CITY OF COLUMBIA
TENNESSEE

AGENDA

The Columbia Planning Commission Development Review Committee will meet on Tuesday, December 12, 2023 at 10:00 AM in Conference Room A, basement level, City Hall, to consider the following:

I. Items For Review

1. 23-0480 - Request from Taylor McMurtry to approve partial revocation of the Honey Farms PUD Master plan and rezoning to CD-4C (General Urban Corridor Character District) at Honey Farm Crossings Lot 5 off Honey Farm Way.

   Documents:

   1. 23-0480_Concept
   2. 23-0480_legal
   3. 23-0480_Water Availability
   4. 23-0480_transmittal
   5. 23-0480_application

2. 23-0437 - Request from Generation 2 Generation, LLC for Site Development Plan and Preliminary Plat approval of four lots located at 1205 E. End Street, being Tax Map 99 Parcel 59.

   Documents:

   1. Site Plan
   2. Building Elevations
   3. Floor Plans
   4. Water Availability Letter - 20231116
   5. Checklist
   6. Description of Proposed Project
   7. Application

3. 23-0478 - Request from Abigail Overstreet for Final Plat approval with surety for Hillcrest Village Subdivision Phase 1A consisting of 27 lots and three open spaces off Rolling Brook Drive at Tax Map 113 Parcel 80.50.

   Documents:

   1. Final Plat
   2. Development Agreement
   3. Surety
   4. Owner Affidavit
   5. Application

4. 23-0473 -
   Request from TKC Architecture & Engineering, LLC for Preliminary Plat and Site Development Plan approval of a mixed use development consisting of one commercial, two live/work, and 98 townhome lots off Harley Davidson Blvd at Tax Map 93 Parcels 2 and 2.01.

   Documents:

   1. Preliminary Plat
   2. Site Development Plan
   3. Tree Preservation Plan
   4. Survey Overall
   5. Survey Exhibit
   6. Trip Gen Comparison Memo
   7. Water Availability Letter
   8. WW Availability Letter
   9. Project Letter
   10. Checklist
   11. Owners Consent
   12. Application

5. 23-0475 - Request from WES Engineers & Surveyors for Rezoning approval from CD-3 (Neighborhood Character District) to CD-4 (General Urban Character District) at 807 Athenaeum Street.

   Documents:

   1. Concept Plan
   2. Plat of Survey
   3. Vicinity Map
   4. Zoning Map

5. FLU Map
6. Fire Flow
7. Water Availability Letter - 20231119
8. Legal Description
9. Description of Requested Zone
10. Application

6. 23-0418 - Request from Andrew Wiseman to approve partial revocation of the Villages at Carters Creek PUD Master plan with rezoning to CD-4C (General Urban Corridor Character District) at 2425 Nashville Highway.

Documents:

1. Concept Plan
2. Legal Description
3. Description of Requested Zone
4. Water Availability Letter - 20231107
5. Hydrant Analysis Report
6. Fire Flow
7. TIS
8. Compliance Submittal Letter
9. Application

7. 23-0476 - Request from Greg Gamble for Preliminary Plat and Site Development Plan approval of 122 units off River Road at Tax Map 90 Parcel 7.08.

Documents:

1. Site Plan
2. PRELIMINARY PLAT
3. Building Elevations
4. Floor Plans
5. Water Availability Letter - 231119
6. Power Availability
7. SWR Availability Letter
8. Fire Flow
9. Traffic Study
10. Traffic MOU
11. Description of Proposed Project
12. Application

8. 23-0421 - Request from Greg Gamble for Annexation approval with a Plan of Services, Comprehensive Plan amendment to Urban Neighborhood, and zoning

to CD-4 (General Urban Character District) for an approximate three acre portion of Tax Map 90 Parcel 12.01 located at 400 Bear Creek Pike

Documents:

1. Concept Plan
2. Description of Requested Zone
3. Legal Description
4. Property Owner Permission Form
5. Application

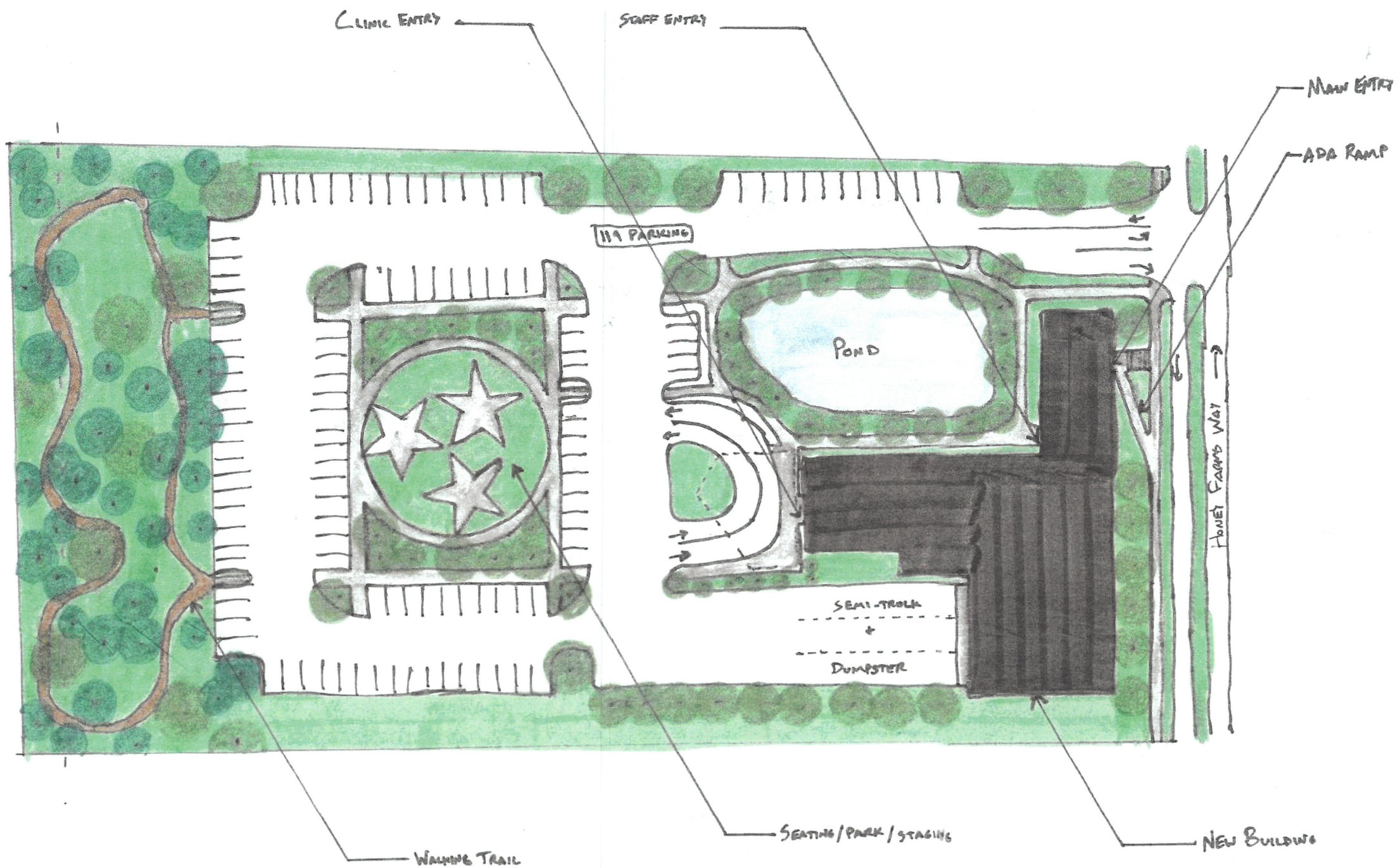
II. Items for Additional Review

1. 23-0414 / 23-0415 - Request from Greg Gamble for approval of Annexation with a Plan of Services and zoning to PUD-R (Residential Planned Unit Development) under a Preliminary PUD Site Development Plan for an approximate 410 acre portion of property at 400 Bear Creek Pike being Tax Map 90 Parcel 12.01.

Documents:

1. 2023-10-16_Columbia Bluffs_PMDP_Full Sheet Set
2. 23-0414_ALTA Survey
3. 23-0414_TIS
4. 23-0414_Building Elevations
5. 23-0414_Columbia Power Will Serve Letter
6. 23-0414_Active Adult HOA Draft
7. 23-0414_Primary Residential HOA Declaration Draft
8. 23-0414_Preliminary Master Civic Space Sheets (L1.1-L1.6)
9. 23-0414_Preliminary Master Dev Plan- first half
10. 23-0414_Sewer Will Serve Letter
11. 23-0414_Water Availability Letter_Oct 13
12. 23-0414_Description of Proposed Project
13. 23-0414_Floor Plans
14. 23-0414_PUD-R Checklist
15. 23-0414_Site Plan
16. 23-0414_Application
17. 23-0415_Preliminary Master Dev Plan-C2.0
18. 23-0415_Comp Plan Compliance Statement
19. 23-0415_Concept Plan
20. 23-0415_Description of Requested Zone
21. 23-0415_Legal Description
22. 23-0415_Property Owner Permission Form
23. 23-0415_REMAINING ANNEXATION AREA P-PUD

24. 23-0415_application (1)
25. 23-0415_Application
26. 2023-10-16_Columbia Bluffs_PMDP_Full Sheet Set



N

0' 25' 50' 100' 150'

ARCHITECTURAL SITE PLAN
OWNER
SOUTH CENTRAL REGIONAL HEALTH OFFICE REPLACEMENT FACILITY
SEPTEMBER 13, 2023
Project No. 408-012-01-2023

TM Partners, PLLC
Architecture Interiors Planning

Transaction No.: 23-01-005

Being at a tract of land lying in Columbia, Maury County, Tennessee, also being Lot 5 of Honey Farm Crossing, as of record in Plat Book P23, Page 218, at the Register's Office for Maury County, Tennessee, and being more particularly described as follows;

Beginning at an existing iron rod in the southerly right-of-way line of Honey Farm Way, at a corner common with Lot 4 of said Honey Farm Crossing, also being the property of EMG Honey Farm, LLC, as of record in Book R2905, Page 1420, at the Register's Office for Maury County, Tennessee, said iron rod being located 668.8 feet from the easterly right-of-way line of Nashville Highway, said iron rod being located at Northing: 495,881.58; Easting: 1,675,269.31; on the State Plane Coordinate System NAD (1983)

Thence with the southerly right-of-way line of Honey Farm Way, South 55 degrees 07 minutes 25 seconds East, 295.78 feet to an existing iron rod, at a corner common with the property of TN Honey Farms, LLC, as of record in Book R2776, Page 757, at the Register's Office for Maury County, Tennessee;

Thence leaving the southerly right-of-way line of Honey Farm Way, with the westerly property line of TN Honey Farms, LLC, South 34 degrees 03 minutes 09 seconds West, 597.44 feet to an existing iron rod, in the northerly property line of Allison D. Love, as of record in Book R2216, Page 185, at the Register's Office for Maury County, Tennessee;

Thence with the northerly property line of Allison D. Love, North 55 degrees 59 minutes 12 seconds West, 154.62 feet to an existing iron rod, at a corner common with the property of Gregg Parsons Sr. Revocable Living Trust, as of record in Book R2535, Page 1171, at the Register's Office for Maury County, Tennessee;

Thence with the northerly property line of Gregg Parsons Sr. Revocable Living Trust, North 55 degrees 50 minutes 48 seconds West, 166.94 feet to an existing iron rod, at a corner common with said Lot 4;

Thence with the easterly property line of said Lot 4, North 36 degrees 30 minutes 36 seconds East, 602.06 feet to the POINT OF BEGINNING. Containing 185,089 square feet or 4.249 acres.

Being part of the same property conveyed to EMG Honey Farm, LLC, as of record in Book R2905, Page 1420, at the Register's Office for Maury County, Tennessee.

CPWS

November 10, 2023
Mr. Taylor McMurtry
Catalyst Design Group
5100 Tennessee Ave.
Nashville, TN 37209
Sent via email: tmcmurtry@catalyst-dg.com
RE: Water Availability Letter
South Central Regional Health Office
Honey Farm Way (Lot 5)
Columbia, Maury County, TN

Dear Mr. McMurtry:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development is an office building with an enclosed area of 20,635 square feet as submitted by the applicant. CPWS has evaluated the projected water demands for the proposed development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,500 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Waterline connection will be made to the existing 12-inch water main located on Honey Farm Way.
- Domestic and fire protection service will be provided through a single ultra-sonic fire-rated meter. Irrigation, if any, will be provided as a separate metered connection.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

November 20, 2023

Kevin C. McCarthy, AICP
City Planner
City of Columbia
700 N. Garden Street
Columbia, TN 38401

TRANSMITTAL

Project Name: TMP – SCRHO Replacement Facility (State of Tennessee)
Project No.: 20230109

We are sending the following:

☒	CPWS Water Avail.	☒	Application	☒	Prop. Legal Desc.
☒	Check	☐	Computer Disk	☐	Specifications
☐	Other				

Via:

☐	Mail	☒	Courier	☐	Overnight

Purpose:

☐	For Signature	☐	Your Use	☐	Your Records
☐	Review & Comment	☒	As Requested	☐	Bids Due

DESCRIPTION	SETS

Remarks:

We have enclosed the signed application, supporting documents, and check to cover the application fees for rezoning in the City of Columbia. Please reach out with any questions.

Taylor McMurtry
Name

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	0 Honey Farm Way		
	TAX MAP: 051	GROUP: N/A	PARCEL: 058.05
SUMMARY OF NATURE OF REQUEST AND WORK	Requesting rezoning for a portion (Lot 5) of Honey Farm PUD from PUD-MU to CD-4C.		

DATE OF PRE-APPLICATION CONFERENCE	9/13/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☒ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☒ Written Legal Description copy ☒ Requested Zone Listed ☒ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☒ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) _____ ☐ Total Number of Lots _____ ☐ Total acreage _____

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Taylor McMurtry	PHONE	615.622.7200
ADDRESS	5100 Tennessee Ave. Nashville, TN 37209	EMAIL	tmcmurtry@catalyst-dg.com

PROPERTY OWNER NAME	State of Tennessee	PHONE	615.339.7806
ADDRESS	312 Rosa L. Parks Ave. Nashville, TN 37243	EMAIL	doug.freeman@tn.gov

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Taylor McMurtry		11/20/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE

Douglas P. Freeman	Douglas P. Freeman Digitally signed by Douglas P. Freeman Date: 2023.11.20 10:10:54 -06'00'	11/20/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

FINAL PLAT

GENERATION 2 GENERATION LLC PROPERTY
9TH CIVIL DISTRICT OF MAURY COUNTY
TAX MAP 99, PARCEL 59.04
DEED BOOK R2857, PAGE 60
PLAT BOOK P23, PAGE 12 (TRACT-2)
R.O.M.C.

NOTES:
1. THE PURPOSE OF THIS PLAT IS TO ILLUSTRATE THE SUBDIVISION OF DEED BOOK 409, PAGE 182 INTO FOUR TRACTS. THIS SURVEY IS PROVIDED TO LARRY OWENS (DEVELOPER)

2. I, TRACY SEIBER, HEREBY CERTIFY THAT THIS MAP WAS DRAWN FROM AN CAT IV GPS SURVEY AND THE FOLLOWING INFORMATION WAS USED TO PERFORM THE SURVEY:
   A. TYPE OF SURVEY: RTK
   B. POSITIONAL ACCURACY: 0.05'
   C. PUBLISHED/FIXED CONTROL: TDOT CORS NETWORK
   D. GEOID MODEL: GEOID 12B
   E. DATUM/EPOCH: NAD83(2011)
   F. GPS: CARLSON BRX7 (BASE/ROVER)
   G. DISTANCES: GRID

3. SUBJECT PARCELS ARE NOT WITHIN A FLOOD ZONE ACCORDING TO FIRM MAP 47119C0285E DATED 4/16/2007.

4. PROPERTY IS ZONED CD-4 CITY OF COLUMBIA ZONING ORDINANCE.
REQUESTING CD-4
FRONT 6' MIN/20' MAX
REAR 3'
SIDE 6'

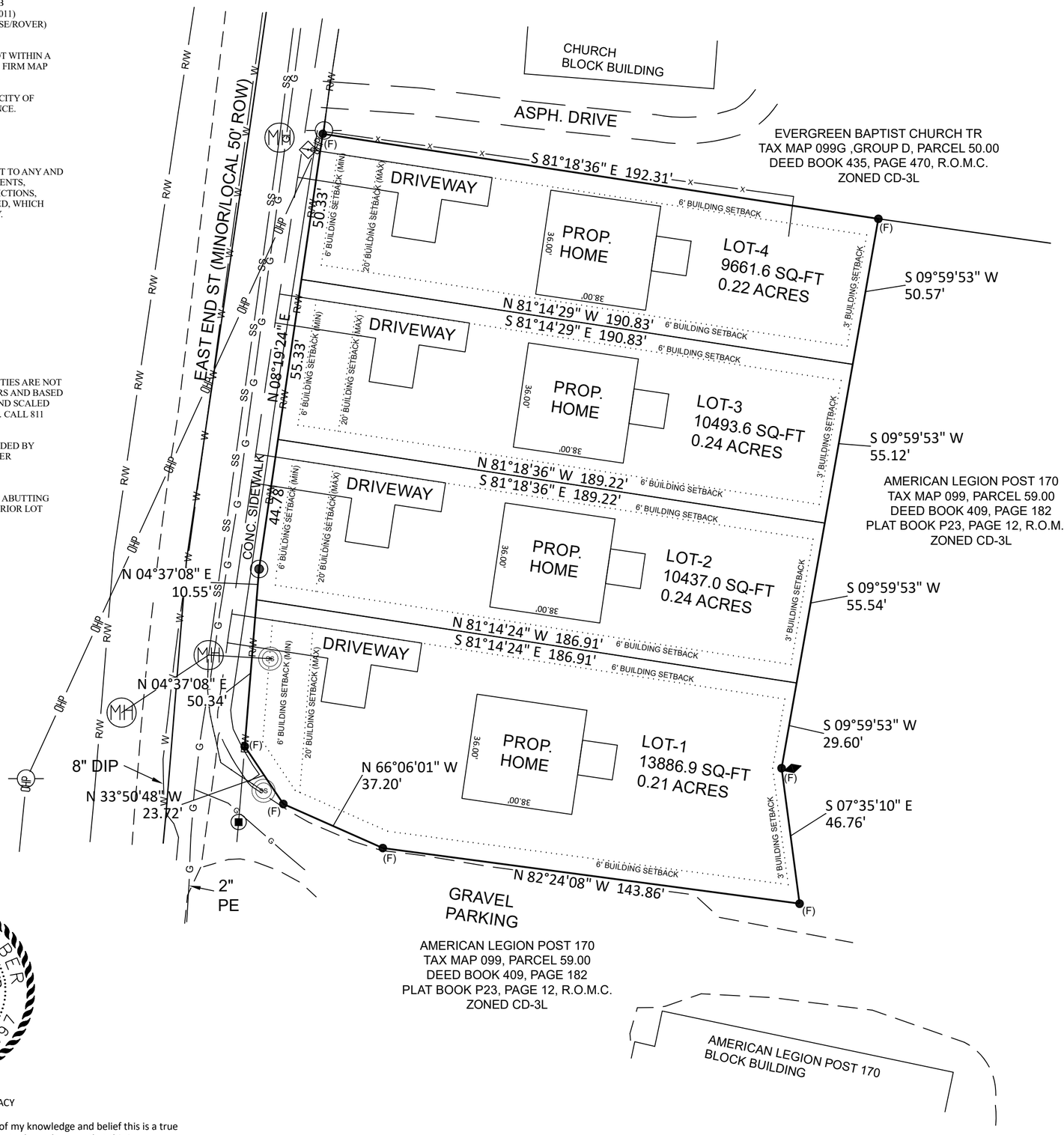
5. THIS PROPERTY IS SUBJECT TO ANY AND ALL RIGHT-OF-WAYS, EASEMENTS, EXCEPTIONS, AND/OR RESTRICTIONS, RECORDED AND UNRECORDED, WHICH MAY AFFECT THIS PROPERTY.

6. PROPERTY ADDRESS:
LOT-1
1203A E. END ST
COLUMBIA, TN 38401
LOT-2
1203B E. END ST
COLUMBIA, TN 38401
LOT-3
1205A E. END ST
COLUMBIA, TN 38401
LOT-4
1205A E. END ST
COLUMBIA, TN 38401

7. ALL UNDERGROUND UTILITIES ARE NOT VERIFIED BY UTILITY OWNERS AND BASED ONLY ON FIELD EVIDENCE AND SCALED FROM UTILITY OWNER MAPS. CALL 811 BEFORE ANY EXCAVATION.

8. ELECTRIC & WATER PROVIDED BY COLUMBIA POWER AND WATER
201 PICKENS LN
COLUMBIA, TN 38401

9. 10' PUDE ON PARALLEL OR ABUTTING STREET AND 5' PUDE ON INTERIOR LOT LINES.



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"C" 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

TRACY SEIBER, RLS #2397

TRACY K SEIBER REGISTERED LAND SURVEYOR XVI AGRICULTURE COMMERCE TENNESSEE NO. 2397

PRELIMINARY

CERTIFICATE OF OWNERSHIP AND DEDICATION

I hereby certify that I am the owner of the property shown and described hereon as evidence recorded in Book Number 409, Pages 182, Maury County Register's Office, and that I hereby adopt this plan of subdivision with my free consent, establish the minimum building restriction lines, and that offers of irrevocable dedication for all public ways, public easements, utilities, and other facilities have been filed.

DATE GENERATION 2 GENERATION LLC.
LARRY OWENS

CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the 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 are noted in the Minutes of the Planning Commission, and that it has been approved for recording in the Office of the County Register.

DATE SECRETARY PLANNING COMMISSION
CITY OF COLUMBIA, TN

E-911 PROGRAM CERTIFICATION OF APPROVAL

This is to certify that this plat has been reviewed and is in compliance with the Maury County E-911 Program

DATE E-911 DIRECTOR

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I hereby certify that the water system(s) outlined or indicated on the final subdivision _____ plat_____ entitled _____ Property 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 COLUMBIA POWER AND WATER

CERTIFICATE OF APPROVAL FOR SEWER SYSTEM

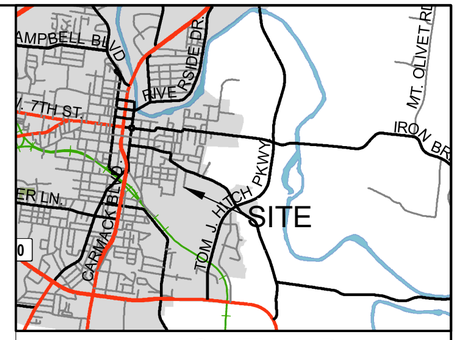
I hereby certify that the sewer system outlined or indicated on this final subdivision pat has been installed in accordance with the current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

DATE DIRECTOR OF WASTE
WATER DEPARTMENT
COLUMBIA, TN

CERTIFICATE OF COMPLIANCE

I hereby certify that the subdivision plat shown hereon has been found to comply with the City of Columbia Subdivision Regulations and other adopted ordinances and policies.

DATE CITY ENGINEER
COLUMBIA, TENNESSEE



VICINITY MAP
(NOT TO SCALE)

N

TN-NAD83

LEGEND

- GM — GAS METER
- SS — SEWER METER
- MH — SEWER MANHOLE
- (F) — IRON PIN FOUND
- (S) — IRON PIN SET
- WATER METER
- RAIL ROAD SPIKE
- UTILITY POLE
- ANT. ANCHOR
- SS — SANITARY SEWER
- OHP — OVERHEAD POWER
- G — GAS LINE
- W — WATER LINE
- R/W — RIGHT OF WAY
- ZONING SETBACK
- X — FENCE
- EASEMENT

0 30 60 90

TRACY SEIBER

102 AVALON DRIVE
COLUMBIA, TN 38401
SEIBERSURVEYING@GMAIL.COM (931)446-6677

DRAWING BY: T. SEIBER	DATE: 6/28/2023
SCALE:1"=30'	JOB NO.:57-2022
R4	

This item is not applicable.

This section is not applicable.

November 16, 2023

Mr. Larry Owens
Generation 2 Generation LLC
Columbia, TN 38401
Sent via email: g2gpropertiesllc@gmail.com

RE: Water Availability Letter
Larry Owens Development – 2 New Units
1205 E. End St. Columbia, TN 38401
Tax Map 99, Parcel 059.04
Columbia, Maury County, TN

Dear Mr. Owens:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development is a rezoning and subdivision of an existing lot with a single service to three lots, with two new services requested. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 8-inch water main located on East End Street.

- No existing hydrants are located within 250 feet of the entire frontage of the parcel. If required by the Fire Marshall, a single public hydrant may be installed at the edge of right-of-way of East End Street, equidistant from existing system hydrants at Hardwick Avenue and E 11th St. Any additional hydrants required to meet fire protection requirements for the development will be considered private hydrants and must be located on the customer side of a fire protection meter.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $250 + $370 per SFU (2 SFUs)	$990.00

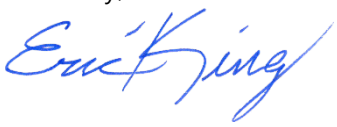
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $1,000 per 3/4" meter (2 meters, tap and service by CPWS)	$2,000.00
Impact Fee: $4,500 per 3/4" meter (2 meters)	$9,000.00
Total Meter and Impact Fees Due =	**$11,000.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-018

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: LARRY OWENS SUBDIVISION

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ☑ Name of development
- ☑ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ☑ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☑ North Arrow, legend, and site vicinity map
- ☑ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ☑ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way.
- ☑ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☑ All property boundaries, existing easements, and encumbrances
- ☑ Parcel identification, owner, and deed and plat references of adjoining properties
- ☑ Proposed phasing and timetable for all phases of development
- ☑ Traffic Impact Study, as required.
- ☑ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☑ The size of total property to be developed in square feet and acres
- ☑ Lot numbers of all proposed lots, with dimensions, locations, and square footage
- ☑ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☑ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ☑ Location and approximate dimensions of all existing and proposed structures.
- ☑ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ☑ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable
- ☑ Location, type, and size of proposed signs
- ☑ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Grading, Drainage, and Storm

- ☐ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ☐ General proposed contours at vertical intervals of not more than two (2) feet
- ☐ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones
- ☐ Location and dimension of aquatic buffer zones
- ☐ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ☐ Identification of all critical lots

Streets, Parking, and Pedestrian Elements

- ☐ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ☐ Proposed connections to existing and proposed streets (including classification) located outside the development
- ☐ Proposed improvements as identified in the Traffic Impact Study, as required
- ☐ Existing and proposed sidewalks, trails, and other pedestrian elements
- ☐ Existing and proposed on-street and off-street parking and loading areas
- ☐ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ☐ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ☐ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features.
- ☐ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ☐ Any amenity features and structures for private or public benefit.
- ☐ Location, dimension, and materials of fences and walls
- ☐ Tree Canopy retention

Utilities

- ☐ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.
- ☐ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

CITY OF
COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PUD Specific Items

- ❑ Legal Description of Property
- ❑ Owner's Affidavit
- ❑ List of all variances requested
- ❑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ❑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ❑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ❑ Exterior lighting

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

TRACY SEIBER		10/26/2023
Print Name	Signature	Date

Site development plan and preliminary plat to create four CD-4 lots. The addresses are 1203A E. End St. Columbia TN. 38401, 1203B E. End St. Columbia TN. 38401, 1205A E. End St. Columbia TN. 38401, 1205B E. End St. Columbia TN. 38401. 4 Single Family Homes

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TENNESSEE

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PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	1205 E. End Columbia TN. 38401		
	TAX MAP: 99	GROUP:	PARCEL: 099059.00
SUMMARY OF NATURE OF REQUEST AND WORK	Site development plan and preliminary plat to create four CD-4 lots.		

