facing cavity flush.
- B. Tie exterior wythe to back-up with continuous horizontal ladder type reinforcing, installed in mortar joints at not more than 16 inches on center vertically.
- C. Provide weep holes in exterior wythe of cavity wall located immediately above ledges and flashing, spaced two (2) feet on center, unless otherwise indicated.

3.07 HORIZONTAL JOINT REINFORCEMENT

- A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" exterior side of walls (one-half (1/2) inch elsewhere). Lap reinforcing a minimum of six (6) inches.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Reinforce all walls with continuous horizontal joint reinforcement.
- D. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.
- E. Space continuous horizontal reinforcement 16 inches on center vertically.
- F. Reinforce masonry openings greater than one (1) foot wide, with horizontal joint reinforcement placed in two (2) horizontal joints approximately eight (8) inches apart, immediately above the lintel and immediately below the sill. Extend reinforcement a minimum of two (2) feet beyond jambs of opening except at control joints.

1. In addition to wall reinforcement, provide additional reinforcement at openings, as required, to comply with the above.

3.08 ANCHORING MASONRY WORK

- A. General: Provide anchor devices of type indicated.
- B. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 1. Provide an open space not less than one (1) inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
 2. Anchor masonry to structural members with flexible anchors embedded in masonry joints and attached to structure.
 3. Space anchors as indicated, but not more than 16 inches on center horizontally.
- C. Anchor masonry veneer to metal studs with masonry veneer anchors to comply with the following requirements:
 1. Fasten each anchor section through sheathing to metal studs with two (2) metal fasteners of type indicated.
 2. Embed tie section in masonry joints. Provide not less than one (1) inch air space between back of masonry veneer wythe and face of sheathing; reference drawings.
 3. Locate anchor section relative to course, in which the tie section is embedded to allow maximum vertical differential movement of tie up and down.
 4. Space the anchors as indicated, but not more than 16 inches on center vertically and 16 inches on center horizontally. Install additional anchors within one (1) foot of openings and at intervals around perimeter not exceeding three (3) feet.

3.09 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and wherever openings of more than one (1) foot for brick size units and two (2) feet for block size units are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.
 1. For hollow concrete masonry unit walls, use a specially formed U-shaped lintel units with reinforcement bars placed as shown filled with coarse grout.

- C. Provide minimum bearing of eight (8) inches at each jamb, unless otherwise indicated.

3.10 FLASHING OF MASONRY WORK

- A. General: Provide concealed flashing in masonry work at or above shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall, so as to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections, which could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar. Extend flashing to within one-half ($\frac{1}{2}$) inch of exterior face of masonry.
- B. Extend flashing the full length of lintels and shelf angles and minimum of four (4) inches into masonry at each end. Extend flashing from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum of four (4) inches and through the inner wythe to within one-half ($\frac{1}{2}$) inch of the interior face of the wall in exposed work. Where interior surface of inner wythe is concealed by furring, carry flashing completely through the inner wythe and turn up approximately two (2) inches. At heads and sills turn up ends not less than two (2) inches to form a pan.
- C. Interlock end joints of deformed metals flashing by over-lapping deformations not less than one and one-half ($1\frac{1}{2}$) inch and seal lap with elastic sealant.
- D. Install flashing to comply with manufacturer's installation.
- E. Provide weep holes in the head joints of the first course of masonry immediately above concealed flashing. Space 24 inches on center, unless otherwise indicated.
- F. Install reglets and nailers for flashing and other related work, where shown to be built into masonry work.

3.11 REPAIR, POINT AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.
- C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave a one-half ($\frac{1}{2}$) panel uncleaned for comparison purposes. Obtain the Architect's approval of sample cleaning before proceeding with cleaning of masonry.

3. Protect adjacent stone and non-masonry surfaces from any contact with cleaner, by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape.
4. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
5. Use bucket and brush hand cleaning method described in BIA "Technical Note No. 20 Revised" to clean brick masonry made from clay or shale. Except use masonry cleaner indicated below:
 - a. Detergent.
 - b. Acidic cleaner; apply in compliance with directions of cleaner manufacturer.
6. Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable to NCMA "Tech" bulletins.
7. Protection: Provide final protection and maintain conditions in a manner acceptable to installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

END OF SECTION 04 26 13

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SECTION 06 10 53 - CARPENTRY WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Definition: Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated.
- B. Types of work in this section include rough carpentry for:
 - 1. Wood nailers and blocking.
 - 2. Wood furring (as applicable).
 - 3. Miscellaneous Framing (as applicable).
 - 4. Fire Treated products as additionally noted in the drawings.

1.03 SUBMITTALS

- A. Material Certificates: Where dimensional lumber is provided to comply with minimum allowable unit stresses, submit listing of species and grade selected for each use, and submit evidence of compliance with specified requirements. Compliance may be in form of a signed copy of applicable portion of lumber producer's grading rules showing design values for selected species and grade. Design values shall be as approved by the Board of Review of American Lumber Standard Committee.
- B. Wood Treatment Data: Submit chemical treatment manufacturer's certification by treating plant stating type of preservative retained and conformance with applicable standards.
 - 1. Preservative Treatment: For each type specified, include certification by treating plant stating type of preservative retained and conformance with applicable standards.
 - 2. For water-borne treatment, include statement that moisture content of treated materials was reduced to levels indicated prior to shipment to project site.
 - 3. For all products requiring fire treated lumber noted in the drawings, provide Pyro-Guard by Hoover Treated Wood Products, Incorporated, (800) 531-5558, or Architect's pre-approved equal. Reference Pyro-Guard specification at the end of this section for additional requirements.

1.04 PRODUCT HANDLING

- A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar material stacks.
 - 1. For lumber and plywood pressure treated with water-borne chemicals, sticker between each course to provide air circulation.

1.05 PROJECT CONDITIONS

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

PART 2 - PRODUCTS

2.01 LUMBER - GENERAL

- A. Lumber Standards: Manufacture lumber to comply with PS 20; "American Softwood Lumber Standard", and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies: Inspection agencies and the abbreviations used to reference with lumber grades and species include the following:
 - 1. RIS - Redwood Inspection Service.
 - 2. NLGA - National Lumber Grades Authority.
 - 3. SPIB - Southern Pine Inspection Bureau.
 - 4. WCLIB - West Coast Lumber Inspection Bureau.
 - 5. WWPA - Western Wood Products Association.
- C. Grade Stamps: Factory-mark each piece of lumber with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing and mill.
 - 1. For exposed lumber, apply grade stamps to ends or back of each piece.
- D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.

2. Provide seasoned lumber with nineteen percent (19%) maximum moisture content at time of dressing and shipment for sizes two (2) inches or less in nominal thickness, unless otherwise indicated.
3. Provide lumber with fifteen percent (15%) maximum moisture content at time of dressing and shipment for sizes two (2) inches or less in nominal thickness, unless otherwise indicated.

2.02 LUMBER AND SHEET MATERIALS

- A. All framing lumber: SPIB, S4S, No. 2 - Southern Pine or WWPA, S4S, No. 2 Douglas Fir.

2.03 MISCELLANEOUS LUMBER

- A. Provide wood for support or attachment of other work including cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:
- B. Moisture content: Nineteen percent (19%) maximum for lumber items not specified to receive wood preservative treatment.
- C. Grade: Standard grade boards per WCLIB or WWPA rules or per SPIB rules.

2.04 MISCELLANEOUS MATERIALS

- A. Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails.
 1. Where rough carpentry work is exposed to the weather, in ground contact, or in an area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A-153.)

2.05 WOOD TREATMENT BY PRESSURE PROCESS

- A. Preservative Treatment: Where lumber or plywood is specified herein to be treated, comply with applicable requirements of AWPB Standards C2 (Lumber), and C9 (Plywood), and of AWPB Standard listed below. Mark each treated item with AWPB Quality Mark Requirements.
 1. Pressure-treat above ground items with water-borne preservatives complying with AWPB LP - 2. After treatment, kiln-dry to a maximum moisture content, respectively of nineteen percent (19%) and fifteen percent (15%). Treat indicated items and the following:
 - a. Wood cants, nailers, curbs, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers and waterproofing.

- b. Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
- 2. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment and to comply with AWP4 M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.
- B. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.
- C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
- D. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

3.02 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS

- A. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
- B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to form work before concrete placement.
- C. Provide permanent grounds of dressed, preservative treated, key-bevelled lumber not less than one and one-half (1-1/2) inch wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

END OF SECTION 06 10 53

SECTION 06 16 43 - SHEATHING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Wall Sheathing.
2. Weather-Resistant Sheathing Barriers.

B. Related Sections include the following:

1. Section 06 10 53 – Carpentry Work (where applicable).

1.02 REFERENCES

A. American Society for Testing and Materials:

1. ASTM C 297: Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
2. ASTM C 954: Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch to 0.110 inch in Thickness
3. ASTM C 1002: Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
4. ASTM C 1177: Standard Specification for Glass Mat Gypsum – Substrate for use as Sheathing.
5. ASTM C 1280: Standard Specification for Application of Gypsum Sheathing.
6. ASTM C 1396: Standard Specification for Gypsum Board.
7. ASTM D 226: Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
8. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
9. ASTM E 119: Test Method for Fire Tests of Building Construction and Materials.
10. ASTM E 1677: Standard Specification for an Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.

B. Gypsum Association:

1. GA 253: Recommended Specification for the Application of Gypsum Sheathing.

1.03 SUBMITTALS

- A. General: Submit in accordance with Section 01 30 00.
- B. Product Data: Submit manufacturer's current technical literature for product specified.

1.04 QUALITY ASSURANCE

- A. Fire Resistance Rated Assembly Characteristics: Provide materials and construction identical to those tested in accordance to ASTM E 119 by an independent testing and inspection agency acceptable to authorities having jurisdiction.
 1. Fire Resistance Ratings: Indicated by design designations from UL Fire Resistance Directory.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements.
WARNING: Store all SECUROCK Brand Glass Mat Sheathing flat. Panels are heavy and can fall over, causing serious injury or death. Do not move unless authorized.

PART 2 - PRODUCTS

2.01 WALL SHEATHING

- A. Glass Mat Gypsum Sheathing: ASTM C 1177 gypsum sheathing.
 1. Product: Subject to compliance with requirements, provide SECUROCK Brand Glass Mat Sheathing by United States Gypsum Company.
 2. Type and Thickness: Regular, 1/2 inch thick.
 3. Size: 48 by 96 inches, 48 by 108 inches, 48 by 120 inches, with square edge, as appropriate to the project.
 4. Contractor may substitute 1/2" plywood with breathable vapor barrier in lieu of glass mat gypsum sheathing.

2.02 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and application.

- B. Screws for Fastening Sheathing to Cold-Formed Metal Framing: #6 1-1/4 inch or 1-5/8 inch (contractor's recommendation) with corrosion-resistance of more than 800 hours per ASTM B117 (Minimum).

1. For steel framing less than 0.0329 inch thick, attach sheathing to comply with ASTM C 1002.
2. For steel framing from 0.033 to 0.112 inch thick, attach sheathing to comply with ASTM C 954.

2.03 WEATHER-RESISTANT SHEATHING PAPERS (Weather Resistive Barrier)

- A. Building Paper: ASTM D 226, Type 1 (No. 15 asphalt-saturated organic felt), unperforated.
- B. Building Wrap: ASTM E 1677, Type I air retarder, with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84, UV stabilized and acceptable to authorities having jurisdiction.
 1. Products: Subject to compliance with requirements, provide Tyvek StuccoWrap by DuPont (E. I. du Pont de Nemours and Company).
- C. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building wrap manufacturer for sealing joints and penetrations in building wrap.

2.04 MISCELLANEOUS MATERIALS

- A. Sealant For Glass Mat Gypsum Sheathing Board: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials.
- B. Sealant for Glass-Mat Gypsum Sheathing Board: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing.
- C. Sheathing Tape for Glass-Mat Gypsum Sheathing Board: Self -adhering, glass fiber tape, minimum 2" wide for use with silicone emulsion sealant in sealing joints in glass- mat gypsum sheathing board.
- D. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film.
- E. Primer for Flexible Flashing: Product recommended by manufacturer of flexible flashing for substrate.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit closely against abutting construction, unless otherwise indicated.
- C. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- D. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.02 SHEATHING INSTALLATION

- A. Comply with ASTM C 1280, GA-253 and manufacturer's written instructions.
 - 1. Fasten sheathing to cold-formed metal framing with screws.
 - 2. Install boards with a 3/8-inch gap where non-load-bearing construction abuts structural elements.
 - 3. Install boards with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.
- B. Apply fasteners so heads bear tightly against face of sheathing boards but do not cut into facing.
- C. Sheathing may be installed with the long dimension of the sheathing either parallel or perpendicular to framing. Board orientation to be dictated by performance requirements. Abut ends and/or edges of the boards centered over face of framing members. Offset board joints by not less than one stud spacing
 - 1. Space fasteners a maximum of 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of boards. Adjust spacing of fasteners to meet specific fire or structural performance requirements.
 - 2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

3.03 WEATHER-RESISTANT SHEATHING PAPER INSTALLATION

- A. General: Cover sheathing with weather-resistant sheathing paper as follows:
 - 1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.

2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap, unless otherwise indicated.
- B. Building Paper: Apply horizontally with a 2-inch overlap and a 6-inch end lap; fasten to sheathing with galvanized staples or roofing nails.
- C. Building Wrap: Comply with manufacturer's written instructions.
 1. Seal seams, edges, fasteners, and penetrations with tape.
 2. Extend into jambs of openings and seal corners with tape.

3.05 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 1. Prime substrates as recommended by flashing manufacturer.
 2. Lap seams and junctures with other materials at least 4 inches, except that at flashing flanges of other construction, laps need not exceed flange width.
 3. Lap flashing over weather-resistant building paper at bottom and sides of openings.
 4. Lap weather-resistant building paper over flashing at heads of openings.
 5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 06 16 43

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SECTION 07 14 00 - FLUID-APPLIED POLYMERIZED VAPOR BARRIER AND DAMPPROOFING (Above Grade)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Surface preparation and substrate treatment.
 - 2. Vapor barrier and dampproofing membrane.
 - 3. Sheet flashing and accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Section "Masonry" for concrete unit masonry placement, curing, and finishing.

1.03 PERFORMANCE REQUIREMENTS

- A. General: Provide a vapor barrier and dampproofing system that prevents the passage of moisture in the absence of hydrostatic pressure and complies with physical requirements as demonstrated by testing performed by an independent testing agency of manufacturer's current dampproofing formulations and system design.

1.04 SUBMITTALS

- A. Submit Product Data for each type of vapor barrier/dampproofing specified, including manufacturer's printed instructions for evaluating, preparing, and treating the substrate, technical data, and tested physical and performance properties.
- B. Project Data - Submit Shop Drawings showing locations and extent of vapor barrier/dampproofing, including details for substrate joints and cracks, sheet flashing, penetrations, and other termination conditions.
- C. Samples - Submit representative samples of the following for approval:
 - 1. Vapor barrier/dampproof membrane material.
 - 2. Geo-textiles and detailing sheet as required.
 - 3. Repair grouts.

- D. Installer Certificates – Submit certificates signed by manufacturer certifying that Installers comply with requirements under the “Quality Assurance” Article.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified in writing and approved by vapor barrier/dampproofing manufacturer Epro Services, Inc. for the installation of ECODAMP material.
- B. Manufacturer Qualification: Obtain vapor barrier/ dampproofing materials and system components from a single manufacturer Epro Services, Inc.
- C. Field Sample: Apply vapor barrier/ dampproofing system field sample to 30 sq./ft. (2.8 sq./m.) of deck or wall to demonstrate surface preparation, joint and crack treatment, thickness, texture, and standard of workmanship.
 - 1. Notify Architect one week in advance of the dates and times when field sample will be prepared.
 - 2. If Architect determines that field sample, does not meet requirements; reapply vapor barrier/ dampproofing material until field sample is approved.
 - 3. Retain and maintain approved field sample during construction in an undisturbed condition as a standard for judging the completed vapor barrier/ dampproofing material. An undamaged field sample may become part of the completed Work.
- D. Pre-installation Conference: A pre-installation conference shall be held prior to application of the vapor barrier/ dampproofing system to assure proper substrate and installation conditions, to include contractor, applicator, architect/engineer and special inspector (if any).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site as specified by manufacturer labeled with manufacturer’s name, product brand name and type, date of manufacture, shelf life, and directions for storing and mixing with other components.
- B. Store materials as specified by the vapor barrier/ dampproofing manufacturer in a clean, dry, protected location and within the temperature range required by vapor barrier/ dampproofing manufacturer. Protect stored materials from direct sunlight.
- C. Remove and replace material that cannot be applied within its stated shelf life.

1.07 PROJECT CONDITIONS

- A. Protect all adjacent areas not to be applied to. Where necessary, apply masking to prevent staining of surfaces to remain exposed wherever membrane abuts to other finish surfaces.

- B. Perform work only when existing and forecasted weather conditions are within manufacturer's recommendations for the material and application method used.
- C. Minimum clearance of 24 inches is required for application of product. For areas with less than 24-inch clearance, the product may be applied by hand.
- D. Ambient temperature shall be within manufacturer's specifications. (Greater than +20°F/-7°C.)
- E. All plumbing, electrical, mechanical and structural items to be under or passing through the vapor barrier/dampproofing membrane shall be positively secured in their proper positions and appropriately protected prior to membrane application.
- F. Vapor barrier/dampproofing membrane shall be installed before placement of reinforcing steel. When not possible, all exposed reinforcing steel shall be masked by General Contractor prior to membrane application.

1.08 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents, and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by vapor barrier/dampproofing manufacturer and Installer, agreeing to repair or replace vapor barrier/dampproofing that does not meet requirements or that does not remain moisture resistant within the specified warranty period. Warranty does not include failure of vapor barrier/dampproofing material due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in the substrate.

- 1. Warranty Period: 1 year after date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. ECODAMP; Epro Services, Inc., Wichita, KS, 800-882-1896
 - 1. Spray-Applied ECODAMP.
 - 2. Detailing-mastic ECOLINE-T.
 - 3. Repair-grout QUIK-SET.

2.02 DAMPPROOFING MATERIALS

- A. Fluid applied dampproofing system - ECODAMP: a single-course, high-build, polymer modified asphalt emulsion. Waterborne and spray applied at ambient temperatures. A

nominal thickness of 20 dry mils (15 mil minimum), unless specified otherwise. Non-toxic and odorless. Manufactured by Epro Services, Inc.

B. Fluid applied dampproofing physical properties.

ECODAMP – TYPICAL CURED PROPERTIES (MEMBRANE ONLY)

Elongation	ASTM D 412-98a	5500%
Tensile Strength	ASTM D 412-98a	9 psi
Hydrostatic Water Pressure	ASTM D 751-00	10 psi
Water Degradation	ASTM D 2939-94	No Effect
Adhesion	ASTM C 836	11 lbf/inch
Perm Rating	ASTM E-96	.1049 gr./hr./sq. ft.
Low Temp. Flexibility	ASTM C 836-00	No Cracking at -6.71/40
Shrinkage	ASTM C 836-00	0.03%
Chemical or Environmental Resistance:		
Hydrochloric & Sulfuric		13%
Acetic		30%

2.03 AUXILIARY MATERIALS

- A. Sheet Flashing: 60-mil reinforced modified asphalt sheet good with double-sided adhesive.
- B. Reinforcing Strip: Manufacturer's recommended polypropylene and polyester fabric.
- C. Repair grout: QUIK-SET a rapid curing, high-build mortar joint repair material.
- D. Joint Detailing Sealant Mastic: ECOLINE-T, a high viscosity polymer modified water based asphalt material.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions under which vapor barrier/dampproofing materials will be applied, with Installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Clean and prepare substrate according to manufacturer's recommendations. Provide clean, dust-free, and dry substrate for vapor barrier/dampproofing application. Power washing or sand blasting is an accepted cleaning method on existing structures.

- B. Mask off adjoining surfaces not receiving the vapor barrier/dampproofing to prevent spillage or over-spray affecting other construction.
- C. Close off deck drains and other deck penetrations to prevent spillage and migration of fluids.
- D. Remove grease, oil, form release agents, paints, and other penetrating contaminants from concrete.
- E. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, grout joints, tie holes, and other voids with ECOLINE-T, hydraulic cement, or rapid-set grout.

3.03 PREPARATION AND TREATMENT AT TERMINATIONS AND PENETRATIONS

- A. Prepare vertical surfaces at terminations, at penetrations through substrate, and at expansion joints and sleeves according to ASTM C 898 and manufacturer's recommendations.
- B. Apply two coats of ECOLINE-T (30 mil each) and embed a joint reinforcing strip in preparation coat and apply a second coat over embedded joint reinforcing strip ensuring its complete saturation and covering.
 - 1. Terminations should be treated 6 inches up vertical and 6 inches on horizontal.
 - 2. Penetrations should be treated in a 6-inch radius around penetration and 3 inches onto penetrating object.

3.04 PREPARATION AND TREATMENT OF JOINTS AND CRACKS

- A. Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C 898 and dampproofing manufacturer's recommendations. Remove dust and dirt from joints and cracks complying with ASTM D 4258 prior to coating surfaces.
- B. Vertical - Apply two coats of ECOLINE-T mastic, 6 inches on each side of joint and embed a joint reinforcing strip in preparation coat and apply a second coat over embedded joint reinforcing strip ensuring to complete saturation and covering.

3.05 VAPOR BARRIER/DAMPPROOFING APPLICATION

- A. Set up spray equipment according to manufacturer's instructions.
- B. Mix materials according to manufacturer's instructions.
- C. Start installing vapor barrier/dampproofing material in presence of manufacturer's technical representative.
- D. Apply vapor barrier/dampproofing material, according to manufacturer's recommendations, by spray.

- E. Apply one spray coat of ECODAMP to obtain a seamless membrane free of entrapped gases, with an average dry film thickness of 20 mils (1.0 mm) and a minimum dry film thickness of 15 mils (.875 mm) at any point.
- F. Apply vapor barrier/dampproofing material to prepared wall terminations and vertical surfaces to heights indicated according to manufacturer's recommendations and details.
- G. Verify film thickness of vapor barrier/dampproofing membrane every 100 sq./ft. (9.3 sq./m.).

3.06 FIELD QUALITY CONTROL

- A. Membrane may be checked for coverage with a lightly oiled, needle nose depth gauge, taking four (4) readings over a one square inch area, every 500 square feet. Record the minimum reading. Mark the test area for repair.
- B. Test areas are to be patched over with ECODAMP to a 35- mil minimum dry thickness, extending a minimum of one-inch (1") beyond the test perimeter.

3.07 CURING, PROTECTING, AND CLEANING

- A. Cure vapor barrier/dampproofing membrane according to manufacturer's recommendations, taking care to prevent contamination and damage during application stages and curing.
- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 14 00

SECTION 07 21 00 - THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation as detailed and noted in the drawings.
- B. Batt insulation in exterior wall construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Field-applied termiticide for concrete slabs and foundations.
- B. Section 03300 - Cast-in-Place Concrete: Perimeter slab insulation.
- C. Section 07 54 23 - FLEXIBLE SHEET ROOFING SYSTEM: Insulation specified as part of roofing system.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.06 SEQUENCING

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

1.07 COORDINATION

- A. Coordinate the work with Section 07 14 00 for installation of vapor retarder.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- C. Insulation Inside Masonry Cavity Walls: Extruded polystyrene (XPS) board.
- D. Insulation on inside of new and existing CMU between 1- 1/2" metal furring and behind 5/8" gypsum board.
- E. Inside face of existing CMO to supplement insulation rating of wall.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
 - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 - 2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 - 4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
 - 5. Board Thickness: 1-1/2 inches.
 - 6. Board Edges: Square.
 - 7. Surface Burning Characteristics: Flame spread/Smoke developed index of 5/45-175, when tested in accordance with ASTM E 84.
 - 8. Product: GreenGuard.
 - 9. Manufacturers:
 - a. Kingspan Insulation LLC; GreenGuard XPS TYPE IV 25 PSI:
www.trustgreenguard.com/#sle.

2.03 BATT INSULATION MATERIALS

2.04 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
- B. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inch wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints.
 - 2. Extend sheet full height of joint.
- B. Install boards horizontally on foundation perimeter.
 - 1. Install in running bond pattern.
 - 2. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT EXTERIOR WALLS (INTERIOR AND EXTERIOR AS DETAILED/NOTED ON THE DRAWINGS)

- A. Install boards horizontally on walls.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION AT CAVITY WALLS

- A. Adhere a 6 inch wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints between sheets.
 - 2. Extend sheet full height of joint.
- B. Apply adhesive to back of boards:

1. Three continuous beads per board length.
2. Full bed 1/8 inch thick.
- C. Install boards to fit snugly between wall ties.
 1. Place membrane surface against adhesive.
 2. Place membrane surface facing out, and tape seal board joints.
- D. Install boards horizontally on walls.
 1. Place boards to maximize adhesive contact.
 2. Install in running bond pattern.
 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- F. Coordinate work of this section with requirements for fluid-applied membrane air barriers in Section 07 14 00.

3.05 BOARD INSTALLATION UNDER CONCRETE SLABS

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.06 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

3.07 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.

- F. Staple or nail facing flanges in place at maximum 6 inches on center.
- G. Support batts as recommended by manufacturer.
- H. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- I. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face.
- J. Tape seal tears or cuts in vapor retarder.
- K. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.08 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

3.09 SCHEDULES

- A. Perimeter Insulation: Extruded polystyrene, bead adhesive application, 1-1/2" inch thick protection board.
- B. Cavity Wall Insulation: Extruded polystyrene, bead adhesive application, 1-1/2" inch thick.

END OF SECTION 07 21 00

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SECTION 07 21 16 - BLANKET INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of insulation work is shown on drawings and indicated by provisions of this section. Applications of insulation specified in this section include the following:
 - 1. Safing insulation (as applicable).
 - 2. Batt insulation and vapor barrier as applicable. See drawings.
 - 3. Rigid perimeter insulation and rigid insulation boards in thicknesses detailed in the drawings.
- B. Membrane roof insulation is specified in Section 07 54 00.

1.03 QUALITY ASSURANCE

- A. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by R-value, they represent the rate of heat flow through a homogenous material exactly one (1) inch thick measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees Fahrenheit between the two (2) exposed faces required to cause one (1) BTU to flow through one (1) square foot per hour at mean temperatures indicated.
- B. Fire Performance Characteristics provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Surface Burning Characteristics: ASTM E 84.
 - 2. Fire Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation and vapor retarder material required.

- B. Certified Test Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including R-values (aged values for plastic insulations), densities, compression strengths, fire performance characteristics, perm ratings, water absorption ratings and similar properties.

1.05 DELIVERY, STORAGE AND HANDLING

- A. General Protection: Protect insulations from physical damage and from becoming wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.
- B. Protection for Plastic Insulation.
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of the installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Manufacturers of Batt Insulation. Manville Corporation
 - 2. Manufacturer of Safing Insulation United States Gypsum Company
 - 3. Manufacturer of Rigid Insulation Dow Chemical Company

2.02 INSULATING MATERIALS

- A. General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards and other characteristics.
- B. Batt Insulation: Performed mineral wool, conforming to ASTM C 665, Type II, Class C, Category 1.
- C. Vapor Barrier: Translucent polyethylene film, as recommended for use in above grade building construction, four (4) mil. thick.
- D. Rigid Insulation: "Styrofoam SM" insulation boards as produced by Dow Chemical or approved equal.

- E. Safing Insulation shall be similar and equal to "Thermafiber" produced by USG Acoustical Products Company.
- F. Nails or Staples: Of electroplated, galvanized steel wire; type and size as recommended for application.
- G. Tape: Two (2) inch wide self adhering type; bright aluminum faced.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

- A. Require installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until satisfactory conditions have been corrected.
- B. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.
- C. Close off openings in cavities to receive pour-in-place insulation sufficiently to prevent escape of insulation. Provide bronze or stainless steel screen (inside), where openings must be maintained for drainage or ventilation.

3.02 INSTALLATION - GENERAL

- A. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
- B. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.
- C. Apply single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

3.03 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations.
- B. Set vapor retarder faced units with vapor retarder to warm side of construction. Do not obstruct ventilation spaces, except for fire stopping.
 - 1. Set vapor retarder faced units with vapor retarder, and seal each continuous area of

the insulation to surrounding construction to ensure air-tight installation.

- C. Stuff loose glass fiber insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately forty percent (40%) of normal maximum volume (to a density of approximately two and one-half (2.5) pounds per cubic foot).

3.04 PROTECTION

- A. General: Protect installed insulation from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION 07 21 16

SECTION 07 26 10 UNDER-SLAB VAPOR RETARDER

PART 1 GENERAL

1.01 SUMMARY

A. Products Supplied Under This Section

1. Vapor Retarder, Seam Tape & Accessories manufactured for installation under concrete slabs.
2. Only 100% Virgin First Melt Resin Products – No Recycled Polyethylene.
3. Only products which have minimum thickness of 10 mils for plastic membrane.
4. Only products manufactured in the USA marketed and sold by a true manufacturer-
5. No Private Label / No Imported Products / No Outsourced Products.
6. Only products from manufacturer with local field Technical Representatives.
7. Only products from ISO 9001 Certified Manufacturers.
8. Only products from manufacturer which provide NO CHARGE on-site review of installations prior to placement of concrete.
9. Only products and accessories stocked, supplied and readily available as needed in project locale – No imported products.
10. Only products which are manufactured for the following uses in protecting against – moisture, radon gas, methane gas and sulphates.
11. Only products which have WVPR of 0.036 (US) / 0.024 (Metric) or less – Products with WVPR higher than .036 will not be accepted.
12. Only products by a manufacturer that will provide current independent third (3rd) party testing results; third (3rd) party testing to be provided by the manufacturer and, not the marketing, private label, or outsourcing party. The actual manufacturer name and address must be identified to the requesting party.
13. Only products by a manufacturer providing current Letters of Certification.
14. Contact M. W. Escue Company for under-slab vapor retarder product details and installation information.
barrierbac@mwescue.com – underslab@mwescue.com, or 901-861-5502

15. Related Sections

- a. Section 03300 Cast-in-place Structural Concrete.
- b. Section 07260 Under-Slab Vapor Barrier.
- c. REFERENCES

16. American Society for Testing and Materials (ASTM)

- a. ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- b. ASTM E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs.
- c. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials.
- d. ASTM E 1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
- e. ASTM D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

17. American Concrete Institute (ACI)

- a. ACI 302.1R-04 Vapor Barrier Component (plastic membrane) is not less than 10 mils thick.
- b. SUBMITTALS

18. Quality Control/ Assurance

- a. Submit CURRENT Laboratory test results showing compliance with ASTM & ACI Standards.
- b. Submit CURRENT Third Party test results.
- c. Submit Manufacturers Product Samples & Literature.
- d. Manufacturer's installation instructions for placement, seaming and pipe boot installation.
- e. Products that DO NOT MEET ALL criteria in section 1.1A - 1 through 13 will not be accepted.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Vapor Retarder

1. Must be first melt 100% virgin resin High Density Polyethylene (HDPE) vapor retarder film. Film thickness alone must be over 10 mils – reinforcing scrims, backing, etc can not be basis for minimum mil thickness.
 - a. Water Vapor Permeance ASTM E 96 0.024 perms (US)
 - b. Water Vapor Barrier ASTM E 1745 Exceeds Class A (Plastics)
 - c. Tensile Strength ASTM D 882 63 lbs / in
 - d. Puncture Resistance ASTM D 1709 2750 grams
 - e. Peel Adhesion to Concrete ASTM D 903 4 lbs / in
 - f. Life Expectancy ASTM E 154 Indefinite
 - g. Chemical Resistance ASTM E 154 Unaffected

2. Vapor Retarder Products

- a. Barrier-Bac (16-mil) VB-350 by Inteplast Group - 800-452-2117 www.barrierbac.com, barrierbac@mwescue.com or underslab@mwescue.com for product details.
- b. Premoulded Membrane Vapor Seal with Plasmatic Core (PMPC) by W.R. Meadows - www.wrmeadows.com.
- c. Zero-Perm by Alumiseal - 800-235-2313 - www.alumiseal.com.
- d. Florprufe 120 by Grace Construction Products - www.na.graceconstruction.com.
- e. Other products submitted must meet ALL criteria in section 1.1A – 1 through 13.
- f. Products that do not have local manufacturer field representative will not be accepted.

2.02 ACCESSORIES

A. Seam Options

1. Seam Tape must have the following qualities:
 - a. Water Vapor Permeance ASTM E 96 0.3 Perms

- b. Tensile Strength ASTM D 882 22/lbs/in. Minimum
- 2. Seam Tape
 - a. Barrier-Bac Seam Tape by Inteplast - 800-452-2117 - www.barrierbac.com
- 3. Seam Welding
 - a. Seams may be heat welded if desired
 - b. Contact Inteplast at 800-452-2117 for heat welding assistance

B. Pipe Boots

- 1. Construct pipe boots from vapor barrier material & seam tape per manufacturer details.

PART 3 – EXECUTION 3.01 PREPARATION

- A. Ensure that subsoil is approved by architect or geotechnical firm
- B. Level and tamp or roll aggregate, sand or tamped earth base

3.02 INSTALLATION

A. Install Vapor Retarder:

- 1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643-98
 - a. Unroll Vapor Retarder w/ the longest dimension parallel with the direction of the pour.
 - b. Lap Vapor Barrier over footings and seal to foundation walls.
 - c. Overlap joints 6 inches and seal with manufacturer's tape.
 - d. Seal all penetrations (including pipes) per manufacturer's instructions.
 - e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
 - f. Repair damaged areas by cutting patches of Vapor Retarder, overlapping damaged area 6 inches and taping all four sides with tape.
 - g. Vapor Retarder installation to be inspected by field representative prior to concrete placement at no charge to owner, architect, engineer or contractor.
 - h. Architect to be notified when installation of Vapor Retarder is started to schedule field inspection.

END OF SECTION 07 26 10

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SECTION 07 41 13 - METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Architectural roofing system of preformed steel panels.
- B. Attachment system.
- C. Finishes.
- D. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 53 - Rough Carpentry: Roof sheathing.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.03 REFERENCE STANDARDS

- A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Storage and handling requirements and recommendations.
 - 2. Installation methods.
 - 3. Specimen warranty.
- C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.
 - 1. Show work to be field-fabricated or field-assembled.
- D. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.
- B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.07 WARRANTY

- A. See Section 01 78 21 - Closeout Submittals, for additional warranty requirements.
- B. Finish Warranty: Provide manufacturer's special warranty covering failure of factory-applied exterior finish on metal roof panels and agreeing to repair or replace panels that show evidence of finish degradation, including significant fading, chalking, cracking, or peeling within specified warranty period of five years from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Roof Panels:
 - 1. Petersen Aluminum Corporation; Snap-Clad Panel: www.pac-clad.com/#sle.
 - 2. Metal Roof Systems Inc.; MRS System 2000.
- B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ARCHITECTURAL METAL ROOF PANELS

- A. Architectural Metal Roofing: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.
- B. Metal Panels: Factory-formed panels with factory-applied finish.
 - 1. Steel Panels:
 - a. Aluminum-zinc alloy-coated steel conforming to ASTM A792/A792M; minimum AZ50 coating.
 - b. Steel Thickness: Minimum 24 gage (0.024 inch).

2. Profile: Standing seam, with minimum 1.0 inch seam height; concealed fastener system for field seaming with special tool.
3. Texture: Smooth.
4. Width: Maximum panel coverage of 16 inches.

2.03 ATTACHMENT SYSTEM

- A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.04 SECONDARY FRAMING

2.05 FABRICATION

- A. Panels: Provide factory or field fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

2.06 FINISHES

- A. Fluoropolymer Coating System: Manufacturer's standard multi-coat thermocured coating system, including minimum 70 percent fluoropolymer color topcoat with minimum total dry film thickness of 0.9 mil; color and gloss to match sample.

2.07 ACCESSORIES

- A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
- B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.
- C. Sealants:
 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
- D. Underlayment: Self-adhering rubber-modified asphalt sheet complying with ASTM D1970/D1970M; 22 mil total thickness; with strippable release film and woven polypropylene sheet top surface.

1. Manufacturers:

- a. Ice & Water Shield by Grace Construction Products.
- b. Substitutions: See Section 01 30 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to assure that the completed roof will be free of leaks.
- B. Remove protective film from surface of roof panels immediately prior to installation. Strip film carefully, to avoid damage to prefinished surfaces.
- C. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by roof panel manufacturer.
- D. Where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

- A. Overall: Install roofing system in accordance with approved shop drawings and panel manufacturer's instructions and recommendations, as applicable to specific project conditions. Anchor all components of roofing system securely in place while allowing for thermal and structural movement.
 - 1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
 - 2. Minimize field cutting of panels. Where field cutting is absolutely required, use methods that will not distort panel profiles. Use of torches for field cutting is absolutely prohibited.
- B. Accessories: Install all components required for a complete roofing assembly, including flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, equipment curbs, rib closures, ridge closures, and similar roof accessory items.

- C. Roof Panels: Install panels in strict accordance with manufacturer's instructions, minimizing transverse joints except at junction with penetrations.

3.04 CLEANING

- A. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

- A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.
- B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION 07 41 13

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SECTION 07 54 23 - FLEXIBLE SHEET ROOFING SYSTEM (FULLY ADHERED)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including general and Supplementary Conditions and Division 0 and 1 Specifications sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. Extent of flexible sheet roofing (FSR) is indicated on drawings and is hereby defined to include non-traffic-bearing sheet membrane system intended for weather exposure as primary roofing. Similar membranes concealed by a wearing surface are excluded by definition.
- B. The project consists of installing Carlisle's Sure-Weld Adhered Thermoplastic Polyolefin Roofing System (TPO) in conjunction with FAST Adhesive as outlined below:

Apply the Adhered TPO Roofing System in conjunction with new rigid insulation over the existing concrete decking as detailed in the drawings.

- C. Flexible sheet roofing specified in this section is as follows:

1. Provide all labor, material, tools, equipment, and supervision necessary to complete the installation of a white, .060 inch thick reinforced Sure-Weld Thermoplastic Polyolefin (TPO) membrane, including flashings and insulation as specified herein and as indicated on the drawings in accordance with the manufacturer's most current specifications and details.
2. The roofing contractor shall be fully knowledgeable of all requirements of the contract documents and shall make themselves aware of all job site conditions that will affect their work.
3. The roofing contractor shall confirm all given information and advise the Architect, prior to the bid, of any conflicts that will affect their cost proposal.
4. *Any contractor who intends to submit a bid using a roofing system other than the approved manufacturer herein must submit for pre-qualification in writing a minimum of five (5) calendar days prior to the bid date regardless of the product. Any contractor who fails to submit all information as requested below will be subject to rejection. Bids stating "as per plans and specs" and/or using alternative products will be unacceptable. Roofing system must be an equivalent product or "or equal" as defined in the General Conditions as follows:*

ACCEPTABLE PRODUCTS AS A SUBSTITUTE TO THE REQUIREMENTS OF THIS SECTION:

A. MEMBRANES:

1. *60 mil tan thermoplastic polyolefin (TPO) membrane as manufactured but not necessarily limited to, Carlisle, Firestone, J.P. Elastomerics, and GenFlex.*
2. *Others only as pre-approved by the Architect in writing and conforming to the requirements of this Section.*

B. *Membrane Adhesive (NOT APPLICABLE):*

1. *NOTE: Manufacturer's standard contact adhesive*

C. *Seaming Products (No Exceptions):*

1. *Thermal heat welds for TPO roofs.*

D. *Insulation Board:*

1. *1/8" per foot slope tapered insulation, 1/2" minimum thickness at the (2) proposed roof drains (See Plumbing Drawings) or as referenced otherwise on the Contract Drawings.*
2. *Any isocyanurate insulation manufacturer approved by Roofing System, but must meet a 20 year Total System Warranty requirement of the roofing manufacturer.*
3. *Minimum of 20 psi on all isocyanurate insulation boards.*
4. *Refer to drawings for designed layout of the roof insulation.*

E. *Insulation Attachment as follows (or per competitive manufacturer's recommendation):*

1. *Approved sure-Seal Insulation is typically mechanically secured to the roof deck with Carlisle Fasteners and 3 inch diameter Insulation Plates, at the minimum rate of 1 every 2 square feet or as required otherwise by the manufacturer's recommendations.*

F. *Warranty:*

1. *Provide manufacturer's 20 year Total System Warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 90 mph measured at 10 meters above ground level. Certification is required with quotation submittal indicating the manufacturer has reviewed and agreed to such wind coverage.*
2. *Pro-rated System Warranties shall not be accepted.*
3. *Evidence of the manufacturer's warranty reserve shall be included as part of the project submittals for the Architect's approval.*

1.03 SUBMITTALS

A. Prior to starting work, the roofing contractor must submit the following:

1. Shop drawings showing layout, details of construction and identification of materials in a timely manner.
 2. A sample of the manufacturer's Membrane System Warranty.
 3. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.
 4. Certification of the manufacturer's warranty reserve.
- B. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the Architect prior to the issuance of the manufacturer's warranty.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.
- B. Comply with the manufacturer's written instructions for proper material storage.
1. Store membrane in a dry area.
 2. Store other materials between 60° F and 80° F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60° F minimum temperature before using.
 3. Store materials containing solvents in dry, well-ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.
- C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials.
- D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.05 WORK SEQUENCE

- A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

1.06 USE OF THE PREMISES

- A. Before beginning work, the roofing contractor must secure approval from the Owner's representative for the following:
 - 1. Areas permitted for personnel parking.
 - 2. Access to the site.
 - 3. Areas permitted for storage of materials and debris.
 - 4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.

1.07 EXISTING CONDITIONS

- A. If discrepancies are discovered between the existing conditions and those noted on the drawings, immediately notify the Architect and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

1.08 PRE-CONSTRUCTION CONFERENCE

- A. A pre-construction conference will be scheduled by the Architect and the Owner.
- B. Prior to bid submittal, the roofing contractor should schedule a job site inspection to observe actual conditions and verify all dimensions on the roof.
- C. Bids must be submitted to Owner in the form as directed in the Instructions to Bidders.
- D. Any conditions which are not shown on the shop drawings should be indicated on a copy of the shop drawing and included with bid submittal if necessary to clarify any conditions not shown.

1.09 TEMPORARY FACILITIES AND CONTROLS

- A. Temporary Utilities:
 - 1. Water, power for construction purposes and lighting are available at the site and will be made available to the roofing contractor. Coordinate with the Architect.
 - 2. Provide all hoses, valves and connections for water from a source designated by the Owner when made available.
 - 3. Electrical power should be extended as required from the source as coordinated through the Owner.
- B. Temporary Sanitary Facilities
 - 1. Sanitary facilities will not be available at the job site unless otherwise agreed to by the Owner.

C. Building Site:

1. The roofing contractor shall use reasonable care and responsibility to protect the building and site against damages. The contractor shall be responsible for the correction of any damage incurred as a result of the performance of the contract.
2. The roofing contractor shall remove all debris from the job site in a timely and legally acceptable manner so as to not detract from the aesthetics or the functions of the building.

D. Security:

1. Obey the Owner's requirements for personnel identification, inspection and other security measures.

1.10 JOB SITE PROTECTION

- A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.
- B. During the roofing contractor's performance of the work, the building owner may continue to occupy the existing building.
- C. Do not overload any portion of the building, by either use of or placement of equipment, storage of debris, or storage of materials.
- D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.
- E. Store moisture susceptible materials above ground and protect with waterproof coverings.
- F. Remove all traces of piled bulk material and return the job site to its original condition upon completion of the work.

1.11 SAFETY

- A. The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. **Safety shall be the responsibility of the roofing contractor.** All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

1.12 WORKMANSHIP

- A. Applicators installing new roof, flashing and related work shall be factory trained and approved by the manufacturer they are representing.
- B. All work shall be of highest quality and in strict accordance with the manufacturer's published specifications and to the building owner's satisfaction.
- C. There shall be a trained supervisor on the job site at all times while work is in progress.

1.13 QUALITY ASSURANCE

- A. The TPO membrane roofing system must achieve a UL Class A and/or FM 1-90 rating.
- B. The manufacturer must have a minimum of twenty (20) years experience in the manufacturing of vulcanized thermal set sheeting.
- C. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.
- D. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least five (5) years successful experience installing single-ply TPO roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year.
- E. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced superintendent on the job at all times roofing work is in progress.
- F. There shall be no deviations made from this specification or the approved shop drawings without the prior written approval of the Architect. Any deviation from the manufacturer's installation procedures must be supported by written certification on manufacturer's letterhead and presented for the Architect's consideration.
- G. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether or not corrective work will be required before the warranty will be issued. Notify the building owner seventy-two (72) hours prior to the manufacturer's final inspection.

1.14 JOB CONDITIONS, CAUTIONS AND WARNINGS

Refer to Carlisle's Sure-Weld Adhered Roofing System specification, Part II - Application, for General Job Site Considerations.

- A. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.

- B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.
- C. When loading materials onto the roof, the Carlisle Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.
- D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitation, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.
- E. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.
- F. Provide protection, such as 3/4" thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.
- G. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.
- H. New roofing shall be complete and weather tight at the end of the work day. Existing deck areas which have not been roofed shall have appropriate night seals to prevent water from entering building.
- I. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

1.15 WARRANTY

- A. Provide manufacturer's 20 year Total System Warranty covering both labor and material with no dollar limitation. The maximum wind speed coverage shall be peak gusts of 90 mph measured at 10 meters above ground level. Certification is required with bid submittal indicating the manufacturer has reviewed and agreed to such wind coverage.
- B. Pro-rated System Warranties shall not be accepted.
- C. Evidence of the manufacturer's warranty reserve shall be included as part of the project submittals for the Architect's approval.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All components of the specified roofing system shall be products of Carlisle SynTec Incorporated or accepted by Carlisle as compatible. See Section 1.02 for alternative roofing system permitted.
- B. Unless otherwise approved by the Architect and accepted by the membrane manufacturer, all products (including insulation, fasteners, fastening plates and edgings as applicable) must be manufactured and supplied by the roofing system manufacturer and covered by the warranty.

2.02 MEMBRANE

Furnish Sure-Weld, gray .060 inch thick Thermoplastic Polyolefin (TPO) membrane. The membrane shall conform to the minimum physical properties of ASTM D4637. Membrane sheets are available in widths of 8 feet or 10 feet wide and 50 or 100 feet long.

2.03 INSULATION/UNDERLAYMENT

- A. When applicable, insulation shall be installed in multiple layers and mechanically fastened or secured to substrate in accordance with manufacturer's published specifications.
- B. Insulation shall be Sure-Seal polyisocyanurate as supplied by Carlisle SynTec Incorporated. Minimum insulation thickness and/or R-value shall be as specified in the contract drawings.

2.04 ADHESIVES AND CLEANERS

All products shall be furnished by Carlisle and specifically formulated for the intended purpose.

- A. Bonding Adhesive: Sure-Weld
- B. Edge Sealant: Cut Edge Sealant
- C. Sealer: Multi-Purpose Sealant
- D. Cleaner: Sure-Weld Membrane Cleaner
- E. Splicing Cement: Brite-Ply Splicing Cement

2.05 MECHANICALLY FASTENED INSULATION ATTACHMENT

Provide Deck Fasteners compatible with new metal decking thickness encountered in the field. Pre-determine deck thickness and submit manufacturer's recommended fasteners for this application. See 3.02 INSULATION PLACEMENT.

2.06 METAL EDGING AND MEMBRANE TERMINATIONS

See drawings for membrane termination requirements.

2.07 WALKWAYS (NOT APPLICABLE)

2.08 OTHER MATERIALS (NOT APPLICABLE THIS PROJECT UNLESS REQUIRED BY MANUFACTURER)

PART 3 - EXECUTION

3.01 GENERAL

- A. Comply with the manufacturer's published instructions for the installation of the membrane roofing system including proper substrate preparation, job site considerations and weather restrictions.
- B. Position sheets to accommodate contours of the roof deck and shingle splices to avoid bucking water.

3.02 INSULATION PLACEMENT

- A. Install insulation over the substrate with boards butted together. Fill joints or gaps greater than $\frac{1}{4}$ " per manufacturer's recommendations. Stagger joints both horizontally and vertically if multiple layers are provided. Reference Contract Drawings for insulation slope/configuration.
- B. Secure insulation to the substrate with mechanical deck fastener's for the specific deck and insulation thickness encountered in the field and in accordance with the manufacturer's specifications.

3.03 MEMBRANE PLACEMENT, ATTACHMENT, AND HOT AIR WELDING

- A. A minimum of one perimeter sheet shall be installed at edges of each roof level and either 10' or 8' wide membrane shall be installed in the field of the roof.
- B. Membrane sheets shall be mechanically fastened with the appropriate Carlisle Fastener/Fastening Plate spaced 6" to 12" on center, depending on project criteria, within the membrane splice. Refer to the "Design Criteria" section for required number of perimeter membrane sheets and fastener spacing.
- C. Overlap adjacent membrane sheets approximately 5- $\frac{1}{2}$ " at those locations where Fastening Plates are located (along length of the membrane) and a minimum of 2" at end roll sections (width of the membrane).
- D. Hot air weld the membrane sheets a minimum of 1'- $\frac{1}{2}$ " with an Automatic Hot Air Welding Machine.
- E. Membrane that has been exposed to the elements for approximately seven (7) days must be prepared with Sure-Weld Membrane Cleaner. Wipe the surface where Sure-Weld Membrane has been applied with a clean, dry HP Splice Wipe or other white rag to remove cleaner residue prior to hot air welding.

3.04 FLASHING

- A. Flash all walls and curbs with Sure-Weld reinforced membrane. Non-reinforced membrane shall be limited to inside and outside corners, field fabricated pipe seals, scuppers and Sealant Pockets where the use of pre-molded accessories are not practical. Terminate the flashing in accordance with an appropriate Carlisle SW-9 Termination Detail.
- B. On vertical surfaces, such as walls, curbs and pipes, Bonding Adhesive is not required when the flashing height is 12" or less and the membrane is terminated under a metal counter-flashing (nailed). When a coping or termination bar is used for vertical terminations, Bonding Adhesive may be eliminated for flashing heights 18" or less.

3.05 WALKWAYS (NOT APPLICABLE)

3.06 DAILY SEAL

- A. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

3.07 CLEAN UP

- A. Perform daily clean up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner. Pressure wash roof membrane to remove all dirt and debris.
- B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

END OF SECTION 07 54 23

SECTION 76 62 00 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and supplementary Conditions and Divisions-1 Specification sections, apply to work specified in this section.

1.02 DESCRIPTION OF WORK

- A. Provide all of the labor, materials, equipment and services to furnish and install the flashing and sheet metal.
- B. All sheet metal items are not individually described.

1.03 QUALITY ASSURANCE

- A. In addition to complying with all pertinent codes and standards, comply with all pertinent recommendations of:
 - 1. "Architectural Sheet Metal Manual," third edition, 1979. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
 - 2. American Iron and Steel Institute (AISI).
 - 3. American Society for Testing Materials (ASTM).
 - 4. Steel Structures Painting Council (SSPC).

1.04 SUBMITTALS

- A. Prior to installation, submit to the Architect for review the following:
 - 1. Complete shop drawings and erection drawings for each product named which shall include a material schedule, details, profiles, gauges, dimensions, and joint details.

PART 2 - PRODUCTS

2.01 GALVANIZED SHEET METAL (Not applicable where specified otherwise elsewhere)

- A. Standard brand of commercial quality steel complying with "Specification for Zinc-Coated (Galvanized) Carbon Steel Sheets of Commercial quality" ASTM A526-80, and "Specification for General Requirements for Delivery of Zinc Coated (Galvanized) Iron or Steel Sheets, Coils and Cut Lengths Coated by the Hot-dip Method," ASTM A525-80. Coating: 1.25 commercial as defined by Table 1 - "Weight of Coating os ASTM A525-80."
- B. Gauge: 24 unless otherwise indicated.

2.02 SOLDER

- A. Standard brand of 50:50 alloy lead-tin complying with "Specifications for Solder Metal," ASTM B32-76. Solder flux: Raw muriatic acid.

2.03 FASTENERS - SHEET METAL

- A. Rivets, nails, sheet metal screws, machine screws, self-tapping screws and stove bolts: Types and sizes best suited for the conditions of use. Use only soft iron rivets having rust-resistive coating, galvanized nails, and cadmium plated screws and washers I connections with galvanized iron and steel.

2.04 SHOP PRIME COATS - SURFACES INACCESSIBLE AFTER FABRICATION OR INSTALLATION

A. Uncoated Ferrous Metalwork:

1. Tnemec #99 Red Metal Primer, #99-D Dark Red Metal Primer, #99-G Green Metal Primer, or #1099 Gray Metal Primer as manufactured by Tnemec Company, Inc., North Kansas City, MO.
2. Rust-Oleum X-60 Red Bar Metal or Primer or #960 Zinc Chromate Primer as manufactured by Rust-Oleum Corporation, Evanston, IL.

B. Galvanized Ferrous Metalwork:

1. Tnemec Primers as specified in paragraph above.
2. Rust-Oleum #3203 Undercoat followed by #3268 Red, as manufactured by Rust-Oleum Corporation. Apply #3203 to 1/2 mil wet coating thickness; #3268 to 1 mil dry coating thickness.

2.05 CAULKING (SEALANT)

- A. One part polysulfide (Thiokol).
- B. An approved equal.

2.06 OTHER MATERIALS

- A. All other material, not specifically described but required for a complete and proper installation of flashing and sheet metal, shall be new, first quality of their respective kinds, and subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 MEASUREMENTS

- A. Verify all dimensions shown on the Drawings by taking field measurements, proper fit and attachment of all parts is required.

3.02 WORKMANSHIP - GENERAL

- A. Unless specifically detailed or specified otherwise, all work shall be in accordance with the recommendation of the SMACNA manual.
- B. Form all sheet metal accurately to the dimension and shapes required, finishing all molded and broken surfaces with true, sharp, and straight lines and angles and, where intercepting other members, coping to an accurate fit and soldering securely.
- C. Reinforcement, fasteners, and expansion provisions shall be wholly concealed within the finished assembly.
- D. Turn exposed edges back ½".
- E. Joints:
 - 1. Join parts with rivets or sheet metal screws where necessary for strength or stiffness.
 - 2. Provide suitable watertight expansion joints for all runs of more than 40 feet, except where closer spacing is indicated on the drawing or required for proper installation.

END OF SECTION 07 62 00

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SECTION 07 84 00 - FIRESTOPPING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 09 29 00 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.
- B. Firestopping of mechanical work.
- C. Firestopping of electrical work.

1.02 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2015.
- B. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2013a.
- C. ITS (DIR) - Directory of Listed Products; current edition.
- D. FM (AG) - FM Approval Guide; current edition.
- E. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.
- F. UL (FRD) - Fire Resistance Directory; current edition.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Schedule of Firestopping: List each type of penetration.
- C. Product Data: Provide data on product characteristics.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.04 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
 - 1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.

2. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 1. Verification of minimum three years documented experience installing work of this type.
 2. Licensed by local authorities having jurisdiction (AHJ).
 3. Approved by firestopping manufacturer.
 4. Provide single source for all firestopping materials.

1.05 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

2.02 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 1. Fire Ratings: Use any system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

2.03 MATERIALS

- A. Submit Manufacturer's list of specific products to be used verify type of material for tested assembly design. Coordinate all subcontractor's manufacturer's products to present a complete firestopping system.
- B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

END OF SECTION 07 84 00

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SECTION 07 92 00 - JOINT SEALERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of each form and type of joint sealer is indicated on drawings, including the following areas:
 - 1. All windows.
 - 2. All exterior doors.
 - 3. Where dissimilar materials meet masonry.
 - 4. Other locations detailed on the drawings.

1.03 SYSTEM PERFORMANCES

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.04 QUALITY ASSURANCE

- A. Installer Specifications: Engage an installer who has successfully completed within the last three years at least three joint sealer applications similar in type and size to that of this project.
- B. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each joint sealer product required, including instructions for joint preparation and joint sealer application.
- B. Samples for Initial Selection Purposes: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available.
- C. Certificates: Submit certificates from manufacturer's of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.
- B. Store and handle materials to prevent their deterioration or damage due to moisture, temperature change, contaminants, or other causes.

1.07 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturers.
 - 2. When joint substrates are wet due to rain, frost, condensation or other causes.
- B. Joint Width Conditions: Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer for application indicated.

PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

- A. General Sealer Requirements: Provide colors indicated or, if not otherwise indicated, as selected by Designer from manufacturer's standard colors. Select materials for compatibility with joint surfaces and other indicated exposures, and except as otherwise indicated select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.
- B. Exterior caulking for masonry-to-metals, except areas to be painted, shall be polyurethane caulking, one-part, color to be selected by Designer, as manufactured by Pecora Dynatrol I.
- C. Exterior caulking for masonry-to-masonry, except areas to be painted, shall be polyurethane caulking, one-part, color to be selected by Designer, as manufactured by Pecora Dynatrol I.
- D. Exterior caulking for parts of building above the slab in areas to be painted shall be polysulfide sealant, nonpourable, one-part, GC-9, color selected by Designer, as manufactured by Pecora Paint Company, "Synthacalk".
- E. Exterior caulking for joints between vertical surfaces and concrete sidewalks shall be pourable, polyurethane, as manufactured by Pecora Paint Company, "Unexpan Nr-200 Urethane" (self-leveling), color as selected by Designer.
- F. Interior Caulking: Acrylic latex caulking as manufactured by Pecora Paint Company, AC-20 Acrylic Latex Caulking Compound. Color as selected by Designer.

- G. Primer/Sealer: Provide type of joint primer/sealer recommended by sealant manufacturer for joint surfaces to be primed or sealed.
- H. Bond Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
- I. Sealant Backer Rod: Provide compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable nonabsorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant.

2.02 SEALANT MATERIALS

- A. One part Non-Acid Curing Silicone Sealant: Type S, Grade NS, Class 25; and complying with the following requirements for uses, modulus and additional joint movement capability:
 - 1. Uses NT, M, G, A and as applicable to joint substrates indicated, O.
 - 2. Medium Modulus: Tensile strength of not less than 45 or more than 75 psi or less at 100% elongation when tested after 14 days at 77 degrees Fahrenheit and 50% relative humidity per ASTM D-412.
 - 3. Products: Subject to compliance with requirements provide one of the following:
 - a. "Spectrum 4-TS" Field Tintable Silicone Sealant; Tremco, Inc.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Filler: ASTM D10565, round open cell foam rod; oversized 30% to 50%.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Require installer to inspect joints indicated to receive joint sealers for compliance with requirements for joint configurations, installation tolerances and other conditions affecting joint sealer performance. Obtain installer's written report listing any conditions

detrimental to performance of joint sealer work. Do not allow joint sealer to proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:
 - 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil, grease, waterproofing, water repellant, water, surface dirt, and frost.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond. Do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION OF JOINT SEALERS

- A. General: Comply with joint sealer manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C-962 for use of joint sealants as applicable to materials, applications and conditions indicated.
- C. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 1. Install joint-fillers of type indicated to provide support for sealants during application and at position required to produce the cross-sectional shapes and depths of the installed sealants relative to joint widths which allow optimum sealant movement capability.
 - a. Do not leave gaps between end of joint-fillers.
 - b. Do not stretch, twist, puncture or tear joint fillers.
 - c. Remove absorbent joint-fillers which have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants and joint fillers, compression seals or back of joints where required to prevent third-side adhesion of sealant to back of joint.
 - 3. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

- D. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
- E. Tooling of Non-Sag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Concave joint configuration per Figure 6A in ASTM C-962, unless otherwise indicated.

3.04 PROTECTION AND CLEANING

- A. Protect joint sealers during and after curing period from contact with contaminating substances or form damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.
- B. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

END OF SECTION 07 92 00

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SECTION 08 11 13 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of standard steel doors and frames is indicated and scheduled on drawings.
- B. Finish hardware is specified in Section 08 71 00.
- C. Building in of anchors and grouting of frames in masonry construction is specified in Section 04 26 13 .

1.03 QUALITY ASSURANCE

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.
- B. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and the openings as those on contract drawings.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver hollow metal work in cartons or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum four (4) inch high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove

carton immediately. Provide one-quarter (1/4) inch spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames by one of the following:
 - 1. Ceco Door Products
 - 2. Copco Door Co.
 - 3. Kewanee Corp.
 - 4. Republic Builders Products Corp./Subs, Republic Steel.
 - 5. Steelcraft

2.02 MATERIALS

- A. Hot-rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A-569 and ASTM A-568.
- B. Cold-rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A-366 and ASTM A620.
- C. Galvanized Steel Sheets: Zinc coated carbon steel sheets of commercial quality, complying with ASTM A-526, ASTM A-525, G60 zinc coating, mill phosphatized.
- D. Supports and Anchors: Fabricate of not less than eighteen (18) gauge galvanized sheet steel.
- E. Insert, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A-153, Class C or D as applicable.
- F. Shop Applied Paint:
 - 1. Primer: Rust-inhibitive enamel or paint, either air drying or baking, suitable as a base for the specified finish paints.

2.03 FABRICATION - GENERAL

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant.
- B. Clearly identify work that cannot be permanently factory- assembled before shipment, to assure proper assembly at project site. Comply with SDI-100 requirements as follows:
 - 1. Exterior Doors: Extra heavy duty, Model 2, minimum sixteen (16) gauge faces.

2. Interior Doors: Eighteen (18) gauge faces.

- C. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.
- D. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at fabricator's option.)
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.
- F. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.
- G. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.
- H. Locate finish hardware as indicated on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.
- I. Shop Painting:
 - 1. Clean, treat and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
 - 2. Clean steel surfaces of mill scale, rust, grease, dirt, oil and other foreign materials before application of the paint.
 - 3. Apply shop coat of the prime paint, of even consistency to provide a uniformly finished surface ready to receive the finish paint.

2.04 STANDARD STEEL DOORS

- A. Provide metal doors of types and styles indicated on drawings and schedules.
- B. Provide polystyrene core for all exterior doors indicated on the drawings and schedules. Polystyrene or architect approved equivalent must have a minimum U-factor of .48 and a R-factor of 2.08.

2.05 STANDARD STEEL FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum sixteen (16) gauge cold-rolled furniture steel. Provide one-hour U.L. Rated Frames as required.

1. Fabricate frames with mitered and welded corners.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive three (3) silencers on strike jambs of single-swing frames and two (2) silencers on heads of double-swing frames.
- C. Plaster Guards: Provide twenty-six (26) gauge steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install standard steel doors, frames and accessories in accordance with final shop drawings, manufacturer's data and as herein specified.
- B. Placing Frame: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.
 1. Except for frames located at in-place concrete or masonry and at drywall installations, place the frames prior to construction at enclosing walls and ceilings. Set frames accurately until permanent anchors are set. After wall construction is completed, remove the temporary braces and spreaders leaving surfaces smooth and undamaged.
 2. In masonry construction, locate three (3) wall anchors per jamb at hinge and strike levels.
- C. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.

3.02 ADJUST AND CLEAN

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.
- C. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION 081 11 13

SECTION 08 14 16 - FLUSH WOOD VENEER DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior Flush Wood Veneer Doors:

1. Five-ply flush bonded doors.

1.2 RELATED SECTIONS

A. Section 08 11 13 - Steel Frames.

B. Section 08 71 00 - Door Hardware.

C. Section 08 80 00 - Glazing.

1.3 REFERENCES

A. ANSI A208.1 - Particleboard.

B. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

C. ASTM E 413 - Classification for Rating Sound Insulation.

D. AWI/AWMAC/WI Architectural Woodwork Standards, Edition 1, Section 9 - Doors.

E. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

F. WDMA I.S. 1A-11 - Architectural Wood Flush Doors.

1.4 SUBMITTALS

A. Comply with Section 01 30 00 - Products.

B. Product Data: Submit manufacturer's product data, including door construction description and WDMA I.S.1-A and AWS classifications.

C. Schedules: Submit manufacturer's schedules, including door dimensions, cutouts, species, finish, and hardware. Reference individual door numbers as indicated on the Drawings.

D. Samples: Submit manufacturer's door finish samples, showing range of color variation.

E. Test Reports: Submit manufacturer's test results of STC ratings from testing performed by independent testing agency for sound-retardant doors.

- F. Manufacturer's Certification: Submit manufacturer's certification that doors comply with specified requirements and are suitable for intended application.
- G. Cleaning Instructions: Submit manufacturer's cleaning instructions for doors.
- H. Warranty: Submit manufacturer's standard warranty.

1.5 QUALITY ASSURANCE

- A. Tolerances for Warp, Telegraphing, Squareness, and Prefitting Dimensions: WDMA I.S.1-A.
- B. Identifying Label: Each door shall bear identifying label indicating:
 - 1. Door manufacturer.
 - 2. Order number.
 - 3. Door number.
 - 4. Fire rating, if applicable.
- C. Environmental Responsibility: Provide doors manufactured with the following environmentally responsible components:
 - 1. Core:
 - a. Particleboard Core:
 - 1) Forest Stewardship Council (FSC) certified.
 - 2) Pre-consumer recycled material.
 - 3) No added urea formaldehyde.
 - 4) CARB NAF / ULEF
 - 2. Composite Crossband:
 - a. High-Density Fiberboard (HDF):
 - 1) Forest Stewardship Council (FSC) certified.
 - 2) Pre-consumer recycled material.
 - 3) CARB NAF / ULEF
 - 3. Stiles and Rails:
 - a. Structural Composite Lumber (SCL):
 - 1) Forest Stewardship Council (FSC) certified.
 - 2) No added formaldehyde.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
 - 1. Deliver doors to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
 - 2. Package doors individually in polybags.

B. Storage:

1. Store doors in accordance with manufacturer's instructions.
2. Store doors in clean, dry area indoors, protected from damage and direct sunlight.
3. Store doors flat on level surface.
4. Do not store doors directly on concrete.
5. Keep doors completely covered. Use covering which allows air circulation and does not permit light to penetrate.
6. Store doors between 50 and 90 degrees F (10 and 32 degrees C) and 30 to 50 percent relative humidity.

C. Handling:

1. Handle doors in accordance with manufacturer's instructions.
2. Protect doors and finish during handling and installation to prevent damage.
3. Handle doors with clean hands or clean gloves.
4. Lift and carry doors. Do not drag doors across other doors or surfaces.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not subject doors to extreme conditions or changes in temperature or relative humidity in accordance with WDMA I.S.1-A.

1.8 WARRANTY

- A. Warrant solid core, interior doors for life of installation against warpage, delamination, and defects in materials and workmanship.
- B. Defects noted during warranty period shall be corrected at no cost to Owner. Corrective work shall include labor and material for repair, replacement, refinishing, and rehanging as required.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. VT Industries, Inc., 1000 Industrial Park, PO Box 490, Holstein, Iowa 51025. Toll Free (800) 827-1615. Phone (712) 368-4381. Fax (712) 368-4111. www.vtindustries.com. door_info@vtindustries.com.
- B. VT Industries, Inc. 164 North Lake Street, Neenah, WI 54956. Phone (920) 722.6444. www.vtindustries.com. door_info@vtindustries.com. Note: Bought out Eggers Company.

2.2 GENERAL

- A. Glazing: As specified in Section 08 80 00.

2.3 FIVE-PLY FLUSH BONDED DOORS

A. Five-Ply Flush Bonded Doors: Heritage Collection.

1. Model:
 - a. PC-5, particleboard core, non-rated.
2. Compliance: WDMA I.S.1-A.
 - a. Aesthetic Grade: Custom.
 - b. Duty Level: Extra heavy duty.
 - c. Type: PC-5
3. Door Thickness: 1-3/4 inches.
4. STC Rating:
 - a. Model PC-5: STC 30.
5. Stiles:
 - a. Structural Composite Lumber (SCL) With Wood Edge: Compatible species as face veneer.
6. Rails:
 - a. Structural composite lumber (SCL). Factory Sealed.
7. Core:
 - a. Material: Particleboard
 - b. Particleboard Compliance: ANSI A208.1, Grade 1-LD-2.
 - c. Stave Lumber Core Compliance: Blocks and strips not more than 2-1/2 inches wide, one species of wood.
8. Door Assembly:
 - a. Stiles and Rails: Bonded to core.
 - b. Sand entire assembly flat as a unit to ensure minimal telegraphing of core components through face veneers.
9. Composite Crossbands:
 - a. Apply to core in hot press using Type I, exterior, water-resistant adhesive, before application of hardwood edges.
 - b. Exposed crossbanding: Not allowed along stile edges.
10. Veneers:
 - a. Apply to crossbanded core in hot press using Type I, exterior, water-resistant adhesive.
 - b. Species: Select White Birch .
 - c. Cut: Rift Cut.
 - d. Match: Book.
 - e. Assembly: Center balanced.
 - f. Minimum Thickness Before Sanding: 1/42 inch.
11. Positive Pressure:

- a. Where UL 10C standards for positive pressure apply, doors shall be constructed in accordance with Category A guidelines as published by Intertek/Warnock Hersey.
- b. Smoke Gasketing: Apply smoke gasketing around frame perimeter and between door and pairs to meet Smoke (S) rating.
- c. Intertek/Warnock Hersey Category A Guidelines: Edge sealing systems not allowed on frames.

2.4 FABRICATION

A. Pre-fit Doors

- 1. Pre-fit and bevel doors at factory to fit openings.
- 2. Pre-fit Tolerances: WDMA I.S.1-A and AWS Section 9.

B. Factory-machine doors for mortised hardware, including pilot holes for hinge screws and lock fronts required.

2.5 FINISHES

A. Doors shall receive factory finishing.

B. Factory Finishing: .WDMA System TR-8, UV cured urethane, premium grade.

- 1. Stain coat.
- 2. Sealer: minimum 3 coats.
- 3. Sanding: Sand.
- 4. Topcoat: 2 coats.

C. Stain Color: To be determined from manufacturer's standard colors. Submit sample box to Architect for review and approval.

D. Top and Bottom Rails: Factory sealed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine locations to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not begin installation until unacceptable conditions are corrected.
- B. Ensure frames are solidly anchored, allowing no deflection when doors are installed.
- C. Ensure frames are plumb, level, square, and within tolerance.

3.2 PREPARATION

- A. Allow doors to become acclimated to building temperature and relative humidity for a minimum of 24 hours before installation.

3.3 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Install doors at locations indicated on the drawings.
- C. Install doors plumb, level, and square.
- D. Install door hardware as specified in Section 08 71 00.

3.4 ADJUSTING

- A. Adjust doors to swing freely, without binding in frame.
- B. Adjust hardware to operate properly.
- C. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- D. Remove and replace damaged doors that cannot be successfully repaired, as determined by Architect.

3.5 CLEANING

- A. Clean doors promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.6 PROTECTION

- A. Protect installed doors from damage during construction.

END OF SECTION 08 14 16

SECTION 08 33 23 - ROLLING SERVICE DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Rolling Service Doors.

1.02 RELATED SECTIONS

- A. Section 06 10 53 - Carpentry Work.
- B. Section 08 71 00 - Finish Hardware.
- C. Section 09 06 90 - Painting.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. American Society for Testing and Materials (ASTM) B 209 Aluminum and Aluminum-Alloy Sheet and Plate.
- C. American Society for Testing and Materials (ASTM) A 240 Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, Strips.
- D. ANSI/DASMA 105 - American National Standard Institute Test Method for Thermal Transmittance and Air Infiltration of Garage Doors
- E. ANSI/DASMA 108 - American National Standards Institute Standard Method For Testing Sectional Garage Doors And Rolling Doors: Determination Of Structural Performance Under Uniform Static Air Pressure Difference.
- F. ANSI/DASMA 203 - American National Standards Institute Specifications for non-rated fire rolling doors published by Door & Access Systems Manufacturers Association International.
- G. ASTM A 123 - Standard Specification for Zinc (hot-dipped galvanized) coatings on iron and steel products.
- H. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.
- I. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
- J. ASTM E 413 - Classification for Rating Sound Insulation
- K. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.
- L. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

- M. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- N. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Provide drawings indicating guide details, head and jamb conditions, anchorage, accessories, finish colors, patterns and textures, operator mounts and other related information.
 - 2. Regulatory Requirements and Approvals: Provide shop drawings in compliance with local Authority Having Jurisdiction (AHJ).
- D. Certifications:
 - 1. Submit manufacturer's certificate that products meet or exceed specified requirements.
 - 2. Submit installer qualifications.
- E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an authorized installer of door manufacturer who has demonstrated experience on projects of similar size and complexity
- B. Manufacturer Qualifications: Company with a minimum of five-year experience in producing the specified type of doors.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 WARRANTY

- A. Raynor warrants the door and its component parts for one (1) year against defects in material and workmanship.
- B. Raynor warrants the electrical operator and its component parts for two (2) years against defects in material and workmanship.
- C. Raynor warrants the electrical operator and its component parts for three (3) years against defects in material and workmanship, on the operator only, when purchased with any model of Raynor rolling service door.
- D. Raynor warrants ArmorBrite™ powder coat finish against cracking or peeling for three (3) years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Raynor, which is located at: 1101 East River Rd. P. O. Box 448 ; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Email: architectsupport@raynor.com; Web: www.raynor.com
- B. Substitutions: Subject to meeting the minimum requirements of these specifications
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 30 00.

2.02 OVERHEAD COILING DOORS

DuraCoil as manufactured by Raynor Garage Doors:

- A. Doors
 - 1. Operation:
 - a. Provide doors designed for push-up operation.
 - 2. Mounting: Door guide mounting configuration.
 - a. Interior face of wall on each side of door opening.
 - 3. Structural Performance Requirements:
 - a. Wind Loads: Uniform pressure of: 13 psf.
 - 4. International Energy Conservation Code (IECC) Requirements:
 - a. Air Infiltration – Maximum air leakage of 1.00 cfm/ft² is required. Testing shall be in accordance with DASMA 105 test procedure.
 - b. DuraCoil with insulated slats and header seal provides air leakage rating of .47 cfm/ft².
 - 5. Sound Transmission Class (STC) rating
 - a. STC rating of 22 required on an insulated door.
- B. Curtain: Interlocking roll-formed slats as specified below. Endlocks shall be attached to each of alternate slat to prevent lateral movement.

Slat Type(s):

1. Insulated flat slats with 24 gauge backer (22 gauge optional). Polyisocyanurate insulation with R-value 6.24.
 - a. Aluminum 18 gauge (0.040 inch minimum thickness)
 2. Material:
 - a. Aluminum in accordance with ASTM B-209, alloy 5005, temper H34.
 3. Color and Finish:
 - a. Clear anodize finish.
- C. Endlocks: Zinc-plated malleable cast iron endlocks fastened with two zinc-plated steel rivets.
- D. Bottom Bar: Two angles, minimum 1-1/2 inches by 1-1/2 inches by 1/8 inch (38.1 mm x 38.1 mm x 3.2 mm) with single-contact type bottom astragal.
1. Material:
 - a. Structural aluminum angles.
 2. Color and finish:
 - a. Structural aluminum angles to be clear anodize finish.
- E. Guide Assemblies: Three structural angles, minimum 3 inches by 2 inches by 3/16 inch (76 mm by 50.8 mm by 4.8 mm) and fitted with removable curtain stops.
1. Material and Finish:
 - a. Structural steel to receive one coat of hot-dipped galvanized.
- F. Guide Weatherseal: Seals to inhibit air infiltration between the guide and the curtain.
1. Snap-on dual durometer vinyl seal.
- G. Counterbalance:
1. Barrel: Minimum 4-1/2 inches (114.3 mm) O.D. and 0.120 inch (3.1 mm) wall thickness structural steel pipe. Deflection of pipe under full load shall not exceed 0.03 inch (0.8 mm) per foot of span.
 2. Counterbalance: Provide counterbalance mechanism with helical torsion springs, grease packed and mounted on a continuous steel torsion shaft.
 - a. High 25,000 cycles.
- H. Brackets: 3/16 inch (4.8 mm), minimum, steel plate, attached to wall angle of guide assembly with 1/2 inch (12.7 mm) diameter Grade 5 bolts. Inside of drive bracket fitted with sealed ball bearing.
1. Finish:
 - a. Provide brackets with one coat of hot-dipped galvanized.
- I. Enclosures:
1. Hood Type:
 - a. Square Hood.
 2. Bracket Covers: Covers to enclose door mechanisms.
 3. Material:
 - a. 18 gauge aluminum (0.040 inch minimum thickness) in accordance with ASTM B-209, alloy 5005, temper H34.

- 4. Color and Finish:
 - a. Clear anodize finish.
- 5. Hood Baffle: Provide hood baffle with a rubber seal to inhibit air infiltration through hood cavity.
- J. Header Seal: Provide a "Z" shape aluminum retainer with EDPM rubber to inhibit air infiltration between the header and the curtain.
- K. Locks: Furnish door system with the following:
 - a. Cylinder Lock: For use with push-up and hand chain operated doors.

2.03 ELECTRIC OPERATORS (Not Required in This Project)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. Verify that site conditions are acceptable for installation of doors, operators, controls, and accessories. Ensure that openings are square, flush, and plumb.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. General: Install door, guides and operating equipment complete with all necessary accessories and hardware according to shop drawings, manufacturer's instructions.
- B. Lubricate bearings and sliding parts and adjust doors for proper operation, balance, clearance and similar requirements.

3.04 PROTECTION

- A. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and legally dispose of construction debris from project site.
- B. Remove temporary coverings and protection of adjacent work areas. Repair or replace installed products damaged prior to or during installation.
- C. Protect installed products until completion of project.
- D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 08 33 23

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SECTION 08 36 13 - SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial sectional doors.
- B. Electric Operators

1.02 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications: Miscellaneous for steel supports.
- B. Section 06 10 00 - Rough Carpentry. Door opening jamb and head members
- C. Section 08 71 00 - Door Hardware: Hardware, locks, access panels.
- D. Section 09 90 00 - Painting: Field painting.

1.03 REFERENCES

- A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- D. ANSI/DASMA 105 - American National Standard Institute Test Method for Thermal Transmittance and Air Infiltration of Garage Doors
- E. ASTM A 123 - Standard Specification for Zinc (hot-dipped galvanized) coatings on iron and steel products.
- F. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.
- G. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.
- H. ASTM E 413 - Classification for Rating Sound Insulation
- I. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element.
- J. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

- K. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- L. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.
- M. ANSI/DASMA 108 - Standard Method for Testing Sectional Garage Doors, Rolling Doors and Flexible Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference
- N. ANSI/DASMA 102 - Specifications for Sectional Overhead-Type Doors
- O. ANSI/DASMA 115 - Standard Method for Testing Sectional Doors, Rolling Doors, and Flexible Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure
- P. FDA 21 CFR 177.1520 - Olefin polymers

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Performance Standards: Provide test data validating the following:
 - 1. Door Section: Gloss retention, fade resistance, FDA compliance, cold crack performance, load to rebound, dent resistance impact.
 - 2. Drive Train: Spring cycle life, track, hinges, rollers, cable assembly, cable strength.
 - 3. Door Assembly: Thermal performance, deflection, wind load.
- D. Shop Drawings:
 - 1. Provide drawings indicating track details, head and jamb conditions, spring shafts, anchorage, accessories, finish colors, patterns and textures, operator mounts and other related information.
 - 2. Regulatory Requirements and Approvals: Provide shop drawings in compliance with local Authority having Jurisdiction (AHJ).
- E. Certifications:
 - 1. Submit manufacturer's certificate that products meet or exceed specified requirements.
 - 2. Submit installer qualifications.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

- G. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an authorized installer of door manufacturer who has demonstrated experience on projects of similar size and complexity.
- B. Manufacturer Qualifications: Company with a minimum of five-year experience in producing the specified type of doors.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.08 WARRANTY

1. Provide manufacturer's standard warranty against defects in material and workmanship, as further described with each model in Part 2 of this Section.
2. Raynor warrants the electrical operator and component parts for two (2) years against defects in material and workmanship when purchased as operator only.
3. Raynor warrants the electrical operator and component parts against defects in material and workmanship for three (3) years, on the operator only, when purchased with any model of Raynor commercial sectional door.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Raynor, which is located at: 1101 East River Rd. P. O. Box 448; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Email: architectsupport@raynor.com; Web: www.raynor.com
- B. Substitutions: Subject to meeting the minimum requirement of these specifications.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 30 00.

2.02 SECTIONAL RAIL AND STYLE ALUMINUM DOORS

- A. AlumaView AV200 as manufactured by Raynor Garage Doors:
 1. Doors:
 - a. Operation:

- 1) Provide doors designed for electric motor operation.
- b. Jamb Construction:
 - 1) Steel jambs with self-tapping fasteners.
- c. Structural Performance Requirements:
 - 1) Wind Loads: 13.3 psf design load/ 20 psf test load standard
- d. International Energy Conservation Code (IECC) Requirements:
 - 1) Air Infiltration: Maximum air leakage of 0.4 cfm/ft² is required. Testing shall be performed in accordance with DASMA 105 test procedure.
 - 2) AV200 with IG Low E Glass has a Tested U-Factor of 0.72.
 - 3) Raynor AV200 provides an air leakage rating of 0.24 cfm/ft² with optional IECC Compliance Package.
2. Sections:
 - a. **AlumaView AV200:**
 - 1) Material: 2 inches (51 mm) thick, 6063-T6 aluminum alloy stiles and rails joined together with 5/16 inch (8 mm) diameter screws. Aluminum panels 0.050 inch (1.3 mm) thick or glazing (when specified) fill the spaces between stiles and rails. Combined dimension of two adjoining intermediate meeting rails 3-13/16 inches (97 mm). Bottom rail height 5-1/4 inches (133 mm). Top rail height 5-1/4 inches (133 mm). End stiles 3-3/8 inches (86 mm) or 6-1/2 inches (165 mm) wide as determined by overall door width. Center stiles 3-5/8 inches (92 mm) wide.
 - 2) ThermaXPS extruded polystyrene provides an R-value of 4.31 when combined with 1/2 inch (13 mm) insulated Low-E Glass.
 - 3) Finish: Aluminum frame extrusions and filler panels finish coated.
 - a) ArmorBrite Powdercoat finish, color as selected by Architect.
 - (1) Color: ArmorBrite RAL3003-to be approved by Owner
 - 4) Seals: Bottom of door to have flexible U-shaped vinyl seal retained in aluminum rail.
 - 5) Bulb-type joint seal between sections.
 - 6) Blade seal on top section to prevent airflow above header.
 - 7) Trussing: Doors designed to withstand specified windload. Deflection of door in horizontal position to be maximum of 1/120th of door width.
 - 8) Windows: Provide door sections with windows and aluminum insulated filler panels. Locations to comply with door elevation drawings.
 - a) 1/2 inch (12.69 mm) **Insulated Low E DSB Glass** consisting of two panes of 1/8 inch (3.2 mm) DSB insulated glass.
3. Track:
 - a. Material: Hot-dipped galvanized steel (ASTM A 653), fully adjustable for adequate sealing of door to jamb or weatherseal.
 - b. Configuration Type: Incline with 6:12 pitch.
 - c. Track Size: 3 inches (76 mm).
 - 1) Jamb Type: Steel, wood, or masonry. To be determined by architectural drawings.

- a) Mounting: Floor-to-shaft angles. 13 gauge (2.2 mm) minimum continuous angles from floor, past header, up to door shaft. Angle Size: 3-1/2 x 5 inches (89 x 127 mm) on 3-inch track.
- d. Finish:
 - 1) Galvanized.
- 4. Counterbalance:
 - a. Counterbalance System: Provided with aircraft-type, galvanized steel lifting cables with minimum safety factor of 5. Torsion Springs consisting of heavy-duty oil-tempered wire torsion springs on a continuous ball-bearing cross-header shaft.
 - 1) Spring Cycle Requirements: Standard 10,000 cycles.
 - 2) Spring Cycle Requirements: High cycle: 25,000 cycles.
- 5. Hardware:
 - a. Hinges and Brackets: Fabricated from galvanized steel.
 - b. Track Rollers: 3 inches (76.2 mm) diameter consistent with track size, with hardened steel ball bearings.
 - c. Perimeter Seal: Provide complete weather stripping system to reduce air infiltration. Weather stripping shall be replaceable.
 - 1) For angle mounted doors provide angle clip-on seal.
- 6. View Limited Warranty: Raynor warrants the door sections against defects in material and workmanship for five years from date of delivery to the original purchaser. Window components are warranted against defects in material and workmanship for three years from date of delivery to the original purchaser. Raynor warrants all hardware and spring components against defects in material and workmanship for one year (or cycle life of the springs) from date of delivery to the original purchaser. Additional Limited Warranty requirements in accordance with manufacturer's full standard limited warranty documentation.

2.03 ELECTRIC OPERATORS

A. ControlHoist as manufactured by Raynor Garage Doors:

- 1. Model:
 - a. Raynor ControlHoist Standard:
 - 1) Type: Jackshaft with manual chain hoist.
 - 2) Motor Horsepower Rating: Continuous 1/2 HP.
 - 3) Electrical Requirements: 115 volt single phase.
 - 4) Duty Cycle: 30 cycles/hour or 300 cycles/day.
 - 5) Control Wiring: Solid state circuitry with provisions for connection of safety edge to reverse, external radio control hook-up and maximum run timer. Provisions for timers to close, monitored reversing devices, mid stop and lock bar sensor capability.