DATE OF PRE-APPLICATION CONFERENCE		*Pre-application meetings are scheduled for Wednesdays.*

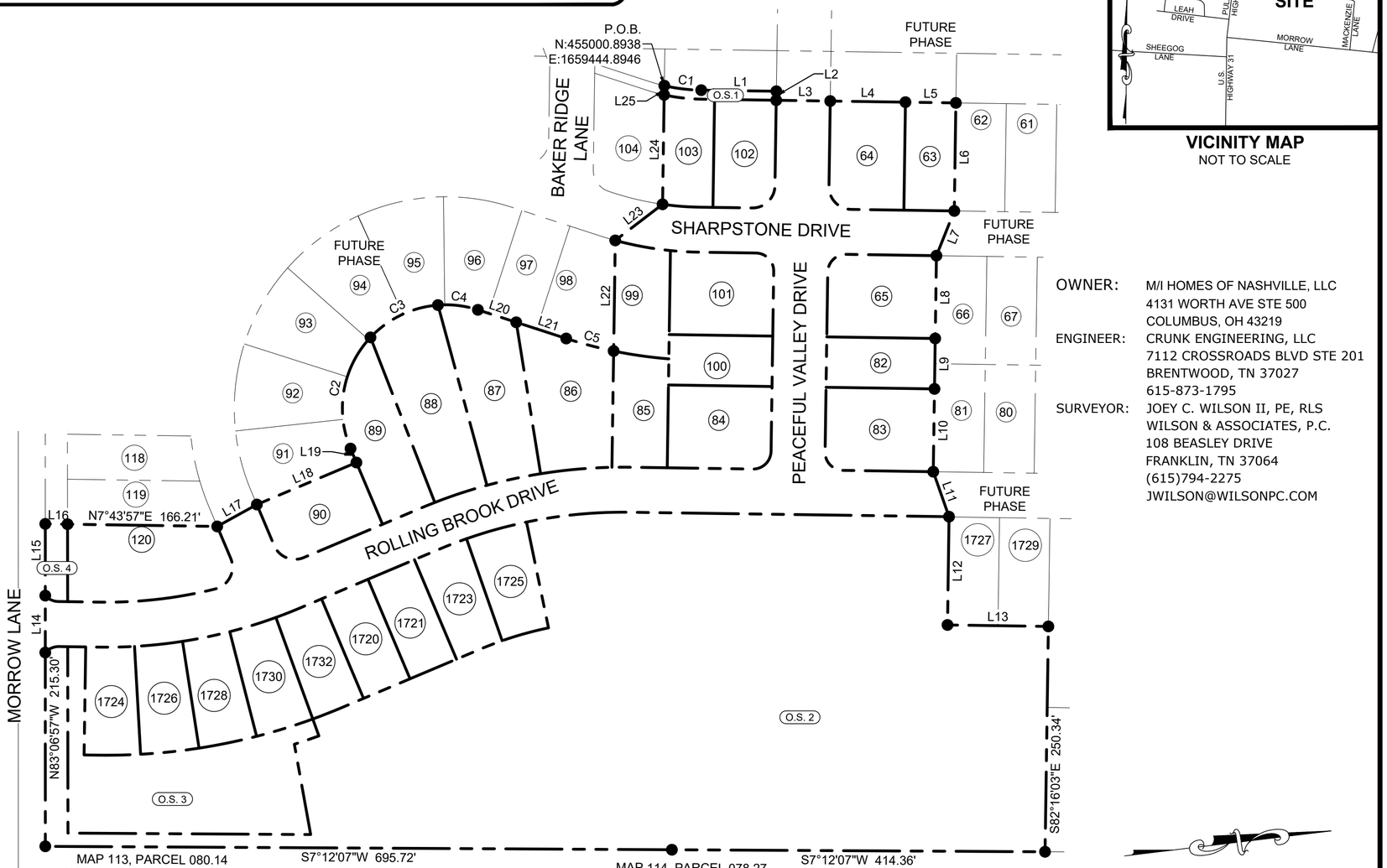
SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☐ Rezoning ☐ Preliminary Plat ☐ Final Plat ☑ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other:	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☑ Plans and/or Plats conforming to City standards with check list completed ☑ Columbia Water System Availability Letter
**File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Plats/PUDs:** ☑ Project Name (include Sections & Phases) ☑ Total Number of Lots 4 ☐ Total acreage

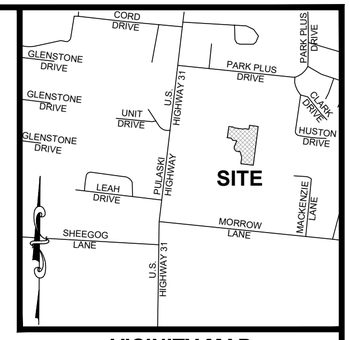
LEGEND

IRON PIN FOUND		FIRE HYDRANT		UTILITY POLE		PUBLIC UTIL. & DRAIN ESMT.	P.U.D.E.	BOUNDARY	
IRON PIN SET		SANITARY SEWER MH	SS	GUY ANCHOR		ADDRESSES	1234	CENTERLINE	
CONC. MON. FOUND		SANITARY SEWER CO	SS	COMMUNICATION BOX	C	HANDICAP SPACE		BUFFER	
CONC. MON. SET		AREA DRAIN		COMMUNICATION MH	C	SANITARY SEWER	8" SA	WATER FEATURE	
CONTROL POINT FOUND		CURB INLET		GAS METER	G	WATER	4" W	TREE LINE	
CONTROL POINT SET		STORM MH	ST	GAS VALVE		UNDERGROUND ELEC	UGE	R.O.W.	RIGHT OF WAY
BENCH MARK		ELECTRIC METER-BOX	E	EVERGREEN TREE		OVERHEAD ELEC	OHE	PVMT.	EDGE OF PAVEMENT
WATER METER	W	ELECTRIC MH	E	SIDEWALK		GAS	4" G	PUDE	PUBLIC UTILITY AND DRAINAGE EASEMENT
WATER VALVE		LIGHT POLE		MIN. BUIDLING SETBACK	M.B.S.L	COMMUNICATIONS	COM	G.I.E.	GREEN INFRASTRUCTURE EASEMENT

PLAT NOTES

1. THE PURPOSE OF THIS PLAT IS TO CREATE 27 SINGLE-FAMILY RESIDENTIAL LOTS AND 3 OPEN SPACES.
2. SUBJECT PROPERTY IS PRESENTLY IDENTIFIED AS A PORTION OF PARCEL 80.50, ON MAURY COUNTY TAX MAP 113. SAID PARCEL IS FURTHER IDENTIFIED AS A PORTION OF THE PROPERTY DESCRIBED IN BOOK R2874, PAGE 1163, REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE.
3. 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.
4. EXISTING ZONING: CD-4 & RS-40
5. I HEREBY CERTIFY THAT THIS IS A CATEGORY IV SURVEY AND WAS CONDUCTED IN ACCORDANCE WITH RULE 0820-03.11 (GLOBAL POSITION SYSTEMS SURVEYS) ACCORDING TO THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE AS PROMULGATED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS. THIS SURVEY WAS CONDUCTED WITH DUAL-FREQUENCY RTK GPS EQUIPMENT BASED ON THE TDOT CORPS NETWORK.
   a. POSITIONAL ACCURACY: 0.07'
   b. DATE OF SURVEY: 03/24/22
   c. DATUM/EPOCH: TENNESSEE STATE PLANE (NAD83). OCCUPATIONS FOR CONTROL POINTS ARE 3 MINUTES EACH, SIDE SHOTS ARE 3 SECONDS.
   d. GEOID 3, ZONE 7 REVISED
6. NO COMBINED GRID FACTORS WERE USED.
7. BEARINGS SHOWN HEREON ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83). ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88.
8. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN ZONE "X" AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0285E, WITH AN EFFECTIVE DATE OF APRIL 16, 2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE PROGRAM. ZONE "X" IS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. ZONE "X" HAS TWO DESCRIPTIONS. PLEASE SEE FLOOD PLAIN MAP IF ZONE "X" IS SHADED. ***IF FIELD RUN CONTOURS ARE ESTABLISHED YOU MUST PLOT THE FLOOD LINE BASED ON BFE UNLESS THE PROPERTY IS IN ZONE A
9. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN ZONE "AE" AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47187C0190F, WITH AN EFFECTIVE DATE OF SEPTEMBER 29, 2006, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE PROGRAM. BASE FLOOD ELEVATION FOR THIS PROPERTY IS 630.9. ZONE "AE" IS AN AREA WHERE BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED. PLEASE MODIFY THIS NOTE FOR THE PROPER ZONE.
10. ALL CORNERS SHOWN ON THE FACE OF THE SURVEY WILL BE SET WITH 5/8 IRON ROD WITH CAP BEARING THIS SURVEYORS COMPANY NAME.
11. THE DEVELOPER ACKNOWLEDGES THAT ALL LOTS HAVE ADEQUATE BUILDING ENVELOPES AND NO VARIANCES WILL BE REQUIRED.
12. STORMWATER MAINTENANCE AGREEMENT RECORDED IN DEED BOOK R2874, PAGE 1163.
13. ALL STREETS AND ALLEYS ARE DESIGNATED AS PUBLIC RIGHT-OF-WAY; THE CITY OF COLUMBIA IS NOT RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ANY PRIVATE STRUCTURES WITHIN PUBLIC EASEMENTS SHOULD THE STRUCTURES BE DISTURBED IN THE PROCESS OF THE CITY EXERCISING ITS EASEMEN RIGHTS.
14. STREETS, DRAINAGE EASEMENTS, STRUCTURES, AND CULVERTS SHALL BE MAINTAINED BY THE CITY OF COLUMBIA. DETENTION PONDS AND OUTLET STRUCTURES WITHIN PUBLIC DRAINAGE EASEMENTS ARE TO BE MAINTAINED BY THE HOMEOWNER'S ASSOCIATION.
15. STORMWATER QUALITY SHALL BE ADDRESSED WITH EACH SITE PLAN.
16. OPEN SPACE AREAS, ROADWAY MEDIANS, BRICK PEDESTRIAN CROSSWALKS, BIKE PATHS, SIDEWALKS OUTSIDE OF RIGHT-OF-WAYS, TRAILS AND DETENTION FACILITIES SHALL BE MAINTAINED BY THE HOME OWNER'S ASSOCIATION AND SHALL BE PUBLIC UTILITY, DRAINAGE AND ACCESS EASEMENTS.
17. WITHIN NEW DEVELOPMENTS AND FOR OFF-SITE LINES CONSTRUCTED AS A RESULT OF, OR TO PROVIDE SERVICE TO, THE NEW DEVELOPMENT, ALL UTILITIES, (INCLUDING CABLE TELEVISION, ELECTRICAL, NATURAL GAS, SEWER, TELEPHONE AND WATER LINES) SHALL BE PLACED UNDERGROUND.
18. AT ALL TEMPORARY TURNAROUNDS, A SIGN SHALL BE PLACED STATING, "STREET TO BE EXTENDED BY AUTHORITY OF THE CITY OF COLUMBIA."
19. MAINTENANCE OF ALL STORMWATER MANAGEMENT FEATURES SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER(S) OR HOA.
20. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS BETWEEN LOTS. THE CITY OF FRANKLIN IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS.
21. SIDEWALKS AND TRAILS OUTSIDE OF PUBLIC RIGHT-OF-WAY SHALL BE PUBLIC ACCESS EASEMENTS AND SHALL BE MAINTAINED BY THE HOMEOWNER'S ASSOCIATION.
22. THE CITY OF COLUMBIA WATER MANAGEMENT DEPARTMENT HAS UNRESTRICTED ACCESS TO ITS DOMESTIC WATER, SANITARY SEWER, RECLAIM WATER LINES OR SYSTEM IMPROVEMENTS LOCATED WITHIN ITS EXCLUSIVE EASEMENTS WITHIN THE DEVELOPMENT. IN THE EVENT LANDSCAPING, FENCING, CONCRETE OR OTHER STRUCTURES ARE INSTALLED OR PLACED WITHIN A CITY OF COLUMBIA EASEMENT, THE CITY OF COLUMBIA SHALL HAVE THE RIGHT TO REMOVE SUCH ENCROACHMENTS WITHIN THE EASEMENT AS MAY BE NECESSARY FOR THE CITY OF COLUMBIA TO REPAIR, MAINTAIN OR REPLACE ITS INFRASTRUCTURE WHICH IS NOW OR IN THE FUTURE MAY BE LOCATED WITHIN THE EASEMENT WITHOUT OBTAINING ANY FURTHER PERMISSION FROM THE PROPERTY OWNER OR HOA. THE PROPERTY OWNER OR HOA SHALL BE RESPONSIBLE FOR REPAIRING AND/OR REPLACING ANY SUCH LANDSCAPING, FENCING, CONCRETE, OR OTHER STRUCTURES REMOVED OR DISTURBED BY THE CITY OF COLUMBIA IN COMMON OPEN SPACE LOTS AND IN AREAS OWNED BY THE PROPERTY OWNER OR HOA AT NO EXPENSE TO THE CITY OF COLUMBIA. INDIVIDUAL HOMEOWNERS SHALL BE RESPONSIBLE FOR STRUCTURES REMOVED OR DISTURBED BY THE CITY OF COLUMBIA WITHIN AN EASEMENT ON THE HOMEOWNER'S LOT AT THE HOMEOWNER'S EXPENSE.
23. ALL LOTS WITHIN PHASE 1A REQUIRE A FIRE SPRINKLER SYSTEM INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.A HORN AND STROBE WILL BE REQUIRED ON THE FRONT OF THE HOUSE. IT WILL ACTIVATE WHEN THE SPRINKLER SYSTEM IS ACTIVATED.





VICINITY MAP
NOT TO SCALE

OWNER: M/I HOMES OF NASHVILLE, LLC
4131 WORTH AVE STE 500
COLUMBUS, OH 43219

ENGINEER: CRUNK ENGINEERING, LLC
7112 CROSSROADS BLVD STE 201
BRENTWOOD, TN 37027
615-873-1795

SURVEYOR: JOEY C. WILSON II, PE, RLS
WILSON & ASSOCIATES, P.C.
108 BEASLEY DRIVE
FRANKLIN, TN 37064
(615)794-2275
JWILSON@WILSONPC.COM

GRAPHIC SCALE: 1" = 100'

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.

NAME, TITLE, AGENCY OF AUTHORIZED APPROVING AGENT _____ DATE _____

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 _____ DATE _____
COLUMBIA, TENNESSEE

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CLASS "X" 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: _ _.

DATE _____

JOEY C. WILSON II, TENNESSEE RLS NO. 2089
WILSON & ASSOCIATES, P.C.
ENGINEERING/SURVEYING/ENVIRONMENTAL
108 BEASLEY DRIVE, FRANKLIN, TN 37064
OFFICE: 615.794.2275 FAX 615.794.2176
JWILSON@WILSONPC.COM

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME & STREET NAMES

SUBDIVISION NAME AND STREET NAMES APPROVED BY THE CITY ENGINEERING DEPARTMENT AND BY E-911 MAURY COUNTY.

MAURY COUNTY E911 _____ DATE _____

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

HILLCREST VILLAGE

PHASE 1A

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 0000, PAGE 0000, MAURY COUNTY REGISTERS OFFICE, AND THAT I (WE) HEREBY 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.

OWNER _____ DATE _____

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE & UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE, AND UTILITIES OUTLINED OR INDICATED ON THIS FINAL SUBDIVISION PLAT HAVE BEEN INSTALLED IN ACCORDANCE WITH CITY SPECIFICATIONS, OR A PERFORMANCE SURETY IN THE AMOUNT OF $ _____ FOR STREETS AND DRAINAGE HAS BEEN POSTED WITH THE CITY OF COLUMBIA, TENNESSEE, TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

CITY ENGINEER _____ DATE _____
COLUMBIA, TENNESSEE

CERTIFICATE OF APPROVAL FOR 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.

DIRECTOR OF WASTEWATER DEPARTMENT _____ DATE _____
COLUMBIA, TENNESSEE

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE 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.

SECRETARY, PLANNING COMMISSION _____ DATE _____
COLUMBIA, TENNESSEE

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IF YOU CAN READ THIS YOU ARE HOLDING AN UNRECORDED COPY

FINAL SUBDIVISION PLAT

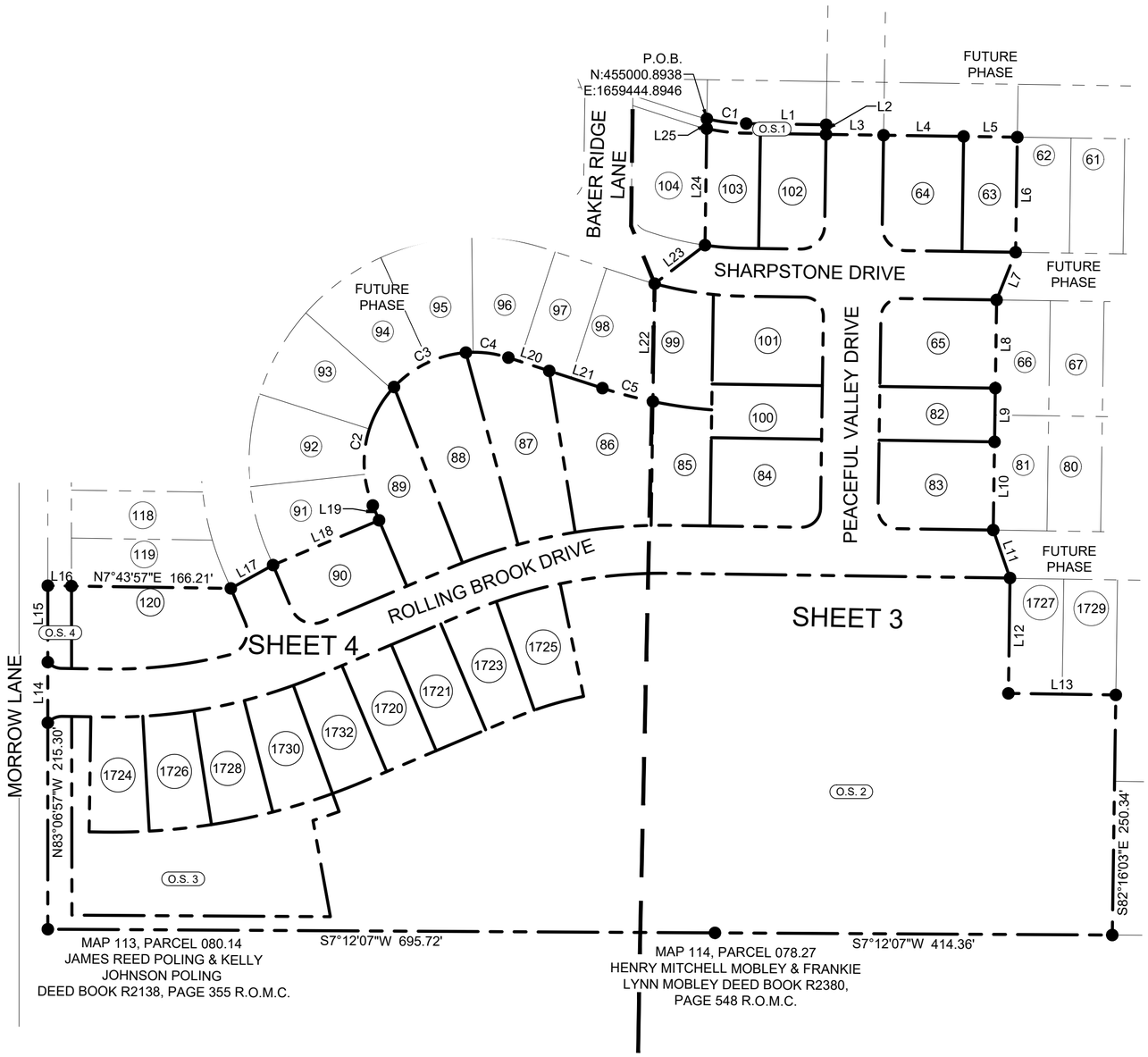
CITY OF COLUMBIA - MAURY COUNTY - TENNESSEE

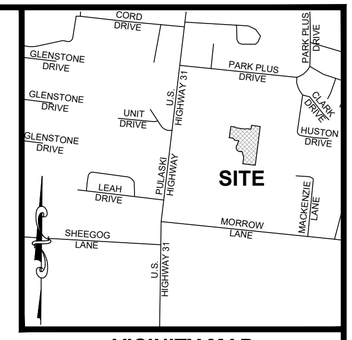
TOTAL ACRES:	14.300	TOTAL NO. OF LOTS:	27
ACRES NEW RD/ST:	2.161 (ROW)	L.F. OF NEW RD/ST:	1897.11 +/-
ACRES OPEN SPACE:	6.613	CIVIL DISTRICT:	3RD
DRAWN BY:	AS	CLOSURE ERROR:	> 1:10,000
SCALE:	1" = 100'	DATE:	09/20/2023

WA PROJECT NO. 22-1861 SHEET 1 0F 4

LEGEND

IRON PIN FOUND	FIRE HYDRANT	UTILITY POLE	PUBLIC UTIL. & DRAIN ESMT.	P.U.D.E.	BOUNDARY
IRON PIN SET	SANITARY SEWER MH	GUY ANCHOR	ADDRESSES	1234	CENTERLINE
CONC. MON. FOUND	SANITARY SEWER CO	COMMUNICATION BOX	HANDICAP SPACE		BUFFER
CONC. MON. SET	AREA DRAIN	COMMUNICATION MH	SANITARY SEWER	8" SA	WATER FEATURE
CONTROL POINT FOUND	CURB INLET	GAS METER	WATER	4" W	TREE LINE
CONTROL POINT SET	STORM MH	GAS VALVE	UNDERGROUND ELEC	UGE	R.O.W. RIGHT OF WAY
BENCH MARK	ELECTRIC METER-BOX	EVERGREEN TREE	OVERHEAD ELEC	OHE	PVMT. EDGE OF PAVEMENT
WATER METER	ELECTRIC MH	SIDEWALK	GAS	4" G	PUDE PUBLIC UTILITY AND DRAINAGE EASEMENT
WATER VALVE	LIGHT POLE	MIN. BUIDLING SETBACK M.B.S.L	COMMUNICATIONS	COM	G.I.E. GREEN INFRASTRUCTURE EASEMENT





VICINITY MAP
NOT TO SCALE

Parcel Area Table		
Parcel #	Area (SF)	Area (AC)
63	6720.00'	0.154
64	9885.87'	0.227
65	10992.25'	0.252
82	6743.19'	0.155
83	10992.25'	0.252
84	10494.16'	0.241
85	7633.64'	0.175
86	13585.98'	0.312
87	13593.69'	0.312
88	14858.87'	0.341
89	10894.01'	0.250
90	8805.87'	0.202
99	7454.81'	0.171
100	6440.00'	0.148

Parcel Area Table		
Parcel #	Area (SF)	Area (AC)
101	10508.15'	0.241
102	8085.87'	0.186
103	6741.04'	0.155
120	14268.47'	0.328
1720	6720.00'	0.154
1721	6720.00'	0.154
1723	7023.35'	0.161
1724	7018.79'	0.161
1725	7357.80'	0.169
1726	7131.86'	0.164
1728	7131.86'	0.164
1730	7131.86'	0.164
1732	6936.45'	0.159

Parcel Line Table		
Line #	Length	Direction
L1	83.44'	N7°43'57"E
L2	10.00'	S82°16'03"E
L3	60.00'	N7°43'57"E
L4	83.50'	N7°43'57"E
L5	56.00'	N7°43'57"E
L6	120.00'	S82°16'03"E
L7	53.52'	S61°22'29"E
L8	92.00'	S82°16'03"E
L9	56.00'	S82°16'03"E
L10	92.00'	S82°16'03"E
L11	52.96'	N77°35'45"E
L12	120.28'	S82°18'54"E
L13	112.00'	N7°43'57"E

Parcel Line Table		
Line #	Length	Direction
L14	63.19'	N83°06'57"W
L15	79.69'	N83°06'57"W
L16	24.71'	N7°43'57"E
L17	50.28'	N22°01'41"W
L18	120.00'	N16°00'18"W
L19	16.80'	S73°59'42"W
L20	44.76'	N24°52'05"E
L21	58.31'	N24°52'05"E
L22	122.90'	N82°16'03"W
L23	66.09'	N30°29'48"W
L24	121.55'	N82°16'03"W
L25	10.22'	N82°16'03"W

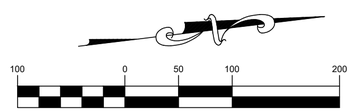
Open Space Area Table		
Parcel #	Area (SF)	Area (AC)
O.S. 1	1247.94'	0.029
O.S. 2	256804.88'	5.895
O.S. 3	27933.64'	0.641
O.S. 4	2101.35'	0.048

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	41.37'	195.00'	12° 09' 24"	N13° 48' 39"E	41.30'
C2	132.75'	115.00'	66° 08' 25"	N72° 56' 06"W	125.50'
C3	84.97'	115.00'	42° 19' 55"	N18° 41' 55"W	83.05'
C4	44.96'	115.00'	22° 24' 03"	N13° 40' 04"E	44.68'
C5	54.51'	495.00'	6° 18' 33"	N21° 42' 49"E	54.48'

OWNER: M/I HOMES OF NASHVILLE, LLC
4131 WORTH AVE STE 500
COLUMBUS, OH 43219
ENGINEER: CRUNK ENGINEERING, LLC
7112 CROSSROADS BLVD STE 201
BRENTWOOD, TN 37027
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WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental



GRAPHIC SCALE: 1" = 100'

HILLCREST VILLAGE

PHASE 1A

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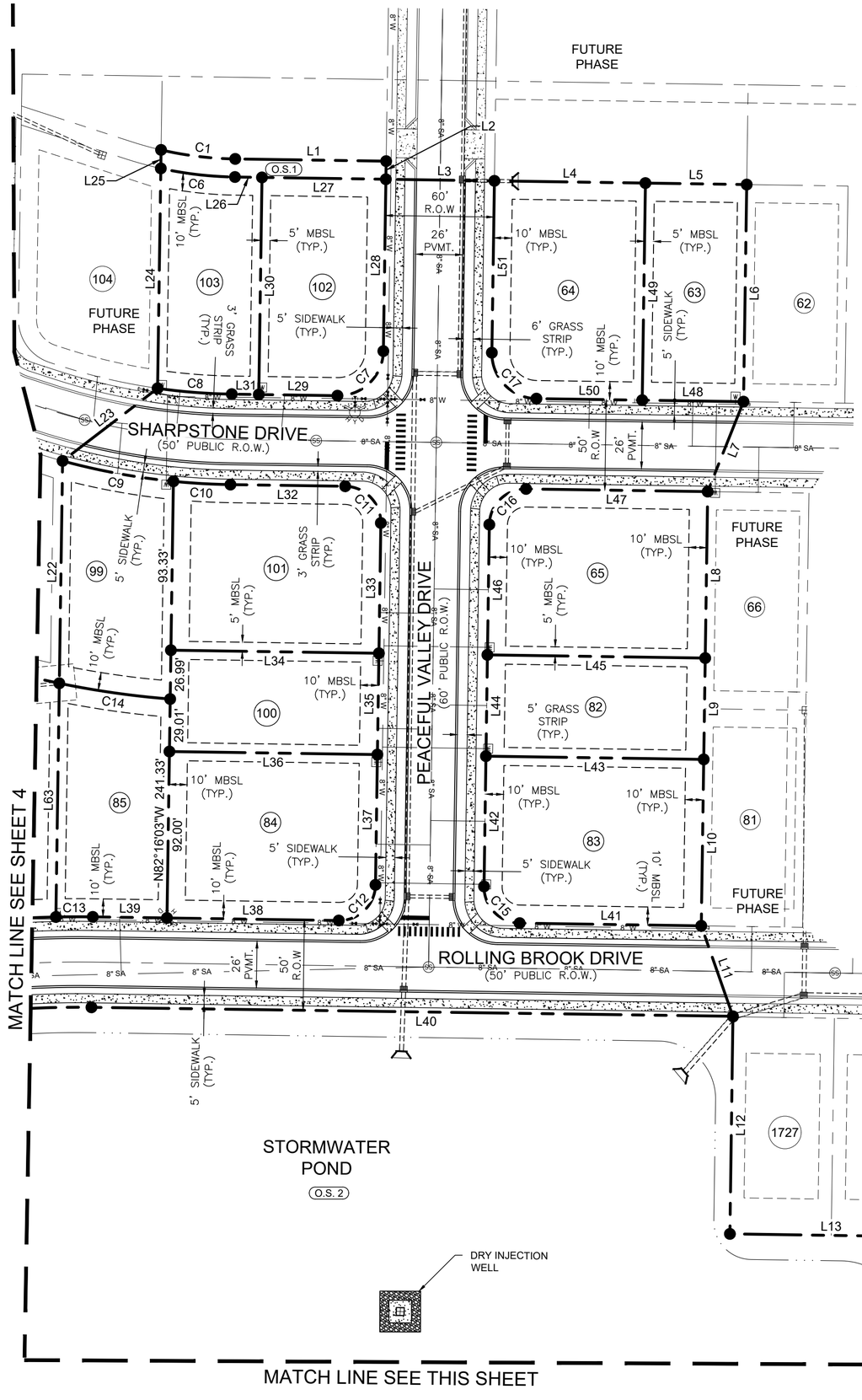
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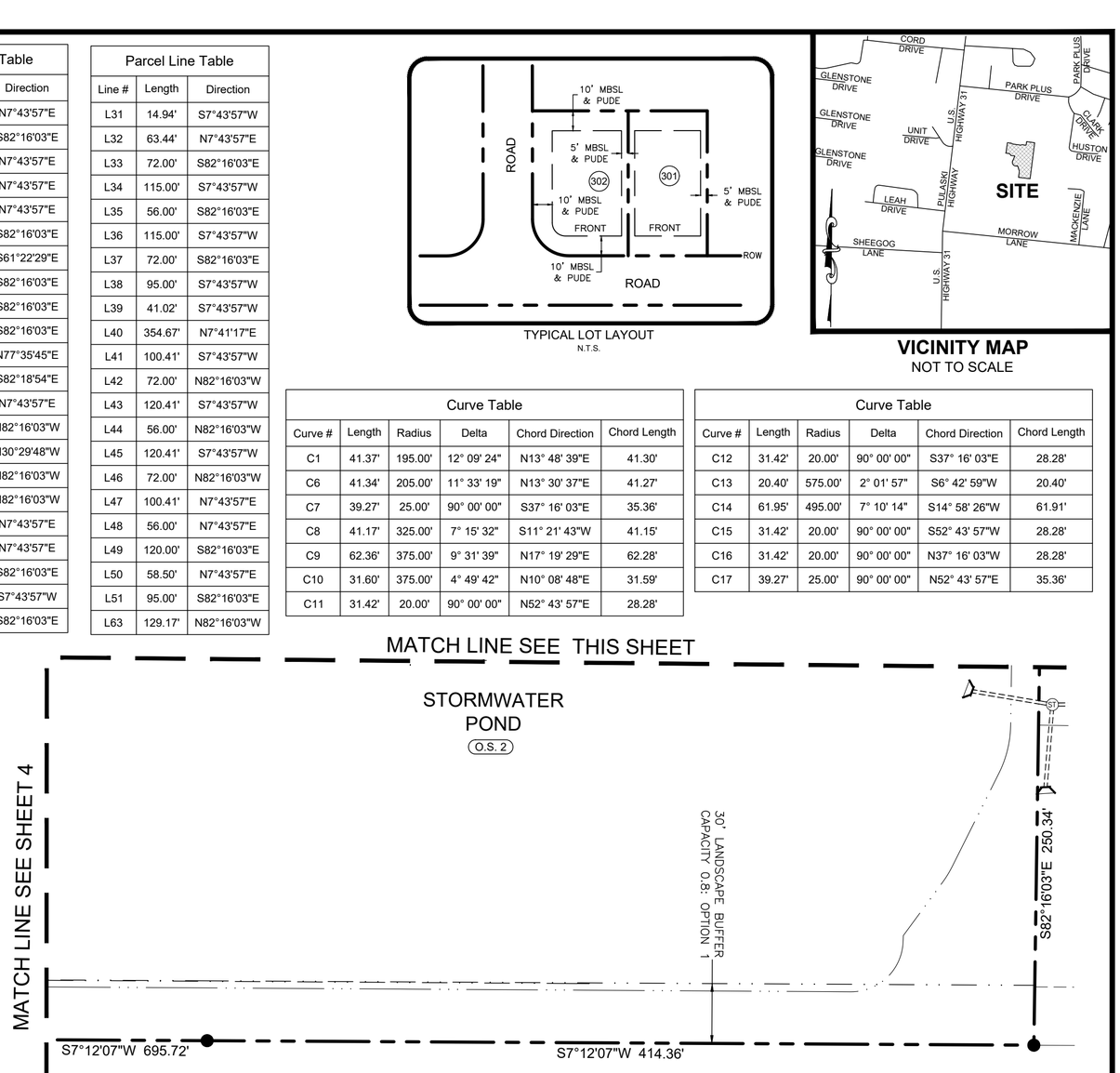
FINAL SUBDIVISION PLAT

CITY OF COLUMBIA - MAURY COUNTY - TENNESSEE

TOTAL ACRES:	14.300	TOTAL NO. OF LOTS:	27
ACRES NEW RD/ST:	2.161 (ROW)	L.F. OF NEW RD/ST:	1897.11 +/-
ACRES OPEN SPACE:	6.613	CIVIL DISTRICT:	3RD
DRAWN BY:	AS	CLOSURE ERROR:	> 1:10,000
SCALE:	1" = 100'	DATE:	09/20/2023

WA PROJECT NO. 22-1861 SHEET 2 0F 4





Parcel Line Table		
Line #	Length	Direction
L1	83.44'	N7°43'57"E
L2	10.00'	S82°16'03"E
L3	60.00'	N7°43'57"E
L4	83.50'	N7°43'57"E
L5	56.00'	N7°43'57"E
L6	120.00'	S82°16'03"E
L7	53.52'	S61°22'29"E
L8	92.00'	S82°16'03"E
L9	56.00'	S82°16'03"E
L10	92.00'	S82°16'03"E
L11	52.96'	N77°35'45"E
L12	120.28'	S82°18'54"E
L13	112.00'	N7°43'57"E
L22	122.90'	N82°16'03"W
L23	66.09'	N30°29'48"W
L24	121.55'	N82°16'03"W
L25	10.22'	N82°16'03"W
L26	14.94'	N7°43'57"E
L27	68.50'	N7°43'57"E
L28	95.00'	S82°16'03"E
L29	43.50'	S7°43'57"W
L30	120.00'	S82°16'03"E

Parcel Line Table		
Line #	Length	Direction
L31	14.94'	S7°43'57"W
L32	63.44'	N7°43'57"E
L33	72.00'	S82°16'03"E
L34	115.00'	S7°43'57"W
L35	56.00'	S82°16'03"E
L36	115.00'	S7°43'57"W
L37	72.00'	S82°16'03"E
L38	95.00'	S7°43'57"W
L39	41.02'	S7°43'57"W
L40	354.67'	N7°41'17"E
L41	100.41'	S7°43'57"W
L42	72.00'	N82°16'03"W
L43	120.41'	S7°43'57"W
L44	56.00'	N82°16'03"W
L45	120.41'	S7°43'57"W
L46	72.00'	N82°16'03"W
L47	100.41'	N7°43'57"E
L48	56.00'	N7°43'57"E
L49	120.00'	S82°16'03"E
L50	58.50'	N7°43'57"E
L51	95.00'	S82°16'03"E
L63	129.17'	N82°16'03"W

TYPICAL LOT LAYOUT
N.T.S.

VICINITY MAP
NOT TO SCALE

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	41.37'	195.00'	12° 09' 24"	N13° 48' 39"E	41.30'
C6	41.34'	205.00'	11° 33' 19"	N13° 30' 37"E	41.27'
C7	39.27'	25.00'	90° 00' 00"	S37° 16' 03"E	35.36'
C8	41.17'	325.00'	7° 15' 32"	S11° 21' 43"W	41.15'
C9	62.36'	375.00'	9° 31' 39"	N17° 19' 29"E	62.28'
C10	31.60'	375.00'	4° 49' 42"	N10° 08' 48"E	31.59'
C11	31.42'	20.00'	90° 00' 00"	N52° 43' 57"E	28.28'

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C12	31.42'	20.00'	90° 00' 00"	S37° 16' 03"E	28.28'
C13	20.40'	575.00'	2° 01' 57"	S6° 42' 59"W	20.40'
C14	61.95'	495.00'	7° 10' 14"	S14° 58' 26"W	61.91'
C15	31.42'	20.00'	90° 00' 00"	S52° 43' 57"W	28.28'
C16	31.42'	20.00'	90° 00' 00"	N37° 16' 03"W	28.28'
C17	39.27'	25.00'	90° 00' 00"	N52° 43' 57"E	35.36'

MAP 114, PARCEL 078.27
HENRY MITCHELL MOBLEY & FRANKIE LYNN MOBLEY DEED BOOK R2380, PAGE 548 R.O.M.C.

GRAPHIC SCALE: 1" = 50'

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 2089

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

HILLCREST VILLAGE

PHASE 1A

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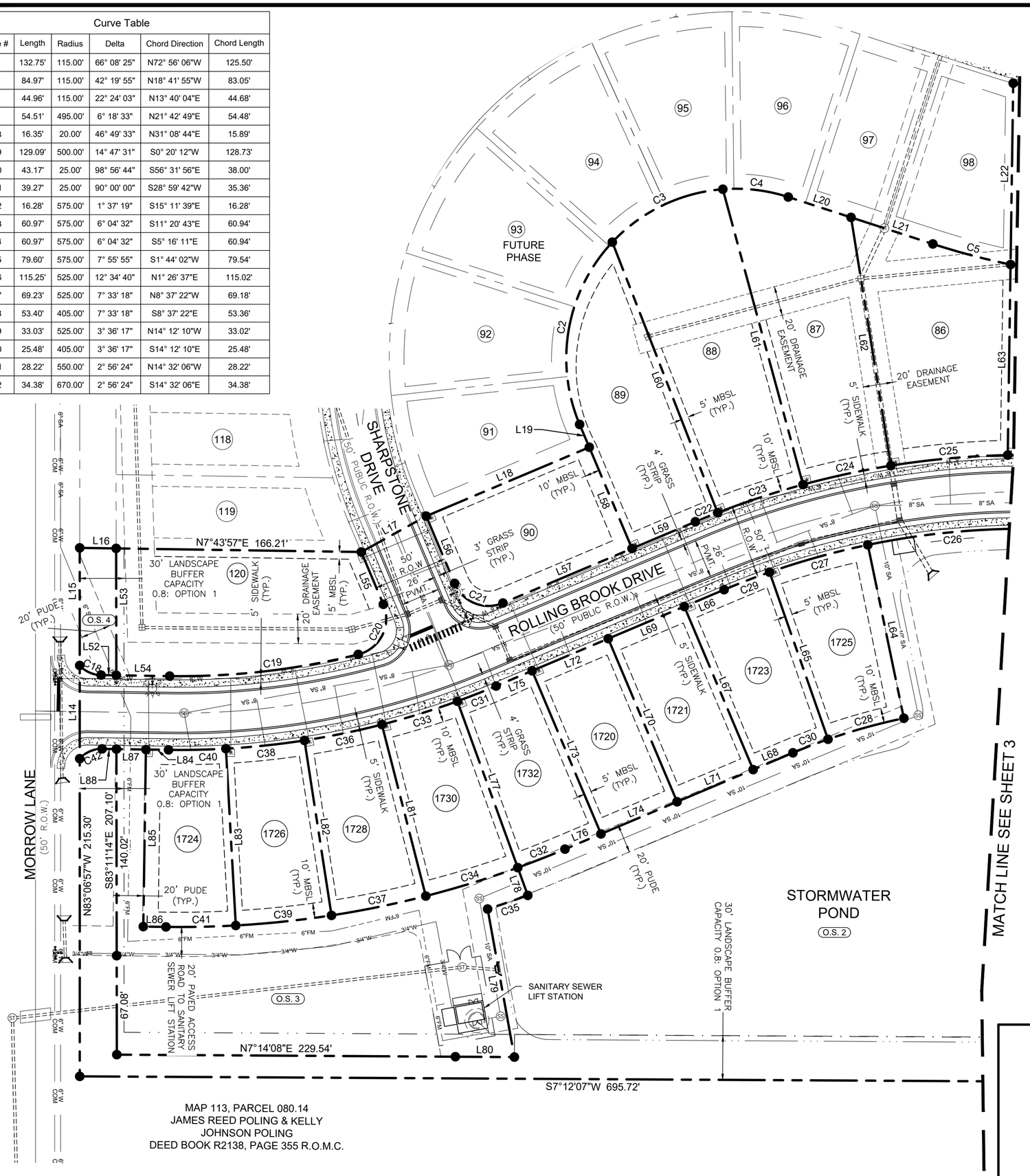
FINAL SUBDIVISION PLAT

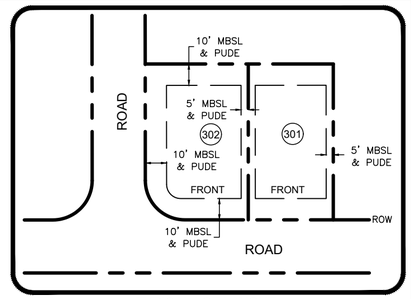
CITY OF COLUMBIA - MAURY COUNTY - TENNESSEE

TOTAL ACRES:	14.300	TOTAL NO. OF LOTS:	27
ACRES NEW RD/ST:	2.161 (ROW)	L.F. OF NEW RD/ST:	1897.11 +/-
ACRES OPEN SPACE:	6.613	CIVIL DISTRICT:	3RD
DRAWN BY:	AS	CLOSURE ERROR:	> 1:10,000
SCALE:	1" = 50'	DATE:	09/20/2023

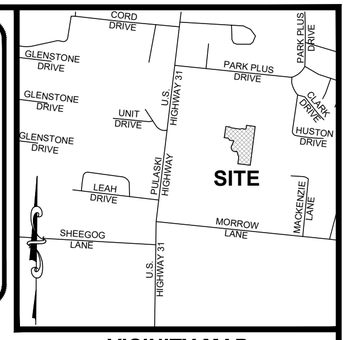
WA PROJECT NO. 22-1861 SHEET 3 0F 4

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C2	132.75'	115.00'	66° 08' 25"	N72° 56' 06"W	125.50'
C3	84.97'	115.00'	42° 19' 55"	N18° 41' 55"W	83.05'
C4	44.96'	115.00'	22° 24' 03"	N13° 40' 04"E	44.68'
C5	54.51'	495.00'	6° 18' 33"	N21° 42' 49"E	54.48'
C18	16.35'	20.00'	46° 49' 33"	N31° 08' 44"E	15.89'
C19	129.09'	500.00'	14° 47' 31"	S0° 20' 12"W	128.73'
C20	43.17'	25.00'	98° 56' 44"	S56° 31' 56"E	38.00'
C21	39.27'	25.00'	90° 00' 00"	S28° 59' 42"W	35.36'
C22	16.28'	575.00'	1° 37' 19"	S15° 11' 39"E	16.28'
C23	60.97'	575.00'	6° 04' 32"	S11° 20' 43"E	60.94'
C24	60.97'	575.00'	6° 04' 32"	S5° 16' 11"E	60.94'
C25	79.60'	575.00'	7° 55' 55"	S1° 44' 02"W	79.54'
C26	115.25'	525.00'	12° 34' 40"	N1° 26' 37"E	115.02'
C27	69.23'	525.00'	7° 33' 18"	N8° 37' 22"W	69.18'
C28	53.40'	405.00'	7° 33' 18"	S8° 37' 22"E	53.36'
C29	33.03'	525.00'	3° 36' 17"	N14° 12' 10"W	33.02'
C30	25.48'	405.00'	3° 36' 17"	S14° 12' 10"E	25.48'
C31	28.22'	550.00'	2° 56' 24"	N14° 32' 06"W	28.22'
C32	34.38'	670.00'	2° 56' 24"	S14° 32' 06"E	34.38'





TYPICAL LOT LAYOUT
N.T.S.



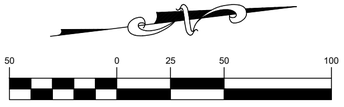
VICINITY MAP
NOT TO SCALE

Parcel Line Table		
Line #	Length	Direction
L14	63.19'	N83°06'57"W
L15	79.69'	N83°06'57"W
L16	24.71'	N7°43'57"E
L17	50.28'	N22°01'41"W
L18	120.00'	N16°00'18"W
L19	16.80'	S73°59'42"W
L20	44.76'	N24°52'05"E
L21	58.31'	N24°52'05"E
L22	122.90'	N82°16'03"W
L52	10.32'	N7°43'57"E
L53	86.01'	N83°11'05"W
L54	36.16'	S7°43'57"W
L55	38.45'	N73°59'42"E
L56	49.50'	S73°59'42"W
L57	95.00'	S16°00'18"E
L58	74.50'	S73°59'42"W

Parcel Line Table		
Line #	Length	Direction
L59	46.64'	S16°00'18"E
L60	196.78'	S75°37'01"W
L61	207.42'	S81°41'33"W
L62	170.40'	S87°46'05"W
L63	129.17'	N82°16'03"W
L64	120.00'	N85°09'17"E
L65	120.00'	N77°35'59"E
L66	29.27'	N16°00'18"W
L67	120.00'	N73°59'42"E
L68	29.27'	S16°00'18"E
L69	56.00'	N16°00'18"W
L70	120.00'	N73°59'42"E
L71	56.00'	S16°00'18"E
L72	56.00'	N16°00'18"W
L73	120.00'	N73°59'42"E
L74	56.00'	S16°00'18"E

Parcel Line Table		
Line #	Length	Direction
L75	26.50'	N16°00'18"W
L76	26.50'	S16°00'18"E
L77	120.00'	N76°56'06"E
L78	19.98'	S76°56'06"W
L79	101.97'	S86°38'16"W
L80	40.00'	N7°14'08"E
L81	120.00'	N82°31'02"E
L82	120.00'	N88°05'58"E
L83	120.00'	S86°19'05"E
L84	15.36'	N7°43'57"E
L85	120.00'	N82°16'03"W
L86	15.36'	S7°43'57"W
L87	20.00'	S7°43'57"W
L88	9.68'	N7°43'57"E

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C33	53.59'	550.00'	5° 34' 56"	N10° 16' 26"W	53.57'
C34	65.28'	670.00'	5° 34' 56"	S10° 16' 26"E	65.25'
C35	28.79'	689.98'	2° 23' 27"	N11° 52' 11"W	28.79'
C36	53.59'	550.00'	5° 34' 56"	N4° 41' 30"W	53.57'
C37	65.28'	670.00'	5° 34' 56"	S4° 41' 30"E	65.25'
C38	53.59'	550.00'	5° 34' 56"	N0° 53' 26"E	53.57'
C39	65.28'	670.00'	5° 34' 56"	S0° 53' 26"W	65.25'
C40	38.88'	550.00'	4° 03' 03"	N5° 42' 26"E	38.88'
C41	47.37'	670.00'	4° 03' 03"	S5° 42' 26"W	47.36'
C42	17.08'	20.00'	48° 56' 29"	N16° 44' 17"W	16.57'



GRAPHIC SCALE: 1" = 50'

JOEY C. WILSON II
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TENNESSEE NO. 2089

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HILLCREST VILLAGE

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FINAL SUBDIVISION PLAT

CITY OF COLUMBIA - MAURY COUNTY - TENNESSEE

TOTAL ACRES:	14.300	TOTAL NO. OF LOTS:	27
ACRES NEW RD/ST:	2.161 (ROW)	L.F. OF NEW RD/ST:	1897.11 +/-
ACRES OPEN SPACE:	6.613	CIVIL DISTRICT:	3RD
DRAWN BY:	AS	CLOSURE ERROR:	> 1:10,000
SCALE:	1" = 50'	DATE:	09/20/2023

WA PROJECT NO. 22-1861 SHEET 4 0F 4

Appendix B: Subdivision Development Agreement

This DEVELOPMENT AGREEMENT is made and entered into on this

Fourteenth day of July, 2023,
between THE CITY OF COLUMBIA, TENNESSEE, (hereinafter the "CITY"), and

M/I Homes of Nashville, LLC., the DEVELOPER (hereinafter the "DEVELOPER") named on the Addendum to this Agreement attached hereto and by this reference made a part hereof (hereinafter the "ADDENDUM").

WITNESSETH:

WHEREAS, the DEVELOPER desires to develop the property described on the ADDENDUM (hereinafter the "PROJECT"); and,

WHEREAS, the Development Plan of the PROJECT has been approved by the Columbia Municipal Planning Commission (hereinafter the “CMPC”) on the

8th day of September, 2021,
pursuant to Tennessee Code Annotated Title 13, Chapter 4, and the Subdivision Regulations of Columbia, Tennessee (hereinafter the "SUBDIVISION REGULATIONS”); and,

WHEREAS, the DEVELOPER is the owner of the PROJECT and has authority to engage in such development; and,

WHEREAS, the DEVELOPER desires to develop and improve said PROJECT; and,

WHEREAS, in order to provide for the health, safety, and welfare of future residents of the PROJECT, it will be necessary for certain improvements to the CITY'S utility systems, public infrastructure, and common areas to be constructed within and to serve the PROJECT including but not be limited to roads, bridges, sidewalks, pedestrian facilities, stormwater facilities, street signs, markings, signals, street lighting, recreation and park facilities, landscaping, and the like (hereinafter the “IMPROVEMENTS”); and,

WHEREAS, in order for the IMPROVEMENTS to be fully integrated with the utility systems and public infrastructure of the CITY and to function in a satisfactory manner, the DEVELOPER has agreed to construct, in accordance with the Subdivision Regulations and other rules, regulations, and ordinances of the CITY, the IMPROVEMENTS in said PROJECT and extend utilities to the PROJECT at their own cost; and,

WHEREAS, the CITY is willing to accept the dedication of the streets, utilities, and other improvements as determined in the Development Plan of the PROJECT, subject to the City of Columbia City Council approval by resolution, and subject to the applicant's compliance with all requirements in this agreement and applicable existing laws of the CITY of Columbia and the State of Tennessee,

NOW, THEREFORE, it is agreed and understood as follows:

B1 General Conditions

B1.1 Construction Costs

The DEVELOPER shall pay for all material and labor necessary to install and complete the roads, sidewalks, sewers, utilities, and other facilities in accordance with this agreement.

B1.2 City Ordinances, Rules and Regulations

All currently existing CITY ordinances, rules and regulations, and the Subdivision Regulations adopted by the CMPC are made a part of this agreement. In the event of a conflict between the terms of this agreement and a CITY ordinance, the ordinance shall prevail. In the event of a conflict between the terms of this agreement and the Subdivision Regulations, the Subdivision Regulations shall prevail. All work done under this agreement is to be performed in accordance with plans and specifications approved by the City and made a part, hereof.

B1.3 Fees

Review fees, inspection fees, and other amounts established by the CITY shall be paid prior to any review of the plans. If the DEVELOPER fails to install the facilities in accordance with the terms of this Agreement, no portion of the review fees, inspection fees, or other amounts paid to the CITY shall be refundable to the DEVELOPER.

B1.4 Inspection

The CITY shall have a continuous right to inspect the work and facilities to assure that the work and facilities are in accordance with the Subdivision Regulations, approved Construction Plans, and other rules, regulations, and ordinances of the CITY.

B1.5 Right of Entry

The CITY shall have the right, in case of breach of the Performance Agreement, to enter upon any property of the DEVELOPER and take all necessary actions to complete the work and obligations not completed.

B1.6 Easements

The DEVELOPER shall obtain and dedicate to the CITY or cause to be dedicated to the CITY, either by dedication on the plat or by easement deed, in either case in a form acceptable to the CITY, permanent easements of such widths as required by the CITY and noted on the Plans. The DEVELOPER further agrees to grant the necessary easements and rights-of-way across the DEVELOPER’s properties without expense to the CITY and waive any claim for damages.

B1.7 Stormwater Maintenance Agreement

If the PROJECT includes any detention or retention ponds, common drainage ditches, water quality facilities, or stormwater facilities outside of the CITY rights-of-way, the DEVELOPER will submit a Stormwater Maintenance Agreement, to be filed with and recorded with the Final Plat.

B1.8 Attorney Fees and Other Expenses

The DEVELOPER shall pay all reasonable costs and expenses incurred by the CITY in enforcing or completing this agreement. The DEVELOPER shall pay all costs and expenses, including the CITY'S attorney fees, of any legal proceedings brought by the CITY against the DEVELOPER seeking remedies for the DEVELOPER'S failure to perform any of its obligations hereunder, whether or not any proceedings are prosecuted to judgment.

B1.9 Agreement Not Assignable

No third party shall obtain any benefits or rights under this agreement nor shall the rights or duties be assigned by either party.

B1.10 Revocation and Interpretation

This agreement shall bind the DEVELOPER when executed by the DEVELOPER and may not be revoked by the DEVELOPER without permission of the CITY, even if the agreement has not been executed by the CITY, or does not bind CITY, for other reasons. This agreement shall be interpreted in accordance with Tennessee law and may only be enforced in the Chancery Court or Circuit Court or Court of competent jurisdiction of Maury County, Tennessee, and Tennessee Appellate Courts.

B1.11 No Oral Agreement

This agreement may not be orally amended and supersedes all prior negotiations, commitments, or understandings.

B1.12 Separability

If any portion of this agreement is held to be unenforceable, the CITY shall have the right to determine whether the remainder of the agreement shall remain in effect, or whether the agreement shall be void and all rights of the DEVELOPER pursuant to this agreement terminated.

B 1.13 Transferability

The DEVELOPER agrees to not transfer the property on which this PROJECT is to be located without first providing the CITY with written notice. The transferee shall provide the CITY an Assumption Agreement of this Agreement, whereby the transferee agrees to perform the IMPROVEMENTS required under this agreement and to provide a performance surety. The DEVELOPER understands that if the DEVELOPER transfers said property without providing the notice of transfer and Assumption Agreement as required herein, they will be in breach of this agreement and in violation of the Subdivision Regulations.

B1.14 Indemnity

The DEVELOPER shall indemnify and hold the CITY harmless from all loss, costs, expenses, liability, money damages, penalties, or claims arising out of any work covered by this agreement, including any attorney fees incurred by the CITY in connection therewith. Inspection of the IMPROVEMENTS by an authorized representative of the CITY shall not constitute a waiver by the CITY of any defect or of any of the DEVELOPER'S obligations hereunder.

B1.15 Binding Effect

This agreement shall be binding upon the DEVELOPER and the DEVELEPOR's heirs, administrators, executors, assigns, and any other successors in interest.

B1.16 Entire Agreement

This document contains the entire agreement between the parties, and there are no collateral understandings or agreements between them. No variations or alterations of the terms of this agreement shall be binding upon either of the parties, unless the same be reduced to writing and made an amendment to this agreement.

B1.17 Headings

Paragraph titles and headings contained herein are inserted for convenience only and shall not be deemed a part of the agreement and in no way shall define, limit, extend, or describe the scope or intent of any provision, hereof.

B2 Performance Surety

At the time of execution of this agreement, the DEVELOPER shall provide the CITY a performance surety, in an amount determined by the City Engineer for the IMPROVEMENTS and other items specified by the Construction Plans, plats, and plans approved by the CMPC. This performance surety shall secure performance of all obligations of the DEVELOPER under this agreement. The performance surety shall meet all requirements established in Chapter 4: Performance Agreement of the Subdivision Regulations and secure full compliance with all terms and conditions of this agreement. The performance surety may be called for failure to comply with the provisions of this agreement in whole or in part according to the terms of the performance surety. The performance surety will not be released, except and until there has been full compliance with this agreement.

B3 Construction

B3.1 Construction Plans

The DEVELOPER shall submit to the CITY, Construction Plans describing in reasonable detail all utility systems, all storm water management systems, all street systems, pedestrian facilities, and all IMPROVEMENTS. The Construction Plans shall be designed according to the Engineering Standards and Specifications, all other codes and ordinances enforced by the City, and sound engineering judgment. The design of all utility systems shall follow the State of Tennessee and utility provider design criteria and specifications. In the event of a disagreement as to compliance with or interpretation of the Construction Plans and the CITY'S specifications, the decision of the CITY shall be final and binding on the DEVELOPER. The Construction Plans shall be prepared by a design professional licensed by the State of Tennessee to design all systems and shall bear the seal, signature, date, and license number of the professional preparing the Construction Plans.

B3.2 Commencement of Construction

Construction of IMPROVEMENTS may not begin until the following events have occurred:

A. The Preliminary Plat has been approved by the CMPC;
B. The Construction Plans are approved by the CITY;
C. The Tennessee Department of Environment and Conservation has approved the applicable portions of the Plans and has confirmed its approval to the CITY and/or DEVELOPER in writing;
D. The CITY shall have received an appropriately executed Development Agreement; and
E. The DEVELOPER shall give the CITY notice of commencement of construction, in writing at least one (1) working day prior to commencement.

B3.3 Site Grading

The DEVELOPER, hereby, agrees to construct all site grading to comply with the approved Construction Plans, including the approved Erosion Control Plan for the PROJECT and to comply with the Engineering Standards and Specifications, Stormwater Ordinance, and all other codes and ordinances enforced by the CITY.

B3.4 Storm Water Management Systems

The DEVELOPER shall be responsible for all storm water management work made necessary by the development of this PROJECT. It is understood and agreed that the CITY in its proprietary function is not and could not be expected to oversee, supervise, or direct the construction of all drainage improvements, and the excavation incident thereto. Neither is the CITY vested with the original design responsibility nor the means to formally survey elevations or the locations of improvements at every stage of the construction process. The CITY is vested with the right of periodic inspections, stop work order, and final approval as a measure of secondary or subsequent enforcement. The DEVELOPER has and shall retain the responsibility to properly anticipate, survey, design and construct the subdivision storm water improvements and give full assurance that same shall not adversely affect the flow or quality of surface water from or upon any property. In providing technical assistance, plan and design review, the CITY does not and shall not relieve or accept any liability from the DEVELOPER.

B3.5 Street Construction

The DEVELOPER, hereby, agrees to construct and improve the streets shown on the Construction Plans to comply with the CITY's specifications and to the satisfaction and approval of the City Engineer by grading, draining, subgrade preparation, base preparation, curbing, signage, striping, signalization, sidewalk installation, and paving with the required preparation, amounts, and types of material. The DEVELOPER further agrees to pay the cost of all engineering, inspection and laboratory cost incidental to the construction of subdivision streets including but not limited to material and density testing. The DEVELOPER further agrees to make all necessary adjustments to manholes and valve boxes to meet finished surface grade and to repair subsurface or base material, as required, in areas directed by the CITY Engineer, prior to application of final surface.

B3.6 Time Period for Construction

The DEVELOPER agrees to be bound to complete, within three (3) years of commencement of construction, all IMPROVEMENTS shown on the plat and plans and all things required by this agreement.

The DEVELOPER further agrees that if due to unforeseen circumstances, he is unable to complete all work included in this agreement within the time specified above, but desires to complete said agreement to the satisfaction of the CITY, the DEVELOPER shall submit a written request for extension of the agreement period to the CITY at least sixty (60) days prior to the expiration of the existing agreement period, specifying the reason for the DEVELOPER's failure to complete the work as agreed and a prospective date for such completion. The DEVELOPER further agrees that if the performance surety executed to secure the value of the work to be performed under this agreement, due to inflation or rising costs, is determined to be inadequate by the City Engineer to secure the cost of said IMPROVEMENTS at the time an extension is sought, the DEVELOPER will provide the additional security to bring the performance surety amount in line with current cost projections as made by the CITY. The DEVELOPER understands that the DEVELOPER's failure to follow the extension procedure constitutes a breach of this agreement and places the DEVELOPER in violation of the Subdivision Regulations. The DEVELOPER further understands, that should the DEVELOPER fail to complete any part of the work outlined in this agreement in a good and workmanlike manner as approved, the CITY shall reserve the right to withhold and withdraw all building permits within the PROJECT until all items of this Agreement have been fulfilled by the DEVELOPER.

B3.7 Off-Site Improvements

The DEVELOPER shall construct any and all off-site facilities that may be required to serve the PROJECT. Unless specifically noted in the Construction Plans and made a part of separate agreement with the CITY, the CITY shall not be required to reimburse the DEVELOPER for construction of off-site improvements.

B3.9 Inspection and Compliance

After construction begins, the CITY shall provide on-site construction inspection as the CITY deems necessary to ensure that all work is performed and completed in accordance with the Construction Plans, CITY specifications, and the contents of this agreement. In the event of a disagreement as to compliance with or interpretation of the Construction Plans and the CITY'S specifications, the decision of the CITY shall be final and binding on the DEVELOPER. If the DEVELOPER fails to construct in accordance with the approved Construction Plans or to comply with the CITY'S specifications, the CITY may issue a stop-work order and DEVELOPER, hereby, agrees to be bound by such order.

B3.10 Testing

The DEVELOPER agrees to pay the cost of all engineering, inspection, and laboratory cost incidental to construction of the streets, sidewalks, utilities, sewers, compacted fill material, and other facilities included within this agreement. Such testing includes, but is not limited to, material and density testing.

B3.11 Scrap Removal

The DEVELOPER agrees to comply with all local, state, and federal rules and regulations regarding waste material and debris disposal.

B3.12 Traffic Control

The DEVELOPER, hereby, agrees to prepare a traffic control/detour plan where required and shall submit said plan to the CITY for review and approval. All traffic control and safety devices, including

signs, lane markings, and barriers necessitated by construction activity undertaken pursuant to this agreement shall be installed and maintained by the DEVELOPER. All traffic control devices shall meet the standards and be installed in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the United States Department of Transportation.

B3.13 Temporary Facilities

The DEVELOPER shall provide all temporary facilities including but not limited to utilities and roadways, that are determined by the CITY to be required in connection with or as a result of interruption of service or access that occurs as a consequence of construction activity associated with the work covered by this agreement. Such temporary services shall in all regards and at all points in time be adequate to assure emergency access and adequate fire flows.

B4 Acceptance of Improvements

B4.1 Completion of Improvements

At such time as the improvements have been constructed and installed, in accordance with the Constructions Plans and specifications, required testing and inspections completed and found satisfactory, and all clean-up and cover-up has been done to the satisfaction the City Engineer, a letter requesting preliminary acceptance of the PROJECT will be provided by the DEVELOPER. Formal acceptance shall follow the procedure established in the Subdivision Regulations.

The DEVELOPER agrees the DEVELOPER shall have no claim, direct or implied, in the title or ownership of the IMPROVEMENTS specified in this agreement when the IMPROVEMENTS are complete and thereafter accepted by the CITY. The DEVELOPER will be responsible for construction failures and defects in PROJECT prior to final acceptance. During this period, it shall remain the responsibility of the DEVELOPER to correct and cure these defects and failures.

B4.2 As-Built Drawings and Post-Completion Items

The DEVELOPER agrees to furnish to the CITY as-built plans, on a reproducible, stable media, of the sanitary sewer, storm water management, water mains and service system, and streets within the subdivision before the CITY shall accept the subdivision.

B4.3 Acceptance of Facilities

Upon final acceptance of all or part of the IMPROVEMENTS in the PROJECT, then those IMPROVEMENTS shall become the property of the CITY free from all claims from any person or entity without the necessity of any further writing, agreement, or deed. The DEVELOPER further agrees that any facilities placed within a public or platted right-of-way or dedicated public easement are irrevocably dedicated to the public use without any right of reimbursement or compensation of any kind.