- a) Provide three button momentary contact "open-stop", constant pressure on close (can be changed to momentary to close).
- 6) Entrapment protection:
 - a) Wireless monitored electric reversing edge extending full width of door.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. Verify that site conditions are acceptable for installation of doors, operators, controls and accessories. Ensure that openings are square, flush and plumb.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. General: Install door, track and operating equipment complete with all necessary accessories and hardware according to shop drawings, manufacturer's instructions.
- B. Lubricate bearings and sliding parts, and adjust doors for proper operation, balance, clearance and similar requirements.

3.04 PROTECTION

- A. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and legally dispose of construction debris from project site.
- B. Remove temporary coverings and protection of adjacent work areas. Repair or replace installed products damaged prior to or during installation.
- C. Lubricate bearings and sliding parts, assure weather tight fit around door perimeter and adjust doors for proper operation, balance, clearance and similar requirements. Protect installed products until completion of project.
- D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 08 36 13

SECTION 087100 - FINISH HARDWARE

Part 1 - GENERAL

1. SUMMARY

A. Section Includes:

1. Door Hardware, including electric hardware.
2. Storefront and entrance door hardware.
3. Wall or floor-mounted electromagnetic hold-open devices.
4. Cylinders for doors fabricated with locking hardware.
5. Key cabinet.

B. Related Sections:

1. Section 062000 - Finish Carpentry: Finish Hardware Installation.
2. Section 079000 - Joint Sealers – exterior thresholds.
3. Section 081100 - Metal Doors and Frames.
4. Section 081400 - Wood Doors.
5. Section 081500 - Plastic Doors.
6. Section 084000 - Entrances and Storefronts.
7. Section 088000 - Glazed Curtain Walls.
8. Section 102200 - Operable Partitions.
9. Section 210000 - Fire/Life-Safety System.
10. Section 280000 - Security Access Systems.

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Folding partitions, except cylinders where detailed.
8. Sliding aluminum doors, except cylinders where detailed.
9. Access doors and panels, except cylinders where detailed.
10. Corner Guards.
11. Wrought Iron railing, gates and supports.
12. Brass rail and drink rail supports.

2. REFERENCES:

- A. Use date of standard in effect as of Bid date.
- B. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- C. ANSI A117.1 – Specifications for making buildings and facilities usable by physically handicapped people.
- D. ADA – Americans with Disabilities Act of 1990
- E. BHMA – Builders Hardware Manufacturers Association
- F. DHI – Door and Hardware Institute
- G. NFPA – National Fire Protection Association

- 1. NFPA 80 – Fire Doors and Windows
- 2. NFPA 101 – Life Safety Code
- 3. NFPA 105 – Smoke and Draft Control Door Assemblies
- 4. NFPA 252 – Fire Tests of Door Assemblies

- H. UL – Underwriters Laboratories

- 1. UL10C – Fire Tests of Door Assemblies (Positive Pressure)
- 2. UL 305 – Panic Hardware

- I. WHI – Warnock Hersey Incorporated
- J. SDI – Steel Door Institute
- K. WDI – Wood Door Institute
- L. AWI – Architectural Woodwork Institute
- M. NAAM – National Association of Architectural Metal Manufacturers

3. SUBMITTALS & SUBSTITUTIONS

- A. SUBMITTALS: Submit six copies of schedule per Division 1. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

- 1. Type, style, function, size, quantity and finish of hardware items. Use BHMA Finish codes per ANSI A156.18.
- 2. Name, part number and manufacturer of each item.
- 3. Fastenings and other pertinent information.
- 4. Location of hardware set coordinated with floor plans and door schedule.
- 5. Explanation of abbreviations, symbols, and codes contained in schedule.
- 6. Mounting locations for hardware.
- 7. Door and frame sizes, materials and degrees of swing.
- 8. List of manufacturers used and their nearest representative with address and phone number.
- 9. Catalog cuts.
- 10. Manufacturer’s technical data and installation instructions for electronic hardware.
- 11. Date of jobsite visit.

- B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.
- C. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
- D. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring/riser diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4 QUALITY ASSURANCE:

A. Qualifications:

- 1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course Work for project hardware consultation to Owner, Architect and Contractor.

- (1) Responsible for detailing, scheduling and ordering of finish hardware.

- B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.

- C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

- D. Fire-Rated Openings: In compliance with NFPA 80. Hardware UL10C/UBC-7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, plus resilient and required intumescent seals. Furnish openings complete.

- 1. Note: scheduled seals may exceed selected door manufacturer's requirements. See 2.6.E for clarification.

- E. **Pre-Installation Meetings: Initiate and conduct with supplier, installer and related trades, coordinate materials and techniques, and sequence complex hardware items and systems installation. Convene at least one week prior to commencement of related work.**

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).

1. Permanent keys: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.
- C. Storage: Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc...

1.6 PROJECT CONDITIONS:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.
- B. Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including sized, quantities, and sill conditions material. If conflict between the scheduled material and existing conditions, submit request for directions from Architect. Include date of jobsite visit in the submittal.

1.7 SEQUENCING AND COORDINATION:

- A. Coordinate with concrete.
- B. Reinforce walls.
- C. Coordinate finish floor materials and floor-mounted hardware.
- D. Conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
- E. Furnish manufacturer templates to door and frame fabricators.
- F. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
 1. Confirm that door manufacturers furnish necessary UBC-7-2 compliant seal packages.

1.8 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' warranties:

1. Closers: Ten years mechanical, two years electrical.
2. Exit Devices: Three years.
3. Hinges: Life of Building.
4. Other Hardware: Two years.

1.9 COMMISSIONING:

- A. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.
- B. Test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
- C. Test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.

<u>ITEM:</u>	<u>MANUFACTURER:</u>	<u>ACCEPTABLE SUB:</u>
Hinges	(IVE) Ives	Bommer, Hager
Key System	(SCH) Schlage Everest 29	None
Locks	(SCH) Schlage	Falcon
Exit Devices	(VON) Von Duprin	None
Closers	(FAL) Falcon	Norton, LCN
Silencers	(IVE) Ives	DCI, Hager
Kickplates	(IVE) Ives	Hager, Rockwood
Stops & Holders	(IVE) Ives	Hager, Rockwood
Overhead Stops	(GLY) Glynn-Johnson	Rixson
Thresholds	(ZER) Zero	National Guard, Reese
Seals & Bottoms	(ZER) Zero	National Guard, Reese
Key Cabinets	(LUN) Lund	TelKee

- B. Provide hardware items required to complete the work in accordance with these specifications and manufacturers' instructions.
 1. Include items inadvertently omitted from this specification. Note these items in submittal for review.
 2. Where scheduled item is now obsolete, bid and furnish manufacturers updated item at no additional cost to the project.

2.2 HANGING MEANS:

- A. Conventional Hinges: Hinge open widths minimum, but, of sufficient throw to permit maximum door swing. Steel or stainless steel pins and concealed bearings.
 - 1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height, or any fraction thereof.
 - 2. Extra heavy weight hinges on doors over 3 foot, 5 inches in width.
 - 3. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins.
 - 4. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
 - 5. Provide shims and shimming instructions for proper door adjustment.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

- A. Heavy Duty Cylindrical Locks and Latches: as scheduled.
 - 1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
 - 2. Locking Spindle: stainless steel, interlocking design.
 - 3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel or stainless steel.
 - 4. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to face of door.
 - 5. Lock Series and Design: Schlage ND series, "LAT" design.
 - 6. Acceptable Substitution: Falcon T series LAT design
 - 7. Certifications:
 - a. ANSI A156.2, 1994, Series 4000, Grade 1
 - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.
 - 8. Accepted substitutions: Sargent 6500 line series LP design

2.4 EXIT DEVICES

- A. Exit Devices:
 - 1. Acceptable manufacturers:
 - a. Von Duprin*
 - 2. Characteristics:
 - a. Exit devices to be "UL" listed for life safety. All exit devices for fire rated openings to have "UL" labels for "Fire Exit Hardware."

- b. All exit devices mounted on labeled wood doors to be mounted on the door per the door manufacturer's requirements.
- c. All trim to be thru-bolted to the lock stile case. Lever design to match locksets.
- d. All exit devices to be made of brass, bronze, stainless steel, or aluminum material, powder coated, anodized, or plated to the standard architectural finishes to match the balance of the door hardware.
- e. Provide glass bead conversion kits to shim exit devices on doors with raised glass beads.
- f. All exit devices to be one manufacturer. No deviation will be considered.
- g. All series exit devices to incorporate a fluid damper, which decelerates the touchpad on its return stroke and eliminates noise associated with exit device operation. All exit devices to be non-handed. Touchpad to extend a minimum of 1/2 of the door width and to extend to the height of the cross rail housing for a "no pinch" operation. Plastic touchpads are not acceptable. All latchbolts to be the deadlocking type. Latchbolts to have a self-lubricating coating to reduce wear. Plated or plastic coated latchbolts are not acceptable. Plastic linkage and "dogging" components are not acceptable.
- h. Lever trim to be solid case material with a break-away feature to limit damage to the unit from vandalism.
- i. Surface vertical rod devices to be UL labeled for fire door applications without the use of bottom rod assemblies. Where bottom rods are required for security applications, the devices to be UL labeled for fire doors applications with rod and latch guards by the device manufacturer.
- j. Exit devices to include impact resistant, flush mounted end cap design to avoid damage due to carts and other heavy objects passing through an opening. End cap to be of heavy-duty metal alloy construction and provide horizontal adjustment to provide alignment with device cover plate. When exit device end cap is installed, no raised edges will protrude.
- k. Basis of Design: Von Duprin 98/99 series, LAT trim to match locksets

2.5 CLOSERS

- A. General: One manufacturer for closer units throughout the Work, including surface closers, high security closers, overhead concealed closers, floor closers, low-energy door operators and electromagnetic hold-open closers.
- B. Surface Closers:
 - 1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast aluminum body. Heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
 - 2. ISO 2000 certified. Units stamped with date-of-manufacture code.
 - 3. Thru-bolts at wood doors unless doors are provided with closer blocking. Non-sized, non-handed and adjustable. Place closers inside building, stairs and rooms.
 - 4. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
 - 5. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb.
 - 6. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
 - 7. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
 - 8. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to 0 degrees F, furnish data on request.
 - 9. Non-flaming fluid will not fuel door or floor covering fires.
 - 10. Basis of Design: Falcon SC71A and SC80 series as specified in sets
 - 11. Accepted substitutions: Norton 7500 and 8301 series as noted above, LCN 4050 and 1450 series as noted above

2.6 OTHER HARDWARE

- A. Overhead Stops: Stainless steel (90 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.
- B. Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.
- C. Door Stops: Provide stops to protect walls, casework or other hardware.
 - 1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
- D. Seals: Finished to match adjacent frame color. Resilient seal material: solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products:

certify that the products equal or exceed specified material's thickness and durability. Proposed substitutions: submit for approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
 2. Non-corroding fasteners at in-swinging exterior doors.
 3. Sound control openings: Use components tested as a system using nationally accepted standards by independent laboratories. Ensure that the door leafs have the necessary sealed-in-place STC ratings. Fasten applies seals over bead of sealant.
 4. Fire-rated Doors, Resilient Seals: UL10C/UBC-7-2 compliant. Coordinate with selected door manufacturers and selected frame manufacturer's requirements.
 5. Fire-rated Doors, Intumescent Seals: Furnish fire-labeled opening assembly complete and in full compliance with UL10C/UBC-7-2. Furnished by selected door manufacturer, these seals vary in requirement by door type and door manufacture. Adhesive applied intumescent strips are not acceptable, use concealed-in-door-edge type or kerfed-in-frame type. Careful coordination required.
- F Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.
- G. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
1. Exteriors: Set in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4 inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
 2. Sound control openings: Set in bed of mastic sealant.
- H. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.
- I. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.
- 2.7 FINISH:
- A. Generally BHMA 619.

- B. Door closers: factory powder coated to match other hardware, unless otherwise noted.
- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8 KEYING REQUIREMENTS:

- A. Key System: For estimate use factory GMK charge. Initiate and conduct meeting(s) with Owner to determine system keyway(s) and structure, furnish Owner's written approval of the system.
 - 1. New master key system
 - 2. Construction keying: FSIC construction cores. At substantial completion, remove temporary cores and install permanent cores in Owner's presence; demonstrate consequent non-operability of construction key. Give all removed construction cores and all construction keys to hardware supplier.
 - 3. Furnish 10 construction keys.
 - 4. Furnish 2 construction control keys.
 - 5. Recombine entire project at no extra expense to Owner if missing construction keys.
- B. Key Cylinders: utility patented, 6-pin FSIC solid brass construction.
- C. Locks and cylinders: keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.
- D. Permanent keys: secured shipment direct from point of origination to Owner.
- E. Bitting List: Secured shipment direct from point of origination to Owner upon completion.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

- A. Factory trained, certified, and carries a factory-issued card certifying that person as a "Certified Installer". Alternative: can demonstrate suitably equivalent competence and experience.

3.2 PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
 - 1. Notify Architect of any code conflicts before ordering material.
 - 2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Owner.
 - 1. Patch and fill wood frames and doors with solid wood stock or dowel material before cutting for new hardware. Do not reuse existing screw holes - - fill and re-pilot.
 - 2. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.

3. INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation.
 - 1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 - 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
- B. Locate floor stops not more than 4 inches from the wall.
- C. Drill pilot holes for fasteners in wood doors and/or frames.
- D. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

4. ADJUSTING

- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction.
- B. Inspection: Use hardware supplier. Include suppliers with closeout documents.
- C. **Post-installation Inspection: Installer will visit Project with representatives of the manufacturers of the locking devices and door closers, the Owner and the Architect to accomplish following:**
 1. **Demonstrate that hardware items have been adjusted according to the manufacturers installations and recommendations.**
 2. **Evaluate maintenance procedures and instruct Owner's personnel.**
 3. **Identify items that have not been installed according to the manufacturers installation instructions and recommendations.**
 4. **Submit written report identifying problems and recommended solutions.**
5. DEMONSTRATION:
 - A. Demonstrate electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.
6. PROTECTION/CLEANING:
 - A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/ barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
 - B. Clean adjacent wall, frame and door surfaces soiled from installation/ reinstallation process.
7. SCHEDULE OF FINISH HARDWARE
 - A. See door schedule in drawings for hardware set assignments.
 - B. Manufacturers and their abbreviations used in this schedule:

FAL	Falcon Closers
GLY	Glynn-Johnson Hardware
IVE	H. B. Ives
SCE	Schlage Electronics
SCH	Schlage Lock Company
VON	Von Duprin
ZER	Zero Manufacturing

HARDWARE GROUP NO.: 01

For use on Door #(s):

100 122

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 02

For use on Door #(s):

101 153 154 155

Provide each RU door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ALL HARDWARE	BY DOOR MANUFACTURER		

HARDWARE GROUP NO.: 03

For use on Door #(s):

102

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	DOOR STATION	IX-DVF		AIP
1	EA	ELEC PANIC HARDWARE	CD-RX-LC-98-EO-SNB	619	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-400-993R-70-MTK-LAT-J 4AA BATTERY	619	SCE
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER
5	EA	DESK MOUNT BUTTON	660-PB	628	SCE

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND
INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL OR PRESSING REMOTE RELEASE UPON RECEIPT OF
VALID REQUEST TO ENTER FROM AIPHONE DOOR STATION UNLOCKS OUTSIDE TRIM. TRIM
RE-LOCKS AFTER PRESET INTERVAL. RX SWITCH IN PANIC BAR SHUNTS DPS. FREE EGRESS AT
ALL TIMES.

HARDWARE GROUP NO.: 04

For use on Door #(s):

103	106	119	129	140	141
164	166	168			

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	619	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 05

For use on Door #(s):

104	114	115	131	133	136
137	138	139			

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	WIRELESS ELECTRONIC LOCK NDEBT LAT BATTERY OPERATED		619	SCE
1	EA	SURFACE CLOSER	SC81A HW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND

INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 06

For use on Door #(s):

105	132
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Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	WIRELESS ELECTRONIC LOCK NDEBT LAT BATTERY OPERATED		619	SCE
1	EA	OH STOP & HOLDER	90H	619	GLY
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND

INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 07

For use on Door #(s):

107 108 109

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 08

For use on Door #(s):

111 113 126

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 09

For use on Door #(s):

120 158

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL ENTRANCE LOCK	ND92TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 10 - NOT USED

HARDWARE GROUP NO.: 11

For use on Door #(s):

110 112 116 128 135

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	WIRELESS ELECTRONIC LOCK NDEBT LAT BATTERY OPERATED		619	SCE
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND
INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 12

For use on Door #(s):

117

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	VANDL STOREROOM LOCK	ND96TD LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 13

For use on Door #(s):

118

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 14

For use on Door #(s):

121 159

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	619	IVE
1	EA	PRIVACY LOCK	ND40S LAT	619	SCH
1	EA	SURFACE CLOSER	SC81A RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MOP PLATE	8400 4" X 1" LDW B-CS	619	IVE
1	EA	WALL STOP	WS406/407CCV	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO.: 15

For use on Door #(s):

123 127

Provide each CO door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CASED OPENING	NO HARDWARE REQUIRED		

HARDWARE GROUP NO.: 16

For use on Door #(s):

124 142

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	SC81A DS	689	FAL
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MEETING STILE	383AA	AA	ZER
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 17

For use on Door #(s):

125

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	WIRELESS ELECTRONIC LOCK NDEBT LAT BATTERY OPERATED		619	SCE
1	EA	SURFACE CLOSER	SC81A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND
INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 18

For use on Door #(s):

130	134	160	161	163	165
167	169	171	172	173	175

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	WALL STOP	WS406/407CCV	619	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 19

For use on Door #(s):

143

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	646	IVE
1	EA	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	SC81A DSHO	689	FAL
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	MEETING STILE	383AA	AA	ZER
2	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 20

For use on Door #(s):

145	151	152	156
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Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	619	IVE
1	EA	ELEC CLASSROOM LOCK	AD-400-CY-70-MTK-LAT-J 4AA BATTERY	619	SCE
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND
INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE LEVER. LEVER RE-LOCKS AFTER
PRESET INTERVAL. RX SWITCH IN LOCK SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 21

For use on Door #(s):

146	147	148	149	150
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Provide each BF door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ALL HARDWARE	BY DOOR MANUFACTURER		

HARDWARE GROUP NO.: 22

For use on Door #(s):

144 157 170

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	ELEC PANIC HARDWARE	CD-RX-LC-98-EO-SNB	619	VON
1	EA	ELEC EXIT DEVICE TRIM	AD-400-993R-70-MTK-LAT-J 4AA BATTERY	619	SCE
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

PANEL INTERFACE MODULES, GATEWAYS, LOW VOLTAGE CABLING, SET-UP, AND
INITIALIZATION TO BE BY DIVISION 28

PRESENTATION OF VALID CREDENTIAL UNLOCKS OUTSIDE TRIM. TRIM RE-LOCKS AFTER
PRESET INTERVAL. RX SWITCH IN PANIC BAR SHUNTS DPS. FREE EGRESS AT ALL TIMES.

HARDWARE GROUP NO.: 23

For use on Door #(s):

162

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-98-EO-SNB	619	VON
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

HARDWARE GROUP NO.: 24

For use on Door #(s):

174

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	646	IVE
1	EA	PASSAGE SET	ND10S LAT	619	SCH
1	EA	OH STOP	90S	619	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO.: 25

For use on Door #(s):

176 177

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PANIC HARDWARE	CD-98-L-LAT-SNB	619	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
1	EA	MORTISE CYLINDER	20-061 ICX 36-083	619	SCH
2	EA	FSIC CORE	23-030	626	SCH
1	EA	SURFACE CLOSER	SC71A DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	619	IVE
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR SWEEP	8197AA	AA	ZER
1	EA	THRESHOLD	8655A	A	ZER

END OF SECTION 08 71 00

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes:

- 1. Glass for windows, doors, interior borrowed lites, storefront framing and glazed curtain walls.
 - 2. Glazing sealants and accessories.

- B. Related Requirements:

- 1. Division 08 Section "Hollow Metal Doors and Frames".
 - 2. Division 08 Section "Flush Wood Doors".

1.03 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.
- C. IBC: International Building Code 2018. D. Interspace: Space between lites of an insulating-glass unit.

1.04 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.05 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

2. Review temporary protection requirements for glazing during and after installation.

1.06 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of the following products; 12 inches (300 mm) square.
 1. Tinted glass.
 2. Coated glass.
 3. Laminated glass.
 4. Insulating glass.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use the same designations indicated on Drawings.
- D. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer, licensed in the state of Illinois, responsible for their preparation.

1.07 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For glass.
- B. Product Test Reports: For insulating glass and glazing sealants, for tests performed by a qualified testing agency.
 1. For glazing sealants, provide test reports based on testing current sealant formulations within the previous 36-month period.
- C. Preconstruction adhesion and compatibility test report.
- D. Sample Warranties: For special warranties.

1.08 QUALITY ASSURANCE

- A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.
- B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- E. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion,

1.09 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 - 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 - 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 - 4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
 - 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers

and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F (4.4 deg C).

1.12 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion

- C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Glass Product: Subject to compliance with requirements, provide product indicated in glass schedules or comparable product by one of the following:
 1. Oldcastle BuildingEnvelope.
 2. PPG Industries, Inc.
 3. Viracon, Inc.

B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.

1. Obtain tinted glass from a single source from a single manufacturer.

C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.02 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, licensed in the state of Illinois, as defined in Division 01 Section "Quality Requirements," to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI7, based on heights above grade indicated on Drawings.

a. Wind Design Data: As indicated on Drawings.

b. Basic Wind Speed: 115 mph.

c. Importance Factor: 1.

d. Exposure Category: C.

2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch (25 mm), whichever is less.

3. Differential Shading: Design glass to resist thermal stresses by differential shading within individual glass lites.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites of thickness indicated.

2. For laminated-glass lites, properties are based on products of construction indicated.

3. For insulating-glass units, properties are based on units of thickness indicated for the overall unit and for each lite.

2.03 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
 2. AAMA Publications: AAMAGDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
 3. IGMA Publication for Sloped Glazing: IGMATB-3001, "Guidelines for Sloped Glazing."
 4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
 1. Minimum Glass Thickness for Exterior Lites: 6 mm.
 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout the Project.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heatstrengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat- strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.04 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C 1036, Type I, Class 1 (clear), Quality-Q3.

- B. Tinted Annealed Float Glass: ASTM C 1036, Type I, Class 2 (tinted), Quality-Q3.
- C. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- D. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- E. Reflective-Coated Vision Glass: ASTM C 1376.
- F. Ceramic-Coated Spandrel Glass: ASTM C 1048, Type I, Condition B, Quality-Q3. 2.5

2.05 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer, ionomeric polymer interlayer or cast-in-place and cured-transparent-resin interlayer to comply with interlayer manufacturer's written instructions.
 - 2. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.06 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
 - 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants
 - 2. Spacer: Manufacturer's standard spacer material and construction.
 - 3. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.07 FIRE-PROTECTION-RATED GLAZING (IF APPLICABLE THIS PROJECT)

- A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies and NFPA 257 for window 08 80 00 - 8 assemblies.
- B. Laminated Ceramic Glazing: Laminated glass made from 2 plies of clear, ceramic flat glass; 5/16-inch (8-mm) total nominal thickness; complying with testing requirements in 16 CFR 1201 for Category II materials.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Nippon Electric Glass Co., Ltd. (distributed by Technical Glass Products); Fire Lite Plus.
 - b. Schott North America, Inc.; Laminated Pyran Crystal.
 - c. Vetrotech Saint-Gobain; SGG Keralite FR-L.

2.08 GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Field-applied sealants shall have a VOC content of not more than 250 g/L.
 - 4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

2.09 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- D. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated

- E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- F. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 - 2. Presence and functioning of weep systems.
 - 3. Minimum required face and edge clearances.
 - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.03 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead,
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).
- 7. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
- 8. Provide 1/8-inch (3-mm) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

- K. Square cut wedge-shaped gaskets at comers and install gaskets in a manner recommended by gasket manufacturer to prevent comers from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.04 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.05 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.06 MONOLITHIC GLASS SCHEDULE

- A. Glass Type GL-1: Clear fully tempered float glass (all interior except as noted).
 - 1. Minimum Thickness: 1/4 inch (6.0 mm).
 - 2. Safety glazing label required.
- B. Glass Type GL-6: Reflective-coated vision glass; fully tempered float glass.
 - 1. Basis-of-Design Product: Pilkington "Mirropane" as manufactured by Pilkington North America Inc.
 - 2. Kind: Kind CV (coated vision glass).
 - 3. Coating Type: Pyrolytic.
 - 4. Coating Color: As selected by Architect.
 - 5. Glass: Clear float glass.
 - 6. Tint Color: As selected by Architect.
 - 7. Minimum Thickness: 1/4 inch (6.0 mm).
 - 8. Coating Location: First surface.
 - 9. Low-Maintenance Coating: Pyrolytic coating on first surface.
 - 10. Safety glazing label required.

3.07 LAMINATED GLASS SCHEDULE

- A. Glass Type GL-7: Clear laminated glass with two plies of fully tempered float glass (main Vestibule).
 - 1. Minimum Thickness of Each Glass Ply: 1/8 inch (3 mm).
 - 2. Interlayer Thickness: 0.030 inch (0.76 mm).
 - 3. Safety glazing required.

3.08 INSULATING GLASS SCHEDULE

- A. Glass Type GL-2: Low-E-coated, clear insulating glass (all exterior except as noted).
 - 1. Basis-of-Design Product: Oldcastle: 1/4" SB60 #2-12.5 mill - 1A" clear.
 - 2. Overall Unit Thickness: 1 inch (25 mm).
 - 3. Minimum Thickness of Each Glass Lite: 1/2 inch (12 mm).
 - 4. Outdoor Lite: Fully tempered float glass.

5. Interspace Content: Air.
 6. Indoor Lite: Fully tempered float glass.
 7. Low-E Coating: Pyrolytic on second surface.
 8. Winter Nighttime U-Factor: 0.33 maximum.
 9. Visible Light Transmittance: 73 percent minimum.
 10. Solar Heat Gain Coefficient: 0.66 maximum.
 11. Safety glazing label required.
- B. Glass Type GL-4 (If project conditions require): Ceramic-coated, low-E, insulating spandrel glass.
1. Basis-of-Design Product: PPG Solarban 60, clear glass insulating unit, OPACI-COAT-300, Charcoal, 1A inch (6mm) PPG Clear.
 2. Coating Color: Match Architect's samples.
 3. Overall Unit Thickness: 1 inch (25 mm).
 4. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).
 5. Outdoor Lite: Fully tempered float glass.
 6. Interspace Content: Air.
 7. Indoor Lite: Fully tempered float glass.
 8. Low-E Coating: Pyrolytic on second surface.
 9. Opaque Coating Location: Fourth surface.
 10. Winter Nighttime U-Factor: 0.29 maximum.
 11. Summer Daytime U-Factor: 0.27 maximum.
- 3.09 FIRE PROTECTION RATED GLAZING TYPES (IF APPLICABLE THIS PROJECT)
- A. Glass Type GL-5: Fire rated laminated ceramic glazing with 450 deg F (250 deg C) temperature rise limitation.
1. Minimum Thickness: 3/4 inch, as required by fire rating.
 2. Provide safety glazing labeling.

3.10 TEMPERED GLASS

A. Glass Type GL-3: Clear, fully tempered float glass.

1. Minimum Thickness: 3/8 inch (10 mm), (Display Cases).
2. Provide safety glazing labeling.

END OF SECTION 08 80 00

SECTION 09 06 90 - PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Prepare surfaces which are to receive finish.
- B. Finish surfaces as indicated in schedule at end of this section.

1.03 MOCK-UP

- A. Before proceeding with paint application, finish one room clearly indicating selected colors, finish texture, materials and workmanship.
- B. If approved, sample area will serve as a minimum standard for work throughout work.

1.04 SAMPLES

- A. Prepare 12" x 12" in draw down samples of finishes when requested by Architect. When possible, apply finishes on identical type materials to which they will be applied on the job.
- B. Identify each sample as to finish, formula, color name and number.
- C. Colors to be selected by Architect prior to commencement of work.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instruction for mixing and/or reducing.
- B. Provide adequate storage facilities. Store paint materials at minimum ambient temperatures of 45 degrees Fahrenheit (seven (7) degrees C.), in well ventilated area.
- C. Take precautionary measure to prevent fire hazard and spontaneous combustion.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below following maximums:
 - 1. Gypsum Wallboard: 12%.

2. Masonry, Concrete and Concrete Block: 12%.
 3. Interior Located Wood: 15%.
 4. Exterior Located Wood: 15%.
- B. Ensure surface temperatures or the surrounding air temperature is above 40 degrees Fahrenheit before applying finishes. Minimum application temperatures for latex paints for interior work is 40 degrees Fahrenheit and 50 degrees Fahrenheit for exterior work.
 - C. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes.

1.07 PROTECTION

- A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.
- C. Place cotton waste, clothes and materials which may constitute a fire hazard in closed metal containers and remove daily from site.
- D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Paint, Varnish, Stain, Enamel, Lacquer and Fillers: Type listed herein, or equivalent products by the following manufacturers are acceptable:
 1. Sherwin Williams Company.
 2. Benjamin Moore and Co. (Moore).
 3. Porter Paints (Porter).
- B. Paint Accessory Materials: Linseed oil, shellac, stain, turpentine and other materials not specifically indicated herein, but required to achieve the finishes specified of high quality and approved manufacturer.
- C. Paints: Ready-mixed except field catalyzed coatings. Pigments fully ground maintaining

a soft paste consistency, capable of being readily and uniformly dispersed to a complete homogeneous mixture.

- D. Paints to have good flowing and brushing properties and be capable of dry or curing free of streaks or sags.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to Architect, any condition that may potentially affect proper application. Do not commence until such defects have been corrected.
- B. Correct defects and deficiencies in surfaces which may adversely affect work of this section.

3.02 PREPARATION

- A. Remove mildew, by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.
- B. Remove surface contamination from aluminum surfaces requiring a paint finish by steam, high pressure water or solvent washing. Apply etching primer, acid, or etc.
- C. Remove contamination from gypsum wallboard surfaces and prime to show defects, if any. Paint after defects have been remedied.
- D. Remove surface contamination and oils from galvanized surfaces and wash with solvent. Apply coat of etching type primer.
- E. Sand and scrape shop primed steel surfaces to remove loose primer and rust. Feather out edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- F. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coat knots, patch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand between coats. Back prime interior and exterior woodwork.
- G. Remove dust grit and foreign matter from exterior wood siding which is to receive paint finish. Seal knots, patch streaks and sap sections. Fill nail holes with exterior caulking compound after prime coat has been applied.

3.03 APPLICATION

- A. Apply each coat at proper consistency.
- B. Sand lightly between coats to achieve required finish.

- C. Do not apply finishes on surfaces that are not sufficiently dry.
- D. Allow each coat of finish to dry before following coat is applied.
- E. Where clear finishes are required, ensure tint fillers match wood. Work fillers well into the grain before set. Wipe excess from the surface.
- F. Back prime exterior woodwork, which is to receive paint finish, with exterior primer paint.
- G. Back prime interior woodwork, which is to receive paint or enamel finish, with enamel undercoater paint.
- H. Prime top and bottom edges of wood doors with gloss varnish when they are to receive a stain or clear finish.
- I. Remove grilles, covers and access panels for mechanical and electrical systems from location and paint separately.
- J. Finish paint primed equipment to color selected.
- K. Prime and paint exposed, insulated and bare pipes except where items are plates or covered with a pre-finished coating.

3.04 PAINTING SCHEDULE

A. Exterior Surfaces:

1. Exterior Ferrous Metals, Hollow Metal Work, and Exposed Piping:

- a. First Coat: No primer required
- b. Second Coat: Sherwin Williams Direct to Metal Paint (semi-gloss)
- c. Third Coat: Sherwin Williams Direct to Metal Paint (semi-gloss)

2. Galvanized Metal:

- a. First Coat: Sherwin Williams ProCryl Waterborne Universal Metal Primer.
- b. Second Coat: Sherwin Williams Duration Exterior Acrylic Satin
- c. Third Coat: Sherwin Williams Duration Exterior Acrylic Satin

3. Exterior Wood Surfaces (NOT APPLICABLE THIS PROJECT):

- a. First Coat: Only as required by manufacturer

- b. Second Coat: Sherwin Williams Super Paint Exterior Acrylic Latex (Semi-Gloss Sheen)
 - c. Third Coat: Sherwin Williams Super Paint Exterior Acrylic Latex (Semi-Gloss Sheen)
- B. Interior Surfaces:
 - 4. Interior Wood Surfaces:
 - a. First Coat: Primer Sealer (May be tinted)
 - b. Second Coat: Sherwin Williams Super Paint Interior Acrylic Latex (Semi-Gloss Sheen)
 - c. Third Coat: Sherwin Williams Super Paint Interior Acrylic Latex (Semi-Gloss Sheen)
 - 5. Pre-painted Brick Surfaces (NOT APPLICABLE THIS PROJECT):
 - a. First Coat: Where primer is required for newly repointed mortar joints or new brick, follow manufacturer's recommendations
 - b. Second Coat: Super Paint (Satin Sheen)
 - c. Third Coat: Super Paint (Satin Sheen)
 - 6. Interior Metal Surfaces:
 - a. First Coat: No primer required
 - b. Second Coat: Sherwin Williams Direct to Metal Paint (semi-gloss)
 - c. Third Coat: Sherwin Williams Direct to Metal Paint (semi-gloss)

3.05 CLEAN-UP AND PROTECTION

- A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans, and rags at end of each work day.
- B. Upon completion of painting work, clean window glass and other paint-splattered surfaces. Remove splattered paint by proper methods of washing and scraping, taking care not to scratch or otherwise damage finished surfaces.
- C. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing, or replacing and repainting, as acceptable to the Designer.

D. Provide "wet paint" signs as required to protect newly painted finishes.

E. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 09 06 90

SECTION 09 29 00 - GYPSUM WALLBOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Types of work include:
 - 1. Gypsum drywall including screw-type metal support system.
 - 2. Gypsum board and joint treatment products.
 - 3. Metal framing for the support of gypsum board partitions and ceilings.
 - 4. Accessories for the installation and trimming of gypsum board partitions and ceilings.

1.03 QUALITY ASSURANCE

- A. Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated or, provide materials and installations which are identical with those applicable assemblies tested per ASTM E-119 by fire testing laboratories acceptable to authorities having jurisdiction.
 - 1. Provide fire-resistance rated assemblies identical to those indicated by reference to UL File Nos. in UL "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.
- B. Gypsum Board Terminology Standard: GA-505 by Gypsum Association.
- C. Single Source Responsibility: Obtain gypsum board products from a single manufacturer.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

- B. Store materials inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements - General: Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.
- B. Cold Weather Protection: When ambient outdoor temperatures are below 55 degrees Fahrenheit, maintain continuous, uniform, comfortable building working temperatures of not less than 55 degrees Fahrenheit for a minimum period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding of adhesives.
- C. Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements provide products of one of the following:
 - 1. Metal Support Materials:
 - a. Gold Bond Building Products Div., National Gypsum Co.
 - b. Milcor Division, Inryco, Inc.
 - c. United States Gypsum Co.
 - 2. Gypsum Board and Related Products:
 - a. American Gypsum Co.
 - b. Flintkote Products, Genstar Building Materials Co.
 - c. Georgia-Pacific Corporation
 - d. Gold Bond Building Products Div., National Gypsum Co.
 - e. United States Gypsum Co.
- B. MOLD and moisture RESISTANT INTERIOR GYPSUM BOARD: Reference the plans and interior elevations in the Construction Documents for the extent of all plumbing walls and walls that are to have ceramic (or porcelain tile) or corian finish. At all

plumbing walls, provide the below specified product up to 48" above the finished floor unless noted otherwise in the partition types. Terminate at corners of room or walls perpendicular to plumbing walls all ceramic (or porcelain) veneered walls, provide the below specified product behind these finish materials up to the heights as dimensioned in the interior elevations and for the full surface area behind these materials. Subject to compliance with requirements stated below, provide products as follows:

1. Abuse Resistant Gypsum Board ASTM C1629: Standard Classification for Abuse-Resistant Non-decorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
 - a. Basis of Design: Subject to compliance with project requirements, the design is based on the following: "USG Corporation, Sheetrock® Brand MoldTough® Abuse Resistant VHI Firecode® X".
 - 1) Abrasion Resistance; Level 31
 - 2) Indentation Resistance; Level 1
 - 3) Soft Body Impact Resistance; Level 3
 - 4) Hard Body Impact Resistance; Level 2
 - b. UL Type Designation "AR".
 - c. ASTM C1658/1658M Standard Specification for Glass Mat Gypsum Panels: 5/8 in. Type AR, with mold-and moisture-resistant core and surface paper.
 - d. ASTM E136 Noncombustibility: Meets or exceeds criteria
 - e. ASTM E84 Surface-Burning Characteristics:
 - 1) Flame Spread: 15
 - 2) Smoke Developed: 0
 - 3) Classification: Class A
 - f. ASTM C473, the average water absorption for panels is not greater than 5% by weight after two-hour immersion
 - 1) Core Hardness: Not less than 11
 - 2) Flexural Strength (lbf):
 - i) Parallel: Not less than 46
 - ii) Perpendicular: Not less than 147
 - 3) Nail Pull Resistance (lbf): Not less than 87

- g. Thickness: 5/8 inch (12.7 mm)
 - h. Lengths: 8'-0" (2440 mm), 10'-0" (3050 mm), or 12'-0" (3660 mm) is acceptable.
 - i. Width: 4'-0" (1220 mm)
 - j. Weight: 2.8 lbs./ft² (13.6 mm)
 - k. Long Edges: Tapered.
- C. GYPSUM BOARD - TYPE X: Unless specified to use Mold and Moisture resistant products per Paragraph "B" otherwise, the balance of interior gypsum wallboard requirements for this project are stated below. Subject to compliance with requirement stated below, provide products from manufacturer's listed above:
- 1. Gypsum Board, Type X: ASTM 1396/C1396M.
 - a. Basis of Design: Subject to compliance with project requirements, the design is based on the following: United States Gypsum Company, LLC, "USG Sheetrock® Brand UltraLight Panels Firecode® X".
 - b. UL Classification: Type ULX.
 - c. ASTM E136: Non Combustible gypsum core.
 - d. ASTM E84 Surface-Burning Characteristics:
 - 1) Flame Spread: 5.
 - 2) Smoke Developed: 5.
 - 3) Classification: Class A.
 - e. Thickness: 5/8 inch (15.9 mm).
 - f. Length: 8'-0" (2440 mm), 10'-0" (3050 mm), or 12'-0" (3660 mm) is acceptable.
 - g. Width: 4'-0" (1219 mm).
 - h. Weight: 1.93 lbs./ft².
 - i. Long Edges: Tapered.

2.02 METAL SUPPORT MATERIALS

- A. Ceiling Support Materials and Systems:
 - 1. General: Size ceiling support components to comply with ASTM C-754 unless otherwise indicated.

2. Main Runners: Steel channels with rust inhibitive paint finish, hot or cold rolled.
3. Hanger Wire: ASTM A-641, soft, Class I galvanized.
4. Hanger Rods and Flats: Mild steel with zinc or equally rust inhibitive coating for rods and zinc or rust inhibitive paint finish for flats.
5. Angle-Type Hangers: Not less than 7/8" x 7/8" x 16 gauge galvanized steel formed angles, with bolted connections and 5/15" diameter bolts.
6. Hanger Anchorage Devices: Screws, clips, bolts, cast-in-place concrete inserts or other devices applicable to the indicated method of structural anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for three (3) times calculated load supported except size direct pull-out concrete inserts for five (5) times calculated loads.
7. Furring Members: ASTM C-645; 0.0179" minimum thickness of base metal, hat-shaped.
8. Furring Members: ASTM C-645; 0.0179" minimum thickness of base metal, C-shaped studs.
9. Furring Anchorage: 16 gauge galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails and/or screws as recommended by furring manufacturer and complying with C-754.
10. Direct Suspension Systems: Manufacturer's standard zinc coated or painted steel system of furring runners, furring tees, and accessories designed for concealed support of gypsum drywall ceilings; of proper type for use intended.
11. Studs: ASTM C-645; 0.0179" minimum thickness of base metal unless otherwise indicated.
 - a. Depth of Section: 3-1/2"; and as indicated on the drawings.
 - b. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

2.03 GYPSUM BOARD PRODUCTS

- A. Gypsum Wallboard: ASTM C-36, of types, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.
 1. Type: Regular, unless otherwise indicated.
 2. Type: Type X for fire-resistant rated assemblies where indicated.
 3. Edges: Tapered.

4. Thickness: As indicated, or if not otherwise indicated, as required to comply with ASTM C-840 for application system and support spacing indicated. Five-eighths ($\frac{1}{2}$) inch Minimum unless required otherwise in the drawings.
- B. Gypsum wallboard exterior sheathing: ASTM C79, of types, edge configuration and thickness indicated below; in maximum lengths available to minimize end-to-end butt joints.
1. Type: A gypsum core sheathing panel with additives to enhance the water resistance of the core; surfaced with water repellant paper on front, back, and long edges. Include manufacturer's approved joint tape for total dampproofed system. Provide Type X for fire resistant rated assemblies where indicated.
 2. Edges: Tapered.
 3. Thickness: As indicated, or if not otherwise indicated, as required to comply with ASTM C-754 for installation system and support spacing indicated. One-half ($\frac{1}{2}$) inch Minimum unless required otherwise in the drawings.

2.04 TRIM ACCESSORIES

- A. General: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim beads, special L-Kerf-type edge trim-beads, and one piece control joint beads.
1. Semi-Finishing Type: Manufacturer's standard trim units which are not to be finished with joint compound, (nonbeaded.)
 2. Plastic Edge Trim: Manufacturer's standard rigid or semi-rigid PVC moldings of semi-finished type, shape to provide resilient contact of gypsum board edges with other work; friction-fit, or pressure-sensitive adhesive mounting.

2.05 JOINT TREATMENT MATERIALS

- A. General: ASTM C-475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.
- B. Joint Tape: Paper reinforcing tape.
- C. Joint Compound: Ready-mixed vinyl-tape for interior use.
1. Grade: A single multi-purpose grade, for entire application.
- D. Joint Compound: On interior work provide chemical hardening type for bedding and filling, ready-mixed vinyl type for topping.

2.06 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

B. Gypsum Board Screws: Comply with ASTM C-646.

C. Gypsum Board Nails: Comply with ASTM C-514.

PART 3 - EXECUTION

3.01 PREPARATION FOR METAL SUPPORT SYSTEMS

A. Ceiling Anchorages: Coordinate work with structural ceiling work to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling hangers.

1. Furnish concrete inserts, steel deck hanger clips and similar devices to other trades for installation well in advance of time needed for coordination with other work.

3.02 INSTALLATION OF METAL SUPPORT SYSTEMS

A. Metal Support Installation Standard: Comply with ASTM C-754.

1. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.
2. Nail or screw furring members to framing as indicated.

B. Ceiling Support Suspension Systems:

1. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips, or other anchorage devices or fasteners as indicated.
2. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c., along runners, except as otherwise shown.
3. Level main runners to a tolerance of 1/4" in 12'-0" measured both lengthwise on each runner and transversely between parallel runners.
4. Wire tie or clip furring members to main runners and to other structural supports as indicated.

C. Wall/Partition Support Systems:

1. Install supplementary framing, blocking, and bracing at termination in the work to comply with details indicated or if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer, or if not available, of "Gypsum Construction Handbook" published by United States Gypsum Company.

2. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.
3. Install runner tracks at floors, ceilings, and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.
4. Extend partition stud system through acoustical ceilings and elsewhere as indicated to the structural support or substrate above the ceiling.
 - a. Space studs 16" o.c. unless otherwise indicated.

3.03 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS

- A. Gypsum Board Application and Finishing Standards: ASTM C-840 and GA 216.
- B. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.
- C. Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'-0".
- D. Install wall/partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- E. Install exposed gypsum board with face side out. Do not install imperfect, damaged, or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
- F. Located either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut end against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- G. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- H. For control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.
- I. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceiling, etc.), except in chase walls which are properly braced internally.

1. Except where concealed application is required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than eight (8) sq. ft. area, and may be limited to not less than 75% of full coverage.
- J. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide one-fourth (1/4) inch to one-half (1/2) inch space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant.
- K. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

3.04 METHODS OF GYPSUM DRYWALL APPLICATION

- A. Single-layer Application: Install gypsum wallboard.
 1. On ceilings, apply gypsum board prior to wall/partition board application to the greatest extent possible.
 2. On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
 3. On partitions/walls eight feet (8') one inch (1") or less in height, apply gypsum board (perpendicular); use maximum length sheets possible to minimize end joints.
 4. On Z-furring members apply gypsum board vertically (parallel) with no end joints. Locate edge joints over furring members.
- B. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
 1. Fasten with screws.

3.05 INSTALLATION OF DRYWALL TRIM ACCESSORIES

- A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.
- B. Install metal corner beads at external corners of drywall work.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints.)
- D. Install semi-finishing trim where indicated, and where exterior gypsum board edges are not covered by applied molding or indicated to receive trim with face flanges covered with joint compound.

- E. Install plastic edge trim where indicated on wall panels at juncture with ceilings.

3.06 INSTALLATION OF DRYWALL FINISHING

- A. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.
 - 1. Apply joint tape at joints between gypsum boards, except where trim accessory is indicated.
 - 2. Apply joint compound in three coats (not including prefill of openings in base), and sand between last two coats and after last coat.
- B. No paint finishes required on concealed drywall.
- C. Refer to sections on painting, coatings and wall covering in Division 9 for decorative finishes to be applied to drywall work.

3.07 PROTECTION OF WORK

- A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION 09 29 00

SECTION 09 51 13 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 - Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of each type of acoustical ceiling is shown and scheduled on drawings.
- B. Types of acoustical ceilings specified in this section include the following:
 - 1. Acoustical panel ceiling, exposed suspension.

1.03 QUALITY ASSURANCE

- A. Installer Qualifications: Firm with not less than three years of successful experience in installation of acoustical ceilings similar to requirements for this project and which is acceptable to manufacturer of acoustical units, as shown by current written statement from manufacturer.
- B. Fire Performance Characteristics: Provide acoustical ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate marking of applicable testing and inspecting agency.
- C. Surface Burning Characteristics: As follows, tested per ASTM E 1264:
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 50 or less.
- D. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by or penetrating through, ceilings, including light fixtures, HVAC equipment and partition system (if any.)

1.04 SUBMITTALS

- A. Product Data: Manufacturer's product specifications and installation instructions for each acoustical ceiling material required, and for each suspension system, including certified laboratory test reports and other data required to show compliance with these specifications.
 - 1. Include manufacturer's recommendations for cleaning and refinishing acoustical units including precautions against materials and methods which may be detrimental to finishes and acoustical performances.
- B. Samples: Set of full size square samples for each acoustical unit required, showing full

range of exposed color and texture to be expected in completed work.

1. Set of 12" long samples of each exposed runner and molding.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.06 PROJECT CONDITIONS

- A. Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproofed, wet-work in space is completed and nominally dry, work above ceilings completed, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

2.01 ACOUSTICAL CEILING UNITS - GENERAL

- A. Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated which are prepared for mounting method designated and which comply with FS SS-S-118 requirements, including those indicated by reference to type, form, pattern, grade (NRC or NIC's as applicable), light reflectance coefficient (LR, edge detail, and joint detail.
 1. Mounting Method for Measuring NRC: No. 7 (mechanically mounted on special metal support), FS SS-S-118; or Type E-400 mounting as per ASTM E795.
- B. Sound Attenuation Performance: Provide acoustical ceiling units with ratings for ceiling sound transmission class (STC) of range indicated as determined according to AMA 1-II "Ceiling Sound Transmission Test by Two Room Method" with ceilings continuous at partitions and supported by a metal suspension system of type appropriate for ceiling unit of configurations indicated (concealed for tile, exposed for panels).
- C. Color, Textures and Patterns: Provide products to match appearance characteristics as selected by Architect from manufacturer's standard colors, surface textures and patterns available for acoustical ceiling units and exposed metal suspension system members of quality designated.

2.02 ACOUSTICAL PANELS

A. Type III Panels-Mineral Composition with Standard Washable Painted Finish: (interior ceiling).

1. Modulated, Cast or Molded Units - Fissured: Form 1, Patterned, NRC .70, LR (0.86), STC 35-39, beveled tegular, manufacturer's standard color line:

a. Products: Subject to compliance with requirements, provide one of the following or architect pre-approved equal:

i. Standard Panels : No. 76775 24" x 24" x 3/4" SLT lay-in for DX 15/16" Exposed Tee Grid; by USG Corporation. Reference finish schedule for all locations depicting "ACOUST. 1". The architect will select a grid and tile color from the manufacturer's standard available color line for this series. Submit samples for review and approval.

ii. Feature kitchen ceiling per attached data sheet. Use USG no. 3210 24" x 24" x 5/8" for DX 15/16" exposed tee grid.

2.03 METAL SUSPENSION SYSTEMS - GENERAL

A. Standard for Metal Suspension Systems: Provide metal suspension systems of type, structural classification and finish indicated which comply with applicable ASTM C 635 requirements.

B. Finishes and Colors: Provide manufacturer's standard finish for type of system indicated, unless otherwise required. For exposed suspension members and accessories with painted finish, provide color as selected by Architect from manufacturer's full range of standard colors.

1. High Humidity Finish: Comply with ASTM C 635 requirements for: "Coating Classification for Severe Environment Performance" where high humidity finishes are indicated.

C. Attachment Devices: Size for five (5) times design load indicated in ASTM C 635, Table 1, Direct Hung.

1. Concrete Inserts: Inserts formed from hot-dip galvanized sheet steel and designed for attachment to concrete forms and for embedment in concrete, with holes or loops for the attachment at hanger wires.

D. Hanger Wire: Galvanized carbon steel wire, ASTM A 641, soft temper, pre-stretched, Class 1 coating, sized so that stress at three (3) times hanger design load (ASTM C 635, Table 1, Direct Hung), will be less than yield stress of wire, but provide not less than 12 gauge.

E. Edge Moldings and Trim: Metal or extruded plastic of types and profiles indicated or, if not indicated, provide manufacturer's standard molding for edges and penetrations of ceiling which fits with type of edge detail and suspension system indicated.

1. For circular penetrations of ceiling, provide edge molding fabricated to diameter required to fit the penetration, exactly.

2.04 EXPOSED METAL DIRECT - HUNG SUSPENSION SYSTEMS

A. Double Web Steel Suspension System: (Interior Ceilings).

1. Structural Classification: Intermediate Duty System.
2. Finish: Painted, white or black.
3. Hold-Down Clips: Provide hold-down clips for ceiling unit weighing less than one (1) pound per sq. ft.

2.05 MISCELLANEOUS MATERIALS

A. Acoustical Sealant: Resilient, non-staining, non-shrinking, non-hardening, non-skinning, non-drying, non-sag sealant intended for interior sealant of concealed construction joints.

1. Products: Subject to compliance with requirements provide one of the following:

Tremco Acoustical Sealant:	Tremco
USG Acoustical Sealant:	United States Gypsum Company.
Chem-Calk 600:	Woodmont Products, Inc.

PART 3 - EXECUTION

3.01 PREPARATION

A. Coordination: Furnish layouts for inserts, clips or other supports required to be installed by other trades for support of acoustical ceilings.

1. Light fixtures, sprinklers and air ducts shall be hung independent of ceiling and shall be furnished and installed by the appropriate electrical and mechanical trades.
2. Furnish steel deck hanger clips and similar devices to the other trades for installation well in advance of the time needed for coordination of other work.

B. Testing Substrates: Before installing adhesively applied tile on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

C. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans wherever possible.

3.02 INSTALLATION

- A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to work.
- B. Arrange acoustical units and orient directionally patterned units (if any), in manner shown by reflected ceiling plans.
 - 1. Install tile with pattern running in one direction.
- C. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers not less than six inches (6") from each end and spaced 4'-0" along each carrying channel or direct hung runner, unless otherwise indicated, leveling to tolerance of one-eighth (1/8) inch in 12'-0".
 - 1. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.
 - 2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of the supporting structural or ceiling suspension system. Splay hangers only where required to miss any obstructions and offset resulting horizontal force by bracing, counter playing or other equally effective means.
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
 - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.
 - 2. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than three (3) inches from ends, leveling with the ceiling suspension system to tolerance of one-eighth (1/8) inch in 12'-0". Miter corners accurately and connect securely.
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

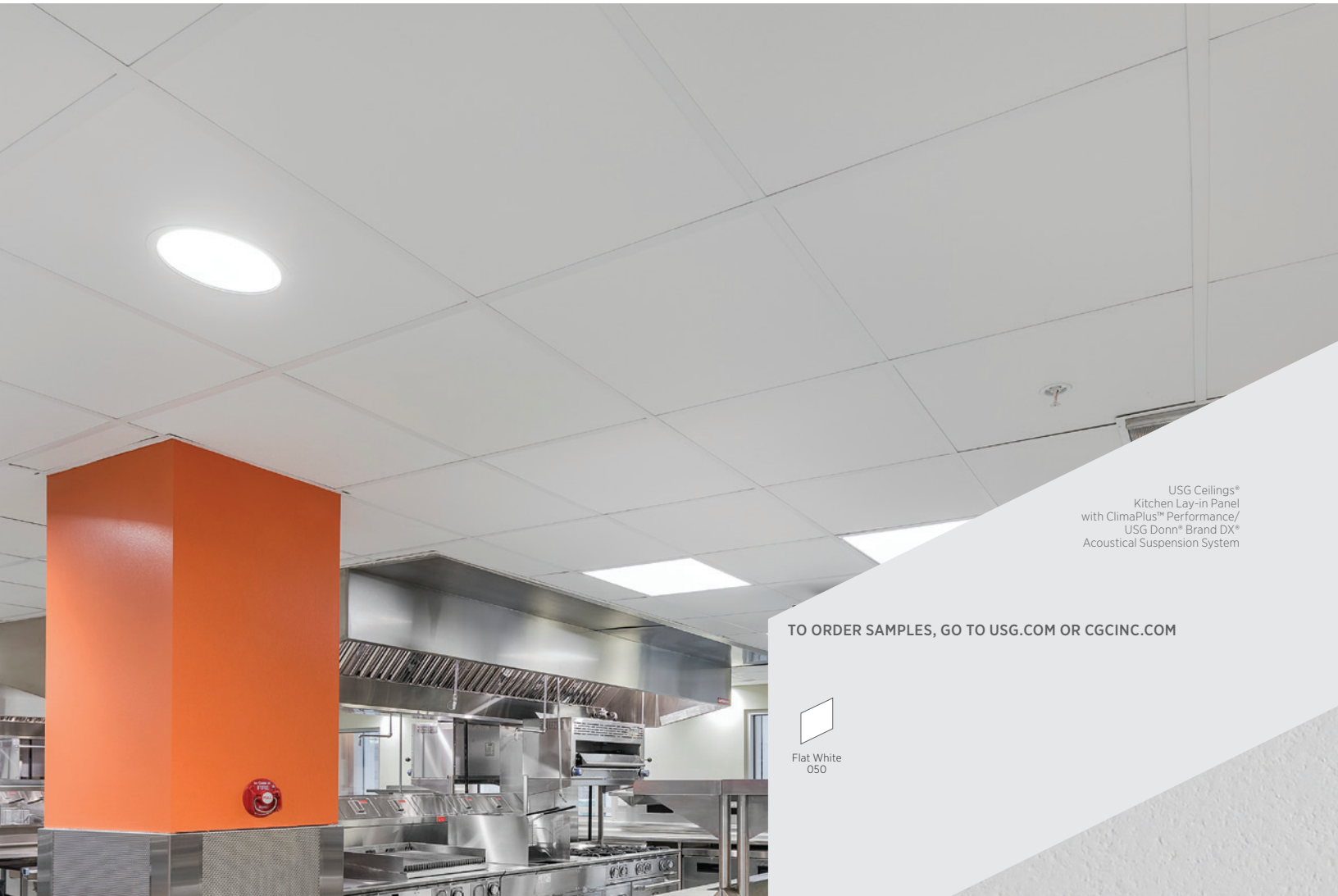
3.03 ADJUST AND CLEAN

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

USG CEILINGS® KITCHEN LAY-IN PANEL

CLIMAPLUS™ PERFORMANCE



USG Ceilings®
Kitchen Lay-in Panel
with ClimaPlus™ Performance/
USG Donn® Brand DX®
Acoustical Suspension System

TO ORDER SAMPLES, GO TO USG.COM OR CGCINC.COM



Flat White
050

FEATURES AND BENEFITS

- Lightweight alternative to vinyl-covered gypsum.
- Meets USDA/FSIS guidelines for use in food-processing areas.
- High light reflectance.
- Washable, water repellent, scratch and soil resistant finish.
- ClimaPlus™ 30-year limited system warranty against visible sag, mold and mildew.

APPLICATIONS

- Kitchens and food preparation areas
- Restrooms and utility areas
- Locker rooms

SUBSTRATE

- Wet-formed mineral fiber

Smooth-Textured Panel

USG CEILINGS® KITCHEN LAY-IN PANEL
CLIMAPLUS™ PERFORMANCE

ORDER SAMPLES/LITERATURE
USG: usg.com or samplitt@usg.com
CGC: contact Sales Representative
FOR MOST UP-TO-DATE TECHNICAL INFORMATION AND LEED REPORT TOOL
usgdesignstudio.com
cgcdesignstudio.com
TECHNICAL SERVICES
800 USG.4YOU (874-4968)



30 YEAR LIMITED SYSTEM WARRANTY
• No Visible Sag
• Mold/Mildew Protection

USG CEILINGS® KITCHEN LAY-IN PANEL²

GRID PROFILE OPTIONS

PHYSICAL DATA

Table with 12 columns: Edge, Panel Size, Fire Rating, Item No., NRC⁴, CAC Min., LR³, Color, Grid Options, Anti-Mold & Mildew/Sag Resistance, Recycled Content¹, Panel Cost. Rows include SQ 2'x2'x5/8" and 2'x4'x5/8" panels.

Low Emissions (VOC)
Third party (GREENGUARD Gold) certified for low-emitting performance, meets California Department of Public Health's (CDPH) Standard Method v1.2 - 2017 (CA Section 01350).
ClimaPlus™ Warranty Performance⁵
Contains a broad-spectrum antimicrobial additive on the face and back of the panel that provides resistance against the growth of mold and mildew. Includes sag-resistance performance.

Table with 3 columns: A USG DX®, B USG DXLA™, C USG ZXLA™. Each column contains a diagram of the grid profile.

Product literature
Data sheet: SC3226
ASTM E1264 classification
Type IX, Form 2, Pattern G
ASTM E84 and CAN/ULC S102 surface-burning characteristics
Class A
Flame spread: 25 or less
Smoke developed: 50 or less
Weight
0.60 lb./sq. ft.
Online tools
usgdesignstudio.com or cgcdesignstudio.com
Thermal resistance
R-1.4
Maximum backloading
See USG 30-Year Limited System Warranty Commercial Applications (SC2102).
Maintenance
Can be cleaned easily with a damp sponge. Use mild detergent and water—do not use acetate, ammonia or high concentration of chlorine, bromide or other harsh chemicals.
Notes
1. For details, see USG Sustainability tool at usgdesignstudio.com or cgcdesignstudio.com.
2. Do not use this product in close proximity to grease ducts.
3. LR values are shown as averages.
4. USG does not consider a ceiling panel to be acoustically rated if NRC is less than 0.50.
5. For details, see USG 30-Year Limited System Warranty Commercial Applications (SC2102).

Notice
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SECTION 09 65 66 - RESILIENT ATHLETIC FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interlocking, loose-laid rubber tile.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

1.03 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed data sheets for products specified.
- C. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.
- D. Verification Samples: Actual flooring material specified, not less than 12 inch square, mounted on solid backing.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer certified in writing by the flooring manufacturer to be qualified for installation of specified flooring system.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.
- B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished

surfaces.

PART 2 PRODUCTS

2.01 PREFORMED ATHLETIC FLOORING

A. Manufacturers: All products by the same manufacturer.

1. Puzzle-Lock by Rubber-Cal: www.rubbercal.com.

B. Rubber Tile Flooring: Recycled rubber tires and colored EPDM granules with urethane binder, formed into square tiles.

1. VOC Content: As specified in Section 01 61 16.

2. Thickness: Minimum 1/4 inch.

3. Size: Nominal 18 inch square.

4. Tensile Strength: Minimum 150 psi, per ASTM D412.

5. Surface Texture: Smooth.

6. Color: As selected from manufacturer's standards.

2.02 ACCESSORIES

A. Leveling Compound: Latex-modified cement formulation as recommended by flooring manufacturer for substrate conditions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of athletic flooring. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.

1. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

D. Verify that concrete sub-floor surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Concrete: Use leveling compound as necessary to achieve substrate flatness of plus or minus 1/8 inch within 10 ft radius.

B. Remove coatings that are incompatible with flooring adhesives, using methods recommended by flooring manufacturer.

C. Broom clean areas to receive athletic flooring immediately before beginning installation.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Comply with manufacturer's recommendations.

C. Rubber Tile Flooring:

1. Lay out center lines in spaces to receive tile flooring, based on location of principal walls. Start tile installation from center, and adjust as necessary to avoid tiles less than one-half width at perimeter.

2. Lay tiles square with room axis, matching for color and pattern by selecting from cartons and mixing as recommended by manufacturer.

3.04 CLEANING

A. Clean flooring using methods recommended by manufacturer.

3.05 PROTECTION

- A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.

END OF SECTION 09 65 66

SECTION 09 67 10 - RESINOUS FLOORING AND BASE (Alternate #1)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coating systems for concrete floors.

1.02 RELATED SECTIONS

- A. Section 09 67 30 - Concrete Floor Coatings.

1.03 REFERENCES

- A. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D 4259 - Standard Practice for Abrading Concrete.
- C. ASTM D 4263 - Indicating Moisture in Concrete by the Plastic Sheet Method.
- D. ASTM F 1869 - Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- E. International Concrete Repair Institute (ICRI) Guideline No. 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
- F. SSPC-SP 13/NACE 6 - Surface Preparation of Concrete.

1.04 DEFINITIONS

- A. Definitions of Painting Terms: ASTM D 16, unless otherwise specified.
- B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

1.05 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.
- C. Color Samples: Submit manufacturer's color samples showing full range of standard colors.
- D. Applicator's Qualifications Assurance: Submit list of a minimum of 5 completed projects of similar size and complexity to this Work within 50 miles of site. Include for each project:
 - 1. Project name and location.

2. Name of owner.
 3. Name of contractor.
 4. Name of architect.
 5. Name of coating manufacturer.
 6. Approximate area of coatings applied.
 7. Date of completion.
- E. All materials specified herein are manufactured by the TNEMEC Co., Inc., North Kansas City, Missouri (Local Contact 615-333-1000) and are approved for use on this project.
- F. Equivalent materials of other manufacturers may be substituted on approval of the Architect. Requests for substitution shall include Manufacturer's literature for each product giving the name, generic type, descriptive information and evidence of satisfactory past performance on flooring projects. Submittals shall include the following performance data as certified by a qualified testing Laboratory:
1. ASTM D 4060, (CS-17 Wheel, 1,000 grams load, 1,000 cycles)
 2. ASTM D 4541
 3. ASTM D 2047
 4. ASTM C 579
 5. ASTM C 531
 6. ASTM D 790
 7. ASTM D 2240
 8. ASTM D 2794
 9. ASTM C 413
 10. ASTM D 635
 11. ASTM D 638
 12. ASTM D 3363
 13. ASTM D 2047
 14. Chemical Resistance

15. TTM-071 Spot Test

16. TTM-59 Covered Spot Test

17. ASTM D 1308 Covered Spot Test

G. Bidders desiring to use coatings other than those specified shall submit their proposal in writing to the Architect at least ten (10) days prior to the bid opening. Substitutions which decrease the film thickness, the number of coats applied, change the generic type of coating, or fail to meet the performance criteria of the specified materials will not be approved. Prime and finish coats of all surfaces shall be furnished by the same manufacturer.

H. Materials supplied by other manufacturers may be considered for substitution if the following prevailing conditions exist:

1. Performance criteria of the specified materials are exceeded by the submitted alternate materials as listed in paragraph 2.1 and detailed on the technical data sheets of each specified product.
2. The submittal must compare the performance criteria of the specified material with that of the submitted material and be documented in a side by side manner for the Architect to review.
3. Substitute materials must be for complete systems and not individual products combined with the specified materials and the performance criteria for all products within a system must meet or exceed the specified materials.
4. Only one alternate submittal will be received for this specification and must be accompanied by a detailed statement of the sum to be added or deducted from the base bid should alternate materials be accepted.

1.06 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Specialize in manufacture of coatings with a minimum of 5 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Single Source Responsibility: Coatings and coating application accessories shall be products of a single manufacturer.

B. Applicator's Qualifications:

1. Experienced in application of specified coatings for a minimum of 5 years on projects of similar size and complexity to this Work.

2. Applicator's Personnel: Employ persons trained for application of specified coatings.
- C. Mock-Ups: Prepare 10 foot x 10 foot mock-up for each coating system specified using same materials, tools, equipment, and procedures intended for actual surface preparation and application. Obtain Architect's approval of mock-ups. Retain mock-ups to establish intended standards by which coating systems will be judged. If possible, leave mock-up in place as part of the completed project.
- D. Preapplication Meeting: Convene a preapplication meeting 2 weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review the following:
 1. Environmental requirements.
 2. Protection of surfaces not scheduled to be coated.
 3. Surface preparation.
 4. Application.
 5. Repair.
 6. Field quality control.
 7. Cleaning.
 8. Protection of coating systems.
 9. One-year inspection.
 10. Coordination with other work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
 1. Coating or material name.
 2. Manufacturer.
 3. Color name and number.
 4. Batch or lot number.
 5. Date of manufacture.
 6. Mixing and thinning instructions.

B. Storage:

1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
2. Keep containers sealed until ready for use.
3. Do not use materials beyond manufacturer's shelf life limits.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.08 ENVIRONMENTAL REQUIREMENTS .

A. Weather:

1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturer's instructions.
2. Surface Temperature: Minimum of 5 degrees F (3 degrees C) above dew point.
3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturer's instructions.

B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.

C. Dust and Contaminants:

1. Schedule coating work to avoid excessive dust and airborne contaminants.
2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Tnemec Company Incorporated, 6800 Corporate Drive, Kansas City, Missouri 64120-1372. Local Representative: Justin Taute, CSI, 615-333-1000.
The following special coating products are manufactured by Tnemec Company, Inc. Manufacturers of products of equal substance, function and performance subject to the review and approval of the Architect will be considered.
- B. Provide the best quality of coating materials as regularly manufactured by approved materials manufacturer. Materials not displaying manufacturer's product identification as a standard, best grade product will not be acceptable. Manufacturer must have five years experience in manufacturing special coatings as specified herein.

C. Certified test data must be furnished with proposed substitution request. The Contractor at his own expense will be required to hire an independent testing laboratory to run comparative tests as requested by the Architect. Approval from the Architect will be submitted in writing if proposed substitution is accepted. Materials selected for coating systems for each type surface shall be the product of a single manufacturer.

D. Other Approved Manufacturers:

1. Tennant Company

2.02 INTERIOR SYSTEMS SCHEDULE

A. 1/8" Pigmented Floor Topping

1. System Type: Polyurethane Modified Concrete/Epoxy/Aliphatic MCU.
2. Surface Preparation: Allow concrete to cure 10 days. Perform "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (ASTM F 1869). Moisture content not to exceed 20 pounds per 1,000 square feet in a 24-hour period. Shot blast or mechanically abrade surface to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide an ICRI CSP 4-5 surface profile.
3. Repairs: Fill voids or surface imperfections with Tnemec Series 241 Ultra-Tread MVT mixed with additional aggregate.
4. Base Coat: Tnemec Series 241 Ultra-Tread MVT applied at 70-80 sq. ft. per kit. Broadcast 30/50 mesh aggregate to refusal while wet at a rate of approximately 0.8 lbs. per sq. ft. to achieve 1/8th inch nominal thickness including broadcast aggregate.
5. Cove Base: Tnemec Series 237-Color Power-Tread blended with aggregate to produce a trowelable mortar and create a 4" rolled radius cove.
6. Grout Coat: Tnemec Series 237 Power-Tread applied at 6.0 to 12.0 mils DFT.*
7. Intermediate Coat: Tnemec Series 237 Power-Tread applied at 6.0 to 12.0 mils DFT.
8. Finish Coat: Tnemec Series 248 Everthane at 2.0 to 3.0 mils DFT
Finish Color: As selected by Architect from manufacturer's standard colors.
* Final thickness and texture to be determined by mock-ups.

2.03 ACCESSORIES

A. Coating Application Accessories:

1. Accessories required for application of specified coatings in accordance with manufacturer's instructions, including thinners.
2. Products of coating manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which coating systems are to be applied. Notify Architect of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.02 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.03 SURFACE PREPARATION OF CONCRETE FLOORS

- A. Prepare concrete surfaces in accordance with manufacturer's instructions, SSPC-SP 13/NACE 6 and ICRI 310.2R-2013.
- B. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
- C. Test concrete for moisture in accordance with ASTM D 4263 and F 1869.
- D. Allow concrete to cure for a minimum of 10 days before coating.
- E. Level protrusions and mortar spatter.

3.04 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.
- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.05 EXPOSED PERIMETERS: SELF-LEVELING AND LAMINATE FLOORING SYSTEMS

- A. All exposed perimeter edges of the broadcast overlay, including doorways, traffic aisle sides, drains, etc must be saw cut. Areas that cannot be reached with the saw or are difficult to saw cut shall be chipped.
 - 1. Saw cut shall be a minimum of 1/4" deep and 1/4" wide.
 - 2. Install flooring so that it folds into saw cut.

3.06 JOINTS:

- A. Expansion Joints:
 - 1. Install flooring so that it covers the expansion joint.
 - 2. After the floor system is installed, honor existing expansion joint by saw cutting a new 1/4" x 1/4" joint over the existing. Install closed cell polyethylene backer rod into saw cut approximately 1/2" to 3/4" down into expansion joint, as required.
 - 3. Fill saw cut with flexible polyurethane joint sealant designed for expansion joints.
- B. Fill all other recessed joints with Tnemec Series 241, 243, or 245 filled with additional aggregate. When filled, joint should be flush with floor surface.
- C. All cracks must be identified as either moving or non-moving. All non-moving cracks 1/16" wide or greater filled flush by using Series 215 Surfacing Epoxy, as required for the particular filling installations. Treat moving cracks as expansion joints as described above.
- D. All control joints with potential movement should be treated as expansion joints as described above.

3.07 ROLLED RADIUS COVING (TYPICALLY USED IN CONJUNCTION WITH LAMINATE AND MORTAR SYSTEMS)

- A. Install coves prior to the installation of special flooring.
- B. Apply prime coat of Tnemec Series 201 to all surfaces scheduled to receive coving.
- C. Install cove flush with the outer edge of the J-Strip or terminating strip.
- D. Apply coving sealant bead to top of J-Strip or terminating strip and tool flush to provide a :
 - 1. Smooth and uniform appearance, as indicated on the Drawings.
 - 2. Cut coves as required for joints.

3.08 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.09 FIELD QUALITY CONTROL

- A. Inspector's Services:
 - 1. Verify coatings and other materials are as specified.
 - 2. Verify surface preparation and application are as specified.
 - 3. Verify DFT of each coat and total DFT of each coating system are as specified using wet film and dry film gauges.
 - 4. Coating Defects: Check coatings for film characteristics or defects that would adversely affect performance or appearance of coating systems.
 - 5. Report:
 - a. Submit written reports describing inspections made and actions taken to correct nonconforming work.
 - b. Report nonconforming work not corrected.
 - c. Submit copies of report to Architect and Contractor.
- B. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

3.10 CLEANING

- A. Remove temporary coverings and protection of surrounding areas and surfaces.

3.11 PROTECTION OF COATING SYSTEMS

- A. Protect surfaces of coating systems from damage during construction.
- B. Repair deficiencies in coating systems as determined by Architect in accordance with manufacturers instructions.

3.12 SCHEDULES

- A. Refer to drawings.

END OF SECTION 09 67 10

SECTION 09 67 23 - FLAKE FILLED RESINOUS FLOORING SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coating systems for concrete floors.

1.02 RELATED SECTIONS

- A. Section 09 67 10 – Resinous Floor and Base.
- B. Section 09 67 30 – Concrete Floor Coatings.

1.03 REFERENCES

- A. ASTM D 16 - Terminology Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D 4259 – Standard Practice for Abrading Concrete.
- C. ASTM D 4263 - Indicating Moisture in Concrete by the Plastic Sheet Method.
- D. ASTM F 1869 - Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- E. International Concrete Repair Institute (ICRI) Guideline No. 03732 - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.
- F. SSPC-SP 13/NACE 6 - Surface Preparation of Concrete.

1.04 DEFINITIONS

- A. Definitions of Painting Terms: ASTM D 16, unless otherwise specified.
- B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state measured in mils (1/1000 inch).

1.05 SUBMITTALS

- A. Submit under provisions of Section 01330.
- B. Product Data: Submit manufacturer's product data for each coating, including generic description, complete technical data, surface preparation, and application instructions.
- C. Color Samples: Submit manufacturer's color samples showing full range of standard colors.

- D. **Applicator's Qualifications Assurance:** Submit list of a minimum of 5 completed projects of similar size and complexity to this Work within 50 miles of site. Include for each project:
1. Project name and location.
 2. Name of owner.
 3. Name of contractor.
 4. Name of architect.
 5. Name of coating manufacturer.
 6. Approximate area of coatings applied.
 7. Date of completion.
- E. All materials specified herein are manufactured by the TNEMEC Co., Inc., North Kansas City, Missouri (Local Contact 615-333-1000) and are approved for use on this project.
- F. Equivalent materials of other manufacturers may be substituted on approval of the Architect. Requests for substitution shall include Manufacturer's literature for each product giving the name, generic type, descriptive information and evidence of satisfactory past performance on flooring projects. Submittals shall include the following performance data as certified by a qualified testing Laboratory:
1. ASTM D 4060, (CS-17 Wheel, 1,000 grams load, 1,000 cycles)
 2. ASTM D 4541
 3. ASTM D 2047
 4. ASTM C 579
 5. ASTM C 531
 6. ASTM D 790
 7. ASTM D 2240
 8. ASTM D 2794
 9. ASTM C 413

10. ASTM D 635

11. ASTM D 638

12. ASTM D 3363

13. ASTM D 2047

14. Chemical Resistance

15. TTM-071 Spot Test

16. TTM-59 Covered Spot Test

17. ASTM D 1308 Covered Spot Test

G. Bidders desiring to use coatings other than those specified shall submit their proposal in writing to the Architect at least ten (10) days prior to the bid opening. Substitutions which decrease the film thickness, the number of coats applied, change the generic type of coating, or fail to meet the performance criteria of the specified materials will not be approved. Prime and finish coats of all surfaces shall be furnished by the same manufacturer.

H. Materials supplied by other manufacturers may be considered for substitution if the following prevailing conditions exist:

1. Performance criteria of the specified materials are exceeded by the submitted alternate materials as listed in paragraph 2.1 and detailed on the technical data sheets of each specified product.
2. The submittal must compare the performance criteria of the specified material with that of the submitted material and be documented in a side by side manner for the Architect\Owner to review.
3. Substitute materials must be for complete systems and not individual products combined with the specified materials and the performance criteria for all products within a system must meet or exceed the specified materials.
4. Only one alternate submittal will be received for this specification and must be accompanied by a detailed statement of the sum to be added or deducted from the base bid should alternate materials be accepted.

1.06 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Specialize in manufacture of coatings with a minimum of 5 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Single Source Responsibility: Coatings and coating application accessories shall be products of a single manufacturer.

B. Applicator's Qualifications:

1. Experienced in application of specified coatings for a minimum of 5 years on projects of similar size and complexity to this Work.
2. Applicator's Personnel: Employ persons trained for application of specified coatings.

C. Mock-Ups: Prepare 10 foot x 10 foot mock-up for each coating system specified using same materials, tools, equipment, and procedures intended for actual surface preparation and application. Obtain Architect's approval of mock-ups. Retain mock-ups to establish intended standards by which coating systems will be judged. If possible, leave mock-up in place as part of the completed project.

D. Preapplication Meeting: Convene a preapplication meeting 2 weeks before start of application of coating systems. Require attendance of parties directly affecting work of this section, including Contractor, Architect, applicator, and manufacturer's representative. Review the following:

1. Environmental requirements.
2. Protection of surfaces not scheduled to be coated.
3. Surface preparation.
4. Application.
5. Repair.
6. Field quality control.
7. Cleaning.
8. Protection of coating systems.
9. One-year inspection.
10. Coordination with other work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
 - 1. Coating or material name.
 - 2. Manufacturer.
 - 3. Color name and number.
 - 4. Batch or lot number.
 - 5. Date of manufacture.
 - 6. Mixing and thinning instructions.
- B. Storage:
 - 1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
 - 2. Keep containers sealed until ready for use.
 - 3. Do not use materials beyond manufacturer's shelf life limits.
- C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Weather:
 - 1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturer's instructions.
 - 2. Surface Temperature: Minimum of 5 degrees F (3 degrees C) above dew point.
 - 3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturer's instructions.
- B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturer's instructions.
- C. Dust and Contaminants:
 - 1. Schedule coating work to avoid excessive dust and airborne contaminants.

2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Tnemec Company Incorporated, 6800 Corporate Drive, Kansas City, Missouri 64120-1372. Local Representative: Justin Taute, CSI, 615-333-1000.
- B. The following special coating products are manufactured by Tnemec Company, Inc. Manufacturers of products of equal substance, function and performance subject to the review and approval of the Architect will be considered.
- C. Provide the best quality of coating materials as regularly manufactured by approved materials manufacturer. Materials not displaying manufacturer's product identification as a standard, best grade product will not be acceptable. Manufacturer must have five years experience in manufacturing special coatings as specified herein.
- D. Certified test data must be furnished with proposed substitution request. The Contractor at his own expense will be required to hire an independent testing laboratory to run comparative tests as requested by the Architect. Approval from the Architect will be submitted in writing if proposed substitution is accepted. Materials selected for coating systems for each type surface shall be the product of a single manufacturer.

2.02 INTERIOR SYSTEMS SCHEDULE

- A. 3/16" Decorative Flake Floor Topping
 1. System Type: Polyurethane Modified Concrete/ Aliphatic Urethane/ Aliphatic MCU.
 2. Surface Preparation: Allow concrete to cure 10 days. Perform "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (ASTM F 1869). Moisture content not to exceed 20 pounds per 1,000 square feet in a 24-hour period. Shot blast or mechanically abrade surface to remove laitance, curing compounds, hardeners, sealers and other contaminants and to provide an ICRI CSP 4-5 surface profile.
 3. Repairs: Fill voids or surface imperfections with Tnemec Series 241 Ultra-Tread MVT mixed with additional aggregate.
 4. Base Coat: Tnemec Series 241 Ultra-Tread MVT applied at 1/8th inch nominal thickness including broadcast flake. Broadcast decorative flake at a rate of 0.25 lbs. per square foot.
 5. Broadcast Coat: Tnemec Series 256 Excellathane applied at 20.0 mils nominal thickness. Broadcast decorative flake at a rate of 0.25 lbs. per square foot.

6. Intermediate Coat: Tnemec Series 256 Excellathane applied at 6.0 to 12.0 mils DFT.
7. Finish Coat: Tnemec Series 248 Everthane at 2.0 to 3.0 mils DFT. *
8. Finish Color: As selected by Architect from manufacturer's standard colors.
9. * Final thickness and texture to be determined by mock-ups.

2.02 ACCESSORIES

A. Coating Application Accessories:

1. Accessories required for application of specified coatings in accordance with manufacturer's instructions, including thinners.
2. Products of coating manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions under which coating systems are to be applied. Notify Architect of areas or conditions not acceptable. Do not begin surface preparation or application until unacceptable areas or conditions have been corrected.

3.02 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.03 SURFACE PREPARATION OF CONCRETE FLOORS

- A. Prepare concrete surfaces in accordance with manufacturer's instructions, SSPC-SP 13/ NACE 6 and ICRI 310.2R-2013.
- B. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants.
- C. Test concrete for moisture in accordance with ASTM D 4263 and F 1869.
- D. Allow concrete to cure for a minimum of 10 days before coating.
- E. Level protrusions and mortar spatter.

3.04 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturer's instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.
- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.05 Exposed Perimeters: (self-leveling and laminate flooring systems)

- A. All exposed perimeter edges of the broadcast overlay, including doorways, traffic aisle sides, drains, etc must be saw cut. Areas that cannot be reached with the saw, or are difficult to saw cut shall be chipped.
- B. Saw cut shall be a minimum of 1/4" deep and 1/4" wide.
- C. Install flooring so that it folds into saw cut.

3.06 Joints

- A. Expansion Joints:
 - 1. Install flooring so that it covers the expansion joint.
 - 2. After the floor system is installed, honor existing expansion joint by saw cutting a new 1/4" x 1/4" joint over the existing. Install closed cell polyethylene backer rod into saw cut approximately 1/2" to 3/4" down into expansion joint, as required.
 - 3. Fill saw cut with flexible polyurethane joint sealant designed for expansion joints.
- B. Fill all other recessed joints with Tnemec Series 241, 243, or 245 filled with additional aggregate. When filled, joint should be flush with floor surface.
- C. All cracks must be identified as either moving or non-moving. All non-moving cracks 1/16" wide or greater filled flush by using Series 241 Ultra-Tread MVT filled with additional aggregate, as required for the particular filling installations. Treat moving cracks as expansion joints as described above.

- D. All control joints with potential movement should be treated as expansion joints as described above.

3.08 Rolled Radius Coving (NOT USED)

- A. Install coves prior to the installation of special flooring.
- B. Apply prime coat of Tnemec Series 201 to all surfaces scheduled to receive coving.
- C. Install cove flush with the outer edge of the J-Strip or terminating strip.
- D. Apply coving sealant bead to top of J-Strip or terminating strip and tool flush to provide a smooth and uniform appearance, as indicated on the Drawings.
- E. Cut coves as required for joints.

3.09 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturer's instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.10 FIELD QUALITY CONTROL

- A. Inspector's Services:
 - 1. Verify coatings and other materials are as specified.
 - 2. Verify surface preparation and application are as specified.
 - 3. Verify DFT of each coat and total DFT of each coating system are as specified using wet film and dry film gauges.
 - 4. Coating Defects: Check coatings for film characteristics or defects that would adversely affect performance or appearance of coating systems.
 - 5. Report:
 - a. Submit written reports describing inspections made and actions taken to correct nonconforming work.

- b. Report nonconforming work not corrected.
 - c. Submit copies of report to Architect and Contractor.
- B. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

4.00 CLEANING

- A. Remove temporary coverings and protection of surrounding areas and surfaces.

4.01 PROTECTION OF COATING SYSTEMS

- A. Protect surfaces of coating systems from damage during construction.
- B. Repair deficiencies in coating systems as determined by Architect in accordance with manufacturers instructions.

END OF SECTION 09 67 23

SECTION 09 67 30 - CONCRETE FLOOR COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sealers and dustproofers for concrete floors.

1.02 DEFINITIONS

- A. Definitions of Painting Terms: In accordance with ASTM D 16, unless otherwise specified.
- B. Dry Film Thickness (DFT): Thickness of a coat of paint in fully cured state, measured in mils.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Operation and maintenance data.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying:
 - 1. Coating or material name.
 - 2. Manufacturer.
 - 3. Color name and number.
 - 4. Batch or lot number.
 - 5. Date of manufacture.
 - 6. Mixing and thinning instructions.
- B. Storage:

1. Store materials in a clean dry area and within temperature range in accordance with manufacturer's instructions.
 2. Keep containers sealed until ready for use.
 3. Do not use materials beyond manufacturers shelf life limits.
- C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Weather:
1. Air and Surface Temperatures: Prepare surfaces and apply and cure coatings within air and surface temperature range in accordance with manufacturers instructions.
 2. Surface Temperature: Minimum of 5 degrees F above dew point.
 3. Relative Humidity: Prepare surfaces and apply and cure coatings within relative humidity range in accordance with manufacturers instructions.
 4. Precipitation: Do not prepare surfaces or apply coatings in rain, snow, fog, or mist.
 5. Wind: Do not spray coatings if wind velocity is above manufacturers recommended limit.
- B. Ventilation: Provide ventilation during coating evaporation stage in confined or enclosed areas in accordance with manufacturers instructions.
- C. Dust and Contaminants:
1. Schedule coating work to avoid excessive dust and airborne contaminants.
 2. Protect work areas from excessive dust and airborne contaminants during coating application and curing.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: Tnemec Company Incorporated, 6800 Corporate Drive, Kansas City, Missouri 64120-1372. ASD. Telephone Toll Free (800) 863-6321. Phone (816) 483-3400. Fax (816) 483-3969. Web Site www.tnemec.com.
- B. Substitutions: See Section 01 30 00 - Product Requirements.

2.02 SEALERS/DUSTPROOFERS

- A. Mild Abuse:
1. System Type: Silicate Blend.
 2. Surface Preparation: Clean & Dry.