B4.4 Failure to Install

In the event the DEVELOPER fails to install the facilities in accordance with the terms of this agreement, the CITY may, in its sole discretion, elect to accept all or a portion of the IMPROVEMENTS in the PROJECT. Should the CITY choose to accept all or a portion of these IMPROVEMENTS, the CITY shall become the sole owner of these facilities. The CITY may give notice of acceptance by writing delivered to the DEVELOPER or recorded in the Register’s Office of Maury County, Tennessee. No further writing or deed shall be required.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in multiple originals by persons properly authorized so, to do on or as of the day and year first given.

Hillcrest Village (Baker Property)
PROJECT

Completed by the Developer	*Completed by the City*
M/I Homes of Nashville, LLC. DEVELOPER NAME	
David Cumming, P.E. AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
7/14/23 DATE	DATE
3020 Stansberry Ln. St. 202 STREET	
Franklin, TN 37069 CITY, STATE, ZIP	
(919) 763-4630 PHONE	
EJordon@mihomes.com EMAIL	
Attest	*Attest*
Eli Jordon ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
7/14/23 DATE	DATE

IRREVOCABLE LETTER OF CREDIT

DATE: **(Date)**
LETTER OF CREDIT NO: **(LOC #)**
EXPIRATION DATE: **(Expiration Date)**

We will have the LOC completed by Oct 10th.

TO: CITY OF COLUMBIA
700 NORTH GARDEN STREEET
COLUMBIA, TENNESSEE 38401

RE: Irrevocable Standby Letter of Credit for **(Developer Name)** for **(Subdivision Name Phase and Section)**, Columbia, Tennessee.

This Bank hereby issues in your favor its Irrevocable Standby Letter of Credit for the account of **(Developer Name)** for an amount not to exceed in the aggregate U.S. Dollars $**(LOC Amount)** effective **(Effective Date)** and expiring automatically at this Bank's Office at **(Bank's Address)** on **(Expiration Date)**. The purpose of this Letter of Credit is to ensure the completion of roads, striping, signage, curbing sidewalks, drainage, grading and street lighting for **(Subdivision Name Phase and Section)**, Columbia, Tennessee 38401 as required by the City of Columbia.

Funds under this credit are available only against your drafts drawn on this Bank, each bearing on its face the clause "Drawn under Letter of Credit No.**(LOC #)** presented at sight at Bank's above office, on or before the above expiration date, accompanied by the following documents, and in strict compliance with the following terms and conditions:

> A statement executed by an authorized official of the City of Columbia certifying that **(Developer Name)**, LLC has failed to perform the completion of roads, striping, signage, curbing, sidewalks, drainage, grading or street lighting for **(Subdivision Name Phase and Section)**, Columbia, Tennessee 38401 as required by the City of Columbia.

Your issuance or negotiation of any drafts hereunder shall be considered a guaranty to this Bank that all of the foregoing terms and conditions have been fulfilled.

Furthermore, this original letter of credit must accompany the above documents required under this credit. No rights hereunder may be transferred, negotiated or assigned in any manner, as this credit is hereby extended solely for your benefit.

It is a condition of the Letter of Credit that it shall be deemed automatically extended, without amendment for a one (1) year period from the expiration date shown here on, or any future expiration date unless at least (60) days prior to any expiration date we send notice to the City of Columbia by Registered Mail that we elect not to renew this Letter of Credit for any such additional period.

This Bank agrees with you that your drafts under and in strict compliance with the terms of this letter of credit will be duly honored if property presented to this Bank before the above expiration date.

Sincerely,

(Bank officer to sign).

OWNER AFFIDAVIT
CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE

I/we, David M. Cummings
(Print Name(s) in Full)

being duly sworn, depose and say(s) that I/we am/are the owner(s) of the property described as:

Tax Map 113, Parcel 80.50
(Property Parcel/Tax ID Number)

and located at:

2643 Pulaski Hwy, Columbia, TN 38401
(Street Address)

am fully aware of the request for development approval in the City of Columbia, Tennessee. Furthermore, I/we hereby appoint:

Wilson & Associates - Joey Wilson, Sean McGowan, Abigail Overstreet
(Print Name(s) in Full)

to act as my/our authorized agent on my/our behalf on all matters pertaining to the processing and obtaining the application with the exception of legal documents for recording purposes.

Signature

3020 Stansberry Lane, Suite 202
Property Owner Mailing Address

Franklin, TN 37069
City, State, & Zip

Subscribed and sworn to before me this 11 day of July, 2023.

Notary Public

My Commission Expires: 11-19-2025

PAIGE SELLERS
STATE OF TENNESSEE NOTARY PUBLIC
WILLIAMSON COUNTY
My Commission Expires 11-19-2025

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	2643 Pulaski Hwy, Columbia, TN 38401		
	TAX MAP: 113	GROUP:	PARCEL: 80.50
SUMMARY OF NATURE OF REQUEST AND WORK	The purpose of this plat is to create 27 single-family residential lots and 3 open spaces.		

DATE OF PRE-APPLICATION CONFERENCE	6/7/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Preliminary Plat ☑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) Hillcrest Village - Phase 1A ❑ Total Number of Lots 30 ❑ Total acreage 14.3

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Abigail Overstreet	PHONE	615-749-0740
ADDRESS	108 Beasley Dr, Franklin, TN 37064	EMAIL	aoverstreet@wilsonpc.com

PROPERTY OWNER NAME	M/I Homes of Nashville, LLC.	PHONE	(919)763-4630
ADDRESS	3020 Stansberry Ln. St. 202, Franklin TN 37069	EMAIL	EJordon@mihomes.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Abigail Overstreet	Abigail Overstreet	9/25/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
M/I Homes of Nashville, LLC.	Dave Cumming	9/25/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

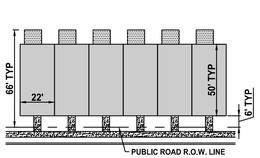
DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

LOTS 1-3 PARKING SUMMARY										
LOT	OFFICE SF	PARKING SPACE REQ'D (1/200 SF)	RETAIL SF	PARKING SPACE REQ'D (1/500 SF)	RESTAURANT SF	PARKING SPACE REQ'D (1/100 SF)	SECOND FLOOR RESIDENTIAL UNITS	PARKING SPACE REQ'D (1.5 PER UNIT)	STREET PARKING PROVIDED	OFFSTREET PARKING PROVIDED
1	5,000	25							6	20
2			3,600	8	2,400	24	5	8	9	31
3			3,600	8	1,200	12	4	6	12	20
TOTAL	5,000	25	7200	16	3600	36	9	14	27	71

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	121.67'	125.00'	55°46'17"	S62°44'08"W	116.93'
C2	24.69'	90.00'	15°43'11"	S82°45'42"W	24.61'
C3	135.29'	100.00'	48°26'52"	S59°04'26"W	131.30'
C4	62.91'	90.00'	40°02'57"	S54°52'33"W	61.64'
C5	76.57'	200.00'	20°13'00"	S24°44'38"W	76.29'
C6	24.66'	165.00'	8°33'42"	S18°54'51"W	24.63'
C7	83.92'	235.00'	20°13'00"	S24°44'38"W	82.49'
C8	39.27'	25.00'	90°00'00"	S13°39'08"E	35.36'
C9	44.30'	25.00'	101°31'11"	S74°51'21"W	38.76'
C10	142.37'	125.00'	65°15'26"	N22°31'18"W	134.80'
C11	27.32'	100.00'	9°47'03"	N35°15'29"W	27.29'

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C12	154.91'	166.00'	53°28'23"	N17°23'46"W	149.35'
C13	102.51'	90.00'	65°15'26"	N22°31'18"W	97.05'
C14	1.77'	206.00'	0°30'29"	N10°21'46"E	1.77'
C15	2.08'	235.00'	0°30'29"	N10°21'46"E	2.08'
C16	1.48'	165.00'	0°30'29"	N10°21'46"E	1.48'
C17	205.12'	125.00'	94°01'06"	N57°37'27"E	182.87'
C18	262.53'	166.00'	94°01'06"	N57°37'27"E	234.67'
C19	147.88'	90.00'	94°01'06"	N57°37'27"E	131.96'
C20	39.27'	25.00'	90°00'00"	S39°22'00"E	35.36'
C21	39.27'	25.00'	90°00'00"	S59°38'00"W	35.36'

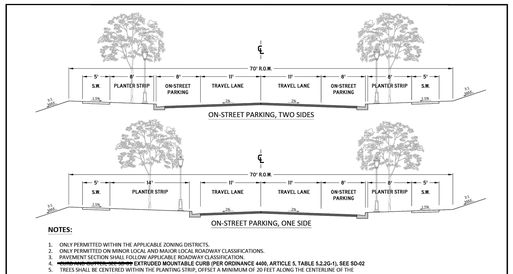


TYPICAL
TOWNHOME LOT LAYOUT

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

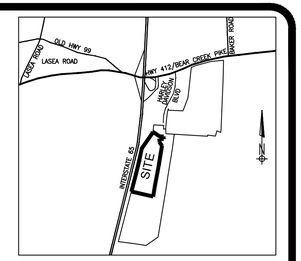


NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. ~~CONCRETE CURB~~ EXTRUDED MOUNTABLE CURB (PER ORDINANCE 4400, ARTICLE 5, TABLE 5.2.2G-1), SEE SD-02
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

PUBLIC ROADWAY DETAIL
NOT TO SCALE

CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DS-03



VICINITY MAP
SCALE: 1" = 2000'

LEGEND

- EXISTING SANITARY SEWER
- SANITARY SEWER — 8"SA
- WATER LINE — W — W
- SANITARY SEWER MANHOLE
- FIRE HYDRANT ASSEMBLY
- WATER VALVE
- STOP SIGN

PURPOSE OF SUBMITTAL - TO OBTAIN PRELIMINARY PLAT APPROVAL FOR MIXED USE DEVELOPMENT ON APPROXIMATELY 20.90 ACRES PORTION OF PARCELS 2.00 & 2.01 ON TAX MAP 93 UNDER CD-4 ZONING.

PROPERTY OWNER:
CHR LAND, LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
TAX MAP 93, PARCELS 2.00 & 2.01

APPLICANT:
TKC ARCHITECTURE AND ENGINEERING LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
615.617.7477
COLE@TKC-AE.COM

NOTE:

ALL ROADS SHOWN ARE PUBLIC ROADS.

ALL ROAD NAMES TO BE APPROVED BY E-911.

TOWNHOMES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE 2018 IRC.

THIS PROPERTY IS LOCATED ON F.E.M.A. FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 47119C0195E WHICH HAS NOT BEEN PRINTED FOR THIS LOCATION.

TOWNHOME DENSITY		
UNITS	ACRES	UNITS/AC.
98	12.65	7.75

TOWNHOME PARKING SUMMARY		
TYPE UNIT	# UNITS	SURFACE PARKING PROVIDED
22'X50' (NO CAR GARAGE)	98	195
TOTAL PARKING PROVIDED ---------- 195		
TOTAL PARKING REQUIRED ---------- 98 X 1.5 = 147		

TOWNHOME OPEN SPACE SUMMARY
PRIVATE YARD SPACE PROVIDED: 100 SF / UNIT = 100 X 98 = 9,800 SF = 0.22 ACRES

Preliminary Plat
Mixed Use Development

COLUMBIA, TENNESSEE
MAURY COUNTY
NOVEMBER 17, 2023

COLE O. NEWTON
LICENSED PROFESSIONAL ENGINEER
STATE OF TENNESSEE
11/15/2023

NOT FOR CONSTRUCTION
DRAWING FOR PRELIMINARY REVIEW ONLY

TKC
ARCHITECTURE
INTERIORS
CIVIL SITE

818 S. MAIN STREET, COLUMBIA, TN 38401 | 615.617.7477 | WWW.TKC-AE.COM



CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	121.67'	125.00'	55°46'11"	S62°44'08"W	116.93'
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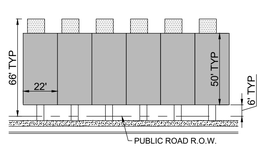
LOCATION MAP
SCALE: 1" = 2000'

N

GRAPHIC SCALE
(IN FEET)
0 50 100
SCALE: 1" = 50'

LOTS 1-3 PARKING SUMMARY

LOT	OFFICE SF	PARKING SPACE REQ'D (1/200 SF)	RETAIL SF	PARKING SPACE REQ'D (1/500 SF)	RESTAURANT SF	PARKING SPACE REQ'D (1/100 SF)	SECOND FLOOR RESIDENTIAL UNITS	PARKING SPACE REQ'D (1.5 PER UNIT)	STREET PARKING PROVIDED	OFFSTREET PARKING PROVIDED
1	5,000	25							6	20
2			3,600	8	2,400	24	5	8	9	31
3			3,600	8	1,200	12	4	6	12	20
TOTAL	5,000	25	7200	16	3600	36	9	14	27	71



TYPICAL TOWNHOME LOT LAYOUT

TOWNHOME DENSITY		
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TOWNHOME PARKING SUMMARY		
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TOTAL PARKING REQUIRED ——— 98 X 1.5 = 147		

TOWNHOME OPEN SPACE SUMMARY
PRIVATE YARD SPACE PROVIDED: 100 SF / UNIT = 100 X 98 = 9,800 SF = 0.22 ACRES

NOTES:
1. THIS IS A PRELIMINARY SITE PLAN. A FINAL SITE PLAN WILL BE SUBMITTED UPON PRELIMINARY PLAT APPROVAL.
2. THIS PLAN FOLLOWS THE DESIGN AND FACADE STANDARDS OF TABLE 4.3.1-D (P.78-85) AND TABLE 4.3.8.B (P. 212) OF THE CITY ZONING ORDINANCE 4400. CONFORMITY WILL BE CONFIRMED AT BUILDING PERMIT.
3. LIGHTING AT FRONTAGE LINES WILL NOT EXCEED 1.0 FOOT CANDLE. ON-SITE OUTDOOR LIGHTING WILL CONFORM TO THE STANDARDS OF 4.3.17.B (P. 297) OF THE ZONING ORDINANCE 4400. CONFORMITY WILL BE CONFIRMED AT BUILDING PERMIT.

PROPERTY OWNER:
CHR LAND, LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
615.812.2147
TAX MAP 93, PARCELS 2.00 & 2.01

APPLICANT:
TKC ARCHITECTURE AND ENGINEERING LLC
818 S. MAIN STREET
COLUMBIA TN 38401
615.617.7477
COLE@TKC-AE.COM

THIS PROPERTY IS LOCATED ON F.E.M.A. FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 47119C0195E WHICH HAS NOT BEEN PRINTED FOR THIS LOCATION.

UTILITY NOTES:

- WATER SERVICES TO BE PROVIDED BY COLUMBIA POWER AND WATER SYSTEMS (CPWS)
- WASTEWATER SERVICE TO BE PROVIDED BY CITY OF COLUMBIA
- ELECTRICAL SERVICE TO BE PROVIDED BY DUCK RIVER ELECTRIC MEMBERSHIP CORPORATION
  - •• FINAL UTILITY DESIGN WILL BE DONE DURING THE FINAL SITE PLAN PHASE

STORMWATER NOTES:

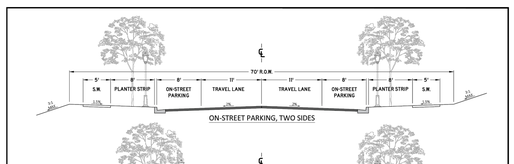
- STORMWATER FOR THE SITE WILL BE MANAGED THROUGH REGIONAL DETENTION IN THE PROPOSED POND JUST NORTH AND SOUTH OF THE SITE

FIRE PROTECTION NOTES:

- FIRE TRUCK ACCESS IS PROVIDED.

LANDSCAPE NOTES:

- LANDSCAPE TO BE PROVIDED WITH THE FINAL SITE PLAN SUBMITTAL.
  - •• THE FINAL DESIGN WITH SPECIES TYPE AND SPACING PER THE ZONING CODE WILL BE DONE WITH FINAL SITE DESIGN.



NOTES:
1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. ~~CURB SHALL BE CAST IN PLACE~~ EXTRUDED MOUNTABLE CURB (PER ORDINANCE 4400, ARTICLE 5, TABLE 5.2.2G-1), SEE SD-02
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

PUBLIC ROADWAY DETAIL
NOT TO SCALE

CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DS-03

TKC
ARCHITECTURE
INTERIORS
CIVIL SITE
818 S. MAIN STREET, COLUMBIA, TN 38401 | 615.617.7477 | WWW.TKC-AE.COM

CONSULTANTS:

PROJECT TITLE:
MIXED USE DEVELOPEMENT
HARLEY DAVIDSON BOULEVARD
COLUMBIA, TN

COLE O. NEWTON
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
STATE OF TENNESSEE
11/17/2023

NOT FOR CONSTRUCTION
DRAWING FOR PRELIMINARY REVIEW ONLY

Revision		
No.	Date	Description

THIS DRAWING IS THE PROPERTY OF TKC ARCHITECTURE & ENGINEERING (TKC A&E). ANY UNAUTHORIZED REPRODUCTION OR USAGE WITHOUT THE PRIOR WRITTEN CONSENT OF TKC A&E IS PROHIBITED.

SHEET TITLE:
SITE DEVELOPMENT PLAN

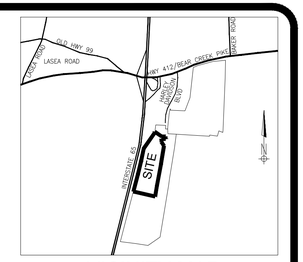
-
DATE: 11/17/2023
DRAWN BY: TS
PROJECT NO.: 2336

SHEET NO.:
10F1

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.



VICINITY MAP
SCALE: 1" = 2000'

BEAR CREEK GLEN TOWNHOMES DEVELOPMENT

HARLEY DAVIDSON BLVD

TOWNHOMES AT PUMPKIN CREEK DEVELOPMENT

27.15 SQ. FT. R.O.W. DEDICATION

EVINOLE ROAD (R.O.W. VARIES)

PUBLIC R.O.W. 4.94 ACRES

LOT 3 0.83 ACRES

TOWNHOMES AT PUMPKIN CREEK DEVELOPMENT

STORMWATER DETENTION / AREA 1

1-STORY OFFICE BUILDING 58' X 95'

2-STORY RETAIL / RESIDENTIAL 60' X 85'

LOT 1 1.10 ACRES

EXISTING HARLEY-DAVIDSON OF COLUMBIA

MAIL KIOSK

2-STORY RETAIL / RESIDENTIAL 60' X 105'

LOT 2 1.38 ACRES

COLUMBIA LEON CO., INC. TAX MAP 93, PARCEL 1.00 ZONED A-2 (MAURY COUNTY)

PROPOSED WALKING TRAIL

TOWNHOME LOT 12.65 ACRES

PROPOSED GRAVITY SANITARY SEWER

TOWNHOMES AT PUMPKIN CREEK DEVELOPMENT

EXISTING 20' AT&T EASEMENT

PROPOSED DUMPSTER AREA (TYP)

INTERSTATE 65

- EXISTING TREE CANOPY COVER 17.54 ACRES

- TREE CANOPY RETAINED 2.70 ACRES (15% OF EXISTING)

NOTE: CANOPY TREES ARE NOT TO BE DISTURBED AND THE DETAIL OF THE AREA WILL BE INCLUDED IN THE INDIVIDUAL LANDSCAPE AND DEVELOPMENT PLAN FOR THE PROJECT.

SITE DATA

SITE AREA: 20.90 ACRES

EXISTING ZONING: CD-4

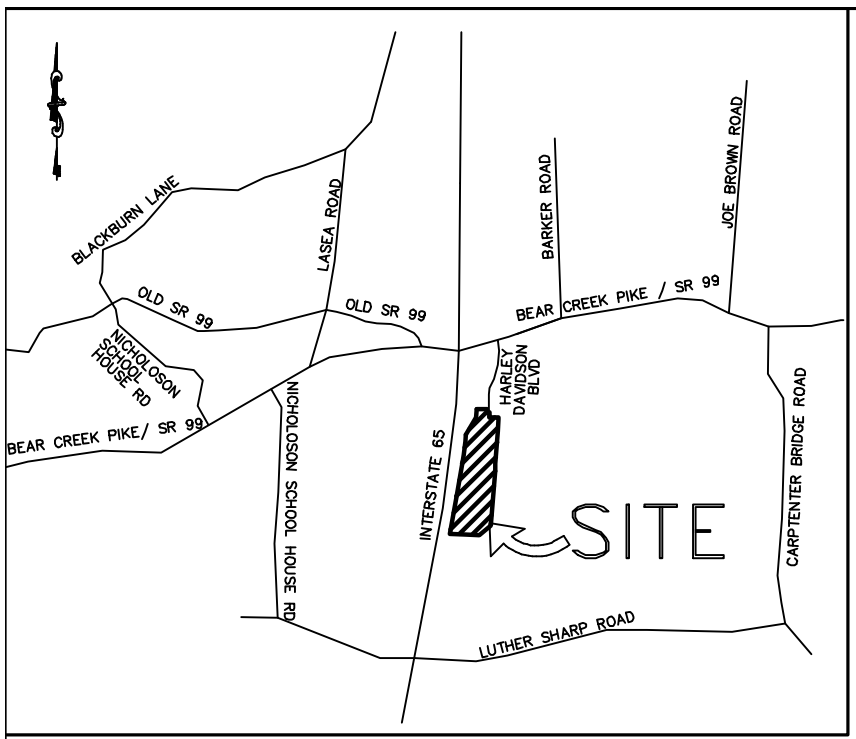
PROPERTY OWNER:
CHR LAND, LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
TAX MAP 93, PARCELS 2.00 & 2.01

THIS PROPERTY IS LOCATED ON F.E.M.A. FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 47119C0195E WHICH HAS NOT BEEN PRINTED FOR THIS LOCATION.

Tree Preservation Plan
Mixed Use Development

COLUMBIA, TENNESSEE
MAURY COUNTY
NOVEMBER 17, 2023

EXHIBIT "A"



VICINITY MAP
NOT TO SCALE

STANDARD LEGEND

- IRF = IRON ROD W/CAP STAMPED "H.H. SURVEY" (FOUND)
- IRS = IRON ROD W/CAP STAMPED "H.H. SURVEY" (SET)
- ——x——x——x—— = FENCE LINE
- P.O.B. = POINT OF BEGINNING

MARKETING GROUP 1, LLC
TAX MAP 93, PARCEL 1.01
BK R2008, PG 875
(R.O.M.C., TN)

HARLEY DAVIDSON BLVD

CHR LAND, LLC
TAX MAP 93A, GRP A,
PARCEL 27.00
BK R2704, PG 868
BEAR CREEK GLEN
PHASE 1
PB 23, PG 144
(R.O.M.C., TN)

P.O.B.

S87°11'22"E 280.53'

20' WIDE ACCESS EASEMENT FOR EXISTING BILLBOARD ON PARCEL 1.00

N07°11'35"E 219.52'

L1 C1 L2 L3 C2 L4 L5

COLUMBIA NEON CO., INC
TAX MAP 93, PARCEL 1.00
BK 643, PG 757
(R.O.M.C., TN)

1/2" IRON ROD FOUND

1/2" IRON ROD FOUND WITH CAP ESPEY HUSTON & ASSOC.

N34°51'00"E 538.69'

335.10' S07°06'29"W

Δ =3°26'59"
R=12,084.38'
L=727.62'
CHD BRG=N12°44'13"E
CHD=727.51'

853.02' S09°17'35"W

DMLG INVESTMENTS, GP
TAX MAP 93, PARCEL 3.00
BK R2805, PAGE 779
(R.O.M.C., TN)

CONC. R-O-W MON. (FOUND)

INTERSTATE I-65

906.27' N14°38'00"E

1/2" IRON ROD FOUND

199.82' S07°34'49"W

1/2" IRON ROD FOUND

LPG, LLC
TAX MAP 93, PARCEL 2.00
AND PARCEL 2.01
BOOK R2952, PAGE 973
(R.O.M.C., TN)

AREA=67.30 AC.±

CONC. R-O-W MON. (FOUND)

1473.68' S09°21'37"W

1051.73' N14°36'26"E

MARTIN L. GROOM, ETUX
TAX MAP 93, PARCEL 13.04
BK 1336, PAGE 174
(R.O.M.C., TN)

1/2" IRON ROD FOUND

409.75' S55°26'49"W

IRF

431.41' N82°29'07"W

348.48' N81°31'56"W

1/2" IRON ROD W/CAP FOUND – ILLEGIBLE

NAIL FOUND (IN BASE OF TREE)

TSFCS

LAMINZA DERRYBERRY
TAX MAP 93, PARCEL 14.00
BK R2092, PAGE 341
(R.O.M.C., TN)

0' 150' 300' 600'

SCALE: 1" = 300'

BOUNDARY ANNOTATION

CURVE	DELTA ANGLE	RADIUS	ARC LENGTH
C1	7°56'05"	530.01'	73.40'
C2	11°21'07"	180.00'	35.66'

CURVE	CHORD BEARING	CHORD LENGTH
C1	S02°08'16"W	73.34'
C2	S03°50'47"W	35.60'

LINE	BEARING	DISTANCE
L1	S06°06'17"W	29.24'
L2	N88°10'14"E	60.00'
L3	S01°51'26"E	99.31'
L4	S86°34'05"E	238.09'
L5	S08°40'50"W	50.28'

DRAWN BY: MAF

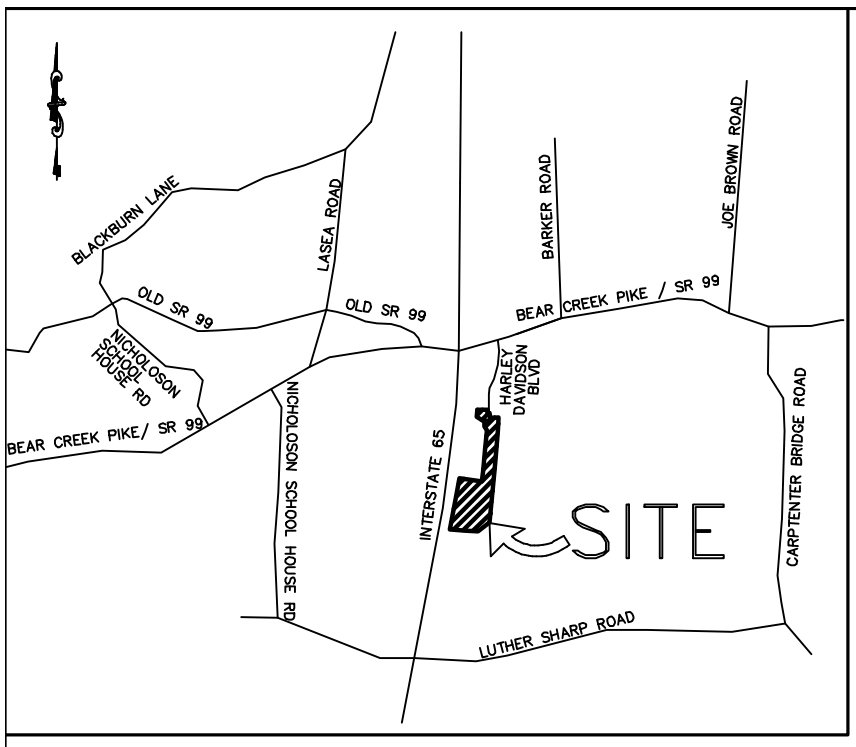
EXHIBIT "A" — *67.30 ACRE TRACT*

OWNER: LPG, LLC
PROPERTY ADDRESS: INTERSTATE I-65, COLUMBIA, MAURY COUNTY, TN
TAX MAP 93, PARCEL 2.00 AND PARCEL 2.01
RECORD: BOOK R2952, PAGE 973, R.O.M.C., TN

H&H LAND SURVEYING, INC.
612 A FITZHUGH BLVD. SMYRNA, TENNESSEE 37167
PHONE: (615) 831-0756 handhland@bellsouth.net

JOB: 2020-0317 | AREA: 2,931,534 SQ.FT. OR 67.30 AC.± | DRAWING SCALE: 1"=300' | DATE: NOVEMBER 9, 2023

EXHIBIT "A"



VICINITY MAP
NOT TO SCALE

STANDARD LEGEND

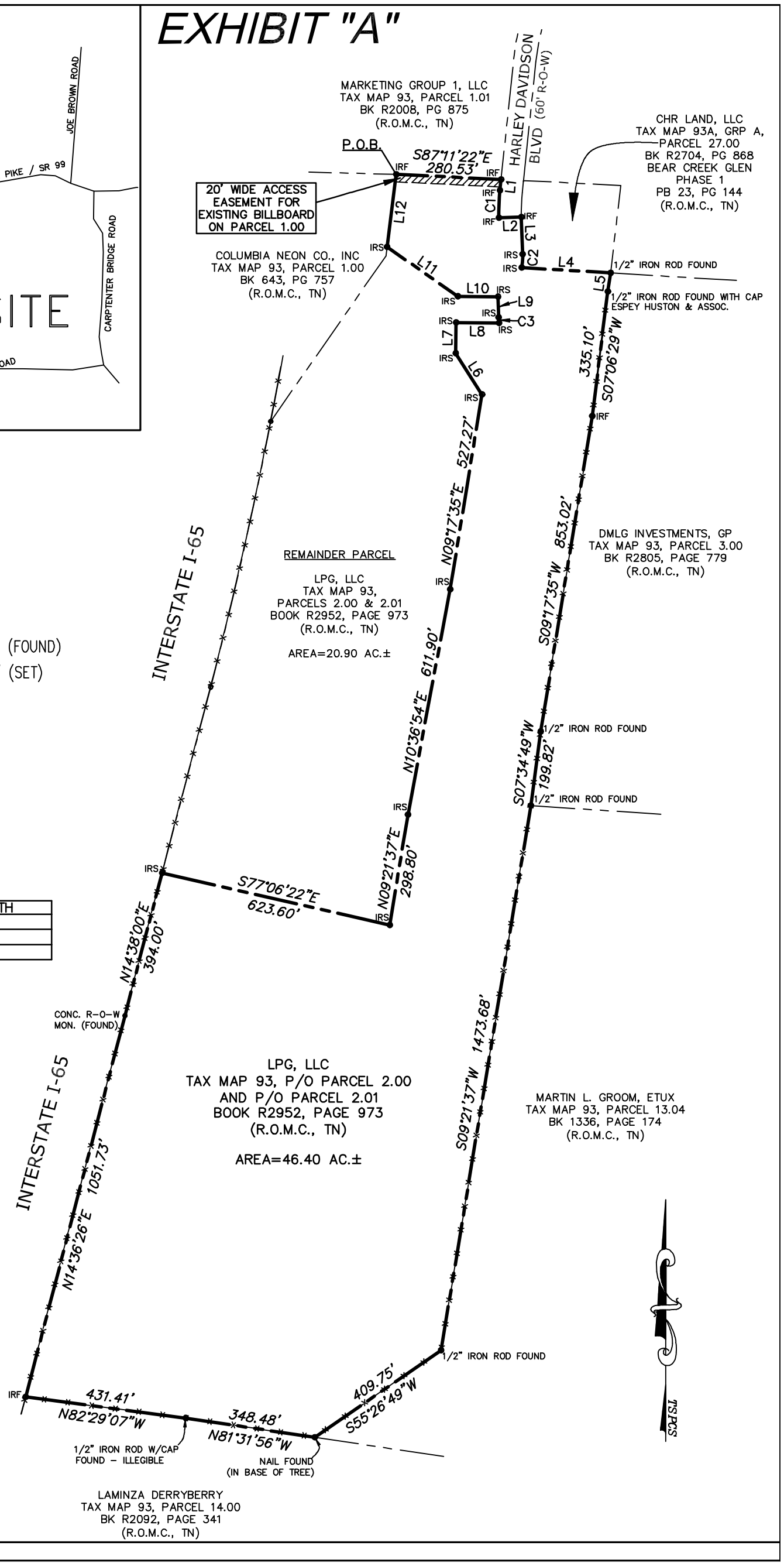
- IRF = IRON ROD W/CAP STAMPED "H.H. SURVEY" (FOUND)
- IRS = IRON ROD W/CAP STAMPED "H.H. SURVEY" (SET)
- ——x——x——x—— = FENCE LINE
- P.O.B. = POINT OF BEGINNING