3. Primer: Series Series 629 CT Densifyer. 300 to 350 sq ft per gal.
4. Total DFT : N/A.
5. Finish Color: Clear

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED

- A. Protect surrounding areas and surfaces not scheduled to be coated from damage during surface preparation and application of coatings.
- B. Immediately remove coatings that fall on surrounding areas and surfaces not scheduled to be coated.

3.03 SURFACE PREPARATION OF CONCRETE FLOORS

- A. Prepare concrete and masonry surfaces in accordance with manufacturers instructions.
- B. The surface to be treated must be sound and free of cracks, dirt, oils, efflorescence, paint, curing compounds and all other contaminants, which may affect the penetration of CT Densifyer. Fill all cracks and voids if necessary.
- C. The surface must be dampened with potable water at the time of application.
- D. New concrete must cure long enough to walk on before treatment.
- E. Level protrusions and mortar spatter.

3.04 APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions.
- B. Mix and thin coatings, including multi-component materials, in accordance with manufacturers instructions.
- C. Keep containers closed when not in use to avoid contamination.
- D. Do not use mixed coatings beyond pot life limits.

- E. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturers instructions.
- F. Uniformly apply coatings at spreading rate required to achieve specified DFT.
- G. Apply coatings to be free of film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.05 REPAIR

- A. Materials and Surfaces Not Scheduled To Be Coated: Repair or replace damaged materials and surfaces not scheduled to be coated.
- B. Damaged Coatings: Touch-up or repair damaged coatings. Touch-up of minor damage shall be acceptable where result is not visibly different from adjacent surfaces. Recoat entire surface where touch-up result is visibly different, either in sheen, texture, or color.
- C. Coating Defects: Repair in accordance with manufacturers instructions coatings that exhibit film characteristics or defects that would adversely affect performance or appearance of coating systems.

3.06 CLEANING

- A. Remove temporary coverings and protection of surrounding areas and surfaces.

3.07 PROTECTION OF COATING SYSTEMS

- A. Protect surfaces of coating systems from damage during construction.
- B. Touch-up, or repair damaged products before Substantial Completion.

END OF SECTION 09 67 30

SECTION 09 97 23 - CONCRETE AND MASONRY COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clear protective finish for concrete floor, identified as "Sealed Concrete" on finish schedule in the drawings.

1.02 RELATED REQUIREMENTS

- A. Section 09 90 00 - Painting and Coatings

1.03 REFERENCE STANDARDS

- A. ASTM D522/D522M - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings; 2013.
- B. ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint; 2002 (Reapproved 2009).
- C. ASTM D2243 - Standard Test Method for Freeze-Thaw Resistance of Water-Borne Coatings; 1995 (Reapproved 2014).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating coating materials .
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document that applies to application on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

1.06 FIELD CONDITIONS

- A. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
- B. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

- D. Restrict traffic from area where coating is being applied or is curing.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for bond to substrate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Concrete and Masonry Coatings:
 - 1. Basis of Design: Seal Krete: www.seal-krete.com.
 - 2. Tnemec
 - 3. Substitutions: Section 01 30 00 - Product Requirements.

2.02 MATERIALS

- A. Coatings - General: Provide complete systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated.
 - 1. Maximum volatile organic compound (VOC) content: As required by applicable regulations.
- B. Water Based Coating
 - 1. Stated by manufacturer as suitable for installation on concrete surfaces.
 - 2. Dry Film Thickness: 15 mils, minimum.
 - 3. Flexibility Test: Passing, when tested according to ASTM D522/D522M with a 1 inch mandrel.
 - 4. Freeze Thaw Resistance: Passing, when tested according to ASTM D2243 for 50 cycles.
 - 5. Color: As indicated.
 - 6. Texture: Smooth.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.

- B. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.
- C. Cementitious Substrates: Do not begin application until substrate has cured 30 days minimum and measured moisture content is not greater than required percent.

3.02 PREPARATION

- A. Clean surfaces of loose foreign matter.
- B. Remove substances that would bleed through finished coatings.
- C. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 COATING APPLICATION

- A. Apply coatings in accordance with manufacturer's instructions, to thicknesses specified.
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

END OF SECTION 09 97 23

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SECTION 10 14 00 - SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Room and door signs.
- B. Building identification signs.
- C. Plaque.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- D. ATBCB ADAAG - Americans with Disabilities Act Accessibility Guidelines; 2002.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:
 - 1. Mohawk Sign Systems, Inc: www.mohawksign.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Dimensional Letter Signs:
 - 1. Gemini: www.signletters.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Plaques:
 - 1. Gemini: www.signletters.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.

1. Sign Type: Flat signs with engraved panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
3. Character Height: 3/4 inch.
4. Sign Height: 4 inches, unless otherwise indicated.
5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
6. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.

C. Building Identification Signs:

1. Use individual metal letters.
2. Mount on outside wall in location indicated on drawings.

D. Plaque: Mount inside building in location shown on drawings.

2.03 SIGN TYPES

A. Flat Signs: Signage media without frame.

1. Edges: Square.
2. Corners: Square.
3. Wall Mounting of One-Sided Signs: Tape adhesive.

B. Color and Font: Unless otherwise indicated:

1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: As selected from standard colors.
4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:

1. Total Thickness: 1/8 inch.

2.05 PLAQUES

A. Metal Plaques:

1. Metal: Bronze casting.
2. Metal Sheet Thickness: 1/8 inch, minimum.
3. Provide the following information:
 - a. Name of the Project
 - b. City of Franklin
 - c. Names of Mayor and Alderman
 - d. Name of City Administrator
 - e. Name of Fire Chief
 - f. Name of Architect
 - g. Name of Contractor
 - h. Year of Construction
 - i. City Logo
 - j. Fire Department logo
4. Final design information and approval by Owner. Provide shop drawing for approval.

2.06 DIMENSIONAL LETTERS

A. Metal Letters:

1. Metal: Aluminum casting.
2. Finish: Brushed, satin.
3. Font: Helvetica
4. Mounting: Flush mounted with Concealed screws.

2.07 ACCESSORIES

- ### A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

B. Exposed Screws: Solid brass.

C. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Protect from damage until Substantial Completion; repair or replace damaged items.

3.02 SCHEDULE

Provide thirty (30) room signs for this project. Owner will provide a list of rooms at a later date.

END OF SECTION 10 14 00

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SECTION 10 28 13 - TOILET ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of each type of toilet accessory is indicated on the drawings and schedules.
- B. Types of toilet accessories required include the following:
 - 1. Paper towel dispensers.
 - 2. Mirrors.
 - 3. Toilet tissue dispenser.
 - 4. Soap dispenser.
 - 5. Grab bars (36" at rear, 42" on side wall, and 18" vertical on side wall; see plans).

1.03 QUALITY ASSURANCE

- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.
- B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.
- C. Products: Provide products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to Architect.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide toilet accessories by one of the following:
 - 1. American Specialties, Inc.
 - 2. Bobrick Washroom Equipment, Inc.

2.02 MATERIALS - GENERAL

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gauge (.034") minimum, unless otherwise indicated.
- B. Fasteners: Screws, bolts and other devices of same material as accessory unit.

2.03 TOWEL DISPENSER/WASTE RECEPTACLE

- A. Reference drawings for schedule.

2.04 TOILET TISSUE DISPENSER

- A. Reference drawings for toilet accessory schedule/requirements.

2.05 SOAP DISPENSERS

- A. Reference drawings for toilet accessory schedule/requirements.

2.06 GRAB BARS

- A. Reference drawings for toilet accessory schedule/requirements.

2.07 MOP RACK

- A. Reference drawings for toilet accessory schedule/requirements.

2.08 BABY CHANGING TABLE

- A. Reference drawings for toilet accessory schedule/requirements.

2.09 FABRICATION

- A. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item by either a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.
- B. Surface Mounted Toilet Accessories - General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.
- C. Recessed Toilet Accessories - General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full length stainless steel piano hinges. Provide anchorage which is fully concealed when unit is closed.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install toilets accessory units in accordance with manufacturer's instruction, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

3.02 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing temporary labels and protective coatings.

END OF SECTION 10 28 13

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SECTION 10 44 13 - FIRE EXTINGUISHER CABINETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1, Specification Sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of each type of fire extinguishers will be field located by the Architect if not performed by the local or State Fire Marshal's field inspector.

1.03 QUALITY ASSURANCE

- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.
- B. Locations: Coordinate locations with other work to avoid interference and to assure proper operation and servicing of units.
- C. Products: Provide products of same manufacturer for each type of unit and for units exposed in same areas, unless otherwise acceptable to Architect.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for each fire extinguisher.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide fire extinguisher cabinets as follows:
- B. Fire Extinguisher Cabinets Recessed:

Multi-Purpose Dry Chemical Fire Extinguisher

1. Contractor shall provide two (5) fire extinguishers and cabinets in location as determined by the Fire Marshal or Architect should the Fire Marshal concede. Fire extinguishers shall include and not be limited to twelve (12) gauge stainless steel box and door trim, recessed type, clear anodized finish, one piece trim and full glaze panel door construction, finish pull handle, continuous matching hinge, and self-adjusting roller catch, with MP-10 fire extinguisher as manufactured by Larsen's Manufacturing or equal pre-approved by the Architect.

- C. Mounting Height: Mount fire extinguisher cabinets 54" from floor to handle of cabinet unless noted otherwise or field determined by the Architect.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install fire extinguishers units in accordance with manufacturer's instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

3.02 ADJUSTING AND CLEANING

- A. Adjust fire extinguishers for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing temporary labels and protective coatings.

END OF SECTION 10 44 13

**SECTION 210500
COMMON WORK RESULTS FOR FIRE SUPPRESSION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, fittings, sleeves, escutcheons, seals, and connections for sprinkler systems.

1.02 REFERENCE STANDARDS

- A. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250 2020.
- B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 2021.
- C. ASME B16.4 - Gray Iron Threaded Fittings: Classes 125 and 250 2021.
- D. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard 2020.
- E. ASME B16.9 - Factory-Made Wrought Buttwelding Fittings 2018.
- F. ASME B16.11 - Forged Fittings, Socket-Welding and Threaded 2021.
- G. ASME B16.25 - Buttwelding Ends 2017.
- H. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings 1999, with Editorial Revision (2022).
- I. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe 2021.
- J. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service 2023a.
- K. ASTM A536 - Standard Specification for Ductile Iron Castings 1984, with Editorial Revision (2019).
- L. ASTM A795/A795M - Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use 2021.
- M. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings 2021.
- N. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast 2017, with Errata (2018).
- O. AWWA C606 - Grooved and Shouldered Joints 2022.
- P. FM (AG) - FM Approval Guide Current Edition.
- Q. ITS (DIR) - Directory of Listed Products Current Edition.
- R. UL (DIR) - Online Certifications Directory Current Edition.
- S. UL 262 - Gate Valves for Fire-Protection Service; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.
- T. UL 312 - Check Valves for Fire-Protection Service; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.
- C. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.
- D. Project Record Documents: Record actual locations of components and tag numbering.
- E. Operation and Maintenance Data: Include installation instructions and spare parts lists.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

- B. Installer Qualifications: Company specializing in performing the work of this section with minimum three years experience. approved by manufacturer.
- C. Conform to UL, FM, and ITS (DIR) or Warnock Hersey requirements.
- D. Valves: Bear UL, UL (DIR), and ITS (DIR) or Warnock Hersey product listing label or marking. Provide manufacturer's name and pressure rating marked on valve body.
- E. Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers, with labeling in place.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

PART 2 PRODUCTS

2.01 FIRE PROTECTION SYSTEMS

- A. Sprinkler Systems: Comply with NFPA 13.

2.02 BURIED PIPING (TO FIVE (5) FEET OUTSIDE BUIDLING)

- A. Ductile Iron Pipe: AWWA C151/A21.51.
 - 1. Fittings: AWWA C110/A21.10, standard thickness.
 - 2. Joints: AWWA C111/A21.11, styrene butadiene rubber (SBR) or vulcanized SBR gasket.
 - 3. Mechanical Couplings: Shaped composition sealing gasket, steel bolts, nuts, and washers.

2.03 ABOVE GROUND PIPING

- A. Steel Pipe: ASTM A135/A135M Schedule 10 or ASTM A795 Schedule 40, black.
 - 1. Steel Fittings: ASME B16.9 wrought steel, butt welded, ASME B16.25 butt weld ends, ASTM A234/A234M wrought carbon steel or alloy steel, ASME B16.5 steel flanges and fittings, or ASME B16.11 forged steel socket welded and threaded.
 - 2. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings and ASME B16.4, threaded fittings.
 - 3. Malleable Iron Fittings: ASME B16.3, threaded fittings and ASTM A47/A47M.
 - 4. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.

2.04 PIPE HANGERS AND SUPPORTS

- A. Hangers for Pipe Sizes 1/2 to 1-1/2 inch (15 to 40 mm): Malleable iron, adjustable swivel, split ring.
- B. Hangers for Pipe Sizes 2 inches (50 mm) and Over: Carbon steel, adjustable, clevis.
- C. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- D. Wall Support for Pipe Sizes to 3 inches (80 mm): Cast iron hook.
- E. Wall Support for Pipe Sizes 4 inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.
- F. Vertical Support: Steel riser clamp.
- G. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

2.05 MECHANICAL COUPLINGS

- A. Rigid Mechanical Couplings for Grooved Joints:
 - 1. Dimensions and Testing: Comply with AWWA C606.
 - 2. Minimum Working Pressure: 300 psig (2065 kPa).

3. Housing Material: Fabricate of ductile iron complying with ASTM A536.
4. Housing Coating: Factory applied orange enamel.
5. Gasket Material: EPDM suitable for operating temperature range from minus 30 degrees F (minus 34 degrees C) to 230 degrees F (110 degrees C).
6. Bolts and Nuts: Hot dipped galvanized or zinc electroplated steel.

2.06 GATE VALVES

- A. Up to and including 2 inches (50 mm):
 1. Bronze body, bronze trim, rising stem, handwheel, solid wedge or disc, threaded ends.
- B. Over 2 inches (50 mm):
 1. Iron body, bronze trim, rising stem pre-grooved for mounting tamper switch, handwheel, OS&Y, solid rubber covered bronze or cast iron wedge, flanged ends.
- C. Over 4 inches (100 mm):
 1. Iron body, bronze trim, non-rising stem with bolted bonnet, solid bronze wedge, flanged ends, iron body indicator post assembly.

2.07 GLOBE OR ANGLE VALVES

- A. Up to and including 2 inches (50 mm):
 1. Bronze body, bronze trim, rising stem and handwheel, inside screw, renewable rubber disc, threaded ends, with backseating capacity repackable under pressure.
- B. Over 2 inches (50 mm):
 1. Iron body, bronze trim, rising stem, handwheel, OS&Y, plug-type disc, flanged ends, renewable seat and disc.

2.08 BALL VALVES

- A. Up to and including 2 inches (50 mm):
 1. Bronze two piece body, brass, chrome plated bronze, or stainless steel ball, teflon seats and stuffing box ring, lever handle and balancing stops, threaded ends with union.
- B. Over 2 inches (50 mm):
 1. Cast steel body, chrome plated steel ball, teflon seat and stuffing box seals, lever handle or gear drive handwheel for sizes 10 inches (250 mm) and over, flanged.

2.09 BUTTERFLY VALVES

- A. Bronze Body:
 1. Stainless steel disc, resilient replaceable seat, threaded or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and built-in tamper proof switch rated 10 amp at 115 volt AC.
- B. Cast or Ductile Iron Body
 1. Cast or ductile iron, chrome or nickel plated ductile iron or aluminum bronze disc, resilient replaceable EPDM seat, wafer, lug, or grooved ends, extended neck, handwheel and gear drive and integral indicating device, and internal tamper switch rated 10 amp at 115 volt AC.

2.10 CHECK VALVES

- A. Up to and including 2 inches (50 mm):
 1. Bronze body and swing disc, rubber seat, threaded ends.
- B. Over 2 inches (50 mm):
 1. Iron body, bronze trim, swing check with rubber disc, renewable disc and seat, flanged ends with automatic ball check.
- C. 4 inches (100 mm) and Over:
 1. Iron body, bronze disc, stainless steel spring, resilient seal, threaded, wafer, or flanged ends.

2.11 DRAIN VALVES

- A. Compression Stop:

1. Bronze with hose thread nipple and cap.
- B. Ball Valve:
 1. Brass with cap and chain, 3/4 inch (20 mm) hose thread.

PART 3 EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and foreign material, from inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

- A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- B. Install piping to conserve building space, to not interfere with use of space and other work.
- C. Group piping whenever practical at common elevations.
- D. Sleeve pipes passing through partitions, walls, and floors.
- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Inserts:
 1. Provide inserts for placement in concrete formwork.
 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).
 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
- G. Pipe Hangers and Supports:
 1. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
 2. Place hangers within 12 inches (300 mm) of each horizontal elbow.
 3. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 6. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- H. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level.
- I. Prepare pipe, fittings, supports, and accessories for finish painting. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- J. Do not penetrate building structural members unless indicated.
- K. Provide sleeves when penetrating footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
- L. Escutcheons:
 1. Install and firmly attach escutcheons at piping penetrations into finished spaces.
 2. Provide escutcheons on both sides of partitions separating finished areas through which piping passes.

- 3. Use chrome plated escutcheons in occupied spaces and to conceal openings in construction.
- M. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- N. Install valves with stems upright or horizontal, not inverted. Remove protective coatings prior to installation.
- O. Provide gate, ball, or butterfly valves for shut-off or isolating service with tamper switch.
- P. Provide drain valves at main shut-off valves, low points of piping and apparatus.

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**SECTION 211300
FIRE-SUPPRESSION SPRINKLER SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wet-pipe sprinkler system.
- B. System design, installation, and certification.
- C. Fire department connections.

1.02 REFERENCE STANDARDS

- A. FM (AG) - FM Approval Guide Current Edition.
- B. NFPA 13 - Standard for the Installation of Sprinkler Systems Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. NFPA 1963 - Standard for Fire Hose Connections 2019.
- D. UL (DIR) - Online Certifications Directory Current Edition.
- E. UL 405 - Standard for Safety Fire Department Connection Devices Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. Shop Drawings:
 - 1. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
 - 2. Submit shop drawings to Authorities Having Jurisdiction for approval. Submit proof of approval to Architect.
- D. Project Record Documents: Record actual locations of sprinklers and deviations of piping from drawings. Indicate drain and test locations.
- E. Manufacturer's Certificate: Certify that system has been tested and meets or exceeds specified requirements and code requirements.
- F. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location and numbers of service depot.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.
 - 2. Extra Sprinklers: Type and size matching those installed, in quantity required by referenced NFPA design and installation standard.
 - 3. Sprinkler Wrenches: For each sprinkler type.

1.04 QUALITY ASSURANCE

- A. Comply with FM (AG) requirements.
- B. Design system under direct supervision of a Professional Fire Protection Engineer or Responsible Managing Employee experienced in design of this Work and licensed in Tennessee.
- C. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum three years experience approved by manufacturer.
- E. Equipment and Components: Provide products that bear FM (AG) label or marking.

- F. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

PART 2 PRODUCTS

2.01 SPRINKLER SYSTEM

- A. Sprinkler System: Provide coverage for entire building and existing Gym.
- B. Occupancy: Comply with NFPA 13R for Office / Admin / Sleeping..
- C. Occupancy (Apparatus Bay.) : Ordinary hazard, Group 2; comply with NFPA 13
- D. Water Supply: Determine volume and pressure from water flow test data.
- E. Interface system with building fire and smoke alarm system.
- F. Storage Cabinet for Spare Sprinklers and Tools: Steel, located adjacent to alarm valve.

2.02 SPRINKLERS

- A. Suspended Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate.
 - 1. Finish: Chrome plated.
 - 2. Escutcheon Plate Finish: Enamel, color as selected.
 - 3. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- B. Exposed Area Type: Standard upright type with guard.
 - 1. Finish: Chrome plated.
 - 2. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- C. Sidewall Type: Standard horizontal sidewall type with matching push on escutcheon plate and guard.
 - 1. Finish: Chrome plated.
 - 2. Escutcheon Plate Finish: Enamel, color as selected.
 - 3. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- D. Suspended Ceiling Type: Semi-recessed pendant type with matching push on escutcheon plate.
 - 1. Finish: Chrome plated.
 - 2. Escutcheon Plate Finish: Enamel, color as selected.
 - 3. Fusible Link: Glass bulb type temperature rated for specific area hazard.
- E. Dry Sprinklers: Recessed pendant type with matching push on escutcheon plate.
 - 1. Finish: Chrome plated.
 - 2. Fusible Link: Glass bulb type temperature rated for specific area hazard.

2.03 PIPING SPECIALTIES

- A. Wet Pipe Sprinkler Alarm Valve: Check type valve with divided seat ring, rubber-faced clapper to automatically actuate water motor alarm, pressure retard chamber and variable pressure trim with the following additional capabilities and features:
- B. Backflow Preventer: Double check valve assembly backflow preventer with drain and OS & Y gate valve on each end or as required by the local Authority.
- C. Test Connections:
 - 1. Inspector's Test Connection for Preaction Systems:
 - a. Provide test connections approximately 6 ft (2 m) above floor for each or portion of each sprinkler system equipped with an alarm device, located at the most remote part of each system.
 - b. Route test connection to an open-site drain location, excluding janitor sinks, accepting full flow without negative consequences.

- D. Electric Alarm: Electrically operated red enameled gong with pressure alarm switch.
- E. Water Flow Switch: Vane type switch for mounting horizontal or vertical, with two contacts; rated 10 amp at 125 volt AC and 2.5 amp at 24 volt DC.
- F. Fire Department Connections:
 - 1. Type: Free standing or wall mount type per local Authority Requirements, made of corrosion resistant metal complying with UL 405 at Pit.
 - a. Inlets: Two way, 2-1/2 inch (65 DN) swivel fittings, internal threaded. Thread size and inlets according to NFPA 1963 or Authority Having Jurisdiction. Brass caps with gaskets, chains, and lugs.
 - b. Sleeve: Brass, 18 inches (460 mm) height.
 - c. Signage: Raised or engraved lettering 1 inch (25.4 mm) minimum indicating system type.
- G. Fire Department Connections - Provided at Fire Department Connection Pit:
- H. Supervisory Switches: As manufactured by Potter-Roemer or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with referenced NFPA design and installation standard.
- B. Install equipment in accordance with manufacturer's instructions.
- C. Install buried shut-off valves in valve box. Provide post indicator.
- D. Provide approved backflow preventer assembly at sprinkler system water source connection or as indicated.
- E. Locate fire department connection with sufficient clearance from walls, obstructions, or adjacent siamese connectors to allow full swing of fire department wrench handle.
- F. Locate outside alarm/ gong on building wall as indicated.
- G. Place pipe runs to minimize obstruction to other work.
- H. Place piping in concealed spaces above finished ceilings.
- I. Center sprinklers in two directions in ceiling tile and provide piping offsets as required.
- J. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting. Replace painted sprinklers.
- K. Flush entire piping system of foreign matter.
- L. Hydrostatically test entire system.
- M. Require test be witnessed by Fire Marshal.

3.02 INTERFACE WITH OTHER PRODUCTS

- A. Ensure required devices are installed and connected as required to fire alarm system.

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**SECTION 220519
METERS AND GAUGES FOR PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Positive displacement meters.
- B. Pressure gauges and pressure gauge taps.
- C. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

- A. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers 2014 (Reapproved 2021).

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

1.04 FIELD CONDITIONS

- A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports and test plugs.

1.05 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements. for additional provisions.
- B. Supply two pressure gages with pulsation damper.

PART 2 PRODUCTS

2.01 POSITIVE DISPLACEMENT METERS (LIQUID)

- A. Meter: Brass body turbine meter with magnetic drive register.
 - 1. Service: Cold water, 122 degrees F (50 degrees C).
 - 2. Size: 2 inch (____ mm).

2.02 PRESSURE GAUGES

- A. Pressure Gauges: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
 - 1. Case: Steel with brass bourdon tube.
 - 2. Size: 3-1/2 inch (90 mm) diameter.
 - 3. Mid-Scale Accuracy: Two percent.
 - 4. Scale: Psi.

2.03 PRESSURE GAUGE TAPPINGS

- A. Gage Cock: Tee or lever handle, brass for maximum 150 psi (1034 kPa).
- B. Pulsation Damper: Pressure snubber, brass with 1/4 inch (6 mm) connections.

2.04 STEM TYPE THERMOMETERS

- A. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
 - 1. Size: 9 inch (225 mm) scale.
 - 2. Window: Clear Lexan.
 - 3. Size: 7 inch (175 mm) scale.
 - 4. Window: Clear Lexan.
 - 5. Accuracy: 2 percent, per ASTM E77.
 - 6. Calibration: Degrees F.

2.05 THERMOMETER SUPPORTS

- A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

2.06 TEST PLUGS

- A. Test Plug: 1/4 inch (6 mm) or 1/2 inch (13 mm) brass fitting and cap for receiving 1/8 inch (3 mm) outside diameter pressure or temperature probe with neoprene core for temperatures up to 200 degrees F (93 degrees C).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install pressure gauges with pulsation dampers. Provide gauge cock to isolate each gauge. Extend nipples and siphons to allow clearance from insulation. Provide siphon on gauges in steam systems.
- C. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch (60 mm) for installation of thermometer sockets. Ensure sockets allow clearance from insulation.
- D. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- E. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- F. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.
- G. Locate test plugs where indicated.

SECTION 220553
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.
- C. Stencils.
- D. Pipe markers.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.
- B. ASME A13.1 - Scheme for the Identification of Piping Systems; The American Society of Mechanical Engineers; 2007.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.
- E. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Piping: Tags.
- B. Pumps: Nameplates.
- C. Small-sized Equipment: Tags.
- D. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 MANUFACTURERS

- A. Brady Corporation: www.bradycorp.com.
- B. Champion America, Inc: www.Champion-America.com.
- C. Seton Identification Products: www.seton.com/aec.

2.03 NAMEPLATES

- A. Description: Laminated three-layer plastic with engraved letters.
 - 1. Letter Color: White.
 - 2. Letter Height: 1/4 inch (6 mm).
 - 3. Background Color: Black.

2.04 TAGS

- A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch (40 mm) diameter.
- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.
- C. Chart: Typewritten letter size list in anodized aluminum frame.

2.05 STENCILS

- A. Stencils: With clean cut symbols and letters of following size:

1. 3/4 to 1-1/4 inch (20-30 mm) Outside Diameter of Insulation or Pipe: 8 inch (200 mm) long color field, 1/2 inch (15 mm) high letters.
 2. 1-1/2 to 2 inch (40-50 mm) Outside Diameter of Insulation or Pipe: 8 inch (200 mm) long color field, 3/4 inch (20 mm) high letters.
 3. 2-1/2 to 6 inch (65-150 mm) Outside Diameter of Insulation or Pipe: 12 inch (300 mm) long color field, 1-1/4 inch (30 mm) high letters.
- B. Stencil Paint: As specified in Section 099123, semi-gloss enamel, colors complying with ASME A13.1.

2.06 PIPE MARKERS

- A. Comply with ASME A13.1.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- C. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
- D. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape with metallic strip, minimum 6 inches (150 mm) wide by 4 mil (0.10 mm) thick, manufactured for direct burial service.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Equipment designations on the drawings are for design purposes only. Request that the Owner's facility operations department provide a list of new designations which conform to their current equipment numbering scheme. Use their designations on all equipment tags.
- C. Prepare surfaces in accordance with Section 099123 for stencil painting.

3.02 INSTALLATION

- A. Install plastic nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Apply stencil painting in accordance with Section 099123.
- D. Install plastic pipe markers in accordance with manufacturer's instructions.
- E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- F. Install underground plastic pipe markers 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried pipe.
- G. Identify air handling units, variable volume boxes, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.
- H. Identify control panels and major control components outside panels with plastic nameplates.
- I. Identify valves in main and branch piping with tags.
- J. Identify air terminal units and radiator valves with numbered tags.
- K. Tag automatic controls, instruments, and relays. Key to control schematic.
- L. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch (20 mm) diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet (6 m) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

**SECTION 220719
PLUMBING PIPING INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Piping insulation.
- B. Jackets and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019, with Editorial Revision (2023).
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form 2023.
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation 2022a.
- D. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel 2008 (Reapproved 2023).
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023b.
- F. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations. Provide data for all field applied adhesives and sealants used showing compliance with Section 01 6116 for maximum VOC content.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.07 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER

- A. Insulation: ASTM C547 and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket.
 - 1. 'K' ('Ksi') Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C).
 - 2. Maximum Service Temperature: 650 degrees F (343 degrees C).
 - 3. Maximum Moisture Absorption: 0.2 percent by volume.
- B. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m).
- C. Tie Wire: 0.048 inch (1.22 mm) stainless steel with twisted ends on maximum 12 inch (300 mm) centers.
- D. Vapor Barrier Lap Adhesive: Compatible with insulation.
 - 1. Compatible with insulation.
- E. Indoor Vapor Barrier Finish:
 - 1. Vinyl emulsion type acrylic, compatible with insulation, white color.
- F. Outdoor Vapor Barrier Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
 - 1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
 - 1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 - 2. Maximum Service Temperature: 220 degrees F (104 degrees C).
 - 3. Connection: Waterproof vapor barrier adhesive.
- B. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation. Adhesive to is have a VOC content of 80 g/L or less. See Section 01 61 16 for additional requirements.

2.04 JACKETS

- A. Domestic Water & Storm (Exposed Locations and Areas with No Ceilings).
 - 1. PVC Plastic.
 - a. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - 1) Minimum Service Temperature: 0 degrees F (-18 degrees C).
 - 2) Maximum Service Temperature: 150 degrees F (66 degrees C).
 - 3) Moisture vapor transmission: ASTM E 96; 0.002 perm-inches.
 - 4) Thickness: 10 mil (0.25 mm).
 - 5) Connections: Brush on welding adhesive.
 - b. Covering Adhesive Mastic:
 - 1) Compatible with insulation. Adhesive to is to have a VOC content of 80 g/L or less. See Section 01 61 16 for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.

- D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. Glass fiber insulated pipes conveying fluids below ambient temperature:
 - 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 - 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
- F. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- G. For hot piping conveying fluids over 140 degrees F (60 degrees C), insulate flanges and unions at equipment.
- H. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- I. Inserts and Shields:
 - 1. Application: Piping 1-1/2 inches (40 mm) diameter or larger.
 - 2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 - 3. Insert Location: Between support shield and piping and under the finish jacket.
 - 4. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
 - 5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 078400.
- K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet (3 meters) above finished floor): Finish with canvas jacket sized for finish painting.
- L. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- M. Buried Piping: Provide factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with one mil (0.025 mm) thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.

3.03 SCHEDULES

- A. Plumbing Systems:
 - 1. Domestic Hot Water Supply:
 - a. Glass Fiber Insulation:
 - 1) Thickness: 1 inch.
 - 2. Domestic Hot Water Recirculation:
 - a. Glass Fiber Insulation:
 - 1) Thickness: 1 inch (25 mm).
 - 3. Domestic Cold Water:
 - a. Glass Fiber Insulation:
 - 1) Thickness: 1 inch.

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**SECTION 221005
PLUMBING PIPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Flanges, unions, and couplings.
 - 4. Valves.
 - 5. Check.
 - 6. Water pressure reducing valves.
 - 7. Relief valves.
 - 8. Gas.

1.02 REFERENCE STANDARDS

- A. ANSI Z21.22 - American National Standard for Relief Valves for Hot Water Supply Systems 2015 (Reaffirmed 2020).
- B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300 2021.
- C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.
- D. ASME B31.1 - Power Piping 2022.
- E. ASME B31.9 - Building Services Piping 2020.
- F. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers 2023.
- G. ASSE 1003 - Water Pressure Reducing Valves for Potable Water Distribution Systems 2023.
- H. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- I. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service 2023a.
- J. ASTM B32 - Standard Specification for Solder Metal 2020.
- K. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2022.
- L. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric) 2020.
- M. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube 2016.
- N. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings 2016.
- O. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120 2021a.
- P. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series) 2020.
- Q. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40 2023.
- R. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems 2020.
- S. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing 2020.
- T. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets 2020.

- U. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems 2018.
- V. AWWA C651 - Disinfecting Water Mains 2014, with Addendum (2020).
- W. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).
- X. MSS SP-67 - Butterfly Valves 2022.
- Y. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves 2019.
- Z. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2012.
- AA. NSF 372 - Drinking Water System Components - Lead Content 2022.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.

1.05 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State of Alabama, and Local plumbing code.
- B. Conform to applicable code for installation of backflow prevention devices.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER & OIL WASTE PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

- A. Sanitary Sewer: PVC Pipe: ASTM D 1785 Schedule 40, or ASTM D 2241 SDR 26 for not less than 150 psi (1 034 kPa) pressure rating.
 - 1. Fittings: PVC, Sanitary Drainage type.
 - 2. Joints: Solvent welded, with ASTM D 2564 Solvent cement.

2.03 SANITARY SEWER & OIL WASTE PIPING, ABOVE GRADE

- A. PVC Pipe: ASTM D 1785 Schedule 40, or ASTM D 2241 SDR 26 for not less than 150 psi (1 034 kPa) pressure rating.
 - 1. Fittings: ASTM D2466, PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

- A. Copper Pipe: ASTM B42, hard drawn.
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
 - 2. Joints: ASTM B 32, alloy Sn95 solder.
- B. Copper Tube: ASTM B 88 (ASTM B 88M), Type K (A), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.

2. Joints: ASTM B 32, alloy Sn95 solder.

2.05 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 2. Joints: ASTM B32, alloy Sn95 solder.

2.06 NATURAL GAS PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 1. Fittings: ASTM A234/A234M, wrought steel welding type.
 2. Joints: ASME B31.1, welded.
 3. Jacket: AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil (0.25 mm) polyethylene tape.

2.07 NATURAL GAS PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
 1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
 2. Joints: NFPA 54, threaded or welded to ASME B31.1.

2.08 FLANGES, UNIONS, AND COUPLINGS

- A. Unions for Pipe Sizes 2 Inches (80 mm) and Under:
 1. Ferrous pipe: Class 150 malleable iron threaded unions.
 2. Copper tube and pipe: Class 150 bronze unions with soldered joints.
- B. Flanges for Pipe Size 2-1/2 Inch (25 mm) and over:
 1. Ferrous pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
 2. Copper tube and pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
- C. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.09 PIPE HANGERS AND SUPPORTS

1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.
- B. Plumbing Piping - Drain, Waste, and Vent:
 1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
 3. Hangers for Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
 4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 5. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook.
 6. Vertical Support: Steel riser clamp.
- C. Plumbing Piping - Water:
 1. Conform to ASME B31.9.
 2. Hangers for Pipe Sizes 1/2 Inch (15 mm) to 1-1/2 Inches (40 mm): Malleable iron, adjustable swivel, split ring.
 3. Hangers for Cold Pipe Sizes 2 Inches (50 mm) and Over: Carbon steel, adjustable, clevis.
 4. Hangers for Hot Pipe Sizes 2 Inches (50 mm) to 4 Inches (100 mm): Carbon steel, adjustable, clevis.
 5. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.
 6. Wall Support for Pipe Sizes to 3 Inches (80 mm): Cast iron hook.

- 7. Wall Support for Pipe Sizes 4 Inches (100 mm) and Over: Welded steel bracket and wrought steel clamp.
- D. Plumbing Piping - Gas:
 - 1. Conform to ASME B31.9.
- E. Multiple or Trapeze Hangers: Steel channels with welded supports or spacers and hanger rods.

2.10 GLOBE VALVES

- A. Up To and Including 3 Inches (80 mm):
 - 1. MSS SP-80, Class 125, bronze body, bronze trim, handwheel, bronze disc, solder ends.

2.11 BALL VALVES

- A. Construction, 2 Inches and Smaller: MSS SP-110, Class 150, 400 psi (2760 kPa) CWP, bronze, two piece body, chrome plated brass ball, full port, teflon seats, blow-out proof stem, lever handle, threaded ends.

2.12 PLUG VALVES

- A. Construction: MSS SP-78, 175 psi (1200 kPa) CWP, semi-steel body and plug, pressure lubricated, teflon or Buna N packing, screwed ends. Provide removable lever operator with set screw.

2.13 BUTTERFLY VALVES

- A. Construction 2-1/2 Inches and Larger: MSS SP-67, 200 psi (1380 kPa) CWP, cast or ductile iron body, nickel-plated ductile iron disc, resilient replaceable EPDM seat, wafer ends, extended neck, 10 position lever handle.
- B. Provide gear operators for valves 8 inches (150 mm) and larger, and chain-wheel operators for valves mounted over 8 feet (2400 mm) above floor.

2.14 WATER PRESSURE REDUCING VALVES

- A. Manufacturers:
 - 1. Cla-Val Company: www.cla-val.com.
 - 2. Zurn/Wilkins: www.zurn.com
 - 3. Watts Regulator Company: www.wattsregulator.com/#sle.
- B. Up to 2 Inches (50 mm):

2.15 RELIEF VALVES

- A. Temperature and Pressure Relief:
 - 1. AGA Z21.22 certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 210 degrees F (98.9 degrees C), capacity ASME BPVC-IV certified and labelled.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. Refer to Section 220516.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Provide access where valves and fittings are not exposed.
- I. Establish elevations of buried piping outside the building to ensure not less than 2 ft (____ m) of cover.
- J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly; Coordinate with Architectural and roof manufacturer warranty requirements.
- K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
- L. Provide support for utility meters in accordance with requirements of utility companies.
- M. Prepare exposed, unfinished pipe, fittings, supports, and accessories ready for finish painting.
- N. Install bell and spigot pipe with bell end upstream.
- O. Install valves with stems upright or horizontal, not inverted. Refer to Section 220523.
- P. Pipe vents from gas pressure reducing valves to outdoors and terminate in weather proof hood.
- Q. Install water piping to ASME B31.9.
- R. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- S. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- T. Sleeve pipes passing through partitions, walls and floors.
- U. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Support horizontal piping as indicated.
 - 3. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
 - 4. Place hangers within 12 inches (300 mm) of each horizontal elbow.
 - 5. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 - 6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 - 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 - 8. Provide copper plated hangers and supports for copper piping.
 - 9. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
 - 10. Provide hangers adjacent to motor driven equipment with vibration isolation; refer to Section 220548.
 - 11. Support cast iron drainage piping at every joint.

3.04 APPLICATION

- A. Install unions downstream of valves and at equipment or apparatus connections.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Install globe valves for throttling, bypass, or manual flow control services.

- E. Provide UL listed plug valves in natural gas systems for shut-off service.
- F. Provide flow controls in water recirculating systems where indicated.

3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/8 inch per foot (1:100) slope.

3.06 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean.
- B. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- C. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual.
- D. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- E. Maintain disinfectant in system for 24 hours.
- F. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- G. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- H. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.07 SERVICE CONNECTIONS

- A. Provide new sanitary sewer service. Before commencing work check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Provide new water service per local code requirements with reduced pressure backflow preventer and, pressure reducing valve, and sand strainer.
 - 1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
 - 2. Provide 18 gage, 0.0478 inch (1.21 mm) galvanized sheet metal sleeve around service main to 6 inch (150 mm) above floor and 6 feet (1800 mm) minimum below grade. Size for minimum of 2 inches (50 mm) of loose batt insulation stuffing.
- C. Provide natural gas service from existing meter as indicated with regulators at the building entrance points. New gas service distribution piping to have initial minimum pressure of 7 inch wg (1.75 kPa) or as indicated on the Drawings. Coordinate with local utility and code requirements.

3.08 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
 - 1) Maximum Hanger Spacing: 6.5 ft (2 m).
 - 2) Hanger Rod Diameter: 3/8 inches (9 mm).
 - b. Pipe Size: 1-1/2 inches (40 mm) to 2 inches (50 mm):
 - 1) Maximum Hanger Spacing: 10 ft (3 m).
 - 2) Hanger Rod Diameter: 3/8 inch (9 mm).
 - c. Pipe Size: 2-1/2 inches (65 mm) to 3 inches (75 mm):
 - 1) Maximum Hanger Spacing: 10 ft (3 m).
 - 2) Hanger Rod Diameter: 1/2 inch (13 mm).
 - d. Pipe Size: 4 inches (100 mm) to 6 inches (150 mm):
 - 1) Maximum Hanger Spacing: 10 ft (3 m).
 - 2) Hanger Rod Diameter: 5/8 inch (15 mm).

- 2. Plastic Piping:
 - a. All Sizes:
 - 1) Maximum Hanger Spacing: 4 ft.
 - 2) Hanger Rod Diameter: 3/8 inch (9 mm).

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**SECTION 221006
PLUMBING PIPING SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Floor drains.
- B. Cleanouts.
- C. Hose bibbs.
- D. Washing machine boxes and valves.
- E. Refrigerator valve and recessed box.
- F. Water hammer arrestors.
- G. Sanitary waste interceptors.

1.02 REFERENCE STANDARDS

- A. ASME A112.6.3 - Floor and Trench Drains 2019.
- B. ASSE 1011 - Performance Requirements for Hose Connection Vacuum Breakers 2023.
- C. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies 2021.
- D. DIN 19580 - Drainage Channels for Vehicular and Pedestrian Areas - Durability, Mass Per Unit Area and Evaluation of Conformity 2010.
- E. NSF 61 - Drinking Water System Components - Health Effects 2022, with Errata.
- F. NSF 372 - Drinking Water System Components - Lead Content 2022.
- G. PDI-WH 201 - Water Hammer Arresters 2017.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. See Section 013000 - Administrative Requirements, for submittal procedures.
- C. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.
- D. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

1.05 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products that comply with NSF 61 and NSF 372 for maximum lead content.

1.06 DRAINS

- A. Manufacturers:
 - 1. Wade
 - 2. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
 - 3. Zurn Industries, LLC: www.zurn.com.
- B. Floor Drain:
 - 1. ASME A112.21.1M; lacquered cast iron two piece body with double drainage flange, weep holes, reversible clamping collar, backwater valve where indicated, and round or square top (as indicated on plans), adjustable nickel-bronze strainer.
- C. Prefabricated Trench Drain: Trench drain system assembled from factory fabricated, polymer concrete castings in standard lengths and variable depths, with integral joint flanges and integral grating support rails; includes joint gaskets and grating.
 - 1. Load Class: DIN 19580, Class E.

2. Chemical Resistant.
 3. Grating Material and Style: Ductile iron grid.
- D. Floor Sink:
1. Lacquered cast iron body and bronze grate with dome strainer or sediment bucket (per schedule) and seepage flange.

1.07 CLEANOUTS

- A. Manufacturers:
1. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
 2. Wade:
 3. Zurn Industries, LLC: www.zurn.com.
- B. Cleanouts at Exterior Unsurfaced Areas (ECO):
1. Line type with lacquered cast iron body and round epoxy coated gasketed cover.
- C. Cleanouts at Interior Finished Floor Areas (FCO):
1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.
- D. Cleanouts at Interior Finished Wall Areas (WCO):
1. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

1.08 HOSE BIBBS

- A. Manufacturers:
1. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
 2. Woodford: www.woodford.com.
 3. Zurn Industries, LLC: www.zurn.com.
- B. Exterior Hose Bibbs:
1. ASSE 1019; freeze resistant, self-draining type with chrome plated wall plate hose thread spout, lockshield and removable key, and integral vacuum breaker.
- C. Interior Hose Bibbs:
1. Bronze or brass with integral mounting flange, replaceable hexagonal disc, hose thread spout, chrome plated where exposed with lockshield and removable key, integral vacuum breaker in conformance with ASSE 1011.

1.09 WASHING MACHINE BOXES AND VALVES

- A. Box Manufacturers:
1. Guy Gray
 2. IPS Corporation/Water-Tite: www.ipscorp.com.
 3. Oatey Supply Chain Services, Inc: www.oatey.com.
- B. Valve Manufacturers:
1. IPS Corporation/Water-Tite: www.ipscorp.com.
 2. Zurn Industries, LLC: www.zurn.com.
 3. ProSet:
- C. Description: Plastic preformed rough-in box with brass long shank valves with wheel handles, socket for 2 inch (50 mm) waste, slip in finishing cover.

1.10 REFRIGERATOR AND ICE MAKER VALVE AND RECESSED BOX

- A. Box Manufacturers:
1. IPS Corporation/Water-Tite: www.ipscorp.com.
 2. Oatey Supply Chain Services, Inc: www.oatey.com.
 3. ProSet:
- B. Description: Preformed rough-in box with brass valves with wheel handle, slip in finishing cover.

1.11 BACKFLOW PREVENTERS

- A. Manufacturers:
 - 1. Conbraco Industries, Inc: www.apollovalves.com.
 - 2. Watts Regulator Company, a part of Watts Water Technologies: www.wattsregulator.com.
 - 3. Wilkins Industries, Inc: www.zurn.com.
- B. Reduced Pressure Backflow Preventers:
 - 1. ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; diaphragm type differential pressure relief valve located between check valves; third check valve that opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.

1.12 WATER HAMMER ARRESTORS

- A. Manufacturers:
 - 1. Jay R. Smith Manufacturing Company: www.jayrsmith.com.
 - 2. Watts Regulator Company, a part of Watts Water Technologies: www.wattsregulator.com.
 - 3. Wilkins Industries, Inc: www.zurn.com.
- B. Water Hammer Arrestors:
 - 1. Stainless steel construction, bellows type sized in accordance with PDI-WH 201, precharged suitable for operation in temperature range minus 100 to 300 degrees F (minus 73 to 149 degrees C) and maximum 250 psi (1700 kPa) working pressure.

1.13 SANITARY WASTE INTERCEPTORS

- A. Oil Interceptors:
 - 1. See Schedule on Drawings.

1.14 MIXING VALVES

- A. Thermostatic Mixing Valves:
 - 1. Manufacturers:
 - a. Symmons: www.symmons.com
 - b. Bradley: www.bradleycorp.com
 - c. Leonard Valve Company: www.leonardvalve.com.
 - 2. Valve: Chrome plated cast brass body, stainless steel or copper alloy bellows, integral temperature adjustment.
 - 3. Accessories:
 - a. Check valve on inlets.
 - b. Stem thermometer on outlet.
 - c. Strainer stop checks on inlets.

1.15 FLOOR DRAIN TRAP SEALS

- A. Description: Push-fit EPDM or silicone fitting with a one-way membrane.

PART 3 EXECUTION

2.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.
- E. Install approved potable water protection devices on plumbing lines where contamination of domestic water may occur; on boiler feed water lines, janitor rooms, fire sprinkler systems, premise isolation, irrigation systems, flush valves, interior and exterior hose bibbs.
- F. Pipe relief from backflow preventer to nearest drain.

- G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping .

SECTION 223000 PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water Heaters:
 - 1. Commercial gas fired.
 - 2. Residential/Light Commercial electric.
- B. In-line circulator pumps.

1.02 REFERENCE STANDARDS

- A. UL 174 - Standard for Household Electric Storage Tank Water Heaters Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittals procedures.
- B. Product Data:
 - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 - 2. Indicate pump type, capacity, power requirements.
 - 3. Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable.
 - 4. Provide storage capacity and recovery rate.
 - 5. Provide electrical characteristics and connection requirements.
- C. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.
- D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 CERTIFICATIONS

- A. Water Heaters: NSF approved.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for domestic water heaters.
 - 1. Provide water heater tank with 15-year no cost repair/replace warranty.

PART 2 PRODUCTS

2.01 WATER HEATER MANUFACTURERS

- A. Lochinvar: www.lochinvar.com
- B. Heat Transfer Products
- C. A.O. Smith Water Products Co: www.hotwater.com.
- D. Noritz:

- E. Rinnai:

2.02 COMMERCIAL GAS FIRED WATER HEATERS

- A. Performance:
 - 1. See Schedule on Drawings.
- B. Accessories: Brass water connections and dip tube, drain valve, and ASME rated temperature and pressure relief valve.
 - 1. Water Connections: Brass.
 - 2. Dip tube: Brass.
 - 3. Drain Valve.
- C. Controls: Automatic water thermostat with temperature range adjustable from 120 to 180 degrees F (49 to 82 degrees C), automatic reset high temperature limiting thermostat factory set at 195 degrees F (90 degrees C), gas pressure regulator, multi-ribbon or tubular burner, 100 percent safety shut-off pilot and thermocouple, flue baffle.

2.03 LIGHT DUTY COMMERCIAL ELECTRIC WATER HEATERS

- A. Type: Automatic, electric, vertical storage.
- B. Performance:
 - 1. See Schedule on Drawings.
- C. Electrical Characteristics:
 - 1. See Schedule on Drawings.
- D. Tank: Glass lined welded steel, thermally insulated with one inch (25 mm) thick glass fiber; encased in corrosion-resistant steel jacket; baked-on enamel finish.
- E. Controls: Automatic water thermostat with externally adjustable temperature range from 120 to 170 degrees F (49 to 77 degrees C), flanged or screw-in nichrome elements, enclosed controls and electrical junction box and operating light. Wire double element units so elements do not operate simultaneously.
- F. Accessories: Provide:

2.04 DIAPHRAGM-TYPE COMPRESSION TANKS

- A. Construction: Welded steel, tested and stamped in accordance with ASME (BPV VIII, 1); supplied with National Board Form U-1, rated for working pressure of 150 psig (860 kPa), with flexible EPDM diaphragm suitable for domestic water sealed into tank, and steel legs or saddles.

2.05 IN-LINE CIRCULATOR PUMPS

- A. See Schedule on Drawings.
- B. Impeller: Non-metallic.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.
- B. Coordinate with plumbing piping and related fuel piping work to achieve operating system.
- C. Provide 4" high housekeeping pad for water heater.
 - 1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

SECTION 224000 PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water closets.
- B. Lavatories.
- C. Sinks.
- D. Service sinks.
- E. Showers.

1.02 REFERENCE STANDARDS

- A. ASME A112.19.2 - Ceramic Plumbing Fixtures 2018, with Errata.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Manufacturer's Instructions: Indicate installation methods and procedures.
- D. Maintenance Data: Include fixture trim exploded view and replacement parts lists.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler.

1.08 EXTRA MATERIALS

- A. See Section 01 6000 - Project Requirements, for additional provisions.
- B. Supply two sets of faucet washers, flush valve service kits, and lavatory supply fittings.

PART 2 PRODUCTS

2.01 FLUSH VALVE WATER CLOSETS

- A. Water Closets: Vitreous china, ASME A112.19.2, floor mounted as indicated on Schedule, siphon jet flush action, china bolt caps.
 - 1. Flush Valve: Exposed (top spud).
 - 2. Flush Operation: Sensor operated.
 - 3. Handle Height: 44 inches (1117 mm) or less.
 - 4. Manufacturers:
 - a. American Standard Inc: www.americanstandard.com.
 - b. Zurn: www.zurn.com.

- c. Kohler Company: www.kohler.com/#sle.
- B. Flush Valves: ASME A112.18.1, diaphragm type, complete with vacuum breaker stops and accessories.
 - 1. Sensor-Operated Type: Solenoid operator, battery powered, infrared sensor with mechanical over-ride or over-ride push button.
 - 2. Manufacturers:
 - a. Sloan Valve Company: www.sloanvalve.com.
 - b. Zurn Industries, Inc: www.zurn.com.
- C. Seats:
 - 1. Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.

2.02 LAVATORIES

- A. Lavatory Manufacturers:
 - 1. American Standard Inc: www.americanstandard.com.
 - 2. Zurn: www.zurn.com.
 - 3. Kohler Company: www.kohler.com.
- B. Vitreous China Under-Mount Basin: ASME A112.19.2; vitreous china under-mount lavatory, front overflow, mounting kit and template by manufacturer.
- C. Vitreous China Wall Hung Basin:
 - 1. ASME A112.19.2M; vitreous china wall hung lavatory 20 x 18 inch (____ x ____ mm) minimum, 4 inch (100 mm) high back, rectangular basin with splash lip, front overflow, and soap depression.
 - 2. ASME A112.19.2M; vitreous china wall hung lavatory 20 x 18 inch (____ x ____ mm) minimum, rectangular basin with splash lip, front overflow, and soap depression.
 - a. Drilling Centers: 4 inch (100 mm).
 - 3. Carrier:
 - a. Manufacturers:
 - 1) Wade
 - 2) Sloan Valve Company.
 - 3) Zurn Industries, Inc.
 - b. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.
- D. Faucet:
 - 1. ASME A112.18.1M; chrome plated combination supply fitting pop-up or open grid strainer, water economy aerator with maximum 0.5 gpm flow, single lever or indexed handles per Schedule. (Drain shall be per Schedule on drawings.)
 - 2. Supply Faucet Manufacturers:
 - a. Symmons
 - b. Zurn
 - c. Kohler
- E. Accessories:
 - 1. Chrome plated 17 gage (1.3 mm) brass P-trap with clean-out plug and arm with escutcheon.
 - 2. Offset waste with perforated open strainer.
 - 3. Wheel handle stops.
 - 4. Lavatory Piping Security Cover.
 - 5. Rigid supplies.
 - 6. Carrier:
 - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.

2.03 SINKS

- A. Sink Manufacturers:

1. Elkay: www.elkayusa.com.
 2. Kohler Company: www.kohler.com.
 3. Just:
- B. Single Compartment Bowl:
1. ASME A112.19.3M; size per Schedule on Drawings, 20 gage (0.9 mm) thick, Type 302 stainless steel, self-rimming or undermount per Schedule, and undercoated, with ledge back drilled for trim.
 - a. Drain: 1-1/2 inch (38 mm) chromed brass drain.
- C. Double Compartment Bowl:
1. ASME A112.19.3M; size per Schedule on Drawings, 20 gage (0.9 mm) thick, Type 302 stainless steel, self-rimming or undermount per Schedule, and undercoated, with ledge back drilled for trim.
 - a. Drain: 3-1/2 inch (90 mm) crumb cup and tailpiece.
- D. Supply Faucet:
1. Manufacturers:
 - a. American Standard.
 - b. Symmons.
 - c. Zurn Industries, Inc.
 2. Trim: ASME A112.18.1M; chrome plated brass supply with swing spout, vandal proof aerator, indexed lever handles or single lever handle where indicated (see Schedule on Drawings).
- E. Accessories: Chrome plated 17 gage (1.3 mm) brass P-trap with clean-out plug and arm with escutcheon, wheel handle stop, rigid supplies, and garbage disposal connections as required.

2.04 SHOWERS

- A. Trim:
1. Manufacturers:
 - a. Symmons: www.symmons.com.
 - b. American Standard: www.americanstandard.com.
 - c. Kohler Company: www.kohlerco.com.
 2. ASME A112.18.1; concealed shower supply with pressure balanced mixing valves, single lever handle, integral service stops, bent shower arm with adjustable spray ball joint shower head with maximum 2.5 gpm (0.16 L/s) flow, and escutcheon.
 3. ADA - ASME A112.18.1; concealed shower supply with pressure balanced mixing valves, single lever handle, integral service stops, adjustable spray flexible shower hose with fixed head shower and handheld shower head with mounting bar and vacuum breaker and maximum and diverter valve 2.5 gpm flow, and escutcheon.

2.05 SERVICE SINKS

- A. Service Sink Manufacturers:
1. Elkay Manufacturing Company: www.elkay.com.
 2. Stern-Williams: www.sternwilliams.com.
 3. Zurn Industries, Inc: www.zurn.com.
- B. Bowl:
1. 24 x 24 x 10 inch (600 x 600 x 250 mm) high (or as indicated on Schedule), white molded stone, floor mounted, with one inch (25 mm) wide shoulders with stainless steel caps, and stainless steel strainer.
- C. Trim:
1. ASME A112.18.1 exposed wall type supply with cross handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges.
- D. Accessories:
1. 30 inches of 5/8 inch diameter plain end reinforced plastic hose.
 2. Hose clamp hanger.

3. Mop hanger.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid supplies to fixtures with screwdriver stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall supports and bolts.
- E. Seal fixtures to wall and floor surfaces with sealant as specified in Section {id\#361}, color to match fixture.
- F. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

- A. Clean plumbing fixtures and equipment.

3.07 SCHEDULES

- A. Fixture Heights: See Architectural for Mounting Heights of Fixtures.

SECTION 233100 HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal ductwork.
- B. Nonmetal ductwork.
- C. Casing and plenums.
- D. New duct cleaning. See Section 23 0130.51 for existing to remain duct cleaning.

1.02 RELATED REQUIREMENTS

- A. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2023.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.
- D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021a.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023b.
- F. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2024.
- G. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems 2024.
- H. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations 2024.
- I. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual 2012.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for duct materials. Provide data for all field applied adhesives and sealants used showing compliance with Section 01 6116 for maximum VOC content.
- C. Shop Drawings: Indicate duct fittings, particulars such as gages, sizes, welds, and configuration prior to start of work for kitchen hood exhaust systems.
- D. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK).
- E. Manufacturer's Installation Instructions: Indicate special procedures for fabric ducts.

1.05 REGULATORY REQUIREMENTS

- A. Construct ductwork to SMACNA , NFPA 90A, NFPA 90B, and NFPA 96 standards.

1.06 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES

- A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.

- B. Ducts: Galvanized steel, unless otherwise indicated.
- C. Low Pressure Supply (System with Cooling Coils): 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- D. Medium and High Pressure Supply: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- E. Return and Relief: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- F. General Exhaust: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- G. Outside Air Intake: 1/2 inch w.g. (125 Pa) pressure class, galvanized steel.
- H. Transfer Air and Sound Boots: 1/2 inch w.g. (125 Pa) pressure class, fibrous glass.

2.02 MATERIALS

- A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.
- B. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
 - 1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
 - 2. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
- C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- D. Insulated Flexible Ducts:
 - 1. Black polymer film supported by helically wound spring steel wire; fiberglass insulation; polyethylene vapor barrier film.
 - a. Pressure Rating: 4 inches WG (1000 Pa) positive and 0.5 inches WG (175 Pa) negative.
 - b. Maximum Velocity: 4000 fpm (20.3 m/sec).
 - c. Temperature Range: -20 degrees F to 175 degrees F (-28 degrees C to 79 degrees C).
- E. Hanger Rod: ASTM A 36/A 36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.03 DUCTWORK FABRICATION

- A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
- B. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
- C. Provide air foil turning vanes when rectangular elbows must be used.
- D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- E. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).
- F. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.04 DUCT MANUFACTURERS

- A. Metal-Fab, Inc: www.mtlfab.com.
- B. SEMCO Incorporated: www.semcoinc.com.
- C. United McGill Corporation: www.unitedmcgill.com.

2.05 MANUFACTURED DUCTWORK AND FITTINGS

- A. Manufacture in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating

pressures indicated.

- B. Double Wall Insulated Round Ducts: Round spiral lockseam duct with galvanized steel outer wall, 1 inch (25 mm) thick fiberglass insulation, galvanized steel inner wall; fittings with solid inner wall. Exterior wall to have paint grip finish for field painting. Provide for all exposed to view ducting in occupied areas.

2.06 CASINGS

- A. Mount floor mounted casings on 4 inch (100 mm) high concrete curbs. At floor, rivet panels on 8 inch (200 mm) centers to angles. Where floors are acoustically insulated, provide liner of galvanized 18 gage, 0.0478 inch (1.21 mm) expanded metal mesh supported at 12 inch (300 mm) centers, turned up 12 inches (300 mm) at sides with sheet metal shields.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install in accordance with manufacturer's instructions.
- C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- D. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
- E. Install and seal metal and flexible ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
- F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
- G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
- H. Use crimp joints with or without bead for joining round duct sizes 8 inch (200 mm) and smaller with crimp in direction of air flow.
- I. Use double nuts and lock washers on threaded rod supports.
- J. Connect diffusers or light troffer boots to low pressure ducts directly or with 5 feet (1.5 m) maximum length of flexible duct held in place with strap or clamp.
- K. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.
- L. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- M. At exterior wall louvers, seal duct to louver frame and install blank-out panels.

3.02 CLEANING

- A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

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**SECTION 233300
AIR DUCT ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backdraft dampers.
- B. Combination fire and smoke dampers.
- C. Duct access doors.
- D. Duct test holes.
- E. Fire dampers.
- F. Flexible duct connections.
- G. Volume control dampers.

1.02 REFERENCE STANDARDS

- A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2024.
- B. NFPA 92 - Standard for Smoke Control Systems 2021, with Amendment.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible 2020.
- D. UL 33 - Safety Heat Responsive Links for Fire-Protection Service Current Edition, Including All Revisions.
- E. UL 555 - Standard for Fire Dampers Current Edition, Including All Revisions.
- F. UL 555S - Standard for Smoke Dampers Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide for shop fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Provide instructions for fire dampers and combination fire and smoke dampers.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect dampers from damage to operating linkages and blades.

1.06 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Provide two of each size and type of fusible link.

PART 2 PRODUCTS

2.01 BACKDRAFT DAMPERS

- A. Gravity Backdraft Dampers, Size 18 by 18 inches (450 by 450 mm) or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

2.02 COMBINATION FIRE AND SMOKE DAMPERS

- A. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated. Minimum Class II.
- B. Provide factory sleeve and collar for each damper.

- C. Operators: UL listed and labelled spring return electric type suitable for 24 volts or as required by Fire Alarm system. Coordinate actuator type, voltage, etc. with Fire Alarm contractor. Provide end switches to indicate damper position. Locate damper operator on exterior of duct and link to damper operating shaft.
- D. Normally Closed Smoke Responsive Fire Dampers: Curtain type, opening by gravity upon actuation of electro thermal link, flexible stainless steel blade edge seals to provide constant sealing pressure.
- E. Electro Thermal Link: Fusible link melting at 165 degrees F (74 degrees C); UL listed and labeled, 24V or as required for Fire Alarm system. Coordinate actuator type, voltage, etc. with Fire Alarm contractor.

2.03 DUCT ACCESS DOORS

- A. Fabricate in accordance with SMACNA (DCS) and as indicated.
- B. Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 1 inch (25 mm) thick insulation with sheet metal cover.
 - 1. Less Than 12 inches (300 mm) Square: Secure with sash locks.
 - 2. Up to 18 inches (450 mm) Square: Provide two hinges and two sash locks.
- C. Access doors with sheet metal screw fasteners are not acceptable.

2.04 DUCT TEST HOLES

- A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

2.05 FIRE DAMPERS

- A. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.
- B. Horizontal Dampers: Galvanized steel, 22 gage (0.76 mm) frame, stainless steel closure spring, and lightweight, heat retardant non-asbestos fabric blanket.
- C. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream except for 1.0 inch (250 Pa) pressure class ducts up to 12 inches (300 mm) in height.
- D. Fusible Links: UL 33, separate at 160 degrees F (71 degrees C) with adjustable link straps for combination fire/balancing dampers.

2.06 FLEXIBLE DUCT CONNECTIONS

- 1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd (1.0 kg/sq m).
 - a. Net Fabric Width: Approximately 2 inches (50 mm) wide.
- 2. Metal: 3 inches (75 mm) wide, 24 gage, 0.0239 inch (0.61 mm) thick galvanized steel.
- B. Fabricate in accordance with SMACNA (DCS) and as indicated.
- C. Single Blade Dampers: Fabricate for duct sizes up to 6 x 30 inch (150 x 760 mm).
- D. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 x 72 inch (200 x 1825 mm). Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
- E. Quadrants:
 - 1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.
 - 2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). Refer to Section 233100 for duct construction and pressure class.
- B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
- C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch (200 x 200 mm) size for hand access, 18 x 18 inch (450 x 450 mm) size for shoulder access, and as indicated. Provide 4 x 4 inch (100 x 100 mm) for balancing dampers only. Review locations prior to fabrication.
- D. Provide duct test holes where indicated and required for testing and balancing purposes.
- E. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
- F. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
- G. Demonstrate re-setting of fire dampers to Owner's representative.
- H. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
- I. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
- J. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
- K. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

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**SECTION 233423
HVAC POWER VENTILATORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall exhausters.
- B. Cabinet exhaust fans.
- C. Inline centrifugal fans.
- D. Cabinet exhaust fans.
- E. Utility vent set.

1.02 REFERENCE STANDARDS

- A. AMCA 99 - Standards Handbook 2016.
- B. AMCA 204 - Balance Quality and Vibration Levels for Fans 2020.
- C. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating 2016.
- D. AMCA (DIR) - [Directory of] Products Licensed Under AMCA International Certified Ratings Program; Air Movement and Control Association International, Inc.; <http://www.amca.org/certified/search/company.aspx>.
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans 2014.
- F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data 2022.
- G. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations 2024.
- H. UL 705 - Power Ventilators Current Edition, Including All Revisions.
- I. UL 762 - Outline of Investigation for Power Roof Ventilators for Restaurant Exhaust Appliances Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fans and accessories including fan curves with specified operating point clearly plotted, power, RPM, sound power levels at rated capacity, and electrical characteristics and connection requirements.
- C. Manufacturer's Instructions: Indicate installation instructions.
- D. Maintenance Data: Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.05 FIELD CONDITIONS

1.06 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.
- B. Supply two sets of belts for each fan.

PART 2 PRODUCTS

2.01 POWER VENTILATORS - GENERAL

- A. Manufacturers:
 - 1. Greenheck Fan Corporation: www.greenheck.com/#sle.

2. PennBarry, Division of Air System Components: www.pennbarry.com/#sle.
 3. Loren Cook Company: www.lorencook.com.
- B. Static and Dynamically Balanced: AMCA 204 - Balance Quality and Vibration Levels for Fans.
 - C. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.
 - D. Sound Ratings: AMCA 301, tested to AMCA 300 and bearing AMCA Certified Sound Rating Seal.
 - E. Fabrication: Comply with AMCA 99.
 - F. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.
 - G. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
 - H. Kitchen Hood Exhaust Fans: Comply with requirements of NFPA 96 and UL 762.

2.02 WALL EXHAUSTERS

- A. Manufacturers:
 1. Greenheck Fan Corporation: www.greenheck.com/#sle.
 2. Captive-Aire:
 3. Cook:
- B. Fan Unit: V-belt or direct driven with spun aluminum housing; resiliently mounted motor; 1/2 inch (13 mm) mesh, 0.062 inch (1.6 mm) thick aluminum wire bird screen.
- C. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor, and wall mounted multiple speed switch.
- D. Backdraft Damper: Gravity actuated, aluminum multiple blade construction, felt edged with offset hinge pin, nylon bearings, blades linked, and line voltage motor drive, power open, spring return.
- E. Sheaves: For V-belt drives, provide cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

2.03 CABINET EXHAUST FANS

- A. Centrifugal Fan Unit: V-belt or direct driven with galvanized steel housing lined with acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge.
- B. Disconnect Switch: Cord and plug in housing for thermal overload protected motor and wall mounted switch.
- C. Grille: Aluminum with baked white enamel finish. Fire rated where indicated.
- D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

2.04 INLINE CENTRIFUGAL FANS

- A. Disconnect Switch: Cord and plug in housing for thermal overload protected motor and wall mounted switch.

2.05 UTILITY VENT SET

- A. See Schedule on Drawings.
- B. Manufacturers:
 1. Neederman Vehicle Exhaust..

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions and per NFPA 96.

- B. Secure roof exhausters with cadmium plated steel lag screws to roof curb.
- C. Hung Cabinet Fans:
 - 1. Install fans with resilient mountings and flexible electrical leads.
- D. Provide sheaves required for final air balance.
- E. Install backdraft dampers on inlet to roof exhausters.
- F. Provide backdraft dampers on outlet from cabinet and ceiling exhauster fans and as indicated.

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**SECTION 233700
AIR OUTLETS AND INLETS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Diffusers.
- B. Registers/grilles.
- C. Door grilles.
- D. Louvers.
- E. Gravity ventilators.

1.02 REFERENCE STANDARDS

- A. ADC 1062: GRD - Test Code for Grilles, Registers & Diffusers; Air Diffusion Council; 1984.
- B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating 2012, with Editorial Revision (2015).
- C. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices 2021, with Editorial Revision (2022).
- D. AMCA 550 - Test Method for High Velocity Wind Driven Rain Resistant Louvers 2022.
- E. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Air Inlets 2023.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.
- G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.
- H. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

1.04 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.
- B. Test and rate louver performance in accordance with AMCA 500-L.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carnes Company HVAC: www.carnes.com.
- B. Price Industries: www.price-hvac.com/#sle.
- C. Titus: www.titus-hvac.com/#sle.
- D. Ruskin
- E. United Enertech
- F. Greenheck.

2.02 RECTANGULAR CEILING DIFFUSERS

- A. Frame: Provide surface mount, snap-in, inverted T-bar, spline, and _____ type. In plaster ceilings, provide plaster frame and ceiling frame.

- B. Type: Square, stamped, multi-core or plaque style diffuser to discharge air in four way pattern, unless otherwise indicated .
- C. Frame: Inverted T-bar type, unless otherwise indicated. In plaster ceilings, provide plaster frame and ceiling frame.
- D. Fabrication: Aluminum or steel (as indicated on Schedule) with baked enamel off-white finish.

2.03 CEILING GRID CORE EXHAUST AND RETURN REGISTERS/GRILLES

- A. Type: Fixed grilles of 1/2 x 1/2 x 1/2 inch (13 x 13 x 13) louvers.
- B. Fabrication: Aluminum with factory off-white enamel finish.
- C. Frame: As indicated on the drawing schedule.

2.04 DOOR GRILLES

- A. Type: V-shaped louvers of aluminum construction, 1 inch (25 mm) deep.
- B. Frame: Auxiliary frame to give finished appearance on both sides of door, with factory prime coat finish.

2.05 LOUVERS

- A. Type: 4 inch (100 mm) or 6 inch deep with blades per Schedule on 45 degree slope with center baffle and return bend, heavy channel frame, 1/2 inch (13 mm) square mesh screen over exhaust and 1/2 inch (13 mm) square mesh screen over intake.
- B. Fabrication: 12 gage (2.50 mm) thick extruded aluminum, welded assembly, with factory baked enamel finish.
- C. Color: To be selected by Architect from manufacturer's standard range.

2.06 GRAVITY VENTILATORS

- A. Hood Intake and Relief Gravity Ventilator:
 - 1. General:
 - a. Low silhouette for intake applications with natural gravity or negative pressure system(s).
 - b. Performance ratings and factory testing to be in accordance with AMCA 511 and AMCA 550.
 - c. Equipment to bear permanently affixed manufacturer's nameplate listing model and serial number.
 - 2. Hood and Base:
 - a. Material: Aluminum.
 - b. Hood Construction: Precision formed, arched panels with interlocking seams.
 - c. Curb Cap: Pre-punched mounting holes for installation.
 - 3. Birdscreen:
 - a. Fabricate in accordance with ASTM B221 (ASTM B221M).
 - b. Construction: 1/2 inch (12.7 mm) Galvanized mesh.
 - c. Horizontally mounted across hood intake area.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.
- C. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
- D. Install diffusers to ductwork with air tight connection.
- E. Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.

**SECTION 235533
FUEL-FIRED UNIT HEATERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Gas fired unit heaters.
- B. Tubular infrared heaters.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. ASHRAE Std 103 - Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers 2022.
- C. NFPA 54 - National Fuel Gas Code 2021.
- D. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2024.
- E. NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances 2019.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- C. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listing.
- E. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturers warranty for heat exchangers.

PART 2 PRODUCTS

2.01 UNIT HEATER MANUFACTURERS

- A. Trane Company Company: www.trane.com.
- B. Sterling HVAC/Mestek Technology, Inc: www.sterlinghvac.com.
- C. Reznor/Thomas & Betts Corporation: www.reznoronline.com.

2.02 GAS FIRED UNIT HEATERS

- A. Units: Separated combustion (where indicated), self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heat exchanger, burner, controls, and accessories:
 - 1. Heating: Natural gas fired.
 - 2. Discharge Louvers: Individually adjustable horizontal and vertical louvers to match cabinet finish.

- B. Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors, glass fiber insulation and reflective liner.
- C. Supply Fan: Propeller type with direct drive.
- D. Heat Exchanger: Type E-3 stainless steel (for separated combustion) welded construction.
- E. Gas Burner:
 - 1. Sealed combustion type with adjustable combustion air supply,
 - 2. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
 - 3. Electronic pilot ignition, with electric spark igniter.
- F. Gas Burner Safety Controls:
 - 1. Thermocouple sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.
 - 2. Vent safety shutoff sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.
- G. Operating Controls
 - 1. Room Thermostat: Cycles burner to maintain room temperature setting with BMS remote interface contact.
- H. Performance:
 - 1. Ratings: Energy Efficiency Rating (EER)/Coefficient of Performance (COP) not less than requirements of ASHRAE Std 90.1 I-P; seasonal efficiency to ASHRAE Std 103.

2.03 TUBULAR INFRARED HEATERS

- A. Manufacturers:
 - 1. Calcana USA Ltd: www.calcana.com/#sle.
 - 2. Detroit Radiant Products Company: www.reverberay.com/#sle.
 - 3. Space-Ray, Division of Gas Fired Products, Inc; _____: www.spaceray.com/#sle.
- B. Infrared Heaters: Tubular type; packaged, partially factory assembled, pre-wired unit consisting of cabinet, burner, heat exchanger, radiant tube, reflector, controls; for natural gas.
- C. Heat Exchanger: Aluminized tubular steel combustion chamber with aluminized steel tube with aluminum reflector.
- D. Gas Burner:
 - 1. Gas Burner: Forced draft type with adjustable combustion air supply.
 - 2. Gas valve provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
 - 3. Electronic pilot ignition, with electric spark igniter.
 - 4. Non-corrosive burner air blower with permanently lubricated motor.
- E. Gas Burner Safety Controls: Thermo-couple sensor prevents opening of solenoid gas valve until pilot flame is proven and stops gas flow on ignition failure.
- F. Operating Controls: Low voltage room thermostat cycles burner to maintain room temperature setting.
- G. Performance:
 - 1. Refer to Schedule. Gas heating capacities are sea level ratings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that space is ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available.
- C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

- A. Install in accordance with NFPA 90A.
- B. Install gas fired units in accordance with NFPA 54 and applicable codes.
- C. Provide vent connections in accordance with NFPA 211. Refer to Section 23 5100.
- D. Install unit heaters with vibration isolation. Refer to Section 23 0548.
- E. Provide connection to electrical power systems; refer to Section 260583.

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**SECTION 238101
TERMINAL HEAT TRANSFER UNITS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electric heaters.

1.02 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.
- C. Shop Drawings:
 - 1. Indicate cross sections of cabinets, grilles, bracing and reinforcing, and typical elevations.
 - 2. Submit schedules of equipment and enclosures typically indicating length and number of pieces of element and enclosure, corner pieces, end caps, cap strips, access doors, pilaster covers, and comparison of specified heat required to actual heat output provided.
 - 3. Indicate mechanical and electrical service locations and requirements.,
- D. Manufacturer's Instructions: Indicate installation instructions and recommendations.
- E. Operation and Maintenance Data: Include manufacturers descriptive literature, operating instructions, installation instructions, maintenance and repair data, and parts listings.
- F. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 ELECTRIC HEATERS

- A. Manufacturers:
 - 1. INDEECO (Industrial Engineering and Equipment Company); Model _____: www.indeeco.com/#sle.
 - 2. Marley Engineered Products; Model _____: www.marleymep.com/#sle.
 - 3. Trane Inc; Model _____: www.trane.com/#sle.
 - 4. Markel, Inc. ; Model _____.
- B. Assembly: UL listed and labelled assembly with terminal box and cover, and built-in controls.
- C. Heating Elements: Enclosed copper tube, aluminum finned element of coiled nickel-chrome resistance wire centered in tubes and embedded in refractory material.
- D. Cabinet: 0.0478 inch (1.2 mm) steel with easily removed front panel with integral air outlet and inlet grilles.
- E. Element Hangers: Quiet operating, ball bearing cradle type providing unrestricted longitudinal movement, on enclosure brackets.
- F. Fan: Direct drive propeller type, statically and dynamically balanced, with fan guard.
- G. Motor: Permanently lubricated, sleeve bearings for horizontal models, ball bearings for vertical models.
- H. Control: Wall mounted BMS thermostat control. Provide built in thermal overload.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

- B. Install equipment exposed to finished areas after walls and ceiling are finished and painted. Do not damage equipment or finishes.
- C. Protection: Provide finished cabinet units with protective covers during balance of construction.
- D. Install electric heating equipment including devices furnished by manufacturer but not factory-mounted. Furnish copy of manufacturer's wiring diagram submittal. Install electrical wiring in accordance with manufacturer's submittals and Section 260583.

3.02 CLEANING

- A. After construction is completed, including painting, clean exposed surfaces of units. Vacuum clean coils and inside of cabinets.
- B. Touch-up marred or scratched surfaces of factory-finished cabinets, using finish materials furnished by manufacturer.

SECTION 238126.13
SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air-source heat pumps.
- B. Forced air furnaces.
- C. Air cooled condensing units.
- D. Indoor ducted and ductless fan & coil units.
- E. Controls.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

- A. AHRI 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment 2023.
- B. AHRI 520 - Performance Rating of Positive Displacement Condensing Units 2004.
- C. ASHRAE Std 15 - Safety Standard for Refrigeration Systems 2022, with Errata (2023).
- D. NFPA 54 - National Fuel Gas Code 2021.
- E. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems 2024.
- F. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems 2024.
- G. NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances 2019.
- H. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- C. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Carrier Corporation: www.carrier.com/#sle.
- B. Trane Inc: www.trane.com.
- C. JCI:
- D. Mitsubishi:
- E. Samsung:

2.02 SYSTEM DESIGN

- A. Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
 - 1. Heating and Cooling: Air-source electric heat pump located in outdoor unit with evaporator.
 - 2. Heating: Natural gas fired.

3. Cooling: Outdoor electric condensing unit with evaporator coil in central ducted indoor unit.
 4. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
- B. Performance Requirements: See Drawings for additional requirements.

2.03 INDOOR UNITS FOR DUCTLESS SYSTEMS

- A. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, evaporator coil, and controls; wired for single power connection with control transformer.
- B. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
 2. Manufacturer: System manufacturer.

2.04 OUTDOOR UNITS

- A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
1. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.
- B. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
- C. Accessories: Filter drier, high pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).
1. Provide thermostatic expansion valves.
 2. Provide heat pump reversing valves.
 3. Louvered or perforated condenser coil hail guards.
- D. Operating Controls:
1. Control by room thermostat to maintain room temperature setting.
 2. Low Ambient Kit: Provide refrigerant pressure switch to cycle condenser fan on when condenser refrigerant pressure is above 285 psig (1965 kPa) and off when pressure drops below 140 psig (965 kPa) for operation to 0 degrees F (-18 degrees C).
- E. Mounting Pad: Concrete pad, minimum 4 inches (100 mm) square; minimum of two located under cabinet feet.

2.05 GAS FURNACE COMPONENTS

- A. Heat Exchanger: Aluminized steel ceramic coated clamshell type welded construction.
- B. Burner: Atmospheric type with adjustable combustion air supply,
1. Gas valve, two stage provides 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
 2. Combustion air damper with synchronous spring return damper motor.
 3. Non-corrosive combustion air blower with permanently lubricated motor.
- C. Burner Safety Controls:
1. Thermocouple Sensor: Prevents opening of gas valve until pilot flame is proven and stops gas flow on ignition failure.
 2. Flame Rollout Switch: Installed on burner box and prevents operation.
 3. Vent Safety Shutoff Sensor: Temperature sensor installed on draft hood and prevents operation, manual reset.
 4. Limit Control: Fixed stop at maximum permissible setting, de-energizes burner on excessive bonnet temperature, automatic resets.
- D. Operating Controls:
1. Cycle burner by room thermostat to maintain room temperature setting.

2.06 ACCESSORY EQUIPMENT

- A. Ductless / VRF Systems: Manufacturer Standard Controller with room low voltage thermostat.
- B. Ducted Systems: Room Thermostat: Wall-mounted, electric solid state microcomputer based room thermostat with remote sensor to maintain temperature setting; low-voltage; with following features:
 - 1. Automatic switching from heating to cooling.
 - 2. Preferential rate control to minimize overshoot and deviation from setpoint.
 - 3. Remote sensors as indicated.
 - 4. Set-up for four separate temperatures per day.
 - 5. Instant override of setpoint for continuous or timed period from one hour to 31 days.
 - 6. Short cycle protection.
 - 7. Programming based on weekdays, Saturday and Sunday.
 - 8. Selection features including degree F or degree C display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
 - 9. Battery replacement without program loss.
 - 10. Thermostat Display:
 - a. Actual room temperature.
 - b. System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.
- B. Verify that proper power supply is available and in correct location.
- C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.
- B. Install in accordance with NFPA 90A and NFPA 90B.
- C. Install gas fired furnaces in accordance with NFPA 54.
- D. Provide vent connections in accordance with NFPA 211.
- E. Install refrigeration systems in accordance with ASHRAE Std 15.
- F. Pipe drain from cooling coils to nearest floor drain or as indicated on drawings.

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**SECTION 260505
SELECTIVE DEMOLITION FOR ELECTRICAL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical demolition.

1.02 RELATED REQUIREMENTS

- A. Section 017000 - Execution and Closeout Requirements: Additional requirements for alterations work.

PART 3 EXECUTION

2.01 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Beginning of demolition means installer accepts existing conditions.

2.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Obtain permission from Owner at least 14 days before partially or completely disabling system.
 - 2. Make temporary connections to maintain service in areas adjacent to work area.
- E. Existing Telephone System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Notify Owner at least 7 days before partially or completely disabling system.
 - 2. Notify telephone utility company at least 24 hours before partially or completely disabling system.
- F. Existing Station Receiving System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Obtain permission from Owner at least 7 days before partially or completely disabling system.
- G. Existing Local Area Network (LAN) System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Obtain permission from Owner at least 7 days before partially or completely disabling system.

2.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

- E. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- F. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- G. Repair adjacent construction and finishes damaged during demolition and extension work.
- H. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- I. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

SECTION 260519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Metal-clad cable.
- C. Wiring connectors.
- D. Electrical tape.
- E. Oxide inhibiting compound.
- F. Wire pulling lubricant.
- G. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 260505 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- B. Section 260526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 284600 - Fire Detection and Alarm: Fire alarm system conductors and cables.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire 2013 (Reapproved 2018).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft 2011 (Reapproved 2017).
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation 2004 (Reapproved 2020).
- E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape 2017.
- F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes 2020.
- G. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- H. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable 2018.
- I. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy 2021.
- J. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- K. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. UL 44 - Thermoset-Insulated Wires and Cables Current Edition, Including All Revisions.
- M. UL 83 - Thermoplastic-Insulated Wires and Cables Current Edition, Including All Revisions.
- N. UL 486A-486B - Wire Connectors Current Edition, Including All Revisions.
- O. UL 486C - Splicing Wire Connectors Current Edition, Including All Revisions.
- P. UL 486D - Sealed Wire Connector Systems Current Edition, Including All Revisions.

- Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape Current Edition, Including All Revisions.
- R. UL 1569 - Metal-Clad Cables Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductors for Grounding and Bonding: Also comply with Section 260526.
- H. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.

3. Tinned Copper Conductors: Comply with ASTM B33.
- I. Conductor Color Coding:
 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 2. Color Coding Method: Integrally colored insulation.
 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.
 - c. Travelers for 3-Way and 4-Way Switching: Pink.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2.
 - a. Installed Underground: Type XHHW-2.

2.04 METAL-CLAD CABLE (FOR FIXTURE WHIPS ONLY)

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 1. Size 10 AWG and Smaller: Solid.
 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Grounding: Full-size integral equipment grounding conductor.
- F. Armor: Steel, interlocked tape.

2.05 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Wiring Connectors for Splices and Taps:
 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- C. Wiring Connectors for Terminations:
 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 3. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.

4. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
 5. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
- D. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
 - E. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
 - F. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - G. Mechanical Connectors: Provide bolted type or set-screw type.
 - H. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.

2.06 WIRING ACCESSORIES

- A. Electrical Tape:
 1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
- B. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
- C. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
- D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated without specific routing, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location indicated.

5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
 7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
 8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
 - C. Perform work in accordance with NECA 1 (general workmanship).
 - D. Install metal-clad cable (Type MC) in accordance with NECA 120.
 - E. Installation in Raceway:
 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
 - F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
 - G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
 1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
 - H. Terminate cables using suitable fittings.
 1. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
 - I. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
 - J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
 - K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
 - L. Make wiring connections using specified wiring connectors.
 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 3. Do not remove conductor strands to facilitate insertion into connector.
 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

- M. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
- N. Insulate ends of spare conductors using vinyl insulating electrical tape.
- O. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
- P. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- Q. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Ground rod electrodes.
- D. Grounding and bonding components.
- E. Provide all components necessary to complete the grounding system(s) consisting of:
 - 1. Existing metal underground water pipe.
 - 2. Metal underground water pipe.
 - 3. Metal frame of the building.
 - 4. Metal underground gas piping system.
 - 5. Rod electrodes.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- C. Section 265600 - Exterior Lighting: Additional grounding and bonding requirements for pole-mounted luminaires.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings 2022.
- C. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 467 - Grounding and Bonding Equipment Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify exact locations of underground metal water service pipe entrances to building.
 - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding Electrode System:
 - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.
 - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 - 2. Metal Underground Water Pipe(s):
 - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
 - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
 - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
 - 3. Metal In-Ground Support Structure:
 - a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
 - 4. Concrete-Encased Electrode:
 - a. Provide connection to concrete-encased electrode consisting of not less than 20 feet (6.0 m) of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
 - 5. Ground Rod Electrode(s):
 - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
 - b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
 - c. Where location is not indicated, locate electrode(s) at least 5 feet (1.5 m) outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
- E. Bonding and Equipment Grounding:
 - 1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 - 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 - 3. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 - 4. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 - 5. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.

6. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
 - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
 - b. Metal gas piping.
7. Provide bonding for metal building frame.
8. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 260526:
 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
 2. Factory Pre-fabricated Bonding Jumpers: Furnished with factory-installed ferrules; size braided cables to provide equivalent gage of specified conductors.
- C. Connectors for Grounding and Bonding:
 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 2. Unless otherwise indicated, use exothermic welded connections or compression connectors for underground, concealed and other inaccessible connections.
 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
- D. Ground Rod Electrodes:
 1. Comply with NEMA GR 1.
 2. Material: Copper-bonded (copper-clad) steel.
 3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.

2.03 CONNECTORS AND ACCESSORIES

- A. Mechanical Connectors: Bronze.
- B. Wire: Stranded copper.
- C. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify existing conditions prior to beginning work.
- E. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury

horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70.

1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
- D. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 260553.
- F. Install ground electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- G. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing . Bond steel together.
- H. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.13.

**SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 260533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- B. Section 260533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.
- C. Section 265100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.
- D. Section 265600 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.
- E. Conduit and equipment supports.
- F. Anchors and fasteners.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2023.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2023.
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 033000.

1.05 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with applicable building code.

- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 4. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 - 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
 - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
- D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Comply with MFMA-4.
- E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 - 4. Hollow Masonry: Use toggle bolts.
 - 5. Hollow Stud Walls: Use toggle bolts.
 - 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
 - 7. Sheet Metal: Use sheet metal screws.
 - 8. Wood: Use wood screws.
 - 9. Plastic and lead anchors are not permitted.
 - 10. Powder-actuated fasteners are not permitted.
 - 11. Hammer-driven anchors and fasteners are not permitted.

12. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
 - a. Comply with MFMA-4.
 - b. Channel Material: Use galvanized steel.
 - c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

2.02 MATERIALS

- A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized.
- C. Anchors and Fasteners:
 1. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
 2. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
 3. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
 4. Solid Masonry Walls: Use expansion anchors or preset inserts.
 5. Sheet Metal: Use sheet metal screws.
 6. Wood Elements: Use wood screws.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 4. Unless otherwise indicated, mount floor-mounted equipment on properly sized 3 inch (80 mm) high concrete pad constructed in accordance with Section 033000.
 5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: Also comply with Section 260533.13.
- I. Cable Tray Support and Attachment: Also comply with Section 260536.
- J. Box Support and Attachment: Also comply with Section 260533.16.

- K. Interior Luminaire Support and Attachment: Also comply with Section 265100.
- L. Exterior Luminaire Support and Attachment: Also comply with Section 265600.
- M. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.
- N. Secure fasteners according to manufacturer's recommended torque settings.
- O. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.
- E. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.
 - 1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
 - 2. Do not drill or cut structural members.
- F. Rigidly weld support members or use hexagon-head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- G. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- H. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.
- I. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

SECTION 260533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Flexible metal conduit (FMC).
- C. Liquidtight flexible metal conduit (LFMC).
- D. Electrical metallic tubing (EMT).
- E. Rigid polyvinyl chloride (PVC) conduit.
- F. Conduit fittings.
- G. Accessories.
- H. Conduit, fittings and conduit bodies.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC), armored cable (Type AC), and manufactured wiring systems, including uses permitted.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
- C. Section 260529 - Hangers and Supports for Electrical Systems.
- D. Section 26 0553 - Identification for Electrical Systems.
- E. Section 260533.16 - Boxes for Electrical Systems.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- G. Section 271000 - Structured Cabling: Additional requirements for communications systems conduits.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC) 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S) 2020.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT) 2020.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- F. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit 2020.
- G. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing 2021.
- H. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 1 - Flexible Metal Conduit Current Edition, Including All Revisions.
- J. UL 6 - Electrical Rigid Metal Conduit-Steel Current Edition, Including All Revisions.
- K. UL 360 - Liquid-Tight Flexible Metal Conduit Current Edition, Including All Revisions.
- L. UL 514B - Conduit, Tubing, and Cable Fittings Current Edition, Including All Revisions.
- M. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings Current Edition, Including All Revisions.
- N. UL 797 - Electrical Metallic Tubing-Steel Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:

1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
 1. Under Slab on Grade: Use galvanized steel rigid metal conduit or rigid PVC conduit.
 2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit or rigid PVC conduit.
 3. Exterior, Embedded Within Concrete: Use galvanized steel rigid metal conduit or rigid PVC conduit.
 4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
 5. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows for bends.
- D. Concealed Within Masonry Walls: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).
- E. Concealed Within Hollow Stud Walls: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).
- F. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).
- G. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit.

- H. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit or electrical metallic tubing (EMT).
- I. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
- J. Exposed, Exterior: Use galvanized steel rigid metal conduit.
- K. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.
- L. Hazardous (Classified) Locations: Use galvanized steel rigid metal conduit.
- M. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit or MC cable.
- N. Connections to Vibrating Equipment:
 - 1. Dry Locations: Use flexible metal conduit.
 - 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
 - 3. Vibrating equipment includes, but is not limited to:
 - a. Transformers.
 - b. Motors.
 - c. HVAC equipment.
 - d. Generators

2.02 CONDUIT REQUIREMENTS

- A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 FLEXIBLE METAL CONDUIT (FMC)

- A. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
- C. Description: Interlocked steel construction.
- D. Fittings: NEMA FB 1.

2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
- C. Description: Interlocked steel construction with PVC jacket.

- D. Fittings: NEMA FB 1.

2.06 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 - 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.07 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
- B. Fittings:
 - 1. Manufacturer: Same as manufacturer of conduit to be connected.
 - 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.08 ACCESSORIES

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
- B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- C. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force (890 N).
- D. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify routing and termination locations of conduit prior to rough-in.
- E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- E. Install liquidtight flexible nonmetallic conduit (LFNC) in accordance with NECA 111.
- F. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated without specific routing, determine exact routing required.
 - 3. Conceal all conduits unless specifically indicated to be exposed.
 - 4. Conduits in the following areas may be exposed, unless otherwise indicated:

- a. Electrical rooms.
 - b. Mechanical equipment rooms.
 - c. Within joists in areas with no ceiling.
 - 5. Unless otherwise approved, do not route conduits exposed:
 - a. Across floors.
 - b. Across roofs.
 - c. Across top of parapet walls.
 - d. Across building exterior surfaces.
 - 6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
 - 7. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
 - 9. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
 - 10. Route conduits above water and drain piping where possible.
 - 11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
 - 12. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
 - 13. Maintain minimum clearance of 12 inches (300 mm) between conduits and hot surfaces. This includes, but is not limited to:
 - a. Heaters.
 - b. Hot water piping.
 - c. Flues.
 - 14. Group parallel conduits in the same area together on a common rack.
- G. Conduit Support:
- 1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide required vibration isolation and/or seismic controls in accordance with Section 260548.
 - 3. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 - 4. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 - 5. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
 - 6. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
 - 7. Use conduit clamp to support single conduit from beam clamp or threaded rod.
 - 8. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
 - 9. Use non-penetrating rooftop supports to support conduits routed across rooftops (only where approved).
 - 10. Use of spring steel conduit clips for support of conduits is not permitted.
 - 11. Use of wire for support of conduits is not permitted.
 - 12. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.
- H. Connections and Terminations:
- 1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.

2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Where spare conduits stub up through concrete floors and are not terminated in a box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.
 7. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 8. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- I. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- J. Hazardous (Classified) Locations: Where conduits cross boundaries of hazardous (classified) locations, provide sealing fittings located as indicated or in accordance with NFPA 70.
- K. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
 3. Where conduits are subject to earth movement by settlement or frost.
- L. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
 3. Where conduits penetrate coolers or freezers.
- M. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches (300 mm) at each end.
- N. Provide grounding and bonding in accordance with Section 260526.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.

- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.
- B. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- C. Install steel conduit as specified in NECA 101.
- D. Install nonmetallic conduit in accordance with manufacturer's instructions.
- E. Arrange supports to prevent misalignment during wiring installation.
- F. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- G. Group related conduits; support using conduit rack. Construct rack using steel channel ; provide space on each for 25 percent additional conduits.
- H. Fasten conduit supports to building structure and surfaces under provisions of Section 26 0529.
- I. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- J. Do not attach conduit to ceiling support wires.
- K. Arrange conduit to maintain headroom and present neat appearance.
- L. Route exposed conduit parallel and perpendicular to walls.
- M. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- N. Route conduit in and under slab from point-to-point.
- O. Do not cross conduits in slab.
- P. Maintain adequate clearance between conduit and piping.
- Q. Cut conduit square using saw or pipecutter; de-burr cut ends.
- R. Bring conduit to shoulder of fittings; fasten securely.
- S. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- T. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- U. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one shot bender to fabricate bends in metal conduit larger than 2 inch (50 mm) size.
- V. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- W. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic.
- X. Provide suitable pull string in each empty conduit except sleeves and nipples.
- Y. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Z. Ground and bond conduit under provisions of Section 26 0526.
- AA. Identify conduit under provisions of Section 26 0553.

3.06 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- B. Route conduit through roof openings for piping and ductwork wherever possible. .

SECTION 260533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
- C. Boxes and enclosures for integrated power, data, and audio/video.
- D. Boxes for hazardous (classified) locations.
- E. Floor boxes.
- F. Wall and ceiling outlet boxes.
- G. Pull and junction boxes.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260533.13 - Conduit for Electrical Systems:
 - 1. Conduit bodies and other fittings.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 262726 - Wiring Devices:
 - 1. Wall plates.
 - 2. Additional requirements for locating boxes for wiring devices.
- F. Section 271000 - Structured Cabling: Additional requirements for communications systems outlet boxes.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports 2013 (Reaffirmed 2020).
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- I. UL 508A - Industrial Control Panels Current Edition, Including All Revisions.
- J. UL 514A - Metallic Outlet Boxes Current Edition, Including All Revisions.
- K. UL 1203 - Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for floor boxes.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Products: Provide products listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 BOXES

- A. General Requirements:
 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.

3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit is used.
 4. Use suitable concrete type boxes where flush-mounted in concrete.
 5. Use suitable masonry type boxes where flush-mounted in masonry walls.
 6. Use raised covers suitable for the type of wall construction and device configuration where required.
 7. Use shallow boxes where required by the type of wall construction.
 8. Do not use "through-wall" boxes designed for access from both sides of wall.
 9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 11. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 12. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
 13. Wall Plates: Comply with Section 262726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.
 - b. Outdoor Locations: Type 3R, painted steel.
 3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
 - b. Boxes 6 square feet (0.56 sq m) and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
- D. Boxes and Enclosures for Integrated Power, Data, and Audio/Video: Size and configuration as indicated or as required with partitions to separate services; field-connected gangable boxes may be used.
- E. Floor Boxes:
1. Use sheet-steel or cast iron floor boxes within slab above grade.
 2. Metallic Floor Boxes: Fully adjustable (with integral means for leveling adjustment prior to and after concrete pour).
 3. Manufacturer: Steel City, Series 664 with metal cover, color by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.
- D. Verify locations of floor boxes and outlets in offices and work areas prior to rough-in.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide separate boxes for emergency power and normal power systems.

- E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- F. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.
- G. Box Locations:
 - 1. Locate boxes to be accessible. Provide access panels in accordance with Section 083100 as required where approved by the Architect.
 - 2. Unless dimensioned, box locations indicated are approximate.
 - 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 262726.
 - b. Communications Systems Outlets: Comply with Section 271000.
 - 4. Locate boxes so that wall plates do not span different building finishes.
 - 5. Locate boxes so that wall plates do not cross masonry joints.
 - 6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 - 7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches (150 mm) horizontal separation unless otherwise indicated.
 - 8. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches (610 mm) horizontal separation.
 - 9. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
 - a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches (610 mm) separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.
- H. Box Supports:
 - 1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
 - 4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.
- I. Install boxes plumb and level.
- J. Flush-Mounted Boxes:
 - 1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch (6 mm) or does not project beyond finished surface.
 - 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 - 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch (3 mm) at the edge of the box.
- K. Install boxes as required to preserve insulation integrity.
- L. Metallic Floor Boxes: Install box level at the proper elevation to be flush with finished floor.
- M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- N. Close unused box openings.
- O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- P. Provide grounding and bonding in accordance with Section 260526.

- Q. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1.
- R. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.
- S. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
 - 1. Adjust box locations up to 10 feet (3 m) if required to accommodate intended purpose.
- T. Orient boxes to accommodate wiring devices oriented as specified in Section 26 2726.
- U. Maintain headroom and present neat mechanical appearance.
- V. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- W. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- X. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes with the architectural drawings.
- Y. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.
- Z. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- AA. Use flush mounting outlet box in finished areas.
- BB. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- CC. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- DD. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- EE. Do not fasten boxes to ceiling support wires.
- FF. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12 inches (305 mm) of box.
- GG. Use gang box where more than one device is mounted together. Do not use sectional box.
- HH. Use cast outlet box in exterior locations exposed to the weather and wet locations.

3.03 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.
- B. Clean exposed surfaces and restore finish.

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SECTION 260553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

1.03 REFERENCE STANDARDS

- A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs 2011 (Reaffirmed 2017).
- B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels 2011 (Reaffirmed 2017).
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 70E - Standard for Electrical Safety in the Workplace 2024.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.
- B. Sequencing:
 - 1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
 - 2. Do not install identification products until final surface finishes and painting are complete.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.06 FIELD CONDITIONS

- A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
 - 5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.

- 6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
- b. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - 3) Identify load(s) served. Include location.
- c. Transfer Switches:
 - 1) Identify voltage and phase.
 - 2) Identify power source and circuit number for both normal power source and standby power source. Include location when not within sight of equipment.
 - 3) Identify load(s) served. Include location when not within sight of equipment.
 - 4) Identify short circuit current rating based on the specific overcurrent protective device type and settings protecting the transfer switch.
- 2. Service Equipment:
 - a. Use identification nameplate to identify each service disconnecting means.
- 3. Emergency System Equipment:
 - a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
 - b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
- 4. Arc Flash Hazard Warning Labels: Comply with Section 260573.
- B. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.

2.02 IDENTIFICATION NAMEPLATES

- A. Identification Nameplates:
 - 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
 - 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch (1.6 mm); engraved text.
 - 3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
 - 4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
 - 5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.
- B. Format for Equipment Identification:
 - 1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
 - 2. Legend:
 - a. Equipment designation or other approved description.
 - b. Other information as indicated.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height:
 - a. System Designation: 1 inch (25 mm).
 - b. Equipment Designation: 1/2 inch (13 mm).
 - c. Other Information: 1/4 inch (6 mm).
 - 5. Color:
 - a. Normal Power System: White text on black background.
 - b. Emergency Power System: White text on red background.
 - c. Fire Alarm System: White text on red background.

- C. Format for Fire Alarm Device Identification:
 - 1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 - 2. Legend: Designation indicated and device zone or address.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch (5 mm).
 - 5. Color: Red text on white background.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces to receive adhesive products according to manufacturer's instructions.
- B. Degrease and clean surfaces to receive nameplates and labels.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.
 - 2. Flush-Mounted Equipment: Inside of equipment door.
 - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 - 4. Elevated Equipment: Legible from the floor or working platform.
 - 5. Branch Devices: Adjacent to device.
 - 6. Interior Components: Legible from the point of access.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
- E. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Install nameplates and labels parallel to equipment lines.

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**SECTION 260583
WIRING CONNECTIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 260533.13 - Conduit for Electrical Systems.
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 262726 - Wiring Devices.
- E. Section 262816.16 - Enclosed Switches.

1.03 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices 1999 (Reaffirmed 2020).
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications 2021.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
 - 2. Determine connection locations and requirements.
- B. Sequencing:
 - 1. Install rough-in of electrical connections before installation of equipment is required.
 - 2. Make electrical connections before required start-up of equipment.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.06 COORDINATION

- A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections. Electrical contractor shall make all final connections to mechanical, plumbing, and medical equipment included in this design package.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Disconnect Switches: As specified on drawings and in individual equipment sections.
- B. Wiring Devices: As specified in Section 262726.
- C. Flexible Conduit: As specified in Section 260533.13.
- D. Wire and Cable: As specified in Section 260519.
- E. Boxes: As specified in Section 260533.16.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

SECTION 260919 ENCLOSED CONTACTORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General purpose contactors.
- B. Lighting contactors.

1.02 RELATED REQUIREMENTS

- A. Section 260529 - Hangers and Supports for Electrical Systems.
- B. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts 2008 (Reaffirmed 2020).
- B. NEMA ICS 6 - Industrial Control and Systems: Enclosures 1993 (Reaffirmed 2016).
- C. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum) 2013.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide dimensions, size, voltage ratings and current ratings.
- C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Maintenance Data: Include instructions for replacing and maintaining coil and contacts.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles (160 km) of Project.
- C. Products: Listed, classified, and labeled as suitable for the purpose intended.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 GENERAL PURPOSE CONTACTORS

- A. Description: NEMA ICS 2, AC general purpose magnetic contactor.
- B. Coil operating voltage: 120 volts, 60 Hertz.
- C. Poles: As required to match circuit configuration and control function.
- D. Enclosure: NEMA ICS 6, Type 1.
- E. Accessories:
 - 1. Auxiliary Contacts: One, field convertible.

2.02 LIGHTING CONTACTORS

- A. Description: NEMA ICS 2, magnetic lighting contactor.
- B. Configuration: Electrically held.
- C. Coil operating voltage: 120 volts, 60 Hertz.

- D. Poles: As required to match circuit configuration and control function.
- E. Contact Rating: Match branch circuit overcurrent protection, considering derating for continuous loads.
- F. Enclosure: NEMA ICS 6, Type 1.
- G. Accessories:
 - 1. Auxiliary Contacts: One, field convertible.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install enclosed contactors where indicated, in accordance with manufacturer's instructions.
- B. Install enclosed contactors plumb. Provide supports in accordance with Section 260529.

3.02 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Perform field inspection and testing in accordance with Section 014000.

SECTION 260923
LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Occupancy sensors.
- B. Outdoor photo controls.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 260919 - Enclosed Contactors: Lighting contactors.
- F. Section 262726 - Wiring Devices: Devices for manual control of lighting, including wall switches.
- G. Section 265100 - Interior Lighting.
- H. Section 265600 - Exterior Lighting.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts 2020.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 773 - Plug-in, Locking Type Photocontrols for Use with Area Lighting Current Edition, Including All Revisions.
- F. UL 1472 - Solid-State Dimming Controls Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of lighting control devices with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate the placement of wall switch occupancy sensors with actual installed door swings.
 - 3. Coordinate the placement of occupancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.
 - 4. Coordinate the placement of photo sensors for daylighting controls with windows, skylights, and luminaires to achieve optimum operation. Coordinate placement with ductwork, piping, equipment, or other potential obstructions to light level measurement installed under other sections or by others.
 - 5. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- B. Sequencing:
 - 1. Do not install lighting control devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.

1. Occupancy Sensors: Include detailed motion detection coverage range diagrams.
- C. Shop Drawings:
 1. Occupancy Sensors: Provide lighting plan indicating location, model number, and orientation of each occupancy sensor and associated system component.
- D. Field Quality Control Reports.
- E. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- F. Operation and Maintenance Data: Include detailed information on device programming and setup.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 016000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for all occupancy sensors.
- C. Provide five year manufacturer warranty for utility grade locking receptacle-mounted outdoor photo controls.
- D. Provide two year manufacturer warranty for all daylighting controls.

PART 2 PRODUCTS

2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.
- C. Products for Switching of Electronic Ballasts/Drivers: Tested and rated to be suitable for peak inrush currents specified in NEMA 410.

2.02 OCCUPANCY SENSORS

- A. All Occupancy Sensors:
 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
 2. Sensor Technology:

- a. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
- 3. Provide LED to visually indicate motion detection.
- 4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
- 5. Dual Technology Occupancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
- 6. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
- 7. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
- 8. Sensitivity: Field adjustable.
- 9. Adaptive Technology: Field selectable; capable of self-adjusting sensitivity and time delay according to conditions.
- 10. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
- 11. Load Rating for Line Voltage Occupancy Sensors: As required to control the load indicated on drawings.
- 12. Where wired sensors are indicated, wireless sensors are not acceptable without prior approval of Architect.
- B. Wall Switch Occupancy Sensors:
 - 1. All Wall Switch Occupancy Sensors:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
 - b. Unless otherwise indicated or required to control the load indicated on drawings, provide line voltage units with self-contained relay.
 - c. Operation: Field selectable to operate either as occupancy sensor (automatic on/off) or as vacancy sensor (manual-on/automatic off).
 - d. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 - e. Provide selectable audible alert to notify occupant of impending load turn-off.
 - f. Finish: Color to be selected by Architect.
 - 2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Occupancy Sensors: Capable of detecting motion within an area of 900 square feet (83.6 sq m).
- C. Wall Dimmer Occupancy Sensors:
 - 1. General Requirements:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated dimming control capability, and no leakage current to load in off mode.
 - b. Operation: Field selectable to operate either as occupancy sensor (automatic on/off) or as vacancy sensor (manual-on/automatic off).
 - c. Manual-Off Override Control Capability: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 - d. Dimmer: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, and listed as complying with UL 1472; type and rating suitable for load controlled.
 - e. Provide field adjustable dimming preset for occupied state.

- f. Provide fade-to-off operation to notify occupant of impending load turn-off.
 - g. Finish: Color to be selected by Architect.
- D. Ceiling Mounted Occupancy Sensors:
 - 1. All Ceiling Mounted Occupancy Sensors:
 - a. Description: Low profile occupancy sensors designed for ceiling installation.
 - b. Unless otherwise indicated or required to control the load indicated on drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - c. Provide field selectable setting for disabling LED motion detector visual indicator.
 - d. Occupancy sensor to be field selectable as either manual-on/automatic-off or automatic on/off.
 - e. Finish: White unless otherwise indicated.
 - 2. Passive Infrared/Ultrasonic Dual Technology Ceiling Mounted Occupancy Sensors:
 - a. Sensors: Capable of detecting motion within an area of 2000 square feet at a mounting height of 9 feet (2.7 m), with a field of view of 360 degrees.
- E. Directional Occupancy Sensors:
 - 1. All Directional Occupancy Sensors: Designed for wall or ceiling mounting, with integral swivel for field adjustment of motion detection coverage.
 - a. Unless otherwise indicated or required to control the load indicated on drawings, provide low voltage units, for use with separate compatible accessory power packs.
 - b. Provide field selectable setting for disabling LED motion detector visual indicator.
 - 2. Passive Infrared (PIR) Directional Occupancy Sensors:
 - a. Long Range Sensors: Capable of detecting motion within a distance of 80 feet (24 m) at a mounting height of 10 feet (3.1 m).
 - b. High Bay Sensors: Capable of detecting motion within a distance of 50 feet (15 m) at a mounting height of 30 feet (9.1 m).
- F. Power Packs for Low Voltage Occupancy Sensors:
 - 1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage occupancy sensors for switching of line voltage loads.
 - 2. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on drawings.
 - 3. Input Supply Voltage: Dual rated for 120/277 V ac.
 - 4. Load Rating: As required to control the load indicated on drawings.

2.03 OUTDOOR PHOTO CONTROLS

- A. Stem-Mounted Outdoor Photo Controls:
 - 1. Description: Direct-wired photo control unit with threaded conduit mounting stem and field-adjustable swivel base, listed and labeled as complying with UL 773A.
 - 2. Housing: Weatherproof, impact resistant polycarbonate.
 - 3. Photo Sensor: Cadmium sulfide.
 - 4. Provide external sliding shield for field adjustment of light level activation.
 - 5. Light Level Activation: 1 to 5 footcandles (10.8 to 53.8 lux) turn-on and 3 to 1 turn-off to turn-on ratio with delayed turn-off.
 - 6. Voltage: As required to control the load indicated on the drawings.
 - 7. Failure Mode: Fails to the on position.
 - 8. Load Rating: As required to control the load indicated on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.

- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of lighting control devices provided under this section.
 - 1. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
 - 2. Locate wall switch occupancy sensors on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level, and held securely in place.
- F. Provide required supports in accordance with Section 260529.
- G. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- H. Occupancy Sensor Locations:
 - 1. Location Adjustments: Locations indicated are diagrammatic and only intended to indicate which rooms or areas require devices. Provide quantity and locations as required for complete coverage of respective room or area based on manufacturer's recommendations for installed devices.
 - 2. Locate dual technology passive infrared/ultrasonic occupancy sensors a minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.
- I. Outdoor Photo Control Locations:
 - 1. Where possible, locate outdoor photo controls with photo sensor facing north. If north facing photo sensor is not possible, install with photo sensor facing east, west, or down.
 - 2. Locate outdoor photo controls so that photo sensors do not face artificial light sources, including light sources controlled by the photo control itself.
- J. Install outdoor photo controls so that connections are weatherproof. Do not install photo controls with conduit stem facing up in order to prevent infiltration of water into the photo control.
- K. Unless otherwise indicated, install power packs for lighting control devices above accessible ceiling or above access panel in inaccessible ceiling near the sensor location.
- L. Where indicated, install separate compatible wall switches for manual control interface with lighting control devices or associated power packs.

- M. Unless otherwise indicated, install switches on load side of power packs so that switch does not turn off power pack.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each lighting control device for damage and defects.
- C. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area.
- D. Test outdoor photo controls to verify proper operation, including time delays where applicable.
- E. Correct wiring deficiencies and replace damaged or defective lighting control devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Adjust position of directional occupancy sensors to achieve optimal coverage as required.
- D. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.
- E. Adjust external sliding shields on outdoor photo controls under optimum lighting conditions to achieve desired turn-on and turn-off activation as indicated or as directed by Architect.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 COMMISSIONING

- A. See Section 019113 - General Commissioning Requirements for commissioning requirements.

3.08 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting control devices.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Instructor: Qualified contractor familiar with the project and with sufficient knowledge of the installed lighting control devices.
 - 3. Location: At project site.

SECTION 262416 PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Power distribution panelboards.
- B. Lighting and appliance panelboards.
- C. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 407 - Standard for Installing and Maintaining Panelboards 2015.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- D. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches; National Electrical Manufacturers Association; 1993.
- E. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts 2008 (Reaffirmed 2020).
- F. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum) 2013.
- G. NEMA PB 1 - Panelboards 2011.
- H. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less 2013.
- I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- J. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- L. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- M. UL 67 - Panelboards Current Edition, Including All Revisions.
- N. UL 98 - Enclosed and Dead-Front Switches Current Edition, Including All Revisions.
- O. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures Current Edition, Including All Revisions.
- P. UL 869A - Reference Standard for Service Equipment Current Edition, Including All Revisions.
- Q. UL 943 - Ground-Fault Circuit-Interrupters Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.

4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: The electrical contractor shall provide a coordination drawing showing the layout for the main electrical room. This drawing shall be created using the dimensions of the equipment to actually be used, including panelboards, transformers, and transfer switches. For the device shop drawing submittals, indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:
 1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Siemens Industry, Inc: www.usa.siemens.com.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.

- D. Substitutions: See Section 016000 - Product Requirements.
- E. Source Limitations: Furnish panelboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- G. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
 - b. Outdoor Locations: Type 3R.
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - b. Increase gutter space as required where sub-feed lugs, feed-through lugs, gutter taps, or oversized lugs are provided.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- K. Load centers are not acceptable.
- L. Provide the following features and accessories where indicated or where required to complete installation:
 - 1. Feed-through lugs.
 - 2. Sub-feed lugs.

2.03 POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Copper suitable for terminating copper conductors only.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase and Neutral Bus Material: Copper.
 - 2. Ground Bus Material: Copper.
- D. Circuit Breakers:
 - 1. Provide bolt-on or plug-in type.
 - 2. Provide thermal magnetic circuit breakers.
- E. Enclosures:
 - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
 - 2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - 3. Provide clear plastic circuit directory holder mounted on inside of door.
- F. Minimum integrated short circuit rating: As indicated.
- G. Molded Case Circuit Breakers: With integral thermal and instantaneous magnetic trip in each pole; UL listed. For air conditioning equipment branch circuits provide circuit breakers UL listed as Type HACR.

2.04 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Copper suitable for terminating copper conductors only.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 - 2. Phase and Neutral Bus Material: Copper.
 - 3. Ground Bus Material: Copper.
- D. Circuit Breakers: Thermal magnetic bolt-on or plug-in type.
- E. Enclosures:
 - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
 - 2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - 3. Provide clear plastic circuit directory holder mounted on inside of door.
- F. Minimum Integrated Short Circuit Rating: As indicated.
- G. Enclosure: NEMA PB 1, Type 1.

2.05 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:

- a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- 3. Conductor Terminations:
 - a. Lug Material: Copper, suitable for terminating copper conductors only.
- 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
- 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
- 6. Provide the following circuit breaker types where indicated:
 - a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
- 7. Provide the following features and accessories where indicated or where required to complete installation:
 - a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
 - b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.

2.06 SOURCE QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 260529.
- F. Install panelboards plumb.
- G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- I. Mount floor-mounted power distribution panelboards on properly sized 3 inch (80 mm) high concrete pad constructed in accordance with Section 033000.
- J. Provide minimum of six spare 1 inch (27 mm) trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- K. Provide grounding and bonding in accordance with Section 260526.
 - 1. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on isolated/insulated ground bus.
- L. Install all field-installed branch devices, components, and accessories.

- M. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- N. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the panelboard as required by NFPA 70.
- O. Install panelboards in accordance with NEMA PB 1.1 and NECA 1.
- P. Install panelboards plumb. Install recessed panelboards flush with wall finishes.
- Q. Height: 6 feet (1800 mm) to top of panelboard; install panelboards taller than 6 feet (1800 mm) with bottom no more than 4 inches (100 mm) above floor.
- R. Provide filler plates to cover unused spaces in panelboards.
- S. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
 - 1. Emergency and night lighting circuits.
 - 2. Fire detection and alarm circuits.
 - 3. Communications equipment circuits.
 - 4. Intrusion detection and access control system circuits.
 - 5. Video surveillance system circuits.
- T. Identify panelboards in accordance with Section 260553.
- U. Provide typed or neatly handwritten circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- V. Provide engraved plastic nameplates under the provisions of Section 26 0553.
- W. Ground and bond panelboard enclosure according to Section 26 0526.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Perform inspection, testing, and adjusting in accordance with Section 014000.
- C. Test GFCI circuit breakers to verify proper operation.
- D. Test shunt trips to verify proper operation.
- E. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.
- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

SECTION 262726 WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Wall dimmers.
- C. Fan speed controllers.
- D. Receptacles.
- E. Wall plates.

1.02 RELATED REQUIREMENTS

- A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Manufactured wiring systems for use with access floor boxes with compatible pre-wired connectors.
- B. Section 260533.16 - Boxes for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 260923 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices 2016.
- C. NEMA WD 1 - General Color Requirements for Wiring Devices 1999 (Reaffirmed 2020).
- D. NEMA WD 6 - Wiring Devices - Dimensional Specifications 2021.
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 20 - General-Use Snap Switches Current Edition, Including All Revisions.
- G. UL 498 - Attachment Plugs and Receptacles Current Edition, Including All Revisions.
- H. UL 514D - Cover Plates for Flush-Mounted Wiring Devices Current Edition, Including All Revisions.
- I. UL 943 - Ground-Fault Circuit-Interrupters Current Edition, Including All Revisions.
- J. UL 1449 - Standard for Surge Protective Devices Current Edition, Including All Revisions.
- K. UL 1472 - Solid-State Dimming Controls Current Edition, Including All Revisions.
- L. UL 1917 - Solid-State Fan Speed Controls Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
 - 3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
 - 4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
 - 5. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- B. Sequencing:
 - 1. Do not install wiring devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Operation and Maintenance Data:

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Products: Listed, classified, and labeled as suitable for the purpose intended.
- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.
- B. Products: Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.

2.02 WIRING DEVICE FINISHES

- A. Wiring Devices, Unless Otherwise Indicated: Color by Architect with wall plate, color and type by Architect.

2.03 ALL WIRING DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

2.04 WALL SWITCHES

- A. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- B. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.05 WALL DIMMERS

- A. Wall Dimmers - General Requirements: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings.

- B. Power Rating, Unless Otherwise Indicated or Required to Control the Load Indicated on the Drawings:

2.06 FAN SPEED CONTROLLERS

- A. Description: 120 V AC, solid-state, as recommended by the fan manufacturer, as indicated on the drawings, with integral radio frequency interference filtering, fan noise elimination circuitry, power failure preset memory, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1917.

2.07 RECEPTACLES

- A. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
- B. Convenience Receptacles:
 - 1. Tamper Resistant Convenience Receptacles: Industrial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
- C. GFCI Receptacles:
 - 1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
 - a. Provide test and reset buttons of same color as device.
 - 2. Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.
 - 3. Tamper Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type.
 - 4. Tamper Resistant and Weather Resistant GFCI Receptacles: Industrial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as tamper resistant type and as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.

2.08 WALL PLATES

- A. Wall Plates: Comply with UL 514D.
 - 1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 - 2. Screws: Metal with slotted heads finished to match wall plate finish.
- B. Decorative Cover Plates: (color by architectural). Finish by architectural

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- F. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of wiring devices provided under this section.
 - 1. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - 2. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
 - 3. Locate wall switches on strike side of door with edge of wall plate 3 inches (80 mm) from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
 - 4. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches (150 mm) long. Do not connect more than one conductor to wiring device terminals.
- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- I. Install securely, in a neat and workmanlike manner, as specified in NECA 1.
- J. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- K. Install wall switches with OFF position down.
- L. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- M. Do not share neutral conductor on branch circuits utilizing wall dimmers.
- N. Install vertically mounted receptacles with grounding pole on bottom and horizontally mounted receptacles with grounding pole on left.
- O. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings.
- P. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.
- Q. Connect wiring device grounding terminal to outlet box with bonding jumper.
- R. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- S. Connect wiring devices by wrapping conductor around screw terminal.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.

- B. Perform field inspection, testing, and adjusting in accordance with Section 014000.
- C. Inspect each wiring device for damage and defects.
- D. Operate each wall switch with circuit energized to verify proper operation.
- E. Operate each wall switch with circuit energized and verify proper operation.
- F. Verify that each receptacle device is energized.
- G. Test each receptacle to verify operation and proper polarity.
- H. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- I. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

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SECTION 262816.16 ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed safety switches.
- B. Nonfusible switches.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.
- C. NECA (INST) - NECA Standard of Installation; National Electrical Contractors Association; 1993.
- D. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum) 2013.
- E. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations Current Edition, Including All Revisions.
- H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations Current Edition, Including All Revisions.
- I. UL 98 - Enclosed and Dead-Front Switches Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

- E. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature between -22 degrees F (-30 degrees C) and 104 degrees F (40 degrees C) during and after installation of enclosed switches.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB/GE: www.geindustrial.com/#sle.
- B. Siemens Industry, Inc: www.usa.siemens.com.
- C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
- D. Substitutions: See Section 016000 - Product Requirements.
- E. Source Limitations: Furnish enclosed switches and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 ENCLOSED SAFETY SWITCHES

- A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet (2,000 m).
 - 2. Ambient Temperature: Between -22 degrees F (-30 degrees C) and 104 degrees F (40 degrees C).
- D. Horsepower Rating: Suitable for connected load.
- E. Voltage Rating: Suitable for circuit voltage.
- F. Provide with switch blade contact position that is visible when the cover is open.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
 - b. Outdoor Locations: Type 3R.
 - 2. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.
- J. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- K. Heavy Duty Switches:
 - 1. Comply with NEMA KS 1.
 - 2. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Lug Material: Copper suitable for terminating copper conductors only.
 - 3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

2.03 COMPONENTS

- A. Nonfusible Switch Assemblies: NEMA KS 1, Type HD enclosed load interrupter knife switch.
 - 1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
 - 2. Handle lockable in OFF position.
- B. Enclosures: NEMA KS 1.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed safety switches.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 260529.
- E. Install enclosed switches plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches (2000 mm) above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 260526.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Perform field inspection in accordance with Section 014000.
- C. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

SECTION 263213 ENGINE GENERATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Owner-Furnished Contractor Installed Packaged engine generator system and associated components and accessories:

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 231123 - Facility Natural-Gas Piping.
- C. Section 231126 - Facility Liquefied-Petroleum Gas Piping.
- D. Section 235100 - Breechings, Chimneys, and Stacks: Engine exhaust piping.
 - 1. Includes installation of exhaust silencer specified in this section.
- E. Section 260526 - Grounding and Bonding for Electrical Systems.
- F. Section 260529 - Hangers and Supports for Electrical Systems.
- G. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- H. Section 263600 - Transfer Switches.

1.03 REFERENCE STANDARDS

- A. NECA/EGSA 404 - Standard for Installing Generator Sets 2014.
- B. NFPA 37 - Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines 2021.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 110 - Standard for Emergency and Standby Power Systems 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment or other potential obstructions within the spaces dedicated for engine generator system.
 - 2. Coordinate arrangement of equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Coordinate the work to provide electrical circuits suitable for the power requirements of the actual auxiliary equipment and accessories to be installed.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Preinstallation Meeting: Convene one week before starting work of this section; require attendance of all affected installers.

1.05 SUBMITTALS

- A. Manufacturer's detailed field testing procedures.
- B. Field quality control test reports.
- C. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- D. Maintenance contracts.
- E. Project Record Documents: Record actual locations of system components, installed circuiting arrangements and routing, and final equipment settings.

1.06 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70 (National Electrical Code).

2. NFPA 110 (Standard for Emergency and Standby Power Systems); meet requirements for Level 2 system.
3. NFPA 37 (Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines).

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store generator sets in accordance with manufacturer's instructions and NECA/EGSA 404.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's instructions to avoid damage to generator set components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of generator sets and auxiliary equipment are consistent with the indicated requirements.
- C. Verify that rough-ins for field connections are in the proper locations.
- D. Verify that mounting surfaces are ready to receive equipment.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Install generator sets and associated accessories in accordance with NECA/EGSA 404.
- D. Arrange equipment to provide minimum clearances and required maintenance access.
- E. Unless otherwise indicated, mount generator set on properly sized, minimum 6 inch (150 mm) high concrete pad constructed in accordance with Section 033000.
- F. Provide required support and attachment in accordance with Section 260529.
- G. Use manufacturer's recommended oil and coolant, suitable for the worst case ambient temperatures.
- H. Provide natural gas piping in accordance with Section 231123.
- I. Provide propane gas piping in accordance with Section 231126.
- J. Provide engine exhaust piping in accordance with Section 235100, where not factory installed.
 1. Include piping expansion joints, piping insulation, thimble, condensation trap/drain, rain cap, hangers/supports, etc. as indicated or as required.
 2. Do not exceed manufacturer's maximum back pressure requirements.
- K. Install exhaust silencer in accordance with Section 235100, where not factory installed.
- L. Provide grounding and bonding in accordance with Section 260526.
- M. Identify system wiring and components in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.

- B. Provide services of a manufacturer's authorized representative to prepare and start systems and perform inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.
- C. Notify Owner and Architect at least two weeks prior to scheduled inspections and tests.
- D. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- E. Provide all equipment, tools, and supplies required to accomplish inspection and testing, including load bank and fuel.
- F. Preliminary inspection and testing to include, at a minimum:
 - 1. Inspect each system component for damage and defects.
 - 2. Verify tightness of mechanical and electrical connections are according to manufacturer's recommended torque settings.
 - 3. Check for proper oil and coolant levels.
- G. Prepare and start system in accordance with manufacturer's instructions.
- H. Perform acceptance test in accordance with NFPA 110.
- I. Inspection and testing to include, at a minimum:
 - 1. Verify compliance with starting and load acceptance requirements.
 - 2. Verify voltage and frequency; make required adjustments as necessary.
 - 3. Verify phase sequence.
 - 4. Verify control system operation, including safety shutdowns.
 - 5. Verify operation of auxiliary equipment and accessories (e.g. battery charger, heaters, etc.).
 - 6. Perform load tests using load bank at 100 percent full load for minimum of 4 hours.
- J. Provide field emissions testing where necessary for certification.
- K. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- L. Submit detailed reports indicating inspection and testing results and corrective actions taken.

3.04 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Instructor: Manufacturer's authorized representative.
 - 3. Location: At project site.
- E. After successful acceptance test and just prior to Substantial Completion, replace air, oil, and fuel filters and fill fuel storage tank.

3.06 PROTECTION

- A. Protect installed engine generator system from subsequent construction operations.

3.07 MAINTENANCE

- A. Provide to Owner a proposal as an alternate to the base bid, a separate maintenance contract for the service and maintenance of engine generator system for two years from date of Substantial Completion; Include a complete description of preventive maintenance, systematic

examination, adjustment, inspection, and testing, with a detailed schedule.

- B. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 4 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- C. Maintain an on-site log listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced.

SECTION 263600 TRANSFER SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Transfer switches for low-voltage (600 V and less) applications and associated accessories:
 - 1. Owner-furnished Contractor-installed Automatic transfer switches.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
- C. Section 260529 - Hangers and Supports for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 262816.16 - Enclosed Switches: Safety switches not listed for use as transfer switch equipment.
- F. Section 263213 - Engine Generators: For interface with transfer switches.
 - 1. Includes additional testing requirements.
 - 2. Includes related demonstration and training requirements.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- B. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems 2021.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 110 - Standard for Emergency and Standby Power Systems 2022.
- E. UL 869A - Reference Standard for Service Equipment Current Edition, Including All Revisions.
- F. UL 1008 - Transfer Switch Equipment Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate compatibility of transfer switches to be installed with work provided under other sections or by others.
 - 2. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
 - 3. Coordinate arrangement of equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 4. Coordinate the work with placement of supports, anchors, etc. required for mounting.
 - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Preinstallation Meeting: Convene one week before starting work of this section; require attendance of all affected installers.

1.05 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. NFPA 70 (National Electrical Code).
 - 2. NFPA 110 (Standard for Emergency and Standby Power Systems); meet requirements for Level 2 system.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store transfer switches in accordance with manufacturer's instructions.

- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's instructions to avoid damage to transfer switch components, enclosure, and finish.

1.07 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide minimum one year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 3 EXECUTION

2.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of transfer switches are consistent with the indicated requirements.
- C. Verify that rough-ins for field connections are in the proper locations.
- D. Verify that mounting surfaces are ready to receive transfer switches.
- E. Verify that conditions are satisfactory for installation prior to starting work.

2.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Arrange equipment to provide minimum clearances and required maintenance access.
- D. Provide required support and attachment in accordance with Section 260529.
- E. Install transfer switches plumb and level.
- F. Unless otherwise indicated, mount floor-mounted transfer switches on properly sized 3 inch (80 mm) high concrete pad constructed in accordance with Section 033000.
- G. Provide grounding and bonding in accordance with Section 260526.
- H. Identify transfer switches and associated system wiring in accordance with Section 260553.

2.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Provide services of a manufacturer's authorized representative to observe installation and assist in inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.
- C. Prepare and start system in accordance with manufacturer's instructions.
- D. Automatic Transfer Switches:
 - 1. Inspect and test in accordance with NETA ATS, except Section 4.
 - 2. Perform inspections and tests listed in NETA ATS, Section 7.22.3. The insulation-resistance tests listed as optional are required, when approved by the manufacturer.
 - a. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
- E. Provide additional inspection and testing as required for completion of associated engine generator testing as specified in Section 263213.
- F. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

- G. Submit detailed reports indicating inspection and testing results and corrective actions taken.

2.04 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

2.05 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of transfer switches to Owner, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, and maintenance of transfer switches.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Instructor: Manufacturer's authorized representative.
 - 3. Location: At project site.
- E. Coordinate with related generator demonstration and training as specified in Section 263213.

2.06 PROTECTION

- A. Protect installed transfer switches from subsequent construction operations.

2.07 MAINTENANCE

- A. Provide to Owner a proposal as an alternate to the base bid, a separate maintenance contract for the service and maintenance of transfer switches for two years from date of Substantial Completion; Include a complete description of preventive maintenance, systematic examination, adjustment, inspection, and testing, with a detailed schedule.
- B. Conduct site visit at least once every three months to perform inspection, testing, and preventive maintenance. Submit report to Owner indicating maintenance performed along with evaluations and recommendations.
- C. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 4 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- D. Maintain an on-site log listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced.

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SECTION 265100 INTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior luminaires.

1.02 RELATED REQUIREMENTS

- A. Section 260529 - Hangers and Supports for Electrical Systems.
- B. Section 260533.16 - Boxes for Electrical Systems.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 260919 - Enclosed Contactors: Lighting contactors.
- E. Section 260923 - Lighting Control Devices: Automatic controls for lighting including occupancy sensors and outdoor photo controls.
- F. Section 262726 - Wiring Devices: Manual wall switches and wall dimmers.
- G. Section 265600 - Exterior Lighting.

1.03 REFERENCE STANDARDS

- A. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information 2019.
- B. IESNA LM-63 - ANSI Approved Standard File Format for Electronic Transfer of Photometric Data and Related Information 2002 (Reaffirmed 2008).
- C. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- D. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources 2021.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- F. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems 2006.
- G. NEMA 410 - Performance Testing for Lighting Controls and Switching Devices with Electronic Drivers and Discharge Ballasts 2020.
- H. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility 2012 (Reaffirmed 2018).
- I. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; 2002.
- J. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. UL 924 - Emergency Lighting and Power Equipment Current Edition, Including All Revisions.
- M. UL 1598 - Luminaires Current Edition, Including All Revisions.
- N. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
 - 2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts

- installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Conform to requirements of NFPA 70 and NFPA 101.
- D. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01600 - Product Requirements.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- J. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- K. Battery:
 - 1. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- L. Provide low-voltage disconnect to prevent battery damage from deep discharge.
 - 1. Number of Faces: Single- or double-face as indicated or as required for installed location.
 - 2. Directional Arrows: As indicated or as required for installed location.
- M. Exit Signs: Furnish products as indicated in Schedule included on the Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of luminaires provided under this section.

- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- E. Provide required support and attachment in accordance with Section 260529.
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
 - 4. Secure pendant-mounted luminaires to building structure.
 - 5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 6. In addition to ceiling support wires, provide two galvanized steel safety wire(s), minimum 12 gauge, connected from opposing corners of each recessed luminaire to building structure.
 - 7. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- H. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.
- I. Suspended Luminaires:
 - 1. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
 - 2. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet (1.2 m) between supports.
 - 3. Install canopies tight to mounting surface.
- J. Install fixtures securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting).
- K. Locate recessed ceiling luminaires as indicated on reflected ceiling plan.
- L. Install surface mounted luminaires and exit signs plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- M. Exposed Grid Ceilings: Support surface mounted luminaires in grid ceiling directly from building structure.
- N. Install recessed luminaires to permit removal from below.
- O. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.
- P. Install clips to secure recessed grid-supported luminaires in place.
- Q. Install accessories furnished with each luminaire.
- R. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.
- S. Bond products and metal accessories to branch circuit equipment grounding conductor.
- T. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- U. Exit Signs:

1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- V. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Perform field inspection in accordance with Section 01 4000.
- D. Operate each luminaire after installation and connection to verify proper operation.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

3.06 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- B. Clean electrical parts to remove conductive and deleterious materials.
- C. Remove dirt and debris from enclosures.
- D. Clean photometric control surfaces as recommended by manufacturer.
- E. Clean finishes and touch up damage.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of luminaires to Architect, and correct deficiencies or make adjustments as directed.
- D. Just prior to Substantial Completion, replace all lamps that have failed.

3.08 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

3.09 PROTECTION

- A. Relamp luminaires that have failed lamps at Substantial Completion.

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SECTION 265600 EXTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
- C. Section 260529 - Hangers and Supports for Electrical Systems.
- D. Section 260533.16 - Boxes for Electrical Systems.
- E. Section 260919 - Enclosed Contactors: Lighting contactors.
- F. Section 260923 - Lighting Control Devices: Automatic controls for lighting including outdoor photo controls.
- G. Section 262726 - Wiring Devices: Receptacles for installation in poles.
- H. Section 265100 - Interior Lighting.

1.03 REFERENCE STANDARDS

- A. IEEE C2 - National Electrical Safety Code(R) (NESC(R)) 2023.
- B. IES LM-63 - Approved Method: IES Standard File Format for the Electronic Transfer of Photometric Data and Related Information 2019.
- C. IESNA LM-5 - Photometric Measurements of Area and Sports Lighting Installations; 2004 (Reaffirmed 2007).
- D. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- F. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems 2000 (Reaffirmed 2006).
- G. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 1598 - Luminaires Current Edition, Including All Revisions.
- I. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
 - 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.

- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- F. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Electrical Components: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01600 - Product Requirements.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.

- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of luminaires provided under this section.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install products in accordance with manufacturer's instructions.
- D. Install luminaires in accordance with NECA/IESNA 501.
- E. Provide required support and attachment in accordance with Section 260529.
- F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- G. Pole-Mounted Luminaires:
 - 1. Maintain the following minimum clearances:
 - a. Comply with IEEE C2.
 - b. Comply with utility company requirements.
 - 2. Foundation-Mounted Poles:
 - a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 033000.
 - 1) Install anchor bolts plumb per template furnished by pole manufacturer.
 - 2) Position conduits to enter pole shaft.
 - b. Install foundations plumb.
 - c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
 - d. Tighten anchor bolt nuts to manufacturer's recommended torque.
 - e. Install non-shrink grout between pole anchor base and concrete foundation, leaving small channel for condensation drainage.
 - f. Install anchor base covers or anchor bolt covers as indicated.
 - 3. Grounding:
 - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
 - 4. Install separate service conductors, size as indicated on drawings, from each luminaire down to handhole for connection to branch circuit conductors.
- H. Install accessories furnished with each luminaire.
- I. Bond products and metal accessories to branch circuit equipment grounding conductor.
- J. Provide concrete bases for metal lighting poles at locations indicated.
- K. Install lamps in each luminaire.
- L. Bond luminaires and metal accessories to branch circuit equipment grounding conductor.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Perform field inspection, testing, and adjusting in accordance with Section 01 4000.
- D. Operate each luminaire after installation and connection to verify proper operation.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.05 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

3.06 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- B. Clean electrical parts to remove conductive and deleterious materials.
- C. Remove dirt and debris from enclosure.
- D. Clean photometric control surfaces as recommended by manufacturer.
- E. Clean finishes and touch up damage.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.

3.08 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

3.09 SCHEDULE - SEE DRAWINGS

**SECTION 270529
HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other communications work.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 260529 - Hangers and Supports for Electrical Systems.
- C. Section 270533.13 - Conduit for Communications Systems: Additional support and attachment requirements for conduits.
- D. Section 271000 - Structured Cabling.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2023.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2023.
- D. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position 2022.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023b.
- F. BICSI ITSIMM - Information Technology Systems Installation Methods Manual (ITSIMM), 8th Edition 2022.
- G. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition 2019.
- H. MFMA-4 - Metal Framing Standards Publication 2004.
- I. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- J. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. TIA-569 - Telecommunications Pathways and Spaces 2019e.
- M. UL 5B - Strut-Type Channel Raceways and Fittings Current Edition, Including All Revisions.
- N. UL 2043 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
 - 2. Coordinate work to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
 - 4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.

5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 033000.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications for Powder-Actuated Fasteners: Certified by fastener system manufacturer with current operator's license.
- B. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 1. Comply with the following. Where requirements differ, comply with most stringent.
 - a. TIA-569.
 - b. NFPA 70.
 - c. Requirements of authorities having jurisdiction.
 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of communications work.
 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
 4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit Supports: Straps and clamps suitable for conduit to be supported.
 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Cable Supports: Suitable for cables to be supported, including but not limited to J-hooks, bridle rings, drive rings, and flexible harnesses/slings.
 1. Applications:
 - a. Do not exceed 5 feet (1.5 m) between cable supports.
 - b. Allowable Cable Types:
 - 1) J-Hooks: Category 5e and single-mode fiber optic.
 2. Comply with TIA-569.
 3. Cable Supports Installed in Spaces Used for Environmental Air: Plenum rated; listed and labeled as complying with UL 2043, suitable for use in air-handling spaces.
 4. J-Hooks: Noncontinuous cabling support with removable top retainer clip.
 - a. Material: Use galvanized steel, factory-painted steel, or stainless steel.
 - b. Provide support surfaces with smooth, beveled edges and radius not less than minimum allowable bend radius of cables supported.
 - c. Provide multitiered J-hooks where required to support multiple cabling systems.
 - d. Color coding to be visible from below after installation.

5. Bridle rings: Noncontinuous circular cabling support.
 - a. Material: Use galvanized steel, painted steel, or stainless steel.
 - b. Provide integral saddle with smooth, beveled edges and radius not less than minimum allowable bend radius of cables supported where indicated.
- D. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
- E. Metal Channel/Strut Framing Systems:
 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
 2. Comply with MFMA-4.
- F. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
- G. Anchors and Fasteners:
 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install hangers and supports in accordance with NECA 1, BICSI ITSIMM, and BICSI N1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
 2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Secure fasteners in accordance with manufacturer's recommended torque settings.
- I. Remove temporary supports.
- J. Identify independent communications component support wires above accessible ceilings, where permitted, with color distinguishable from other support wires in accordance with NFPA 70.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

SECTION 270533.13
CONDUIT FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Galvanized steel electrical metallic tubing (EMT).
- C. Rigid polyvinyl chloride (PVC) conduit.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260533.13 - Conduit for Electrical Systems.
- C. Section 271000 - Structured Cabling.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC) 2020.
- B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S) 2020.
- C. BICSI ITSIMM - Information Technology Systems Installation Methods Manual (ITSIMM), 8th Edition 2022.
- D. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition 2019.
- E. BICSI TDMM - Telecommunications Distribution Methods Manual, 14th Edition 2020.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- G. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT) 2020.
- H. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable 2014.
- I. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit 2020.
- J. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing 2021.
- K. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. TIA-568.0 - Generic Telecommunications Cabling for Customer Premises 2020e.
- M. TIA-569 - Telecommunications Pathways and Spaces 2019e.
- N. UL 6 - Electrical Rigid Metal Conduit-Steel Current Edition, Including All Revisions.
- O. UL 514A - Metallic Outlet Boxes Current Edition, Including All Revisions.
- P. UL 514B - Conduit, Tubing, and Cable Fittings Current Edition, Including All Revisions.
- Q. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings Current Edition, Including All Revisions.
- R. UL 797 - Electrical Metallic Tubing-Steel Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with actual type and quantity of cables to be installed.
 - 2. Coordinate arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment.
 - 4. Coordinate work to provide roof penetrations that preserve integrity of roofing system and do not void roof warranty.

5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 1. Do not begin installation of communications cables until installation of conduit between termination points is complete.

1.05 QUALITY ASSURANCE

- A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, TIA-569, BICSI ITSIMM, BICSI TDMM, manufacturers' instructions, and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
 1. Under Slab on Grade: Use galvanized steel rigid metal conduit (RMC) or rigid PVC conduit.
 2. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from underground.
 3. Where rigid polyvinyl chloride (PVC) conduit larger than 2-inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit (RMC) elbows for bends.
- D. Concealed Within Masonry Walls: Use galvanized steel electrical metallic tubing (EMT).
- E. Concealed Within Hollow Stud Walls: Use galvanized steel electrical metallic tubing (EMT).
- F. Concealed Above Accessible Ceilings: Use galvanized steel electrical metallic tubing (EMT) or inside-plant flexible nonmetallic communications raceway/innerduct.
- G. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit (RMC).
- H. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel electrical metallic tubing (EMT).
- I. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit (RMC).

2.02 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70 and TIA-569.
- B. Provide conduit, fittings, supports, and accessories required for complete communications pathway.
- C. Provide products listed, classified, and labeled as suitable for purpose intended.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- B. Fittings:
 1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
 2. Material: Use steel or malleable iron.

3. Connectors and Couplings: Use threaded fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.
4. Conduit Bodies: Use only conduit bodies specifically designed for communications cabling. Standard conduit bodies designed for electrical raceways are not permitted.
 - a. Comply with TIA-568.0 minimum bend radius requirements for fiber optic cables.

2.04 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:
 1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 2. Material: Use steel or malleable iron.
 3. Connectors and Couplings: Use compression/gland or set-screw type.
 - a. Do not use indenter type connectors and couplings.
 4. Conduit Bodies: Use only conduit bodies specifically designed for communications cabling. Standard conduit bodies designed for electrical raceways are not permitted.
 - a. Comply with TIA-568.0 minimum bend radius requirements for fiber optic cables.

2.05 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage.
- B. Fittings:
 1. Manufacturer: Same as manufacturer of conduit to be connected.
 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.
 3. Conduit Bodies: Use only conduit bodies specifically designed for communications cabling. Standard conduit bodies designed for electrical raceways are not permitted.
 - a. Comply with TIA-568.0 minimum bend radius requirements for fiber optic cables.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in accordance with NECA 1, BICSI ITSIMM, and BICSI N1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install galvanized steel electrical metallic tubing (EMT) in accordance with NECA 101.
- E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- F. Conduit Routing:
 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 2. When conduit destination is indicated without specific routing, determine exact routing required.
 3. Conceal conduits unless specifically indicated to be exposed.
 4. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Communications rooms.
 - c. Mechanical equipment rooms.
 - d. Within joists in areas with no ceiling.

5. Unless otherwise approved, do not route exposed conduits:
 - a. Across floors.
 6. Conduits installed underground or embedded in concrete may be routed in shortest possible manner unless otherwise indicated. Route other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
 7. Arrange conduit to maintain adequate headroom, clearances, and access.
 8. Arrange conduit to provide no more than equivalent of two 90-degree bend(s) between pull points.
 - a. The equivalent of three 90-degree bends between pull points is permitted only under conditions described in BICSI TDMM.
 9. Arrange conduit to provide no more than 100 feet (33 m) between pull points.
 10. Arrange conduit to provide minimum bend radii in accordance with BICSI TDMM.
 11. Route conduits above water and drain piping where possible.
 12. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
 13. Maintain recommended separation from sources of EMI greater than 5 kVA in accordance with BICSI ITSIMM and BICSI TDMM.
 14. Maintain minimum clearance of 6 inches (150 mm) between conduits and piping for other systems.
 15. Maintain minimum clearance of 12 inches (300 mm) between conduits and hot surfaces. This includes, but is not limited to:
 - a. Heaters.
 - b. Hot water piping.
 - c. Flues.
 16. Group parallel conduits in same area on common rack.
- G. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
 5. Use metal channel/strut with accessory conduit clamps to support multiple, parallel, surface-mounted conduits.
 6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
 7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple, parallel, suspended conduits.
 8. Use of wire for support of conduits is not permitted.
- H. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 5. Terminate outside-plant entrance conduits at 4 inches (100 mm) above finished floor unless otherwise indicated.
 6. Where spare conduits stub up through concrete floors and are not terminated in box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.

7. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect cables.
 8. Secure joints and connections to provide mechanical strength and electrical continuity.
- I. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves and/or slots for penetrations as indicated or as required to facilitate installation.
 4. Conceal bends for conduit risers emerging above ground.
 5. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 078400.
- J. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed cables or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal expansion and contraction.
 3. Where conduits are subject to earth movement by settlement or frost.
- K. Provide grounding and bonding.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of cables.

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SECTION 271000 STRUCTURED CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Communications system design requirements.
- B. Equipment frames, racks and cabinets.
- C. Communications pathways.
- D. Copper cable and terminations.
- E. Fiber optic cable and interconnecting devices.
- F. Communications equipment room fittings.
- G. Communications outlets.
- H. Communications grounding and bonding.
- I. Communications identification.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260526 - Grounding and Bonding for Electrical Systems.
 - 1. Includes intersystem bonding termination.
 - 2. Includes bonding jumpers for bonding of communications systems and electrical system grounding.
- C. Section 260533.16 - Boxes for Electrical Systems.
- D. Section 260553 - Identification for Electrical Systems: Identification products.
- E. Section 262726 - Wiring Devices.
- F. Section 270529 - Hangers and Supports for Communications Systems.
- G. Section 270533.13 - Conduit for Communications Systems.

1.03 REFERENCE STANDARDS

- A. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition 2019.
- B. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment 2005e.
- C. ICEA S-83-596 - Indoor Optical Fiber Cable 2021.
- D. ICEA S-90-661 - Category 3 and 5E Individually Unshielded Twisted Pairs, Indoor Cables (With or Without an Overall Shield) for Use in General Purpose and LAN Communication Wiring Systems 2021.
- E. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. TIA-455-21 - FOTP-21 - Mating Durability of Fiber Optic Interconnecting Devices 1988a (Reaffirmed 2012).
- G. TIA-492AAAC - Detail Specification for 850-nm Laser-Optimized, 50-um Core Diameter/125-um Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers 2009b.
- H. TIA-492CAAA - Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers 1998 (Reaffirmed 2002).
- I. TIA-492CAAB - Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak 2000 (Reaffirmed 2005).
- J. TIA-526-7 - Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant, Adoption of IEC 61280-4-2 Edition 2: Fibre-Optic Communications Subsystem Test Procedures – Part 4-2: Installed Cable Plant – Single-Mode Attenuation and Optical Return Loss

Measurement 2015a (Reaffirmed 2022).

- K. TIA-568 (SET) - Commercial Building Telecommunications Cabling Standard Set 2020.
- L. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards 2018d, with Addenda (2020).
- M. TIA-568.3 - Optical Fiber Cabling and Components Standard 2022e.
- N. TIA-569 - Telecommunications Pathways and Spaces 2019e.
- O. TIA-570 - Residential Telecommunications Infrastructure Standard 2018d.
- P. TIA-598 - Optical Fiber Cable Color Coding 2014d, with Addendum (2018).
- Q. TIA-606 - Administration Standard for Telecommunications Infrastructure 2021d.
- R. TIA-607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises 2019d.
- S. UL (DIR) - Online Certifications Directory Current Edition.
- T. UL 444 - Communications Cables Current Edition, Including All Revisions.
- U. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers Current Edition, Including All Revisions.
- V. UL 1651 - Fiber Optic Cable Current Edition, Including All Revisions.
- W. UL 1863 - Communications-Circuit Accessories Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.
 - 2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
 - 3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Arrange for Communications Service Provider to provide service.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- D. Evidence of qualifications for installer.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
- F. MDF and IDF rack layouts showing patch panels for fiber and copper, as well as number of ports used.
- G. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.
- H. Field Test Reports.
- I. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).

1. Record actual locations of outlet boxes and distribution frames.
 2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
 3. Identify distribution frames and equipment rooms by room number on drawings.
- J. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.
- B. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
 1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
 2. Supervisors and installers factory certified by manufacturers of products to be installed.
 3. Employing BICSI Registered Cabling Installation Technicians (RCIT) for supervision of all work.
- C. Products: Listed, classified, and labeled as suitable for the purpose intended.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep stored products clean and dry.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SYSTEM DESIGN

- A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
 1. Comply with TIA-568 (SET) (cabling) and TIA-569 (pathways) (commercial standards).
 2. Comply with Communications Service Provider requirements.
 3. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
 4. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F (0 to 60 degrees C) at relative humidity of 0 to 95 percent, noncondensing.
 5. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
- B. System Description:
 1. Building Entrance Cable: Fiber optic with redundant copper cable. Coordinate with the local utility..
 2. Backbones - Within Building: Fiber optic, 12-pair single mode -fiber.
 3. Offices and Work Areas: Provide (2) two CAT 5e cables to each location in each work area.
 4. TV's and MDIS stations: Provide (3) three CAT5e and (1) RG59 coax to each location.
- C. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.
 1. The MDF rack is to be located in I/T room 145.
- D. Intermediate Distribution Frames (IDF): Support structures for terminating horizontal cables that extend to telecommunications outlets.

1. Locate IDF wall mount rack in Compressed Air Room E12.
- E. Backbone Cabling: Cabling, pathways, and terminal hardware connecting intermediate distribution frames (IDF's) with main distribution frame (MDF), wired in star topology with main distribution frame at center hub of star.
- F. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

2.02 PATHWAYS

- A. Conduit: See section 270533.13.
- B. Underground Service Entrance: Rigid polyvinyl chloride (PVC) conduit, Schedule 40 or as required by the local utility.

2.03 COPPER CABLE AND TERMINATIONS

- A. Manufacturers:
 1. CommScope: www.commscope.com/#sle.
 2. General Cable Technologies Corporation: www.generalcable.com/#sle.
 3. Siemon Company: www.siemon.com/#sle.
 4. Substitutions: See Section 016000 - Product Requirements.
- B. Copper Horizontal Cable:
 1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.
 2. Cable Type - Voice and Data: TIA-568.2 Category 5e UTP (unshielded twisted pair); 24 AWG.
 3. Cable Capacity: 4-pair.
 4. Cable Jacket Color - Voice and Data Cable: Blue.
- C. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.
- D. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.
 1. Performance: 500 mating cycles.
 2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.
- E. Copper Patch Cords:
 1. Description: Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.
 2. Patch Cords for Work Areas:
 - a. Quantity: One for each work area outlet port.
 - b. Length: 6 feet.
 3. Patch cords for TV's and MDIS systems:
 - a. Quantity: One CAT 5e and one RG59 coax for each outlet port.

2.04 FIBER OPTIC CABLE AND INTERCONNECTING DEVICES

- A. Manufacturers:
 1. CommScope: www.commscope.com/#sle.
 2. Siemon Company: www.siemon.com/#sle.
 3. Substitutions: See Section 016000 - Product Requirements.
- B. Fiber Optic Backbone Cable:
 1. Description: Tight buffered, non-conductive fiber optic cable complying with TIA-568.3, TIA-598, ICEA S-83-596 and listed as complying with UL 444 and UL 1651.
 2. Cable Type: Multimode, laser-optimized 50/125 um (OM3) complying with TIA-492AAAC.
 3. Cable Capacity: 12-pair single mode -fiber.
 4. Cable Jacket Color:

- a. Single-Mode Fiber (OS1/OS2): Yellow.
- C. Fiber Optic Interconnecting Devices:
 - 1. Connector Type: Type LC.
 - 2. Connector Performance: 500 mating cycles, when tested in accordance with TIA-455-21.
 - 3. Maximum Attenuation/Insertion Loss: 0.3 dB.

2.05 COMMUNICATIONS EQUIPMENT ROOM FITTINGS

- A. Copper Cross-Connection Equipment:
 - 1. Manufacturers:
 - a. CommScope; _____: www.commscope.com/#sle.
 - b. Siemon Company; _____: www.siemon.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
 - 2. Patch Panels for Copper Cabling: Sized to fit EIA/ECA-310 standard 19 inch (482.6 mm) wide equipment racks; 0.09 inch (2.2 mm) thick aluminum; cabling terminated on Type 110 insulation displacement connectors; printed circuit board interface.
 - a. Jacks: Non-keyed RJ-45, suitable for and complying with same standard as cable to be terminated; maximum 48 ports per standard width panel.
 - b. Capacity: Provide ports sufficient for cables to be terminated plus 25 percent spare.
 - c. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA-606.
 - d. Provide incoming cable strain relief and routing guides on back of panel.
- B. Fiber Optic Cross-Connection Equipment:
 - 1. Manufacturers:
 - a. CommScope; _____: www.commscope.com/#sle.
 - b. Siemon Company; _____: www.siemon.com/#sle.
 - 2. Patch Panels for Fiber Optic Cabling: Sized to fit EIA/ECA-310 standard 19 inch (482.6 mm) wide equipment racks; 0.09 inch (2.2 mm) thick aluminum.
 - a. Adapters: As specified above under FIBER OPTIC CABLE AND INTERCONNECTING DEVICES; maximum of 24 duplex adaptors per standard panel width.
 - b. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA-606.
 - c. Provide incoming cable strain relief and routing guides on back of panel.
 - d. Provide rear cable management tray at least 8 inches (203 mm) deep with removable cover.
 - e. Provide dust covers for unused adapters.
- C. Backboards: Interior grade plywood without voids, 3/4 inch (19 mm) thick; UL-labeled fire-retardant.
 - 1. Size: 48 by 96 inches (1220 by 2440 mm).
 - 2. Do not paint over UL label.
- D. Equipment Frames, Racks and Cabinets:
 - 1. Manufacturers:
 - a. CommScope; _____: www.commscope.com/#sle.
 - b. Siemon Company; _____: www.siemon.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.
 - 2. MDF Freestanding Cabinets: Front and rear doors with locks; removable side panels with locks; vented top and rear door; adjustable leveling feet; cable access in roof and base; grounding bar.
 - a. Size: 22-5/16"W x 25-1/2"D x 74-1/4"T.
 - 3. IDF Wall Mounted Cabinets: Front doors with locks, louvered side panels, top and bottom cable access, and ground lug.
 - a. Size: Standard 19" in 12U.
 - b. Mount on fire rated plywood backboard.
 - 4. Cabinets: Steel construction with corrosion resistant finish.

- 5. Locks: Keyed alike.
- E. Cable Management:
 - 1. Manufacturers:
 - a. CommScope; _____: www.commscope.com/#sle.
 - b. Siemon Company; _____: www.siemon.com/#sle.
 - c. Substitutions: See Section 016000 - Product Requirements.

2.06 COMMUNICATIONS OUTLETS

- A. Manufacturers:
 - 1. CommScope; _____: www.commscope.com/#sle.
 - 2. Siemon Company; _____: www.siemon.com/#sle.
- B. Outlet Boxes: Comply with Section 260533.16.
 - 1. See detail on the drawings.
- C. Wall Plates:
 - 1. Comply with system design standards and UL 514C.
 - 2. Accepts modular jacks/inserts.
 - 3. Capacity:
 - a. For Work Areas:
 - 1) Data or Combination Voice/Data Outlets: (2) two ports total per box.
 - b. For TV and MDIS Systems:
 - 1) (3) three RJ-45 and (1) one coaxial F-type.
 - 4. Wall Plate Material/Finish - Flush-Mounted Outlets: High impact thermoplastic, color to be selected.

2.07 GROUNDING AND BONDING COMPONENTS

- A. Comply with TIA-607.
- B. Comply with Section 260526.

2.08 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606.
- B. Comply with Section 260553.

2.09 SOURCE QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Factory test cables according to TIA-568 (SET).

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Comply with latest editions and addenda of TIA-570, TIA-607, NFPA 70, and SYSTEM DESIGN as specified in PART 2.
- B. Comply with Communication Service Provider requirements.
- C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.
- D. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

3.02 INSTALLATION OF PATHWAYS

- A. Install pathways with the following minimum clearances:
 - 1. 48 inches (1220 mm) from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
 - 2. 12 inches (300 mm) from power conduits and cables and panelboards.
 - 3. 5 inches (125 mm) from fluorescent and high frequency lighting fixtures.
 - 4. 6 inches (150 mm) from flues, hot water pipes, and steam pipes.

- B. Minimum Cover - Underground Service Entrance: Comply with NFPA 70 and Communications Service Provider requirements.
- C. Outlet Boxes:
 - 1. Coordinate locations of outlet boxes provided under Section 260533.16 as required for installation of telecommunications outlets provided under this section.
 - a. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - b. Provide minimum of 24 inches (600 mm) horizontal separation between flush mounted outlet boxes installed on opposite sides of fire rated walls.
 - c. Unless otherwise indicated, provide separate outlet boxes for line voltage and low voltage devices.
 - d. Locate outlet boxes so that wall plate does not span different building finishes.
 - e. Locate outlet boxes so that wall plate does not cross masonry joints.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

- A. Cabling:
 - 1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
 - 2. Do not over-cinch or crush cables.
 - 3. Do not exceed manufacturer's recommended cable pull tension.
 - 4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
- B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
 - 1. At Distribution Frames: 120 inches (3000 mm).
 - 2. At Outlets - Copper: 12 inches (305 mm).
 - 3. At Outlets - Optical Fiber: 39 inches (1000 mm).
- C. Copper Cabling:
 - 1. Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch (12 mm) from point of termination.
 - 2. For 4-pair cables in conduit, do not exceed 25 pounds (110 N) pull tension.
 - 3. Use T568B wiring configuration.
- D. Fiber Optic Cabling:
 - 1. Prepare for pulling by cutting outer jacket for 10 inches (250 mm) from end, leaving strength members exposed. Twist strength members together and attach to pulling eye.
 - 2. Support vertical cable at intervals as recommended by manufacturer.
- E. Wall-Mounted Racks and Enclosures:
 - 1. Install to plywood backboards only, unless otherwise indicated.
 - 2. Mount so height of topmost panel does not exceed 78 inches (1980 mm) above floor.
- F. Floor-Mounted Racks and Enclosures: Permanently anchor to floor in accordance with manufacturer's recommendations.
- G. Identification:
 - 1. Use wire and cable markers to identify cables at each end.
 - 2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.
 - 3. Use identification nameplate to identify cross-connection equipment, equipment racks, and cabinets.

3.04 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Comply with inspection and testing requirements of specified installation standards.
- C. Visual Inspection:
 - 1. Inspect cable jackets for certification markings.

2. Inspect cable terminations for color coded labels of proper type.
 3. Inspect outlet plates and patch panels for complete labels.
- D. Testing - Copper Cabling and Associated Equipment:
1. Category 5e and Above Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.
- E. Testing - Fiber Optic Cabling:
1. Backbone: Perform optical fiber end-to-end attenuation test using an optical time domain reflectometer (OTDR) and manufacturer's recommended test procedures; perform verification acceptance tests and factory reel tests.
 2. Single Mode Backbone: Perform tests in accordance with TIA-526-7.
- F. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

SECTION 274133
MASTER ANTENNA TELEVISION SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Television service entrance.
- B. Television distribution equipment.
- C. Cable and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 260533.13 - Conduit for Electrical Systems.
- C. Section 260533.16 - Boxes for Electrical Systems.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SYSTEM DESCRIPTION

- A. Existing.
- B. Premises wiring for broadband distribution of television signal, including individual outlets.
- C. Signal at each outlet: 3 dBmV across 75 ohms, minimum, plus 5 dB, minus 0 dB.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements. Show installation details, cable routing, and system configuration.
- C. Product Data: Provide showing electrical characteristics and connection requirements for each component.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- E. Project Record Documents: Record actual locations of outlets, devices, and cable routing.
- F. Operation Data: Instructions for setting and tuning channels.
- G. Maintenance Data: Basic trouble-shooting procedures.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70 and cable television utility company.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience with service facilities within 100 miles of Project.
- C. Supplier Qualifications: Authorized distributor of specified manufacturer with minimum three years documented experience.
- D. Installer Qualifications: Authorized installer of specified manufacturer with service facilities within 100 miles of the project.
- E. Products: Listed, classified and labeled as suitable for the purpose intended.
- F. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 AMPLIFIERS AND CONVERTERS

- A. Manufacturers:
 - 1. Blonder Tongue Laboratories, Inc: www.blondertongue.com/#sle.
 - 2. Channel Master: www.channelmaster.com/#sle.
 - 3. Substitutions: See Section 016000 - Product Requirements.
- B. VHF Preamplifier: Provide additional broadband preamplifier for channels if required.
 - 1. Impedance: 75 ohm.
 - 2. Bandpass: 6 MHz, plus or minus 0.25 dB.
 - 3. Gain: 24 dB, minimum.
 - 4. Signal-to-Noise Ratio: 3 db maximum.
 - 5. Power Supply: Remote, impedance matched for 22 dB return loss, 0.2 dB through loss. Provide 120 volt, single phase input.
- C. UHF-VHF Converters: Provide solid-state, crystal-controlled converter for each UHF channel required.
 - 1. Convert UHF channels to VHF channels as needed.
 - 2. Convert UHF channels as follows:
 - 3. Gain: 10 dB.
 - 4. Minimum Input Signal: Minus 1.0 dBmV.
 - 5. Maximum Signal Without Distortion: 35 dBmV.
 - 6. Signal-to-Noise Ratio: 8 dB, minimum.
 - 7. Bandpass Flatness: 0.5 dB over channel.
 - 8. Power Supply: Provide 120 volt, single phase input.
- D. VHF Amplifiers: Provide one single channel VHF amplifier with automatic gain control for each required channel, including converted UHF channels.
 - 1. Impedance: 75 ohm.
 - 2. Input Match: 11 dB return loss.
 - 3. Output Match: 13 dB return loss.
 - 4. Bandpass Flatness at Full Gain: plus or minus 1.5 dB.
 - 5. Gain: Adjustable, 35 to 55 dB.
 - 6. Output: 69.5 dBmV, maximum, for 0.5 dB synch compression.
 - 7. Noise at Maximum Gain: 7 db maximum.
 - 8. AGC Range: 40 dB, minimum.
 - 9. Power Supply: Provide 120 volt, single phase input.

2.02 ACCESSORIES

- A. Bandpass Filters:
 - 1. Provide one bandpass filter for each required channel that is adjacent to another required channel.
 - 2. Impedance: 75 ohm.
 - 3. Insertion Loss: 3.5 dB, maximum.
 - 4. Bandpass Flatness: 1.5 dB.
 - 5. Selectivity: Minus 55 dB at 9 MHz.
- B. Trap:
 - 1. Provide one tunable trap.
 - 2. Range: 14.5 to 216 MHz.
 - 3. Bandwidth: 1.9 MHz., plus or minus 3 dB.
 - 4. Maximum Notch Depth: 60 dB.
- C. Attenuator Pads:
 - 1. Impedance: 75 ohm.
 - 2. Bandwidth: 6 MHz., plus or minus 0.5 dB.
- D. Tap:

1. Surface mounted, all channel, back-matched tap.
 2. Through Loss: 0.7 dB, maximum.
 3. Return Loss: 20 dB, maximum.
 4. Isolation: 12 dB.
 5. Connector: F type coaxial connector.
- E. Splitter:
1. Inline, all channel, back-matched splitter.
 2. Through Loss: 3.5 dB for two-way; 6.7 dB for four-way.
 3. Isolation: 16 dB, minimum.
- F. Antenna Cable:
1. Description: RG 59/F.
- G. Main Distribution Cable:
1. Description: RG 11/F.
- H. Branch Distribution Cable:
1. Description: RG 59/F.
- I. Television Lead Cable:
1. Provide set-matched cord with 75-300 ohm transformer. Use RG 59/F coax cable, minimum length 6 feet (2 m).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide proper grounding of television system components and wiring. Bond outdoor components to lightning protection system.

3.02 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Provide services of manufacturer's technical representative to prepare and start systems and supervise final adjustments and tuning of system.
- C. Measure signal level at each outlet.

3.03 ADJUSTING

- A. Adjust work under supervision of manufacturer's field service personnel.
- B. Adjust each antenna using field strength meter to orient it for maximum signal reception.
- C. Adjust amplifier gain and make other system adjustments to achieve specified output levels at each outlet.
- D. Adjust traps to eliminate spurious interference.

3.04 CLOSEOUT ACTIVITIES

- A. See Section 017900 - Demonstration and Training, for additional requirements.
- B. Demonstration: Demonstrate operation of system to Owner's personnel.
 1. Use operation and maintenance data as reference during demonstration.
 2. Conduct walking tour of project.
 3. Briefly describe function, operation, and maintenance of each component.
 4. Include demonstration of television operation specified signal level at two outlets selected by Owner.
- C. Training: Train Owner's personnel on operation and maintenance of system.
 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 2. Provide minimum of two hours of training.
 3. Instructor: Manufacturer's training personnel.
 4. Location: At project site.

3.05 MAINTENANCE

- A. See Section 017000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.
- B. Provide service and maintenance of television system for one year from Date of Substantial Completion.

SECTION 281523 INTERCOM ENTRY SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Intercom entry system and associated door/entry stations, interior stations, and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 087100 - Door Hardware: Electrically operated door hardware, for interface with intercom entry system.
- C. Section 111200 - Parking Control Equipment: Parking gates, for interface with intercom entry system.
- D. Section 260526 - Grounding and Bonding for Electrical Systems.
- E. Section 260533.13 - Conduit for Electrical Systems.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- G. Section 271000 - Structured Cabling: Data cables for intercom entry system IP network connections.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of intercom stations with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate the work with other installers to provide power for equipment at required locations.
 - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Preinstallation Meetings:
 - 1. Conduct meeting with facility representative to review intercom station and equipment locations.
 - 2. Conduct meeting with facility representative and other related equipment manufacturers to discuss intercom entry system interface requirements.
- C. Sequencing:
 - 1. Do not install intercom stations until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.
- C. Shop Drawings: Include plan views indicating locations of system components and proposed size, type, and routing of conduits and/or cables. Include system interconnection schematic diagrams.
- D. Evidence of qualifications for installer.
- E. Specimen Warranty: Submit sample of manufacturer's warranty.

- F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
- G. Manufacturer's certification that products meet or exceed specified requirements.
- H. Field quality control test reports.
- I. Operation and Maintenance Data: Include detailed information on system operation, equipment setup, replacement parts, and recommended maintenance procedures and intervals.
- J. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- K. Project Record Documents: Record actual locations of system components and installed wiring arrangements and routing.

1.06 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. ADA Standards.
 - 2. NFPA 70 (National Electrical Code).
 - 3. The requirements of the local authorities having jurisdiction.
 - 4. Applicable TIA/EIA standards.
- B. Manufacturer Qualifications: Company engaged in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company with minimum three years documented experience with similar systems and providing contract maintenance service as a regular part of their business; manufacturer's authorized installer.
- D. Products: Listed, classified, and labeled as suitable for the purpose intended.
- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide minimum one year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Intercom Entry System - Basis of Design: Aiphone Corporation - AX Series.
- B. Products other than basis of design are subject to compliance with specified requirements and prior approval of Engineer. By using products other than basis of design, Contractor accepts responsibility for costs associated with any necessary modifications to related work, including any design fees.
- C. Source Limitations: Furnish system components and accessories produced by a single manufacturer and obtained from a single supplier.

2.02 INTERCOM ENTRY SYSTEM

- A. Provide new intercom entry system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, accessories, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.
- B. System Description:
 - 1. System Type: Audio-video, analog.
 - 2. System Capacity:
 - a. Door/Entry Stations: (1) one.
 - b. Gate/Entry Stations: (2) two
 - 3. Interface with Other Systems:
 - a. Provide products compatible with other systems requiring interface with intercom entry system.
 - b. Interface with electrically operated door hardware as specified in Section 087100.
 - 1) Capable of locking/unlocking/releasing controlled doors.
 - c. Interface with parking control gates as specified in Section 111200.
 - 1) Capable of controlling gate access.
- C. Door/Entry Stations:
 - 1. Vandal resistant, with tamper proof hardware.
 - 2. Suitable for the environment where installed.
 - 3. Provide means to initiate call to designated interior station(s).
 - 4. Provide for hands-free two-way communication with interior station(s).
 - 5. Audio-Video Door/Entry Station for exterior entrance doors and parking control gate:
 - a. Basis of Design: Aiphone part # AX-DV-P (at door), #AX-DVF-P (at parking control gate).
 - b. Furnished with integral video camera for door/entry monitoring and visitor identification.
 - c. Call Initiation: Single button; initiates call to pre-determined interior station(s).
 - d. Finish: Stainless steel.
 - e. Mounting: (1) flush mounted at building door, (2) surface mounted at parking control gate (one at car height and one at fire truck height).
 - f. Features:
 - 1) LED low-light video illumination.
 - 2) Integrated proximity card reader for unlocking/releasing door.
- D. Interior Stations:
 - 1. Audio-Video Master Station:
 - a. Basis of Design: Aiphone part #AX-8MV.
 - b. Provides for hands-free and handset two-way communication with designated door/entry station(s) and other interior station(s).
 - c. Provide means for unlocking/releasing door corresponding to door/entry station communication is established with.
 - d. Provide means to initiate video monitoring of connected door/entry station(s).
 - e. Mounting: Combination of wall and desk (See the drawings).
 - f. Features:
 - 1) Adjustable audible call notification volume.
 - 2) Adjustable communication volume.
 - 3) Adjustable LCD screen brightness.
 - 4) Automatic recording of visitor images upon call initiation from door/entry station.
 - 5) Manual video recording capability.
 - 6) Capability to transfer an answered call to another master station.
- E. Accessories:
 - 1. Provide components as required such as power supplies, relays, etc., for a complete operating system.

2. Wiring: Provide manufacturer's recommended cables as indicated or as required for connections between system components.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that characteristics of system components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive system components.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Wiring Method for NFPA 70 Class 2/Class 3 Circuits: Unless otherwise indicated or required by NFPA 70, use wiring in conduit except above ACT.
 1. Use suitable listed cables in wet locations, including underground raceways.
 2. Use suitable listed cables for vertical riser applications.
 3. Conduit: Comply with Section 260533.13.
- D. Provide grounding and bonding in accordance with Section 260526.
- E. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- F. Identify system wiring and components in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Provide services of a manufacturer's authorized representative to observe installation and assist in inspection and testing. Include manufacturer's field reports with submittals.
- C. Test to verify wiring is free of shorts and grounds.
- D. Prepare and start system in accordance with manufacturer's instructions.
- E. Test system for proper operation.
- F. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.
- G. Submit detailed reports indicating inspection and testing results and corrective actions taken.