BOUNDARY ANNOTATION

CURVE	DELTA ANGLE	RADIUS	ARC LENGTH
C1	7°56'05"	530.01'	73.40'
C2	11°21'07"	180.00'	35.66'
C3	5°24'51"	157.50'	14.88'

CURVE	CHORD BEARING	CHORD LENGTH
C1	S02°08'16"W	73.34'
C2	S03°50'47"W	35.60'
C3	N04°08'37"W	14.88'

LINE	BEARING	DISTANCE
L1	S06°06'17"W	29.24'
L2	N88°10'14"E	60.00'
L3	S01°51'26"E	99.31'
L4	S86°34'05"E	238.09'
L5	S08°40'50"W	50.28'
L6	N32°31'42"W	130.51'
L7	N00°37'17"E	82.07'
L8	S89°22'43"E	114.59'
L9	N01°26'11"W	55.21'
L10	N89°22'43"W	107.39'
L11	N55°09'00"W	230.49'
L12	N07°11'35"E	195.47'



0' 150' 300' 600'

SCALE: 1" = 300'

DRAWN BY: MAF

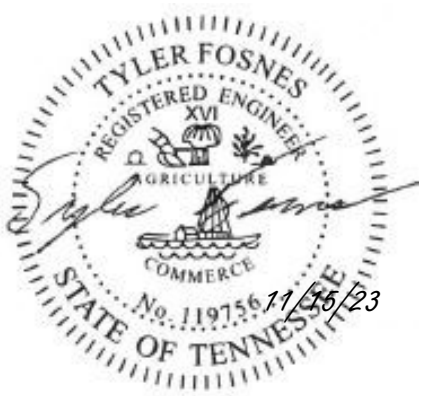
EXHIBIT "A" — 46.40 ACRE TRACT

OWNER: LPG, LLC
PROPERTY ADDRESS: INTERSTATE I-65, COLUMBIA, MAURY COUNTY, TN
TAX MAP 93, P/O PARCEL 2.00 AND P/O PARCEL 2.01
RECORD: BOOK R2952, PAGE 973, R.O.M.C., TN

H&H LAND SURVEYING, INC.
612 A FITZHUGH BLVD. SMYRNA, TENNESSEE 37167
PHONE: (615) 831-0756 handhland@bellsouth.net

JOB: 2020-0317 | AREA: 2,021,331 SQ.FT. OR 46.40 AC.± | DRAWING SCALE: 1"=300' | DATE: NOVEMBER 13, 2023

MEMORANDUM



TO:	City of Columbia
FROM:	Tyler Fosnes, PE, KCI Technologies, Inc.
DATE:	November 15, 2023
SUBJECT:	I-65 and Bear Creek Pike – Trip Generation Comparison and Capacity Analysis Memo

The I-65 and Bear Creek Pike development is located along Bear Creek Pike (SR 99) in Columbia, Tennessee. In January 2022, KCI Technologies, Inc. conducted an updated a traffic impact study for the proposed development. Phase 2 included 189 single-family residential units and 125 multi-family residential units.

In April 2023, the development team proposed changes to Phase 2 of the approved development plan to include 300 multi-family residential units and 5,500 square feet of office space. A Trip Generation Comparison Memo was prepared and submitted to the City of Columbia to detail the effects of these changes.

The development team is now proposing additional updates to Phase 2 to include 408 multi-family residential units (398 townhomes and 10 apartment units), 5,510 square feet of office space, 7,600 square feet of retail space, and 3,800 square feet of restaurant space. The current site plan is attached at the end of the memo. This memo provides a trip generation comparison and updated capacity analysis associated with the changes between the approved development plan and the proposed development plan.

Trip Generation Comparison

The approved and proposed trip generation for the project site were calculated in order to determine the impact of the proposed changes to the development. When the traffic impact study was completed for the development in January 2022, ITE's *Trip Generation*, 10th Edition was utilized. Since then, however, ITE has updated the equations used to calculate trip generation in order to better reflect the changes in trip generation over time. In order to accurately compare the approved and proposed land uses, factors for the trip generation were taken from ITE's *Trip Generation*, 11th Edition, for all scenarios. The results of those calculations are presented in Table 1.

TABLE 1. DEVELOPMENT TRIP GENERATION

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK		PM PEAK	
			Enter	Exit	Enter	Exit
JANUARY 2022 APPROVED						
Single Family Detached Housing (LUC 210)	189 units	1,812	35	98	114	67
Multi-Family Housing (Low-Rise) (LUC 220)	125 units	877	12	38	47	27
JANUARY 2022 TIS - NEW TRIPS		**2,689**	**47**	**136**	**161**	**94**
			183		**255**	
APRIL 2023 PROPOSED						
Multi-Family Housing (Low-Rise) (LUC 220)	300 units	1,385	28	92	71	46
Office (LUC 710)	5,500 s.f.	60	7	1	1	7
APRIL 2023 PROPOSED – NEW TRIPS		**1,445**	**35**	**93**	**72**	**53**
			128		**125**	
NOVEMBER 2023 PROPOSED						
Multi-Family Housing (Low-Rise) (LUC 220)	408 units	2,691	39	124	123	73
Office (LUC 710)	5,510 s.f.	60	7	1	1	7
Strip Retail Plaza (LUC 822)	7,600 s.f.	550	11	7	25	25
High-Turnover (Sit-Down) Restaurant (LUC 932)	3,800 s.f.	407	20	16	21	13
NOVEMBER 2023 PROPOSED – NEW TRIPS		**3,708**	**77**	**148**	**170**	**118**
			225		**288**	
DIFFERENCE BETWEEN JANUARY 2022 APPROVED AND NOVEMBER 2023 PROPOSED		***+1,019***	***+30***	***+12***	***+9***	***+24***
			+42		***+33***	

Source: *Trip Generation*, 11th Edition

As shown in Table 1, the traffic generated by the proposed development scenario is expected to be more than the traffic generated by the approved development scenario from the January 2022 TIS. Trip generation calculations are attached at the end of the memo.

The additional trips generated by the changes in Phase 2 of the proposed development were assigned throughout the roadway network using the same distribution as the January 2022 TIS. The distribution figure from the January 2022 TIS as well as the updated projected peak hour traffic volume figure is attached at the end of the memo.

Capacity / Level of Service Analyses

To determine the operation of the study intersections with the new proposed site plan, capacity analyses were performed for the AM and PM peak hours. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, 6th Edition. The capacity analyses result in the determination of a Level of Service (LOS) for an intersection. The LOS is a concept used to describe how well an intersection or roadway operates. LOS A is the best, while LOS F is the worst. LOS D is typically considered as the minimum acceptable LOS for an intersection in an urbanized area. For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection. Table 2 presents the descriptions of LOS for signalized and unsignalized intersections.

TABLE 2. DESCRIPTIONS OF LEVEL OF SERVICE

LEVEL OF SERVICE	DESCRIPTION	UNSIGNALIZED CONTROL DELAY (sec/veh)	SIGNALIZED CONTROL DELAY (sec/veh)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	>10 and ≤ 15	>10 and ≤ 20
C	Average traffic delay	>15 and ≤ 25	>20 and ≤ 35
D	Long traffic delay	>25 and ≤ 35	>35 and ≤ 55
E	Very long traffic delay	>35 and ≤ 50	>55 and ≤ 80
F	Extreme traffic delay	> 50.0	> 80.0

Source: *Highway Capacity Manual*, 6th Edition

The results of the capacity analyses for the January 2022 scenario and the current proposed scenario at the study intersections are presented in Tables 3A and 3B. As shown, all intersections and critical movements operate at the same levels of service as under the January 2022 scenario in both the AM and PM peak hours. Furthermore, the change in average delay is minimal. Capacity analyses worksheets are attached at the end of the memo.

TABLE 9A. PROJECTED AM PEAK HOUR LEVELS OF SERVICE (PHASE 2)

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)	
		January 2022	November 2023
Bear Creek Pike and Harley Davidson Boulevard	Northbound Left-Turn	E (45.3)	E (46.1)
	Northbound Through/Right	B (12.1)	B (12.1)
	Eastbound Left-Turn	A (8.9)	A (8.9)
	Westbound Left-Turn	A (7.9)	A (8.0)
	Southbound Approach	B (12.5)	B (12.6)
Bear Creek Pike and Harley Davidson Boulevard **(signalized)**	**Overall Intersection**	**D (36.7)**	**D (36.7)**
	Eastbound Approach	**D (36.7)**	**D (36.6)**
	Westbound Approach	**D (51.0)**	**D (50.9)**
	Northbound Approach	**A (9.3)**	**A (9.3)**
	Southbound Approach	**B (13.5)**	**B (13.4)**
Bear Creek Pike and I-65 Northbound On/Off-Ramps *(signalized)* **(with westbound right-turn lane)**	Overall Intersection	C (29.1) **C (29.1)**	C (28.5) **C (28.5)**
	Eastbound Approach	C (28.8) **C (28.8)**	C (27.9) **C (27.9)**
	Westbound Approach	C (23.8) **C (23.8)**	C (23.8) **C (23.8)**
	Northbound Approach	E (64.1) **E (64.1)**	E (64.1) **E (64.1)**
Bear Creek Pike and I-65 Southbound On/Off-Ramps *(signalized)*	Overall Intersection	D (48.6)	D (49.7)
	Eastbound Approach	E (57.7)	E (59.2)
	Westbound Approach	D (50.4)	D (52.1)
	Southbound Approach	B (13.7)	B (13.7)
Bear Creek Pike and Halifax Drive	Eastbound Left-Turn	D (34.7)	D (34.7)
	Southbound Approach	F (>300.0)	F (>300.0)
Bear Creek Pike and Old Highway 99	Eastbound Left-Turn	A (0.0)	A (0.0)
	Southbound Approach	D (33.4)	D (34.0)
Bear Creek Pike and Driveway A	Northbound Left-Turn	C (17.4)	C (17.4)
	Northbound Right-Turn	A (9.7)	A (9.7)
	Westbound Left-Turn	A (7.8)	A (7.8)
"Projected with Improvements" Scenario Results			

TABLE 9B. PROJECTED PM PEAK HOUR LEVELS OF SERVICE (PHASE 2)

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)	
		January 2022	November 2023
Bear Creek Pike and Harley Davidson Boulevard	Northbound Left-Turn	F (63.0)	F (81.1)
	Northbound Through/Right	B (12.9)	B (12.8)
	Eastbound Left-Turn	A (8.3)	A (8.3)
	Westbound Left-Turn	A (9.5)	A (9.5)
	Southbound Approach	C (18.2)	C (18.4)
Bear Creek Pike and Harley Davidson Boulevard **(signalized)**	**Overall Intersection**	**C (33.8)**	**C (33.5)**
	Eastbound Approach	**D (36.9)**	**D (36.8)**
	Westbound Approach	**D (38.8)**	**D (38.7)**
	Northbound Approach	**B (12.2)**	**B (12.4)**
	Southbound Approach	**B (16.3)**	**B (16.8)**
Bear Creek Pike and I-65 Northbound On/Off-Ramps *(signalized)* **(with westbound right-turn lane)**	Overall Intersection	C (20.4) **C (20.4)**	C (20.3) **C (20.3)**
	Eastbound Approach	B (15.7) **B (15.7)**	B (15.6) **B (15.6)**
	Westbound Approach	B (15.0) **B (15.0)**	B (15.0) **B (15.0)**
	Northbound Approach	E (61.1) **E (61.1)**	E (61.1) **E (61.1)**
Bear Creek Pike and I-65 Southbound On/Off-Ramps *(signalized)*	Overall Intersection	D (35.8)	D (35.9)
	Eastbound Approach	D (42.4)	D (42.5)
	Westbound Approach	D (36.1)	D (36.5)
	Southbound Approach	C (29.7)	C (29.7)
Bear Creek Pike and Halifax Drive	Eastbound Left-Turn	F (54.8)	F (55.5)
	Southbound Approach	F (224.1)	F (235.8)
Bear Creek Pike and Old Highway 99	Eastbound Left-Turn	B (12.1)	B (12.2)
	Southbound Approach	E (36.0)	E (36.3)
Bear Creek Pike and Site Access A	Northbound Left-Turn	C (18.4)	C (18.5)
	Northbound Right-Turn	B (11.4)	B (11.4)
	Westbound Left-Turn	A (8.6)	A (8.6)
"Projected with Improvements" Scenario Results			

Conclusions

The I-65 and Bear Creek Pike development is located along Bear Creek Pike (SR 99) in Columbia, Tennessee. In January 2022, KCI Technologies, Inc. conducted an updated a traffic impact study for the proposed development. Phase 2 included 189 single-family residential units and 125 multi-family residential units.

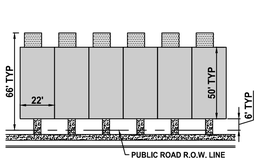
Since then, the development team has proposed changes to Phase 2 of the proposed development to include 408 multi-family residential units (398 townhomes and 10 apartment units), 5,510 square feet of office space, 7,600 square feet of retail space, and 3,800 square feet of restaurant space. This memo provided a trip generation comparison and updated capacity analysis associated with the changes between the approved development plan and the proposed development plan.

The traffic generated by the proposed development scenario is expected to be more than the traffic generated by the approved development scenario from the January 2022 TIS; however, based on the analysis in this memo, the traffic impacts of the updated site plan are expected to cause minimal changes in operations in comparison to the original plan. Therefore, the recommendations included in the January 2022 TIS remain valid. No further improvements are recommended in conjunction with the proposed development.

LOTS 1-3 PARKING SUMMARY										
LOT	OFFICE SF	PARKING SPACE REQ'D (1/200 SF)	RETAIL SF	PARKING SPACE REQ'D (1/500 SF)	RESTAURANT SF	PARKING SPACE REQ'D (1/100 SF)	SECOND FLOOR RESIDENTIAL UNITS	PARKING SPACE REQ'D (1.5 PER UNIT)	STREET PARKING PROVIDED	OFFSTREET PARKING PROVIDED
1	5,000	25							6	20
2			3,600	8	2,400	24	5	8	9	31
3			3,600	8	1,200	12	4	6	12	20
TOTAL	5,000	25	7200	16	3600	36	9	14	27	71

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	121.67'	125.00'	55°46'17"	S62°44'08"W	116.93'
C2	24.69'	90.00'	15°43'11"	S82°45'42"W	24.61'
C3	135.29'	169.00'	45°26'52"	S59°04'26"W	131.30'
C4	62.91'	90.00'	40°02'57"	S54°52'33"W	61.64'
C5	76.57'	209.00'	20°13'99"	S24°44'38"W	76.20'
C6	24.66'	165.00'	8°33'42"	S18°54'51"W	24.63'
C7	83.92'	235.00'	20°13'99"	S24°44'38"W	82.49'
C8	39.27'	25.00'	90°00'00"	S13°39'06"E	35.36'
C9	44.30'	25.00'	101°31'11"	S74°51'21"W	38.76'
C10	142.37'	125.00'	65°15'26"	N22°31'18"W	134.82'
C11	27.32'	169.00'	9°15'53"	N35°15'29"W	27.29'

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C12	154.91'	169.00'	52°32'23"	N17°37'46"W	149.50'
C13	102.51'	90.00'	65°15'26"	N22°31'18"W	97.05'
C14	1.77'	209.00'	0°30'29"	N10°21'40"E	1.77'
C15	2.08'	235.00'	0°30'29"	N10°21'40"E	2.08'
C16	1.46'	165.00'	0°30'29"	N10°21'40"E	1.46'
C17	205.12'	125.00'	94°01'06"	N57°37'27"E	182.87'
C18	262.33'	169.00'	94°01'06"	N57°37'27"E	234.07'
C19	147.88'	90.00'	94°01'06"	N57°37'27"E	131.66'
C20	39.27'	25.00'	90°00'00"	S39°22'00"E	35.36'
C21	39.27'	25.00'	90°00'00"	S59°38'00"W	35.36'

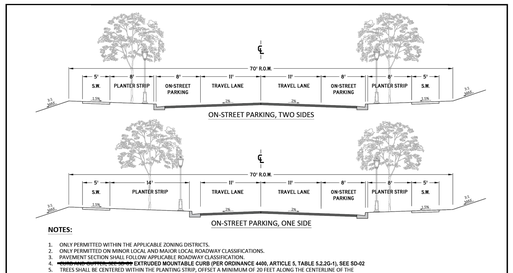


TYPICAL
TOWNHOME LOT LAYOUT

GRAPHIC SCALE

60 0 30 60

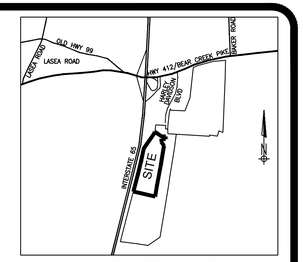
(IN FEET)
1 inch = 60 ft.



NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. EXTRUDED MOUNTABLE CURB (PER ORDINANCE 4400, ARTICLE 5, TABLE 5.2.2G-1), SEE SD-02
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

PUBLIC ROADWAY DETAIL
NOT TO SCALE



VICINITY MAP
SCALE: 1" = 2000'

CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION	CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD	DATE 6/9/2022
STANDARD DETAILS	(NTS)	DS-03

LEGEND

- EXISTING SANITARY SEWER
- SANITARY SEWER — 8"SA
- WATER LINE — W — W
- SANITARY SEWER MANHOLE
- FIRE HYDRANT ASSEMBLY
- WATER VALVE
- STOP SIGN

PURPOSE OF SUBMITTAL - TO OBTAIN PRELIMINARY PLAT APPROVAL FOR MIXED USE DELEOPMENT ON APPROXIMATELY 20.90 ACRES PORTION OF PARCELS 2.00 & 2.01 ON TAX MAP 93 UNDER CD-4 ZONING.

PROPERTY OWNER:
CHR LAND, LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
TAX MAP 93, PARCELS 2.00 & 2.01

APPLICANT:
TKC ARCHITECTURE AND ENGINEERING LLC
818 S. MAIN STREET
COLUMBIA, TN 38401
615.617.7477
COLE@TKC-AE.COM

NOTE:

ALL ROADS SHOWN ARE PUBLIC ROADS.

ALL ROAD NAMES TO BE APPROVED BY E-911.

TOWNHOMES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE 2018 IRC.

THIS PROPERTY IS LOCATED ON F.E.M.A. FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 47119C0195E WHICH HAS NOT BEEN PRINTED FOR THIS LOCATION.

TOWNHOME DENSITY		
UNITS	ACRES	UNITS/AC.
98	12.65	7.75

TOWNHOME PARKING SUMMARY		
TYPE UNIT	# UNITS	SURFACE PARKING PROVIDED
22'X50' (NO CAR GARAGE)	98	195
TOTAL PARKING PROVIDED ---------- 195 TOTAL PARKING REQUIRED ---------- 98 X 1.5 = 147		

TOWNHOME OPEN SPACE SUMMARY
PRIVATE YARD SPACE PROVIDED: 100 SF / UNIT = 100 X 98 = 9,800 SF = 0.22 ACRES

Preliminary Plat
Mixed Use Development
COLUMBIA, TENNESSEE
MAURY COUNTY
OCTOBER 19, 2023

COLE O. NEWTON
REGISTERED
AGRICULTURE
ENGINEER
NUMBER
115199
STATE OF TENNESSEE
10/19/2023

NOT FOR CONSTRUCTION
DRAWING FOR PRELIMINARY REVIEW ONLY

TKC ARCHITECTURE INTERIORS CIVIL SITE

818 S. MAIN STREET, COLUMBIA, TN 38401 | 615.617.7477 | WWW.TKC-AE.COM

TOTAL TRIP GENERATION

ITE CODE	LAND USE	# UNITS	UNIT TYPE	ADT	AM			PM		
					Enter	Exit	Total	Enter	Exit	Total
220.1	Multifamily Housing (Low-Rise) - Not Close to Rail Transit	408	welling Uni	2691	39	124	163	123	73	196
710	Office	5.51	k.s.f.	60	7	1	8	1	7	8
822	Strip Retail Plaza	7.6	k.s.f.	550	11	7	18	25	25	50
932	High-Turnover (Sit-Down) Restaurant	3.8	k.s.f.	407	20	16	36	21	13	34
			SUBTOTAL	**3708**	77	148	**225**	170	118	**288**
			TOTAL NEW TRIPS	**3708**	77	148	**225**	170	118	**288**

TRIP GENERATION

Multifamily Housing (Low-Rise) - Not Close to Rail Transit

220.1 ITE Land Code

408 Dwelling Units

Average Daily Traffic:

T = 6.41 * (X) + 75.31

T = 6.41 * (408) + 75.31

T = 2691

A.M. Peak Hour:

T = 0.40 * (X)

T = 0.40 * (408)

T = 163

Enter =	39	24%
Exit =	124	76%

P.M. Peak Hour:

T = 0.43 * (X) + 20.55

T = 0.43 * (408) + 20.55

T = 196

Enter =	123	63%
Exit =	73	37%

TRIP GENERATION

Office

710 ITE Land Code

5.51 k.s.f.

Average Daily Traffic:

T = 10.84 * (X)

T = 10.84 * (5.51)

T = 60

A.M. Peak Hour:

T = 1.52 * (X)

T = 1.52 * (5.51)

T = 8

Enter =	7	88%
Exit =	1	12%

P.M. Peak Hour:

T = 1.44 * (X)

T = 1.44 * (5.51)

T = 8

Enter =	1	17%
Exit =	7	83%

TRIP GENERATION

Strip Retail Plaza

822 ITE Land Code

7.6 k.s.f.

Average Daily Traffic:

T = 42.20 * (X) + 229.68

T = 42.20 * (7.6) + 229.68

T = 550

A.M. Peak Hour:

T = 2.36 * (X)

T = 2.36 * (7.6)

T = 18

Enter =	11	60%
Exit =	7	40%

P.M. Peak Hour:

T = 6.59 * (X)

T = 6.59 * (7.6)

T = 50

Enter =	25	50%
Exit =	25	50%

TRIP GENERATION

High-Turnover (Sit-Down) Restaurant

932 ITE Land Code

3.8 k.s.f.

Average Daily Traffic:

T = 107.20 * (X)

T = 107.20 * (3.8)

T = 407

A.M. Peak Hour:

T = 9.57 * (X)

T = 9.57 * (3.8)

T = 36

Enter =	20	55%
Exit =	16	45%

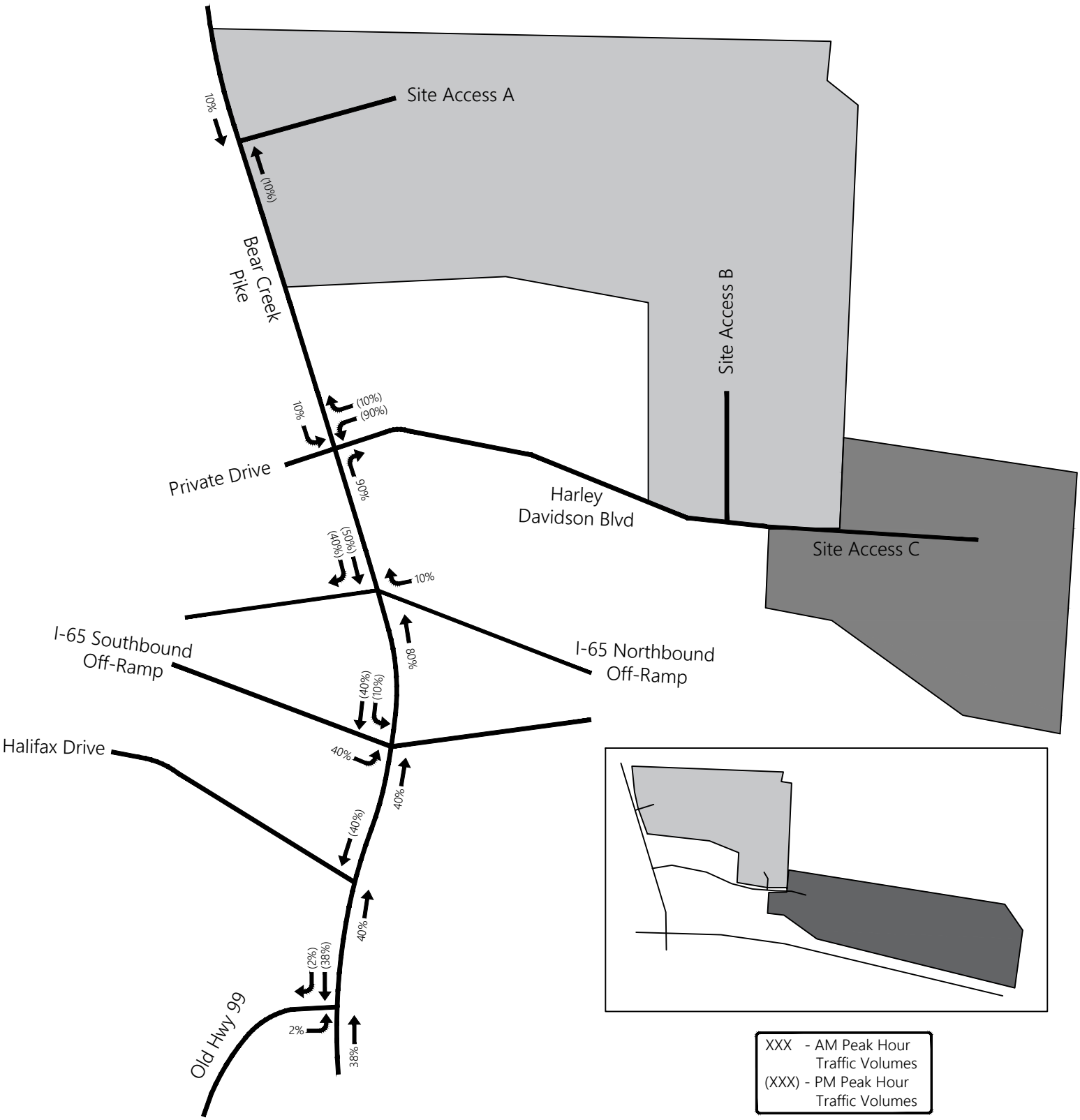
P.M. Peak Hour:

T = 9.05 * (X)

T = 9.05 * (3.8)

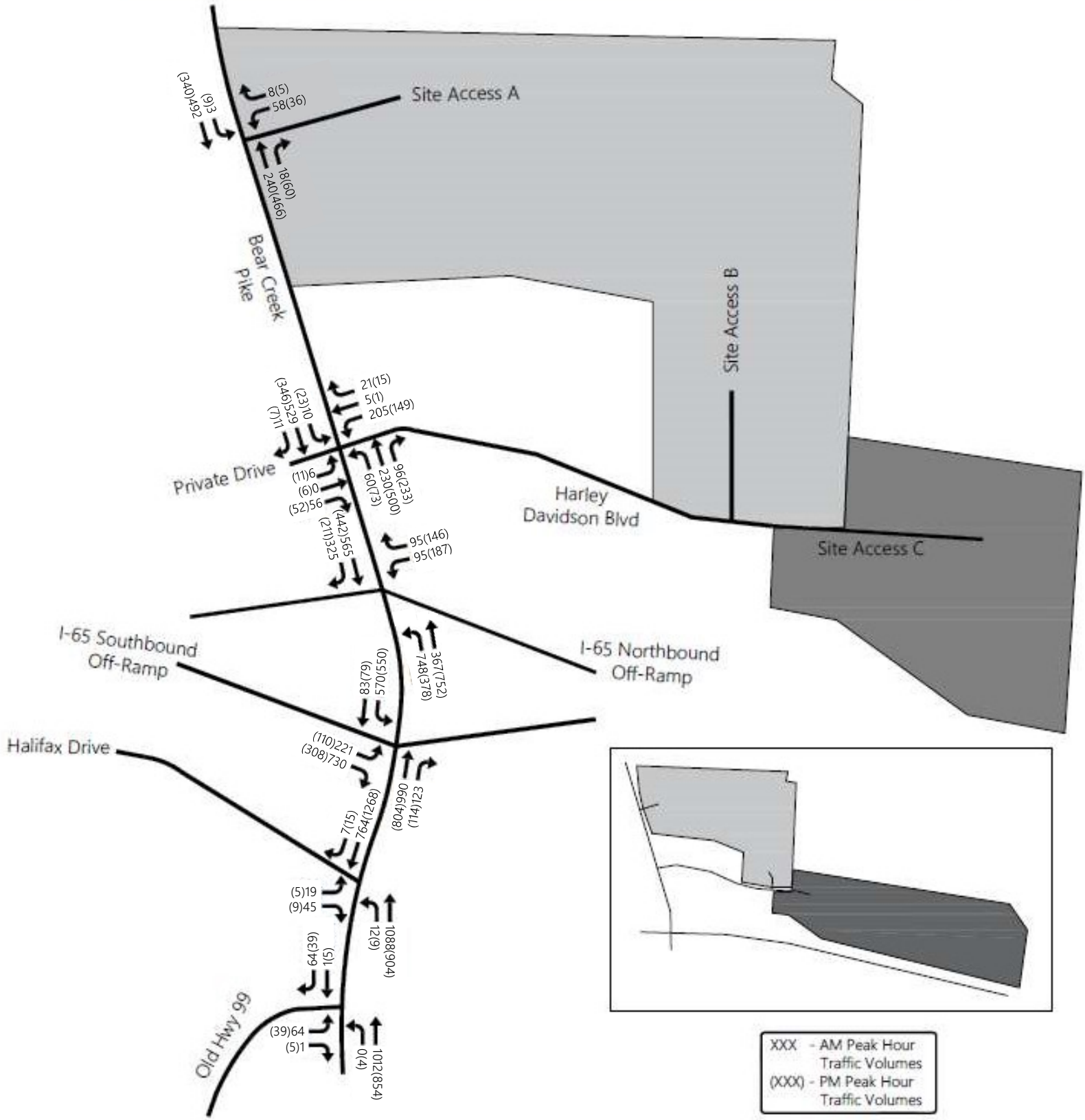
T = 34

Enter =	21	61%
Exit =	13	39%



Distribution of Peak Hour Traffic Volumes Generated by the Project Site (Phase 2)
(Not to Scale)

Figure 9.