3.04 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. See Section 017900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, and maintenance of system.
 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 2. Instructor: Manufacturer's authorized representative.
 3. Location: At project site.

**SECTION 284600
FIRE DETECTION AND ALARM**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Duct Detectors.
- B. Smoke Detectors.
- C. Heat Detectors.
- D. Horn/Strobes.
- E. Strobes.
- F. Flow and Tamper Switches.
- G. Fire alarm system design and installation, including all components, wiring, and conduit.
- H. Transmitters for communication with supervising station.
- I. Removal of existing fire alarm system components, wiring, and conduit.
- J. Maintenance of fire alarm system under contract for specified warranty period.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping: Materials and methods for work to be performed by this installer.
- B. Section 211300 - Fire-Suppression Sprinkler Systems: Supervisory, alarm, and actuating devices installed in sprinkler system.
- C. Section 233300 - Air Duct Accessories: Smoke dampers monitored and controlled by fire alarm system.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits 2002 (Corrigendum 2012).
- C. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 72 - National Fire Alarm and Signaling Code Most Recent Edition Cited by Referring Code or Reference Standard.
- E. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 268 - Standard for Smoke Detectors for Fire Alarm Systems Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Evidence of designer qualifications.
- C. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:
 - 1. Copy (if any) of list of data required by authority having jurisdiction.
 - 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 - 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
 - 4. System zone boundaries and interfaces to fire safety systems.
 - 5. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.

6. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
 7. List of all devices on each signaling line circuit, with spare capacity indicated.
 8. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
 9. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
 10. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
 11. Certification by the manufacturer of the control unit that the system design complies with Contract Documents.
 12. Certification by Contractor that the system design complies with Contract Documents.
 13. Do not show existing components to be removed.
- D. Evidence of installer qualifications.
- E. Evidence of instructor qualifications; training lesson plan outline.
- F. Evidence of maintenance contractor qualifications, if different from installer.
- G. Inspection and Test Reports:
1. Submit inspection and test plan prior to closeout demonstration.
 2. Submit documentation of satisfactory inspections and tests.
 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- H. Operating and Maintenance Data: Revise and resubmit until acceptable; have one set available during closeout demonstration:
1. Complete set of specified design documents, as approved by authority having jurisdiction.
 2. Additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
 4. List of recommended spare parts, tools, and instruments for testing.
 5. Replacement parts list with current prices, and source of supply.
 6. Detailed troubleshooting guide and large scale input/output matrix.
 7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- I. Project Record Documents: Have one set available during closeout demonstration:
1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
 2. "As installed" wiring and schematic diagrams, with final terminal identifications.
 3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- J. Closeout Documents:
1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
 2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.
 3. Certificate of Occupancy.
 4. Maintenance contract.
- K. Maintenance Materials, Tools, and Software: Furnish the following for Owner's use in maintenance of project.
1. See Section 016000 - Product Requirements, for additional provisions.

2. In addition to the items in quantities indicated in PART 2, furnish the following:
 - a. All tools, software, and documentation necessary to modify the fire alarm system using Owner's personnel; minimum modification capability to include addition and deletion of devices, circuits, and zones, and changes to system description, operation, and evacuation and instructional messages.
 - b. One copy, on CD-ROM, of all software not resident in read-only-memory.

1.05 QUALITY ASSURANCE

- A. Copies of Design Criteria Documents: Maintain at the project site for the duration of the project, bound together, an original copy of NFPA 72, the relevant portions of applicable codes, and instructions and guidelines of authorities having jurisdiction; deliver to Owner upon completion.
- B. Designer Qualifications: NICET Level III or IV (3 or 4) certified fire alarm technician or registered fire protection engineer, employed by fire alarm control panel manufacturer, Contractor, or installer, with experience designing fire alarm systems in the jurisdictional area of the authorities having jurisdiction.
- C. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
 1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
 3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
 4. Contract maintenance office located within 100 miles (___ km) of project site.
 5. Certified in the State in which the Project is located as fire alarm installer.
- D. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
- E. Instructor Qualifications: Experienced in technical instruction, understanding fire alarm theory, and able to provide the required training; trained by fire alarm control unit manufacturer.
- F. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.
- C. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

PART 2 PRODUCTS

2.01 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
 1. Provide all components necessary, regardless of whether shown in the contract documents or not. Expand system if necessary.
 2. Protected Premises: Entire building.
 3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. The requirements of the State Fire Marshal.
 - c. The requirements of the local authority having jurisdiction.
 - d. Applicable local codes.
 - e. Contract Documents (drawings and specifications).

- f. NFPA 101.
 - g. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
- 4. Evacuation Alarm: Multiple smoke zones; allow for evacuation notification of any individual zone or combination of zones, in addition to general evacuation of entire premises.
- 5. General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated, with alarm notification in all zones on the same floor, on the floor above, and the floor below.
- 6. Fire Alarm Control Unit: New, located at where shown on drawings.
- B. Supervising Stations and Fire Department Connections:
 - 1. Public Fire Department Notification: By remote supervising station.
 - 2. Remote Supervising Station: UL-listed central station under contract to facility.
 - 3. Means of Transmission to Remote Supervising Station: Digital alarm communicator transmitter (DACT), GSM and VoIP.
- C. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A.
 - 2. Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
 - 3. Notification Appliance Circuits (NAC): Class B, Style W.
- D. Spare Capacity:
 - 1. Initiating Device Circuits: Minimum 25 percent spare capacity.
 - 2. Notification Appliance Circuits: Minimum 25 percent spare capacity.
 - 3. Fire Alarm Control Units: Capable of handling all circuits utilized to capacity without requiring additional components other than plug-in control modules.
- E. Power Sources:
 - 1. Primary: Dedicated branch circuits of the facility power distribution system.
 - 2. Secondary: Storage batteries.
 - 3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.

2.02 EXISTING COMPONENTS

- A. Existing Fire Alarm System: Remove existing system completely after new system is fully operational and tested.
- B. Remove unused existing components and materials from site and dispose of properly.

2.03 FIRE SAFETY SYSTEMS INTERFACES

- A. Supervision: Provide supervisory signals in accordance with NFPA 72 for the following:
 - 1. Sprinkler water control valves.
- B. Alarm: Provide alarm initiation in accordance with NFPA 72 for the following:
 - 1. Sprinkler water flow.
 - 2. Kitchen hood suppression activation; also disconnect fuel source from cooking equipment.
 - 3. Duct smoke detectors.
- C. HVAC:
 - 1. Duct Smoke Detectors: Shut down associated air handlers.
 - 2. Smoke dampers and combination fire/smoke dampers.

2.04 COMPONENTS

- A. General:
 - 1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
 - 2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.

- B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.
- C. Initiating Devices:
 - 1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
 - 2. Manual Pull Stations: _____.
 - 3. Smoke Detectors: _____.
 - 4. Duct Smoke Detectors: _____.
 - 5. Heat Detectors: _____.
- D. Notification Appliances:
 - 1. Horn/Strobes: _____.
 - 2. Strobes: _____.
- E. Circuit Conductors: Copper; provide 200 feet (60 m) extra; color code and label.
- F. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70; except for optical fiber conductors.
 - 1. Equipment Connected to Alternating Current Circuits: Maximum let through voltage of 350 V(ac), line-to-neutral, and 350 V(ac), line-to-line; do not use fuses.
 - 2. Initiating Device Circuits, Notification Appliance Circuits, and Communications Circuits: Provide surge protection at each point where circuit exits or enters a building; rated to protect applicable equipment; for 24 V(dc) maximum dc clamping voltage of 36 V(dc), line-to-ground, and 72 V(dc), line-to-line.
 - 3. Signaling Line Circuits: Provide surge protection at each point where circuit exits or enters a building, rated to protect applicable equipment.
- G. Locks and Keys: Deliver keys to Owner.
 - 1. Provide the same standard lock and key for each key operated switch and lockable panel and cabinet; provide 5 keys of each type

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and Contract Documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Obtain Owner's approval of locations of devices, before installation.
- D. Install instruction cards and labels.

3.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 2 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.
- G. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

- H. Diagnostic Period: After successful completion of inspections and tests, Operate system in normal mode for at least 14 days without any system or equipment malfunctions.
 - 1. Record all system operations and malfunctions.
 - 2. If a malfunction occurs, start diagnostic period over after correction of malfunction.
 - 3. Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
 - 4. At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

3.03 OWNER PERSONNEL INSTRUCTION

- A. Provide the following instruction to designated Owner personnel:
 - 1. Hands-On Instruction: On-site, using operational system.
 - 2. Factory Instruction: At control unit manufacturer's training facility.
- B. Administrative: One-hour session(s) covering issues necessary for non-technical administrative staff; classroom:
 - 1. Initial Training: 1 session pre-closeout.
- C. Basic Operation: One-hour sessions for attendant personnel, security officers, and engineering staff; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
- D. Detailed Operation: Two-hour sessions for engineering staff; assume NICET level I qualifications or equivalent; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
- E. Maintenance Technicians: Detailed training for electrical technicians, on programming, maintaining, repairing, and modifying; factory training:
 - 1. Initial Training: One 3-day session, pre-closeout.
- F. Furnish the services of instructors and teaching aids; have copies of operation and maintenance data available during instruction.

3.04 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
 - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - 5. Repeat demonstration until successful.
- B. Occupancy of the project will not occur prior to Substantial Completion.
- C. Substantial Completion of the project cannot be achieved until inspection and testing is successful and:
 - 1. Specified diagnostic period without malfunction has been completed.
 - 2. Approved operating and maintenance data has been delivered.
 - 3. Spare parts, extra materials, and tools have been delivered.
 - 4. All aspects of operation have been demonstrated to Owner.
 - 5. Final acceptance of the fire alarm system has been given by authorities having jurisdiction.
 - 6. Occupancy permit has been granted.
 - 7. Specified pre-closeout instruction is complete.

3.05 MAINTENANCE

- A. See Section 017000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

- B. Provide to Owner, at no extra cost, a written maintenance contract for entire manufacturer's warranty period, to include the work described below.
- C. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
 - 1. Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
 - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
 - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
- D. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 4 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- E. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
- F. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- G. Comply with Owner's requirements for access to facility and security.

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SECTION 31 10 00 SITE CLEARING

PART 1 GENERAL

1. SUMMARY

- A. This work shall consist of clearing, grubbing, removing, and disposing of all vegetation, buildings and foundations not removed by others, and debris which are within designated limits inside the areas, except such objects as are designated to remain or are to be removed in accordance with other Sections of these specifications. Additionally, this work shall consist of the removal, wholly or in part, and the satisfactory disposal of all buildings, fences, structures, pavements, abandoned pipelines, and any other obstructions which are not designated or permitted to remain, except for the obstructions to be removed and disposed of under other items in the contract.
- B. This work shall also include salvaging of designated materials and backfilling the resulting trenches, holes, and pits.
- C. This work shall also include the reservation from injury or defacement of all vegetation and objects designated to remain.
- D. This item of work shall also include removal of existing inlet structures, manholes, steps, walls, etc. as shown on the plans.
- E. The Engineer will designate all trees, shrubs, plants, and other items to remain.
- F. Paint required for cut or scarred surfaces of trees or shrubs selected for retention shall be an approved asphaltum base paint prepared especially for tree surgery.
- G. Any damage done to trees, plants, structures, etc. designated to remain shall be repaired and/ or replaced.

1.02 PAYMENT

- A. The plans will indicate the entire area of the project including all easements, in acres. Clearing and Grubbing will be paid as lump sum unless the contract plans and/or contract documents specify otherwise.
- B. If no provision is made in the plans for Clearing and Grubbing, the work shall be considered incidental to the contract and no additional payment will be made.
- C. The area shown on the plans is approximate only, and the contract lump sum price for Clearing and Grubbing shall include all work necessary to clear and grub the original project in accordance with these specifications and all other requirements of the plans or proposal applicable to Clearing and Grubbing, regardless of the area actually cleared and grubbed.
- D. No claim will be allowed for any increase over the estimated area of Clearing and Grubbing unless work is performed outside the areas shown on the original plans, and then only when such work is caused by a change in the plans approved, in writing, by the Engineer. The area of Clearing and Grubbing will not be decreased unless the total area of the original right-of-way including easements is decreased by a change in the plans approved, in writing, by the Engineer. Approved increases and decreases will be measured in acres.
- E. If no disturbed limits are shown on the plans, the area of clearing and grubbing shall be calculated to be inclusive of all areas inside of the construction easements, permanent

31 10 00

easements, or right of way. However, the contractor shall not remove more than is absolutely necessary to complete the project.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

- A. Clearing and grubbing- The entire area of the construction shall be cleared of all weeds, brush, briars, bushes, trees, stumps, and other protruding obstructions not designated to remain, except within areas the Engineer may designate to remain undisturbed. In addition, all bushes, trees, roots, and stumps within the line of slope stakes, excavated trenches, and other construction shall be grubbed and completely removed.
1. In the yard areas of established residential areas, only the immediate area of construction necessary for completing the work shall be cleared and shall meet the approval of the Engineer. Yard areas shall be restored in accordance with these Specifications.
 2. All materials resulting from clearing and grubbing shall become the property of the Contractor. Burning shall not be permitted on this project unless specifically permitted. Therefore, all cleared and grubbed items shall be removed by the contractor and taken to an acceptable dump. He/She shall secure all necessary permits and pay all necessary fees to dispose of his materials. No additional payment shall be made by the Owner for these permits and fees. In the event that burning is permitted, the contractor shall do so in accordance with the requirements of all local ordinances and codes. The Contractor shall secure all necessary approvals and permits from applicable agencies.
 3. In no case shall the Contractor place on adjacent property any material obtained from clearing and grubbing without written permission from the property owner, a copy of which shall be furnished to the Owner. No material shall be placed within view of any public road.
 4. All merchantable timber in the clearing area is to remain the property of the owner(s), unless said owner(s) declines possession, and then shall become the property of the Contractor.
 5. Low hanging branches and unsound and unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending above any roadbed shall be trimmed to provide a minimum clear height of 20 feet above the roadbed surface. All trimming shall be performed in accordance with accepted practice. When required by the plans or the Engineer, brush barriers shall be constructed.
- B. Structures and obstructions- The Contractor shall raze, remove, and dispose of all buildings and foundations, structures, fences, and other obstructions, any portions of which are on the project, except utilities and those for which other provisions have been made for removal or those which are designated to remain.
1. All designated salvable material shall be removed, without unnecessary damage, in sections or pieces which may be readily transported, and shall be stored by the Contractor within the project limits, as directed.

2. All other material shall be disposed of by the Contractor in accordance with the disposal requirements of this Section.
3. Basements or cavities left by structure removal shall be filled to the level of the surrounding ground and, within embankment limits.
4. All septic tanks within the project affected areas shall be cleaned and filled with granular material or removed as directed. Temporary accommodations shall be made for the affected property owner's convenience. No additional payment shall be made for temporary hook-ups, etc.
5. Any existing structures meeting the Engineer's definition of bridge, including foundations, and so noted on the plans, shall be removed as directed.
6. When an existing bridge is to be used as a temporary crossing or detour, no part of the removal shall be performed nor the structure closed or obstructed, until the new work is open to traffic.
7. Existing structures shall become the property of the Contractor and shall be disposed of unless specified otherwise in the plans or in the proposal. In no case shall material be dumped onto the channel of a stream. All material entering the stream as a result of the removal of the existing structure shall be immediately removed from the waterway. When specified on the plans or in the proposal, the members of the superstructure shall be removed, without damage, in sections which can be readily transported and shall be carefully stored on the project at an accessible location above high water. Before removal of the super-structure, the parts shall be match marked with paint as directed.
8. Any materials forming the superstructure may be used temporarily by the Contractor in the erection of the new structure when authorized; however, such material shall not be cut or otherwise damaged except with written approval.
9. All portions of abutments which are exposed in the finished work and all of the piers above a stream bed and any parts of either abutments or piers which interfere with construction of the new work as planned, shall be completely removed. Any stone in the substructure of the existing structure may be used by the Contractor in the new work provided it meets the requirements of these specifications for its intended use.
10. All work in the vicinity of streams shall be performed in accordance with the applicable provisions of the Tennessee Department of Environment and Conservation.
11. Existing embankment approaches to structures thus removed, and lying outside the limits of the new construction, shall be removed to a minimum slope of 2:1 to provide a stable condition. The slope shall be shaped to a uniform finish. This work shall be considered incidental to removal of the structures and payment shall be included in the lump-sum price bid for Removal of Existing Structures.
12. Existing structures, indicated by the plans, including their foundations, shall be completely removed unless otherwise directed, the resulting material disposed of, and any resulting holes or pits filled. Any slopes that may result, such as stream sides, that lie outside the limits of the new construction, shall be excavated to a minimum slope of 2:1. This excavation will be considered incidental to removal of the structure and no separate payment will be made.

13. Unless the plans indicate a road may be closed to traffic, no existing structure may be disturbed until traffic is routed over the new work or satisfactory means of passage around the existing structure has been provided. All work in the vicinity of streams shall be performed in accordance with the applicable provisions of the Tennessee Department of Environment and Conservation.
14. When the plans provide for using any parts of an existing structure as permanent parts of a new structure, only such portions shall be removed as are indicated on the plans. Any damage to the portion remaining in service shall be repaired at no cost to the Owner.
15. All Portland cement concrete pavement or base, sidewalks, curbs, gutters, paved ditches, and similar items shall be completely removed; bituminous pavements, granular bases, etc. shall be removed.
16. In removing old pavement, curb, curb and gutter, sidewalks, cross-walks, and similar structures, and where portions of the existing structures are to be left in place, the old structures shall be removed to an existing joint or shall be cut to a true line with a vertical face. Sufficient removal shall be made to provide for proper grades and connections in the new work.

C. Miscellaneous Items

1. Removing and salvaging or disposal of all other items within the right-of-way or easements not included in this Division such as fence, guardrails, headwalls, inlet boxes, etc., whether shown on the plans or not shall be considered incidental to the contract unless otherwise provided.
2. In removing manholes, catch basins, and inlets, any live sewers connected thereto shall be rebuilt and properly reconnected, and satisfactory by-pass service shall be maintained during such construction operations.

END OF SECTION

SECTION 31 20 00 EARTH MOVING

PART 1 - GENERAL

1. SCOPE

- A. This Specification section includes earthwork and related operations, including, but not limited to, clearing and grubbing the construction site, excavating all classes of material encountered, handling, storage, transportation, and disposal of all excavated and unsuitable material, construction and compaction of fill and embankments, compacting, preparation of subgrades, surfacing and grading, and any other similar, incidental, or appurtenant earthwork operation which may be necessary to properly complete the work.
- B. The Contractor shall provide all services, labor, materials, and equipment required for all earthwork and related operations necessary or convenient to the Contractor for furnishing a complete work as shown on the Drawings or specified in these Contract Documents.

2. RELATED SECTIONS

- A. Section 31 22 19 – Spreading and Grading Topsoil

3. MEASUREMENT AND PAYMENT

A. Measurement & Payment

A lump sum payment shall be made for Earthwork, including clearing, unclassified and common excavation, embankments, grading, topsoil, etc., under these Specifications as listed under the applicable pay items in the Bid Form. Payment for the excavated quantities shall include its transport on the project, placement, compaction, etc. and removal and disposal of all excess materials. These amounts, so paid, shall constitute full compensation to the Contractor under this item and shall cover the cost of furnishing all labor, materials, tools, plant equipment, services, and other expenses in connection with the excavation and placement of all common earth and rock material, complete in-place all as herein specified. Under no circumstances shall quantities be calculated or estimated by using a counting of truckloads.

B. Topsoil

The measurement and payment of topsoil shall be included in the lump sum payment for excavation for the entire project.

C. Excavation

1. Trench Excavation

- a. No separate measurement or payment will be made for trench earth excavation for sewers and other pipelines, nor for any other appurtenant facilities such as manholes, inlets, outlets, headwalls, collars, saddles, piers, and pipe protection or encasement. Payment for all such excavation shall be included in the unit prices bid per linear foot of the various sizes of pipe laid for the respective trench depths as provided for in the contract Bid Form. Trench depths shall be the vertical distance between the ground surface and the invert elevation of the pipe. Where special bedding or cradles are shown on the Drawings or required by the Engineer, no allowance shall be made for extending earth excavation in trenches to the bottom of such bedding or cradles; such costs shall be included in the unit price bid per cubic yard of bedding material or cradle.
- b. The removing of all pavements, pavement foundations, sidewalks, driveways, etc., will be included in the trench excavation for which payment will be made as provided for in Paragraph (a) above. No separate payment will be made for these items.

- c. No separate payment shall be made for pumping, bailing, draining, clearing, grubbing, backfilling, borrow excavation, removing vegetable growth, debris, buildings, or waste material nor for the disposal of any materials or similar work.

3. Rock Excavation

No separate payment shall be made for rock excavation.

4. Undercut and Backfill

- a. If undercutting is required beyond a depth of 12 inches, the measurement for the undercutting of unsuitable soils and backfilling/compaction with approved material shall be expressed in cubic yards of material excavated and/or backfilled. The limits of unsuitable soil removal shall be approved in the field by the Engineer or Geotechnical Engineer. Unsuitable soil quantities shall be submitted on separate cross-sections or cut sheets, shall be verified prior to removal, and shall be approved by the Engineer. Under no circumstances shall quantities be calculated or estimated by using a counting of truckloads.
- b. Payment for all undercutting and backfill under these Specifications shall be made for the quantities determined in the manners specified above as listed under the applicable pay items in the Bid Form. Payment for these quantities shall include its transport on and/or to the project, placement, compaction, etc. These amounts, so paid, shall constitute full compensation to the Contractor under this item and shall cover the cost of furnishing all labor, materials, tools, plant equipment, services, and other expenses in connection with all undercutting and backfilling, complete-in-place all as herein specified.

4. GENERAL

- A. The elevations shown on the Drawings as existing are taken from the best existing data and are intended to give reasonable, accurate information about the existing elevations. The Contractor should satisfy himself as to the exact quantities of excavation and fill required.
- B. Imported Soils – Test results from the qualified testing agency shall be submitted and approved prior to import of soil.
- C. Earthwork operations shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards.
- D. All excavated and filled areas for structures, trenches, fills, topsoil areas, embankments and channels shall be maintained by the Contractor in good condition at all times until final acceptance by the Owner. All damage caused by erosion or other construction operations shall be repaired by the Contractor using material of the same type as the damaged material.
- E. Earthwork within the rights-of-way of the State Department of Transportation, County Government, or the City shall be done in accordance with requirements and provisions of the permits issued by those agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these Specifications.
- F. The Contractor shall control grading in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm water can be uninterrupted in existing gutters, other surface drains, or temporary drains.
- G. No classification of excavated materials will be made. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition, or condition thereof.
- H. Tests for compaction and density shall be conducted by the owner or by an independent testing laboratory selected by him. Costs of compaction tests performed by an independent

testing laboratory shall be paid for directly by the Owner and not as a part of this Contract. The Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting compaction and density tests. The cost of all retest made necessary by the failure of materials to conform to the requirements of these Contract Documents shall be paid by the Contractor.

- I. All earthwork operations shall comply with any applicable requirements of OSHA Construction Standards.
- J. It is understood and agreed that the Contractor has made a thorough investigation of the surface and subsurface conditions of the site and any special construction problems which might arise. The Contractor shall be responsible for providing all services, labor, equipment, and materials necessary or convenient to him for completing the work within the time specified in these Contract Documents.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 INITIAL SITE PREPARATION

- A. Preparatory to beginning of construction operations, the Contractor shall remove from the site all vegetative growth, trees, brush, stumps, roots, debris, and any other objectionable matter, including fences, buildings, and other structures shown on the Drawings in the construction areas which are designated for removal or which, if left in place, would interfere with the proper performance or completion of the contemplated work, would impair its subsequent use, or would form obstructions therein.
- B. Stumps and roots shall be grubbed and removed to a depth not less than 3 feet below grade. All holes or cavities which extend below the subgrade elevation of the proposed work shall be filled with compacted layers of crushed rock or earth backfill conforming to the requirements specified here for backfill. Organic material from clearing operations shall not be incorporated in excavation backfill or embankment material.
- C. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, buildings, and other structures which are located in the construction area but not within designated clearing limits as shown on the Drawings or within the limits of embankments, excavations, or proposed structures. The Contractor shall be responsible for the repair and/or replacement of any of the aforementioned items damaged by his operation or construction activities.
- D. The Contractor shall remove and dispose of all excess material resulting from clearing or site preparation operations.

3.02 EXCAVATION

A. General

- 1. Excavation shall include the removal of all material from the area necessary for the construction of a pipeline, structure, basin, flume, or building. Excavations shall provide adequate working space and clearances for the work to be performed therein.
- 2. Except where otherwise shown on the Drawings, specified herein, or authorized by the Engineer, all material excavated below the bottom of concrete walls, footings, and foundations shall be replaced, by and at the expense of the Contractor, with Class B concrete to the lines and grades shown on the Drawings.
- 3. Where quicksand, soft clay, spongy, swampy or other materials unsuitable for subgrade or foundation purposes are encountered below the excavation limits, they shall be removed and disposed of to the level of suitable material, or depth not to exceed 1.5 feet. Areas so excavated shall be backfilled with Class B concrete or with compacted layers of crushed rock, sand, or other approved material conforming to the requirements specified herein for

backfill to the lines and grades shown on the Drawings.

B. Excavation for Paved Surfaces

1. Excavation for paved surfaces shall consist of excavation for roadways, tracks, sidewalks, and parking areas in conformity with lines, grades, cross sections, and dimensions shown on the Drawings. After shaping to line, grade, and cross section, the subgrade shall be rolled until compacted to a depth of at least 12 inches to 98 percent density (Std. Proctor ASTM D698) at a moisture content of 1 to 2% of the optimum. This operation shall include any reshaping and wetting required to obtain proper compaction. All soft or otherwise unsuitable material shall be removed and replaced with suitable material.

C. Trench Excavation

1. Trench excavation shall consist of the removal of materials necessary for the construction of water, sewer, and other pipelines and all appurtenant facilities including manholes, inlets, headwalls, collars, concrete saddles, piers and pipe protection called for on the Drawings.
2. Excavation for pipelines shall be made in open cut unless shown otherwise on the Drawings. Trenches shall be cut true to the lines and grades shown on the Drawings or established by the Engineer on the ground. The banks of trenches shall be cut in vertical, parallel planes equidistant from the pipe centerline. From an elevation 12 inches above the top of the pipe to the bottom of the trench, the horizontal distance between vertical planes for different sizes of pipe shall not exceed those shown on the Drawings. The bottom of the trench shall be cut carefully to the required grade of the pipe except where bedding materials or cradles are shown, in which case the excavation shall extend to the bottom of the bedding or cradles as shown on the Drawings or specified in these Contract Documents.
3. Bell holes for bell and spigot pipe and/or mechanical joint pipe shall be excavated at proper intervals so the barrel of the pipe will rest for its entire length upon the bottom of the trench. Bell holes shall be large enough to permit proper installation of all joints in the pipe. Bell holes shall not be excavated more than 10 joints ahead of pipe laying. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or granular embedment when the pipe is jointed.
4. Unless otherwise specified herein or shown on the Drawings, wherever pipe trenches are excavated below the elevation shown on the Drawings, the Contractor, at his own expense, shall fill the void thus made to the proper grade with Class B concrete or with compacted layers of crushed rock or sand conforming to the requirements specified here for backfill.

3. FILLS AND EMBANKMENTS

- A. Fills and embankments shall consist of all earth fills except backfills in trenches or around structures. Unless special material is specified or shown on the Drawings, material for fills and embankments shall consist of excavated material from structures or of a mixture of such excavated materials and materials borrowed from other sources by the Contractor. All material used for fills and embankments shall be free from wood, vegetable matter, debris, soft or spongy earth or clay, large rock, or other objectionable material and shall be acceptable to the Engineer.
- B. Materials shall be placed in the fill or embankment in successive layers 8 inches or less in thickness before compaction, each layer being approximately horizontal and extending to the full limit of the required cross section. Each layer shall be compacted at optimum moisture content of between 1% below or 2% above optimum, and shall be compacted to not less than 95 percent Standard Proctor, ASTM D698. The process shall be repeated for each layer of material until the fill or embankment conforms to the plan lines, grades, and cross sections.
- C. The area over which the fill or embankment is to be constructed shall first be cleared of all vegetation, debris, and other objectionable material and, if the ground is in a loose, uncompacted condition, it shall be compacted to a minimum 95 percent density determined as specified herein.
- D. No material shall be placed beyond the sloping lines of embankment unless so ordered by the Engineer. Material allowed to be placed beyond the lines of embankment shown on the Drawings will be compacted as required above unless otherwise authorized by the Engineer.
- E. Material for embankments or roadway fills shall be placed in 6-inch maximum lifts and shall be compacted by rolling with power rollers weighing not less than 10 tons, with sheepsfoot rollers,

with vibrating rollers, or with pneumatic tire rollers, as required to accomplish the work. While and as each layer is deposited, water shall be applied in sufficient amount to ensure optimum moisture to secure the compaction specified.

- F. The use of trucks, carryalls, scrapers, tractors, or other heavy hauling equipment shall not be considered as rolling in lieu of rollers, but the traffic of such hauling equipment shall be distributed over the fill in such a manner as to make the use of the compaction afforded thereby as an addition to compaction by the use of rollers.
- G. On subgrades for all roadbeds and parking areas, the density for the top 6 inches of the finished subgrade shall be equal to not less than 100 percent density as determined by Standard Proctor ASTM D698. When field tests show failure to meet the density requirement, the subgrade shall be loosened by disking, harrowing or other approved methods to a depth of not less than 6 inches, then reshaped and recompact as indicated in this paragraph.

3.04 DISPOSAL OF WASTE AND UNSUITABLE MATERIALS

- A. All materials removed by excavation, which are suitable for the purpose as approved by the geotechnical Engineer, shall be used to the extent possible for backfilling pipe trenches, foundations, and footings and for making embankment fills or for such other approved purposes. All material non-suitable for such purposes, including but not limited to rock debris, shall be considered as waste materials and the disposal thereof shall be made by the Contractor. All on-site disposal of waste materials shall be made in a manner and at locations approved by the Engineer.
- B. Waste materials shall be spread in uniform layers and neatly leveled and shaped. Spoil banks shall be provided with sufficient and adequate openings to permit surface drainage of adjacent lands.
- C. Unsuitable materials, consisting of wood, vegetable matter, debris, soft or spongy clay, peat, and other objectionable material so designated by the Engineer shall be removed from the work site and disposed of by the Contractor. Burning of brush shall be permitted on site only at the approval of the owner. Contractor shall obtain the necessary burning permit from the applicable agency for the burning site and shall provide a copy of the permit showing date of expiration to the owner at least five days before any burning is to take place. Contractor shall comply with all regulations of the applicable burning permit.

3.05 FINAL GRADING

- A. After other earthwork operations have been completed, the sites of all structures, building pads, roads, and embankments shall be graded within the limits and to the elevations shown on the Drawings. Grading operations shall be so conducted that materials shall not be removed or loosened beyond the required limits. The finished surfaces shall be left in smooth and uniform planes such as are normally obtainable from the use of hand tools. If the Contractor is able to obtain the required degree of evenness by means of mechanical equipment he will not be required to use hand labor methods. Slopes and ditches shall be neatly trimmed and finished to slopes shown on the Drawings.
- B. Unless otherwise specified or shown on the Drawings, all finished ground surfaces shall be graded and dressed to present a surface varying not more than plus or minus 0.10 foot as regards local humps or depressions.

END OF SECTION

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**SECTION 31 22 19
SPREADING AND GRADING TOPSOIL**

PART 1 – GENERAL

1. WORK INCLUDED
 - A. Place finish grade and compact topsoil.
2. PROTECTION
 - A. Prevent damage to existing trees to remain, benchmarks, pavement, and utility lines. Correct damage at no cost to the Owner.
3. QUALITY ASSURANCE
 - A. The Owner shall employ a qualified testing laboratory to observe this work and test materials as required by the geotechnical Engineer.

PART 2 – PRODUCTS

1. MATERIALS
 - A. Provide topsoil acceptable to the project geotechnical Engineer.
 - B. Topsoil shall be free of live Bermuda grass roots, stones and roots over 1 inch diameter and other foreign matter. Use topsoil stockpiled on site if conforming to these requirements. If inadequate topsoil exists on site, contractor will be responsible for providing additional topsoil.

PART 3 – EXECUTION

1. PLACING TOPSOIL
 - A. Place topsoil in areas where seeding, sodding, and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:
 1. 12 inches for seeded or sodded areas or groundcover beds.
 2. 24 inches for shrub beds or tree pits.
 - B. Use topsoil in relatively dry state. Place during dry weather.
 - C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.
 - D. Remove stone, roots, grass, weeds, debris and other foreign material while spreading.
 - E. Manually spread topsoil around trees and plants to prevent damage which may be caused by grading equipment.
 - F. Lightly compact placed topsoil.
2. CLEAN-UP
 - A. Upon completion of work of this Section, clean up and leave area free of debris, excess material, and equipment.
 - B. Any excess earth shall be removed from the area by the contractor, who shall properly dispose of the material.

END OF SECTION

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SECTION 31 50 00 EXCAVATION SUPPORT & PROTECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This work shall consist of soil preparation, application and incorporation of materials, and mulching of areas to be seeded and protected or sodded.
- B. Areas, not paved, that have been disturbed by grading trenching, or other construction operations, and such other areas as directed by the Engineer shall be seeded and mulched or sodded. Sodding shall be done only as shown on the plans or as directed by the Owner or Engineer.
- C. This includes areas disturbed by prior work if said work is completed prior to the seeding operation. Areas outside the construction work area which are disturbed due to the Contractor's negligence or solely for his convenience shall be shaped and seeded at his expense.
- D. The work to be performed consists of the furnishing of all materials, equipment, tools, supplies, services and labor to complete the work described in these specifications and contract documents.

1.02 PAYMENT

- A. Unless otherwise specified in the Proposal or Special Provisions, payment will be made at the contract unit price per square yard for seeding.
- B. The quantity of seeding to be paid for will be actual number of square yards measured along the surface of the ground, which have been completed and accepted. No separate measurement will be made for top-dressing and overseeding.

1.03 MAINTENANCE

- A. The Contractor shall water, mow, and otherwise maintain all sodded or seeded areas until final acceptance of the contract.
- B. All sodded areas shall be kept thoroughly moist for at least 2 weeks after sodding.
- C. Damaged areas shall be restored prior to final acceptance. No additional payment will be allowed for this work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fertilizer
 - 1. Fertilizer shall be 12-12-12 and shall be applied at the rate of 20 pounds per 1000 square feet of area.
- B. Agricultural Ground Limestone

1. Agricultural ground limestone with a minimum total neutralizing power of 90 and at least 40 percent passing a No. 100 sieve, and at least 95 percent passing a No. 8 sieve, is considered standard and shall be applied at the rate of 100 pounds per 1000 square feet of area. Agricultural ground limestone shall be utilized only if specified in the Proposal or on the plans.

C. Seed Mixture

1. The following seed mixture shall be used unless otherwise specified: 100% Finelawn Turf Type Tall Fescue having the following characteristics - Draught, insect, and disease resistant, good in shade, best lawn grass available.
2. The seed shall be sown at a rate of six to eight (6-8) pounds per one thousand (1,000) square feet or 264 to 352 pounds per acre.

D. Mulch

1. All newly seeded areas shall be mulched with clean straw with an emulsion type tie-down applied, with extreme care to prevent any splash on adjacent structures, etc.

E. Sod

1. Unless otherwise specified in the contract, sod shall be well-rooted Kentucky Bluegrass or Finelawn Turf Type Tall Fescue. The sod shall be completely free from noxious weeds and reasonably free from other objectionable grasses and weeds and stones or other foreign materials detrimental to the development and future maintenance of the sod.

PART 3 EXECUTION

3.01 PREPARATION

- A. Prior to seeding or sodding operations, the topsoil shall be redistributed over all affected areas to a minimum depth as indicated in 31 22 19 Spreading and Grading Topsoil. If the contractor cannot obtain this quantity on site, he/she shall import the required amount at no additional cost to the Owner.
- B. All areas to be seeded or sodded shall be free of rock and other foreign material one (1) inch or greater in any dimension and shall be satisfactorily shaped and finished.
- C. Fertilizer and liming materials shall be applied separately but may be disked or otherwise incorporated into the soil in the same operation.
- D. If the surface becomes compacted prior to seeding or sod placement, it shall be re-disked or loosened to a friable condition before seeding or sod placement.
- E. If the fertilizer or lime has been washed or otherwise lost from the seed bed, the areas so depleted shall be re-treated, as directed by the Engineer, at no cost to the project.

3.02 INSTALLATION

- A. The seed shall be thoroughly mixed and then evenly sown over the prepared areas at the rate of 6 to 8 pounds per 1000 square feet. The seed shall be sown dry or hydraulically.
- B. Immediately after sowing, the area shall be raked, dragged or otherwise treated so as to cover the seed the depth of approximately 1/4 inch.
- C. The operation of seed sowing shall not be performed when the ground is frozen or muddy,

or when soil or weather conditions would prevent the proper soil preparation and subsequent operations as specified.

- D. Within 48 hours after any given area is seeded, vegetative mulching material shall be evenly placed over all seeded areas at the rate of approximately 2 tons per acre when seeding is performed between the dates of March 15 and October 15, and at the approximate rate of 3 tons per acre when seeding is allowed to be performed between the dates of October 15 and March 15 of the succeeding year. No permanent seeding will be allowed in the period from December 1 through February 29.
- E. Prior to cutting, the grass shall be mowed to a height of no more than 3 inches and the mowed area shall be raked to eliminate all clippings, cuts and trash.
- F. All sod must be delivered to the project and placed within 24 hours after being cut.
- G. The sod bed shall be graded to such elevation so the sod, when in place, shall be flush with any adjacent seeded or turfed area, pavement, curb, or other structure, except when otherwise directed.
- H. Sod shall not be placed when the atmospheric temperature is below 32 degrees F, or when the sod or sod bed is frozen, or during other weather or soil conditions detrimental to the work.
- I. The sod shall be carefully placed by hand so that each section closely joins the adjacent sections without overlapping. All open spaces or gaps shall be plugged with sod cut to the appropriate size and shape.
- J. When placed on slopes, the sod shall be laid with the long edges of the strips parallel to the contour starting at the bottom of the slope. Successive strips shall be neatly matched, and all joints staggered or broken. The sodding shall be carried at least 18 inches beyond the top of the slope to prevent surface water from undermining the sod.
- K. When placed on slopes 2:1 or steeper and 6 feet or more in height, and in all sodded ditches, each strip or section of sod shall be staked securely with at least 2 wood stakes or wire staples no more than 2 feet apart and driven flush with the surface. The stakes or staples will be subject to approval by the Engineer on the project.
- L. The sod, after it is placed, shall be wetted thoroughly and tamped sufficiently with approved tampers to incorporate the roots into the sod bed and to ensure tight joints between the sections or strips.

END OF SECTION

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SECTION 32 12 16 BITUMINOUS PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. The work to be performed consists of the furnishing of all tools, supplies, services, labor, supervision and installation, complete, of the bituminous pavement, curbs, and drives as shown on the plans, profiles and details accompanying the specifications and contract documents.
- B. This work shall consist of one or more courses of bituminous mixture constructed on the prepared foundation in accordance with these specifications and the special provisions, in reasonably close conformity with the lines, grades, thicknesses and Typical Cross Section shown on the plans, within the tolerances specified or established.
- C. Prior to actual paving, the prepared subgrade shall be proof rolled using a fully loaded tandem dump truck. The truck shall be loaded to the maximum allowable gross weight (34,000 Pounds + 10% if loaded with natural resources such as sand or crushed aggregates). The test shall be witnessed by a qualified geotechnical technician. No paving shall commence until the qualified geotechnical technician's recommendation is approved by the owner's representative (the Engineer).
- D. The methods employed in performing the work and all equipment, tools, and other appliance used in handling materials and executing any part of the work shall be subject to approval before the work is started and whenever found unsatisfactory shall be changed and improved as required. All equipment and tools and the plant must be maintained in a satisfactory working condition. The equipment shall, as a minimum, include:
 - 1.a bituminous concrete mixing plant;
 - 2.a bituminous concrete paver;
 - 3.sufficient rollers;
 - 4.sufficient vehicles for transporting mixtures;
 - 5.straightedges and all other necessary small tools and equipment

1.02 BITUMINOUS MIXING PLANT REQUIREMENTS

- A. Requirements for All Plants - The plant shall of sufficient capacity and so coordinated to adequately handle the proposed construction, and shall be maintained in good mechanical condition at all times.
- B. The plant shall conform to the current, requirements of the current TDOT "Standard Specifications for Road and Bridge Construction".

3. EQUIPMENT

- A. Hauling Equipment - All trucks shall be equipped with covers of sufficient size to completely cover the bituminous material, and all covers shall be securely fastened in place before the truck leaves the plant. When the length of haul tends to cause excessive loss of heat by the mixture, truck beds shall be insulated to maintain proper temperature. The Contractor shall observe all legal load limits on roads to and from the work site, or he shall be responsible for obtaining the proper permits for excess load weights.
- B. Trucks used for hauling bituminous mixtures shall have tight, clean, and smooth metal beds that

have been sprayed with a minimum amount of soap emulsion, paraffin oil, or other mixture to prevent the mixture from adhering to the beds.

C. Pavers

1. Bituminous concrete pavers shall be self-propelled and shall be capable of spreading and finishing the mixture to the depths, lines, and grades specified.
2. The screed or strike-off assembly shall be easily adjustable to the required crown, and shall be designed to lay bituminous concrete in widths from 8 to 12 1/2 feet in increments of one foot. Satisfactory means shall be provided for heating the screed uniformly throughout its length.
3. The screed or strike-off assembly shall operate by cutting or crowding the mixture without tearing or pulling the mixture. Pavers shall be equipped with hoppers and distributing screws of the reversing type that will place the material evenly in front of the screeds.
4. Mechanical or electronic devices such as equalizing runners, straightedge runners, eveners, or other compensating devices shall be provided to confine the edges to true lines and adjust the grade line so that minor changes in grade elevations will not be reflected in the finished surface of the course.
5. Pavers shall be equipped with blending or joint leveling devices for smoothing and adjusting all longitudinal joints between adjacent lanes of bituminous concrete.
6. Pavers shall be equipped with a quick and efficient steering mechanism and shall have both forward and reverse traveling speeds.

D. Rollers

1. All rollers shall be self-propelled and free from backlash, loose link motion, and faulty steering, and shall be maintained in first class mechanical condition.
2. Three-wheel steel wheel rollers shall weigh not less than 10 tons, with a minimum rear wheel compression of 325 pounds per linear inch of tire width. Three axle steel wheel tandem rollers shall weigh not less than 12 tons. Two axle steel wheel tandem rollers shall weigh not less than 8 tons.
3. Vibratory rollers shall be of a design and weight, and shall be operated at a frequency that will produce the specified compaction without damage to the mat.
4. Rollers used for the initial or breakdown rolling shall be equipped with rolling wheels having a diameter of 40 inches or more.

E. Small Tools and Portable Equipment - The Contractor shall provide and maintain in a satisfactory workable condition, all necessary small tools and portable equipment required for satisfactory execution of the work. Such equipment shall include, when needed, asphalt kettle, surface heater, burners, or torches for heating hand tools, pouring pots, paint brushes, lutes, rakes, brooms, tamps, straightedges, templates, or other devices necessary for routine checks of finishing requirements.

F. The straightedges shall be of standard 10 foot length and each shall be equipped with handles extending to a height of 3 feet. They shall be available on the project before the work is started and all times thereafter until completion of the work.

1.04 MEASUREMENT AND PAYMENT

- A. The term "ton" will mean the short ton consisting of 2000 pounds avoirdupois. Except as otherwise noted, all scales shall be furnished by the Contractor. The scales shall be suitable for the purposes intended and shall conform to the tolerances and specifications of the Tennessee Division of Weights and Measures or as otherwise required.
- B. The Contractor shall furnish all materials equipment, tools, supplies, services, labor and supervision to install and perform all work necessary to complete all items under this section as indicated in the specifications at the lump sum stated in the proposal, for the items set forth herein
- C. Bituminous Material- Unless otherwise provided, Bituminous Material for base course, leveling courses, and surface courses will be measured in tons and shall be weighed in accordance with the requirements in "A" above.
- D. Bituminous Tack Coat - Only the actual quantity of undiluted SS-1, SS-1h, CSS-1, or AE 60 furnished will be measured for payment as the cost of the water for dilution will be considered incidental to the contract unit price for Bituminous Tack Coat.
- E. Bituminous Prime Coat - is not a pay item.
- F. Unless otherwise specified in the Proposal, the accepted quantities will be paid for as follows:

Bituminous Mixture for Leveling and Wedging	Ton
Bituminous Material for Tack Coat	Ton
Bituminous Concrete Surface Class I	Ton
Bituminous Concrete Base Class I	Ton

PART 2 PRODUCTS

2.01 MATERIALS

- A. All materials shall conform to the TDOT "Standard Specifications for Road and Bridge Construction".
- B. Composition of Mixtures - Shall conform to TDOT. requirements except that for the walkways and bike paths, where a modified bituminous concrete base course is called for, the amount of smaller aggregates shall be increased so as to provide a smooth well sealed surface.

PART 3 EXECUTION

3.01 WEATHER LIMITATIONS

- A. Bituminous plant mix shall not be placed on any wet surface, when the ambient air temperatures on the project are less than those specified in the following table, or when weather conditions otherwise prevent the proper handling or finishing of the bituminous mixtures, unless written approval of the construction manager is provided.

Bituminous Mixtures	Temperature for Placing
---------------------	-------------------------

Sand Asphalt Type I or II	60 Degrees F
Open-graded Friction Courses	50 Degrees F
Bituminous Concrete Surface 1" thick or less	45 Degrees F
Bituminous Concrete Surface thicker than 1"	40 Degrees F
Bituminous Concrete	
Base and Binder	35 Degrees F
Leveling and Wedging	40 Degrees F
Bituminous Mixture for Shoulders	40 Degrees F

3.02 APPLICATION OF BITUMINOUS TACK COATS-WHEN REQUIRED

- A. Existing surfaces shall be thoroughly cleaned of all dirt and other matter foreign to the surface being treated.
- B. Sweeping shall extend beyond the edges of the surface being treated to ensure a thorough cleaning of the full width to be treated.
- C. Tack coat shall be applied at the rate specified on the Plans or in the Proposal or as directed by the Engineer when conditions justify variations in the rates of application. Unless directed, the contractor shall construct bituminous material for: tack coat at the rate of 0.80 pounds per square yard.
- D. The bituminous material shall be heated to the proper laying temperature for the particular type and grade being used.
- E. Tack coat shall not be applied to wet surfaces.
- F. Tack coat will only be required when, in the opinion of the Engineer, there is sufficient dirt, or foreign material on the preceding pavement course to prevent good bonding between courses. Tack coat shall be used for an overlay onto existing pavement.
- G. When SS-1, AA-1h, or AE 60 is furnished for tack material, it shall be diluted with an equal quantity of clean water from an approved source, shall be thoroughly mixed prior to application, and shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before the bituminous mixture is placed.
- H. The application rate shall be 0.8 pound (0.1 gallon) per square yard of diluted SS-1, SS-1h, CSS-1h, or AE-60.

3.03 APPLICATION OF BITUMINOUS PRIME COAT-WHEN REQUIRED

- A. Bituminous prime coat shall consist of the application of liquid bituminous material, having penetrating properties, to granular type bases. The prime coat shall not be applied to wet surfaces.
- B. The prime coat shall be applied at the rate specified on the plans or in the specifications or as directed by the Engineer when conditions justify variations in the rates of application.
- C. The bituminous material shall be heated to the proper temperature for the particular type and grade being used.

- D. The number of applications of the prime coat shall be as directed by the Engineer. The material shall be applied under pressure. Hand pouring shall not be used except for special conditions, and then only when approved by the Engineer.
- E. The prime coat shall be allowed to cure for at least 36 hours before being covered by the bituminous course unless otherwise approved by the Engineer.
- F. The bituminous prime coat material shall be of the type and grade specified in TDOT specifications and shall meet the requirements of Section 407 and 806 of those specifications.
- G. The application rate shall be as specified in the TDOT specifications.

3.04 SPREADING AND FINISHING

- A. Except as hereinafter provided, the mixtures shall be spread by means of a paver meeting requirements of Section 1.03 (C).
- B. The paver shall spread the mixtures without tearing the surface, and shall strike a finish true to the required cross section, uniform in density and texture, and free of irregularities. The use of small tools shall be held to a minimum.
- C. The speed of the paver shall be adjusted, as directed, to that speed which provides the best results for the type of mixture being used and which coordinates satisfactorily with the rate of delivery of mixture to the paver so as to provide a uniform rate of placement with out intermittent operation of the paver.
- D. Each course, immediately after striking off and before rolling, will be visually inspected for irregularities and shall be corrected as necessary. All fat sandy droppings shall be removed and all fat areas occurring in any course shall be removed and replaced with satisfactory material.
- E. Any portion of a pavement course that is defective in compaction (including aggregate base courses), mixture composition, or that does not otherwise comply with these specifications shall be removed immediately, as directed, and replaced with suitable material, placed in accordance with these specifications, all at the Contractor's expense.
- F. Irregularities in alignment of the outside edge of the edges of longitudinal joints shall be corrected by the addition or removal of material before the edges are compacted.
- G. Over areas where machine spreading is impracticable, due to irregularities or obstruction, the mixture may be spread by approved hand methods as directed. The materials shall be deposited in quantities no greater than can be properly handled by the workman spreading and raking. The material shall be uniformly distributed to the depth necessary to provide the required compacted depth, and at a rate not to exceed that which can be properly handled by the rakers. The material shall be carefully placed by skilled workmen to avoid segregation and to reduce to a minimum the amount of back patching required during compaction. All coarse aggregate particles brought to the surface by raking shall be discarded.

- H. The surface of each course shall be checked with templates, straightedges, and/or stringlines, and all irregularities exceeding the allowable tolerances shall be corrected.
- I. All surface courses shall be spread with allowances made for compacting to finish approximately 3/8 inch above forms, gutters, or similar construction, when fully compacted.
- J. Suitable burners or torches for heating small tools shall be provided at all times during the spreading and finishing operations. The use of diesel fuel, or other solvents that would be detrimental to the mixture, for cleaning small tools during placing and spreading operations will not be permitted.

3.05 JOINTS

- A. When curbs, gutters, or pavement, and other structures adjoin the new construction, all contact surfaces of the existing construction shall be coated by painting with bituminous material.
- B. Cold Joints of previously laid new construction, both longitudinal and transverse, shall also be coated in the same manner when required.
- C. When the pavement construction consists of 2 or more courses, each course shall be laid in such widths as will provide for offsetting the longitudinal joint in the succeeding courses 6 inches minimum from that in the course being laid. Adjacent surfaces shall be maintained clean of all loose materials so the joint shall receive full compaction from the rollers.
- D. The placing and spreading of all courses shall be as nearly continuous as possible, keeping the number of joints to a minimum. When it is necessary to make a transverse joint, the finishing machine shall complete spreading material at hand and the course shall be adjusted to a straight line, square with the pavement. Before work is resumed, the joint shall be cut back on the previous run so as to expose the full depth of the course. The joint shall be painted with a thin coat of bituminous material just prior to laying the fresh mixture, when directed. All excess material shall be removed. The joint shall be checked with a straightedge at intervals of 2 feet or less immediately after initial rolling and any irregularities shall be immediately corrected either by additional raking or by addition of hot material or both. All coarse aggregate particles brought to surface by raking shall be discarded. Rolling of joints shall be performed in a manner to compress the material and produce as tight a joint as possible.

3.06 COMPACTING

- A. Rollers shall meet the requirements of Section 1.03 (D).
- B. Initial or breakdown rolling shall consist of at least one complete coverage of the course being laid by a 3-wheel roller or a tandem roller weighing 10 tons or more and shall be performed immediately after completion of spreading and finishing.
- C. Intermediate rolling, unless otherwise provided or permitted, shall consist of at least 3 complete coverages with a 2-axle tandem roller weighing 8 tons or more.
- D. Intermediate rolling shall follow breakdown rolling as closely as possible without undue displacement, cracking, or shoving of the material.

3.07 MAINTENANCE AND PROTECTION

- A. All foreign materials shall be removed from the surface of each course before rolling or before placing the covering courses.
- B. The Contractor shall provide necessary flagmen, barricades, warning signs and flashing arrows when required, to protect all sections of newly compacted base, binder and surfaces from traffic until each is hardened sufficiently to bear traffic without undue distortion and to provide for public convenience and safety.

END OF SECTION

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Performance Bond

CONTRACTOR:

(Name, legal status and address)

Brindley Construction, LLC
747 W. College Street
Pulaski, TN 38478

SURETY:

(Name, legal status and principal place of business)

Western Surety Company
151 N Franklin St.
Chicago, IL 60606

OWNER:

(Name, legal status and address)

City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable

CONSTRUCTION CONTRACT

Date: December 4, 2023

Amount: \$ 4,882,000.00

Description: Renovations to Fire Station #1
(Name and location) 1000 South Garden Street
Columbia, TN 38401

BOND

Date: December 4, 2023

(Not earlier than Construction Contract Date)

Amount: \$ 4,882,000.00

Modifications to this Bond:

☒ None

☐ See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)
Brindley Construction, LLC

SURETY

Company: (Corporate Seal)
Western Surety Company

Signature:

Name
and Title:


Ronnie Brindley
President

Signature:

Name
and Title:


Mike LeCroy
Attorney-In-Fact

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

LeCroy & Associates, Inc.
16 Office Park Circle, Suite 10
Birmingham, AL 35223
205-879-4009

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)
Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____
(Corporate Seal)

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address _____

Signature: _____
Name and Title: _____
Address _____

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Payment Bond

CONTRACTOR:

(Name, legal status and address)
Brindley Construction, LLC
747 W. College Street
Pulaski, TN 38478

SURETY:

(Name, legal status and principal place of business)
Western Surety Company
151 N Franklin St.
Chicago, IL 60606

OWNER:

(Name, legal status and address)
City of Columbia, TN
700 North Garden Street
Columbia, TN 38401

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONSTRUCTION CONTRACT

Date: December 4, 2023

Amount: \$ 4,882,000.00

Description: Renovations to Fire Station #1
(Name and location) 1000 South Garden Street
Columbia, TN 38401

BOND

Date: December 4, 2023

(Not earlier than Construction Contract Date)

Amount: \$ 4,882,000.00

Modifications to this Bond: ☒ None

☐ See Section 18

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)
Brindley Construction, LLC

SURETY

Company: (Corporate Seal)
Western Surety Company

Signature: 
Name: Ronnie Brindley
and Title: President

Signature: 
Name: Mike LeCroy
and Title: Attorney-In-Fact

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

LeCroy & Associates, Inc.
16 Office Park Circle, Suite 10
Birmingham, AL 35223
205-879-4009

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)
Nuber Architecture, LLC
1069 Rolling Fields Circle
Columbia, TN 38401

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanics' lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____
(Corporate Seal)

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address _____

Signature: _____
Name and Title: _____
Address _____

Western Surety Company

POWER OF ATTORNEY APPOINTING INDIVIDUAL ATTORNEY-IN-FACT

Know All Men By These Presents, That WESTERN SURETY COMPANY, a South Dakota corporation, is a duly organized and existing corporation having its principal office in the City of Sioux Falls, and State of South Dakota, and that it does by virtue of the signature and seal herein affixed hereby make, constitute and appoint

Jerry Le Croy, Mike Le Croy, Individually

of Birmingham, AL, its true and lawful Attorney(s)-in-Fact with full power and authority hereby conferred to sign, seal and execute for and on its behalf bonds, undertakings and other obligatory instruments of similar nature

- In Unlimited Amounts -

and to bind it thereby as fully and to the same extent as if such instruments were signed by a duly authorized officer of the corporation and all the acts of said Attorney, pursuant to the authority hereby given, are hereby ratified and confirmed.

This Power of Attorney is made and executed pursuant to and by authority of the Authorizing By-Laws and Resolutions printed at the bottom of this page, duly adopted, as indicated, by the shareholders of the corporation.

In Witness Whereof, WESTERN SURETY COMPANY has caused these presents to be signed by its Vice President and its corporate seal to be hereto affixed on this 9th day of November, 2023.



WESTERN SURETY COMPANY

Larry Kasten, Vice President

State of South Dakota }
County of Minnehaha } ss

On this 9th day of November, 2023, before me personally came Larry Kasten, to me known, who, being by me duly sworn, did depose and say: that he resides in the City of Sioux Falls, State of South Dakota; that he is a Vice President of WESTERN SURETY COMPANY described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to the said instrument is such corporate seal; that it was so affixed pursuant to authority given by the Board of Directors of said corporation and that he signed his name thereto pursuant to like authority, and acknowledges same to be the act and deed of said corporation.

My commission expires

March 2, 2026



M. Bent, Notary Public

CERTIFICATE

I, L. Nelson, Assistant Secretary of WESTERN SURETY COMPANY do hereby certify that the Power of Attorney hereinabove set forth is still in force, and further certify that the By-Law and Resolutions of the corporation printed below this certificate are still in force. In testimony whereof I have hereunto subscribed my name and affixed the seal of the said corporation this 4th day of December, 2023.



WESTERN SURETY COMPANY

L. Nelson, Assistant Secretary

Authorizing By-Laws and Resolutions

ADOPTED BY THE SHAREHOLDERS OF WESTERN SURETY COMPANY

This Power of Attorney is made and executed pursuant to and by authority of the following By-Law duly adopted by the shareholders of the Company.

Section 7. All bonds, policies, undertakings, Powers of Attorney, or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, and Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or agents who shall have authority to issue bonds, policies, or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile.

This Power of Attorney is signed by Larry Kasten, Vice President, who has been authorized pursuant to the above Bylaw to execute power of attorneys on behalf of Western Surety Company.

This Power of Attorney may be signed by digital signature and sealed by a digital or otherwise electronic-formatted corporate seal under and by the authority of the following Resolution adopted by the Board of Directors of the Company by unanimous written consent dated the 27th day of April, 2022:

"RESOLVED: That it is in the best interest of the Company to periodically ratify and confirm any corporate documents signed by digital signatures and to ratify and confirm the use of a digital or otherwise electronic-formatted corporate seal, each to be considered the act and deed of the Company."

Go to www.cnasurety.com > Owner / Obligor Services > Validate Bond Coverage, if you want to verify bond authenticity.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Wanda McClain, HR Director, wmcclain@columbiatn.com, 931-560-1574

AGENDA ITEM TITLE: RESOLUTION NO. 23-81 - A RESOLUTION TO ACCEPT THE ESTABLISHED UPDATED OCCUPATIONAL SAFETY AND HEALTH PROGRAM PLAN, DEVISE RULES AND REGULATIONS, AND TO PROVIDE FOR A SAFETY DIRECTOR AND THE IMPLEMENTATION OF SUCH PROGRAM PLAN

RECOMMENDATION: Approve Resolution No. 23-81.

INFORMATION: The City of Columbia, in electing to update the established Program Plan, will maintain an effective and comprehensive Occupational Safety and Health Program Plan for its employees as required by TOSHA. The Plan is designed to provide a safe and healthful place of employment. The Plan is required to be updated every seven years and the last update was August 11, 2016. The Organizational Chart was also updated as requested by TOSHA.

**A RESOLUTION TO ESTABLISH AN UPDATED OCCUPATIONAL SAFETY AND HEALTH PROGRAM PLAN,
DEVISE RULES AND REGULATIONS, AND TO PROVIDE FOR A SAFETY DIRECTOR AND THE
IMPLEMENTATION OF SUCH PROGRAM PLAN**

WHEREAS, in compliance with Public Chapter 561 of the General Assembly of the State of Tennessee for the year 1972, the City of Columbia hereby updates the Occupational Safety and Health Program Plan for our employees; and

WHEREAS, due to various changes in subsequent years, it has become necessary to amend the program plan to comply with more recent state requirements.

NOW, THEREFORE, BE IT RESOLVED BY THE City of Columbia, as follows:

SECTION 1: The following Occupational Safety and Health Program Plan is hereby adopted by the City of Columbia, hereby deleting any previously adopted plan.

TITLE:

This section shall be known as "The Occupational Safety and Health Program Plan" for the employees of the City of Columbia.

PURPOSE:

The City of Columbia in electing to update the established Program Plan will maintain an effective and comprehensive Occupational Safety and Health Program Plan for its employees and shall:

- 1) Provide a safe and healthful place and condition of employment that includes:
 - a) Top Management Commitment and Employee Involvement;
 - b) Continually analyze the worksite to identify all hazards and potential hazards;
 - c) Develop and maintain methods for preventing or controlling the existing or potential hazards; and
 - d) Train managers, supervisors, and employees to understand and deal with worksite hazards.
- 2) Acquire, maintain, and require the use of safety equipment, personal protective equipment, and devices reasonably necessary to protect employees.
- 3) Record, keep, preserve, and make available to the Commissioner of Labor and Workforce Development, or persons within the Department of Labor and Workforce Development to whom such responsibilities have been delegated, adequate records of all occupational accidents and illnesses and personal injuries for proper evaluation and necessary corrective action as required.
- 4) Consult with the Commissioner of Labor and Workforce Development with regard to the adequacy of the form and content of records.
- 5) Consult with the Commissioner of Labor and Workforce Development, as appropriate, regarding safety and health problems that are considered to be unusual or peculiar and are such that they cannot be achieved under a standard promulgated by the State.

6) Provide reasonable opportunity for the participation of employees in the effectuation of the objectives of this Program Plan, including the opportunity to make anonymous complaints concerning conditions or practices injurious to employee safety and health.

7) Provide for education and training of personnel for the fair and efficient administration of occupational safety and health standards, and provide for education and notification of all employees of the existence of this Program Plan.

COVERAGE:

The provisions of the Occupational Safety and Health Program Plan for the employees of the City of Columbia shall apply to all employees of each administrative department, commission, board, division, or other agency whether part-time or full-time, seasonal or permanent.

STANDARDS AUTHORIZED:

The Occupational Safety and Health standards adopted by the City of Columbia are the same as, but not limited to, the State of Tennessee Occupational Safety and Health Standards promulgated, or which may be promulgated, in accordance with Section 6 of the Tennessee Occupational Safety and Health Act of 1972 (T.C.A. Title 50, Chapter 3).

VARIANCES FROM STANDARDS AUTHORIZED:

Upon written application to the Commissioner of Labor and Workforce Development of the State of Tennessee, we may request an order granting a temporary variance from any approved standards. Applications for variances shall be in accordance with Rules of Tennessee Department of Labor and Workforce Development Occupational Safety and Health, VARIANCES FROM OCCUPATIONAL SAFETY AND HEALTH STANDARDS, CHAPTER 0800-01-02, as authorized by T.C.A., Title 50. Prior to requesting such temporary variance, we will notify or serve notice to our employees, their designated representatives, or interested parties and present them with an opportunity for a hearing. The posting of notice on the main bulletin board shall be deemed sufficient notice to employees.

ADMINISTRATION:

For the purposes of this resolution, the Benefits and Safety Administrator is designated as the Safety Director of Occupational Safety and Health to perform duties and to exercise powers assigned to plan, develop, and administer this Program Plan. The Safety Director shall develop a plan of operation for the Program Plan in accordance with the Rules of the Tennessee Department of Labor and Workforce Development Occupational Safety and Health, SAFETY, AND HEALTH PROVISIONS FOR THE PUBLIC SECTOR, CHAPTER 0800-01-05, as authorized by T.C.A., Title 50.

FUNDING THE PROGRAM PLAN:

Sufficient funds for administering and staffing the Program Plan under this resolution shall be made available as authorized by the City of Columbia.

SEVERABILITY:

SECTION 2. BE IT FURTHER RESOLVED that if any section, sub-section, sentence, clause, phrase, or portion of this resolution is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed separate, distinct, and independent provision, and such holding shall not affect the validity of the remaining portions hereof.

AMENDMENTS, ETC:

SECTION 3. BE IT FURTHER RESOLVED that this resolution shall take effect from and after the date it shall have been passed, properly signed, certified, and has met all other legal requirements, and as otherwise provided by law, the general welfare of the City of Columbia requiring it.

PASSED AND ADOPTED BY THE CITY OF COLUMBIA, TENNESSEE

This the _____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

PLAN OF OPERATION FOR THE OCCUPATIONAL SAFETY AND HEALTH
PROGRAM PLAN FOR THE EMPLOYEES OF THE CITY OF COLUMBIA.

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I. PURPOSE AND COVERAGE

The purpose of this plan is to provide guidelines and procedures for implementing the Occupational Safety and Health Program Plan for the employees of the City of Columbia.

This plan applies to all employees, part-time or full-time, seasonal or permanent.

The City of Columbia in electing to update and maintain an effective Occupational Safety and Health Program Plan for its employees,

- a. Provide a safe and healthful place and condition of employment.
- b. Require the use of safety equipment, personal protective equipment, and other devices where reasonably necessary to protect employees.
- c. Make, keep, preserve, and make available to the Commissioner of Labor and Workforce Development, his designated representatives, or persons within the Department of Labor and Workforce Development to whom such responsibilities have been delegated, including the Safety Director of the Division of Occupational Safety and Health, adequate records of all occupational accidents and illnesses and personal injuries for proper evaluation and necessary corrective action as required.
- d. Consult with the Commissioner of Labor and Workforce Development or his designated representative with regard to the adequacy of the form and content of such records.
- e. Consult with the Commissioner of Labor and Workforce Development regarding safety and health problems which are considered to be unusual or peculiar and are such that they cannot be resolved under an occupational safety and health standard promulgated by the State.
- f. Assist the Commissioner of Labor and Workforce Development or his monitoring activities to determine Program Plan effectiveness and compliance with the occupational safety and health standards.
- g. Make a report to the Commissioner of Labor and Workforce Development annually, or as may otherwise be required, including information on occupational accidents, injuries, and illnesses and accomplishments and progress made toward achieving the goals of the Occupational Safety and Health Program Plan.
- h. Provide reasonable opportunity for and encourage the participation of employees in the effectuation of the objectives of this Program Plan, including the opportunity to make anonymous complaints concerning conditions or practices which may be injurious to employees' safety and health.

II. DEFINITIONS

For the purposes of this Program Plan, the following definitions apply:

- a. COMMISSIONER OF LABOR and Workforce Development means the chief executive officer of the Tennessee Department of Labor and Workforce Development. This includes any person appointed, designated, or deputized to perform the duties or to exercise the powers assigned to the Commissioner of Labor and Workforce Development.
- b. EMPLOYER means the City of Columbia and includes each administrative department, board, commission, division, or other agency of the City of Columbia.
- c. SAFETY DIRECTOR OF OCCUPATIONAL SAFETY AND HEALTH or SAFETY DIRECTOR means the person designated by the establishing resolution, or executive order to perform duties or to exercise powers assigned so as to plan, develop, and administer the Occupational Safety and Health Program Plan for the employees of the City of Columbia.
- d. INSPECTOR(S) means the individual(s) appointed or designated by the Safety Director of Occupational Safety and Health to conduct inspections provided for herein. If no such compliance inspector(s) is appointed, inspections shall be conducted by the Safety Director of Occupational Safety and Health.
- e. APPOINTING AUTHORITY means any official or group of officials of the employer having legally designated powers of appointment, employment, or removal therefrom for a specific department, board, commission, division, or other agency of this employer.

- f. **EMPLOYEE** means any person performing services for this employer and listed on the payroll of this employer, either as part-time, full-time, seasonal, or permanent. It also includes any persons normally classified as "volunteers" provided such persons received remuneration of any kind for their services. This definition shall not include independent contractors, their agents, servants, and employees.
- g. **PERSON** means one or more individuals, partnerships, associations, corporations, business trusts, or legal representatives of any organized group of persons.
- h. **STANDARD** means an occupational safety and health standard promulgated by the Commissioner of Labor and Workforce Development in accordance with Section VI (6) of the Tennessee Occupational Safety and Health Act of 1972 which requires conditions or the adoption or the use of one or more practices, means, methods, operations, or processes or the use of equipment or personal protective equipment necessary or appropriate to provide safe and healthful conditions and places of employment.
- i. **IMMINENT DANGER** means any conditions or practices in any place of employment which are such that a hazard exists that could reasonably be expected to cause death or serious physical harm immediately or before the imminence of such hazard can be eliminated through normal compliance enforcement procedures.
- j. **ESTABLISHMENT** or **WORKSITE** means a single physical location under the control of this employer where business is conducted, services are rendered, or industrial-type operations are performed.
- k. **SERIOUS INJURY** or **HARM** means that type of harm that would cause permanent or prolonged impairment of the body in that:
 - 1. A part of the body would be permanently removed (e.g., amputation of an arm, leg, finger(s); loss of an eye) or rendered functionally useless or substantially reduced in efficiency on or off the job (e.g., leg shattered so severely that mobility would be permanently reduced), or
 - 2. A part of an internal body system would be inhibited in its normal performance or function to such a degree as to shorten life or cause a reduction in physical or mental efficiency (e.g., lung impairment causing shortness of breath).

On the other hand, simple fractures, cuts, bruises, concussions, or similar injuries would not fit either of these categories and would not constitute serious physical harm.

- l. **ACT** or **TOSH Act** shall mean the Tennessee Occupational Safety and Health Act of 1972.
- m. **GOVERNING BODY** means the County Quarterly Court, Board of Aldermen, Board of Commissioners, City or Town Council, Board of Governors, etc., whichever may apply to the local government, government agency, or utility to which this plan applies.
- n. **CHIEF EXECUTIVE OFFICER** means the chief administrative official, County Judge, County Chairman, County Mayor, Mayor, City Manager, General Manager, etc., as may be applicable.

III. EMPLOYERS RIGHTS AND DUTIES

Rights and duties of the employer shall include, but are not limited to, the following provisions:

- a. Employer shall furnish to each employee conditions of employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious injury or harm to employees.
- b. Employer shall comply with occupational safety and health standards and regulations promulgated pursuant to Section VI (6) of the Tennessee Occupational Safety and Health Act of 1972.
- c. Employer shall refrain from an unreasonable restraint on the right of the Commissioner of Labor and Workforce Development to inspect the employer's place(s) of business. The employer shall assist the Commissioner of Labor and Workforce Development in the performance of their monitoring duties by supplying or by making available information, personnel, or aids reasonably necessary to the effective conduct of the monitoring activity.
- d. Employer is entitled to participate in the development of standards by submission of comments on proposed

standards, participation in hearing on proposed standards, or by requesting the development of standards on a given issue under Section 6 of the Tennessee Occupational Safety and Health Act of 1972.

- e. Employer is entitled to request an order granting a variance from an occupational safety and health standard.
- f. Employer is entitled to protection of its legally privileged communication.
- g. Employer shall inspect all worksites to ensure the provisions of this Program Plan are complied with and carried out.
- h. Employer shall notify and inform any employee who has been or is being exposed in a biologically significant manner to harmful agents or material more than the applicable standard and of corrective action being taken.
- i. Employer shall notify all employees of their rights and duties under this Program Plan.

IV. EMPLOYEES RIGHTS AND DUTIES

Rights and duties of employees shall include, but are not limited to, the following provisions:

- a. Each employee shall comply with Occupational Safety and Health Act standards and all rules, regulations, and orders issued pursuant to this Program Plan and the Tennessee Occupational Safety and Health Act of 1972 which are applicable to his or her actions and conduct.
- b. Each employee shall be notified by the placing of a notice upon bulletin boards, or other places of common passage, of any application for a permanent or temporary order granting the employer a variance from any provision of the TOSH Act or any standard or regulation promulgated under the Act.
- c. Each employee shall be given the opportunity to participate in any hearing which concerns an application by the employer for a variance from a standard or regulation promulgated under the Act.
- d. Any employee who may be adversely affected by a standard or variance issued pursuant to the Act or this Program Plan may file a petition with the Commissioner of Labor and Workforce Development or whoever is responsible for the promulgation of the standard or the granting of the variance.
- e. Any employee who has been exposed or is being exposed to toxic materials or harmful physical agents in concentrations or at levels in excess of that provided for by any applicable standard shall be provided by the employer with information on any significant hazards to which they are or have been exposed relevant symptoms, and proper conditions for safe use or exposure. Employees shall also be informed of corrective action being taken.
- f. Subject to regulations issued pursuant to this Program Plan, any employee or authorized representative of employees shall be given the right to request an inspection and to consult with the Safety Director or Inspector at the time of the physical inspection of the worksite.
- g. Any employee may bring to the attention of the Safety Director any violation or suspected violations of the standards or any other health or safety hazards.
- h. No employee shall be discharged or discriminated against because such employee has filed any complaint or instituted or caused to be instituted any proceeding or inspection under or relating to this Program Plan.
- i. Any employee who believes that he or she has been discriminated against or discharged in violation of subsection (h) of this section may file a complaint alleging such discrimination with the Safety Director. Such employee may also, within thirty (30) days after such violation occurs, file a complaint with the Commissioner of Labor and Workforce Development alleging such discrimination.
- j. Nothing in this or any other provisions of this Program Plan shall be deemed to authorize or require any employee to undergo medical examination, immunization, or treatment for those who object thereto on religious grounds, except where such is necessary for the protection of the health or safety of others or when a medical examination may be reasonably required for performance of a specific job.
- k. Employees shall report any accident, injury, or illness resulting from their job, however minor it may seem to be, to their supervisor or the Safety Director within twenty-four (24) hours after the occurrence.

V. ADMINISTRATION

- a. The Safety Director of Occupational Safety and Health is designated to perform duties or to exercise powers assigned so as to administer this Occupational Safety and Health Program Plan.
 1. The Safety Director may designate person or persons as he deems necessary to carry out his powers, duties, and responsibilities under this Program Plan.
 2. The Safety Director may delegate the power to make inspections, provided procedures employed are as effective as those employed by the Safety Director.
 3. The Safety Director shall employ measures to coordinate, to the extent possible, activities of all departments to promote efficiency and to minimize any inconveniences under this Program Plan.
 4. The Safety Director may request qualified technical personnel from any department or section of government to assist him in making compliance inspections, accident investigations, or as he may otherwise deem necessary and appropriate in order to carry out his duties under this Program Plan.
 5. The Safety Director shall prepare the report to the Commissioner of Labor and Workforce Development required by subsection (g) of Section 1 of this plan.
 6. The Safety Director shall make or cause to be made periodic and follow-up inspections of all facilities and worksites where employees of this employer are employed. He shall make recommendations to correct any hazards or exposures observed. He shall make or cause to be made any inspections required by complaints submitted by employees or inspections requested by employees.
 7. The Safety Director shall assist any officials of the employer in the investigation of occupational accidents or illnesses.
 8. The Safety Director shall maintain or cause to be maintained records required under Section VIII of this plan.
 9. **The Safety Director shall, in the eventuality that there is a fatality, ensure that the Commissioner of Labor and Workforce Development receives notification of the occurrence within eight (8) hours. All work-related inpatient hospitalizations, amputations, and loss of an eye must be reported to TOSHA within 24 hours.**
- b. The administrative or operational head of each department, division, board, or other agency of this employer shall be responsible for the implementation of this Occupational Safety and Health Program Plan within their respective areas.
 1. The administrative or operational head shall follow the directions of the Safety Director on all issues involving occupational safety and health of employees as set forth in this plan.
 2. The administrative or operational head shall comply with all abatement orders issued in accordance with the provisions of this plan or request a review of the order with the Safety Director within the abatement period.
 3. The administrative or operational head should make periodic safety surveys of the establishment under his jurisdiction to become aware of hazards or standards violations that may exist and make an attempt to immediately correct such hazards or violations.
 4. The administrative or operational head shall investigate all occupational accidents, injuries, or illnesses reported to him. He shall report such accidents, injuries, or illnesses to the Safety Director along with his findings and/or recommendations in accordance with APPENDIX IV of this plan.

VI. STANDARDS AUTHORIZED

The standards adopted under this Program Plan are the applicable standards developed and promulgated under Section VI (6) of the Tennessee Occupational Safety and Health Act of 1972. Additional standards may be promulgated by the governing body of this employer as that body may deem necessary for the safety and health of employees. Note: 29 CFR 1910 General Industry Regulations; 29 CFR 1926 Construction Industry Regulations; and the Rules of Tennessee Department of Labor and Workforce Development Occupational Safety and Health, CHAPTER 0800-01-1 through CHAPTER 0800-01-11 are the standards and rules invoked.

VII. VARIANCE PROCEDURE

The Safety Director may apply for a variance as a result of a complaint from an employee or of his knowledge of certain hazards or exposures. The Safety Director should definitely believe that a variance is needed before the application for a variance is submitted to the Commissioner of Labor and Workforce Development.

The procedure for applying for a variance to the adopted safety and health standards is as follows:

- a. The application for a variance shall be prepared in writing and shall contain:
 1. A specification of the standard or portion thereof from which the variance is sought.
 2. A detailed statement of the reason(s) why the employer is unable to comply with the standard supported by representations by qualified personnel having first-hand knowledge of the facts represented.
 3. A statement of the steps the employer has taken and will take (with a specific date) to protect employees against the hazard covered by the standard.
 4. A statement of when the employer expects to comply and what steps have or will be taken (with dates specified) to come into compliance with the standard.
 5. A certification that the employer has informed employees, their authorized representative(s), and/or interested parties by giving them a copy of the request, posting a statement summarizing the application (to include the location of a copy available for examination) at the places where employee notices are normally posted and by other appropriate means. The certification shall contain a description of the means actually used to inform employees and that employees have been informed of their right to petition the Commissioner of Labor and Workforce Development for a hearing.
- b. The application for a variance should be sent to the Commissioner of Labor and Workforce Development by registered or certified mail.
- c. The Commissioner of Labor and Workforce Development will review the application for a variance and may deny the request or issue an order granting the variance. An order granting a variance shall be issued only if it has been established that:
 1. The employer
 - i. Is unable to comply with the standard by the effective date because of unavailability of professional or technical personnel or materials and equipment required or necessary construction or alteration of facilities or technology.
 - ii. Has taken all available steps to safeguard employees against the hazard(s) covered by the standard.
 - iii. Has as effective Program Plan for coming into compliance with the standard as quickly as possible.
 2. The employee is engaged in an experimental Program Plan as described in subsection (b), section 13 of the Act.
- d. A variance may be granted for a period of no longer than is required to achieve compliance or one (1) year, whichever is shorter.
- e. Upon receipt of an application for an order granting a variance, the Commissioner to whom such application

- is addressed may issue an interim order granting such a variance to permit time for an orderly consideration of such application. No such interim order may be effective for longer than one hundred eighty (180) days.
- f. The order or interim order granting a variance shall be posted at the worksite and employees notified of such order by the same means used to inform them of the application for said variance (see subsection (a)(5) of this section).

VIII. RECORDKEEPING AND REPORTING

Recording and reporting of all occupational accident, injuries, and illnesses shall be in accordance with instructions and on forms prescribed in the booklet. You can get a copy of the Forms for Recordkeeping from the internet. Go to www.osha.gov and type Recordkeeping Forms in the search box.

The position responsible for recordkeeping is shown on the SAFETY AND HEALTH ORGANIZATIONAL CHART, Appendix IV to this plan.

Details of how reports of occupational accidents, injuries, and illnesses will reach the recordkeeper are specified by ACCIDENT REPORTING PROCEDURES, Appendix IV to this plan. The Rule of Tennessee Department of Labor and Workforce Development Occupational Safety and Health, OCCUPATIONAL SAFETY AND HEALTH RECORD-KEEPING AND REPORTING, CHAPTER 0800-01-03, as authorized by T.C.A., Title 50.

IX. EMPLOYEE COMPLAINT PROCEDURE

If any employee feels that he is assigned to work in conditions which might affect his health, safety, or general welfare at present or at any time in the future, he should report the condition to the Safety Director of Occupational Safety and Health.

- a. The complaint should be in the form of a letter and give details on the condition(s) and how the employee believes it affects or will affect his health, safety, or general welfare. The employee should sign the letter but need not do so if he wishes to remain anonymous (see subsection (h) of Section 1 of this plan).
- b. Upon receipt of the complaint letter, the Safety Director will evaluate the condition(s) and institute any corrective action, if warranted. Within ten (10) working days following the receipt of the complaint, the Safety Director will answer the complaint in writing stating whether or not the complaint is deemed to be valid and if not, why not, what action has been or will be taken to correct or abate the condition(s), and giving a designated time period for correction or abatement. Answers to anonymous complaints will be posted upon bulletin boards or other places of common passage where the anonymous complaint may be reasonably expected to be seen by the complainant for a period of three (3) working days.
- c. If the complainant finds the reply not satisfactory because it was held to be invalid, the corrective action is felt to be insufficient, or the time period for correction is felt to be too long, he may forward a letter to the Chief Executive Officer or the governing body explaining the condition(s) cited in his original complaint and why he believes the answer to be inappropriate or insufficient.
- d. The Chief Executive Officer or a representative of the governing body will evaluate the complaint and will begin to take action to correct or abate the condition(s) through arbitration or administrative sanctions or may find the complaint to be invalid. An answer will be sent to the complainant within ten (10) working days following receipt of the complaint or the next regularly scheduled meeting of the governing body following receipt of the complaint explaining decisions made and actions taken or to be taken.
- e. After the above steps have been followed and the complainant is still not satisfied with the results, he may then file a complaint with the Commissioner of Labor and Workforce Development. Any complaint filed with the Commissioner of Labor and Workforce Development in such cases shall include copies of all related

correspondence with the Safety Director and the Chief Executive Officer or the representative of the governing body.

- f. Copies of all complaint and answers thereto will be filed by the Safety Director who shall make them available to the Commissioner of Labor and Workforce Development or his designated representative upon request.

X. EDUCATION AND TRAINING

a. Safety Director and/or Compliance Inspector(s):

1. Arrangements will be made for the Safety Director and/or Compliance Inspector(s) to attend training seminars, workshops, etc., conducted by the State of Tennessee or other agencies. A list of Seminars can be obtained.
2. Access will be made to reference materials such as 29 CFR 1910 General Industry Regulations; 29 CFR 1926 Construction Industry Regulations; The Rules of Tennessee Department of Labor and Workforce Development Occupational Safety and Health, and other equipment/supplies, deemed necessary for use in conducting compliance inspections, conducting local training, wiring technical reports, and informing officials, supervisors, and employees of the existence of safety and health hazards will be furnished.

b. All Employees (including supervisory personnel):

A suitable safety and health training program for employees will be established. This program will, as a minimum:

1. Instruct each employee in the recognition and avoidance of hazards or unsafe conditions and of standards and regulations applicable to the employee's work environment to control or eliminate any hazards, unsafe conditions, or other exposures to occupational illness or injury.
2. Instruct employees who are required to handle or use poisons, acids, caustics, toxicants, flammable liquids or gases, explosives, and other harmful substances in the proper handling procedures and use of such items and make them aware of the personal protective measures, person hygiene, etc., which may be required.
3. Instruct employees who may be exposed to environments where harmful plants or animals are present, of the hazards of the environment, how to best avoid injury or exposure, and the first aid procedures to be followed in the event of injury or exposure.
4. Instruct all employees of the common deadly hazards and how to avoid them, such as Falls; Equipment Turnover; Electrocution; Struck by/Caught In; Trench Cave In; Heat Stress; and Drowning.
5. Instruct employees on hazards and dangers of confined or enclosed spaces.
 - i. Confined or enclosed space means space having a limited means of egress and which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, boilers, ventilation or exhaust ducts, sewers, underground utility accesses, tunnels, pipelines, and open top spaces more than four feet (4) in depth such as pits, tubs, vaults, and vessels.
 - ii. Employees will be given general instruction on hazards involved, precautions to be taken, and on use of personal protective and emergency equipment required. They shall also be instructed on all specific standards or regulations that apply to work in dangerous or potentially dangerous areas.
 - iii. The immediate supervisor of any employee who must perform work in a confined or enclosed space shall be responsible for instructing employees on the danger of hazards which may be present, precautions to be taken, and use of personal protective and emergency equipment, immediately prior to their entry into such an area and shall require the use of appropriate personal protective

equipment.

XI. GENERAL INSPECTION PROCEDURES

It is the intention of the governing body and responsible officials to have an Occupational Safety and Health Program Plan that will ensure the welfare of employees. In order to be aware of hazards, periodic inspections must be performed. These inspections will enable the finding of hazards or unsafe conditions or operations that will need correction in order to maintain safe and healthful worksites. Inspections made on a pre-designated basis may not yield the desired results. Inspections will be conducted, therefore, on a random basis at intervals not to exceed thirty (30) calendar days.

- a. In order to carry out the purposes of this Resolution, the Safety Director and/or Compliance Inspector(s), if appointed, is authorized:
 1. To enter at any reasonable time, any establishment, facility, or worksite where work is being performed by an employee when such establishment, facility, or worksite is under the jurisdiction of the employer and;
 2. To inspect and investigate during regular working hours and at other reasonable times, within reasonable limits, and in a reasonable manner, any such place of employment and all pertinent conditions, processes, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any supervisor, operator, agent, or employee working therein.
- b. If an imminent danger situation is found, alleged, or otherwise brought to the attention of the Safety Director or Inspector during a routine inspection, he shall immediately inspect the imminent danger situation in accordance with Section XII of this plan before inspecting the remaining portions of the establishment, facility, or worksite.
- c. An administrative representative of the employer and a representative authorized by the employees shall be given an opportunity to consult with and/or to accompany the Safety Director or Inspector during the physical inspection of any worksite for the purpose of aiding such inspection.
- d. The right of accompaniment may be denied any person whose conduct interferes with a full and orderly inspection.
- e. The conduct of the inspection shall be such as to preclude unreasonable disruptions of the operation(s) of the workplace.
- f. Interviews of employees during the course of the inspection may be made when such interviews are considered essential to investigative techniques.
- g. Advance Notice of Inspections.
 1. Generally, advance notice of inspections will not be given as this precludes the opportunity to make minor or temporary adjustments in an attempt to create a misleading impression of conditions in an establishment.
 2. There may be occasions when advance notice of inspections will be necessary in order to conduct an effective inspection or investigation. When advance notice of inspection is given, employees or their authorized representative(s) will also be given notice of the inspection.
- h. The Safety Director need not personally make an inspection of each and every worksite once every thirty (30) days. He may delegate the responsibility for such inspections to supervisors or other personnel provided:

1. Inspections conducted by supervisors or other personnel are at least as effective as those made by the Safety Director.
 2. Records are made of the inspections, any discrepancies found and corrective actions taken. This information is forwarded to the Safety Director.
- i. The Safety Director shall maintain records of inspections to include identification of worksite inspected, date of inspection, description of violations of standards or other unsafe conditions or practices found, and corrective action taken toward abatement. Those inspection records shall be subject to review by the Commissioner of Labor and Workforce Development or his authorized representative.

XII. IMMINENT DANGER PROCEDURES

- a. Any discovery, any allegation, or any report of imminent danger shall be handled in accordance with the following procedures:
 1. The Safety Director shall immediately be informed of the alleged imminent danger situation and he shall immediately ascertain whether there is a reasonable basis for the allegation.
 2. If the alleged imminent danger situation is determined to have merit by the Safety Director, he shall make or cause to be made an immediate inspection of the alleged imminent danger location.
 3. As soon as it is concluded from such inspection that conditions or practices exist which constitute an imminent danger, the Safety Director or Compliance Inspector shall attempt to have the danger corrected. All employees at the location shall be informed of the danger and the supervisor or person in charge of the worksite shall be requested to remove employees from the area if deemed necessary.
 4. The administrative or operational head of the workplace in which the imminent danger exists, or his authorized representative, shall be responsible for determining the manner in which the imminent danger situation will be abated. This shall be done in cooperation with the Safety Director or Compliance Inspector and to the mutual satisfaction of all parties involved.
 5. The imminent danger shall be deemed abated if:
 - i. The imminence of the danger has been eliminated by removal of employees from the area of danger.
 - ii. Conditions or practices which resulted in the imminent danger have been eliminated or corrected to the point where an unsafe condition or practice no longer exists.
 6. A written report shall be made by or to the Safety Director describing in detail the imminent danger and its abatement. This report will be maintained by the Safety Director in accordance with subsection (i) of Section XI of this plan.
- b. Refusal to Abate.
 1. Any refusal to abate an imminent danger situation shall be reported to the Safety Director and Chief Executive Officer immediately.
 2. The Safety Director and/or Chief Executive Officer shall take whatever action may be necessary to achieve abatement.

XIII. ABATEMENT ORDERS AND HEARINGS

- a. Whenever, as a result of an inspection or investigation, the Safety Director or Compliance Inspector(s) finds

1.3

that a worksite is not in compliance with the standards, rules, or regulations under this plan and is unable to negotiate abatement with the administrative or operational head of the worksite within a reasonable period of time, the Safety Director shall:

1. Issue an abatement order to the head of the worksite.
 2. Post or cause to be posted, a copy of the abatement order at or near each location referred to in the abatement order.
- b. Abatement orders shall contain the following information:
1. The standard, rule, or regulation which was found to be violated.
 2. A description of the nature and location of the violation.
 3. A description of what is required to abate or correct the violation.
 4. A reasonable period of time during which the violation must be abated or corrected.
- c. At any time within ten (10) days after receipt of an abatement order, anyone affected by the order may advise the Safety Director in writing of any objections to the terms and conditions of the order. Upon receipt of such objections, the Safety Director shall act promptly to hold a hearing with all interested and/or responsible parties in an effort to resolve any objections. Following such hearing, the Safety Director shall, within three (3) working days, issue an abatement order and such subsequent order shall be binding on all parties and shall be final.

XIV. PENALTIES

- a. No civil or criminal penalties shall be issued against any official, employee, or any other person for failure to comply with safety and health standards or any rules or regulations issued pursuant to this Program Plan.
- b. Any employee, regardless of status, who willfully and/or repeatedly violates, or causes to be violated, any safety and health standard, rule, or regulation or any abatement order shall be subject to disciplinary action by the appointing authority. It shall be the duty of the appointing authority to administer discipline by taking action in one of the following ways as appropriate and warranted:
 1. Oral reprimand.
 2. Written reprimand.
 3. Suspension for three (3) or more working days.
 4. Termination of employment.

XV. CONFIDENTIALITY OF PRIVILEGED INFORMATION

All information obtained by or reported to the Safety Director pursuant to this plan of operation or the legislation (resolution, or executive order) enabling this Occupational Safety and Health Program Plan which contains or might reveal otherwise privileged information shall be considered confidential. Such information may be disclosed to other officials or employees concerned with carrying out this Program Plan or when relevant in any proceeding under this Program Plan. Such information may also be disclosed to the Commissioner of Labor and Workforce Development or their authorized representatives in carrying out their duties under the Tennessee Occupational Safety and Health Act of 1972.

XVI. DISCRIMINATION INVESTIGATIONS AND SANCTIONS

The Rule of Tennessee Department of Labor and Workforce Development Occupational Safety and Health, DISCRIMINATION AGAINST EMPLOYEES EXERCISING RIGHTS UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1972 0800-01-08, as authorized by T.C.A., Title 50. The agency agrees that any employee who believes they have been discriminated against or discharged in violation of Tenn. Code Ann § 50-3-409 can file a complaint with their agency/safety Safety Director within 30 days, after the alleged discrimination occurred. Also, the agency agrees the employee has a right to file their complaint with the Commissioner of Labor and Workforce Development within the same 30 day period. The Commissioner of Labor and Workforce Development may investigate such complaints, make recommendations, and/or issue a written notification of a violation.

XVII. COMPLIANCE WITH OTHER LAWS NOT EXCUSED

- a. Compliance with any other law, statute, resolution, or executive order, which regulates safety and health in employment and places of employment, shall not excuse the employer, the employee, or any other person from compliance with the provisions of this Program Plan.
- b. Compliance with any provisions of this Program Plan or any standard, rule, regulation, or order issued pursuant to this Program Plan shall not excuse the employer, the employee, or any other person from compliance with the law, statute, resolution, or executive order, as applicable, regulating and promoting safety and health unless such law, statute, resolution, or executive order, as applicable, is specifically repealed.

Signature: Safety Director, Occupational Safety and Health and Date

APPENDIX - I WORK LOCATIONS
(ORGANIZATIONAL CHART)

{For this section make a list of each work location wherein (City/County/etc) your employees work, such as Street Department, Fire Hall, City Hall, Courthouse, Jail, Sheriff Department, Each School, etc. covered under this Program Plan. Include, the address for the workplace, phone number at that workplace, and number of employees who work there.}

An Example:

Sheriff Department - 45 employees
1234 Main Street
Chattanooga, TN 37415
423-345-6789

East High School - 82 employees
4567 Garden Avenue
Chattanooga, TN 37415
423-222-5555

TOTAL NUMBER OF EMPLOYEES : 127

{Once each work location has been listed, record the total number of employees that the county employees.}

APPENDIX – II NOTICE TO ALL EMPLOYEES

NOTICE TO ALL EMPLOYEES OF THE CITY OF COLUMBIA

The Tennessee Occupational Safety and Health Act of 1972 provides job safety and health protection for Tennessee workers through the promotion of safe and healthful working conditions. Under a plan reviewed by the Tennessee Department of Labor and Workforce Development, this government, as an employer, is responsible for administering the Act to its employees. Safety and health standards are the same as State standards and jobsite inspections will be conducted to ensure compliance with the Act.

Employees shall be furnished conditions of employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious injury or harm to employees.

Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Program Plan which are applicable to his or her own actions and conduct.

Each employee shall be notified by the placing upon bulletin boards or other places of common passage of any application for a temporary variance from any standard or regulation.

Each employee shall be given the opportunity to participate in any hearing which concerns an application for a variance from a standard.

Any employee who may be adversely affected by a standard or variance issued pursuant to this Program Plan may file a petition with the Safety Director or Department Head.

Any employee who has been exposed or is being exposed to toxic materials or harmful physical agents in concentrations or at levels in excess of that provided for by an applicable standard shall be notified by the employer and informed of such exposure and corrective action being taken.

Subject to regulations issued pursuant to this Program Plan, any employee or authorized representative(s) of employees shall be given the right to request an inspection.

No employee shall be discharged or discriminated against because such employee has filed any complaint or instituted or caused to be instituted any proceedings or inspection under, or relating to, this Program Plan.

Any employee who believes he or she has been discriminated against or discharged in violation of these sections may, within thirty (30) days after such violation occurs, have an opportunity to appear in a hearing before the Civil Service Board for assistance in obtaining relief or to file a complaint with the Commissioner of Labor and Workforce Development alleging such discrimination.

A copy of the Occupational Safety and Health Program Plan for the Employees of the City of Columbia is available for inspection by any employee at City Hall during regular office hours.

Signature: (City/County) MAYOR AND DATE

APPENDIX - III PROGRAM PLAN BUDGET

(Either answer questions 1-11 or fill in the statement below)

1. Prorated portion of wages, salaries, etc., for program administration and support.
2. Office space and office supplies.
3. Safety and health educational materials and support for education and training.
4. Safety devices for personnel safety and health.
5. Equipment modifications.
6. Equipment additions (facilities)
7. Protective clothing and equipment (personnel)
8. Safety and health instruments
9. Funding for projects to correct hazardous conditions.
10. Reserve fund for the Program Plan.
11. Contingencies and miscellaneous,

TOTAL ESTIMATED PROGRAM PLAN FUNDING,
ESTIMATE OF TOTAL BUDGET FOR:

OR Use This Statement:

STATEMENT OF FINANCIAL RESOURCE AVAILABILITY

Be assured that City of Columbia has sufficient financial resources available or will make sufficient financial resources available as may be required in order to administer and staff its Occupational Safety and Health Program Plan and to comply with standards.

APPENDIX – IV ACCIDENT REPORTING PROCEDURES

- (1-15) Employees shall report all accidents, injuries, or illnesses directly to the Safety Director as soon as possible, but not later than twenty-four (24) hours after the occurrence. Such reports may be verbal or in writing. All fatalities, inpatient hospitalizations, amputations, and losses of an eye shall be reported to the Safety Director and/or record keeper immediately, either by telephone or verbally, and will be followed by a written report within four (4) hours after their occurrence. The Safety Director will ensure completion of required reports and records in accordance with Section VIII of the basic plan.
- (16-50) Employees shall report all accidents, injuries, or illnesses to their supervisor as soon as possible, but not later than two (2) hours after the occurrence. All fatalities, inpatient hospitalizations, amputations, and losses of an eye shall be reported to the Safety Director and/or record keeper immediately, either by telephone or verbally, and will be followed by a written report within four (4) hours after their occurrence. The supervisor will investigate the accident or illness, complete an accident report, and forward the accident report to the Safety Director and/or record keeper within twenty-four (24) hours of the time the accident or injury occurred or the time of the first report of the illness.
- (51-250) Employees shall report all accidents, injuries, or illnesses to their supervisors as soon as possible, but not later than two (2) hours after the occurrence. The supervisor will provide the Safety Director and/or record keeper with the name of the injured or ill employee and a brief description of the accident or illness by telephone as soon as possible, but not later than four (4) hours, after the accident or injury occurred or the time of the first report of the illness. All fatalities, inpatient hospitalizations, amputations, and losses of an eye shall be reported to the Safety Director and/or record keeper immediately, either by telephone or verbally, and will be followed by a written report within four (4) hours after their occurrence. The supervisor will then make a thorough investigation of the accident or illness (with the assistance of the Safety Director or Compliance Inspector, if necessary) and will complete a written report on the accident or illness and forward it to the Safety Director within seventy-two (72) hours after the accident, injury, or first report of illness and will provide one (1) copy of the written report to the recordkeeper.
- (251-Plus) Employees shall report all accidents, injuries, or illnesses to their supervisors as soon as possible, but not later than two (2) hours after their occurrence. The supervisor will provide the administrative head of the department with a verbal or telephone report of the accident as soon as possible, but not later than four (4) hours, after the accident. If the accident involves a fatality, inpatient hospitalization, amputation, loss of an eye, loss of consciousness, broken bones, or third degree burns, the Safety Director will be notified by telephone immediately and will be given the name of the injured, a description of the injury, and a brief description of how the accident occurred. The supervisor will then make a thorough investigation of the accident or illness (with the assistance of the Safety Director or Compliance Inspector, if necessary) and will complete a written report on the accident or illness and forward it to the Safety Director within seventy-two (72) hours after the accident, injury, or first report of illness and will provide one (1) copy of the written report to the record keeper.

Since Workers Compensation Form 6A or OSHA NO. 301 Form must be completed; all reports submitted in writing to the person responsible for recordkeeping shall include the following information as a minimum:

1. Accident location, if different from employer's mailing address and state whether accident occurred on premises owned or operated by employer.
2. Name, social security number, home address, age, sex, and occupation (regular job title) of injured or ill employee.
3. Title of the department or division in which the injured or ill employee is normally employed.
4. Specific description of what the employee was doing when injured.
5. Specific description of how the accident occurred.
6. A description of the injury or illness in detail and the part of the body affected.
7. Name of the object or substance which directly injured the employee.
8. Date and time of injury or diagnosis of illness.
9. Name and address of physician, if applicable.
10. If employee was hospitalized, name and address of hospital.
11. Date of report.

NOTE: A procedure such as one of those listed above or similar information is necessary to satisfy Item Number 4 listed under PROGRAM PLAN in Section V. ADMINISTRATION, Part b of the Tennessee Occupational Safety and Health Plan. This information may be submitted in flow chart form instead of in narrative form if desired. These procedures may be modified in any way to fit local situations as they have been prepared as a guide only.

The four (4) procedures listed above are based on the size of the workforce and the relative complexity of the organization. The approximate size of the organization for which each procedure is suggested is indicated in parenthesis in the left-hand margin at the beginning, i.e., (1-15), (16-50), (51-250), and (251 Plus), and the figures relate to the total number of employees including the Chief Executive Officer but excluding the governing body (County Court, City Council, Board of Directors, etc.).

Generally, the more simple an accident reporting procedure is, the more effective it is. Please select the one procedure listed above, or prepare a similar procedure or flow chart, that most nearly fits what will be the most effective for your local situation. Note also that the specific information listed for written reports applies to all three of the procedures listed for those organizations with sixteen (16) or more employees.

City of Columbia Organizational Chart / Work Locations

Work Location - Name	Address	Contact Person	Phone #	# Employees
City Manager's Office	700 North Garden Street Columbia, TN 38401	Tony Massey tmassey@columbiatn.com	931-560-1501	6
City Recorder	700 North Garden Street Columbia, TN 38401	Thad Jablonski tjablonski@columbiatn.com	931-560-1520	6
MIS Department	700 North Garden Street Columbia, TN 38401	Jonathan Stotler jistotler@columbiatn.com	931-560-1549	4
Finance Department	700 North Garden Street Columbia, TN 38401	Thad Jablonski tjablonski@columbiatn.com	931-560-1559	5
Human Resources	700 North Garden Street Columbia, TN 38401	Wanda McClain wmccclain@columbiatn.com	931-560-1574	3
Police Department	707 North Main Street Columbia, TN 38401	Jeremy Alsup jalsup@columbiatn.com	931-560-1646	103 total
Police Department - Storage / Equipment Fleet Coordinator	800 Westover Drive Columbia, TN 38401	Jeremy Alsup jalsup@columbiatn.com	931-560-1667	1
Fire & Rescue Department Station 1	1000 South Garden Street Columbia, TN 38401	Ty Cobb tcobb@columbiatn.com	931-560-1721	35 report to work
Fire & Rescue Department Station 2	711 Lion Parkway Columbia TN 38401	Ty Cobb tcobb@columbiatn.com	931-560-1702	15 report to work

City of Columbia Organizational Chart / Work Locations

Fire & Rescue Department Station 3	705 Firefighters Drive Columbia TN	Ty Cobb tcobb@columbiatn.com	931-560-1703	15 report to work
Fire & Rescue Department Station 4	5040 Trotwood Ave Columbia TN 38401	Ty Cobb tcobb@columbiatn.com	931-560-1704	12 report to work
Fire & Rescue Department Station 5	2633 Nashville Hwy Columbia TN 38401	Ty Cobb tcobb@columbiatn.com	931-560-1705	12 report to work
Fire Marshall Office 700 North Garden Columbia, TN	700 North Garden Street Columbia, TN 38401	Ty Cobb tcobb@columbiatn.com	931-560-1740	4
Public Works – Street & Sanitation	110 Santa Fe Pike Columbia, TN 38401	Jeff DeWire jdewire@columbiatn.com	931-560-1469	75
Development Services	700 North Garden Street Columbia TN 38401	Paul Keltner pkeltner@columbiatn.com	931-560-1555	18
Parks and Recreation Main office- Woodland	821 West 9 th Street Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1454	32 total 7 to 15 daily
Parks and Recreation Fairview Recreation	871 Iron Bridge Rd Columbia TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1655	10
Parks and Recreation Armory Recreation Center	503 Carter Street Columbia TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1449 Or 931-560-1462	10

City of Columbia Organizational Chart / Work Locations

Parks and Recreation Macedonia Recreation Center	501 Armstrong Street Columbia TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	3 to 4
Parks and Recreation Riverwalk Park	102 Riverside Drive Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	5
Parks and Recreation Frierson-Johnson Park	East 10 th Street Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation Betty Lee Park	Santa Fe Pike Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation Greenwood Cemetery	South Garden Street Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation Old Hickory Park	Jackson Heights Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation Pop Geers Memorial Park	602 West 7 th Street Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation West Haven Park	Experiment Station Lane Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	1
Parks and Recreation Ridley Sports Complex	6148 Trotwood Avenue Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	9
Parks and Recreation Cook Soccer Park	710 Experiment Station Lane Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	2

City of Columbia Organizational Chart / Work Locations

Parks and Recreation Eva Gilbert Football & Soccer Field	Cord Drive Columbia, TN 38401	Mackel Reagan mreagan@columbiatn.com	931-560-1448	2
Wastewater	1244 Treatment Plant Road Columbia, TN 38401	Donnie Boshers dboshers@columbiatn.com	931-560-1001	45
Welcome Center	713 North Main Street Columbia, TN 38401	Kellye Murphy kmurphy@columbiatn.com	931-560-1507	3
TOTAL				
Employees 394 Subject to change				

Note: This is the updated organization with the New Hires included.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Ginger Adams, Sr. Administrative Assistant, gadams@columbiatn.com, 931-560-1723

AGENDA ITEM TITLE: A RESOLUTION ACCEPTING THE DONATION OF \$1,005 (ONE THOUSAND FIVE DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF A HIGH EXPANSION FOAM PRO/PAK TO BE UTILIZED BY COLUMBIA FIRE & RESCUE

RECOMMENDATION: Approve Resolution 23-90.

INFORMATION: Columbia Fire & Rescue requests City Council's approval to accept the donation of \$1,005 (One Thousand Five Dollars) from Joshua Ranes of Muletown Bearded Axe.

This monetary donation will provide for the purchase of a High Expansion Foam Pro/Pak. This High Expansion Foam Pro/Pak is a portable device allowing firefighting foam to be used in special applications needing a high expansion ratio. This system is designed mainly for use in hazardous material environments, allowing the foaming agent to suppress hazardous vapors.

ATTACHMENTS: Staff Report; Resolution No. 23-90.

A RESOLUTION ACCEPTING A DONATION OF \$1,005 (ONE THOUSAND FIVE DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF A HIGH EXPANSION FOAM PRO/PAK TO BE UTILIZED BY COLUMBIA FIRE & RESCUE

WHEREAS, Joshua Ranes of Muletown Bearded Axe in Columbia, Tennessee, desires to support the operations of Columbia Fire & Rescue with a monetary donation of \$1,005 (One Thousand Five Dollars); and

WHEREAS, Columbia Fire & Rescue desires to accept the donation of \$1,005 (One Thousand Five Dollars); and

WHEREAS, said monetary donation of \$1,005 (One Thousand Five Dollars) is to be utilized to equip Columbia Fire & Rescue Response Units by purchasing a High Expansion Foam Pro/Pak; and

WHEREAS, no matching funds are required.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that such city does hereby endorse the efforts of Columbia Fire & Rescue by accepting this donation.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Ginger Adams, Sr. Administrative Assistant, gadams@columbiatn.com, 931-560-1723

AGENDA ITEM TITLE: A RESOLUTION ACCEPTING A DONATION OF \$2,000 (TWO THOUSAND DOLLARS) FOR THE PURCHASE OF SUPPLIES FOR COLUMBIA FIRE & RESCUE.

RECOMMENDATION: Approve Resolution 23-91.

INFORMATION: An undisclosed citizen of the City of Columbia desires to support the operations of Columbia Fire & Rescue by making a donation of \$2,000 (Two Thousand Dollars) for the purchase of High Heat Gloves and CellBlockEX. CellBlockEX is a dry granulate material used for the prevention and suppression of Class D lithium-ion battery fires and combustible liquids.

Columbia Fire & Rescue requests City Council's approval to accept the donation of \$2,000 (Two Thousand Dollars).

ATTACHMENTS: Staff Report; Resolution No. 23-91.

A RESOLUTION ACCEPTING A DONATION OF \$2,000 (TWO THOUSAND DOLLARS) FOR THE PURCHASE OF SUPPLIES FOR COLUMBIA FIRE & RESCUE

WHEREAS, an undisclosed citizen of Columbia, Tennessee, desires to support the operations of Columbia Fire & Rescue with a monetary donation of \$2,000 (Two Thousand Dollars); and

WHEREAS, in the privacy interests of said donor, Columbia Fire & Rescue desires to accept the donation of \$2,000 (Two Thousand Dollars) to the City of Columbia; and

WHEREAS, said monetary donation of \$2,000 (Two Thousand Dollars) is to be utilized to equip Columbia Fire & Rescue Response Units by purchasing bags of extinguishing agent and high heat gloves; and

WHEREAS, no matching funds are required.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that such city does hereby endorse the efforts of Columbia Fire & Rescue by accepting this donation.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Donnie Boshers, Wastewater Director, dboshers@columbiatn.com, 931-560-1011

AGENDA ITEM TITLE: RESOLUTION NO. 23-92 - A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING DRUMWRIGHT, PHASE 2 – WARD 5

RECOMMENDATION: Approve Resolution No. 23-92.

INFORMATION: Drumwright, Phase 2 consists of 2,092 linear feet of 8" gravity sanitary sewer main. The Developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF
SEWER IMPROVEMENTS SERVING DRUMWRIGHT, PHASE 2

WHEREAS, The City of Columbia, has been requested to accept ownership and maintenance of 2,092 linear feet of 8" gravity main serving Drumwright, Phase 2; and

WHEREAS, the City of Columbia has inspected said sewer improvements and has determined that said sewer improvements meet the requirements imposed by the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City of Columbia does hereby accept the ownership and maintenance of said sanitary sewer improvements serving Drumwright, Phase 2.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:

C. Tim Tisher
C. TIM TISHER - CITY ATTORNEY

LENNAR HOMES OF TENNESSEE , LLC

November 1, 2023

Columbia City Council
City of Columbia Tennessee
City Hall
700 North Garden Street
Columbia, Tennessee 38401

Re: Drumwright Phase 2 Sanitary Sewer
LOC #55110527

Dear Council Members:

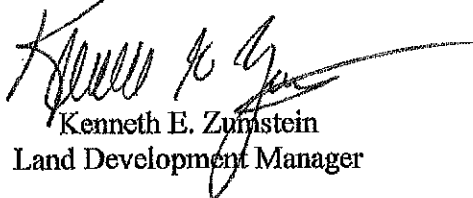
I wish to present for dedication to the Council of the City of Columbia Tennessee at the December, 2023 council meeting the wastewater system improvements installed to service Drumwright Phase 2 consisting of 2,092 lineal feet.

You have been provided with as-built drawings of the project, all inspections and testing have been completed, we have provided an affidavit of no liens and a one (1) year maintenance surety in the amount of \$ 50,731.00, set to expire one (1) year from the date of Council acceptance.

Acceptance by the Columbia City Council for the wastewater system improvements and surety would be deeply appreciated.

If you have any questions please contact myself at cell (317) 590-6988 (email - Ken.zumstein@lennar.com).

Respectfully Yours,



Kenneth E. Zumstein
Land Development Manager

File/kez
enclosures

381 Mallory Lane Suite 200
Nashville, TN 37067



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Donnie Boshers, Wastewater Director, dboshers@columbiatn.com, 931-560-1011

AGENDA ITEM TITLE: Resolution No. 23-93 – A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING WILLIAMSPORT LANDING-SINGLE FAMILY, PHASE 1 – WARD 1

RECOMMENDATION: Approve Resolution No. 23-93.

INFORMATION: Williamsport Landings-Single Family, Phase 1 consists of 2,130 linear feet of 8" sanitary sewer main. The Developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

**A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF
SEWER IMPROVEMENTS SERVING WILLIAMSPORT LANDING-SINGLE
FAMILY, PHASE 1**

WHEREAS, The City of Columbia, has been requested to accept ownership and maintenance of 2,130 linear feet of 8" gravity main serving Williamsport Landing-Single Family, Phase 1; and

WHEREAS, the City of Columbia has inspected said sewer improvements and has determined that said sewer improvements meet the requirements imposed by the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City of Columbia does hereby accept the ownership and maintenance of said sanitary sewer improvements serving Williamsport Landing-Single Family, Phase 1;

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER - CITY ATTORNEY

Date: 16 October 2023

Columbia City Council
City of Columbia, Tennessee
City Hall
700 North Garden Street
Columbia, Tennessee 38401

Dear Council Members:

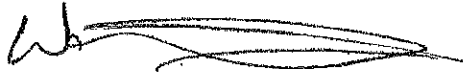
I wish to present for dedication to the Council of the City of Columbia, Tennessee, the wastewater system improvements installed to service Williamsport Landing (Pike) Single Family Phase 1 in the amount of 2,130 linear feet. The Contractor installed the sanitary sewer according to the Standard Sewer Specifications of the City of Columbia.

You have been provided with CCTV and as-built drawings of the project and all inspections and testing has been completed. All fees required for dedication have been paid. You have also been provided a one-year maintenance surety in the amount of \$51,652.50, set to expire one year from date of Council acceptance.

Acceptance by the Columbia City Council for these wastewater system improvements would be appreciated.

Sincerely,

Signed:



Print:

Wade Kincaid



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Liz Bermudez, Executive Secretary, liz@columbiatn.com 931-560-1510

AGENDA ITEM TITLE: RESOLUTION NO. 23-95 - A RESOLUTION AUTHORIZING THE ACQUISITION OF PROPERTY AND EASEMENTS INCLUDING THE AUTHORIZATION OF EMINENT DOMAIN PROCEEDING IF NECESSARY FOR THE IRON BRIDGE ROAD REPLACEMENT IMPROVEMENTS PROJECT

RECOMMENDATION: Approve Resolution No. 23-95.

INFORMATION: The City previously authorized the design of the Iron Bridge Road Replacement Project which includes the replacement of Iron Bridge. The infrastructure design for the project has been completed and it is now time for the acquisition of property and utility easements. Acquisition of the property described in "Exhibit A" of the Resolution is necessary for the completion of the project. The resolution also authorizes the use of eminent domain proceedings, if necessary, for this project to be completed.

ATTACHMENTS: Resolution No. 23-95, Exhibit A.

**A RESOLUTION AUTHORIZING THE ACQUISITION OF PROPERTY AND
EASEMENTS INCLUDING THE AUTHORIZATION OF EMINENT DOMAIN
PROCEEDINGS IF NECESSARY FOR THE IRON BRIDGE ROAD
REPLACEMENT IMPROVEMENT PROJECT**

WHEREAS, The City of Columbia, has previously authorized the design of the Iron Bridge Road Replacement Project with such project including the replacement of Iron Bridge; and

WHEREAS, the infrastructure design of such project has been completed and the time has arrived for the acquisition of property and utility easements; and

WHEREAS, the taking of the property described in “Exhibit A” is for public use and in the public interest; and

WHEREAS, the acquisition of the property described in “Exhibit A” is necessary for the completion of the Iron Bridge Road Replacement Project.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City Attorney is authorized to acquire the necessary property and utility easements, specifically including the property described in “Exhibit A”, including authorization to use eminent domain proceedings, if necessary, for the Iron Bridge Road Replacement Project.

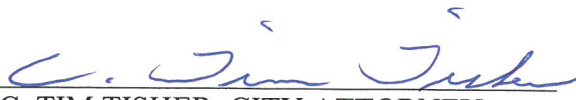
PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

Owner Name and Address:

TRACT 1

Josephine D. Crouch, Amy D. Cato
& Shirley D. Carthon
2485 Walker Lane
Nashville, Tennessee 37207

Recorded Document of Ownership:

Deed Book 781, Page 524, R.O.M.C.

Property Address: 875 Iron Bridge
Road

Map No. 99

Parcel No. 9

Legal Description (a survey by a Tennessee Registered Land Surveyor is attached):

SLOPE EASEMENT

Being a Slope Easement in Columbia, Maury County, Tennessee located north of Iron Bridge Road and being a portion of the property of Josephine D. Crouch, Amy D. Cato & Shirley D. Carthon of record in Book 781, Page 524, R.O.M.C. and being more particularly described as follows:

BEGINNING in the existing northerly right-of-way of Iron Bridge Road at the southeasterly corner of said Crouch, Cato and Carthon property at a common corner with Parks Properties of record in Book 1333, Page 551, R.O.M.C.;

THENCE, leaving said common corner with the northerly right-of-way of Iron Bridge Road N 83° 30' 22" W, 19.65' to the TRUE POINT OF BEGINNING of the Slope Easement;

THENCE, with said northerly right-of-way N 83° 30' 22" W, 174.28 feet;

THENCE, leaving said northerly right-of-way with a severance line through the property, the following calls:

N 46° 40' 25" E, 19.97 feet;
S 77° 17' 32" E, 50.30 feet;
S 86° 29' 02" E, 50.07 feet;
N 71° 52' 04" E, 8.41 feet;
N 87° 53' 20" E, 6.57 feet;
N 66° 34' 03" E, 22.33 feet;
S 66° 56' 35" E, 17.21 feet;
S 35° 03' 14" E, 16.17 feet;
S 02° 09' 49" W, 9.55 feet;
S 08° 32' 48" W, 1.51 feet to the POINT OF BEGINNING

Containing 2,540 square feet, more or less.

Slope easements - The above-described property is hereby conveyed as permanent easement for construction and maintenance of slopes outside the proposed right-of-way line. The land described above, on which the slopes are to be constructed, is to remain the property of the Grantor(s) and may be used for any purpose desired, provided such use does not interfere with the use or maintenance of said slopes.

TEMPORARY CONSTRUCTION EASEMENT

Being a Temporary Construction Easement in Columbia, Maury County, Tennessee located north of Iron Bridge Road and being a portion of the property of Josephine D. Crouch, Amy D. Cato & Shirley D. Carthon of record in Book 781, Page 524, R.O.M.C. and being more particularly described as follows:

BEGINNING in the existing northerly right-of-way of Iron Bridge Road at the southeasterly corner of said Crouch, Cato and Carthon property at a common corner with Parks Properties of record in Book 1333, Page 551, R.O.M.C.;

THENCE, leaving said common corner with the northerly right-of-way of Iron Bridge Road N 83° 30' 22" W, 9.65' to the TRUE POINT OF BEGINNING of the Temporary Construction Easement.

THENCE, with said northerly right-of-way N 83° 30' 22" W, 10.01 feet ;

THENCE, with a severance line through said Crouch, Cato and Carthon property, the following calls:

N 08° 32' 48" E, 1.51 feet;
N 02° 09' 49" E, 9.55 feet;
N 35° 03' 14" W, 16.17 feet;
N 66° 56' 35" W, 17.21 feet;
S 66° 34' 03" W, 22.33 feet;
S 87° 53' 20" W, 6.57 feet;
S 71° 52' 04" W, 8.41 feet;
N 86° 29' 02" W, 50.07 feet;
N 77° 17' 32" W, 50.30 feet;
S 46° 40' 25" W, 19.97 feet to the northerly right-of-way of Iron Bridge Road;

THENCE, with said northerly right-of-way N 83° 30' 22" W, 4.68 feet;

THENCE, leaving said northerly right-of-way with a severance line, the following calls:

N 33° 53' 19" E, 29.03 feet;
S 77° 17' 32" E, 54.81 feet;
S 86° 29' 02" E, 47.35 feet;
N 71° 52' 04" E, 7.91 feet;
N 87° 53' 20" E, 6.10 feet;
N 66° 34' 03" E, 24.75 feet;

S 66° 56' 35" E, 24.37 feet;
S 35° 03' 14" E, 22.40 feet;
S 02° 09' 49" W, 13.48 feet;
S 08° 32' 48" W, 1.71 feet to the POINT OF BEGINNING.

Containing 2,085 square feet, more or less.

Temporary construction easement - The above-described property is hereby conveyed as an easement for the construction of a working area and erosion control outside of the proposed right of way line. The title to the above-described land remains vested in the Grantor, and is to be used by The City of Columbia, Tennessee, its contractors or assigns for a period of three (3) years, from and after the commencement of construction."

All of which is more particularly shown by words, figures, signs and symbols on the attached map, which is made a part hereof.

This conveyance includes the right of The City of Columbia, Tennessee, its servants and agents to construct, operate, maintain, repair, replace and inspect the public roadway, sidewalks, and all appurtenances, within the limits of the aforescribed right-of-way



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Regina Connelly, City Recorder's Office, rconnelly@columbiatn.com, 931-560-1520

AGENDA ITEM TITLE:

RESOLUTION NO. 23-96 – TAX CORRECTIONS

RECOMMENDATION: Approve Resolution No. 23-96.

INFORMATION: The City Recorder is presenting tax corrections through 11/17/2023 for Council consideration as submitted by Mr. Bobby Daniels, Maury County Tax Assessor.

ATTACHMENTS: Staff Report for Resolution 23-96; Resolution No. 23-96; Resolution No. 23-96 Exhibit A.

RESOLUTION

WHEREAS, the City of Columbia, Tennessee, has on its books certain property that is assessed which should not be assessed; and

WHEREAS, the City of Columbia, Tennessee, has on its books certain property that is incorrectly assessed; and

WHEREAS, the City of Columbia, Tennessee, desires to correct these errors to properly reflect the corrections on the books of the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the following corrections are hereby approved:

(SEE SCHEDULE "A" ATTACHED HERETO)

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF

COLUMBIA, TENNESSEE, this the _____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

TAX CORRECTIONS – EXHIBIT A
RESOLUTION NO. 23-96

1. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF INDUSTRIAL DEVELOPMENT BOARD OF CITY OF COLUMBIA TN, ATTN: CHAIRMAN. MAP 100 N L 007.00, S JAMES M CAMPBELL BLVD. PROPERTY VALUE \$305,200.00, ASSESSED VALUE \$122,080.00, AND TAXES \$1007.00. DUE TO IDB PARCEL AS OF 2022 AND TAX BILL SHOULD BE DELETED PER MAURY COUNTY TAX ASSESSOR.
2. DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF INDUSTRIAL DEVELOPMENT BOARD OF CITY OF COLUMBIA TN, ATTN: CHAIRMAN. MAP 100 N L 007.00, S JAMES M CAMPBELL BLVD. PROPERTY VALUE \$305,200.00, ASSESSED VALUE \$122,080.00, AND TAXES \$1007.00. DUE TO IDB PARCEL AS OF 2022 AND TAX BILL SHOULD BE DELETED PER MAURY COUNTY TAX ASSESSOR.
3. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF MULETOWN HOME REMODELING. MAP 100 K G 024.00 P 001, 1613 ROBERT RD. PROPERTY VALUE \$33,063.00, ASSESSED VALUE \$9,919.00, AND TAXES \$82.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
4. DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF MULETOWN HOME REMODELING. MAP 100 K G 024.00 P 001, 1613 ROBERT RD. PROPERTY VALUE \$38,022.00, ASSESSED VALUE \$11,407.00, AND TAXES \$94.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
5. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF SOUTHERN HOME ARTISTRY. MAP 089 L G 004.00 P 024, 101 N JAMES M CAMPBELL BLVD STE 24. PROPERTY VALUE \$4,000.00, ASSESSED VALUE \$1,200.00, AND TAXES \$10.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.

6. DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF SOUTHERN HOME ARTISTRY. MAP 089 L G 004.00 P 024, 101 N JAMES M CAMPBELL BLVD STE 24. PROPERTY VALUE \$4,600.00, ASSESSED VALUE \$1,380.00, AND TAXES \$11.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
7. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF POPE BOY LANDSCAPING AND MOVING COMPANY. MAP 089 D D 017.00 P 001, 703 SANTA FE PIKE. PROPERTY VALUE \$15,000.00, ASSESSED VALUE \$4,500.00, AND TAXES \$37.00. DUE TO KEYING ERROR PER MAURY COUNTY TAX ASSESSOR.
8. DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF POPE BOY LANDSCAPING AND MOVING COMPANY. MAP 089 D D 017.00 P 001, 703 SANTA FE PIKE. PROPERTY VALUE \$17,250.00, ASSESSED VALUE \$5,175.00, AND TAXES \$43.00. DUE TO KEYING ERROR PER MAURY COUNTY TAX ASSESSOR.
9. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF KINGDOM KONNECTION CHRISTIAN APPAREL AND ACCESSORIES. MAP 099 I E 001.00 P 002, 1501 CARMACK BLVD. PROPERTY VALUE \$1,521.00, ASSESSED VALUE \$456.00, AND TAXES \$4.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
10. DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF KINGDOM KONNECTION CHRISTIAN APPAREL AND ACCESSORIES. MAP 099 I E 001.00 P 002, 1501 CARMACK BLVD. PROPERTY VALUE \$1,749.00, ASSESSED VALUE \$525.00, AND TAXES \$4.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
11. DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF I-GET. MAP 089 P A 009.00 P 003, 1302 HAMPSHIRE PK. PROPERTY VALUE \$2,500.00, ASSESSED VALUE \$750.00, AND TAXES \$6.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.

- 12.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF I-GET. MAP 089 P A 009.00 P 003, 1302 HAMPSHIRE PK. PROPERTY VALUE \$2,875.00, ASSESSED VALUE \$863.00, AND TAXES \$7.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 13.DELETE 2022 PERSONAL PROPERTY TAX IN THE NAME OF TJ'S MOBILE NOTARY. MAP 100 B B 003.00 P 011, 800 ACADEMY LN APT #A11. PROPERTY VALUE \$10,000.00, ASSESSED VALUE \$3,000.00, AND TAXES \$25.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 14.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF TJ'S MOBILE NOTARY. MAP 100 B B 003.00 P 011, 800 ACADEMY LN APT #A11. PROPERTY VALUE \$11,500.00, ASSESSED VALUE \$3,450.00, AND TAXES \$28.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 15.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF TAPS LLC, C/O TAMRA R COONCE. MAP 050 026.10 P 001, 3189 GREENS MILL RD. PROPERTY VALUE \$60,669.00, ASSESSED VALUE \$18,201.00, AND TAXES \$150.00. DUE TO KEYING ERROR PER MAURY COUNTY TAX ASSESSOR.
- 16.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF FIT 2B DYED. MAP 101 L B 003.00 P 001, 400 MEADOWVIEW DR. PROPERTY VALUE \$4,073.00, ASSESSED VALUE \$1,222.00, AND TAXES \$10.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 17.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF DARLIN DESIGN. MAP 075 K B 017.00 P 001, 911 NASH'S NOOK. PROPERTY VALUE \$11,500.00, ASSESSED VALUE \$3,450.00, AND TAXES \$28.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 18.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF TW SURPLUS. MAP 088 J B 032.00 P 001, 1909 SHEFFIELD LN. PROPERTY VALUE \$3,306.00, ASSESSED VALUE \$992.00, AND

TAXES \$8.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.

- 19.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF NOVEL WOODWORKS. MAP 090 P F 022.00 P 001, 204 CONANT DR. PROPERTY VALUE \$10,618.00, ASSESSED VALUE \$3,185.00, AND TAXES \$26.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 20.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF THE STONE GOAT TAVERN. MAP 099 H O 029.00 P 002, 926 S MAIN ST. PROPERTY VALUE \$16,000.00, ASSESSED VALUE \$4,800.00, AND TAXES \$40.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 21.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF THE ULTIMATE SPACE. MAP 042 P C 011.00 P 001, 2661 CONTI DR. PROPERTY VALUE \$10,000.00, ASSESSED VALUE \$3,000.00, AND TAXES \$25.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 22.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF DIAZ-MENDE MARIETTA. MAP 089 D E 023.00 001, 722 SANTA FE PIKE. PROPERTY VALUE \$30,200.00, ASSESSED VALUE \$12,080.00, AND TAXES \$100.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 23.DELETE 2023 PERSONAL PROPERTY TAX IN THE NAME OF JAMES AND SONS GENERAL. MAP 075 O A 023.00 P 001, 410 CHEYENNE TRL. PROPERTY VALUE \$12,000.00, ASSESSED VALUE \$3,600.00, AND TAXES \$30.00. DUE TO BUSINESS CLOSED PER MAURY COUNTY TAX ASSESSOR.
- 24.CHANGE 2023 PROPERTY TAX IN THE NAME OF COOK ROBERTS & COOK INC., C/O CVS/HEALTH #641303 ATTN: STORE ACCOUNT. MAP 100 J F 001.00, 1300 TROOTWOOD AVE. PROPERTY VALUE FROM \$6,823,600.00 TO \$2,141,800.00, ASSESSED VALUE FROM \$2,729,440.00 TO \$856,720.00 AND TAXES FROM \$22,521.00. TO \$7,069.00. DUE TO ERROR IN

IMPROVEMENT VALUE PER MAURY COUNTY TAX
ASSESSOR.

- 25.CHANGE 2023 PROPERTY TAX IN THE NAME OF HARAKAS
CURT. MAP 089 M A 020.01, 602 BULLOCK ST. PROPERTY
VALUE FROM \$270,200.00 TO \$50,000.00, ASSESSED VALUE
FROM \$67,550.00 TO \$12,5000.00 AND TAXES FROM \$557.00.
TO \$103.00. DUE TO ERROR ON PROPERTY RECORD PER
MAURY COUNTY TAX ASSESSOR.
- 26.PICK UP 2023 TAXES IN THE NAME OF PARKER HANNIFIN
CORP. MAP 101 034.30, 2203 OAKLAND PKWY. PROPERTY
VALUE \$134,466.00, ASSESSED VALUE \$40,340.00, AND
TAXES \$333.00. BARA FOR TAX YEAR 2023. POLLUTION
CONTROL CERTIFICATE NOT FILED FOR EQUIPMENT PER
MAURY COUNTY TAX ASSESSOR.
- 27.PICK UP 2023 TAXES IN THE NAME OF AMERIGAS PROPANE
LP #5488. MAP 191 531.00 P 200, COLUMBIA ICL. PROPERTY
VALUE \$21,178.00, ASSESSED VALUE \$6,353.00, AND TAXES
\$52.00. BARA FOR TAX YEAR 2023. TPPS FILED AFTER BOE
DEADLINE PER MAURY COUNTY TAX ASSESSOR.
- 28.PICK UP 2023 TAXES IN THE NAME OF BARLOW LAWN AND
LANDSCAPE. MAP 101 G A 027.00 P 200, 102 GREENVALE DR.
PROPERTY VALUE \$9,572.00, ASSESSED VALUE \$2,902.00,
AND TAXES \$24.00. BARA FOR TAX YEAR 2023. TPPS FILED
AFTER BOE DEADLINE PER MAURY COUNTY TAX
ASSESSOR.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT

Bailey Fitzgerald, Senior Administrative Assistant, bfitzgerald@columbiatn.com, 931-560-1612

AGENDA ITEM TITLE: RESOLUTION NO. 23-97 - A RESOLUTION ACCEPTING THE DONATION OF \$1,000 (ONE THOUSAND DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF DEFENSE SHIELDS TO BE UTILIZED BY THE COLUMBIA POLICE DEPARTMENT.

RECOMMENDATION: Approve Resolution 23-97.

INFORMATION: The Columbia Police Department requests the City Council's approval to accept the donation of \$1,000 (One Thousand Dollars) from Joshua Ranes of Muletown Bearded Axe.

This monetary donation will provide for the purchase of Defense Shields. The Defense Shield provides full torso protection with a tough polycarbonate shield. The shield features an aluminum handle, web arm strap, and POLICE lettering and weighs about 6 lbs. This equipment will provide protection to Patrol officers if ever have to be deployed in an unruly environment.

ATTACHMENTS: Staff Report; Resolution No. 23-97.

A RESOLUTION ACCEPTING A DONATION OF \$1,000 (ONE THOUSAND DOLLARS) FROM JOSHUA RANES OF MULETOWN BEARDED AXE FOR THE PURCHASE OF DEFENCE SHIELDS TO BE UTILIZED BY THE POLICE DEPARTMENT

WHEREAS, Joshua Ranes of Muletown Bearded Axe in Columbia, Tennessee, desires to support the operations of the Columbia Police Department with a monetary donation of \$1,000 (One Thousand Dollars); and

WHEREAS, the Columbia Police Department desires to accept the donation of \$1,000 (one thousand dollars); and

WHEREAS, said monetary donation of \$1,000 (One Thousand Dollars) is to be utilized to equip the Columbia Police Department by purchasing Defense Shields; and

WHEREAS, no matching funds are required.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA that such city does hereby endorse the efforts of the Columbia Police Department by accepting said donation.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Donnie Boshers, Wastewater Director, dboshers@columbiatn.com, 931-560-1011

AGENDA ITEM TITLE: RESOLUTION NO. 23-98 – A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING BEAR CREEK GLEN, PHASE 1 – WARD 5

RECOMMENDATION: Approve Resolution No. 23-98.

INFORMATION: Bear Creek Glen, Phase 1 consist of 796 linear feet of 8" gravity sanitary sewer main. The Developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

**A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF
SEWER IMPROVEMENTS SERVING BEAR CREEK GLEN, PHASE 1**

WHEREAS, The City of Columbia, has been requested to accept ownership and maintenance of 796 linear feet of 8" gravity main serving Bear Creek Glen, Phase 1; and

WHEREAS, the City of Columbia has inspected said sewer improvements and has determined that said sewer improvements meet the requirements imposed by the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City of Columbia does hereby accept the ownership and maintenance of said sanitary sewer improvements serving Bear Creek Glen, Phase 1.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER - CITY ATTORNEY

Date: 3 November 2023

Columbia City Council
City of Columbia, Tennessee
City Hall
700 North Garden Street
Columbia, Tennessee 38401

Dear Council Members:

I wish to present for dedication to the Council of the City of Columbia, Tennessee, the wastewater system improvements installed to service Bear Creek Glen Phase 1 in the amount of 796 linear feet. The Contractor installed the sanitary sewer according to the Standard Sewer Specifications of the City of Columbia.

You have been provided with CCTV and as-built drawings of the project and all inspections and testing has been completed. All fees required for dedication have been paid. You have also been provided a one-year maintenance surety in the amount of \$19,303.00, set to expire one year from date of Council acceptance.

Acceptance by the Columbia City Council for these wastewater system improvements would be appreciated.

Sincerely,

Signed:



Print:





CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Donnie Bosher, Wastewater Director, dbosher@columbiatn.com, 931-560-1011

AGENDA ITEM TITLE: RESOLUTION NO. 23-99 – A RESOLUTION TO ACCEPT OWNERSHIP AND MAINTENANCE OF SEWER IMPROVEMENTS SERVING BEAR CREEK OVERLOOK, PHASE 1 – WARD 5

RECOMMENDATION: Approve Resolution No. 23-99.

INFORMATION: Bear Creek Overlook, Phase 1 consists of 1,865 linear feet of 8" sanitary sewer main. The Developers have met all of the qualifications for acceptance. The Wastewater Department has performed the necessary testing and inspections.

**A RESOLUTION TO ACCEPT THE OWNERSHIP AND MAINTENANCE OF
SEWER IMPROVEMENTS SERVING BEAR CREEK OVERLOOK, PHASE 1-
WARD 5**

WHEREAS, The City of Columbia, has been requested to accept ownership and maintenance of 1,865 linear feet of 8" gravity main serving Bear Creek Overlook, Phase 1; and

WHEREAS, the City of Columbia has inspected said sewer improvements and has determined that said sewer improvements meet the requirements imposed by the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City of Columbia does hereby accept the ownership and maintenance of said sanitary sewer improvements serving Bear Creek Overlook, Phase 1.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER - CITY ATTORNEY

Date: 3 November 2023

Columbia City Council
City of Columbia, Tennessee
City Hall
700 North Garden Street
Columbia, Tennessee 38401

Dear Council Members:

I wish to present for dedication to the Council of the City of Columbia, Tennessee, the wastewater system improvements installed to service Bear Creek Glen Phase 1 in the amount of 796 linear feet. The Contractor installed the sanitary sewer according to the Standard Sewer Specifications of the City of Columbia.

You have been provided with CCTV and as-built drawings of the project and all inspections and testing has been completed. All fees required for dedication have been paid. You have also been provided a one-year maintenance surety in the amount of \$19,303.00, set to expire one year from date of Council acceptance.

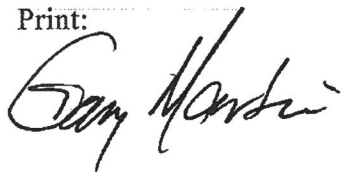
Acceptance by the Columbia City Council for these wastewater system improvements would be appreciated.

Sincerely,

Signed:



Print:





CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Jonathan Stotler, MIS Director, jstotler@columbiatn.com, 931.560.1550

AGENDA ITEM TITLE: RESOLUTION NO. 23-100 – A RESOLUTION TO RATIFY THE APPLICATION OF THE FY 2022 STATE & LOCAL CYBERSECURITY GRANT PROGRAM AND AUTHORIZE THE MAYOR TO EXECUTE DOCUMENTS RELATED TO ACCEPTING AND ADMINISTERING THE GRANT

RECOMMENDATION: Approve Resolution No. 23-100.

INFORMATION: The City of Columbia has the opportunity to apply for a grant from the FY 2022 state & local cybersecurity grant program for the purpose of MDR (Managed Detection and Response) security services.

**A RESOLUTION TO RATIFY THE APPLICATION OF THE FY 2022 STATE &
LOCAL CYBERSECURITY GRANT PROGRAM AND AUTHORIZE THE MAYOR TO
EXECUTE DOCUMENTS RELATED TO ACCEPTING AND ADMINISTERING THE
GRANT**

WHEREAS, the City of Columbia MIS Department has applied for the FY 2022 State & Local Cybersecurity Grant Program for the purpose of MDR (Managed Detection and Response) security services; and

WHEREAS, the City of Columbia supports the efforts of the MIS Department to enhance security efforts to keep the City of Columbia's data information infrastructure secure and operational.

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE CITY OF COLUMBIA that:

1. The City Council does hereby ratify the application to the FY 2022 State & Local Cybersecurity Grant Program for the purpose of MDR (Managed Detection and Response) security services.
2. The City Council hereby authorizes the Mayor to execute the grant contract and all other documents related to the grant project during the project's term.

**PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA,
TENNESSEE**, this the _____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

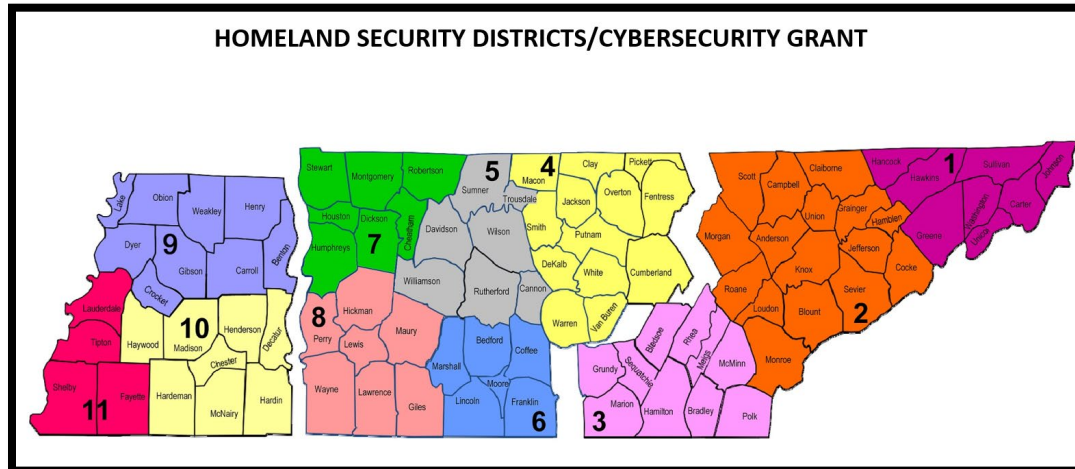
THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

CYBERSECURITY PLANNING COMMITTEE MEMBERS **HOMELAND SECURITY DISTRICTS**



District 1

Primary Committee Member:
Randall Lewis, Washington County
Gov, Assistant 911 Director
rlewis@wc911.org

District 2

Primary Committee Member:
Brian Young, Anderson County Gov
IT@andersoncountyttn.gov

Secondary/backup Member:
Rob Ogle, City of Pigeon Forge
rogle@cityofpigeonforgetn.gov

District 3

Primary Committee Member:
Brendan Taylor
City of Chattanooga
btaylor@chattanooga.gov

Secondary/backup Member:
Raul Hidalgo, Hamilton County IT
RaulH@HamiltonTn.gov

District 4

Primary Committee Member:
Mickey Ledbetter, Overton Co
mledbetter@opecd.com

Secondary/backup Member:
Loren Baker, Overton Co
Horathgar2000@gmail.com

District 5

Primary Committee Member:
Sean Cothron
Communications and Technology
Coordinator, Williamson Co EMA
Sean.Cothron@williamsoncounty-tn.gov

Secondary/backup Member:
Carl Wilson
Town of Smyrna
carl.wilson@townofsmyrna.org

District 6

Primary Committee Member:
Josh Carney, Bedford County
josh.carney@bedfordcountyttn.gov

District 7

Primary Committee Member:
Skip Burchett, Montgomery Co IT
wsburchett@mcgtn.net

Secondary/backup Member:
Jared Oakes, Montgomery County
Information Technology
jmoakes@mcgtn.net

District 8

Primary Committee Member:
Chaz Morrow, Lawrence Co
cmorrow@lawrenceburgtn.gov

Secondary/backup Member:

Clayton Cross, Wayne County
clayton.cross@waynecountyttn.gov

District 9

Primary Committee Member:
Justin Little, Gibson Co. EMA
gcmacomms@usit.net

Secondary/backup Member:
Steve Agee, Gibson Co. EMA
Agee@crocketttnet.com

District 10

Primary Committee Member:
Matt Presson, Madison County IT
mpresson@madisoncountyttn.gov

Secondary/backup Member:
Brian Taylor, City of Jackson IT Dept
btaylor@jacksontn.gov

District 11

Primary Committee Member:
Smita Sompalli – Shelby County IT
Department
smita.sompalli@shelbycountyttn.gov

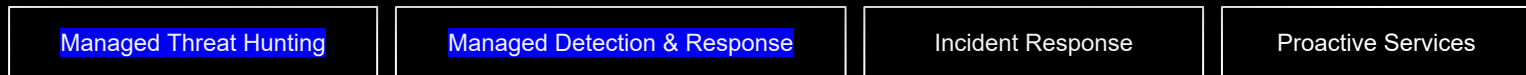
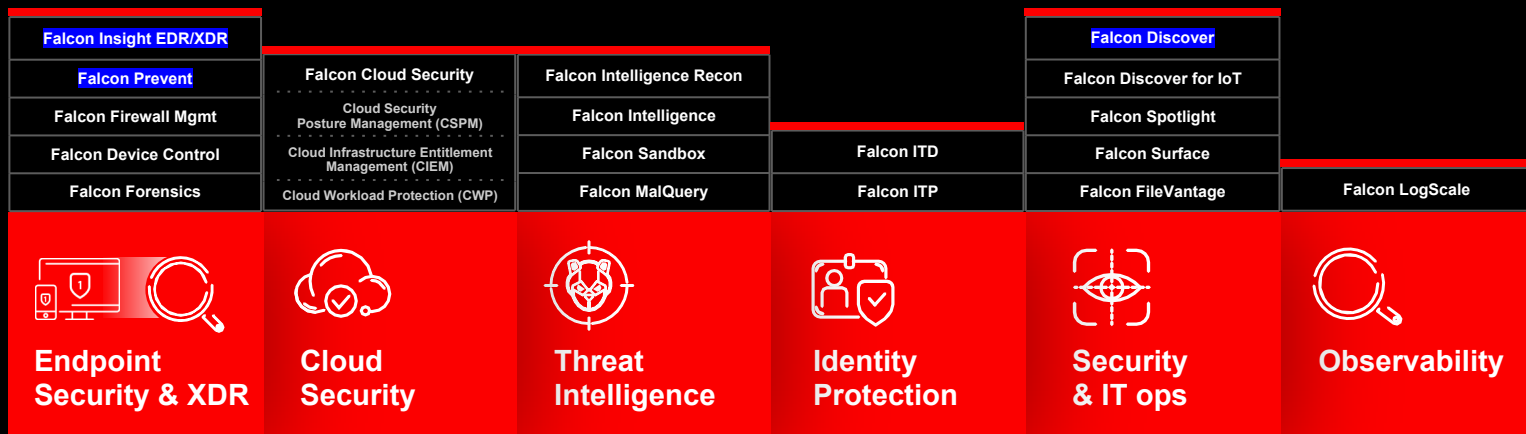
Secondary/backup Member:
Tony Fischer
City of Germantown
Afischer@germantown-tn.gov

CrowdStrike “Whole of State” Cybersecurity Approach

Nat Cuppan
Tom Rawlyk
Michael Padus

Agenda

- Intro To CrowdStrike Team
- State of TN SLCGP – MDR – what's happening – where and how to apply
- Falcon Complete Overview
- Next Steps -> APPLY!



Leading the MDR Market

CrowdStrike has committed to developing a program in support of a “Whole of State” approach and align with the SLCGP.

CrowdStrike already partnered with:



In Sept (FY) 2022, DHS provided \$185M address cybersecurity risks and cybersecurity threats to information systems owned or operated by, or on behalf of, state, local and territorial governments.

- Eligible - All 56 states and territories
- Each state and territory must establish a Cybersecurity Planning Committee that coordinates, develops, and approves a Cybersecurity Plan.
- 80% of total state allocations must support local entities, while 25% of the total state allocations must support rural entities

What's Happening :

- State Funded MDR Using SLCGP – Year 1
- Applicants Should work with their district leaders to apply
- State of Tennessee will be buying on behalf of Accepted Applicants
- Accepted Applicants will work with CrowdStrike to deploy, onboard & start program.
- Questions to cybersafetn@tn.gov

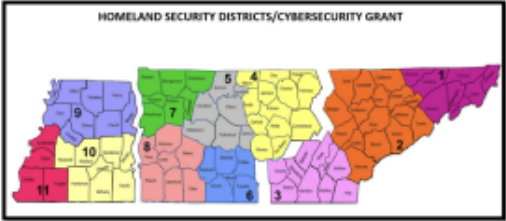
Where and how to apply & things to note:

- Make sure you have completed the NCSR
- Identify Your District Leader (will show example) on TN.gov
- Fill out project form (Will show sample) on TN.gov
- Specify Managed Detection & Response (MDR) in project title
- Set dollar value to “\$0”
- Specify Endpoint/server count
- K12 Specific – ONLY SPECIFY FACULTY & STAFF
- Questions to cybersafetn@tn.gov

District Boundaries & Leaders

**CYBERSECURITY PLANNING COMMITTEE MEMBERS
HOMELAND SECURITY DISTRICTS**

HOMELAND SECURITY DISTRICTS/CYBERSECURITY GRANT



District 1
Primary Committee Member:
Randall Lewis, Washington County Gov, Assistant 911 Director
rlewis@wc911.org

District 2
Primary Committee Member:
Brian Young, Anderson County Gov
bryoung@andersoncountytgva.gov

Secondary/backup Member:
Rob Ogile, City of Pigeon Forge
rogile@cityofpigeonforgetn.gov

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Secondary/backup Member:
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Raul.H@HamiltonTn.gov

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mledbetter@speed.com

Secondary/backup Member:
Loren Baker, Overton Co
lbaker@overtonco.com

District 5
Primary Committee Member:
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Communications and Technology
Coordinator, Williamson Co EMA
Sean.Cochran@williamsoncountytgva.gov

Secondary/backup Member:
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Town of Smyrna
carl.wilson@townofsmyrna.org

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Information Technology
jcullen@mcgtn.net

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Primary Committee Member:
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cmorrow@lawrencecountytgva.gov

Secondary/backup Member:
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clayton.cross@waynecountytgva.gov

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Primary Committee Member:
Justin Little, Gibson Co EMA
jgmacomm@usd.net

Secondary/backup Member:
Steve Agre, Gibson Co EMA
Agre@crowdstrike.net

District 10
Primary Committee Member:
Matt Presson, Madison County IT
mpresson@madisoncountytgva.gov

Secondary/backup Member:
Brian Taylor, City of Jackson IT Dept
btaylor@jacksontn.gov

District 11
Primary Committee Member:
Smita Sompalli - Shelby County IT
Department
ssmita.sompalli@shelbycountytgva.gov

Secondary/backup Member:
Tony Fischer
City of Germantown
Afischer@germantown-tgva.gov

- Additional questions should go to cybersafetn@tn.gov

Example Application Template

PROJECT DETAIL SHEET 2022	
County/City Name:	
Project Title:	Project 1 - Cybersecurity Managed Endpoint Detection and Response (MDR)
Total Project Cost:	\$ 0.00
Date Prepared:	
Prepared By:	
Email:	Email Address
Phone:	Cell Phone Number
Project Description:	
The <your entity> wishes to participate in the Managed Endpoint Detection and Response solution - Project 1 of the FY22 SLGCP. We will require approximately <#> licenses that will cover <#> would list out at least a sample of the departments and agencies this will cover. I would definitely call out if it is for (G/A), (EMA), (LE), or (FS and EMS) (see above)> workstations and servers. This type of 24/7 managed solution was identified as a need when we recently completed our NCSR. This project aligns with Objective 1 and 3 in the NOFO. Objective 1: Develop and establish appropriate governance structures, including developing, implementing, or revising cybersecurity plans, to improve capabilities to respond to cybersecurity incidents and ensure continuity of operations. Objective 3: Implement security protections commensurate with risk, and enhance the preparation, response, and resiliency of information systems, applications, and user accounts. This project also aligns up with the State's Cybersecurity Plan Goals 1) Secure and Reliable Information Access; 2.1) Enhance capabilities to manage cybersecurity risks; 2.2) Implement controls to reduce risk and increase resilience; 2.3) Promote the use of network detection tools, technologies, and policies; 2.4) Rapid analysis of, and response to, anomalies and suspected events; 4) Adopt a cost savings and crosscutting approach, and the following elements of the grant: Monitor, audit, and, track network traffic and activity transiting or traveling to or from information systems, applications, and user account.	

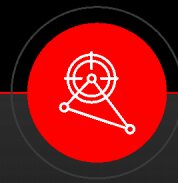
- Fill out project form (Will show sample) on TN.gov
- Specify Managed Detection & Response (MDR) in project title
- Set dollar value to "\$0"
- Specify Endpoint/server count
- K12 Specific – ONLY SPECIFY FACULTY & STAFF
- Questions to cybersafetn@tn.gov

Response-Driven MDR



Immediate Containment

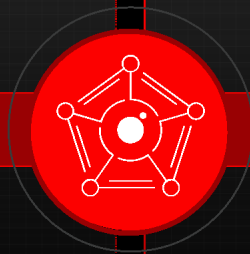
Neutralize attacks
Minimize exposure and spread



Surgical Remediation

Eliminate reimaging burden
No end-user impact

Maximum Effectiveness



Minimum Disruption

Identity

Block access
Reset password
Reauthenticate with MFA

File & Registry

Quarantine file
Pull file for analysis
Remove registry persistence

Process & Memory

End process / stop service
Global process hash block
Retrieve memory dump

System

Event log review
Restart host
Network contain host

CROWDSTRIKE ALIGN'S WITH CISA's VISION

FOR:

Cyber Defense

Risk Reduction and Resilience

Operational Collaboration

Agency Unification



KEY CYBERSECURITY THEMES



Flat/Declining Budgets
do more with less; must
replace an existing tool



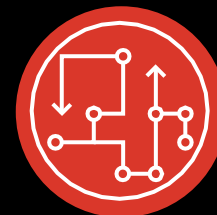
Lack of Visibility and Control
how can you secure what you
cannot see?



Staffing Challenges
challenging to hire, train,
and retain

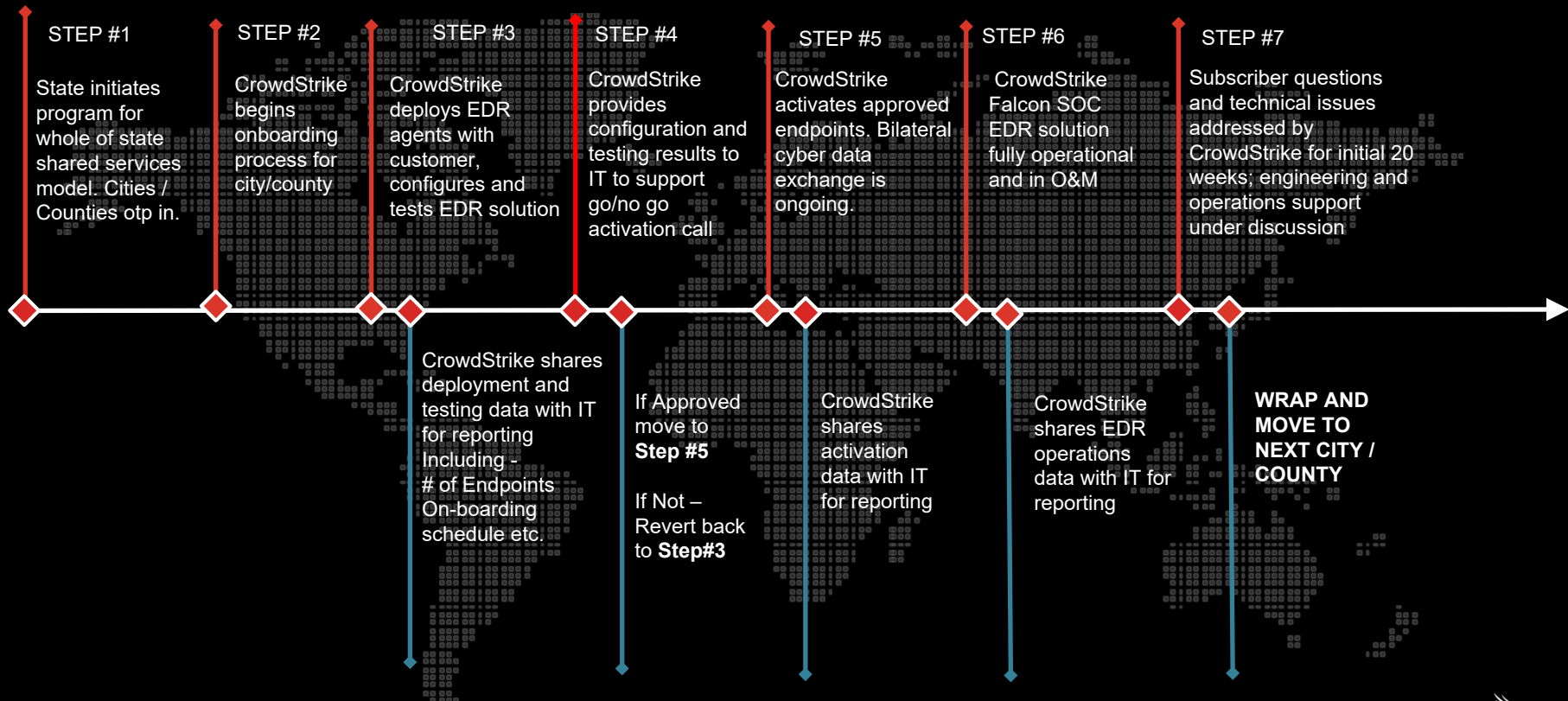


Data Fidelity
too much, not current, not
relevant, not actionable

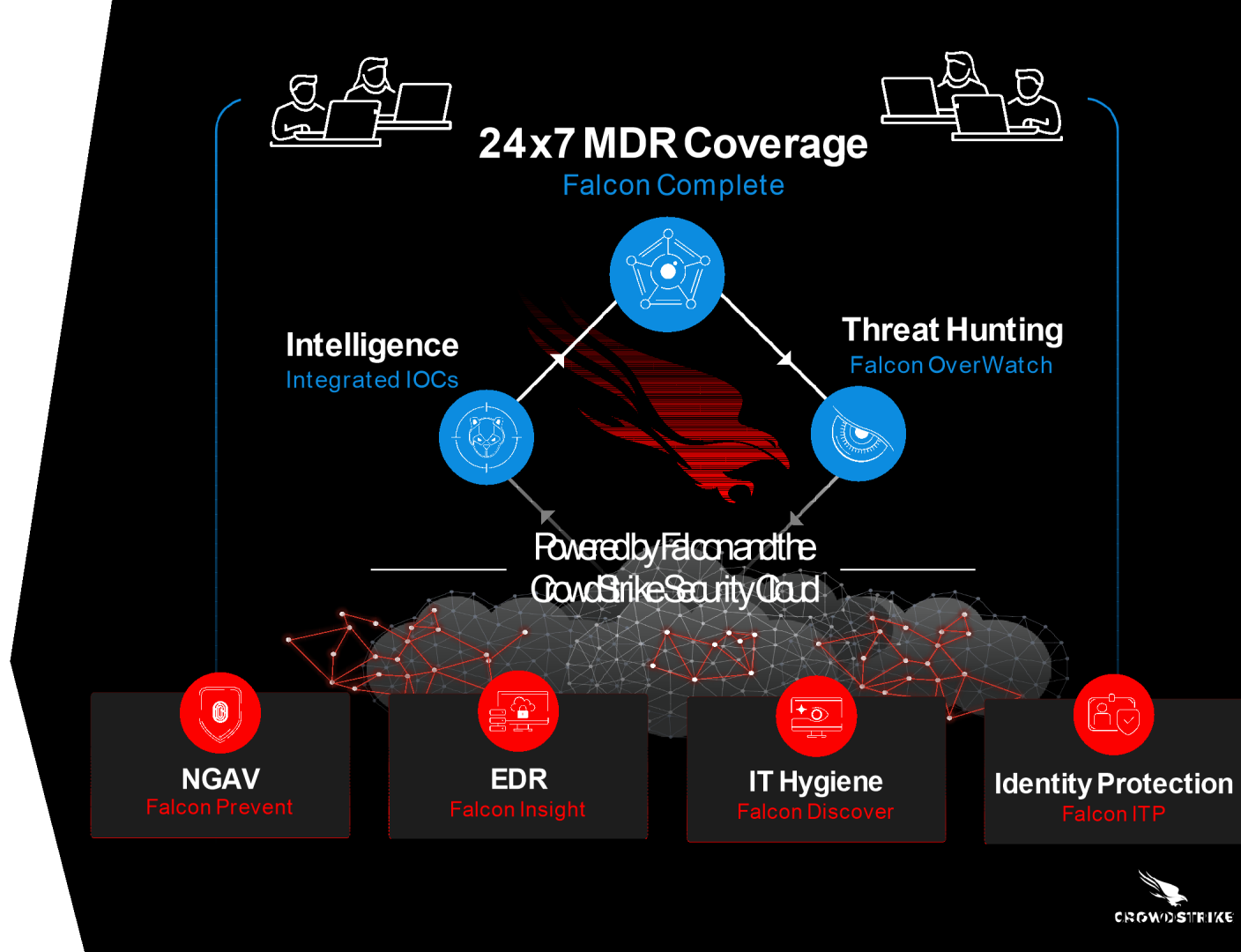


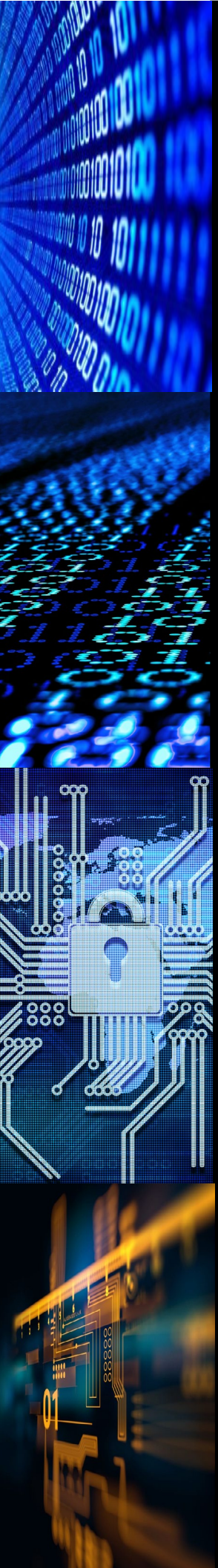
Cyber Threats
increasing in complexity,
frequency and intensity

Timeline of Activities for CrowdStrike Whole of State Approach



MDR with Benefits





STATE OF TENNESSEE CYBERSECURITY PLAN



June 2023

Approved by the TN Cybersecurity Grant Planning Committee on 06-29-2023

Version 7.3

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LETTER FROM THE STATE OF TENNESSEE'S CYBERSECURITY GRANT PLANNING COMMITTEE CO-CHAIRS

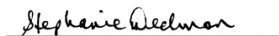
Greetings,

The Cybersecurity Planning Committee for the State of Tennessee is pleased to present to you the 2022/2023 Tennessee Cybersecurity Plan. The Cybersecurity Plan represents the State's continued commitment to improving cybersecurity and supporting our state, as well as cybersecurity practitioners across our Local jurisdictions. In addition, this update meets the requirement of the current U.S. Department of Homeland Security guidelines for the State and Local Cybersecurity Grant Program (SLCGP).

Leaders from the State of Tennessee along with Tennessee Local government representatives from the 11 Homeland Security Districts collaborated to develop and update the enclosed Cybersecurity Plan. The Plan contains measurable goals and actionable objectives that include identified champions to ensure their completion. These goals and objectives focus on the following goals: Deliver high-quality IT and cybersecurity solutions to stakeholders; Continually improve the whole-of-state cybersecurity posture; Provide better customer-focused protection of critical data; and excel as stewards of taxpayer dollars. They are designed to support our entity in planning for new technologies and navigating the ever-changing cybersecurity landscape. They also incorporate the SLCGP required plan elements.

As we continue to enhance cybersecurity, we must remain dedicated to improving our resilience among disciplines and across jurisdictional boundaries. With help from cybersecurity practitioners, we will work to achieve the goals set forth in the Cybersecurity Plan and become a model for cyber resilience.

Sincerely,



Stephanie Dedmon,
Chief Information Officer and Chair of Tennessee Cybersecurity Grant Planning Committee
State of Tennessee
Strategic Technology Solutions



Curtis Clan,
Chief Information Security Officer and Co-Chair of Tennessee Cybersecurity Grant Planning Committee
State of Tennessee
Strategic Technology Solutions

Date: 04/14/2023

INTRODUCTION

The State of Tennessee Cybersecurity Plan is a three-year strategic planning document that contains the following components:

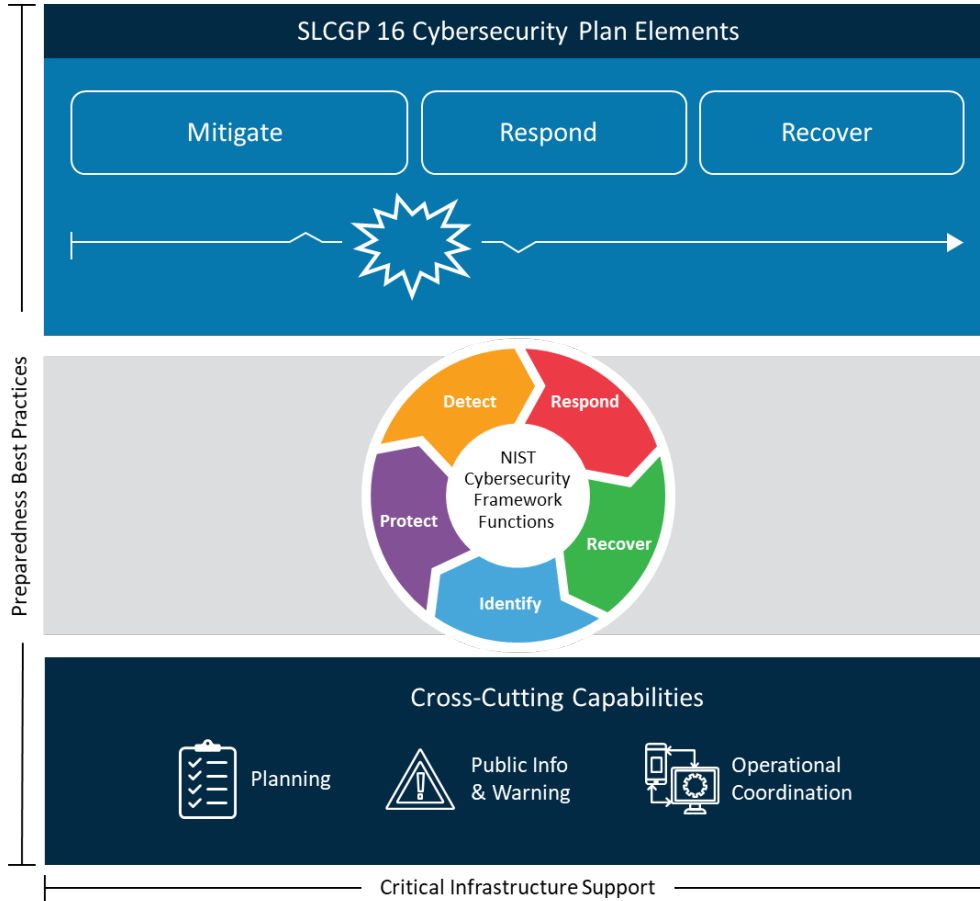
- **Vision and Mission:** Articulates the vision and mission for improving cybersecurity resilience interoperability over the next one-to-three-years.
- **Organization, and Roles and Responsibilities:** Describes the current roles and responsibilities, and any governance mechanisms for cybersecurity within the State of Tennessee as well as successes, challenges, and priorities for improvement. This also includes a strategy for the cybersecurity program and the organization structure that identifies how the cybersecurity program is supported. In addition, this section includes governance that identifies authorities and requirements of the State of Tennessee's cybersecurity program. The Cybersecurity Plan is a guiding document and does not create any authority or direction over any of the State of Tennessee's local systems or agencies.
- **How feedback and input from Local governments and associations was incorporated.** Describes how inputs from Local governments as used to reduce overall cybersecurity risk across the eligible entity. This is especially important to develop a holistic cybersecurity plan.
- **Cybersecurity Plan Elements:** Outlines technology and operations needed to maintain and enhance resilience across the cybersecurity landscape.
- **Funding:** Describes funding sources and allocations to build cybersecurity capabilities within the State of Tennessee along with methods and strategies for funding sustainment and enhancement to meet long-term goals.
- **Implementation Plan:** Describes the State of Tennessee's plan to implement, maintain, and update the Cybersecurity Plan to enable continued evolution of and progress toward the identified goals. The implementation plan must include the resources and timeline where practicable.
- **Metrics:** Describes how the State of Tennessee will measure the outputs and outcomes of the program across the entity.

This plan aligns with and/or references the following:

- Customer Focused Government Plan Department of Finance & Administration
- Enterprise IT Statewide Plan
- Governor's Cybersecurity Advisory Council Statewide Strategic Action Plan
- The State Enterprise Information Security Policy https://www.tn.gov/content/dam/tn/finance/sts/security-documents/300-POL-001_EISP-V%202.5%20Policy.pdf
- Strategic Technology Solutions' Cyber Incident Response Plan
- Tennessee Emergency Management Agency (TEMA) Tennessee Emergency Management Plan (TEMP) and Emergency Support Function 17 (ESF-17) Cybersecurity
- STS System Security Plan
- Information System Council (ISC) Policies <https://www.tn.gov/lawsandpolicies/policies/information-systems-council-isc-policies/information-systems-council-isc-policies-main-redirect/isc-information-resources-policies.html>

- The National Institute of Standards and Technology (NIST) Cybersecurity Framework¹, included in Figure 1 below.

Figure 1: Achieving Cyber Resilience Through Comprehensive Cybersecurity Plans



¹ <https://www.nist.gov/cyberframework/getting-started>

Vision and Mission

Vision:

A safe, secure, and prosperous Tennessee, through adequately and appropriately protected information resources.

Mission:

Lead Tennessee's effort to protect, manage, and reduce risk to our cyber and physical infrastructure, while developing a first-class workforce to meet the needs of business and industry.

Cybersecurity Program Goals and Objectives

The State of Tennessee's Cybersecurity Grant Planning Committee goals and objectives include the following:

Cybersecurity Program	
Program Goal	Program Objectives
1. Deliver high-quality IT and cybersecurity solutions to stakeholders	1.1 Secure and Reliable Information Access 1.1.1 Ensure the availability of and access to systems, networks, and information resources that enable government employees and citizens to perform essential functions. 1.1.2 Ensure the state's and local government's high value assets are protected by cybersecurity and physical controls. 1.1.3 Strengthen information resources in the state's data centers. 1.1.4 Leverage technologies to manage, monitor and track internal and external information flow across the state's and local government's operating environments. 1.1.5 Integrate Supply Chain Risk Management with mission oriented, risk-based protections that support IT based services, external access, and collaboration. 1.1.6 Provide quality cybersecurity training programs to ensure that users are fully aware of their responsibilities for protecting their information resources.
2. Continually improve the Whole-of-State cybersecurity posture	2.1 IDENTIFY – Enhance capabilities to manage cybersecurity risks 2.1.1 Assist local governments with establishing policies for cybersecurity hygiene through the use of automated tools and strengthening internal controls.

Cybersecurity Program	
Program Goal	Program Objectives
	2.1.2 Conduct assessments to ensure that hardware, software, and firmware meet cybersecurity standards – along with legal and regulatory requirements. 2.1.3 Conduct and analyze risk and vulnerability assessments to identify gaps in risk posture. 2.1.4 Leverage tools, technologies, and policies to identify, monitor, track, and log cybersecurity risks to state and local government. Provide and implement timely and quality cybersecurity hygiene training.
	2.2 PROTECT – Implement controls to reduce risk and increase resilience; promote cybersecurity awareness through workforce development and training. 2.2.1 Collaborate with public education and local governments to identify and develop a highly capable workforce to better meet the needs of state and local government. 2.2.3 Collaborate with public education and local governments to improve cybersecurity curriculum to better meet the needs of the state and local government workforce. 2.2.4 Implement cybersecurity requirements, measures, and solutions that harden state and local government infrastructure and network environments, thereby increasing protection of its information resources (monitor, manage, track users, etc.). 2.2.5 Promote the adoption and use of Identity, Credential, and Access Management tools, technology, and policies.
	2.3 DETECT – Develop and implement a process to accelerate cybersecurity risk and threat information across the state; promote the use of network detection tools, technologies, and policies. 2.3.1 Increase and enhance statewide sharing of analytics and real-time threat information to improve cybersecurity situational awareness, incident detection, and response. 2.3.2 Increase local government participation with the Multi-State Information and Analysis Sharing Center (MS-ISAC) and the Election Infrastructure – Information and Analysis Sharing Center (EI-ISAC). 2.3.3 Leverage tools, technologies, and policies to increase internal and external detection of risks, threats, and intrusions (monitor, track, log, analyze, etc.). 2.3.4 Promote the use of, or migration to, the .gov domain.
	2.4 RESPOND – Rapid analysis of, and response to, anomalies and suspected events. 2.4.1 Develop, in collaboration with local governments and stakeholders, information reporting requirements to form a common operating picture. 2.4.2 Adopt and enhance the Emergency Services Function 17 (ESF-17; Cybersecurity) capabilities for incident reporting and response coordination.