Total Projected Peak Hour Volumes (Phase 2)

(Not to Scale)

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	230	96	10	529	11	205	5	21	6	0	56
Future Vol, veh/h	60	230	96	10	529	11	205	5	21	6	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	100	80	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	250	104	11	575	12	223	5	23	7	0	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	587	0	0	354	0	0	690	989	250	1049	1087	294
Stage 1	-	-	-	-	-	-	380	380	-	603	603	-
Stage 2	-	-	-	-	-	-	310	609	-	446	484	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	986	-	-	1203	-	-	345	246	788	193	215	703
Stage 1	-	-	-	-	-	-	641	613	-	454	487	-
Stage 2	-	-	-	-	-	-	676	484	-	591	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	986	-	-	1203	-	-	297	228	788	174	199	703
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	228	-	174	199	-
Stage 1	-	-	-	-	-	-	599	573	-	424	483	-
Stage 2	-	-	-	-	-	-	612	480	-	531	515	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.1	42.3	12.6
HCM LOS			E	B

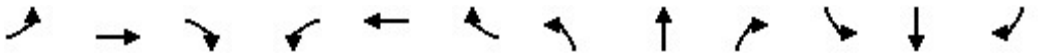
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	297	535	986	-	-	1203	-	-	543
HCM Lane V/C Ratio	0.75	0.053	0.066	-	-	0.009	-	-	0.124
HCM Control Delay (s)	46.1	12.1	8.9	-	-	8	-	-	12.6
HCM Lane LOS	E	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	5.6	0.2	0.2	-	-	0	-	-	0.4



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	813	399	967	103	103
v/c Ratio	0.67	0.26	0.64	0.57	0.40
Control Delay	14.1	0.5	25.7	62.7	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	0.5	25.7	62.7	13.8
Queue Length 50th (ft)	64	5	268	77	0
Queue Length 95th (ft)	m102	m8	341	131	51
Internal Link Dist (ft)		583	416	378	
Turn Bay Length (ft)					250
Base Capacity (vph)	1220	1531	1503	376	417
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.26	0.64	0.27	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

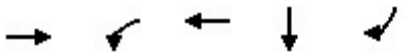


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	748	367	0	0	565	325	95	0	95	0	0	0
Future Volume (veh/h)	748	367	0	0	565	325	95	0	95	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	813	399	0	0	614	0	103	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	848	1333	0	0	1526		132	0				
Arrive On Green	0.41	1.00	0.00	0.00	0.43	0.00	0.07	0.00	0.00			
Sat Flow, veh/h	3456	1870	0	0	3741	0	1781	0	1585			
Grp Volume(v), veh/h	813	399	0	0	614	0	103	0	0			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1777	0	1781	0	1585			
Q Serve(g_s), s	27.4	0.0	0.0	0.0	14.3	0.0	6.8	0.0	0.0			
Cycle Q Clear(g_c), s	27.4	0.0	0.0	0.0	14.3	0.0	6.8	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	848	1333	0	0	1526		132	0				
V/C Ratio(X)	0.96	0.30	0.00	0.00	0.40		0.78	0.00				
Avail Cap(c_a), veh/h	850	1333	0	0	1526		379	0				
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.20	0.20	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	34.8	0.0	0.0	0.0	23.6	0.0	54.6	0.0	0.0			
Incr Delay (d2), s/veh	6.7	0.1	0.0	0.0	0.2	0.0	9.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.0	0.0	0.0	0.0	5.8	0.0	3.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.1	0.0	0.0	23.8	0.0	64.1	0.0	0.0			
LnGrp LOS	D	A	A	A	C		E	A				
Approach Vol, veh/h		1212			614	A		103	A			
Approach Delay, s/veh		27.9			23.8			64.1				
Approach LOS		C			C			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		90.0			34.0	56.0		13.4				
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s		85.5			29.5	51.5		25.5				
Max Q Clear Time (g_c+I1), s		2.0			29.4	16.3		8.8				
Green Ext Time (p_c), s		2.4			0.0	4.1		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



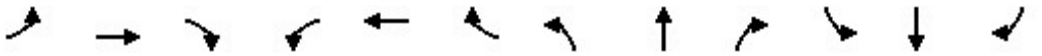
Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1210	90	620	124	240
v/c Ratio	0.95	1.48	0.48	0.12	0.26
Control Delay	53.6	309.6	42.9	12.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	309.6	42.9	12.8	7.5
Queue Length 50th (ft)	472	~92	265	43	45
Queue Length 95th (ft)	#622	m#175	327	74	88
Internal Link Dist (ft)	294		583	540	
Turn Bay Length (ft)		260			500
Base Capacity (vph)	1269	61	1282	999	939
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.95	1.48	0.48	0.12	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	990	123	83	570	0	0	0	0	110	4	221
Future Volume (veh/h)	0	990	123	83	570	0	0	0	0	110	4	221
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1076	134	90	620	0				120	4	240
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1153	143	77	1288	0				971	32	892
Arrive On Green	0.00	0.36	0.36	0.36	0.36	0.00				0.56	0.56	0.56
Sat Flow, veh/h	0	3274	396	462	3647	0				1726	58	1585
Grp Volume(v), veh/h	0	601	609	90	620	0				124	0	240
Grp Sat Flow(s),veh/h/ln	0	1777	1799	462	1777	0				1784	0	1585
Q Serve(g_s), s	0.0	39.1	39.2	4.3	16.2	0.0				3.9	0.0	9.4
Cycle Q Clear(g_c), s	0.0	39.1	39.2	43.5	16.2	0.0				3.9	0.0	9.4
Prop In Lane	0.00		0.22	1.00		0.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	644	652	77	1288	0				1004	0	892
V/C Ratio(X)	0.00	0.93	0.93	1.18	0.48	0.00				0.12	0.00	0.27
Avail Cap(c_a), veh/h	0	644	652	77	1288	0				1004	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.72	0.72	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	36.8	36.9	59.5	29.5	0.0				12.3	0.0	13.5
Incr Delay (d2), s/veh	0.0	22.3	22.4	141.9	0.9	0.0				0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.0	20.4	5.3	6.8	0.0				1.6	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	59.1	59.3	201.4	30.5	0.0				12.6	0.0	14.3
LnGrp LOS	A	E	E	F	C	A				B	A	B
Approach Vol, veh/h		1210			710						364	
Approach Delay, s/veh		59.2			52.1						13.7	
Approach LOS		E			D						B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		48.0		72.0		48.0						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		43.5		67.5		43.5						
Max Q Clear Time (g_c+I1), s		41.2		11.4		45.5						
Green Ext Time (p_c), s		1.5		1.5		0.0						

Intersection Summary												
HCM 6th Ctrl Delay			49.7									
HCM 6th LOS			D									

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	1088	764	7	19	45
Future Vol, veh/h	12	1088	764	7	19	45
Conflicting Peds, #/hr	717	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1183	830	8	21	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1555	0	-	0	2169	1136
Stage 1	-	-	-	-	1551	-
Stage 2	-	-	-	-	618	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	422	-	-	-	40	196
Stage 1	-	-	-	-	161	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	134	-	-	-	~ 4	62
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	159	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	$ 394.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	134	-	-	-	50
HCM Lane V/C Ratio	0.097	-	-	-	1.391
HCM Control Delay (s)	34.7	-	-	-	$ 394.9
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	6.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1012	750	37	64	1
Future Vol, veh/h	0	1012	750	37	64	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1100	815	40	70	1

Major/Minor	Major1			Major2		
Conflicting Flow All	855	0	-	0	1915	408
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	1100	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	783	-	-	-	~ 67	593
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	318	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	783	-	-	-	~ 67	593
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	318	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	783	-	-	-	193
HCM Lane V/C Ratio	-	-	-	-	0.366
HCM Control Delay (s)	0	-	-	-	34
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	240	18	3	492	58	8
Future Vol, veh/h	240	18	3	492	58	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	261	20	3	535	63	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	802	261
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1282	-	353	778
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1282	-	352	778
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	778	-	-	1282	-
HCM Lane V/C Ratio	0.179	0.011	-	-	0.003	-
HCM Control Delay (s)	17.4	9.7	-	-	7.8	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-

Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	500	233	23	346	7	149	1	15	11	6	52
Future Vol, veh/h	73	500	233	23	346	7	149	1	15	11	6	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	200	-	100	80	-	-	90	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	543	253	25	376	8	162	1	16	12	7	57

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	384	0	0	796	0	0	943	1135	543	1266	1384	192
Stage 1	-	-	-	-	-	-	701	701	-	430	430	-
Stage 2	-	-	-	-	-	-	242	434	-	836	954	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.23	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1173	-	-	824	-	-	230	202	539	135	143	818
Stage 1	-	-	-	-	-	-	428	440	-	574	583	-
Stage 2	-	-	-	-	-	-	741	580	-	361	336	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1173	-	-	824	-	-	191	183	539	121	129	818
Mov Cap-2 Maneuver	-	-	-	-	-	-	191	183	-	121	129	-
Stage 1	-	-	-	-	-	-	399	411	-	536	566	-
Stage 2	-	-	-	-	-	-	661	563	-	326	313	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.6	74.5	18.4
HCM LOS			F	C

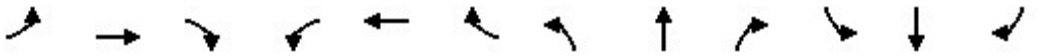
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	191	481	1173	-	-	824	-	-	343
HCM Lane V/C Ratio	0.848	0.036	0.068	-	-	0.03	-	-	0.219
HCM Control Delay (s)	81.1	12.8	8.3	-	-	9.5	-	-	18.4
HCM Lane LOS	F	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	6.2	0.1	0.2	-	-	0.1	-	-	0.8



Lane Group	EBL	EBT	WBT	NBT	NBR
Lane Group Flow (vph)	411	817	709	203	159
v/c Ratio	0.40	0.57	0.47	0.73	0.42
Control Delay	21.7	7.9	22.6	62.5	9.6
Queue Delay	0.0	1.6	0.0	0.0	0.0
Total Delay	21.7	9.5	22.6	62.5	9.6
Queue Length 50th (ft)	60	478	178	151	0
Queue Length 95th (ft)	m130	657	233	220	57
Internal Link Dist (ft)		583	416	378	
Turn Bay Length (ft)					250
Base Capacity (vph)	1030	1429	1493	376	461
Starvation Cap Reductn	0	412	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.80	0.47	0.54	0.34

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

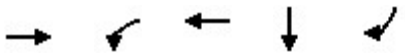


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	378	752	0	0	442	211	187	0	146	0	0	0
Future Volume (veh/h)	378	752	0	0	442	211	187	0	146	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	411	817	0	0	480	0	203	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	481	1333	0	0	1904		238	0				
Arrive On Green	0.28	1.00	0.00	0.00	0.54	0.00	0.13	0.00	0.00			
Sat Flow, veh/h	3456	1870	0	0	3741	0	1781	0	1585			
Grp Volume(v), veh/h	411	817	0	0	480	0	203	0	0			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1777	0	1781	0	1585			
Q Serve(g_s), s	13.5	0.0	0.0	0.0	8.7	0.0	13.4	0.0	0.0			
Cycle Q Clear(g_c), s	13.5	0.0	0.0	0.0	8.7	0.0	13.4	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		1.00			
Lane Grp Cap(c), veh/h	481	1333	0	0	1904		238	0				
V/C Ratio(X)	0.85	0.61	0.00	0.00	0.25		0.85	0.00				
Avail Cap(c_a), veh/h	850	1333	0	0	1904		379	0				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.52	0.52	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	42.1	0.0	0.0	0.0	15.0	0.0	50.8	0.0	0.0			
Incr Delay (d2), s/veh	2.4	1.1	0.0	0.0	0.1	0.0	10.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.0	0.4	0.0	0.0	3.3	0.0	6.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	1.1	0.0	0.0	15.0	0.0	61.1	0.0	0.0			
LnGrp LOS	D	A	A	A	B		E	A				
Approach Vol, veh/h		1228			480	A		203	A			
Approach Delay, s/veh		15.6			15.0			61.1				
Approach LOS		B			B			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		90.0			21.2	68.8		20.5				
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s		85.5			29.5	51.5		25.5				
Max Q Clear Time (g_c+I1), s		2.0			15.5	10.7		15.4				
Green Ext Time (p_c), s		6.6			1.2	3.1		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

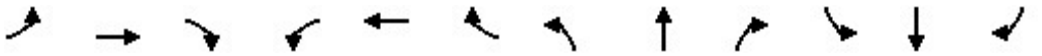


Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	998	86	598	336	793
v/c Ratio	0.79	1.18	0.47	0.34	0.84
Control Delay	39.0	197.0	37.2	15.4	28.0
Queue Delay	0.2	0.0	0.0	0.0	0.0
Total Delay	39.1	197.0	37.2	15.4	28.0
Queue Length 50th (ft)	354	~66	254	134	424
Queue Length 95th (ft)	439	#166	313	195	641
Internal Link Dist (ft)	294		583	540	
Turn Bay Length (ft)		260			500
Base Capacity (vph)	1268	73	1282	998	944
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	22	0	0	8	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	1.18	0.47	0.34	0.84

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	804	114	79	550	0	0	0	0	308	1	730
Future Volume (veh/h)	0	804	114	79	550	0	0	0	0	308	1	730
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	874	124	86	598	0				335	1	793
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1133	161	125	1288	0				999	3	892
Arrive On Green	0.00	0.36	0.36	0.36	0.36	0.00				0.56	0.56	0.56
Sat Flow, veh/h	0	3218	443	564	3647	0				1776	5	1585
Grp Volume(v), veh/h	0	497	501	86	598	0				336	0	793
Grp Sat Flow(s),veh/h/ln	0	1777	1791	564	1777	0				1782	0	1585
Q Serve(g_s), s	0.0	29.7	29.7	13.8	15.5	0.0				12.2	0.0	52.6
Cycle Q Clear(g_c), s	0.0	29.7	29.7	43.5	15.5	0.0				12.2	0.0	52.6
Prop In Lane	0.00		0.25	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	644	649	125	1288	0				1002	0	892
V/C Ratio(X)	0.00	0.77	0.77	0.69	0.46	0.00				0.34	0.00	0.89
Avail Cap(c_a), veh/h	0	644	649	125	1288	0				1002	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	33.9	33.9	54.8	29.3	0.0				14.2	0.0	23.0
Incr Delay (d2), s/veh	0.0	8.7	8.6	24.0	1.1	0.0				0.9	0.0	12.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.8	13.9	3.4	6.5	0.0				4.9	0.0	21.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	42.6	42.5	78.8	30.4	0.0				15.1	0.0	35.9
LnGrp LOS	A	D	D	E	C	A				B	A	D
Approach Vol, veh/h		998			684						1129	
Approach Delay, s/veh		42.5			36.5						29.7	
Approach LOS		D			D						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		48.0		72.0		48.0						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		43.5		67.5		43.5						
Max Q Clear Time (g_c+I1), s		31.7		54.6		45.5						
Green Ext Time (p_c), s		4.6		4.5		0.0						

Intersection Summary												
HCM 6th Ctrl Delay			35.9									
HCM 6th LOS			D									

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	904	1268	15	5	9
Future Vol, veh/h	9	904	1268	15	5	9
Conflicting Peds, #/hr	717	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	983	1378	16	5	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2111	0	-	0	2615	1414
Stage 1	-	-	-	-	2103	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	256	-	-	-	20	127
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	81	-	-	-	~ 2	40
Mov Cap-2 Maneuver	-	-	-	-	18	-
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	180	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	235.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	81	-	-	-	28
HCM Lane V/C Ratio	0.121	-	-	-	0.543
HCM Control Delay (s)	55.5	-	-	-	235.8
HCM Lane LOS	F	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	1.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	854	1156	94	39	5
Future Vol, veh/h	4	854	1156	94	39	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	928	1257	102	42	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1359	0	-	0	2193	629
Stage 1	-	-	-	-	1257	-
Stage 2	-	-	-	-	936	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	504	-	-	-	44	426
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	504	-	-	-	44	426
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	381	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	36.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	504	-	-	-	162
HCM Lane V/C Ratio	0.009	-	-	-	0.295
HCM Control Delay (s)	12.2	-	-	-	36.3
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	1.2

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	466	60	9	340	36	5
Future Vol, veh/h	466	60	9	340	36	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	507	65	10	370	39	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	572	0	897	507
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1001	-	310	566
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	684	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1001	-	306	566
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	675	-

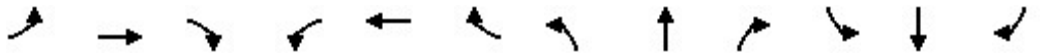
Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	306	566	-	-	1001	-
HCM Lane V/C Ratio	0.128	0.01	-	-	0.01	-
HCM Control Delay (s)	18.5	11.4	-	-	8.6	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	65	250	104	11	587	223	28	68
v/c Ratio	0.33	0.43	0.19	0.05	0.77	0.26	0.03	0.08
Control Delay	43.6	47.8	15.8	34.9	50.8	12.9	5.7	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	47.8	15.8	34.9	50.8	12.9	5.7	2.6
Queue Length 50th (ft)	40	159	24	7	224	76	2	0
Queue Length 95th (ft)	60	173	45	22	272	137	16	17
Internal Link Dist (ft)		416			760		382	154
Turn Bay Length (ft)	200		100	80		90		
Base Capacity (vph)	219	877	800	389	1221	890	1013	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.29	0.13	0.03	0.48	0.25	0.03	0.08

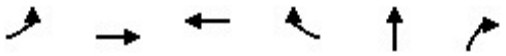
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	230	96	10	529	11	205	5	21	6	0	56
Future Volume (veh/h)	60	230	96	10	529	11	205	5	21	6	0	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	250	104	11	575	12	223	5	23	7	0	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	512	434	226	698	15	946	190	872	97	23	762
Arrive On Green	0.04	0.27	0.27	0.20	0.20	0.20	0.07	0.65	0.65	0.54	0.00	0.54
Sat Flow, veh/h	1781	1870	1585	1027	3560	74	1781	291	1338	119	43	1412
Grp Volume(v), veh/h	65	250	104	11	287	300	223	0	28	68	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1027	1777	1857	1781	0	1629	1574	0	0
Q Serve(g_s), s	3.4	13.4	6.1	1.1	18.6	18.6	6.3	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.4	13.4	6.1	5.2	18.6	18.6	6.3	0.0	0.7	2.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.82	0.10		0.90
Lane Grp Cap(c), veh/h	165	512	434	226	348	364	946	0	1061	883	0	0
V/C Ratio(X)	0.39	0.49	0.24	0.05	0.82	0.82	0.24	0.00	0.03	0.08	0.00	0.00
Avail Cap(c_a), veh/h	250	881	746	380	614	642	1177	0	1061	883	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.7	36.5	33.9	42.6	46.3	46.3	9.4	0.0	7.4	13.3	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.7	0.3	0.1	4.9	4.7	0.1	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	6.1	2.3	0.3	8.3	8.6	2.5	0.0	0.3	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	37.2	34.2	42.7	51.2	51.0	9.5	0.0	7.5	13.4	0.0	0.0
LnGrp LOS	D	D	C	D	D	D	A	A	A	B	A	A
Approach Vol, veh/h		419			598			251			68	
Approach Delay, s/veh		36.6			50.9			9.3			13.4	
Approach LOS		D			D			A			B	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		82.7		37.3	13.4	69.3	9.3	28.0				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		54.5		56.5	24.5	25.5	10.5	41.5				
Max Q Clear Time (g_c+I1), s		2.7		15.4	8.3	4.4	5.4	20.6				
Green Ext Time (p_c), s		0.1		1.7	0.6	0.3	0.0	2.9				

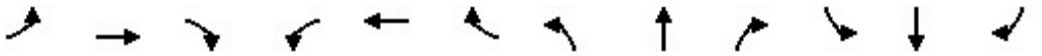
Intersection Summary												
HCM 6th Ctrl Delay			36.7									
HCM 6th LOS			D									



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	813	399	614	353	103	103
v/c Ratio	0.67	0.26	0.40	1.00	0.57	0.40
Control Delay	14.1	0.5	24.7	54.2	62.7	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	0.5	24.7	54.2	62.7	13.8
Queue Length 50th (ft)	64	5	170	0	77	0
Queue Length 95th (ft)	m102	m8	218	#189	131	51
Internal Link Dist (ft)		583	416		378	
Turn Bay Length (ft)						250
Base Capacity (vph)	1220	1531	1518	353	376	417
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.26	0.40	1.00	0.27	0.25

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

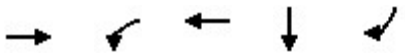


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	748	367	0	0	565	325	95	0	95	0	0	0
Future Volume (veh/h)	748	367	0	0	565	325	95	0	95	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	813	399	0	0	614	0	103	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	848	1333	0	0	1526		132	0				
Arrive On Green	0.41	1.00	0.00	0.00	0.43	0.00	0.07	0.00	0.00			
Sat Flow, veh/h	3456	1870	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	813	399	0	0	614	0	103	0	0			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	27.4	0.0	0.0	0.0	14.3	0.0	6.8	0.0	0.0			
Cycle Q Clear(g_c), s	27.4	0.0	0.0	0.0	14.3	0.0	6.8	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	848	1333	0	0	1526		132	0				
V/C Ratio(X)	0.96	0.30	0.00	0.00	0.40		0.78	0.00				
Avail Cap(c_a), veh/h	850	1333	0	0	1526		379	0				
HCM Platoon Ratio	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.20	0.20	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	34.8	0.0	0.0	0.0	23.6	0.0	54.6	0.0	0.0			
Incr Delay (d2), s/veh	6.7	0.1	0.0	0.0	0.2	0.0	9.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.0	0.0	0.0	0.0	5.8	0.0	3.4	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	0.1	0.0	0.0	23.8	0.0	64.1	0.0	0.0			
LnGrp LOS	D	A	A	A	C		E	A				
Approach Vol, veh/h		1212			614	A		103	A			
Approach Delay, s/veh		27.9			23.8			64.1				
Approach LOS		C			C			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		90.0			34.0	56.0		13.4				
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s		85.5			29.5	51.5		25.5				
Max Q Clear Time (g_c+I1), s		2.0			29.4	16.3		8.8				
Green Ext Time (p_c), s		2.4			0.0	4.1		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

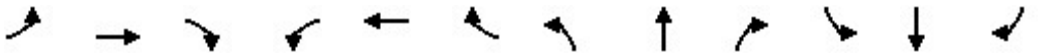


Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1210	90	620	124	240
v/c Ratio	0.95	1.48	0.48	0.12	0.26
Control Delay	53.6	319.8	50.3	12.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	319.8	50.3	12.8	7.5
Queue Length 50th (ft)	472	~93	272	43	45
Queue Length 95th (ft)	#622	#200	333	74	88
Internal Link Dist (ft)	294		583	540	
Turn Bay Length (ft)		260			500
Base Capacity (vph)	1269	61	1282	999	939
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.95	1.48	0.48	0.12	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	990	123	83	570	0	0	0	0	110	4	221
Future Volume (veh/h)	0	990	123	83	570	0	0	0	0	110	4	221
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1076	134	90	620	0				120	4	240
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1153	143	77	1288	0				971	32	892
Arrive On Green	0.00	0.36	0.36	0.36	0.36	0.00				0.56	0.56	0.56
Sat Flow, veh/h	0	3274	396	462	3647	0				1726	58	1585
Grp Volume(v), veh/h	0	601	609	90	620	0				124	0	240
Grp Sat Flow(s),veh/h/ln	0	1777	1799	462	1777	0				1784	0	1585
Q Serve(g_s), s	0.0	39.1	39.2	4.3	16.2	0.0				3.9	0.0	9.4
Cycle Q Clear(g_c), s	0.0	39.1	39.2	43.5	16.2	0.0				3.9	0.0	9.4
Prop In Lane	0.00		0.22	1.00		0.00				0.97		1.00
Lane Grp Cap(c), veh/h	0	644	652	77	1288	0				1004	0	892
V/C Ratio(X)	0.00	0.93	0.93	1.18	0.48	0.00				0.12	0.00	0.27
Avail Cap(c_a), veh/h	0	644	652	77	1288	0				1004	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.92	0.92	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	36.8	36.9	59.5	29.5	0.0				12.3	0.0	13.5
Incr Delay (d2), s/veh	0.0	22.3	22.4	153.4	1.2	0.0				0.3	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.0	20.4	5.5	6.8	0.0				1.6	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	59.1	59.3	212.9	30.7	0.0				12.6	0.0	14.3
LnGrp LOS	A	E	E	F	C	A				B	A	B
Approach Vol, veh/h		1210			710						364	
Approach Delay, s/veh		59.2			53.8						13.7	
Approach LOS		E			D						B	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		48.0		72.0		48.0						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		43.5		67.5		43.5						
Max Q Clear Time (g_c+I1), s		41.2		11.4		45.5						
Green Ext Time (p_c), s		1.5		1.5		0.0						

Intersection Summary												
HCM 6th Ctrl Delay			50.3									
HCM 6th LOS			D									

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	1088	764	7	19	45
Future Vol, veh/h	12	1088	764	7	19	45
Conflicting Peds, #/hr	717	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	1183	830	8	21	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1555	0	-	0	2169	1136
Stage 1	-	-	-	-	1551	-
Stage 2	-	-	-	-	618	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	422	-	-	-	40	196
Stage 1	-	-	-	-	161	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	134	-	-	-	~ 4	62
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	159	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	$ 394.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	134	-	-	-	50
HCM Lane V/C Ratio	0.097	-	-	-	1.391
HCM Control Delay (s)	34.7	-	-	-	$ 394.9
HCM Lane LOS	D	-	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	6.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1012	750	37	64	1
Future Vol, veh/h	0	1012	750	37	64	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1100	815	40	70	1

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	855	0	-	0	1915	408			
Stage 1	-	-	-	-	815	-			
Stage 2	-	-	-	-	1100	-			
Critical Hdwy	4.13	-	-	-	6.63	6.93			
Critical Hdwy Stg 1	-	-	-	-	5.83	-			
Critical Hdwy Stg 2	-	-	-	-	5.43	-			
Follow-up Hdwy	2.219	-	-	-	3.519	3.319			
Pot Cap-1 Maneuver	783	-	-	-	~ 67	593			
Stage 1	-	-	-	-	397	-			
Stage 2	-	-	-	-	318	-			
Platoon blocked, %		-	-	-					
Mov Cap-1 Maneuver	783	-	-	-	~ 67	593			
Mov Cap-2 Maneuver	-	-	-	-	191	-			
Stage 1	-	-	-	-	397	-			
Stage 2	-	-	-	-	318	-			

Approach	EB	WB	SB
HCM Control Delay, s	0	0	34
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	783	-	-	-	193
HCM Lane V/C Ratio	-	-	-	-	0.366
HCM Control Delay (s)	0	-	-	-	34
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	1.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	240	18	3	492	58	8
Future Vol, veh/h	240	18	3	492	58	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	261	20	3	535	63	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	281	0	802	261
Stage 1	-	-	-	-	261	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1282	-	353	778
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1282	-	352	778
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	783	-
Stage 2	-	-	-	-	581	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.5
HCM LOS			C

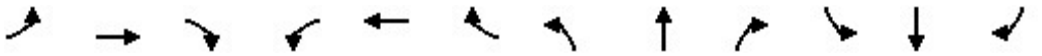
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	778	-	-	1282	-
HCM Lane V/C Ratio	0.179	0.011	-	-	0.003	-
HCM Control Delay (s)	17.4	9.7	-	-	7.8	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0	-	-	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	79	543	253	25	384	162	17	76
v/c Ratio	0.23	0.78	0.36	0.19	0.37	0.22	0.02	0.11
Control Delay	38.9	59.5	26.5	33.3	34.1	16.5	8.0	11.4
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.9	60.0	26.5	33.3	34.1	16.5	8.0	11.4
Queue Length 50th (ft)	57	427	112	15	127	60	0	9
Queue Length 95th (ft)	m88	491	166	35	147	123	14	50
Internal Link Dist (ft)		416			760		382	154
Turn Bay Length (ft)	200		100	80		90		
Base Capacity (vph)	342	1047	960	208	1603	753	885	711
Starvation Cap Reductn	0	197	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.64	0.26	0.12	0.24	0.22	0.02	0.11

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	500	233	23	346	7	149	1	15	11	6	52
Future Volume (veh/h)	73	500	233	23	346	7	149	1	15	11	6	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	79	543	253	25	376	8	162	1	16	12	7	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	635	538	107	914	19	845	55	882	134	94	579
Arrive On Green	0.05	0.34	0.34	0.26	0.26	0.26	0.06	0.59	0.59	0.49	0.49	0.49
Sat Flow, veh/h	1781	1870	1585	682	3558	76	1781	94	1505	203	193	1190
Grp Volume(v), veh/h	79	543	253	25	188	196	162	0	17	76	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	682	1777	1857	1781	0	1599	1587	0	0
Q Serve(g_s), s	3.8	32.4	15.1	4.2	10.5	10.6	5.2	0.0	0.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.8	32.4	15.1	26.8	10.5	10.6	5.2	0.0	0.5	3.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.94	0.16		0.75
Lane Grp Cap(c), veh/h	309	635	538	107	456	477	845	0	937	806	0	0
V/C Ratio(X)	0.26	0.86	0.47	0.23	0.41	0.41	0.19	0.00	0.02	0.09	0.00	0.00
Avail Cap(c_a), veh/h	355	1052	892	242	807	843	950	0	937	806	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.9	36.9	31.2	54.0	37.0	37.1	12.5	0.0	10.4	16.6	0.0	0.0
Incr Delay (d2), s/veh	0.4	3.2	0.5	1.1	0.6	0.6	0.1	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	14.7	5.5	0.7	4.4	4.6	2.1	0.0	0.2	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	40.1	31.7	55.1	37.6	37.6	12.6	0.0	10.5	16.8	0.0	0.0
LnGrp LOS	C	D	C	E	D	D	B	A	B	B	A	A
Approach Vol, veh/h		875			409			179			76	
Approach Delay, s/veh		36.8			38.7			12.4			16.8	
Approach LOS		D			D			B			B	

Timer - Assigned Phs		2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s		74.8		45.2	11.9	62.8	9.9	35.3				
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s		43.5		67.5	14.5	24.5	8.5	54.5				
Max Q Clear Time (g_c+I1), s		2.5		34.4	7.2	5.0	5.8	28.8				
Green Ext Time (p_c), s		0.1		4.4	0.2	0.3	0.0	2.0				

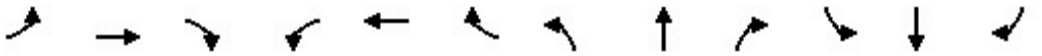
Intersection Summary												
HCM 6th Ctrl Delay			33.5									
HCM 6th LOS			C									



Lane Group	EBL	EBT	WBT	WBR	NBT	NBR
Lane Group Flow (vph)	411	817	480	229	203	159
v/c Ratio	0.40	0.57	0.32	1.00	0.73	0.42
Control Delay	21.7	7.9	23.4	67.3	62.5	9.6
Queue Delay	0.0	1.6	0.0	0.0	0.0	0.0
Total Delay	21.7	9.5	23.4	67.3	62.5	9.6
Queue Length 50th (ft)	60	478	126	0	151	0
Queue Length 95th (ft)	m130	657	168	#161	220	57
Internal Link Dist (ft)		583	416		378	
Turn Bay Length (ft)						250
Base Capacity (vph)	1030	1429	1518	229	376	461
Starvation Cap Reductn	0	412	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.80	0.32	1.00	0.54	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

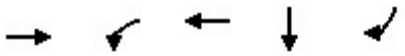


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	378	752	0	0	442	211	187	0	146	0	0	0
Future Volume (veh/h)	378	752	0	0	442	211	187	0	146	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	411	817	0	0	480	0	203	0	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	481	1333	0	0	1904		238	0				
Arrive On Green	0.28	1.00	0.00	0.00	0.54	0.00	0.13	0.00	0.00			
Sat Flow, veh/h	3456	1870	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	411	817	0	0	480	0	203	0	0			
Grp Sat Flow(s),veh/h/ln	1728	1870	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	13.5	0.0	0.0	0.0	8.7	0.0	13.4	0.0	0.0			
Cycle Q Clear(g_c), s	13.5	0.0	0.0	0.0	8.7	0.0	13.4	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	481	1333	0	0	1904		238	0				
V/C Ratio(X)	0.85	0.61	0.00	0.00	0.25		0.85	0.00				
Avail Cap(c_a), veh/h	850	1333	0	0	1904		379	0				
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.52	0.52	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	42.1	0.0	0.0	0.0	15.0	0.0	50.8	0.0	0.0			
Incr Delay (d2), s/veh	2.4	1.1	0.0	0.0	0.1	0.0	10.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.0	0.4	0.0	0.0	3.3	0.0	6.5	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.5	1.1	0.0	0.0	15.0	0.0	61.1	0.0	0.0			
LnGrp LOS	D	A	A	A	B		E	A				
Approach Vol, veh/h		1228			480	A		203	A			
Approach Delay, s/veh		15.6			15.0			61.1				
Approach LOS		B			B			E				
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		90.0			21.2	68.8		20.5				
Change Period (Y+Rc), s		4.5			4.5	4.5		4.5				
Max Green Setting (Gmax), s		85.5			29.5	51.5		25.5				
Max Q Clear Time (g_c+I1), s		2.0			15.5	10.7		15.4				
Green Ext Time (p_c), s		6.6			1.2	3.1		0.7				

Intersection Summary	
HCM 6th Ctrl Delay	20.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

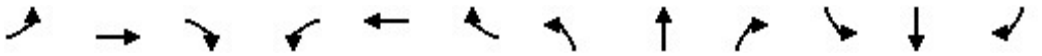


Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	998	86	598	336	793
v/c Ratio	0.79	1.18	0.47	0.34	0.84
Control Delay	39.0	203.6	42.7	15.4	28.0
Queue Delay	0.2	0.0	0.0	0.0	0.0
Total Delay	39.1	203.6	42.7	15.4	28.0
Queue Length 50th (ft)	354	~66	260	134	424
Queue Length 95th (ft)	439	#166	318	195	641
Internal Link Dist (ft)	294		583	540	
Turn Bay Length (ft)		260			500
Base Capacity (vph)	1268	73	1282	998	944
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	22	0	0	8	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.80	1.18	0.47	0.34	0.84

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	804	114	79	550	0	0	0	0	308	1	730
Future Volume (veh/h)	0	804	114	79	550	0	0	0	0	308	1	730
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	874	124	86	598	0				335	1	793
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1133	161	125	1288	0				999	3	892
Arrive On Green	0.00	0.36	0.36	0.36	0.36	0.00				0.56	0.56	0.56
Sat Flow, veh/h	0	3218	443	564	3647	0				1776	5	1585
Grp Volume(v), veh/h	0	497	501	86	598	0				336	0	793
Grp Sat Flow(s),veh/h/ln	0	1777	1791	564	1777	0				1782	0	1585
Q Serve(g_s), s	0.0	29.7	29.7	13.8	15.5	0.0				12.2	0.0	52.6
Cycle Q Clear(g_c), s	0.0	29.7	29.7	43.5	15.5	0.0				12.2	0.0	52.6
Prop In Lane	0.00		0.25	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	644	649	125	1288	0				1002	0	892
V/C Ratio(X)	0.00	0.77	0.77	0.69	0.46	0.00				0.34	0.00	0.89
Avail Cap(c_a), veh/h	0	644	649	125	1288	0				1002	0	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.96	0.96	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	33.9	33.9	54.8	29.3	0.0				14.2	0.0	23.0
Incr Delay (d2), s/veh	0.0	8.7	8.6	25.9	1.2	0.0				0.9	0.0	12.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	13.8	13.9	3.5	6.6	0.0				4.9	0.0	21.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	42.6	42.5	80.7	30.5	0.0				15.1	0.0	35.9
LnGrp LOS	A	D	D	F	C	A				B	A	D
Approach Vol, veh/h		998			684						1129	
Approach Delay, s/veh		42.5			36.8						29.7	
Approach LOS		D			D						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		48.0		72.0		48.0						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		43.5		67.5		43.5						
Max Q Clear Time (g_c+I1), s		31.7		54.6		45.5						
Green Ext Time (p_c), s		4.6		4.5		0.0						

Intersection Summary												
HCM 6th Ctrl Delay			36.0									
HCM 6th LOS			D									

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	904	1268	15	5	9
Future Vol, veh/h	9	904	1268	15	5	9
Conflicting Peds, #/hr	717	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	983	1378	16	5	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2111	0	-	0	2615	1414
Stage 1	-	-	-	-	2103	-
Stage 2	-	-	-	-	512	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	256	-	-	-	20	127
Stage 1	-	-	-	-	80	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	81	-	-	-	~ 2	40
Mov Cap-2 Maneuver	-	-	-	-	18	-
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	180	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	235.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	81	-	-	-	28
HCM Lane V/C Ratio	0.121	-	-	-	0.543
HCM Control Delay (s)	55.5	-	-	-	235.8
HCM Lane LOS	F	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	1.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	854	1156	94	39	5
Future Vol, veh/h	4	854	1156	94	39	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	10	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	928	1257	102	42	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1359	0	-	0	2193	629
Stage 1	-	-	-	-	1257	-
Stage 2	-	-	-	-	936	-
Critical Hdwy	4.13	-	-	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.219	-	-	-	3.519	3.319
Pot Cap-1 Maneuver	504	-	-	-	44	426
Stage 1	-	-	-	-	232	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	504	-	-	-	44	426
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	381	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	36.3
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	504	-	-	-	162
HCM Lane V/C Ratio	0.009	-	-	-	0.295
HCM Control Delay (s)	12.2	-	-	-	36.3
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0	-	-	-	1.2

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	466	60	9	340	36	5
Future Vol, veh/h	466	60	9	340	36	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	350	-	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	507	65	10	370	39	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	572	0	897	507
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	390	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1001	-	310	566
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	684	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1001	-	306	566
Mov Cap-2 Maneuver	-	-	-	-	306	-
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	675	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	306	566	-	-	1001	-
HCM Lane V/C Ratio	0.128	0.01	-	-	0.01	-
HCM Control Delay (s)	18.5	11.4	-	-	8.6	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-

November 17, 2023
Mr. Cole Newton
TKC Architecture and Engineering LLC
2004 Carmack Blvd Suite C
Columbia, TN 38401
Sent via email: cole@tkc-ae.com
RE: Water Availability Letter
Harley Davidson Blvd Mixed Use
Harley Davidson Blvd
Tax Map 93, Parcel 2.01
Columbia, Maury County, TN

Dear Mr. Newton:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development includes 98 townhome units, a one-story office building, and 2 two-story retail/residential buildings. CPWS has evaluated the projected water demands for the proposed development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- **Sprinklers are mandatory for the commercial buildings, based on available flow and the fire requirements as provided by the applicant.**
- Domestic waterline connection will be made to the existing 12-inch water main located on Harley Davidson Boulevard.
- Domestic and fire protection service for each commercial building will be served by a single ultra-sonic fire-rated master meter. Irrigation, if any, will be provided as a separate metered connection.

The above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (120.8 SFUs)	$46,196.00

- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $540 per 3/4" meter (98 meters)	$52,920.00
Meter Fee: $7,000 per 6" ultra-sonic fire-rated meter (3 meters)	$21,000.00
Impact Fee: $4,500 per 3/4" meter equivalent (98 equivalents)	$441,000.00
Impact Fee: $25,000 per 2" meter equivalent (3 equivalents)	$75,000.00
Total Meter and Impact Fees Due =	**$589,920.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-061

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

7 November 2023

Cole Newton
818 South Main St
Columbia, TN 38401

RE: Mixed Use Development, End of Harley Davidson, Adjacent to Pumpkin Creek Townhomes

Cole,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Major or minor improvements to existing infrastructure may or may not be necessary to satisfactorily convey the additional sanitary sewer flow from the above-referenced proposed development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

The site has partial availability already in-place to the north, but availability to the south depends upon other development and a proposed pump station that has not yet been approved, but some comments have been addressed in the planning stages. Capacity in the area may be a concern in the future given other developments in the I-65 area of Bear Creek Pike and may need to be addressed at a later date.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

TKC ARCHITECTURE
INTERIORS
CIVIL SITE

818 South Main Street
COLUMBIA, TN 38401
TKC-AE.COM
615.617.7477

November 20th, 2023

Development Services
City of Columbia
700 N. Garden Street
Columbia, TN 38401

Project: Mixed Use Development (adjacent to Pumpkin Creek Townhomes)

Subject: Preliminary Plat Submittal

Staff,

We are requesting preliminary plat approval for a Preliminary Plat for a project located at the end of Harley Davidson Blvd. adjacent to the Pumpkin Creek Townhomes project. The Plat follow the City's Zoning Ordinance 4400. The plat proposes 98 townhomes, two mixed use buildings/properties with first floor commercial and upper story residential and one commercial building/property. We are proposing a playground for the site and we are proposing installing trails and landscaping within the tree save area (not removing any trees that provide canopy cover) to include the space as civil green space.

The included development plan includes the overall site details and detailed landscape plans will be included with the construction plans

If you have any comments or questions please contact Cole Newton at TKC Architecture and Engineering at cole@tkc-ae.com or 615.617.7477.

Thank you,

Cole Newton

Cole Newton, PE, LEED AP
TKC Architecture and Engineering LLC
615.617.7477 (o)
931.797.3323 (c)
cole@tkc-ae.com

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: Mixed Use Development (adjacent to Pumpkin Creek Townhomes)

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ☒ Name of development
- ☒ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ☒ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☒ North Arrow, legend, and site vicinity map
- ☒ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ☒ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way.
- ☒ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☒ All property boundaries, existing easements, and encumbrances
- ☒ Parcel identification, owner, and deed and plat references of adjoining properties
- ☒ Proposed phasing and timetable for all phases of development
- ☒ Traffic Impact Study, as required.
- ☒ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☒ The size of total property to be developed in square feet and acres
- ☒ Lot numbers of all proposed lots, with dimensions, locations, and square footage
- ☒ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☒ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ☒ Location and approximate dimensions of all existing and proposed structures.
- ☒ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ☒ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable
- ☒ Location, type, and size of proposed signs (none at this time)
- ☒ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
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Grading, Drainage, and Storm

- ☒ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ☒ General proposed contours at vertical intervals of not more than two (2) feet
- ☒ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones
- ☒ Location and dimension of aquatic buffer zones (n/a)
- ☒ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ☒ Identification of all critical lots(no proposed critical lots)

Streets, Parking, and Pedestrian Elements

- ☒ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ☒ Proposed connections to existing and proposed streets (including classification) located outside the development
- ☒ Proposed improvements as identified in the Traffic Impact Study, as required
- ☒ Existing and proposed sidewalks, trails, and other pedestrian elements
- ☒ Existing and proposed on-street and off-street parking and loading areas
- ☒ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ☒ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ☒ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features. (discussed with staff and detailed landscape plans will be provided with site construction plans)
- ☒ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ☒ Any amenity features and structures for private or public benefit. (Playground and Civil Space)
- ☒ Location, dimension, and materials of fences and walls(no walls / fences proposed)
- ☒ Tree Canopy retention

Utilities

- ☒ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.
- ☒ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

CITY OF
COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
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PUD Specific Items

- ❑ Legal Description of Property
- ❑ Owner's Affidavit
- ❑ List of all variances requested
- ❑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ❑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ❑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ❑ Exterior lighting

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

Cole Newton	Cole Newton	11/21/23
Print Name	Signature	Date

TKC ARCHITECTURE INTERIORS CIVIL SITE

2004 CARMACK BLVD, SUITE C
COLUMBIA, TN 38401
TKC-AE.COM
615.617.7477

November 20th, 2023

Development Services
City of Columbia
700 N. Garden Street
Columbia, TN 38401

Project: Mixed Use Development – (adjacent to Pumpkin Creek Townhomes)

Subject: Preliminary Plat Submittal Owner's Consent

As the property owner of the property located at Map 93, Parcel 2.01, I hereby give consent for TKC Architecture and Engineering LLC to submit a preliminary plat for approval on our property and represent that the project to the City.

Sincerely,



Owners Signature

CHR Land, LLC – Gary Martin
Owners Printed Name

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION			
	TAX MAP: 93	GROUP:	PARCEL: 2.01
SUMMARY OF NATURE OF REQUEST AND WORK	To obtain Preliminary Plat approval for Mixed Use Development consisting of 1 commercial lot, 2 live/work lots and 98 townhomes. The submittal follows the 4400 Zoning Ordinance. Included with the submittal is the Preliminary Plat, Site Development Plan, Survey, and Project Letter.		

DATE OF PRE-APPLICATION CONFERENCE	10/11/23	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ☒ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) Mixed Use Development ❑ Total Number of Lots 101 ❑ Total acreage 20.90

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	TKC Architecture & Engineering LLC	PHONE	615-617-7477
ADDRESS	818 S. Main Street, Columbia, TN 38401	EMAIL	cole@tkc-ae.com

PROPERTY OWNER NAME	CHR Land LLC	PHONE	615-812-2147
ADDRESS	818 S. Main Street, Columbia, TN 38401	EMAIL	gary@martinengrg.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Cole Newton (TKC A&E)	Cole Newton	11/17/23
APPLICANT NAME	APPLICANT SIGNATURE	DATE
CHR Land LLC		11/17/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

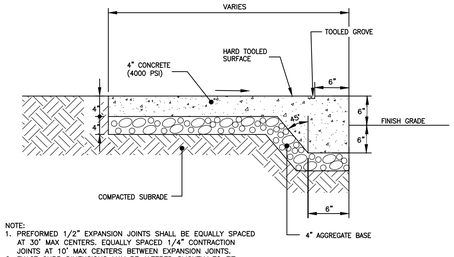
STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

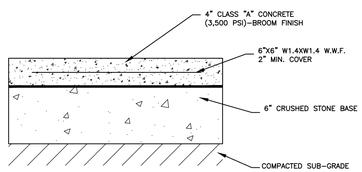
BOARD ACTION	

PROPOSED CONCEPT SKETCH



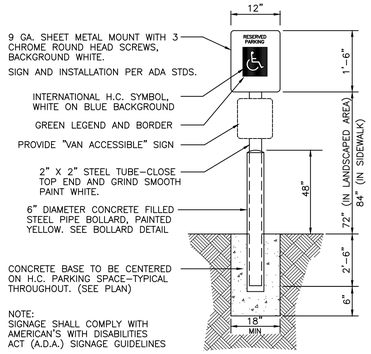
NOTE:
1. PREFORMED 1/2" EXPANSION JOINTS SHALL BE EQUALLY SPACED AT 30' MAX CENTERS. EQUALLY SPACED 1/4" CONTRACTION JOINTS AT 10' MAX CENTERS BETWEEN EXPANSION JOINTS.
2. EXACT CURB DIMENSIONS MAY BE ALTERED SLIGHTLY TO FIT STANDARD CURB MACHINES, BUT SUCH VARIANCES MUST BE APPROVED BY THE ENGINEER.

TURN-DOWN CURB AND SIDEWALK



CONCRETE SIDEWALK

NOTE:
CONTROL JOINT EVERY 5' EXPANSION JOINT EVERY 25' UNLESS OTHERWISE NOTED.

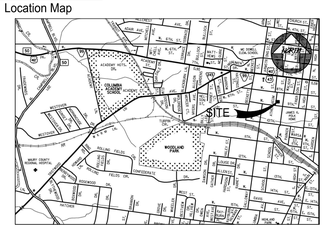


NOTE:
SIGNAGE SHALL COMPLY WITH AMERICAN'S WITH DISABILITIES ACT (A.D.A.) SIGNAGE GUIDELINES

ACCESSIBLE SIGN
NOT TO SCALE



Location Map



SITE DATA:

OWNER: CLARK QUIN
807 ATHENAEUM STREET
COLUMBIA, TN 38401

PARCEL NUMBER: TAX MAP 100D PARCEL 09.00
DEED BOOK: R2550, PG 233

SUBJECT PARCEL ZONING: EXISTING ZONING CD-3
REQUEST ZONING CD-4

ACREAGE OF SITE: 19,185 SQ. FT.
0.44 ACRES

MINIMUM REQUIRED BUILDING SETBACKS:
30' FRONT (MINOR COLLECTOR)
20' FRONT (MINOR)
20' REAR
7.50' SIDE
15' SIDE SETBACK FOR CORNER LOTS

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: CONVERT EXISTING RESIDENCE TO LAW OFFICE. IMPROVEMENTS TO INCLUDE CREATING AN ADA COMPLIANT PARKING SPACE & RAMP TO ENTRANCE.

BENCHMARK

BENCHMARK #1
IRON PIN
ELEV = 683.35'
N = 467,920.79
E = 1,659,150.81
TENNESSEE COORDINATE
SYSTEM OF 1983
NAVD 88

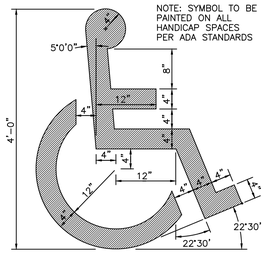
WARNING! UTILITY LINES!

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.

Tennessee811
Know what's below
Call before you dig.

LEGEND

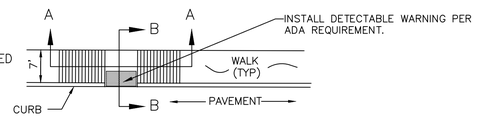
	EXISTING	PROPOSED
WATER MAIN		8" W
SANITARY SEWER		
STORM SEWER	15"ST	18"ST
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET	EIP	
EXISTING IRON PIN		
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	
TREE LINE		
STORM STRUCTURE LABEL		(ST)
ASPHALT		
CONCRETE		
# PARKING SPACES		(14)



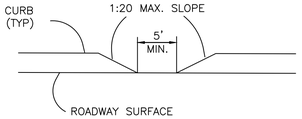
PAINTED HANDICAP SYMBOL
NOT TO SCALE

NOTES:

1. FOLLOW ADA REQUIREMENTS FOR REQUIRED LOCATIONS AND PLACEMENT OF DETECTABLE WARNINGS.

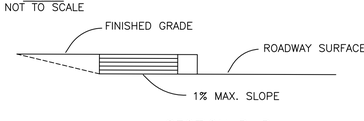


PLAN
NOT TO SCALE



SECTION A–A
NOT TO SCALE

ACCESSABLE RAMP DETAIL
NOT TO SCALE



SECTION B–B
NOT TO SCALE

GEOTECHNICAL NOTE:

CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMINCEMENT 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's) MAP NUMBER 47119C0285E DATED APRIL 16, 2007.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GERALD W. LICK
REGISTERED ENGINEER
No. 107415
STATE OF TENNESSEE
gerald@wesengineers.com

SUBMITTED FOR MUNICIPAL APPROVAL
NOT FOR CONSTRUCTION

© 2023

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
CARA LYNN
710 NORTH MAIN STREET
COLUMBIA, TENNESSEE 38401

REVISIONS
DATE

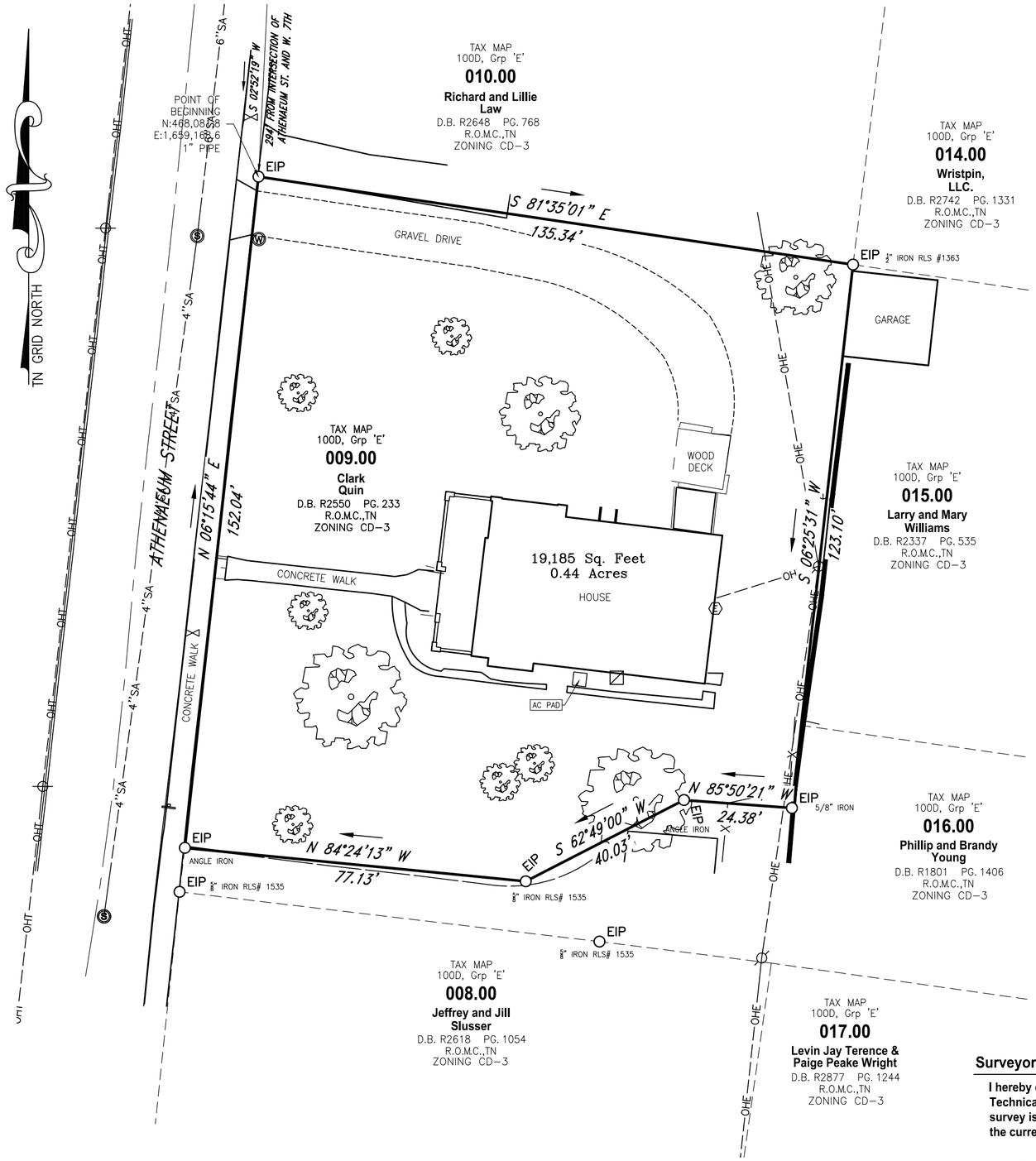
LAW OFFICE
807 ATHENAEUM STREET
COLUMBIA, MAURY COUNTY, TENNESSEE
CONCEPT SKETCH

Drawn: RP
Checked: RP
Approved: GV
Date: 11/17/23

Job. no. 23603
Scale: Vertical: 1"=20' Horizontal:

1 of 1

FILE:J:\WES_Engineers_Surveyors 2023\23603 - 807 Athenaeum - Cara and Bart\Dwg\Engineering\23603 ATHENAEUM STREET_base.dwg



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Site Data

Current Zoning – CD-3 – Neighborhood Character District

Lot Width:
- House: 40 feet min if Alley loaded at rear, otherwise 65 feet min
- Duplex: 50 feet min for each unit of Duplex
- Civic: 50 feet min

Setbacks:
Principal:
- Front: 25 feet min(Principal Frontage) 20 feet min(Secondary Frontage)
- Side: 8 feet min
- Rear: 25 feet min, or 15 feet min from center of Rear Alley

Accessory:
- Front: 25 feet min(Principal Frontage) 20 feet min(Secondary Frontage)
- Side: 8 feet min
- Rear: 25 feet min, or 15 feet min from center of Rear Alley

Property Description

A tract of land located in Maury County, Tennessee. Being all of the property of Clark Quin as recorded in Deed Book R2550, page 233, shown on Tax Map 100D, Group "E", Parcel 009.00, and being more particularly described as follows.

Beginning at an 1" iron pipe, said point being the south west corner of Richard and Lillie Law as recorded in Deed Book R2648, page 768, said point lying SOUTH 02°52'19" WEST a distance of 294' from the intersection of W. 7th Street and Athenaeum Street, having a Tennessee State Plane Coordinate N-468,081.8, E-1,659,168.6 (TDOT CORS).

Thence with the south line of the Law property, SOUTH 81°35'01" EAST a distance of 135,34' to a ½" iron pin with RLS# 1363 cap;
Thence with the west line of Larry and Mary Williams as recorded in Deed Book R2337, page 535, SOUTH 06°25'31" WEST a distance of 123,10' to a 5/8" iron pin found;
Thence with the north line of Phillip and Brandy Young as recorded in Deed Book R1801, page 1406, NORTH 85°50'21" WEST a distance of 24,38' to a found angle iron;
Thence with the same, SOUTH 62°49'00" WEST a distance of 40.03' to a 5/8" iron pin with RLS# 1535 cap;
Thence with the same, NORTH 84°24'13" WEST a distance of 77,13' to a found angle iron;
Thence with the east margin of Athenaeum Stree, NORTH 06°15'44" EAST a distance of 152.04', which is the point of beginning, having an area of 19,185 square feet, 0,44 acres.

There may exist easement/easements either by record or prescription that a complete and accurate title search may reveal. No title research was provided to the surveyor at the time of this survey.

Note: The above property description is based on information gathered during the course of an actual field survey conducted by W.E.S. - ENGINEERS AND SURVEYORS - Job #23603, under the direction of Allen B. O'Leary, Tennessee Registered Land Surveyor Number 1987. All iron pins set are ½" Rebar, with a plastic cap stamped "O'Leary, RLS 1987". All deeds referenced above are of record in the Register's Office of Maury County, Tennessee. The above property description was prepared under my direction on this the 17TH day of November 2023.

Surveyor's Certification (Tennessee)

I hereby certify that this is a Category "IV" survey, meets or exceeds the Minimum Technical Standards for Land Surveyors, and the ratio of precision of the undjusted survey is greater than 1:10,000 as shown hereon, and was done in compliance with the current Minimum Technical Standards.

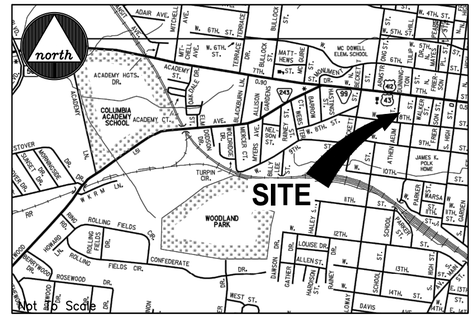
Allen B. O'Leary — 11/15/23

Allen B. O'Leary, TN RLS #1987 — **Date**

I hereby certify this is a true and accurate survey and meets or exceeds the current Minimum Standards and Applications of a Category IV (Remote Sensing) survey as defined in T.C.A. 0820-03-.07C(5).