Cybersecurity Program	
Program Goal	Program Objectives
	2.4.3 Conduct periodic testing of the ESF-17 incident response capabilities and communications. 2.4.4 Leverage tools, technologies, and policies to increase internal and external response capabilities to possible or actual cybersecurity incidents at the state and local government enterprise level (monitor, manage, audit, track, etc.). 2.5 RECOVER – Implement incident triage, response, and recovery processes to address cybersecurity threats 2.5.1 Assist local governments with developing Continuity of Operations Plans (COOP) and Disaster Recovery Plans (DRPs). 2.5.2 Conduct cyber incident response plan exercises 2.5.3 Conduct gap analysis of IT and Cybersecurity resources necessary for Continuity of Operations Plans (COOP) and Disaster Recovery Plans (DRPs). 2.5.4 Leverage tools, technologies, and policies to assist with response and recovery of a suspected or actual cybersecurity event. 2.5.5 Conduct testing of critical IT and Cybersecurity systems and communications.
3. Provide better customer-focused protection of critical data	3.1 Customer focused cybersecurity at the State and Local Government level 3.1.1 Leverage tools, technologies, and policies to ensure legal and regulatory requirements are met while providing the highest quality of service possible, while providing the highest level of protection. 3.1.2 Leverage tools, technologies, and policies that provide data and identity protection for customers interacting with state and local government networks. 3.1.3 Promote the adoption and use of Identity, Credential, and Access Management tools, technology, and policies.
4. Excel as stewards of taxpayer dollars	4.1 Adopt a cost savings and crosscutting approach 4.1.1 Implement an information technology and operational technology modernization cybersecurity review process. 4.1.2 Utilize to the greatest extent possible, services provided by the Department of Homeland Security and other approved organizations. 4.1.3 Utilize to the greatest extent possible, cost analysis and group/bulk purchasing strategies to ensure local government entities have adequate access to, participation in, the services and programs outlined in this Plan.

CYBERSECURITY PLAN ELEMENTS

Manage, Monitor, and Track

At the State and Local Levels, entities should establish procedures that effectively control and restrict access to agency information assets to authorized users based on defined business and legal requirements (essentially, access will be limited to a “need-to-use” and/or “need-to-know” basis). Mechanisms will be implemented that provide for the control, administration, and tracking of access to, and the use of, information assets, as well as the protection of such assets from unauthorized or unapproved activity and/or destruction. The State of Tennessee’s Executive Branch Specific Policies to implement this Strategic Approach are documented in the Strategic Technology Solutions’ Enterprise Information Security Policy that is available for use by the other Branches of State Government and Local Government entities on the State’s cybersafetn.gov website.

Monitor, Audit, and Track

Asset owners, asset custodians, and information security and privacy officers at the State and Local levels should:

- (a) Ensure the information assets under their purview are assessed for security and privacy risks and configured such that event logging is enabled to ensure an adequate level of situational awareness regarding potential threats to the confidentiality, integrity, availability, and privacy of agency information and information systems are identified and managed; and
- (b) Review and retain event logs in compliance with all applicable Local, State and Federal laws.

The State Agency, Department, Board, and Commission Management must comply with the ISC Policy 2.00: Review of Confidential Information Technology (IT) Audit Findings.

1. Ensure that agency, department, board, and commission staff receive the security training appropriate for their job functions.
2. Ensure that recommendations are considered, and corrective action plans are developed and executed.
3. As appropriate, consult with the Office of the State’s Chief Information Officer (CIO) on steps needed in order to improve the agency’s security posture.
4. As appropriate, develop internal policies and procedures.
5. Ensure internal policies and procedures are followed.
6. Attend Information Systems Council meetings and present corrective action plans upon request.

STS manages a central logging and analysis solutions for the State Executive Branch agencies and any other agencies that leverage the STS managed network and infrastructure including data centers on-premises and in the cloud.

Enhance Preparedness

State and Local Government Entities should implement continuous risk management processes that account for the identification, assessment, treatment, and monitoring of risks that can adversely impact their operations, information systems, and information. These processes will inform the exercise and execution of Incident Response Plans,

Continuity of Operations Plans and the State Emergency Operation Plan. Lessons Learned from these exercises will be incorporated into future planning, inform organizational decisions, and demonstrate additional equipment and training needs.

Tennessee Emergency Management Agency has established the Tennessee Emergency Management Plan (TEMP) and is building out Emergency Support Function – 17 (ESF-17) Cybersecurity.

Assessment and Mitigation

STS manages two on-premises data centers and three cloud environments. All servers in those data centers are scanned for vulnerabilities each week. The output of those scans is stored in our governance and risk tool. Agency system/application administrators have access into the governance tool to have a real time visibility of their risk so they can patch. The Enterprise Information Security Policy states the patch cadence that must be followed. STS has developed an out-of-cycle patch process for zero-day exploits and critical known exploits in the wild.

STS Security holds meetings with the agencies to discuss the findings and to answer any questions they may have.

STS also performs an annual risk assessment on the data centers to make them SOC2/Type2 certified.

In addition, STS has contracted with a third-party cybersecurity provider to perform penetration test on all external facing websites/systems.

Local entities should leverage the statewide third-party contract to evaluate their systems for vulnerabilities.

STS runs and manages a 24/7 security operations team that responds to cyber incidents and facilitates events to mitigation. STS has a Cyber Incident Response Plan that they follow. STS is available as a consulting arm for Locals during cyber related events.

Local entities should create their own Cyber Incident Response Plan and include STS as appropriate.

Best Practices and Methodologies

The State of Tennessee cybersecurity is governed by the Enterprise Information Security Policy. That policy states the minimum requirements for each state agency to provide. The policy covers topics such as least-privilege, separation of duties and password complexity.

STS has enabled multi-factor authentication for the O365 suite of applications. In addition, we have enabled multi-factor for all VPN users. STS is in the process of also enabling multi-factor for all Internet facing applications that host confidential information. STS leverages active directory group policy to control access in the application.

STS has established an enterprise logging solution and a Security Information Event Management tool (SIEM). Those tools are used for detecting and responding to potential security events.

STS has implemented encryption at rest for all workstations and servers. In addition, STS has encrypted all storage in the data centers. STS manages TLS certificates and applies those to all websites that contain confidential information. Example of this is <https://tn.gov>.

All third-party contracts have language in them requiring encryption at rest and in-transit for confidential data.

As part of the Vulnerability Management Program end of life systems are updated prior to going out of support. STS has assigned project managers to assist with working with all the agencies to update their systems. Priority is given to all Internet facing systems. Any system that cannot be updated are mitigated with other security controls.

As part of the requirement of the EISP agencies are required to change all default passwords upon installation. Security application assessments are done to audit this process.

STS has a Disaster Recovery team that works with the agencies to perform table-top exercises as well as functional test. The functional test uses the process to restore from backups.

Most of the state websites are leveraging the .GOV domain. STS has started a project to do an inventory of sites that are not leveraging the .GOV and will work with the agencies to determine the potential to move to the .GOV domain.

Local entities should establish the same practices and STS will support them as appropriate.

NIST Principles

STS Security policy is based on the ISO27001 framework which is easily mapped to the NIST SP 800-53 framework. The State has five agencies that receives, processes, and stores federal data that must meet the NIST SP 800-53. The State has a compliance group that works with those agencies to validate that they are compliant.

STS has been participating and submitting the National Cybersecurity Review (NCSR) since 2015. STS has started a program to reach out to all Local entities to help them participate in the NCSR. This project is a multi-year project.

STS has partnered with a third-party security firm to assess entities on NIST CSF for year 2022-2023.

Local entities can leverage the statewide contract with that third party partner to access their systems.

Many Local counties and jurisdictions are now members of the Multi-State Information Sharing and Analysis Center (MS-ISAC) and we will be promoting adding more as we complete the NCSR.

Supply Chain Risk Management

Through the procurement process the State has written into the contract language security requirements. Depending on the data being process or stored in the solution the requirements differ. The requirements could include that they have certifications in FedRAMP, SOC2 Type 2, or ISO27001. They also must meet the requirements of the State's EISP.

The State has established an approval committee for new solutions. The STS security team does an analysis of the vendor solution for security concerns prior to the solution being approved.

Tools and Tactics

The State leverages several tools around threat. We partner with CISA and MS-ISAC for threat intel as well as State Homeland Security. We get intel via email and use that information and share with our agencies as warranted.

Tools that State uses include a Governance Risk and Compliance (GRC) platform, Intrusion Detection and Prevention (IDP), Security Information and Event Management (SIEM), MS-ISAC Albert sensor, Open Web and Dark Web intel, secure email gateway with scanning of attachments and url re-writing, vulnerability scanning, Endpoint Detection and Response (EDR), central logging, phishing campaigns, security awareness training platform, and firewalls.

The State also has designed the architecture in a way to provide defense in depth. Tactics to protect include a 24/7 security operations team with monitoring of events. The Security Incident Response team leverages the Security Incident Response Plan. We have a third-party contract to assist with forensics. Distributed Denial of Service (DDOS) protection is in place, and we are put in automatic mitigation when an attack is detected.

We are promoting that Local entities join the MS-ISAC so they can also receive intel.

Safe Online Services

On Sept 11, 2019 the State established the Governor's Cybersecurity Advisory Council. We worked with the National Governors Association (NGA) to develop a Strategic Plan around cyber. One of the outcomes was the development of a website dedicated to cyber. The site is <https://cybersafetn.gov>. That site contains information helpful to the State and Local entities.

We have a current project to identify all non .GOV sites for the state agencies and will promote the moving to the .GOV domain.

Continuity of Operations

State and Local Government entities should develop, implement, test, and maintain contingency plans to ensure continuity of operations for all information systems that deliver or support essential or critical functions on behalf of the State of Tennessee or their respective Local Government Entity. Contingency planning is an important aspect of risk management.

For State government agencies ISC Policy 9 Discovery Recovery mandates that each agency performs a Business Impact Analysis and disaster recovery test. The policy defines the roles for the Information Technology shop as well as the business.

Tennessee Emergency Management Agency (TEMA) has established the Tennessee Emergency Management Plan (TEMP) and is building out a dedicated cybersecurity Emergency Support Function – 17 (ESF-17). As part of the effort to bring together the ESF-17, TEMA has partnered with Strategic Technology Solutions (STS), Tennessee Bureau of Investigations (TBI), State Homeland Security, Attorney General's office and the Department of Treasury Risk management office to form a cross-collaboration channel for intelligence sharing and situation awareness.

Exercises are planned in the future and lessons learned will be documented and plans updated as needed. TEMA manages and runs the overall large exercises, while the other smaller entities leverage their respective plans as needed.

Workforce

The Tennessee Cybersecurity Advisory Council is currently designing and implementing programs to strengthen public partnerships in cybersecurity. The developing programs will ultimately increase the number of cyber services available to county and municipal governments. Increased statewide engagement provides a more accurate threat picture, which subsequently enhances Tennessee's cyber portfolio.

The Council has identified four primary areas of focus for the next two years:

1. Preparing for and responding to major cyber disruptions
2. Establishing coordinated programs that develop highly skilled cybersecurity professionals
3. Promoting the awareness of state security resources and services across the State
4. Information sharing and collaboration with Local governments and municipalities

The Council was awarded the opportunity to work with the National Governors Association (NGA) in building out a Strategic Action Plan to accomplish the four focus areas. That plan is underway and includes workforce development.

As part of cyber workforce development efforts, STS worked with its partner agencies and used the NICE framework and created a capability matrix. This document shows which agencies have staff either in those current roles or the skills to perform those defined task. The NICE framework defines around 52 roles. What we have found is that we have employees that are assigned multiple roles, typically around five to eight.

The NICE framework shows that to have everything covered you must rely on multiple parties. As an example, STS does not have a law enforcement component and we use TBI for that.

The exercise also validated that the services we were providing were valued and needed.

Next steps will be to document any gaps and add those roles and responsibilities for individuals to cover.

We will share our capability matrix with our Local entity partners, and they can use that to make sure they have as much coverage as possible for their business.

Continuity of Communications and Data Networks

The State's data network is built around being a very robust/resilient architecture. We have multiple data centers and perform disaster recover testing frequently. We leverage alternate Internet and Domain Name Providers. All enterprise services are built in a resilient manner. In addition to that we test our physical environments as well. Each data center goes through maintenance protocols such as weekly generator test, etc.

We did a study on resiliency to define critical sites that were not already part of what was considered "core network". An example would be a hospital on the network. We are working on redundant connectivity options to those types of sites in the future.

Assess and Mitigate Cybersecurity Risks and Threats to Critical Infrastructure and Key Resources

STS receives intelligence from multiple entities such as CISA, MS-ISAC, vender community and our own tools. We run a centrally managed security program which includes a 24/7 security operations center which runs an intrusion detection/prevention tool (IDP), security information event management (SIEM), firewalls, Web Application Firewalls (WAF), Endpoint Detection and Response (EDR), security email gateway, internet content filtering, DMARK, DNSSEC, DDOS protection, weekly vulnerability scans, dark web scanning intel, central management of workstations, network segmentation, central logging, and forensics.

If we detect any suspicious activity, we can isolate at multiple levels. We can isolate an individual device, or we can isolate an entire virtual local area network (VLAN).

Preventative assessments are ongoing yearly. We perform annual risk assessments, and we are audited regularly by State Audit and other federal agencies.

For mitigation we have multiple tiers depending on the level of the event. If the event can be handled by the security team, then the security operations team manages on their own. If a larger impact to the State, then we have a "Major Incident Response" team that gets engaged. Security of course participates in that. These are all hands-on deck types of calls initially for triage and containment of the situation stopping the bleeding and then scaling back as things calm down.

STS has awarded a contract to a third-party security company to help Local agencies with security risk assessments. The contract is a statewide contract and open to all Local entities for use. They can do general

risk assessments or true red/blue team type penetration testing. STS plans to offer Local governments a copy of our Cyber Incident Response Plan (CIRP).

Cyber Threat Indicator Information Sharing

STS has created the <http://cybersafetn.gov> for information sharing to the public.

STS has multiple ways that we communicate information. We receive intel from CISA and MS-ISAC and share that to the Information Technology community via an email listserv.

We also have monthly group meetings where key cybersecurity information is shared with a wider state audience. One group is the Information Technology Executive Committee (ITEC) which meets monthly. This group consist of all the State's information technology directors and agency Chief Information Officers.

Another group is the Information Technology Professional Association (ITPA). This is a much larger group containing all State employees classified as IT professionals.

We have a dedicated Vulnerability Management Team (VMT) that scans all the systems for CVEs and imports those findings into our governance risk and compliance tool (GRC). The VMT has weekly meetings with the agency staff to go over the findings and remediation plans and answer any questions they may have. Not patching is not an option! Everyone must stay in compliance with the Enterprise Information Security Policy (EISP).

There is also the Governor's Cybersecurity Advisory Council where we discuss cyber events. We have created a TEAMS channel for everyone to post ad hoc communications.

We are in the process of sending newsletters out to all the Local entities through a new email campaign.

We will investigate the CISA Cyber Information Sharing and Collaboration Program.

Department Agreements

At this time, there is no intent by the State of Tennessee to expand any information sharing agreements.

Leverage CISA Services

The State has leveraged CISA services in the past for penetration testing. We recognize that this may be a service the Local entities may want to leverage. We will partner with our Local entities and communicate with our regional CISA representative, as we currently do not have a local CISA representative. We will investigate the options that make sense, enrolling in the Vulnerability Scanning and Web-Application Scanning as required.

Information Technology and Operational Technology Modernization Review

All State agencies submit an Information System Plan (ISP) to STS which defines their three-year strategic Information Technology roadmap. This covers their modernization efforts. There is a lot of pressure and support to get away from legacy systems such as mainframe or systems that are going out of support. At the State we do our best to keep up with modern technology architecture with advanced security capabilities such as cloud services.

To ensure that information security is an integral part of information systems throughout their life cycle. This includes application infrastructure, vendor applications, agency-developed, and user-developed applications and information systems which provide services over public networks or the State's internal network.

Security requirements should be identified and documented as part of the overall business case for new information systems and for enhancement to existing information systems. These requirements should be

included early and continuously throughout the lifecycle of the application, including, but not limited to the conception, design, development, testing, implementation, maintenance, and disposal phases.

Cybersecurity Risk and Threat Strategies

STS has awarded an RFP to a partner to work with the State and hundreds of Local entities to assist in filling out the MS-ISAC NCSR assessment. In addition to filling out the NCSR they are tasked with identifying gaps for each entity. This will help with developing an overarching strategy for the State.

The NCSR is an assessment designed to measure potential cybersecurity gaps and capabilities of all branches of State government, counties, cities, and other Local jurisdictions. The assessment's goal is to assess opportunities for improvement and identify significant risks or gaps to protect our citizens and safeguard data. The benefits of implementing this assessment include increased awareness, risk mitigation, and enhanced communication regarding cyber safeguards.

The metrics that come out of the NCSR results will be presented to the Cybersecurity Planning Committee for their knowledge. This information will help then in making decisions when approving applications that come to the committee on spending of grant funds.

Rural Communities

Rural communities are assured adequate access to projects under the SLCGP by virtue of their representation on the planning committee and outreach activities that will be done by the Planning Committee as a whole and individual members of the Planning Committee. The consensus of the Planning Committee is that we make sure we consider the "have nots" before the "haves".

FUNDING & SERVICES

The State of Tennessee's Cybersecurity Grant Planning Committee intends to focus on three key projects in year one in order to strengthen cybersecurity across the State. These efforts include:

1. Cybersecurity Training
2. Cybersecurity Detection and Response
3. Formalized Planning and Organization

Year one projects are outlined below and further defined in Appendix B: Project Summary Worksheet.

Project Name: Project #1 Training

Project Description: User/End User Cybersecurity Awareness Training

If approved for funding, the eligible entity would purchase a cybersecurity awareness platform that will educate end users on how to protect against social engineering tactics and how to report them. In addition to being a training platform, the solution will also support validating the effectiveness of the training through the deployment of phishing campaigns. Metrics will show how many users click, forward, and read. Follow up training can be administered for those that continue to fail the phishing test to ensure organization personnel are appropriately trained in cybersecurity, commensurate with responsibility and offered to Local government entities as a service in lieu of funding.

This project aligns with Objective 4 in the Notice of Funding Opportunity (NOFO). Ensure organization personnel are appropriately trained in cybersecurity, commensurate with responsibility. This project also aligns with the State's Cybersecurity Plan - Goals 1) Secure and Reliable Information Access & 2) Enhance capabilities to manage cybersecurity risks; 4) Adopt a cost savings and crosscutting approach, and the following elements of the grant: Continuous cybersecurity vulnerability assessments and threat mitigation practices; Cyber hygiene

and end user training; Ensure adequate access to, and participation in, the services and programs and, distribute funds, items, services, capabilities, or activities to Local governments.

Project Name: Project #2 Detection and Response

Product Description: Cybersecurity Detection and Response – Endpoint Detection and Response (EDR)

If approved, the eligible entity would procure a solution that would be installed on the endpoints to address detection and prevention. The solution would then be monitored for malicious activities and mitigation controls would be put in place to prevent further access into the network and systems. Security operational personnel would respond and mitigate. This solution would be made available to Local government entities that wish to receive services in lieu of funding.

This project aligns with Objective 1 and 3 in the NOFO. Objective 1: Develop and establish appropriate governance structures, including developing, implementing, or revising cybersecurity plans, to improve capabilities to respond to cybersecurity incidents and ensure continuity of operations. Objective 3: Implement security protections commensurate with risk, and enhance the preparation, response, and resiliency of information systems, applications, and user accounts.

This project also aligns up with the State's Cybersecurity Plan Goals 1) Secure and Reliable Information Access; 2.1) Enhance capabilities to manage cybersecurity risks; 2.2) Implement controls to reduce risk and increase resilience; 2.3) Promote the use of network detection tools, technologies, and policies; 2.4) Rapid analysis of, and response to, anomalies and suspected events; 4) Adopt a cost savings and crosscutting approach, and the following elements of the grant: Monitor, audit, and, track network traffic and activity transiting or traveling to or from information systems, applications, and user account.

Project Name: Project #3 Planning and Organization

Product Description: Formal Planning Committee meetings and mitigations

The State of Tennessee is comprised of 95 counties with around 1300 entities within those counties. The maturity of those entities ranges from 1-7 with 1 being very poor to 7 optimized. The State has a project where we are doing the NCSR assessment for all entities. This assessment will show the current posture of each entity and will identify gaps where solutions need to be implemented.

If approved this project will fund those areas and gaps as they are identified. The actual solutions will be identified after the assessments have been done. Those solutions will be governed and approved by the State CIO office with support of the cyber grant committee. Formal meeting and discussions around the State Cyber Plan and Grant Elements will need to be revisited regularly to ensure grant compliance and project management goals and objectives.

This project aligns up with Objective 2 in the NOFO. Understand their current cybersecurity posture and areas for improvement based on continuous testing, evaluation, and structured assessments. This project also aligns with the State Cyber Plan Goals: 2) Continually Improve the Whole-of-State Cybersecurity Posture; 2.4) Rapid analysis of, and response to, anomalies and suspected events; and 4) Excel as Stewards of Taxpayer Dollars, and the following elements of the grant: Ensure adequate access to, and participation in, the services and programs, Adopt and use best practices and methodologies to enhance cybersecurity, Understand the current cybersecurity posture and areas for improvement based on continuous testing, evaluation, and structured assessment, and distribute funds, items, services, capabilities, or activities to Local governments.

Distribution to Local Governments

The State of Tennessee intends to passthrough at least 80% of the grant funding to local government entities as directed in the grant guidance in the form of sub-grant awards or by providing enterprise services on behalf of local governments as approved by the Cybersecurity Grant Planning Committee. The sub-award distribution process will follow the already established process used for the State Homeland Security Program (SHSP) by using an application process that meets our cybersecurity program goals and objectives. This approach, including ensuring that 25% of the Grant Funding is received as services to rural areas, meets the requirement in the State and Local Cybersecurity Improvement Act: e.2.B.xvi. See Appendix B: Project Summary Worksheet for details on year one projects.

ASSESS CAPABILITIES

The State of Tennessee's Cybersecurity Grant Planning Committee used Appendix A: Cybersecurity Plan Capabilities Assessment to assess and document capabilities for the cybersecurity plan elements included in this plan.

IMPLEMENTATION PLAN

Organization, Roles and Responsibilities

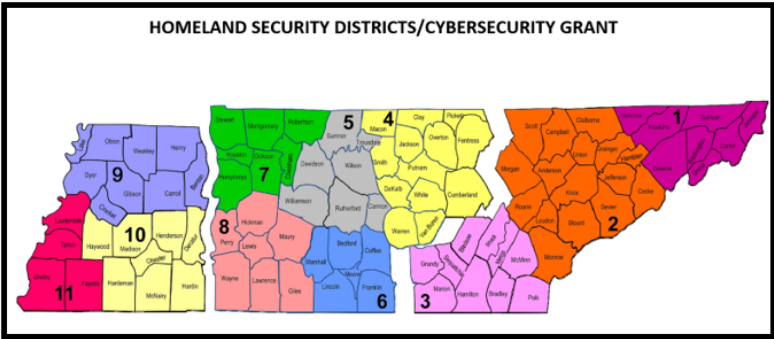
Organizational Model: In the State of Tennessee, cybersecurity is largely managed at the enterprise level. The Department of Finance and Administration houses the State's highly centralized information technology (IT) division, Strategic Technology Solutions (STS). STS serves the State's 23 Executive Branch agencies and also partners with the Judicial and Legislative branches on some projects and services. The STS Cybersecurity and Risk Management program is run by the Chief Information Security Officer (CISO), under the guidance of the State's Chief Information Officer (CIO). This encompassing program includes governance of security, policy, compliance, vulnerability management, disaster recovery, security awareness and incident & response.

For the State of Tennessee to participate in the Grant Program, there are several requirements, including the establishment of a planning committee and development of the Tennessee Cybersecurity Plan.

Committee Membership: The Tennessee Cybersecurity Grant Planning Committee is co-chaired by the State's Chief Information Officer (CIO) and Enterprise Cybersecurity Security Information Officer (CISO). Voting members of the Planning Committee currently include:

1. Stephanie Dedmon, Chief Information Officer, STS, Department of Finance & Administration
2. Curtis Clan, Chief Information Security Officer, STS, Department of Finance & Administration
3. James Cotter, Special Agent, Department of Safety and Homeland Security
4. Gary Baker, TEMA and State Administrative Agency contact
5. Lauren Lamberth, Attorney General's office
6. Rich Littlehale, Tennessee Bureau of Investigation, CIO
7. Chris Dowell, STS IT Director supporting the Department of Safety and Homeland Security
8. Jason Laney, STS IT Director supporting TEMA/Military
9. John Voss, TEMA Planning Manager
10. Vijay Gollapudi, Department of Education CIO
11. David Tall, STS Agency CIO supporting Department of Health
- 13-22. The primary IT representatives from each of the 11 Local government Homeland Security grant districts:

CYBERSECURITY PLANNING COMMITTEE MEMBERS
HOMELAND SECURITY DISTRICTS



District 1 Primary Committee Member: Randall Lewis, Washington County Gov, Assistant 911 Director District 2 Primary Committee Member: Brian Young, Anderson County Gov Secondary/backup Member: Rob Ogle, City of Pigeon Forge District 3 Primary Committee Member: Brendan Taylor City of Chattanooga Secondary/backup Member: Raul Hidalgo, Hamilton County IT District 4 Primary Committee Member: Mickey Ledbetter, Overton Co Secondary/backup Member: Loren Baker , Overton Co	District 5 Primary Committee Member: Sean Cothron Communications and Technology Coordinator, Williamson Co EMA Secondary/backup Member: Carl Wilson Town of Smyrna District 6 Primary Committee Member: Josh Carney, Bedford County District 7 Primary Committee Member: Skip Burchett, Montgomery Co IT Secondary/backup Member: Jared Oakes, Montgomery County Information Technology District 8 Primary Committee Member: Chaz Morrow, Lawrence Co	Secondary/backup Member: Clayton Cross, Wayne County District 9 Primary Committee Member: Justin Little, Gibson Co. EMA Secondary/backup Member: Steve Agee, Gibson Co. EMA District 10 Primary Committee Member: Matt Presson, Madison County IT Secondary/backup Member: Brian Taylor, City of Jackson IT Dept District 11 Primary Committee Member: Shawn McClure, Shelby County Gov Secondary/backup Member: Tony Fischer City of Germantown
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Roles and Responsibilities:

- Assisting with the development, implementation, and revision of the Cybersecurity Plan
- Approve/deny the spend of the grant monies
- Approving the Cybersecurity Plan
- Assisting with the determination of effective funding priorities
- Coordinating with other committees and like entities with the goal of maximizing coordination and reducing duplication of effort
- Creating a cohesive planning network that builds and implements cybersecurity preparedness initiatives using FEMA resources, as well as other Federal, State, Local, Tribal, private sector, and faith-based community resources
- Ensuring investments support closing capability gaps or sustaining capabilities; and
- Represent and speak on behalf of the local and rural areas for consent for the state to provide enterprise solutions.

Oversight/Governance: The TN Cybersecurity Grant Planning Committee is a true working group which reports to an informal Executive Committee comprised of the State of Tennessee's Chief Operating Officer, the Commissioner of the Department of Finance & Administration, the Commissioner of the Department of Safety, and the Director of the Tennessee Emergency Management Agency. The Planning Committee will also report quarterly to the Tennessee Cybersecurity Advisory Council (formed Fall of 2019), which is Co-chaired by the State's Chief Operating Officer and Chief Information Officer and contains members representing all three branches of State of Tennessee government. This Council's mission is to provide a collaborative source of knowledge, expertise and information sharing in the field of cybersecurity supporting the confidentiality, integrity and availability of services and resources. The Council develops recommendations for the Governor's Office regarding the organizational structure, authority, governance, policies, and responsibilities for a coordinated, multidisciplinary, broad-based approach to cybersecurity within the State of Tennessee - a model known as a whole-of-government approach.

Resource Overview and Timeline Summary

The following information is provided to meet the requirement in the State and Local Cybersecurity Improvement Act: e.2.E. This information represents best estimates based on current reference material. It is subject to revision over time.

The voting members of the Tennessee Cybersecurity Grant Planning Committee listed previously will be required to implement the Tennessee Cybersecurity Plan over the next four years. In addition, supplemental support staff and contract resources may also be required as we move through the plan's implementation.

The State of Tennessee intends to request the following financial resources to implement the Tennessee Cybersecurity Plan over the next four years:

	TN Allocation / NOFO	Match % Required	Match Amount	Total Amount Estimated
FY22	\$4,242,000	10%	\$424,200	\$4,666,200
FY23	\$8,366,000	20%	\$1,673,200	\$10,039,200
FY24	\$6,275,000	30%	\$1,882,500	\$8,157,500
FY25	\$2,092,000	40%	\$836,800	\$2,928,800
Totals	\$20.975,000	—	\$4,816,700	\$25,791,700

METRICS

Please note: this table summarizes program objectives not the cybersecurity plan objectives.

Tennessee Cybersecurity Program Metrics – Year One			
Program Objectives	Program Sub-Objectives	Associated Metrics	Metric Description (details, source, frequency)
1. Deliver high-quality IT and cybersecurity solutions to stakeholders	1.0 Secure and Reliable Information Access	—	---
	1.2 Ensure the availability of and access to systems, networks, and information resources that enable government employees and citizens to perform essential functions.	State's network availability/uptime	• Percent • Report from STS • Continuously (report available upon request)
	1.3 Ensure the State's and Local governments' high value assets are protected by cybersecurity and physical controls.	STS physical access control audit.	• Number of findings • STS Audit • Quarterly
	1.4 Strengthen information resources in the State's data centers.	Application vulnerability assessment (AVA) for public-facing websites.	• Number of vulnerabilities identified • STS Risk Assessment • Annually
	1.5 Leverage technologies to manage, monitor and track internal and external information flow across the State's and Local government's operating environments.	STS Intrusion detection and prevention (IDP).	• Number of events • STS Incident Response Team • Continuously (report available upon request)
	1.6 Integrate Supply Chain Risk Management with mission oriented, risk-based protections that support IT based services, external access, and collaboration.	STS Security contract management process.	• Turnaround time for contract review completion • STS Endorsement • As requested
	1.7 Provide quality cybersecurity training programs to ensure that users are fully aware of their responsibilities for protecting their information resources.	Percentage of State government employees that complete required end-user cybersecurity awareness training each year.	• Percent • Report from STS • Annually

PLAN APPROVAL:

Member & Title	State/ District	Plan Version	Approved Date	Signature
Stephanie Dedmon, Chief Information Officer (Co-Chair), STS, Department of Finance & Administration	State of Tennessee	V 7.3 / 06-29-23	06-30-23	
Curtis Clan, Chief Information Security Officer (Co-Chair), STS, Department of Finance & Administration	State of Tennessee	V 7.3 / 06-29-23	06-30-23	
The following members attended the TN Cybersecurity Grant Planning Committee meeting on June 29th, 2023; the Committee achieved a voting quorum. At this meeting, the TN Cybersecurity Plan document (V3.1) was reviewed and all members present voted to approve:	6/29/2023 Meeting Attendance			
	Cyber Plan V7.3 Approval			
	Voting Members:			
	1. Stephanie Dedmon, Chief Information Officer, STS, Department of Finance & Administration	absent	will sign	
	2. Curtis Clan, Chief Information Security Officer, STS, Department of Finance & Administration	present	approve	
	3. James Cotter, Special Agent, Department of Safety and Homeland Security	present	approve	
	4. Alex Pellom, TEMA Chief of Staff	present (joined late)	N/A	
	5. Gary Baker, TEMA and State Administrative Agency contact	present	approve	
	6. Lauren Lamberth, Attorney General's office	present	approve	
	7. Rich Littlehale, Tennessee Bureau of Investigation, CIO	present	approve	
	8. Chris Dowell, STS IT Director supporting the Department of Safety and Homeland Security	present	approve	
	9. Jason Laney, STS IT Director supporting TEMA/Military	present	approve	
	10. John Voss, TEMA Planning Manager	absent	N/A	
	11. Vijay Gollapudi, Department of Education CIO	present (joined late)	approve	
	12. David Tall, STS Agency CIO supporting Department of Health	present	approve	
	13. Randall Lewis, District 1 Primary Committee Member	absent	N/A	
	14. Brian Young, District 2 Primary Committee Member	absent	N/A	
	15. Brendan Taylor, District 3 Primary Committee Member	present	approve	
	16. Mickey Ledbetter, District 4 Primary Committee Member	absent	N/A	
	17. Sean Cothron, District 5 Primary Committee Member	present	approve	
	18. Josh Carney, District 6 Primary Committee Member	absent	N/A	
	19. Skip Burchett, District 7 Primary Committee Member	present	approve	
	20. Chaz Morrow, District 8 Primary Committee Member	present	approve	
	21. Justin Little, District 9 Primary Committee Member	present	approve	
	22. Matt Presson, District 10 Primary Committee Member	present	approve	
	23. Shawn McClure, District 11 Primary Committee Member	absent	N/A	
	Secondaries/Designees:			
	N/A, District 1 Secondary Committee Member	N/A	N/A	
	Rob Ogle, District 2 Secondary Committee Member	present	approve	
	Raul Hidalgo, District 3 Secondary Committee Member	present (joined late)	N/A	
Loren Baker, District 4 Secondary Committee Member	present	approve		
Carl Wilson, District 5 Secondary Committee Member	present	approve		
N/A, District 6 Secondary Committee Member	N/A	N/A		
Jared Oakes, District 7 Secondary Committee Member	absent	N/A		
Clayton Cross, District 8 Secondary Committee Member	absent	N/A		
Steve Agee, District 9 Secondary Committee Member	absent	N/A		
Brian Taylor, District 10 Secondary Committee Member	absent	N/A		
Tony Fischer, District 11 Secondary Committee Member	absent	N/A		
Aime Nsengiyumva (secondary for Curtis Clan)	present	N/A		

APPENDIX A: SAMPLE CYBERSECURITY PLAN CAPABILITIES ASSESSMENT

*Eligible entities can use the "EVAL" column as a self-assessment tool. Entities with newly initiated programs could use this spreadsheet to track the status of their cybersecurity planning efforts. Similarly, entities with advanced programs could use this worksheet to evaluate their current cybersecurity plan using "Yes, No, Partial, or N/A."]

COMPLETED BY: State of Tennessee Cybersecurity Grant Planning Committee				EVAL*
Cybersecurity Plan Required Element	Brief Description of Current Capabilities of SLTT within the Eligible Entity	Capability Level (Options: Foundational, Fundamental, Intermediary, Advanced)	Applicable Project No. (as provided in Appendix B)	
1. Manage, monitor, and track information systems, applications, and user accounts	State: EDR, Vulnerability scans, GRC tool, AD Logs, SIEM, etc.	Intermediary	2	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
2. Monitor, audit, and track network traffic and activity	State: SIEM, IDP, ALBERT, web threat intel at state level.	Intermediary	2	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
3. Enhance the preparation, response, and resiliency of information systems, applications, and user accounts	State: Security Incident and Response Plans (SIRP), Business Impact Assessment (BIA), Disaster Recovery Plans for State Agencies.	Intermediary	1	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
4. Implement a process of continuous cybersecurity risk factors and threat mitigation. practices prioritized by degree of risk	State: Third party risk assessments (Strategic Control Assessment, Technical Control Assessment) at State Level. Statewide contract established.	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		

5. Adopt and use best practices and methodologies to enhance cybersecurity (references NIST)				
a. Implement multi-factor authentication	State: MFA for all of O365 Cloud and VPN.	Fundamental		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
b. Implement enhanced logging	State: Centralized logging in place.	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
c. Data encryption for data at rest and in transit	State: TLS termination for all presentation tiers as needed and data at rest encryption for storage. Endpoint encryption at rest (ex: Bitlocker).	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
d. End use of unsupported/end of life software and hardware that are accessible from the Internet	State: Guidance through Enterprise Security Policy and tracked and mitigated through Governance Risk and Compliance (GRC) tool.	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
e. Prohibit use of known/fixed/default passwords and credentials	State: Prohibited through Enterprise Information Security Policy.	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		

<i>f. Ensure the ability to reconstitute systems (backups)</i>	State: Daily, Weekly, Monthly backups tested regularly in addition to disaster recovery tests.	Advanced		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>g. Migration to the .gov internet domain</i>	State: Multiple state websites remaining that need to be addressed.	Fundamental		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>6. Promote the delivery of safe, recognizable, and trustworthy online services, including using the .gov internet domain</i>	State: Majority of State agency websites are leveraging tn.gov naming conventions. Small percentage that still needs to be addressed. Standards committee on software use.	Fundamental		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>7. Ensure continuity of operations including by conducting exercises</i>	State: Multiple security incident and Disaster Recovery exercises performed yearly. Both functional and tabletops.	Intermediary		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>8. Identify and mitigate any gaps in the cybersecurity workforces, enhance recruitment and retention efforts, and bolster the knowledge, skills, and abilities of personnel (reference to NICE Workforce Framework for Cybersecurity)</i>	State: Established Cybersecurity Advisory Council and worked with National Governor's Association to develop strategic action plan to address cyber workforce.	Foundational	1, 3	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		

9. <i>Ensure continuity of communications and data networks in the event of an incident involving communications or data networks</i>	State: State data network and data centers including internet access are built with high availability and disaster recovery features for automatic failover. DDOS protection in place.	Advanced		
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
10. <i>Assess and mitigate, to the greatest degree possible, cybersecurity risks and cybersecurity threats relating to critical infrastructure and key resources, the degradation of which may impact the performance of information systems within the jurisdiction of the eligible entity</i>	State: STS receives Intel from multiple entities such as CISA, MS-ISAC, vender community and our own tools. Run a central managed security program which includes a 24/7 security operations center which runs an intrusion detection/prevention tool (IDP), security information event management (SIEM), firewalls, Web Application Firewalls (WAF), Endpoint Detection and Response (EDR), security email gateway, internet content filtering, DMARK, DNSSEC, DDOS protection, weekly vulnerability scans, dark web scanning intel, central management of workstations, network segmentation, central logging, and forensics.	Intermediary	2, 3	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
11. <i>Enhance capabilities to share cyber threat indicators and related information between the eligible entity and the Department</i>	State: Created http://cybersafetn.gov site for information sharing to the public. STS has multiple ways to communicate information. Receives intel from CISA and MS-ISAC and share that to the Information Technology community via an email listserv. Also conduct monthly group meetings where key cybersecurity information is shared with a wider state audience. The Information Technology Executive Committee (ITEC) meets monthly. This group consists of all the State	Intermediary		

	information technology directors and agency Chief Information Officers. The Information Technology Professional Association (ITPA) is a much larger group as it includes all IT professionals statewide. STS has a dedicated Vulnerability Management Team (VMT) that scans all the systems for CVEs and imports those findings into our governance risk and compliance tool (GRC). The VMT has weekly meetings with the agency staff to go over the findings and remediation plans and answer any questions they may have. Not patching is not an option; everyone must stay in compliance with the Enterprise Information Security Policy (EISP). There is also the Governor's Cybersecurity Advisory Council where we discuss cyber events. This Council has an active TEAMS channel that was created for members and stakeholders to share pertinent cyber information quickly as needed. We are in the process of sending communications out to TN Local entities through a new email campaign (current focus is NCSR assessments).			
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
12. Leverage cybersecurity services offered by the Department	State: Looking to add services managed at the State level that Local entities can leverage, such as endpoint protection and training. Statewide contracts can be leveraged by local entities as well (current ex: cyber awareness training and security consulting services).	Fundamental	1, 2	

	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>13. Implement an information technology and operational technology modernization cybersecurity review process that ensures alignment between information technology and operational technology cybersecurity objectives</i>	State: All State agencies submit an Information System Plan (ISP) which defines their three-year strategic Information Technology roadmap. This covers their modernization efforts. There is a lot of pressure and support to get away from legacy systems such as mainframe and other systems that are going out of support. At the State, we do our best to keep up with modern technology architecture with advanced security capabilities such as cloud services. To ensure that information security is an integral part of information systems throughout their life cycle. This includes application infrastructure, vendor applications, agency-developed, and user-developed applications and information systems which provide services over public networks or the State's internal network. Security requirements should be identified and documented as part of the overall business case for new information systems and for enhancement to existing information systems and should be included early and continuously throughout the lifecycle of the application, including, but not limited to the conception, design, development, testing, implementation, maintenance, and disposal phases.	Fundamental	3	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>14. Develop and coordinate strategies to address</i>	State: Dedicated Vulnerability Management Team (VMT) that scans all the systems for CVEs and imports those findings into our	Advanced		

<i>cybersecurity risks and cybersecurity threats</i>	governance risk and compliance tool (GRC). The VMT has weekly meetings with the agency staff to go over the findings and remediation plans and answer any questions.			
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>15. Ensure rural communities have adequate access to, and participation in plan activities</i>	State: Ensure the pathway for rural communities to leverage their regional representative for the cybersecurity grant funds. Ensure rural entities participate in the NCSR.	Foundational	1, 3	
	Local: Incomplete/varying implementation levels across the totality of TN Local Government entities.	Foundational – level varies across entities		
<i>16. Distribute funds, items, services, capabilities, or activities to local governments</i>	State SSA and TN Cybersecurity Grant Planning Committee to manage SLCGP in TN.	Foundational	1, 16	

APPENDIX B: PROJECT SUMMARY WORKSHEET

Purpose: The **Project Summary Worksheet** is a list of cybersecurity projects that the entity plans to complete to develop or improve any needed cybersecurity capabilities identified in **Appendix A: Sample Cybersecurity Plan Capabilities Assessment**.

1. Rank	2. Project Name	3. Project Description	4. Alignment	5. Estimated Cost	6. Status (options: Future, Ongoing, Complete)	7. Priority (options: High, Medium, Low)	8. Type (options: Plan, Organize, Equip, Train, Exercise)
1	<u>Cybersecurity Training</u>	Enhance cybersecurity understanding statewide by providing cybersecurity awareness training service/solution to government employees of qualified State and Local organizations.	Objective 4 Elements 3, 8, 12, 15, 16	\$500,000.00	Ongoing	High	Train
2	<u>Cybersecurity Detection and Response</u>	Enhance cybersecurity detection and response efforts statewide by providing Endpoint Detection and Response (EDR) service/solution to qualified State and Local organizations.	Objectives 1, 3 Elements 1, 2, 3, 10, 12	\$3,000,000.00	Future	High	Equip
3	<u>Formalized Planning and Organization</u>	Develop formalized committee to approve and fund gaps/needs identified in the statewide NCSR assessments for TN during FY23-FY24.	Objective 2 Elements 8, 10, 13, 15, 16	\$1,167,098.00	Ongoing	High	Organize

APPENDIX C: ENTITY METRICS

The below table reflects the goals and objectives that the Tennessee Cybersecurity Grant Planning Committee has established.

Tennessee Cybersecurity Plan Metrics			
Planning Goal	Plan Objectives	Associated Metrics	Metric Description <i>(details, source, frequency)</i>
1. The State of Tennessee has an approved Cybersecurity Plan that meets the SLCGP requirements as defined in the NOFO	1.1 Draft TN Cybersecurity Plan	Drafted Plan	Planning Committee Co-Chairs confirms draft Plan document is saved in repository
	1.2 TN Cybersecurity Grant Planning Committee Approves Plan	Signed Letter by Planning Committee Co-Chairs	Committee Meeting Recordings are saved in repository and available for sharing upon request.
	1.3 Submit Plan to CISA	Confirmation of Receipt	Email from CISA
	1.4 CISA Approval for Plan	Statement of Approval	Email from CISA
2. Receive funding from SLCGP	2.1 Funding received to execute approved projects	Receipt of funds	Accept and expend approval from State CIO and TN Cybersecurity Grant Planning Committee
3. Execute procurement process for each approved project where applicable.	3.1 Execute approved projects	Projects are invoiced and paid	Financial Reporting via SAA
	3.2 Close approved projects	Projects are terminated or renewed as applicable.	Financial Reporting via SAA

Tennessee Cybersecurity Plan Metrics			
Planning Goal	Plan Objectives	Associated Metrics	Metric Description <i>(details, source, frequency)</i>
4. Process services for Local entities and rural areas that apply and receive Planning Committee approval.	4.1 Enroll approved Local entities in applicable services	Number of entities enrolled in each approved project	Financial Reporting via SAA
5. Review, revise and update Tennessee Cybersecurity Plan for next FY as required.	5.1 Repeat objectives for Goal 1 for subsequent FY	See metrics for Goal 1 for subsequent FY	See metric descriptions for Goal 1 for subsequent FY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Liz Bermudez, Executive Secretary, liz@columbiatn.com 931-560-1510

AGENDA ITEM TITLE: RESOLUTION NO. 23-103 - A RESOLUTION RATIFYING THE ACCEPTANCE OF DONATIONS VALUED AT APPROXIMATELY ONE THOUSAND DOLLARS (\$1,000) FROM MR. AND MRS. TONY AND CONNIE MASSEY TO THE CITY OF COLUMBIA FOR THE CITY OF COLUMBIA ANNUAL EMPLOYEE CHRISTMAS PARTY

RECOMMENDATION: Approve Resolution No. 23-103.

INFORMATION: Finance is requesting that the City Council ratify the acceptance of donated items valued at approximately \$1,000 by Mr. and Mrs. Tony and Connie Massey. The intent of the donated items were for the express use as door prizes at the City Employee Christmas Party to show appreciation for the City of Columbia employees.

ATTACHMENTS: Resolution No. 23-103.

**A RESOLUTION RATIFYING THE ACCEPTANCE OF DONATIONS VALUED AT
APPROXIMATELY ONE THOUSAND DOLLARS (\$1,000) FROM MR. AND MRS.
TONY AND CONNIE MASSEY TO THE CITY OF COLUMBIA FOR THE CITY OF
COLUMBIA ANNUAL EMPLOYEE CHRISTMAS PARTY**

WHEREAS, Mr. and Mrs. Tony and Connie Massey have offered to make a donation as an expression of appreciation for City of Columbia employees; and

WHEREAS, the City of Columbia would like to ratify the acceptance of said donation for the express purpose of door prizes for the City of Columbia Annual Employee Christmas Party; and

WHEREAS, the total items donated were valued at approximately One Thousand Dollars (\$1,000).

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that such city does hereby endorse the efforts of Mr. and Mrs. Massey by ratifying the acceptance of said donations.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Lindsay W. Barrier, Sr. Administrative Assistant, lbarrier@columbiatn.com, 931.560.1527

AGENDA ITEM TITLE: RESOLUTION NO. 23-104 – A RESOLUTION TO ACCEPT THE STREETS AND DRAINAGE IMPROVEMENTS IN HOMESTEAD AT CARTER’S STATION SUBDIVISION, SECTION 4, PHASE 1A, 1B, 2 AND 3 FOR OWNERSHIP AND MAINTENANCE

RECOMMENDATION: Approve Resolution No. 23-104.

INFORMATION: This Resolution refers to acceptance of streets and drainage improvements in Homestead at Carter’s Station, Section 4, Phase 1A, 1B, 2 and 3, for ownership and maintenance in the City of Columbia. The Engineering Division has made inspections and recommends acceptance of the streets and drainage improvements.

ATTACHMENTS: Resolution No. 23-104, Homestead at Carter’s Station, Section 4, Phase 1A, 1B, 2 and 3, Final Acceptance Requests and Final Plat

**A RESOLUTION TO ACCEPT THE STREETS AND DRAINAGE
IMPROVEMENTS IN HOMESTEAD AT CARTER'S STATION SUBDIVISION,
SECTION 4, PHASE 1A, 1B, 2 AND 3 FOR OWNERSHIP AND MAINTENANCE**

WHEREAS, The City of Columbia, has been requested to accept the streets and drainage improvements in Homestead at Carter's Station, Section 4, Phase 1A, 1B, 2 and 3 for ownership and maintenance; and

WHEREAS, the City of Columbia has inspected said streets and drainage improvements and has determined that said streets and drainage improvements in the Homestead at Carter's Station, Section 4, Phase 1A, 1B, 2 and 3, meet the requirements imposed by the City of Columbia.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY OF COLUMBIA, that the City of Columbia does hereby accept the ownership and maintenance of said streets and drainage improvements located in the Homestead at Carter's Station, Section 4, Phase 1A, 1B, 2 and 3.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, this the 14th day of December, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER - CITY ATTORNEY



CARTER'S STATION
REDISCOVERED

October 3, 2023

Mr. Glenn Harper
City Engineer
City of Columbia
700 North Garden St
Columbia, TN 38401

Re: Homestead at Carter's Station, Section 4, Phase 1A, request for final acceptance

Glenn:

This letter is a request to process final acceptance of the public improvements and release of the letter of credit for Homestead at Carter's Station, Section 4, Phase 1A.

Please advise.

Sincerely,

Scott Davis
Land Development Manager

cc: G. Nelson Crowe, II
Tyler L. Ring
Scott Bagwell



CARTER'S STATION
REDISCOVERED

October 3, 2023

Mr. Glenn Harper
City Engineer
City of Columbia
700 North Garden St
Columbia, TN 38401

Re: Homestead at Carter's Station, Section 4, Phase 1B, request for final acceptance

Glenn:

This letter is a request to process final acceptance of the public improvements and release of the letter of credit for Homestead at Carter's Station, Section 4, Phase 1B.

Please advise.

Sincerely,

Scott Davis
Land Development Manager

cc: G. Nelson Crowe, II
Tyler L. Ring
Scott Bagwell



CARTER'S STATION
REDISCOVERED

October 3, 2023

Mr. Glenn Harper
City Engineer
City of Columbia
700 North Garden St
Columbia, TN 38401

Re: Homestead at Carter's Station, Section 4, Phase 2, request for final acceptance

Glenn:

This letter is a request to process final acceptance of the public improvements and release of the letter of credit for Homestead at Carter's Station, Section 4, Phase 2.

Please advise.

Sincerely,

Scott Davis
Land Development Manager

cc: G. Nelson Crowe, II
Tyler L. Ring
Scott Bagwell



CARTER'S STATION
REDISCOVERED

October 3, 2023

Mr. Glenn Harper
City Engineer
City of Columbia
700 North Garden St
Columbia, TN 38401

Re: Homestead at Carter's Station, Section 4, Phase 3, request for final acceptance

Glenn:

This letter is a request to process final acceptance of the public improvements and release of the letter of credit for Homestead at Carter's Station, Section 4, Phase 3.

Please advise.

Sincerely,

Scott Davis
Land Development Manager

cc: G. Nelson Crowe, II
Tyler L. Ring
Scott Bagwell

TN GRID NORTH

CURV	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	42.40	540.00	42°29'57"	S 76°48'24" E	42.39
C2	53.63	540.00	54°12'24"	S 81°52'05" E	53.60
C3	55.39	540.00	55°52'39"	S 87°39'06" E	55.37
C4	56.27	540.00	56°58'53"	N 86°29'08" E	56.35
C5	58.07	540.00	6°09'40"	N 80°20'52" E	58.04
C6	67.35	540.00	7°10'01"	N 73°41'02" E	67.50
C7	83.87	130.00	38°57'56"	N 85°34'59" E	82.42
C8	41.99	25.00	98°14'18"	N 31°17'48" W	37.23
C9	37.39	25.00	85°41'10"	N 59°39'55" E	34.00
C10	39.27	25.00	90°00'00"	S 28°10'40" W	35.36
C11	39.27	25.00	90°00'00"	S 61°49'20" W	35.36
C12	32.37	140.00	13°14'48"	S 23°28'44" W	32.30
C13	48.37	140.00	19°47'37"	S 39°57'57" W	48.13
C14	48.37	140.00	19°47'37"	S 59°45'35" W	48.13
C15	48.37	140.00	19°47'37"	S 79°33'12" W	48.13
C16	23.26	140.00	9°31'10"	N 85°47'24" W	23.23
C17	21.14	710.00	1°42'23"	N 80°10'38" W	21.14
C18	54.00	710.00	4°21'28"	N 77°08'43" W	53.99
C19	5.49	710.00	0°26'34"	N 74°44'42" W	5.49
C20	51.83	660.00	4°29'57"	S 76°48'24" E	51.81
C21	23.12	660.00	2°00'27"	S 80°01'36" E	23.12
C22	129.04	90.00	18°08'50"	N 5°53'45" E	118.27

LOT	SQ FEET	ACRE
307	7962	0.18
308	6762	0.16
309	6602	0.15
310	6601	0.15
311	6601	0.15
312	8418	0.19
313	10629	0.24
314	14603	0.34
315	9951	0.23
316	8188	0.19
317	6624	0.15
318	6616	0.15
319	6601	0.15
320	6676	0.15
321	6968	0.16
322	6887	0.16
323	7123	0.16
324	8399	0.19
329	6687	0.16
340	6600	0.15
341	6600	0.15
342	6791	0.16
343	6697	0.15
344	6811	0.16
345	7322	0.17
346	8165	0.19
347	12089	0.28
348	10481	0.24

Owner:
FP TCI CCS, LLC.
135 Hampton Pl.
Nashville, TN 37215

Purpose of this plat:
The purpose of this plat is to
create 28 single family lots.

Certificate of Ownership and Dedication

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book Number R2403, page 319, Maury County Register's Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers of irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Date: 6/25/2018

Title: FP TCI CCS, LLC

Certificate of Survey Accuracy

I (we) hereby certify that to the best of my (our) knowledge and belief that this is a true and accurate survey of the property shown hereon; that this is a Class "1" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

Date: 6/25/2018

Title: Registered Land Surveyor

Number: 2290

Certificate of Approval of Water System

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled "Section 4, Phase 1A Homestead at Carter's Station" has/have been installed in accordance with current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

Date: 6/25/2018

Title: Superintendent, Columbia Water System

Certificate of Approval of Streets, Drainage, and Utilities

I hereby certify that the streets, drainage, and utilities designated in Section 4, Phase 1A Homestead at Carter's Station Subdivision have been installed in accordance with City specifications, or a performance bond in the amount of \$129,000 for streets and drainage has been posted with the City of Columbia, Tennessee, to assure completion of such improvements.

Date: 6/28/2018

Title: City Engineer, Columbia, Tennessee

Certificate of Approval for Recording

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations, with the exceptions of such variances, if any, as noted in the minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

Date: 6/28/2018

Title: Secretary Planning Commission, Columbia, Tennessee

Certificate of Approval of Subdivision Name and Street Names

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date: 6/25/2018

Title: City Engineer, Columbia, Tennessee

Certificate of Approval for Sewer System

I hereby certify that the sewer system outlined or indicated on this final subdivision plat has been installed in accordance with current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

Date: 6/25/2018

Title: Superintendent, Columbia Wastewater System

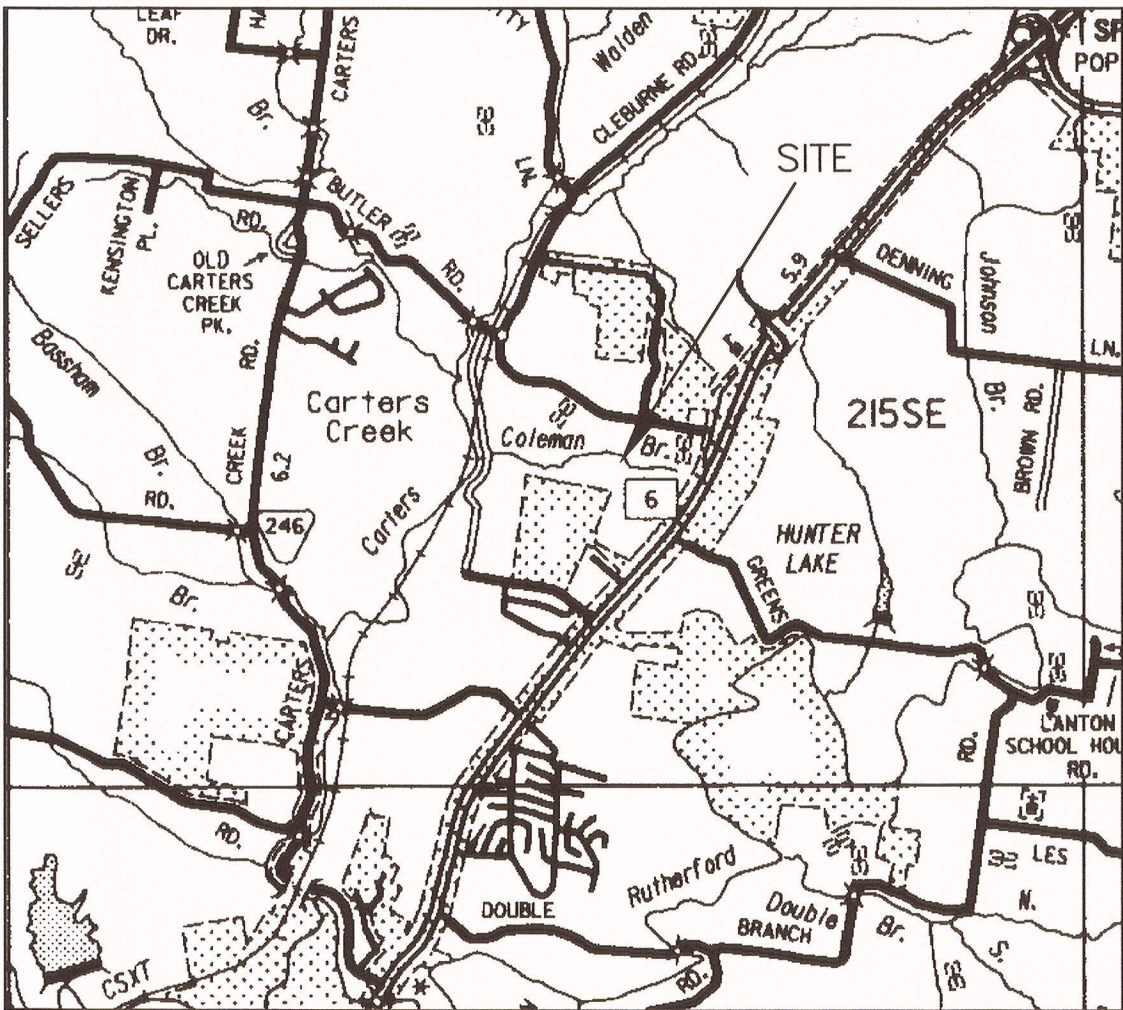
Certificate of Compliance

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations and other adopted ordinances and policies.

Date: 6/28/2018

Title: City Engineer, Columbia, Tennessee

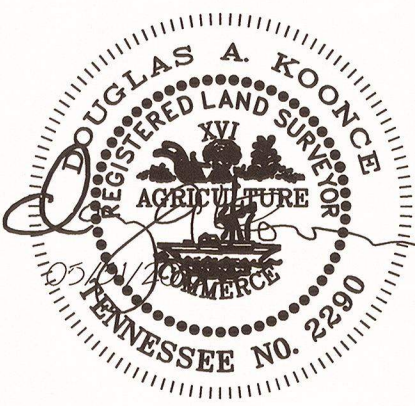
LOCATION MAP



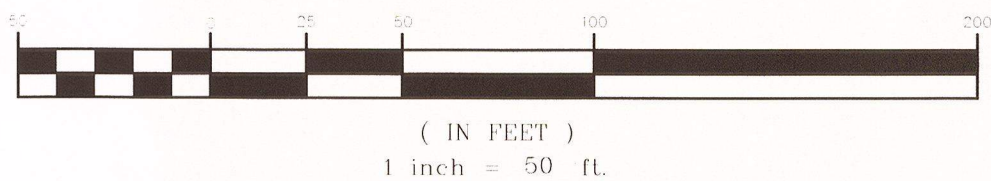
NOT TO SCALE

Surveyor's Notes

- The property shown hereon is located within the City of Columbia, Maury County, TN. All matters pertaining to construction, use, location of improvements, signage, parking, noise, vibration, emissions, fire hazards, radiation, illumination, setback provisions, etc., are subject to the City of Columbia's Zoning Regulations as interpreted and regulated by the Department of Development Services.
- This property currently identified as a portion of Tax Map No. 41 Parcel Number 15.00.
- Deed reference: Record Book R2368, page 448, Register's Office of Maury County, Tennessee.
- Bearings based on: Tennessee State Plane, as determined by GPS observation.
- This drawing was prepared in accordance with our field survey notes. It shows improvements as they exist to the best of our knowledge, but is not guaranteed to be correct in each and every detail.
- This survey was prepared from current deeds of record and does not represent a title search or a guarantee of title, and is subject to any state of facts a current and accurate search may reveal.
- Total area of property surveyed is 6.98 acres.
- Subject property does not lie in a FEMA/FIRM "Special Flood Hazard Area" as shown on Map 4719C0180E dated April 16, 2007.
- New right-of-way dedication: 1.71 acres.
- Unless otherwise noted, all lot corners are marked with iron rods.



GRAPHIC SCALE



MARTIN ENGINEERING & SURVEYING, LLC

5226 Main Street, Suite C-3
Spring Hill, TN 37174

615.540.8530

doug@martinengr.com

06/29/2018 - 09:07 AM
18009301
1 PGS-AL-PLAT
SUSIE BATCH: 201666
PLAT BOOK: P21
PAGE: 424
REC FEE 16.00
DP FEE 2.00
TOTAL 17.00
STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

Final Plat - Section 4, Phase 1A Homestead at Carter's Station

City of Columbia - Third Civil District - Maury County, Tennessee
A portion of Tax Map 41, Parcel 15.00
Containing 6.98 acres
Zoned RS-6

Date: May 31, 2018

Scale: 1"=50'

Drawn by: DAK

Job number: 1665

Revised:

Sheet 1 of 1



CUR	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	37.85	25.00	86.4244	N 31°09'14" E	W 34.34
C2	46.42	75.00	327.7371	S 84°44'48" E	W 45.68
C3	22.97	125.00	101.3938	N 75°02'01" E	W 22.21
C4	15.84	125.00	180.0447	S 89°17'10" E	W 39.28
C5	26.44	125.00	112.1134	N 81°02'01" E	W 2.64
C6	25.43	150.00	194.2355	N 75°34'15" E	W 15.40
C7	10.67	50.00	121.3134	N 56°06'28" E	W 10.68
C8	32.08	50.00	36.4547	N 31°36'48" E	W 31.53
C10	32.23	50.00	36.9744	N 31°36'48" E	W 31.53
C11	52.29	50.00	57.0000	E 42°12'20" E	E 31.73
C12	40.12	50.00	45.8810	N 83°47'25" E	S 39.05
C13	71.24	50.00	81.3758	S 32°30'30" E	E 65.36
C14	70.74	50.00	81.3758	S 32°30'30" E	E 65.36
C15	31.78	100.00	181.7227	N 71°19'28" E	E 31.64
C16	38.69	75.00	29.3315	N 84°47'41" E	E 38.26
C17	35.55	125.00	161.0700	N 75°02'01" E	E 35.43
C18	35.55	125.00	161.0700	S 84°06'21" E	E 41.82

Owner:
FP TCI CCS, LLC.
135 Hampton Pl.
Nashville, TN 37215

Purpose of this plat:

The purpose of this plat is to create 14 single family lots.

Certificate of Ownership and Dedication

I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book Number R2403, page 319, Maury County Register's Office, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers of irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Date _____, 2018 Owner _____
Title (FP TCI CCS, LLC) _____

Certificate of Survey Accuracy

I (we) hereby certify that to the best of my (our) knowledge and belief that this is a true and accurate survey of the property shown above; that this is a Class "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

6/22, 2018 [Signature] 2290

Date Registered Land Surveyor Number

Certificate of Approval of Water System

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled "Section 4, Phase 1B Homestead at Carter's Station" has/have been installed in accordance with current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

6/25, 2018
Date

Superintendent, Columbia Water System

Certificate of Approval of Streets, Drainage, and Utilities

I hereby certify that the streets, drainage, and utilities designated in Section 4, Phase 1B Homestead at Carter's Station Subdivision have been installed in accordance with City specifications, or a performance bond in the amount of \$120,000.00 for streets and drainage has been posted with the City of Columbia, Tennessee, to assure completion of such improvements.

Date 6/28, 2018 A. Harris
City Engineer, Columbia, Tennessee

Certificate of Approval for Recording

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations, with the exceptions of such variances, if any, as noted in the minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

Secretary, Planning Commission
Columbia, Tennessee

Date 6/28/10

Certificate of Approval of Subdivision Name and Street Names

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County,
6/25, 2018
 Date
Crystal Gidycz
 Maury County E-911

Certificate of Approval for Sewer System

I hereby certify that the sewer system outlined or indicated on this final subdivision plat has been installed in accordance with current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

6/25, 2018
Date

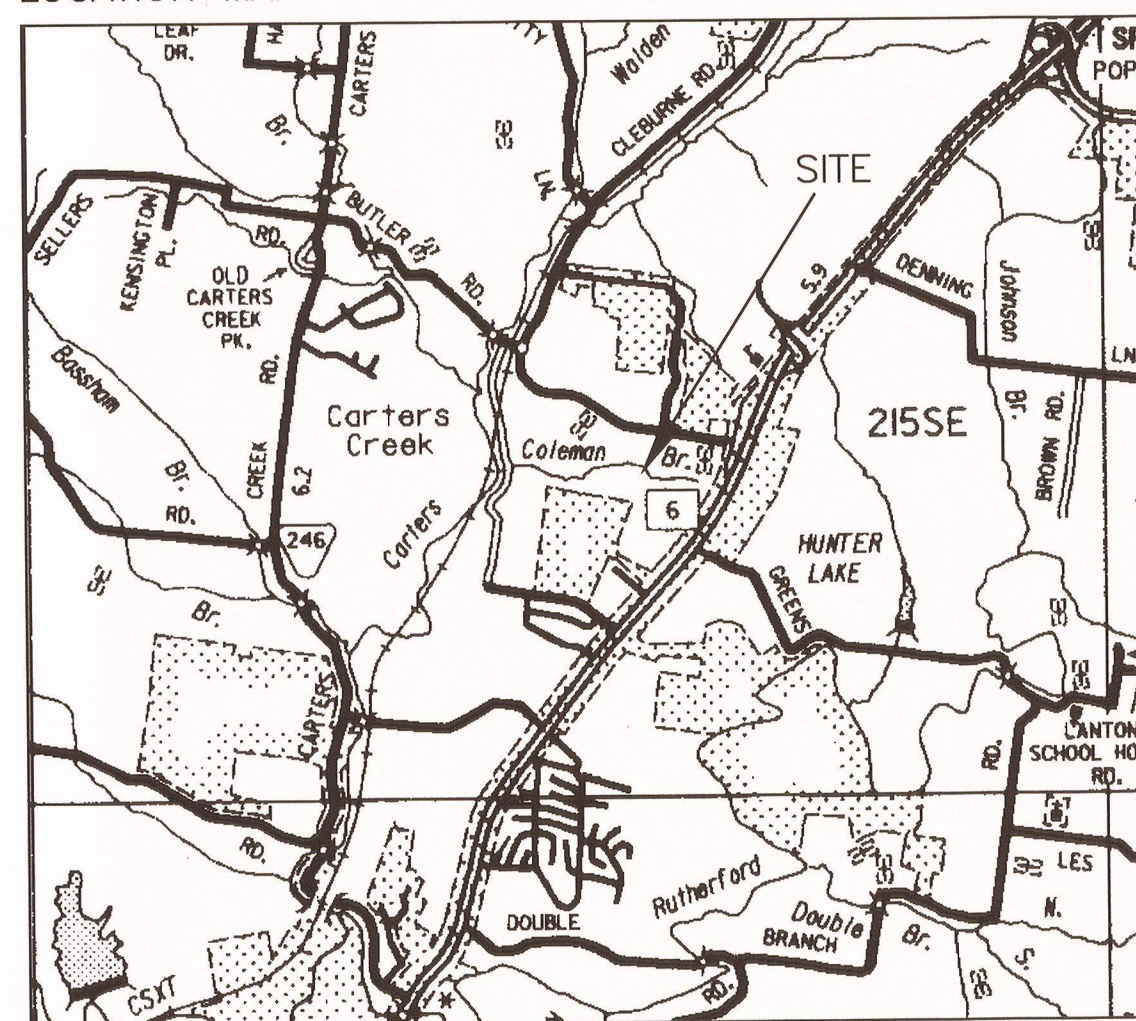
Paul Blum
Superintendent, Columbia Wastewater System

Certificate of Compliance

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations and other adopted ordinances and policies.

A. Harris 6/28/2018
City Engineer Date
Columbia, Tennessee

Stormwater appurtenances as depicted on this Final Plat shall be maintained as directed in the "Inspection and Maintenance Agreement of Private Stormwater Management Facilities" as recorded in Record Book R2462, page 1471 in the Register's Office of Maury County, Tennessee.

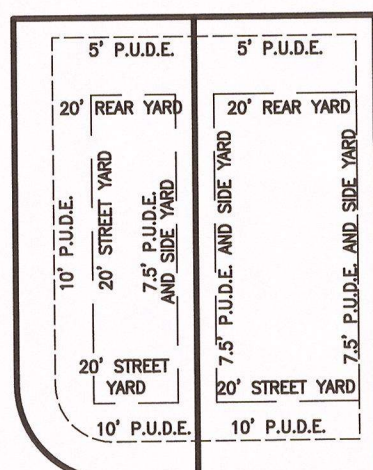


NOT TO SCALE

LOT AREA TABLE		
LOT	SQ FEET	ACRE
325	7722	0.18
326	10818	0.25
327	6612	0.15
328	6616	0.15
329	7237	0.17
330	10167	0.23
331	17089	0.39
332	11137	0.26
333	10209	0.23
334	7142	0.16
335	8054	0.18
336	8230	0.19
337	6600	0.15
338	7028	0.16

REMAINING LAND OF
FP TCI CCS LLC
PARCEL 041 015.00
R2403/319 R.O.M.C.

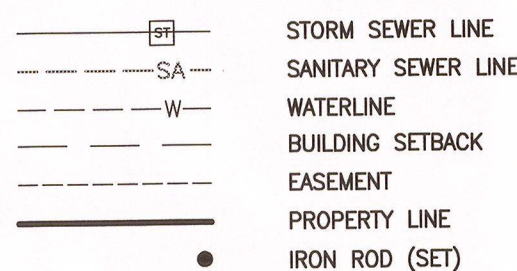
* Denotes Critical Lot – Prior to application for a building permit on a lot designated as critical, a plan shall be submitted to the Engineering Department for approval (Section 4-2.4 City of Columbia Subdivision Regulations).



TYPICAL LOT CONFIGURATION
P.U.D.E. = PUBLIC UTILITY AND
DRAINAGE EASEMENT

LEGEND

These standard symbols
be found in the drawing.



**MARTIN ENGINEERING &
SURVEYING, LLC**

5226 Main Street, Suite C-3
Spring Hill, TN 37174
615.540.8530
doug@martinengrg.com

06/29/2018 - 09:07 AM
18009302

1 PGS:AL-PLAT
SUSIE BATCH: 201656

PLAT BOOK: P21
PAGE: 425

REC FEE	15.00
DP FEE	2.00
TOTAL	17.00

STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER CLERK

Final Plat - Section 4, Phase 1B
Homestead at Carter's Station
City of Columbia - Third Civil District - Maury County, Tennessee
A portion of Tax Map 41, Parcel 15.00
Containing 3.73 acres
Zoned RS-6

Date **May 31, 2018**

Drawn by
DAK

Job number 1665	Revised
---------------------------	---------

Sheet 1 of 1

Scale
1"=50'

PURPOSE NOTE

THE PURPOSE OF THIS PLAT IS TO CREATE 27 SINGLE FAMILY LOTS.

SURVEYOR'S NOTES

1. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
2. SUBJECT PROPERTY IS A PORTION OF PARCEL 15.00 AS SHOWN ON MAURY COUNTY TAX MAP 41.
3. DEED REFERENCE: RECORD BOOK R2370, PAGE 1470, REGISTER'S OFFICE OF MAURY COUNTY, TN.
4. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPS ZONE 4100; NAD83.
5. THIS SURVEYOR HAS NOT PHYSICALLY LOCATED ALL UNDERGROUND UTILITIES. ABOVE, GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION AS INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. TENNESSEE ONE CALL 1-800-351-1111 OR 1-615-366-1987.
6. THIS SURVEYOR HAS NOT BEEN FURNISHED WITH A TITLE REPORT, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. TOTAL AREA OF THE PROPERTY SURVEYED IS 6.00 ACRES±.
8. THE SUBJECT PROPERTY LIES WITHIN AN AREA DESIGNATED AS ZONE "X" (UNSHADDED), ON FEMA/FIRM MAP NO. 471190D180E, (EFFECTIVE APRIL 16, 2007), AS SHOWN ON THE FLOOD INSURANCE RATE MAPS FOR MAURY COUNTY, TENNESSEE.
9. NEW RIGHT-OF-WAY DEDICATION: 1.09 ACRES±.
10. ZONED: RS-10 PUD
11. UNLESS OTHERWISE NOTED, ALL LOT CORNERS ARE MARKED WITH SET IRON RODS.

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) do hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book R2370, Page 1470, Maury County Register's Office, Tennessee, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers of irrevocable dedication for all public ways, utilities, and other facilities have been filed.

[Signature] O-MANAGER Date *6/18/19*

[Signature] O-MANAGER Date *6/18/19*

Declarer (FF TO PCS, LLC) Title Date

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled "Homestead at Carter's Station - Section 4, Phase 2" has/have been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

[Signature] Date *6/18/2019*

Superintendent, Columbia Water System Date

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, AND UTILITIES

I hereby certify that the streets, drainage, and utilities at "Homestead at Carter's Station Subdivision - Section 4, Phase 2" have been installed in accordance with City specifications, or a performance bond in the amount of \$121,000, for streets and drainage has been posted with the City of Columbia, Tennessee, to assure completion of such improvements.

[Signature] Date *6/21/19*

City Engineer, Columbia, Tennessee Date

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations, with the exceptions of such variances, if any, as noted in the minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

[Signature] Date *6/20/19*

Secretary, Planning Commission Date

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

[Signature] Date *6-18-19*

Maury County E-911 Date

CERTIFICATE OF APPROVAL FOR SEWER SYSTEM

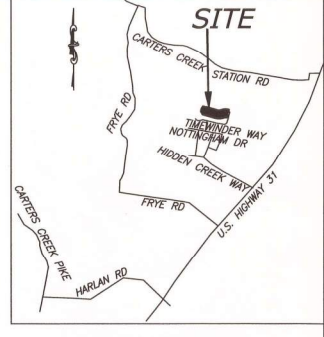
I hereby certify that the sewer system outlined or indicated on this final subdivision plat has been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

[Signature] Date *6-18-19*

Superintendent, Columbia Wastewater System Date

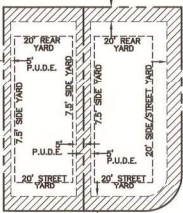
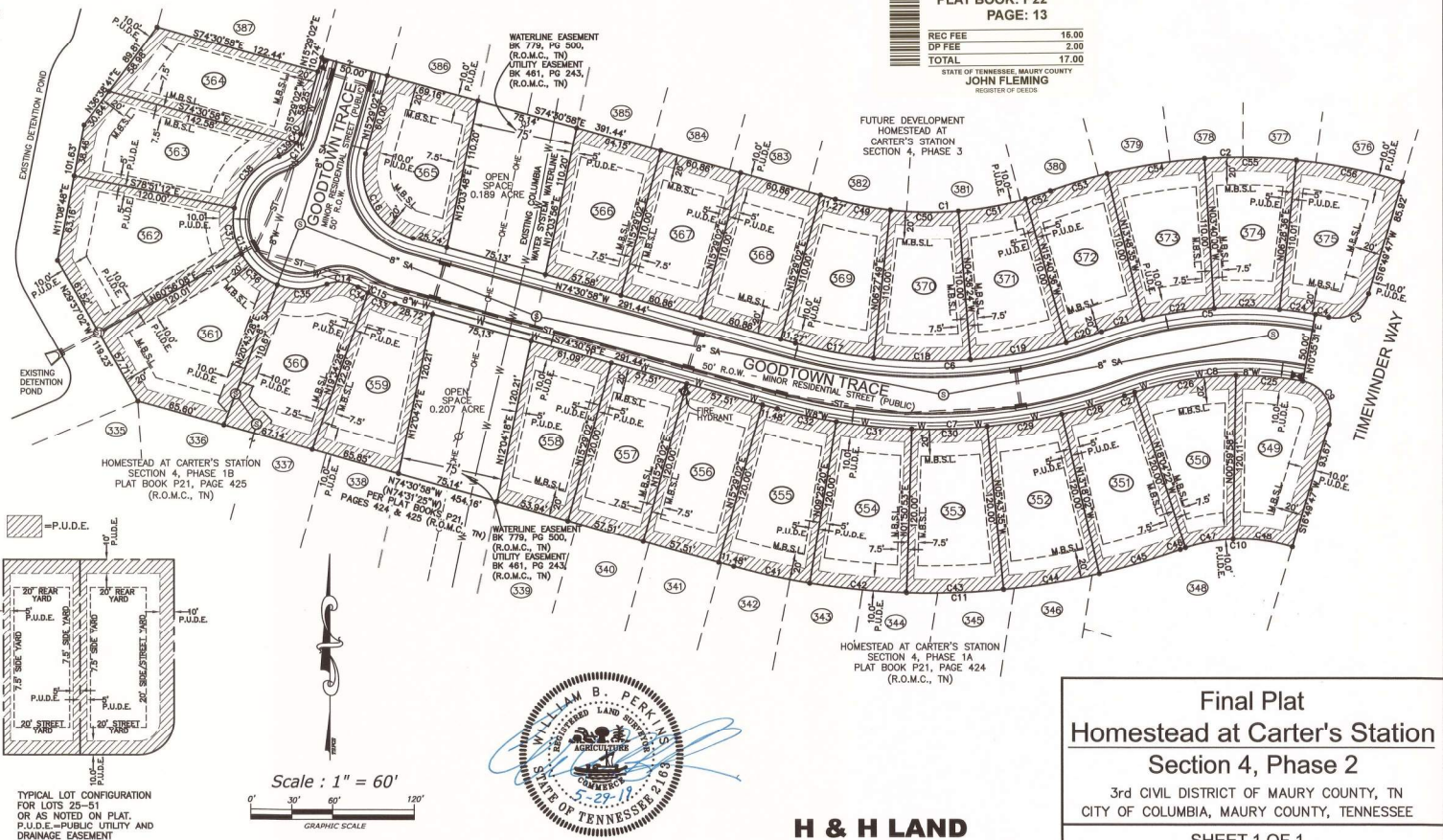
LOT NUMBER	SQUARE FEET	ACRES	CURVE DELTA	ANGLE	RADIUS	ARC LENGTH	CHORD	CHORD BEARING
349	7,117	0.16	C1	35°22'33"	260.00	180.53	157.99	S87°47'45"E
350	6,880	0.15	C2	36°47'57"	410.00	263.33	258.83	S88°30'27"W
351	7,951	0.17	C3	85°41'11"	25.00	37.39	34.00	S59°40'27"W
352	7,615	0.17	C4	1°52'29"	300.00	10.07	10.07	S79°49'48"E
353	7,615	0.17	C5	30°29'03"	300.00	158.61	157.74	N85°21'00"E
354	7,615	0.17	C6	35°22'33"	370.00	228.45	224.84	N87°47'45"E
355	7,615	0.17	C7	35°22'33"	420.00	268.39	262.42	N87°47'45"E
356	6,901	0.16	C8	30°29'03"	250.00	133.01	131.45	S85°21'00"W
357	6,901	0.16	C9	86°14'16"	25.00	41.99	37.23	N31°17'21"W
358	6,901	0.16	C10	35°22'33"	130.00	83.57	82.42	N88°35'26"E
359	6,901	0.16	C11	35°22'33"	540.00	333.41	328.14	N87°47'45"E
360	7,790	0.18	C12	55°25'32"	25.00	24.18	23.25	N43°11'48"E
361	9,276	0.21	C13	18°25'27"	50.00	159.66	99.87	N87°47'45"E
362	9,276	0.21	C14	54°37'44"	25.00	3.84	3.84	N84°44'01"W
363	9,085	0.19	C15	17°05'49"	100.00	29.84	29.73	N65°58'03"W
364	9,085	0.19	C16	89°59'53"	50.00	78.54	70.71	N29°31'02"W
365	7,433	0.17	C17	9°01'13"	370.00	168.29	168.19	S71°11'03"E
366	6,695	0.15	C18	11°04'13"	370.00	71.49	71.38	N89°04'17"W
367	6,695	0.15	C19	11°04'13"	370.00	71.49	71.38	N79°51'30"E
368	6,695	0.15	C20	41°25'54"	170.00	72.27	72.04	N72°17'55"E
369	6,695	0.15	C21	6°04'57"	300.00	51.85	51.83	N73°08'57"E
370	6,695	0.15	C22	10°08'35"	300.00	53.11	53.04	N81°15'43"E
371	6,695	0.15	C23	8°11'17"	300.00	48.11	48.06	S89°04'17"E
372	6,695	0.15	C24	8°04'57"	300.00	26.55	26.54	N81°06'56"W
373	6,695	0.15	C25	11°19'42"	250.00	49.43	49.35	S85°04'20"E
374	6,695	0.15	C26	17°20'11"	250.00	75.64	75.36	S89°35'43"W
375	7,548	0.17	C27	1°48'09"	370.00	168.29	168.19	N71°11'03"E
376	7,548	0.17	C28	6°35'29"	420.00	148.32	148.29	S73°24'13"W

LOT NUMBER	SQUARE FEET	ACRES	CURVE DELTA	ANGLE	RADIUS	ARC LENGTH	CHORD	CHORD BEARING
329	7,342	0.17	C29	7°34'27"	420.00	55.52	55.48	S80°29'11"W
330	7,342	0.17	C30	7°34'27"	420.00	55.52	55.48	N88°03'39"E
331	7,342	0.17	C31	7°34'27"	420.00	55.52	55.48	S84°21'54"E
332	6,034	0.14	C32	6°03'42"	420.00	44.43	44.41	N77°33'49"W
333	12'15'20"	100.00	C33	12'15'20"	100.00	21.39	21.35	S68°23'18"E
334	450'25"	100.00	C34	450'25"	100.00	8.45	8.45	S59°50'23"E
335	42'48'22"	50.00	C35	42'48'22"	50.00	37.33	36.47	N89°20'18"E
336	40'12'40"	50.00	C36	40'12'40"	50.00	35.09	34.37	S49°10'12"E
337	40'12'40"	50.00	C37	40'12'40"	50.00	35.09	34.38	S08°57'32"E
338	59'48'48"	50.00	C38	59'48'48"	50.00	52.18	48.89	S71°01'41"E
339	37'58'20"	25.00	C39	37'58'20"	25.00	16.57	16.27	N51°55'24"E
340	17'27'12"	25.00	C40	17'27'12"	25.00	7.62	7.59	N24°12'58"E
341	6'03'42"	540.00	C41	6'03'42"	540.00	57.13	57.10	S77°32'49"E
342	7°34'27"	540.00	C42	7°34'27"	540.00	71.39	71.34	N87°30'01"W
343	7°34'27"	540.00	C43	7°34'27"	540.00	71.39	71.33	S88°03'39"W
344	7°34'27"	540.00	C44	7°34'27"	540.00	71.39	71.33	S80°29'11"W
345	6'03'42"	540.00	C45	6'03'42"	540.00	62.55	62.50	N73°08'57"E
346	1'48'09"	130.00	C46	1'48'09"	130.00	4.13	4.13	N71°01'03"E
347	18°43'57"	130.00	C47	18°43'57"	130.00	35.70	35.58	N79°47'38"E
348	18°43'57"	130.00	C48	18°43'57"	130.00	44.09	43.84	N87°30'01"W
349	9°01'13"	280.00	C49	9°01'13"	280.00	40.93	40.89	S79°01'34"E
350	11°04'13"	280.00	C50	11°04'13"	280.00	50.24	50.16	S89°04'17"E
351	11°04'13"	280.00	C51	11°04'13"	280.00	50.24	50.16	N79°51'30"E
352	4'12'55"	280.00	C52	4'12'55"	280.00	19.13	19.12	N73°15'56"E
353	6°04'57"	410.00	C53	6°04'57"	410.00	43.53	43.50	N73°08'57"E
354	10°08'35"	410.00	C54	10°08'35"	410.00	72.58	72.49	S81°15'43"W
355	8°28'40"	410.00	C55	8°28'40"	410.00	62.55	62.51	S88°04'20"E
356	11°07'45"	410.00	C56	11°07'45"	410.00	78.84	79.51	N78°39'27"W

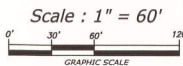


VICINITY MAP
NOT TO SCALE

06/21/2019 - 02:18 PM
19008855
1 PGS AL PLAT
SUSIE BATCH: 214703
PLAT BOOK: P22
PAGE: 13
REC FEE 16.00
DP FEE 2.00
TOTAL 17.00
STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS



TYPICAL LOT CONFIGURATION
FOR LOTS 25-31
OR AS NOTED ON PLAT.
P.U.D.E.=PUBLIC UTILITY AND
DRAINAGE EASEMENT



CERTIFICATE OF COMPLIANCE

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations and other adopted ordinances and policies.

[Signature] Date *6/20/19*

City Engineer, Columbia, Tennessee Date

CERTIFICATE OF ACCURACY

I hereby certify that to the best of my knowledge and belief, that this is a true and accurate survey of the property shown hereon; that this is a Category "1" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated; and that the ratio of precision is greater than or equal to 1:10,000.

[Signature] Date *5-29-19*

Registered Land Surveyor
Tenn. License No. 2103
William B. Perkins

H & H LAND SURVEYING, INC.

612A FITZHUGH BOULEVARD
SMYRNA, TENNESSEE 37167
(615) 831-0756 (Fax) 355-6928
H & H Project No. 2019-0219

Final Plat Homestead at Carter's Station Section 4, Phase 2

3rd CIVIL DISTRICT OF MAURY COUNTY, TN
CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE

SHEET 1 OF 1

TAX MAP 41, P/O PARCEL 15.00

SCALE: 1" = 60'
AREA: 6.00 ACRES±
DATE: MAY 29, 2019

PURPOSE NOTE

THE PURPOSE OF THIS PLAT IS TO CREATE 31 SINGLE FAMILY LOTS.

SURVEYOR'S NOTES

- THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
- SUBJECT PROPERTY IS A PORTION OF PARCEL 32.00 AS SHOWN ON MAURY COUNTY TAX MAP 42.
- DEED REFERENCE: RECORD BOOK R2403, PAGE 319, REGISTER'S OFFICE OF MAURY COUNTY, TN.
- THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS USING THE TDOT NETWORK, TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPSZONE 4100; NAD83.
- THIS SURVEYOR HAS NOT PHYSICALLY LOCATED ALL UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN HEREON WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION AS INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. TENNESSEE ONE CALL 1-800-351-1111 OR 1-615-366-1987.
- THIS SURVEYOR HAS NOT BEEN FURNISHED WITH A TITLE REPORT. THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
- TOTAL AREA OF THE PROPERTY SURVEYED IS 7.75 ACRES±.
- THE SUBJECT PROPERTY LIES WITHIN AN AREA DESIGNATED AS ZONE "X" (UNSHADED), ON FEMA/FIRM MAP No. 47119C0180E, (EFFECTIVE APRIL 16, 2007), AS SHOWN ON THE FLOOD INSURANCE RATE MAPS FOR MAURY COUNTY, TENNESSEE.
- NEW RIGHT-OF-WAY DEDICATION: 1.40 ACRES±.
- ZONED: RS-10 PUD
- UNLESS OTHERWISE NOTED, ALL LOT CORNERS ARE MARKED WITH SET IRON RODS.

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) do hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book R2403, Page 319, Maury County Register's Office, Tennessee, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers of irrevocable dedication for all public ways, utilities, and other facilities have been filed.

Owner (FP TCI CCS, LLC) Title Co-Manager Date 7/16/20

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled "Homestead at Carter's Station - Section 4, Phase 3" has/have been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

Superintendent, Columbia Water System Date 7/16/2020

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, AND UTILITIES

I hereby certify that the streets, drainage, and utilities at "Homestead at Carter's Station Subdivision - Section 4, Phase 3" have been installed in accordance with City specifications, or a performance bond in the amount of \$160,000 for streets and drainage has been posted with the City of Columbia, Tennessee, to assure completion of such improvements.

City Engineer, Columbia, Tennessee Date 7/21/20

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations, with the exceptions of such variances, if any, as noted in the minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

Secretary, Planning Commission Date 7/21/20

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME AND STREET NAMES

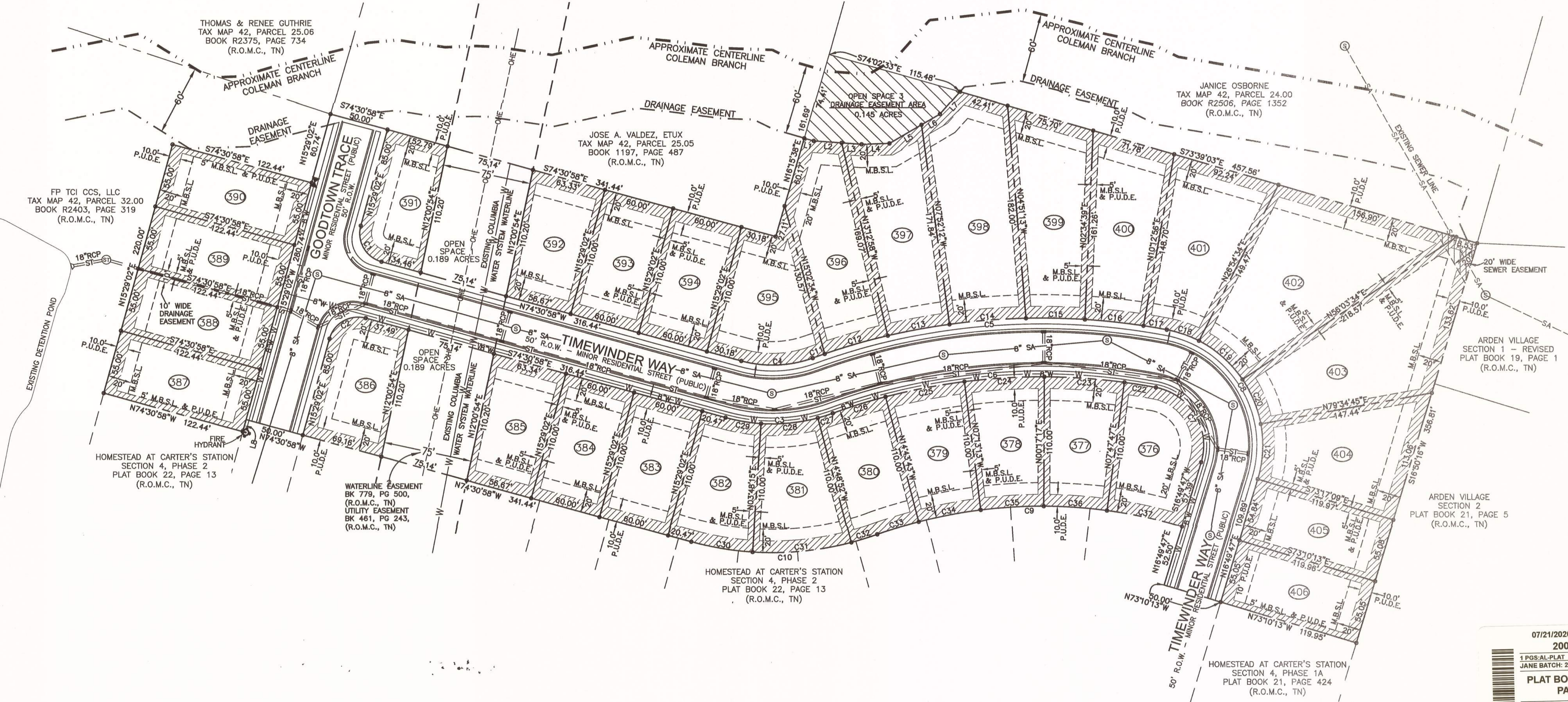
Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Maury County E-911 Date 7-16-20

CERTIFICATE OF APPROVAL FOR SEWER SYSTEM

I hereby certify that the sewer system outlined or indicated on this final subdivision plat has been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

Superintendent, Columbia Wastewater System Date 07/16/2020

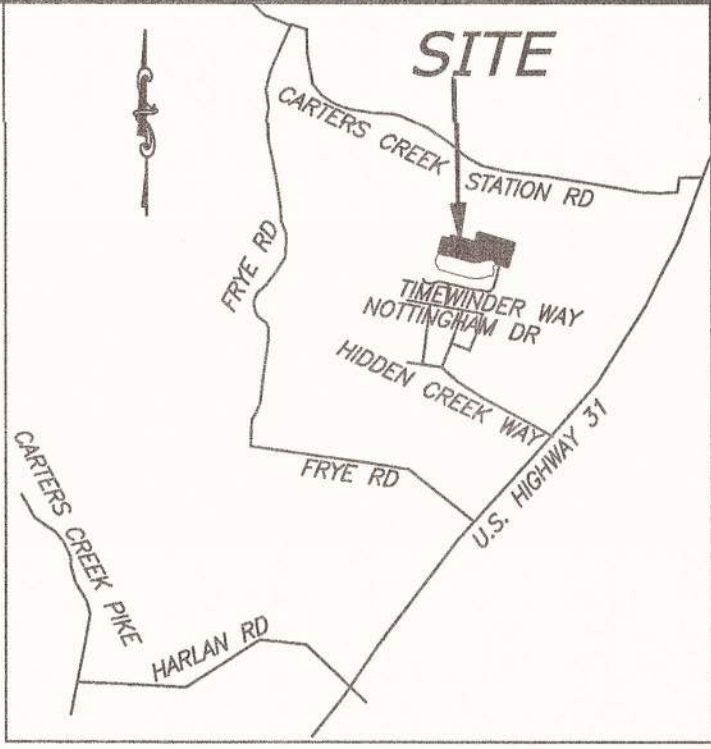


CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	25.00	39.27	35.36	N29°30'58\"W	90°00'00\"
C2	25.00	39.27	35.36	N60°29'02\"E	90°00'00\"
C3	150.00	92.61	91.15	N87°47'45\"E	35°22'33\"
C4	100.00	61.74	60.77	S87°47'45\"W	35°22'33\"
C5	570.00	305.24	301.61	S89°28'59\"W	30°40'58\"
C6	520.00	278.47	275.15	N85°28'57\"E	30°40'58\"
C7	50.00	83.81	74.34	S31°11'29\"E	96°02'32\"
C8	100.00	167.62	148.67	N31°11'29\"W	96°02'32\"
C9	410.00	263.33	258.83	S88°30'27\"W	36°47'57\"
C10	280.00	180.53	157.98	S87°47'45\"W	35°22'33\"
C11	570.00	110.74	10.74	S70°38'02\"W	110°44'00\"
C12	570.00	55.68	55.68	S70°38'02\"W	5°35'47\"
C13	570.00	53.19	53.17	S79°27'25\"W	5°20'48\"
C14	570.00	65.39	65.35	S85°25'00\"W	8°34'23\"
C15	570.00	50.09	50.00	N89°48'59\"W	9°01'58\"
C16	570.00	50.07	50.06	N89°48'10\"W	9°01'58\"
C17	570.00	20.16	20.16	N80°13'22\"W	2°01'37\"
C18	100.00	29.07	28.97	N70°52'55\"W	16°39'17\"
C19	100.00	48.94	48.92	N48°16'11\"W	28°36'51\"
C20	100.00	41.05	40.76	N22°10'50\"W	23°31'11\"
C21	100.00	47.56	47.11	N03°12'16\"E	27°18'02\"
C22	520.00	127.17	127.17	S89°42'23\"E	2°59'59\"
C23	520.00	68.14	68.10	S85°57'28\"E	7°30'30\"
C24	520.00	68.14	68.10	N86°32'02\"E	7°30'30\"
C25	520.00	68.14	68.10	N79°01'32\"E	7°30'30\"
C26	520.00	46.88	46.85	N72°41'23\"E	5°09'48\"
C27	150.00	13.29	13.29	N72°38'48\"E	5°04'40\"
C28	150.00	48.74	48.53	N84°29'42\"E	18°37'07\"
C29	150.00	30.88	30.52	S80°21'21\"E	11°40'48\"
C30	280.00	53.50	53.52	N80°21'21\"W	11°40'48\"
C31	280.00	84.49	84.12	S84°28'42\"W	18°37'07\"
C32	280.00	23.04	23.03	S72°38'48\"W	5°04'40\"
C33	410.00	36.98	36.94	S72°41'23\"W	5°09'48\"
C34	410.00	53.73	53.69	S79°01'52\"W	7°30'30\"
C35	410.00	53.73	53.69	S56°32'02\"W	7°30'30\"
C36	410.00	53.73	53.69	N85°57'28\"W	7°30'30\"
C37	410.00	65.19	65.12	N77°38'54\"W	9°06'58\"

LINE	BEARING	DISTANCE
L1	S74°29'40\"E	8.39
L2	S85°54'35\"E	23.87
L3	S85°54'35\"E	17.00
L4	N88°16'06\"E	23.42
L5	N89°48'27\"E	31.33
L6	N59°39'55\"E	18.19
L7	N41°27'29\"E	25.49
L8	S19°29'02\"W	10.74

LOT #	AREA TABLE	LOT #	AREA TABLE
376	7,497 0.17	384	6,600 0.15
377	6,703 0.15	385	6,600 0.15
378	6,703 0.15	386	6,600 0.15
379	6,703 0.15	387	6,734 0.15
380	6,606 0.15	388	6,734 0.15
381	6,326 0.17	389	6,734 0.15
382	6,849 0.16	390	6,734 0.15
383	6,600 0.15	391	6,040 0.14
384	6,600 0.15	392	6,600 0.15
385	6,600 0.15	393	6,600 0.15
386	6,600 0.15	394	6,600 0.15
387	6,734 0.15	395	8,197 0.19
388	6,734 0.15	396	9,593 0.22
389	6,734 0.15	397	10,037 0.23
390	6,734 0.15	398	13,033 0.30
391	6,040 0.14	399	10,435 0.24
392	6,600 0.15	400	9,316 0.21
393	6,600 0.15	401	10,335 0.24
394	6,600 0.15	402	16,658 0.38
395	8,197 0.19	403	14,814 0.34
396	9,593 0.22	404	10,069 0.23
397	10,037 0.23	405	5,593 0.15
398	13,033 0.30	406	6,603 0.15
399	10,435 0.24		
400	9,316 0.21		
401	10,335 0.24		
402	16,658 0.38		
403	14,814 0.34		
404	10,069 0.23		
405	5,593 0.15		
406	6,603 0.15		

OPEN SPACE	AREA TABLE
1	8,265 0.19
2	8,265 0.19
3	6,333 0.15



VICINITY MAP NOT TO SCALE



CERTIFICATE OF ACCURACY

I hereby certify that to the best of my knowledge and belief, that this is a true and accurate survey of the property shown hereon; that this is a Category "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated and that the ratio of precision is greater than or equal to 1:10,000.

Registered Land Surveyor Date 7-14-20

CERTIFICATE OF COMPLIANCE

I hereby certify that the subdivision plat shown hereon has been found to comply with the Columbia Subdivision Regulations and other adopted ordinances and policies.

City Engineer, Columbia, Tennessee Date 7/21/20

Final Plat
Homestead at Carter's Station
Section 4, Phase 3
3rd CIVIL DISTRICT OF MAURY COUNTY, TN
CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE

SHEET 1 OF 1

TAX MAP 42, P/O PARCEL 32.00

SCALE: 1"= 50'
AREA: 7.75 ACRES±

DATE: APRIL 22, 2020
REVISED: JUNE 24, 2020

H & H LAND
SURVEYING, INC.

612A FITZGUGH BOULEVARD
SMYRNA, TENNESSEE 37167
(615) 831-0756 (FAX) 355-8928
H & H Project No. 2020-0101

07/21/2020 - 02:45 PM
20012262
1 PGS-AL-PLAT
JANE BATCH: 232047
PLAT BOOK: P22
PAGE: 215
REC FEE 16.00
DP FEE 2.00
TOTAL 17.00
STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

PURPOSE NOTE

THE PURPOSE OF THIS PLAT IS TO REVISE LOTS 403, 404, 405, & 406 PER THE FINAL PLAT ENTITLED "HOMESTEAD AT CARTER'S STATION, SECTION 4, PHASE 3" AS OF RECORD IN PLAT BOOK P22, PAGE 215, (R.O.M.C., TN).

VOID AND VACATE NOTE

THE RECORDING OF THIS PLAT WILL VOID, VACATE, AND SUPERSEDE THE FINAL PLAT ENTITLED "HOMESTEAD AT CARTER'S STATION, SECTION 4, PHASE 3" AS OF RECORD IN PLAT BOOK P22, PAGE 215, (R.O.M.C., TN) AS IT PERTAINS TO LOTS 403, 404, 405, & 406 ONLY.

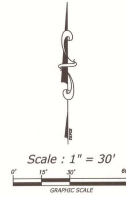
SURVEYOR'S NOTES

1. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
2. SUBJECT PROPERTY IS A PORTION OF PARCEL 32.00 AS SHOWN ON MAURY COUNTY TAX MAP 42.
3. DEED REFERENCE: RECORD BOOK R2403, PAGE 319, REGISTER'S OFFICE OF MAURY COUNTY, TN.
4. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS USING THE TDOT NETWORK, TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPSZONE 4100, NAD83.
5. THIS SURVEYOR HAS NOT PHYSICALLY LOCATED ALL UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN HEREON WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION AS INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. TENNESSEE ONE CALL 1-800-351-1111 OR 1-615-366-1987.
6. THIS SURVEYOR HAS NOT BEEN FURNISHED WITH A TITLE REPORT. THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. TOTAL AREA OF THE PROPERTY SURVEYED IS 0.84 ACRES±.
8. THE SUBJECT PROPERTY LIES WITHIN AN AREA DESIGNATED AS ZONE "X" (UNSHADED), ON FEMA/FIRM MAP NO. 47119C0180E, (EFFECTIVE APRIL 16, 2007), AS SHOWN ON THE FLOOD INSURANCE RATE MAPS FOR MAURY COUNTY, TENNESSEE.
9. ZONED: IS-10 FUD
10. UNLESS OTHERWISE NOTED, ALL LOT CORNERS ARE MARKED WITH SET IRON RODS.

CURVE TABLE

CURVE	RADIUS (FT)	LENGTH (FT)	CHORD (FT)	CHORD BEARING	DELTA ANGLE
C1	1100.00/44.74	12.28	N12°11'11"E	12°11'11"	12°11'11"
C2	1100.00/40.08	39.81	N51°10'40"E	22°57'50"	12°11'11"
C3	1100.00/41.59	40.79	N22°10'40"W	33°31'11"	12°11'11"
C4	1100.00/88.81	85.74	N08°33'19"W	50°48'13"	12°11'11"

LOT	AREA (AC)
403	1.3111
404	1.3111
405	1.3111
406	1.3111
TOTAL	5.2444



CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) do hereby certify that I am (we are) the owner(s) of the property shown and described herein as evidenced in Book R2584, Page 628 and Book R2651, Page 1321, Maury County Register's Office, Tennessee, and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and that offers of irrevocable dedications for all public ways, utilities, and other facilities have been made to the appropriate authority.

John Fleming Date *10/23/20*
Owner: JOHN FLEMING LLC Title

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled "Minor Revision to Lots 403, 404, 405, & 406 of Homestead at Carter's Station - Section 4, Phase 3" has/have been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

John Fleming Date *10/23/20*
Superintendent, Columbia Water System

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, AND UTILITIES

I hereby certify that the streets, drainage, and utilities of "Minor Revision to Lots 403, 404, 405, & 406 of Homestead at Carter's Station - Section 4, Phase 3" have been installed in accordance with City specifications, or a performance bond in the amount of \$100,000.00 for streets and drainage has been posted with the City of Columbia, Tennessee, to ensure completion of such improvements.

John Fleming Date *10/23/20*
City Engineer, Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown herein has been found to comply with the Columbia Subdivision Regulations, with the exceptions of such variations, if any, as noted in the minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

John Fleming Date *10/23/20*
Secretary, Planning Commission, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by the Maury County:

John Fleming Date *10-27-20*
Maury County Engineer

CERTIFICATE OF APPROVAL FOR SEWER SYSTEM

I hereby certify that the sewer system outlined or indicated on this final subdivision plat has been installed in accordance with current local and state government requirements, or a sufficient bond or surety has been filed to guarantee said installation.

John Fleming Date *10/26/2020*
Superintendent, Columbia Wastewater System

CERTIFICATE OF COMPLIANCE

I hereby certify that the subdivision plat shown herein has been found to comply with the Columbia Subdivision Regulations and other adopted ordinances and policies.

John Fleming Date *10/27/20*
City Engineer, Columbia, Tennessee

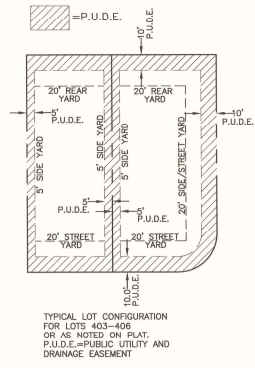
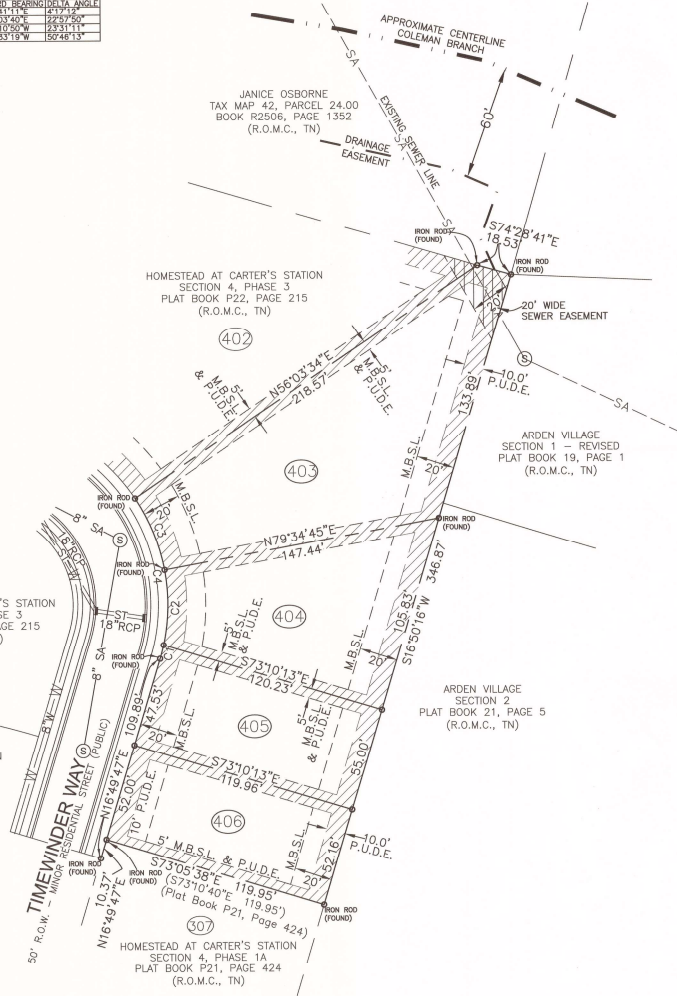
CERTIFICATE OF ACCURACY

I hereby certify that to the best of my knowledge and belief, that this is a true and accurate survey of the property shown herein, that this is a "Category II" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated and that the ratio of precision is greater than or equal to 1:10,000.

John Fleming Date *10-22-20*
Registered Land Surveyor
BOBBY G. MOORE, RLS
TENNESSEE, RLS NO. 1039



10/29/2020 - 10:10 AM
20019569
FISHER & FISHER
MANCY BATCH: 237461
PLAT BOOK: P22
PAGE: 289
RECEIVED 18.08
DPI FILE 2.00
TOTAL 17.08
MAURY COUNTY
JOHN FLEMING
REGISTERED LAND SURVEYOR



H & H LAND SURVEYING, INC.

612A FITZGHUGH BOULEVARD
SMYRNA, TENNESSEE 37167
(615) 831-0756 (FAX) 355-8828
H & H Project No. 2020-0101

Minor Revision
to
Lots 403, 404, 405, & 406
of
Homestead at Carter's Station
Section 4, Phase 3
Plat Book P22, Page 215, (R.O.M.C., TN)

3rd CIVIL DISTRICT OF MAURY COUNTY, TN
CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE

SHEET 1 OF 1

TAX MAP 42, P/O PARCEL 32.00

SCALE: 1"= 30'
AREA: 0.84 ACRES± DATE: OCTOBER 22, 2020



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Paul Keltner, AICP, Director of Development Services, paul@columbiatn.com 931.560.1560

AGENDA ITEM TITLE:

2ND CONSIDERATION ON ORDINANCE NO. 4484 - AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY BEING A PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER A QUITCLAIM DEED TO THE PROPERTY OWNER - WARD 5

RECOMMENDATION: Approve Ordinance No. 4484 on second consideration.

INFORMATION: The City no longer has any use for a portion of right-of-way off Wendy Boulevard. Easements will be kept for utilities. The right-of-way will be split between the two adjacent property owners.

**AN ORDINANCE FOR THE ABANDONMENT OF A RIGHT OF WAY BEING A
PORTION OF PROPERTY OFF WENDY BOULEVARD BETWEEN LOTS 20A
AND 21A AND AUTHORIZING THE MAYOR TO EXECUTE AND DELIVER
QUITCLAIM DEEDS TO THE PROPERTY OWNERS.**

WHEREAS, the City of Columbia, Tennessee, is the owner of a public right-of-way adjacent to Lot 20A, 1826 Wendy Boulevard, owned by Russell and Johnetta Moore, and also adjacent to Lot 21A, 1824 Wendy Boulevard, owned John and Christin Edmondson respectively; and

WHEREAS, the City of Columbia, Tennessee, no longer has any use for a portion of said right-of-way and that portion of said right-of-way should be declared surplus, abandoned and transferred to the adjacent property owners.

NOW THEREFORE, BE IT ORDAINED BY THE CITY OF COLUMBIA, as follows:

Section 1: That the City of Columbia, Tennessee, does hereby declare surplus, abandon and relinquish all of its right, title and interest in and to the tract of unimproved right-of-way located between Lots 20A and 21A, which property is legally described in Exhibit "A" attached hereto and incorporated herein by reference.

Section 2: That the Mayor of the City of Columbia, Tennessee, is hereby authorized to execute and deliver quitclaim deeds, conveying all right, title and interest the said City of Columbia may have in and to the property underlying said right-of-way to the owners of Lots 20A and 21A described in Exhibit "A" with one half being conveyed to the owners of Lot 20A and one half being conveyed to the owners of Lot 21A.

Section 3: This Ordinance is passed after review and public hearing of the City of Columbia City Council to amend the recorded plat, with a recommendation of approval on the 14th day of December, 2023.

Section 4: That all Ordinances or parts of Ordinances in conflict herewith are hereby repealed.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, This the _____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

ANTHONY R. MASSEY, CITY MANAGER

Passed on 1st Consideration: _____

Passed on 2nd Consideration: _____



PROPERTY OWNERS' CONTACT INFORMATION:	
LOT 21A	LOT 20A
JOHN C. EDMONDSON & WIFE, CHRISTIN L. EDMONDSON 1824 Wendy Blvd Columbia, TN 38401 Cell (Christin): 615-971-7094 christinedmondson@gmail.com	RUSSELL C. MOORE & WIFE, JOHNETTA MOORE 1826 Wendy Blvd Columbia, TN 38401 Home: 931-486-2383 Cell (Johnetta): 615-516-4339 Cell (Russ): 615-483-0885 jminter@bellsouth.net

<u>LOT 21A PROPERTY DATA:</u>	<u>LOT 20A PROPERTY DATA:</u>
<u>JOHN C. EDMONDSON AND WIFE,</u>	<u>RUSSELL C. MOORE AND WIFE,</u>
<u>CHRISTIN L. EDMONDSON</u>	<u>JOHNETTA MOORE</u>
Deed Book R2112 Page 188	Deed Book R2741 Page 203
Plat Book P17 Page 271 Lot 21	Plat Book P17 Page 271 Lot 20
Tax Map 042H Group A Parcel 013.00	Tax Map 042H Group A Parcel 014.00
Surveyed Area Lot 21: 0.580 Acres/25,258.0 Sq. Ft.	Surveyed Area Lot 20: 0.591 Acres/25,732.0 Sq. Ft.
Abandoned Right-of-Way Area: 0.123 Acres/5,359.0 Sq. Ft.	Abandoned Right-of-Way Area: 0.123 Acres/5,356.0 Sq. Ft.
NEW COMBINED AREA: 0.703 Acres/30,617.0 Sq. Ft.	NEW COMBINED AREA: 0.714 Acres/31,088.0 Sq. Ft.
Columbia, TN Zoning: CD-3	Columbia, TN Zoning: CD-3

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	275.38'	56.74'	56.64'	S 65°04'55" E	11°48'18"
C2	25.00'	37.97'	34.42'	N 27°47'24" W	87°01'15"
C3	25.00'	40.70'	36.35'	S 62°20'57" W	93°15'27"

CERTIFICATE OF OWNERSHIP AND DEDICATION
 (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon as evidenced in Book R2741_, Page 203_, Maury County Registers Office, and adopt this final subdivision plat of the property as shown hereon and dedicate all public ways and easements as noted with my (our) free consent.

CERTIFICATE OF APPROVAL OF WATER SYSTEM
I hereby certify that the water system(s) outlined or indicated on this final subdivision plat has/have been installed in accordance with current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

CERTIFICATE OF APPROVAL FOR RECORDING
I hereby certify that the final subdivision plat shown hereon has been found to comply with the City of Columbia Subdivision Regulations, with the exception of such variances, if any, as noted in the minutes of the Columbia Municipal Planning Commission, and that it has been approved for recording in the Office of the Maury County Register of Deeds.

CERTIFICATE OF SUBDIVISION NAME AND STREET NAMES
Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

CERTIFICATE OF SANITARY SEWER SYSTEM
I hereby certify that the sanitary sewer system outlined or indicated on this final subdivision plat has been installed in accordance with the current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

CERTIFICATE OF COMPLIANCE
I hereby certify that the final subdivision plat shown hereon has been found to comply with the City of Columbia Subdivision Regulations and other adopted ordinances and policies.

Certificate of Survey Accuracy
I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this is a class IV Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, survey having a positional accuracy of 0.07'. This survey meets the standards of practice for surveying in the State of Tennessee.

Joseph C. Pugh (Date)
TN RLS# 3183

MINOR PLAT FOR JOHNETTA MOORE		
WENDY BOULEVARD, COLUMBIA , TENNESSEE		
DRAWN BY: ELR		DATE: 07/11/2023
CHECKED BY: JCP		REVISED: 10/09/2023
SCALE: 1"=50'	ESSENTIAL LAND SURVEYING & MAPPING, LLC 811 HATCHER LANE, COLUMBIA, TN 38401 PHONE: 931-286-6483 EMAIL: CPUGH@ELSM-LLC.COM	JOB #: 230613_M o o r e PAGE #:
		1 of 1
		Page 1142 of 1173



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Thad Jablonski, Finance Director, tjablonski@columbiatn.com, 931-560-1580

AGENDA ITEM TITLE: 1ST CONSIDERATION OF ORDINANCE NO. 4485 – AN ORDINANCE TO AMEND THE FISCAL YEAR 2023-2024 BUDGET ORDINANCE NO. 4464 PROVIDING FOR REVISIONS TO THE GENERAL AND CAPITAL PROJECTS FUNDS AND ESTABLISH THE DATE OF JANUARY 11, 2024 AS THE DATE OF PUBLIC HEARING

RECOMMENDATION: Approve Ordinance No. 4485 on first consideration and establish the date of January 11, 2024 as the date of public hearing.

INFORMATION: The proposed ordinance is the second amendment to the FY 2024 Appropriation Ordinance, impacting the Capital Projects and several departments within the General Fund.

Within this budget amendment, the following items are included:

- Replenish General City Admin – Reserves for the transfer to Capital Projects Fund (\$149,122),
- Budget funds in Police for 2024 THSO Grant totaling \$20,000,
- Budget funds in Parks to establish a budget for Mid-State Classic (\$45,000),
- Budget \$200,000 for the 2024 Tourism Enhancement Grant funds for blue-way access on the Duck River and \$49,122 for engineering for Parking Garage Design from the prior fiscal year.

A detailed schedule of items included within this budget amendment is attached. This amendment increases the City's total budget for FY 2024 by \$463,244 to \$101,392,976.

AN ORDINANCE TO AMEND THE FISCAL YEAR 2023-2024 BUDGET ORDINANCE
NO. 4464 PROVIDING FOR REVISIONS TO THE GENERAL AND CAPITAL
PROJECTS FUNDS

BE IT ORDAINED BY THE CITY OF COLUMBIA, TENNESSEE:

Section 1: That Ordinance No. 4464 as amended, the same being the Appropriation Ordinance for the City of Columbia for the Fiscal Year July 1, 2023 through June 30, 2024, be amended. That the total budget appropriation for the fiscal year be increased from \$100,929,732 to \$101,392,976, an increase of \$463,244.

Section 2: That the budget appropriations shall be revised as follows:
General City Admin total of \$12,966,416 be amended to \$13,115,538, an increase of \$149,122.

Police total of \$12,874,685 be amended to \$12,894,685, an increase of \$20,000.

Capital Projects total of \$14,422,143 be amended to \$14,671,265, an increase of \$249,122.

ALL OTHER APPROPRIATIONS REMAIN THE SAME.

Section 3: This ordinance is enacted pursuant to and in compliance and conformity with Article 9, Section 9 of the Charter of the City of Columbia, with Notice of Public Hearing published on the 26th day of November, 2023, and it shall be executed and construed consistent with said charter and laws of the State of Tennessee.

Section 4: That all ordinances or parts of ordinances in conflict herewith are hereby repealed.

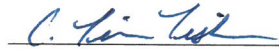
PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF
COLUMBIA, TENNESSEE, THIS THE ____ DAY OF JANUARY, 2024.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:

_____
C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

ANTHONY R. MASSEY, CITY MANAGER

Passed on 1st Consideration: _____

Passed on 2nd Consideration: _____

Summary of Appropriation Amendment #2
1st Consideration - December 14th (12/14/23)

General City Admin

Replenish General City Admin - Reserves	149,122.00
Budget reduction to reserves to transfer to CPF	(149,122.00)
Transfer funds for 2024 Tourism Enhancement Grant match	<u>\$ 149,122.00</u>

Total General City Admin \$ 149,122.00

Police

Budget funds for 2024 THSO Grant	<u>\$ 20,000.00</u>
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Total Police \$ 20,000.00

Parks

Establish budget for Mid-State Classic	<u>\$ 45,000.00</u>
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Total Parks \$ 45,000.00

TOTAL GENERAL FUND \$ 214,122.00

Capital Projects

Budget 2024 Tourism Enhancement Grant funds 32601-77740 (Blueway)	200,000.00
Budget funds for Morrison Engineering for Parking Garage Design from FY 23	<u>\$ 49,122.00</u>

Total Capital Projects \$ 249,122.00

Total Increase - All Funds (First Consideration)	<u>\$ 463,244.00</u>
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CITY OF COLUMBIA
FY 2024 APPROPRIATION AMENDMENT #2
First Consideration 12/14/23

1) Budget funds for 2024 THSO Grant

Approved by Council 10/12/23

Increase Revenues

110-33208	\$	20,000.00	Highway Safety Grant
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Increase Expenditures

110-42147-112	\$	10,000.00	Police - Highway Safety Grant-Overtime
110-42147-321	\$	10,000.00	Police - Highway Safety Grant-Controllable Assets
	\$	20,000.00	Total

2) Establish budget for Mid-State Classic

Increase Revenues

110-34751	\$	20,000.00	Mid State Classic-Sponsorships
110-34752		25,000.00	Mid State Classic-Ticket Sales
	\$	45,000.00	Total

Increase Expenditures

110-44490-290	\$	18,000.00	Mid State Classic-Other Services & Charges
110-44490-320		20,000.00	Mid State Classic-Operating Supplies
110-44490-530		7,000.00	Mid State Classic-Rentals
	\$	45,000.00	Total

3) Budget transfer to Capital Projects for Parking Garage

Replenish General City Admin - Reserves

Increase Revenues

110-37110		149,122.00	Prior Year Revenue
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Increase Expenditures

110-41900-800	\$	149,122.00	General City Admin - Reserves
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Budget transfer to Capital Projects for Tourism Enhancement Grant

Decrease Expenditures

110-41900-800		149,122.00	General City Admin - Reserves
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Increase Expenditures

110-41900-766	\$	149,122.00	General City Admin - Miscellaneous - Transfer to Capital Proj Fund
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Budget transfer to Capital Projects for Tourism Enhancement Grant

Increase Revenues

311-37940	\$	100,000.00	Transfer From General Fund
311-33454	\$	100,000.00	Capita Projects - Tourism Enhancement Grant
Total	\$	200,000.00	

Increase Expenditures

311-41850-937	\$	200,000.00	Tourism Enhancement-Blueway Project
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4) Budget funds for Morrison Engineering for Parking Garage Design from FY 23

Materials/Equipment/Services not received by 6/30/23

Increase Revenues

311-37940	49,122.00	Transfer From General Fund
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Increase Expenditures

311-41850-936	49,122.00	Parking Garage - Parking Garage Improvements
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Summary of Appropriation Amendment #2
1st Consideration - December 14th (12/14/23)

General City Admin

Replenish General City Admin - Reserves		149,122.00
Budget reduction to reserves to transfer to CPF		(149,122.00)
Transfer funds for 2024 Tourism Enhancement Grant match	\$	149,122.00

Total General City Admin \$ 149,122.00

Police

Budget funds for 2024 THSO Grant		\$ 20,000.00
----------------------------------	--	-----------------

Total Police \$ 20,000.00

Parks

Establish budget for Mid-State Classic		\$ 45,000.00
--	--	-----------------

Total Parks \$ 45,000.00

TOTAL GENERAL FUND \$ 214,122.00

Capital Projects

Budget 2024 Tourism Enhancement Grant funds 32601-77740 (Blueway)		200,000.00
Budget funds for Morrison Engineering for Parking Garage Design from FY 23	\$	49,122.00

Total Capital Projects \$ 249,122.00

Total Increase - All Funds (First Consideration)		\$ 463,244.00
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CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Paul Keltner, AICP, Director of Development Services, paul@columbiatn.com 931.560.1560

AGENDA ITEM TITLE:

1ST CONSIDERATION ON ORDINANCE NO. 4486 - AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 89E GROUP F PARCELS 1.01 AND 1.02, LOCATED OFF MORNINGSIDE LANE, FROM CD-3L (NEIGHBORHOOD LARGE LOT CHARACTER DISTRICT) TO CD-4 (GENERAL URBAN CHARACTER DISTRICT) AND ESTABLISH JANUARY 11, 2024 AS THE DATE OF PUBLIC HEARING - WARD 3.

RECOMMENDATION: Approve Ordinance No. 4486 on first consideration and establish January 11, 2024 as the date of Public Hearing.

INFORMATION: The applicant is requesting to rezone the property from CD-3L (Neighborhood Large Lot Character District) to CD-4 (General Urban Character District) with the future development concept reflecting single family lots on the four acres of property. The future land use plan designation of Urban Neighborhood is consistent with the CD-4 requested zone. The Planning Commission reviewed this request at the November 8, 2023 meeting and recommended approval by a vote of four to three.

AN ORDINANCE TO AMEND ORDINANCE NO. 4400, THE SAME BEING THE ZONING ORDINANCE OF THE CITY OF COLUMBIA, TENNESSEE BY REZONING TAX MAP 89E GROUP F PARCELS 1.01 AND 1.02, LOCATED OFF MORNINGSIDE LANE, FROM CD-3L (NEIGHBORHOOD LARGE LOT CHARACTER DISTRICT) TO CD-4 (GENERAL URBAN CHARACTER DISTRICT).

BE IT ORDAINED BY THE CITY OF COLUMBIA:

Section 1: That the City of Columbia Zoning Ordinance, the same being Ordinance No. 4400, and the zoning maps therein adopted be, and the same are hereby amended by rezoning the properties herein described from CD-3L (Neighborhood Large Lot Character District) to CD-4 (General Urban Character District).

Section 2: Said properties to be rezoned, being Tax Map 89E Group F Parcels 1.01 and 1.02, located off Morningside Lane, are located in the Ninth Civil District of Maury County, Tennessee, within the corporate limits of the City of Columbia, as described on Exhibit "A", which is attached hereto and incorporated herein by reference. A location map showing the proposed area to be rezoned from CD-3L (Neighborhood Large Lot Character District) to CD-4 (General Urban Character District) is attached hereto, identified as Exhibit "B" and incorporated herein by reference.

Section 3: This Ordinance is passed after review of Columbia Zoning Ordinance Section 8.5.19.H.4 by the Columbia Municipal Planning Commission with a recommendation of approval on the 8th day of November, 2023, and after a public hearing held on the 11th day of January, 2024, with notice of said hearing being given in The Daily Herald of Columbia, Tennessee, fifteen (15) days or more before said hearing.

Section 4: That pursuant to Section 8.5.19.K.6, the City Council makes the following specific findings:

- A. The proposed rezoning is in agreement with the Comprehensive plan and any applicable local area plans;

- B. It has been determined that the legal purposes for which zoning exists are not contravened; and
- C. It has been determined that there will be no adverse effect upon the Adjoining property owners unless such effect can be justified by the overwhelming public good or welfare;

Section 5: That all ordinances or parts of ordinances in conflict herewith are hereby repealed.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY OF COLUMBIA, TENNESSEE, This the 11th day of January, 2024.

CHARLES (CHAZ) M. MOLDER, MAYOR

ATTEST:

THAD H. JABLONSKI, CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

ANTHONY R. MASSEY – CITY MANAGER

Passed on 1st consideration _____

Passed on 2nd consideration: _____

Send TAX Info to:
Rainey Pogue
P.O. Bx384
Columbia, TN
38402

QUIT CLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, this indenture made this 12 day of May 2021, between JACK H. POGUE, HEREINAFTER REFERRED TO AS "Grantor" and JACK H POGUE AS Trustee of the JACK H. POGUE LIVING TRUST, HEREINAFTER REFERRED TO AS "Grantee", for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable considerations, to said Grantor in hand paid by said Grantee, the receipt whereof is acknowledged, have granted, bargained, and sold to Grantee, the Grantees' heirs, assigns, and successors forever, the following described land, situate, lying and being in Maury County, Tennessee, to-wit:

Being a 4.12 acre's track of land located in the 9th Civil District of Maury County, Tennessee.

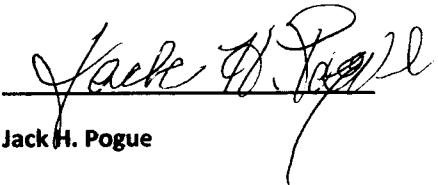
Property location: Morningside Lane, Columbia, Tennessee

Parcel ID/Tax ID: 089E F 001.01

Being the same property conveyed from James D. Patterson, Travis Sargent Patterson, Johnny D. Patterson and David Lee Patterson, to Jack H. Pogue, a one third undivided interest, and Jack H. Pogue, Trustee for Eric L. Pogue and Rainey J. Pogue a two-third undivided interest as tenants in common. and recorded in BK 753, PG's 110 & 111. Register's Office of Maury County, Tennessee.

A more complete description of metes and bounds for the property can be found as recorded in BK 753, PG' 110 and 111. Register's Office of Maury County, Tennessee.

In Witness Whereof, the said Grantor has set his hand the day and year first written above.


Jack H. Pogue

BK/PG: R2733/1478-1479	
21010383	
2 PGS:AL-QUITCLAIM DEED	
JANE BATCH: 248818	05/12/2021 - 03:16 PM
VALUE	0.00
MORTGAGE TAX	0.00
TRANSFER TAX	0.00
RECORDING FEE	10.00
ARCHIVE FEE	0.00
DP FEE	2.00
REGISTER'S FEE	0.00
TOTAL AMOUNT	12.00
STATE OF TENNESSEE, MAURY COUNTY	
JOHN FLEMING	
REGISTER OF DEEDS	

Witness Name: Bonnie G. Hickman Witness Signature: Bonnie G. Hickman
Witness Name: Julie A Kirk Witness Signature: Julie A Kirk

CERTIFICATE OF ACKNOWLEDGMENT OF NOTARY PUBLIC

State of Tennessee)

County of MAURY)

On May 12, 2021 before me, a notary public in and for said state,
personally appeared Jack H Pogue, personally known to me (or
proved on the basis of satisfactory evidence) to be the person whose name is subscribed to the
within instrument and acknowledged to me that she/he executed the same in her/his
authorized capacity, and that by her/his signature on the instrument the person, or the entity
upon behalf of which the person acted, executed the instrument.

WITNESS MY HAND AND OFFICIAL SEAL

Penny C Worley

Notary Public

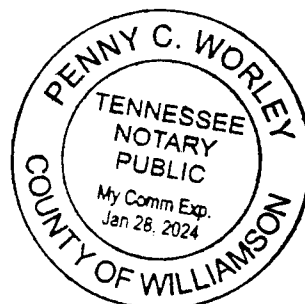
My commission expires: 1-28-24

(NOTARIAL SEAL)

MAURY COUNTY REGISTER, STATE OF TENNESSEE Page 2 of 2
For we hereby certify that the actual Consideration for
the transfer of value of the property transferred whichever is
greater is \$ 0 which amount is equal to greater than
the amount value of the property transferred would command at
a run voluntary sale.

James J Pogue Affiant
Subscribed and sworn before me this 12 day of May 2021

John Fleming
by jj (DR)



OFFICIAL SEAL
JOHN FLEMING
REGISTER OF DEEDS
MAURY CO TN

QUIT CLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, this indenture made this 12 day of May, 2021, between JACK H. POGUE, TRUSTEE for Eric L. Pogue and Rainey J. Pogue, HEREINAFTER REFERRED TO AS "Grantor" and JACK H POGUE AS Trustee of the JACK H. POGUE LIVING TRUST, HEREINAFTER REFERRED TO AS "Grantee", for and in consideration of the sum of Ten Dollars (\$10.00) and other good and valuable considerations, to said Grantor in hand paid by said Grantee, the receipt whereof is acknowledged, have granted, bargained, and sold to Grantee, the Grantees' heirs, assigns, and successors forever, the following described land, situate, lying and being in Maury County, Tennessee, to-wit:

Property Address: Morningside Lane

Subdivision: Sunset Park

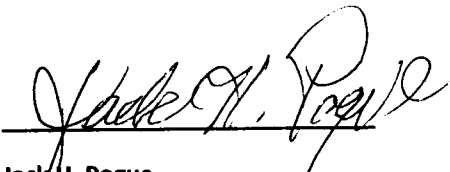
Parcel ID/Tax ID: 089E F 001.02

Located in the Ninth (9th) Civil District of Maury County, Tennessee.

This being the same property conveyed by Travis Sargent Patterson and wife, Shirly A. Patterson to Jack H. Pogue, Trustee for Eric L. Pogue and Rainey J. Pogue with the deed recorded on Book 755, Pages 623 and 624, Register's Office County of Maury, Tennessee.

A more complete description of the metes and bounds for the property can be found recorded in Book 755 Pages 623 and 624, Register's Office Maury County, Tennessee.

In Witness Whereof, the said Grantor has hereunto set his hand the day and year first written above.


Jack H. Pogue

BK/PG: R2733/1486-1487	
21010387	
2 PGS:AL-QUITCLAIM DEED	
JANE BATCH: 248818	05/12/2021 - 03:16 PM
VALUE	0.00
MORTGAGE TAX	0.00
TRANSFER TAX	0.00
RECORDING FEE	10.00
ARCHIVE FEE	0.00
DP FEE	2.00
REGISTER'S FEE	0.00
TOTAL AMOUNT	12.00
STATE OF TENNESSEE, MAURY COUNTY	
JOHN FLEMING	
REGISTER OF DEEDS	

Witness Name: BONNIE G. HICKMAN Witness Signature: Bonnie G. Hickman
Witness Name: Luba A. Kerk Witness Signature: Luba A. Kerk

CERTIFICATE OF ACKNOWLEDGMENT OF NOTARY PUBLIC

State of TENNESSEE

County of MAURY

On May 12, 2021 before me, a notary public in and for said state,
personally appeared Jack H Pogue, personally known to me (or
proved on the basis of satisfactory evidence) to be the person whose name is subscribed to the
within instrument and acknowledged to me that she/he executed the same in her/his
authorized capacity, and that by her/his signature on the instrument the person, or the entity
upon behalf of which the person acted, executed the instrument.

WITNESS MY HAND AND OFFICIAL SEAL

Penny C Worley

Notary Public

My commission expires: 1.28.24

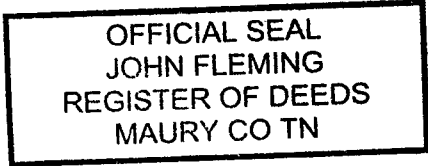
(NOTARIAL SEAL)

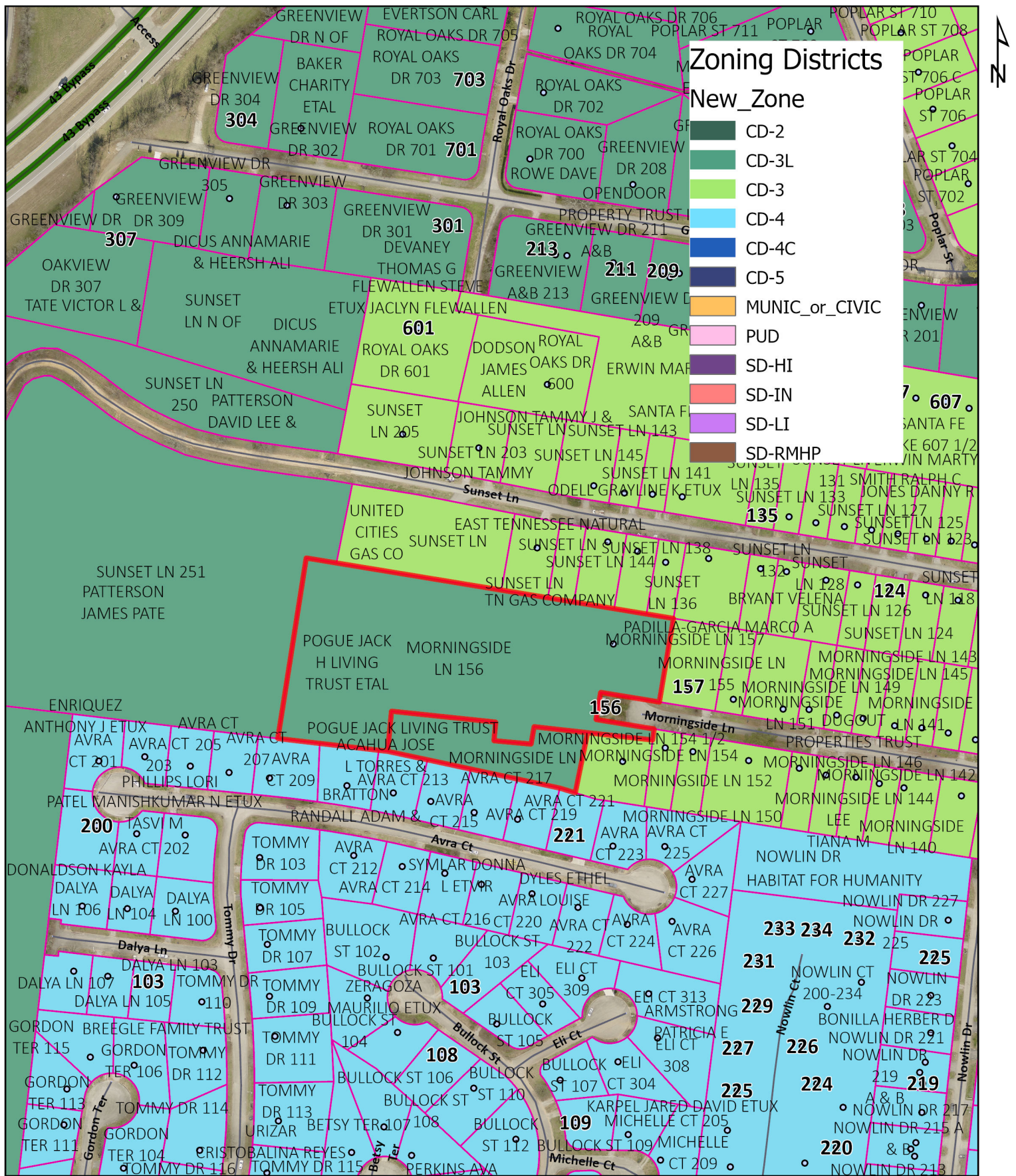
MAURY COUNTY REGISTER STATE OF TENNESSEE
For we hereby, certify that the actual Consideration for
this transfer of value of the property transferred whichever is
greater is \$ 0 which amount is equal to greater than
the amount which the property transferred would command at
the time of the transfer.
Jack H Pogue Affiant
Subscribed and sworn before me this 12 day of May 2021

Page 2 of 2



John Fleming
Leg JJ (PR)





Ordinance No. 4486 - Exhibit B

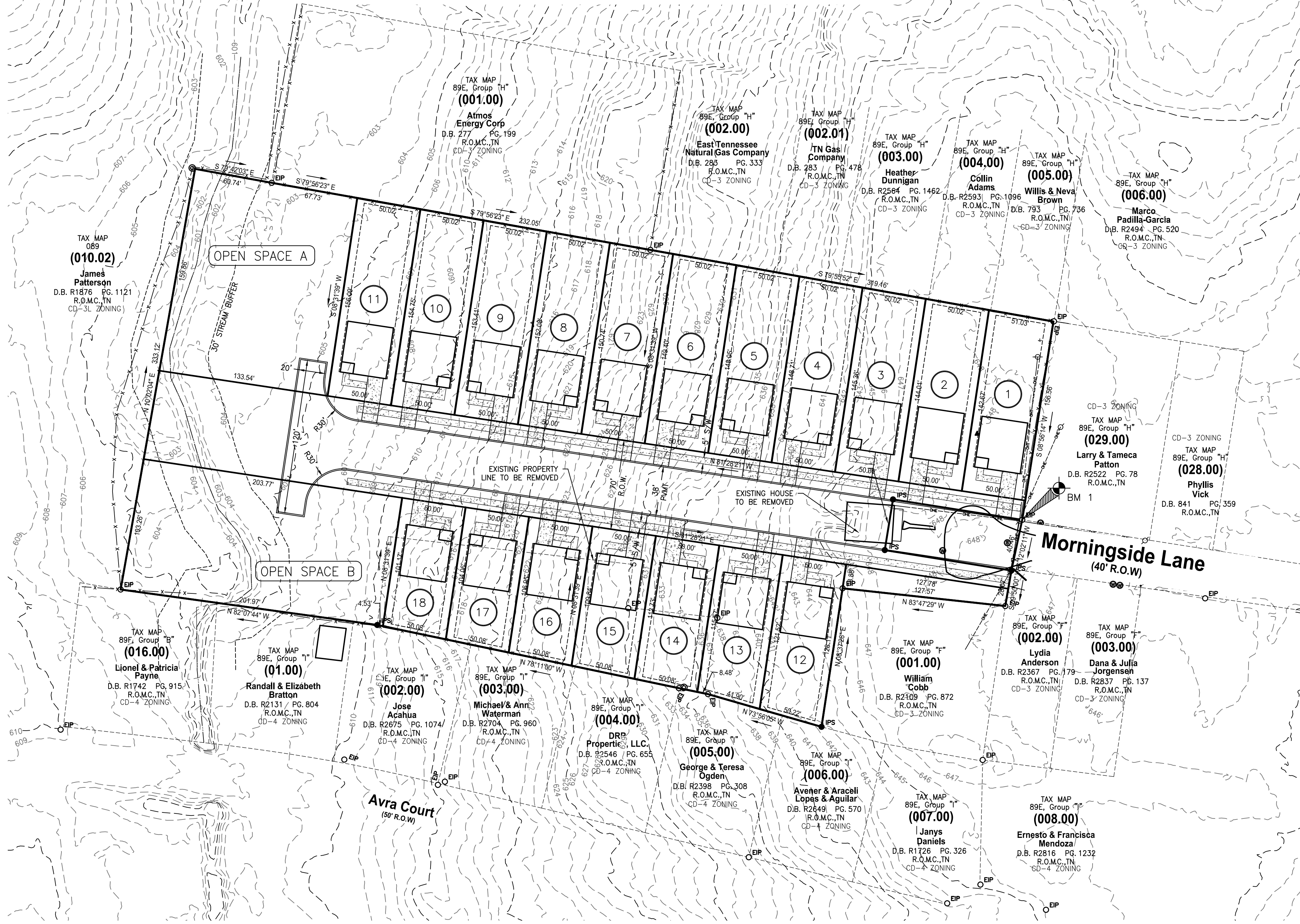
TM 89E Group F Parcels 1.01 & 1.02 Morningside Lane



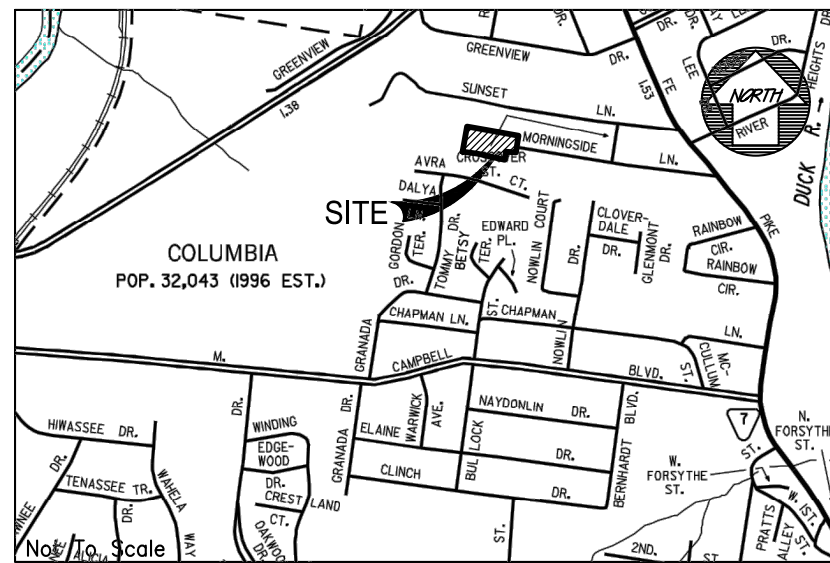
CITY OF
COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

SKETCH CONCEPT PLAN



Location Map



SITE DATA:

OWNER: JACK POGUE, TRUSTEE
P.O. BOX 384
COLUMBIA, TN 38402

PARCEL NUMBER: TAX MAP 89E, GRP F, PARCEL 01.01
DEED BOOK: R2733, PG 1478

SUBJECT PARCEL ZONING: REQUEST CD-4, CURRENT CD-3L

ACREAGE OF SITE: 4.78 ACRES
(PROPOSED 47,745.95 S.F. - 1.10 Ac.
RIGHT OF WAY DEDICATION)

MINIMUM REQUIRED BUILDING SETBACKS:
6' MIN - 20' MAX FRONT
3' MIN - REAR
6' MIN - SIDE

UTILITY SERVICES:
WATER SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TENNESSEE 38401
(931) 388-4833

PURPOSE NOTE: CONSTRUCT 548.54 L.F. OF ROADWAY AND
PROVIDE 18 RESIDENTIAL LOTS.

NOTES:

- INSTALLATION OF HVAC EQUIPMENT IN P.U.D.E.'s WITH
BURIED PIPES IS PROHIBITED.
- ALL DRAINAGE SWALES AND BERMS TO BE MAINTAINED BY
INDIVIDUAL HOMEOWNERS.

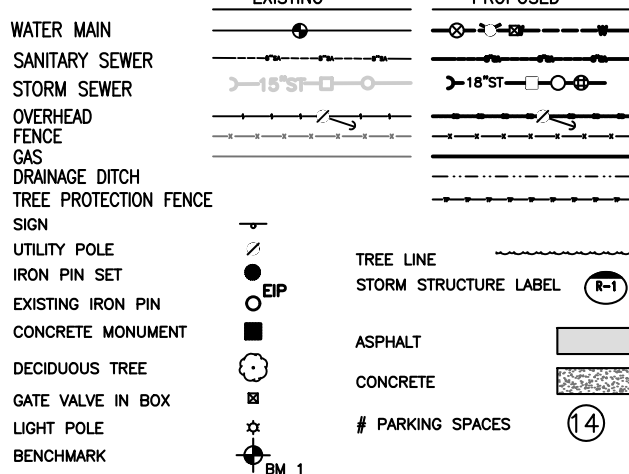
BENCHMARK

BENCHMARK #1
IRON PIN
ELEV = 647.69'
N = 474.645.74
E = 1,657.815.38
TENNESSEE COORDINATE
SYSTEM OF 1983
NAVD 88

WARNING! UTILITY LINES!

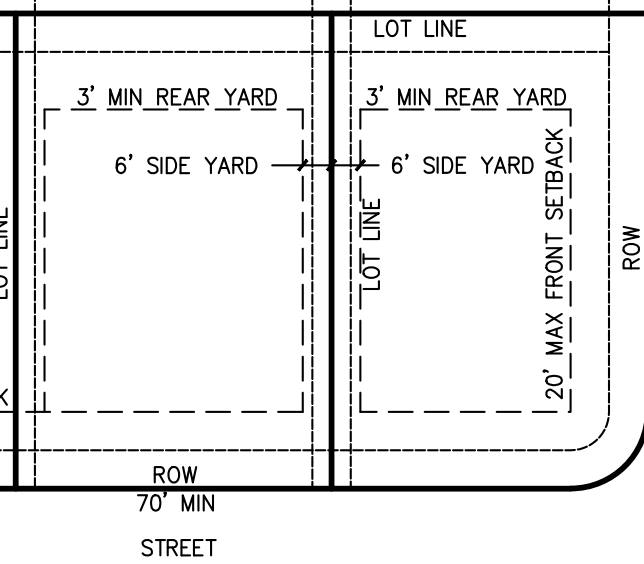
THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN
AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT
ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE
PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY
SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES
TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT
AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF
CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS
CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE
SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO
BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND
TYPE OF THEIR SERVICES.

LEGEND



10' Public Utility and Drainage Easement
(Unless otherwise noted)

6' MIN - 20' MAX FRONT SETBACK
10' Public Utility and Drainage Easement
(Unless otherwise noted)



SUBDIVISION
TYPICAL LOT LAYOUT

LOT AREA TABLE

LOT #	AREA S.F.	AREA AC.
1	7,171.2	0.16
2	7,167.1	0.16
3	7,234.4	0.17
4	7,261.7	0.17
5	7,368.9	0.17
6	7,436.2	0.17
7	7,503.4	0.17
8	7,570.3	0.17
9	7,637.2	0.18
10	7,704.1	0.18
11	7,771.0	0.18
12	6,229.7	0.14
13	5,913.4	0.14
14	5,708.2	0.13
15	5,584.1	0.13
16	5,419.7	0.12
17	5,255.3	0.12
18	5,150.9	0.12

OPEN SPACE

OPEN SPACE	AREA S.F.	AREA AC.
A	20,608.5	0.47
B	20,931.0	0.48

OPEN SPACE NOTE:

ALL OPEN SPACE AREA IS TO BE MAINTAINED BY THE
HOMEOWNERS ASSOCIATION, CREATED FOR THE PURPOSE OF
MAINTAINING ALL COMMON OPEN SPACE AND GROUNDS
INCLUDING THE DETENTION AREAS SHOWN ON THIS PLAN.

GRAPHIC SCALE



(IN FEET)
1 inch = 50 ft.

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMMENCEMENT OF
CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL
INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE
CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED
IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY
NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER BEFORE ANY
REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED. ALL PARTIES TO THE PROCESS (OWNER, CIVIL
ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF
THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE
RE-VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

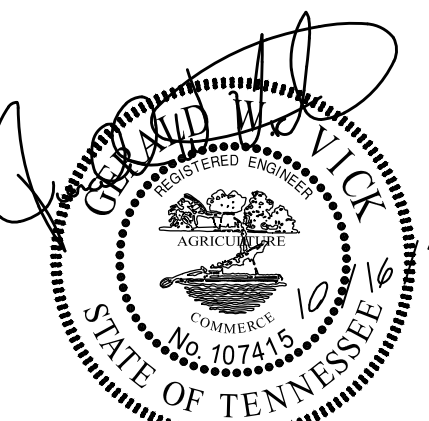
BOUNDARY & TOPOGRAPHIC SURVEY PROVIDED BY:

W.E.S. ENGINEERS AND SURVEYORS
2486 NASHVILLE HWY
COLUMBIA, TENNESSEE 38401
(931) 388-2329



FLOOD STUDY NOTE:

A PORTION OF THE PROPERTY IS LOCATED WITHIN A FLOOD
HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT
AGENCY FLOOD INSURANCE RATE MAPS (FIRM) MAP
NUMBER 47117C0170E DATED APRIL 16, 2007.

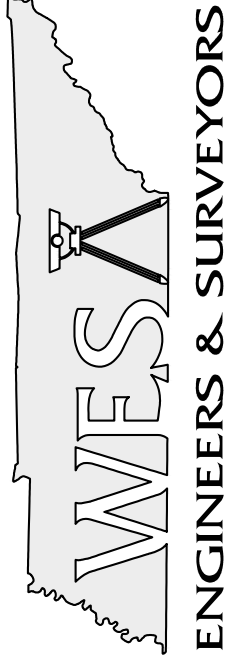


gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

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WES E ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com



Client
RAINEY POGUE
P.O. BOX 384
COLUMBIA, TN 38402
931-215-1299

REVISIONS	DATE	COMMENTS
1	10/12/23	

POGUE CONCEPT SKETCH

MORNINGSIDE LANE
COLUMBIA, MAURY COUNTY, TENNESSEE
SKETCH PLAN

Drawn: RP	Checked: CV	Approved: CV	Date: 9/28/23
23544	Scale: Vertical: 1"=50'	Horizontal: 1"=50'	

MP-1

Morningside Lane Rezoning

Project #:	23-0379	Location:	Map 89E F Parcel 1.01, 1.02
Applicant:	WES Engineers & Surveyors	Case Type(s):	Rezoning
Staff Planner:	Kevin C. McCarthy, AICP	Proposed Use:	Single Family Homes

PROJECT SUMMARY

The applicant requests to rezone a 4.28-acre property located near the current terminus of Morningside Lane from CD-3L (Neighborhood Large-Lot Character District) to CD-4 (General Urban Character District). The subject site is composed of two existing lots of record. The current zoning designation permits low density single-family residences. The requested zoning designation accommodates a medium density mix of residential and commercial uses. The concept provided by the applicant depicts development of the site for detached single family homes. The Zoning Ordinance permits two dwelling units per acre in CD-3L and twelve dwelling units per acre in CD-4.

- The DRC reviewed this proposal at its October 2023 meeting.
- The request is consistent with Connect Columbia, the City's comprehensive plan.
- The concept plan generally indicates that it is possible to develop the site in conformity with the requested standards.
- Rezoning simply establishes entitlements under the zoning ordinance, not a vested right to develop the site as depicted in the concept plan; greater detail will be required at the time of any subsequent site development plan and preliminary plat.
- The concept plan depicts development of the infill site with a 550-foot extension of Morningside Lane beyond its current terminus.
- Although the subject property is not located in an Area of Change, the single-family standards of the CD-4 character district are compatible with the established pattern of the surrounding neighborhood. The development depicted in the concept plan effectively extends the Sunset Park Subdivision.
- At the request of staff, the applicant provided specific responses to some of the rezoning criteria.
- The Planning Commission is a **recommending body** for rezoning requests.
- Templates are provided at the end of the report to assist the Planning Commission in crafting properly formatted motions.

SITE INFORMATION

CURRENT ZONING	EXISTING USE	EXISTING IMP.	LAND AREA
CD-3L	Single Family	Single Family House	+/- 4.28 Acres



SITE CONTEXT/ADJACENT PROPERTIES			
	Future Land Use	Zoning	Current Use
Subject Property	Urban Neighborhood	CD-3L	Single-Family
North	Urban Neighborhood	CD-3	Utility Facility/Single Family
South	Urban Neighborhood	CD-4	Single-Family
East	Urban Neighborhood	CD-3	Single-Family
West	Suburban Neighborhood	CD-3L	Single-Family

The subject property is currently vacant except for an unoccupied single-family home constructed in 1940. The property is located at the current terminus of Morningside Lane. It sits between a very large residential property to the west and medium density neighborhoods on the east, north, and south. One of the parcels bordering the property on the north contains a utility facility. The area is a mix of CD-3L, CD-3, and CD-4 zoned parcels. The future land use of the subject property and most adjacent properties is Urban Neighborhood. The current zoning in the immediate vicinity of the site is **not consistent** with Connect Columbia, except for the CD-4 section to the south. Although the current zoning of the immediately surrounding Sunset Park Subdivision is CD-3, and therefore inconsistent with the Future Land Use Map, the platted lots are generally 50' wide, conforming to the CD-4 standard.

CONSISTENCY WITH CONNECT COLUMBIA

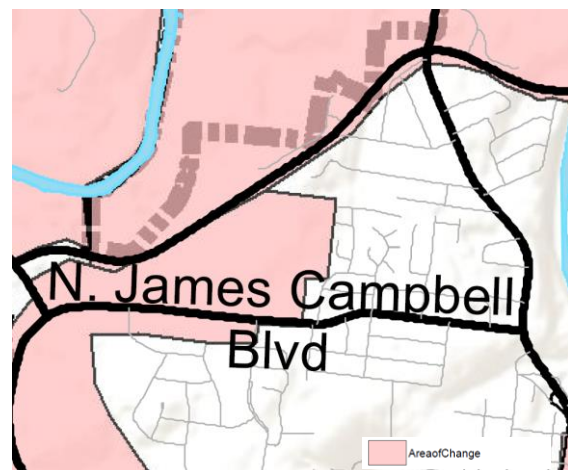
Urban Neighborhood: The future land use of the subject site is Urban Neighborhood. The Character Area is characterized by residential development and neighborhoods, with intermixed and compatible civic uses. The Future Land Use Plan indicates that “the general development pattern is defined by a single use activity on individual lots with a mixture of lot sizes” (Connect Columbia, p. 24). Future development should focus on context-responsive in-fill development that emphasizes connectivity and housing diversity. (Connect Columbia, p. 25). The future land use classification is implemented by the CD-4 and CD-5 character districts.

Urban Neighborhood

CHARACTER AREA MATRIX				
	Development Pattern	Zoning Category and Uses	Infrastructure	Design Standard
URBAN NEIGHBORHOOD	Is the property in an Area of Change? No: The development pattern is established. Changes to overall character of the area should rarely occur. Yes: The development pattern is evolving. Changes to area are likely as development occurs. New development should blend with existing, surrounding neighborhood assets.	Residential Uses Zoning Category: Low Density Residential, Medium High Residential, and High Residential Districts Public and Civic Uses Zoning Category: Religious Facilities, Government Facilities (low to medium impact), and Educational Facilities	Not in an Area of Change: Limited new services, with mostly in-fill enhancements to existing infrastructure. Within an Area of Change: Extensions to transportation, water, sewer, and other services should be expected. New service or extensive redevelopment of existing services should be vetted and reviewed by Planning Commission and City Council as a primary element of approval.	<u>Scale:</u> New dwellings and structures should aid in establishing the character of the area. <u>Architecture:</u> New developments or redevelopments should include a mix of architectural styles. Residential garages, if front-facing, should be recessed from the front façade of the structure. Civic use should respect the residential character, while providing architectural interest.

AREA OF CHANGE

The subject site **is not located** in an Area of Change (Connect Columbia Map 3). In 2017 the Planning Commission determined that the development pattern in the area was established and that changes to overall character of the area should rarely occur. The designation does not necessarily mean that any particular development proposal is inconsistent with Connect Columbia. It does mean that the Planning Commission should pause to ensure the context of the area surrounding the subject property is considered in the review process. (Connect Columbia p. 14).

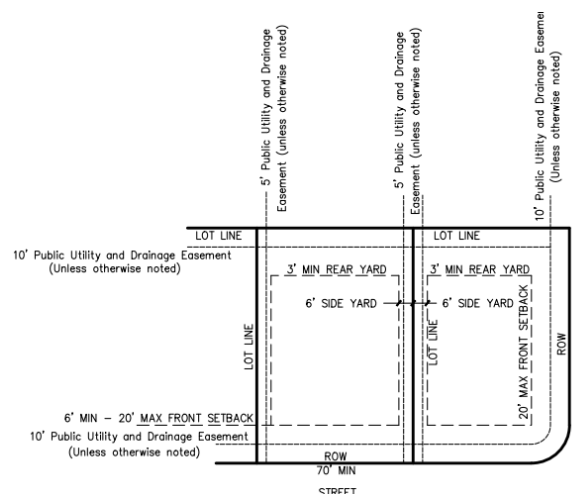


CONFORMITY WITH ZONING ORDINANCE

As required by § 8.5.19.F.3 of the Zoning Ordinance, the applicant provided a concept plan (i.e. “Sketch Development Plan”) demonstrating that it is possible to develop the property in conformity with the standards applicable to the requested zoning designation. Any site development plan/preliminary plat must conform to Zoning Ordinance 4400, adopted on July 14th, 2022. This request for rezoning simply establishes entitlements under the zoning ordinance, not a vested right to develop the site as depicted in the concept plan.

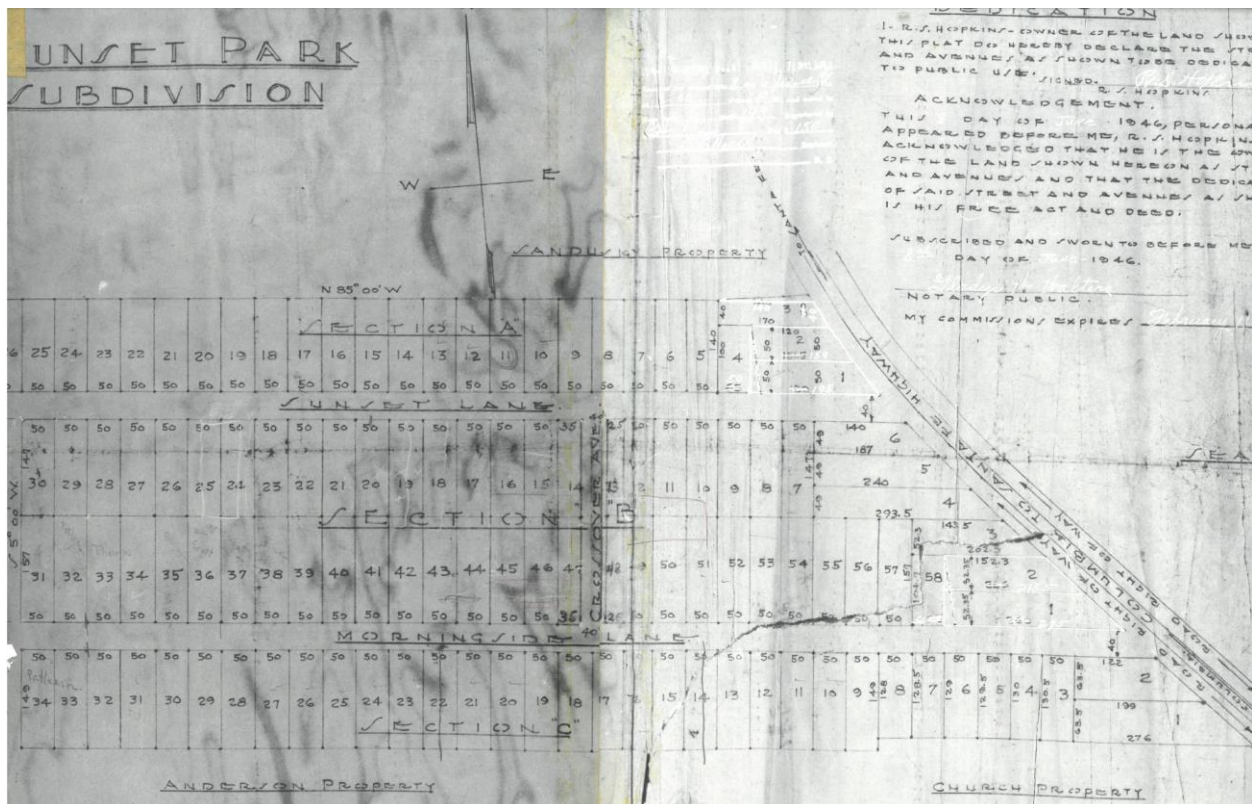
Lots, Building Sites & Bulk Standards

- **The concept plan depicts single family lots which generally conform to the CD-4 bulk standards listed in Table 4.3.1-D of the Zoning Ordinance.**
 - The Ordinance requires a minimum lot width of 50’ for a single family home.
 - The Ordinance prescribes setbacks of:
 - 6’ minimum and 20’ maximum front setback principal and secondary frontages;
 - 6’ side setback; and
 - 3’ rear setback, measured from the rear property line; or 15’ from the centerline of rear alley as applicable.
 - The applicant’s concept proposes the creation of eighteen lots which conform to the minimum lot width and could accommodate homes conforming to the setbacks.



Conceptual Lots Conform to CD-4 Standards

- **The CD-4 lot standards extend the established pattern of Columbia**
 - The concept plan depicts development of the infill site with a 550-foot extension of Morningside Lane beyond its current terminus.
 - The Sunset Park Subdivision established 50-foot wide lots enfronting Morningside Lane and Sunset Lane, which run parallel to each other.
 - The single-family standards of the CD-4 character district are compatible with the established pattern of the surrounding neighborhood. The development depicted in the concept plan effectively extends the Sunset Park Subdivision through the subject site.



The standards of the requested zone are compatible with the lot dimensions of the surrounding neighborhood as established by the 1946 Sunset Park Subdivision Plat

Other Standards

- Conformity with other requirements of the Ordinance, including tree preservation, Civic Space, and design prescriptions will be reviewed at the time of preliminary plat or building permit as applicable.

REVIEW PROCESS

The Development Review Committee evaluated the proposed rezoning at its October 2023 meeting, as directed by **§8.3.7** of the Zoning Ordinance. Technical comments are provided in the agenda package.

Section **8.5.19** of the Zoning Ordinance directs the Planning Commission to review and make a recommendation on all proposed changes to the Official Zoning Map. The Planning Commission is the recommending body for rezonings under **§ 8.3.3.B.3** of the Zoning Ordinance.

Section **8.5.19.H.4** of the Zoning Ordinance establishes the review criteria for approval of all changes to the Official Zoning Map:

- a. The Rezoning is consistent and not in conflict with the Comprehensive Plan or other applicable approved local plans for the area;*
- b. It has been determined that the legal purposes for which zoning exists, as set forth in Section 1.5 [are not contravened];¹*
- c. It has been determined that there will be no adverse effect upon Adjoining property owners unless such effect can be justified by the overwhelming public good or welfare;*
- d. It has been determined that no one property owner or small group of property owners will benefit materially from the change to the detriment of the general public;*
- e. It has been determined that conditions affecting the area have changed to a sufficient to warrant the Zoning Map Amendment or that the existing zoning of the property was the result of a mistake;*
- f. It has been determined that adequate school, road, parks, wastewater treatment, water supply, and stormwater drainage facilities are available*

SUMMARY OF DEVELOPMENT REVIEW COMMITTEE COMMENTS

The DRC reviewed this proposal at its October 2023 meeting. A full list of comments, and the applicant's responses, is provided in the agenda packet. Some key comments are noted below.

- **Planning** asked the applicant to provide a narrative response to criterion **8.5.19.H.4(e)** explaining why the applicant believes conditions affecting the area have changed sufficiently to warrant the Zoning Map Amendment. This request is intended to aid the Planning Commission in its analysis of the requested change to zoning map.

¹ Ordinance 4400 contains this incomplete sentence. The previous ordinance contained a nearly identical list of criteria at § 3.18.7.B. The corresponding criterion in Ordinance 3638 read "the legal purposes for which zoning exists are not contravened."

- Planning requested a legal description of the smaller of the two parcels which compose the subject site.
- Planning also made a number of advisory comments. Specifically, planning staff noted that the design of homes for the lots will need to conform to the CD-4 standards at the time of building permit.
- Planning also advised the applicant to prepare to answer questions from the Commission and the community related to compatibility and character.
- **Wastewater** noted that sewer upgrades may be required at the time Site Development Plan and Preliminary Plat.
- Columbia Water System's (CPWS) consultant (Inflow) noted that water is available for the site and that a water availability letter was issued on September 15th.

COMMENTARY FROM PROFESSIONAL PLANNING STAFF

The requested CD-4 zoning is consistent with Connect Columbia. The subject site's future land use classification is Urban Neighborhood. The future land use classification is implemented by the CD-4 and CD-5 character districts, as well as PUDs.

Conditions affecting the area may have changed to a sufficient degree to warrant the Zoning Map Amendment. The comprehensive plan and the zoning ordinance encourage infill development. The subject property is located well inside the urbanized area of Columbia with existing services. The lot standards of the requested character district mimic the pattern of residential development established in 1946. The proposed rezoning allows the development of the property in a manner consistent with the comprehensive plan and compatible with adjacent residential properties.

SAMPLE MOTIONS

Approve:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed rezoning [*subject to technical comments and other conditions presented by planning staff*].

Approve Subject to Conditions:

Move to find, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance have been satisfied and recommend approval of the proposed rezoning, subject to the following conditions: [*list conditions of approval crafted by Planning Commission*].

Deny:

Move to recommend denial of the requested rezoning having found, based on the information presented by the applicant and the analysis provided by city staff, that the criteria listed in section **8.5.19.H** of the City of Columbia Zoning Ordinance are not satisfied [*list specific reasons for denial*].

Defer:

Move to find that there is insufficient information to decide, defer the matter to the next regularly scheduled meeting of the Planning Commission, and request that the [*applicant/staff*] provide: [*list additional information*] for review at a future meeting.



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Kim Dale, Assistant City Recorder, kdale@columbiatn.com , 931-560-1579

AGENDA ITEM TITLE: 1ST CONSIDERATION OF ORDINANCE NO. 4488 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2022 DELINQUENT PROPERTY TAXES

RECOMMENDATION: Approve Ordinance No. 4488 on first consideration

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent property taxes. Following adoption of the ordinance, the City Recorder provides the County Attorney with a certified list of delinquent 2022 property taxes. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent property taxes.

AN ORDINANCE PROVIDING FOR THE COLLECTION OF
2022 DELINQUENT PROPERTY TAXES

BE IT ORDAINED BY THE CITY OF COLUMBIA:

Section 1: That the City Recorder is hereby directed at his earliest convenience to provide to the County Attorney a certified list of real property within the City of Columbia on which municipal taxes for the year 2022 are delinquent, said list to set forth a description of the property, the person or persons assessed, the assessed value thereof, and the taxes and penalties due thereon.

Section 2: That upon receipt of such list the County Attorney is directed to file suit in the Chancery Court for Maury County and proceed as provided by the Charter and the general law controlling delinquent taxes.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY
OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

TONY MASSEY, CITY MANAGER

Passed on 1st Consideration: _____
Passed on 2nd Consideration: _____

Ordinance No. 4488
Page 1 of 1 Page



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Kim Dale, Assistant City Recorder, kdale@columbiatn.com , 931-560-1579

AGENDA ITEM TITLE: 1ST CONSIDERATION OF ORDINANCE NO. 4489 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2020, 2021 and 2022 DELINQUENT PERSONAL PROPERTY TAXES

RECOMMENDATION: Approve Ordinance No. 4489 on first consideration

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent personal property taxes. Following adoption of the ordinance, the City Recorder may provide the County Attorney with a certified list of delinquent 2020, 2021 and 2022 personal property taxes. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent personal property taxes.

AN ORDINANCE PROVIDING FOR THE COLLECTION OF
2020, 2021 and 2022 DELINQUENT PERSONAL PROPERTY TAXES

BE IT ORDAINED BY THE CITY OF COLUMBIA:

Section 1: That the City Recorder is hereby directed at his earliest convenience to compile a certified list of personal property within the City of Columbia on which municipal taxes for the years 2020, 2021 and 2022 are delinquent. Said list shall set forth a description of the property, the person or persons assessed, the assessed value thereof, and the taxes and penalties due thereon.

Section 2: The City Recorder may provide such list to the County Attorney to file suit in the Chancery Court for Maury County and proceed as provided by the Charter and the general law controlling delinquent taxes.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY
OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER - MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

TONY MASSEY, CITY MANAGER

Passed on 1st Consideration: _____
Passed on 2nd Consideration: _____

Ordinance No. 4489
Page 1 of 1 Page



CITY OF COLUMBIA TENNESSEE
CITY COUNCIL
STAFF REPORT

STAFF REPORT CONTACT INFORMATION

Kim Dale, Assistant City Recorder, kdale@columbiatn.com , 931-560-1579

AGENDA ITEM TITLE: 1ST CONSIDERATION OF ORDINANCE NO. 4490 – AN ORDINANCE PROVIDING FOR THE COLLECTION OF 2022 DELINQUENT SPECIAL ASSESSMENTS

RECOMMENDATION: Approve Ordinance No. 4490 on first consideration.

INFORMATION: Per the Municipal Code, and in accordance with past City policy, the City Council annually considers an ordinance to provide for the collection of delinquent special assessments. Following adoption of the ordinance, the City Recorder provides the County Attorney with a certified list of delinquent 2022 special assessments. Upon receipt of said list, the County Attorney initiates the appropriate process to file suit in the Chancery Court of Maury County for the collection of the delinquent special assessments.

AN ORDINANCE PROVIDING FOR THE COLLECTION OF
2022 DELINQUENT SPECIAL ASSESSMENTS

BE IT ORDAINED BY THE CITY OF COLUMBIA:

Section 1: That the City Recorder is hereby directed at his earliest convenience to provide to the County Attorney a certified list of real and personal property within the City of Columbia on which special assessments for the year 2022 are delinquent, said list to set forth a description of the property, the person or persons assessed, the assessed value thereof, and the taxes and penalties due thereon.

Section 2: That upon receipt of such list the County Attorney is directed to file suit in the Chancery Court for Maury County and proceed as provided by the Charter and the general law controlling delinquent taxes.

PASSED AND ADOPTED BY THE CITY COUNCIL OF THE CITY
OF COLUMBIA, TENNESSEE, this the ____ day of _____, 2023.

CHARLES (CHAZ) M. MOLDER – MAYOR

ATTEST:

THAD H. JABLONSKI - CITY RECORDER

LEGAL FORM APPROVED:



C. TIM TISHER, CITY ATTORNEY

APPROVED FOR FIRST CONSIDERATION:

TONY MASSEY, CITY MANAGER

Passed on 1st Consideration: _____
Passed on 2nd Consideration: _____