Equipment:	Carlson BRX7, Base and Rover
Positional Accuracy:	HRMS =0.04 SD=0.008, VRMS=0.075 SD=0.013
Geoid:	NGS2012B
Date:	November 2023

Location Map



Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure, portions of the survey were done utilizing a Carlson BRX7, utilizing Base and Rover.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category IV as per Standards of Practice adopted by the State Board of Examiners for Land Surveyors for the State of Tennessee, and the precision of the unadjusted survey is greater than 1 foot in 10,000 feet.
3. Information concerning site utility services and appurtenances shown hereon is based on visible evidence noted during the survey, information provided by utility representatives or information shown on original construction plans by other. Information and location of service lines on site should be considered approximate and there may be underground utility lines that are not shown on the survey. Owner(s) and contractor(s) should assume responsibility of locating all underground utility service lines prior to any construction, excavation or any disturbance of the existing ground elevation to avoid hazard of unnecessary expense.
4. Information concerning major utilities or appurtenances shown hereon are based on visible evidence noted during the survey or information provided by utility representatives. Verification of existence, size, location, depth and availability of service should be confirmed by local utility agencies.
5. 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 Regulation as interpreted and regulated by the Department of Planning and Codes.
6. The area of the parcel is as shown hereon.
7. This property currently identified as Tax Map No. 100D, Group "E", Parcel No. 009.00, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: n/a
9. Deed reference: Book R2550, Page 233.
10. Bearings based on: Tennessee State Plane, Fipzone 4100.
11. 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.
12. This survey was prepared from current deeds of record and title search as provided by others and noted hereon.
13. This survey was prepared for the exclusive use of the person, persons, or entity, if any, named on the certification hereon. Said certificate does not extend to any unnamed person without an express re-certification by the surveyor naming said person.
14. The certification as provided on this survey, is purely a statement of professional opinion based on knowledge, information and belief, based on existing field evidence and documentary evidence provided by others.
15. The certification is not an expressed or implied warranty or guarantee.
16. The property as shown hereon is not located in a Special Flood Hazard Area as shown on F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0285E, dated April 16, 2007, as scaled graphically.

Legend

- EIP Iron Rod Found
- IPS Iron Rod Set
- I.P.F. Iron Pipe Found
- AXLE Axle Found
- FENCE Fence Post
- ECM Concrete Monument Existing
- P.K.F. PK Nail Found
- P.K.S. PK Nail Set
- R.R.S.F. Railroad Spike Found
- R.R.S.S. Railroad Spike Set
- Bench Mark
- Stake Found
- Fire Hydrant
- Water Meter
- Water Valve
- Water Reducer
- Clean Out
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Catch Basin
- Curb Inlet
- Storm Pipe
- Cable Manhole
- Electric Manhole
- Telephone Manhole
- Water Manhole
- Electric Meter
- Cable Riser
- Electric Riser
- Telephone Riser
- Telephone Booth
- Gas Meter
- Gas Valve
- Light Pole
- Power Pole
- Telephone Pole
- Guy Pole
- Power Pole
- Flag Pole
- Guy Wire
- Mailbox
- Parking Block
- Satellite Dish
- Handicap Parking
- Water Spigot
- Bollard
- Evergreen Tree
- Deciduous Tree
- Bush
- Sign
- Adjoining Property Line
- Subject Property Line
- Easement Line
- Building Setback Line
- Centerline
- Edge of Pavement
- Edge of Gravel
- Fence Line
- Landscape
- Woods / Tree line
- Edge of Water
- Ditch / Creek Centerline
- Minor Contour Line
- Index Contour Line
- G Gas Line
- SA Sanitary Sewer Line
- W Water Line
- ST Storm Sewer Line
- OH Overhead Utility Line
- OHC Overhead Cable Line
- OHE Overhead Electric Line
- OHT Overhead Telephone Line
- UG Underground Utility Line
- UGC Underground Cable Line
- UGE Underground Electric Line
- UGT Underground Telephone Line
- FM Forced Main Line

ALLEN B. O'LEARY XVI REGISTERED LAND SURVEYOR AGRICULTURE OR COMMERCIAL TENNESSEE NO. 1987

allen@wesengineers.com

©2023

WES ENGINEERS & SURVEYORS
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
Cara Lynn
710 N. Main Street, Suite 200
Columbia, TN 38401
931-388-5070

PLAT OF SURVEY
807 ATHENAEUM STREET
COLUMBIA, TN 38401

DATE	REVISIONS

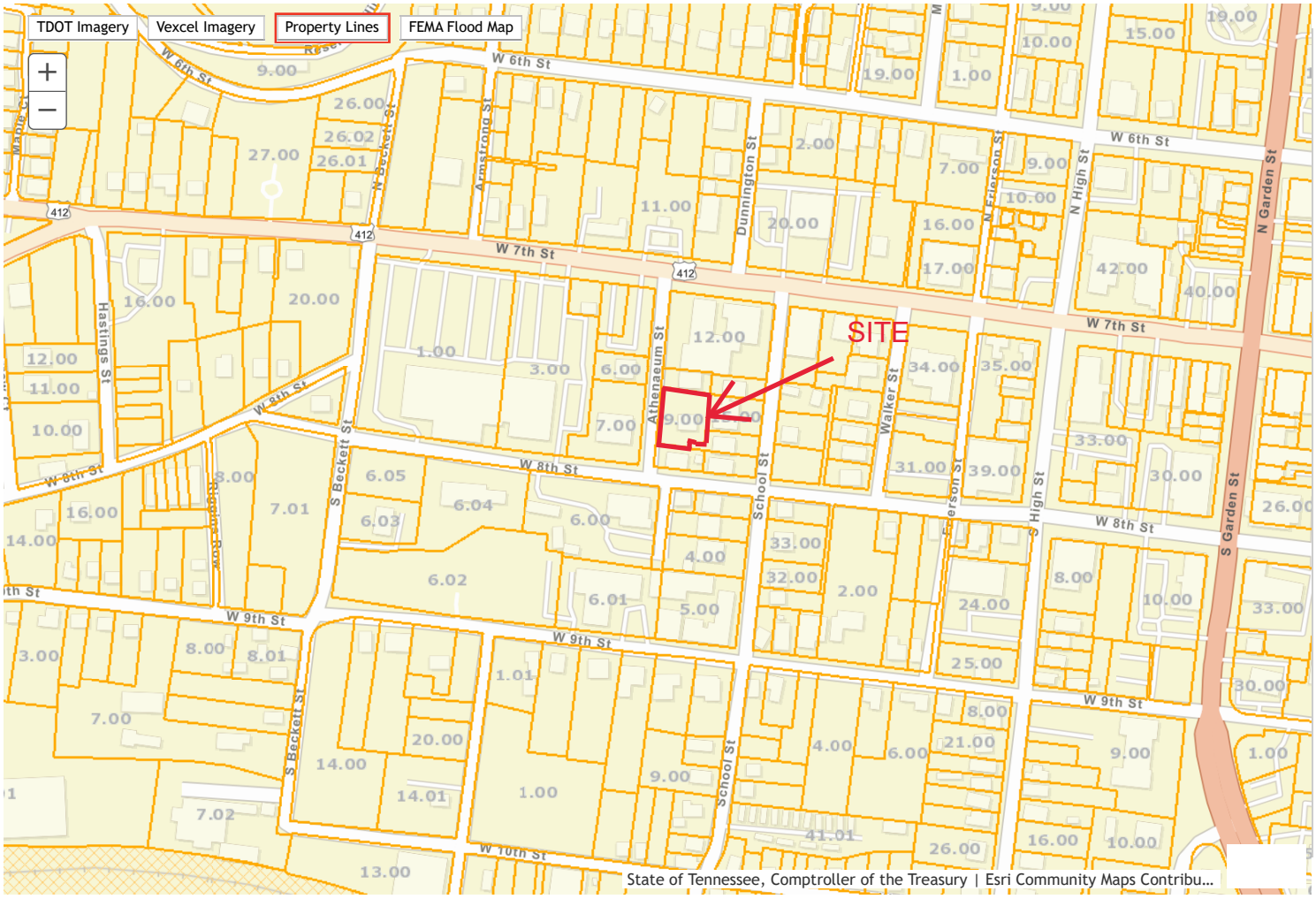
Drawn: AO | Checked: | Approved: | Date: NOV. 16, 2023

Job. no. 23603 | Scale: Vertical: 1"=20' Horizontal:

1 of 1

FILE:J:\WES_Engineers_Surveyors 2023\23603 - 807 Athenaeum - Cara and Bart\Dwg\Survey\23603 ATHENAEUM SURVEY.dwg

Tennessee Property Viewer



Athanaeum Street



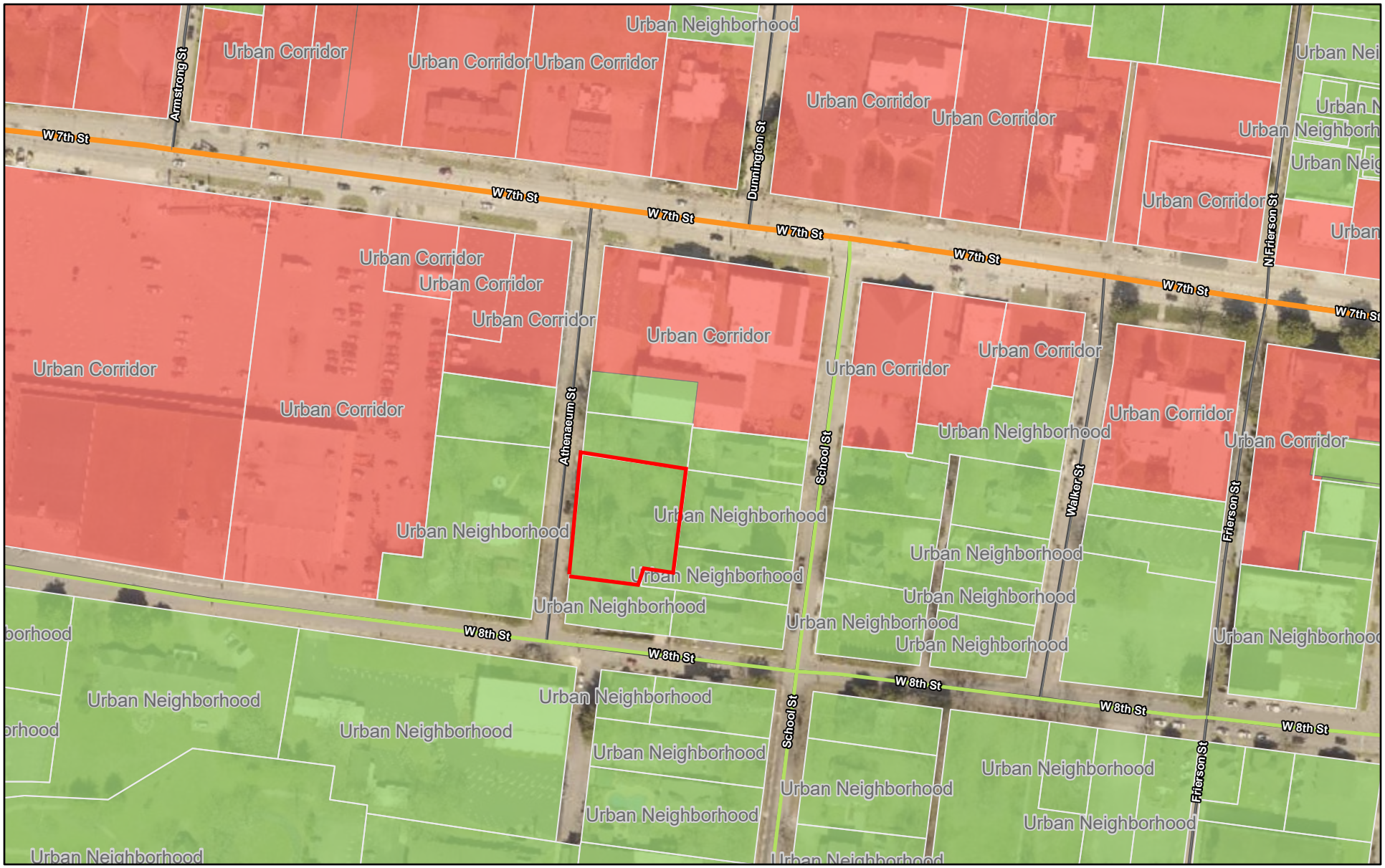
November 17, 2023

1:2,000

0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

Athanaeum Street Future Land Use



November 17, 2023

1:2,000

0 0.01 0.03 0.06 mi

0 0.03 0.06 0.11 km

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 11/1/2023
Name: Gerald Vick
Phone: 9313882329
Email: gerald@wesengineers.com
Address/Parcel ID: Athenaeum St, Columbia Map 100D, Grp "E" Pcl 9.00
Property Type: ○ Residential ◉ Commercial ○ Industrial
Construction Type: V-B
Enclosed Area (ft²): 3,275 sf (existing res)

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: NFPA 13

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: 1,500 gpm Duration: 2 hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: 1,000 gpm Duration: 2 hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

Fire Plan Reviewer: Brad Massey Date: 11/1/2023

CPWS

November 19, 2023
Mr. Gerald W. Vick P.E.
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
Sent via email: gerald@wesengineers.com
RE: Water Availability Letter
807 Athenaeum St.
Tax Map 100D, Parcel 9
Columbia, Maury County, TN

Dear Mr. Vick:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development is an existing residence to be repurposed as office space. CPWS has evaluated the projected water demands for the proposed development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,500 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,

Eric King

Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-059

W.E.S. – ENGINEERS AND SURVEYORS

2486 Nashville Highway
Columbia, TN 38401
931-388-2329

CD-4 REQUEST – 807 Athenaeum Street

A tract of land located in Maury County, Tennessee. Being all of the property of Clark Quin as recorded in Deed Book R2550, page 233, shown on Tax Map 100D, Group "E", Parcel 009.00, and being more particularly described as follows.

Beginning at an 1" iron pipe, said point being the south west corner of Richard and Lillie Law as recorded in Deed Book R2648, page 768, said point lying SOUTH 02°52'19" WEST a distance of 294' from the intersection of W. 7th Street and Athenaeum Street, having a Tennessee State Plane Coordinate N-468,081.8, E-1,659,168.6 (TDOT CORS).

Thence with the south line of the Law property, SOUTH 81°35'01" EAST a distance of 135.34' to a ½" iron pin with RLS# 1363 cap;
Thence with the west line of Larry and Mary Williams as recorded in Deed Book R2337, page 535, SOUTH 06°25'31" WEST a distance of 123.10' to a 5/8" iron pin found;
Thence with the north line of Phillip and Brandy Young as recorded in Deed Book R1801, page 1406, NORTH 85°50'21" WEST a distance of 24.38' to a found angle iron;
Thence with the same, SOUTH 62°49'00" WEST a distance of 40.03' to a 5/8" iron pin with RLS# 1535 cap;
Thence with the same, NORTH 84°24'13" WEST a distance of 77.13' to a found angle iron;
Thence with the east margin of Athenaeum Stree, NORTH 06°15'44" EAST a distance of 152.04', which is the point of beginning, having an area of 19,185 square feet, 0.44 acres.

There may exist easement/easements either by record or prescription that a complete and accurate title search may reveal. No title research was provided to the surveyor at the time of this survey.

Note: The above property description is based on information gathered during the course of an actual field survey conducted by W.E.S. – ENGINEERS AND SURVEYORS – Job #23603, under the direction of Allen B. O'Leary, Tennessee Registered Land Surveyor Number 1987. All iron pins set are ½" Rebar, with a plastic cap stamped "O'Leary, RLS 1987". All deeds referenced above are of record in the Register's Office of Maury County, Tennessee. The above property description was prepared under my direction on this the 17TH day of November 2023.

Allen B. O'Leary
TN R.L.S. No. 1987

CD–4 TABLE 4.3.1–D DISTRICT STANDARDS: GENERAL URBAN CHARACTER DISTRICT



General Description

The CD–4 General Urban Character District consists of a medium density area that has a mix of Building Types and primarily Residential, Retail / Personal Service / Artisan, Office, Lodging and Civic Uses; there are medium, shallow or no front Setbacks and narrow to medium side Setbacks; it has variable private landscaping; and it has Thoroughfares and Internal Drives with curbs, Sidewalks and trees that define medium-sized blocks. CD–4 is an appropriate District for the Urban Neighborhood Character Area, the Employment Character Area, the Tom Hitch Special Area, the Industrial Road Special Area, the Bear Creek Pike "Node" Special Area, and the Interstate Gateway Special Area as described in the Comprehensive Plan.



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Authentisign ID: FDB9A288-7485-EE11-8925-6045BDD68161

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	807 Athenaeum Street. Columbia, TN 38401		
	TAX MAP: 100D	GROUP: E	PARCEL: 09.00
SUMMARY OF NATURE OF REQUEST AND WORK	Request rezoning from x to CD-4 for a proposed Attorney Office providing Personal Services		

DATE OF PRE-APPLICATION CONFERENCE	9/27/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ☑ Rezoning ❑ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☑ Written Legal Description copy ☑ Requested Zone Listed ☑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ☑ Plans and/or Plats conforming to City standards with check list completed ☑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) _____ ❑ Total Number of Lots _____ ❑ Total acreage _____

Authentisign ID: FDB9A288-7485-EE11-8925-6045BDD68161

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	WES Engineers & Surveyors	PHONE	931-388-2329
ADDRESS	2486 Nashville Hwy Columbia, TN 38401	EMAIL	gerald@wesengineers.com

PROPERTY OWNER NAME	Clark Quin	PHONE	
ADDRESS	807 Athenaeum Street Columbia, TN 38401	EMAIL	

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

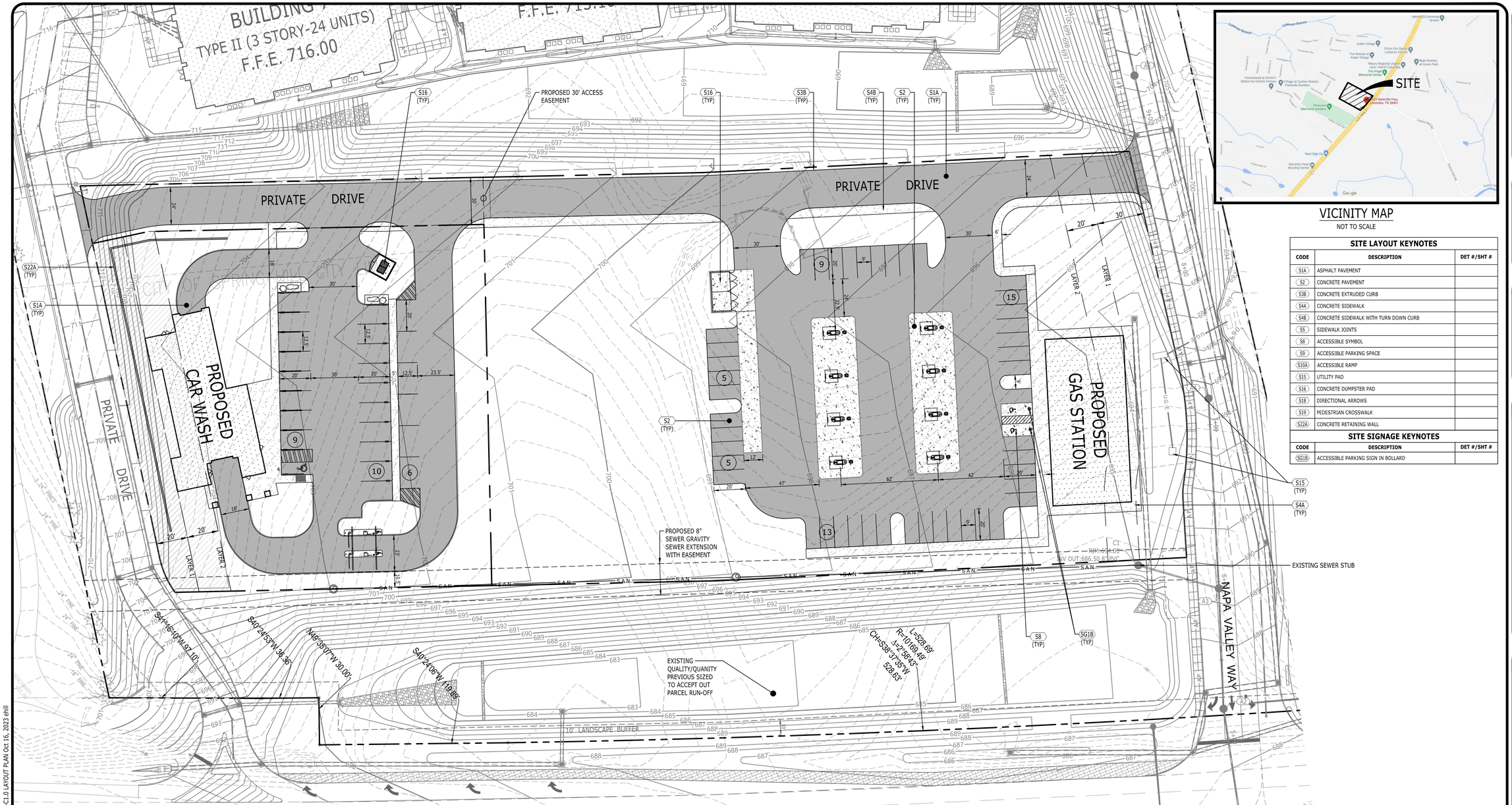
APPLICANT NAME	APPLICANT SIGNATURE	DATE
WES Engineers & Surveyors	Ariel Elizabeth Simon 11/17/23 Nathaniel David Simon 11/17/23	Oliver Eugene Simon 11/17/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	



VICINITY MAP

NOT TO SCALE

SITE LAYOUT KEYNOTES		
CODE	DESCRIPTION	DET #/SHT #
S1A	ASPHALT PAVEMENT	
S2	CONCRETE PAVEMENT	
S3B	CONCRETE EXTRUDED CURB	
S4A	CONCRETE SIDEWALK	
S4B	CONCRETE SIDEWALK WITH TURN DOWN CURB	
S5	SIDEWALK JOINTS	
S8	ACCESSIBLE SYMBOL	
S9	ACCESSIBLE PARKING SPACE	
S10A	ACCESSIBLE RAMP	
S15	UTILITY PAD	
S16	CONCRETE DUMPSTER PAD	
S18	DIRECTIONAL ARROWS	
S19	PEDESTRIAN CROSSWALK	
S22A	CONCRETE RETAINING WALL	
SITE SIGNAGE KEYNOTES		
CODE	DESCRIPTION	DET #/SHT #
SG1B	ACCESSIBLE PARKING SIGN IN BOLLARD	

SITE DATA

TAX MAP:	50
PARCEL ID.:	051 02203 000
SITE ADDRESS:	2425 NASHVILLE HIGHWAY COLUMBIA, TN, 38401
SITE AC. PROPOSED GAS STATION:	2.77 AC. (120,510 FT²)
SITE AC. PROPOSED CAR WASH:	1.20 AC. (52,419 FT²)
	3.97 AC. TOTAL
EXISTING ZONING:	PUD
PROPOSED ZONING:	CP-4C SUBURBAN CORRIDOR CHARACTER DISTRICT
LOT OCCUPATION:	HOUSE 38' MIN. IF ALLEY LOADED GARAGE AT REAR, OTHERWISE 50' MIN. DUPLEX: 30' FT MIN. FOR EACH UNIT OF DUPLEX TOWNHOUSE: FOR TOWNHOUSES WITH EACH UNIT ON ITS OWN LOT OR BUILDING SITE: 18 - 36 FT, FOR SINGLE TOWNHOUSE UNIT ATTACHED TO OTHER TOWNHOUSE UNITS X 8 MAX. ATTACHED TOWNHOUSE UNITS FOR MULTIPLE TOWNHOUSES ON A SINGLE LOT OR BUILDING SITE: 18 20 FT PER TOWNHOUSE UNIT X 6 MAX ATTACHED TOWNHOUSE UNITS LARGE SCALE COMMERCIAL: 600 FT. MAX. ALL OTHER BUILDING TYPES: 18 FT MIN. - 200 FT MAX.
FRONT BUILDOUT:	60% MIN. EXCEPT COMMERCIAL 40% MIN.
LOT / BUILDING SITE AREA:	NR
LOT / BUILDING SITE ENFRONTMENT:	MUST ENFRONT A VEHICULAR THOROUGHFARE OR INTERNAL DRIVE, EXCEPT < 20% OF THE LOTS OR BUILDING SITES WITHIN EACH TYPE OF CHARACTER DISTRICT OF A DEVELOPMENT PARCEL MAY ENFRONT A PEDESTRIAN PATH PASSAGE, PEDESTRIAN WALKWAY OR WATER BODY IF SUCH LOTS HAVE LEGAL AND PHYSICAL VEHICULAR ACCESS TO A VEHICULAR THOROUGHFARE VIA DRIVEWAY OR EASEMENT.
LOT / BUILDING SITE ACCESS:	ALL LOTS MUST HAVE LEGAL AND PHYSICAL VEHICULAR ACCESS TO A VEHICULAR THOROUGHFARE VIA DRIVEWAY OR EASEMENT.

SETBACK / YARDS:

SETBACK / YARDS - PRINCIPAL BUILDING	
FRONT SETBACK / YARD PRINCIPAL FRONTAGE:	6 FT. MIN. - 40 FT. MAX.
FRONT SETBACK / YARD SECONDARY FRONTAGE:	6 FT. MIN. - 40 FT. MAX.
SIDE SETBACK / YARD, EACH SIDE:	0 FT. MIN. PER SIDE
REAR SETBACK:	3 FT. MIN.; 15 FT. MIN. FROM CENTER LINE OF REAR ALLEY
SETBACK / YARDS - ACCESSORY BUILDING	
FRONT SETBACK / YARD PRINCIPAL FRONTAGE:	20 FT. MIN. BEHIND PRINCIPAL BUILDING FRONTAGE
FRONT SETBACK / YARD SECONDARY FRONTAGE:	5 FT. MIN.
SIDE SETBACK / YARD, EACH SIDE:	5 FT. MIN.
REAR SETBACK:	3 FT. MIN.; 5 FT. MIN. IF GARAGE DOOR FACES REAR ALLEY

IMPERVIOUS SURFACE AREA GAS STATION:

BUILDINGS:	0.12 AC. (5,302 FT²)
DRIVES/SIDEWALKS:	1.43 AC. (62,582 FT²)
TOTAL PROPOSED IMPERVIOUS AREA:	1.55 AC. (67,384 FT²)
PROPOSED ISR:	0.56 (67,384 FT² / 112,777 FT²)

IMPERVIOUS SURFACE AREA CAR WAS:

BUILDINGS:	0.11 AC. (4,718 FT²)
DRIVES/SIDEWALKS:	0.60 AC. (26,343 FT²)
TOTAL PROPOSED IMPERVIOUS AREA:	0.71 AC. (31,061 FT²)
PROPOSED ISR:	0.59 (31,061 FT² / 52,419 FT²)
ALLOWED ISR:	80% MAX.

OWNER:	ENDEAVOR REAL ESTATE GROUP
ADDRESS:	500 WEST 5TH STREET, STE. 700 AUSTIN, TX, 78701
PHONE NO.:	512.532.2180
CONTACT NAME:	NELSON CROWE
CONTACT E-MAIL ADDRESS:	NCROWE@ENDEAVOR-RE.COM

PROJECT REPRESENTATIVE:	CATALYST DESIGN GROUP
ADDRESS:	5100 TENNESSEE AVENUE NASHVILLE, TN 37209
PHONE NO.:	615.622.7200
CONTACT NAME:	ANDREW WISEMAN
CONTACT E-MAIL ADDRESS:	AWISEMAN@CATALYST-DG.COM

PARKING SUMMARY

PARKING RQD GAS STATION:	1 PER 200 S.F. (5,302 S.F. / 200 S.F.) = 27 SPACES
PARKING REQUIRED CAR WASH:	1 PER 500 S.F. (4,718 S.F. / 500 S.F.) = 10 SPACES

PARKING PROPOSED

GAS STATION	47 SPACES (2 ACCESSIBLE)
CAR WASH	26 SPACES (1 ACCESSIBLE)

LEGEND	
BUILDING	
CONCRETE PAVEMENT	
CONCRETE SIDEWALK	
HEAVY DUTY PAVEMENT	
LIGHT DUTY PAVEMENT	
PAINTED STRIPE	
CONCRETE CURB	

N

0 15 30 60 90

GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

ENDEAVOR REAL ESTATE GROUP
500 WEST 5TH STREET, ST. 700
AUSTIN, TX 78701
512.532.2180

PRELIMINARY SITE PLAN FOR REZONING

RETAIL PARCEL

2425 NASHVILLE HIGHWAY
COLUMBIA, MAURY COUNTY, TENNESSEE, 38401

NO.	DATE	DESCRIPTION

DRAWING TITLE

SCHEMATIC LAYOUT

PROJECT NUMBER
20210055

DRAWING NUMBER
C1.0

P:\2021\20210055\dwg\Construction\Retail Out Parcels\ref\20210055_C1-0_LAY.dwg-C1.0 LAYOUT PLAN Oct 16, 2023 ehill

BUILDING 7
TYPE II (3 STORY-24 UNITS)
F.F.E. 716.00

F.F.E. 715.10

PROPOSED 30' ACCESS EASEMENT

DUMPSTER PAD

PRIVATE DRIVE

PRIVATE DRIVE

RETAINING WALL

PROPOSED CAR WASH

PROPOSED GAS STATION

DUMPSTER PAD

LAYER 1

LAYER 2

STORMWATER

10' LANDSCAPE BUFFER

NAPA VALLEY WAY

NASHVILLE HIGHWAY
(HIGHWAY 31)
(PUBLIC R.O.W. VARIES)

GREEN MILLS

CURB CUT

N

0 15 30 60 90
GRAPHIC SCALE

P:\2021\20210055\dwg\Construction\Retail Out Parcels\Xref\20210055_C1-0_LAY.dwg-C2.0 RENDER Oct 16, 2023 @1

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

ENDEAVOR REAL ESTATE GROUP
500 WEST 5TH STREET, ST. 700
AUSTIN, TX 78701
512.532.2180

PRELIMINARY SITE PLAN FOR REZONING

RETAIL PARCEL

2425 NASHVILLE HIGHWAY
COLUMBIA, MAURY COUNTY, TENNESSEE, 38401

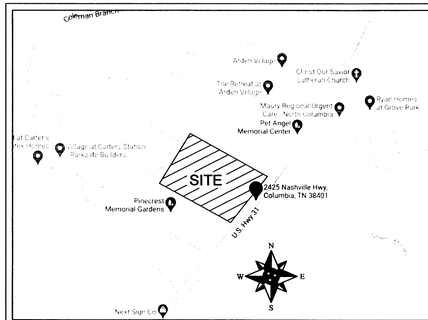
NO.	DATE	DESCRIPTION

DRAWING TITLE

RENDERED LAYOUT

PROJECT NUMBER
20210055

DRAWING NUMBER
C2.0



VICINITY MAP (NOT TO SCALE)

GENERAL NOTES:

1. THIS PROPERTY IS LOCATED IN ZONE "X" AREA OF MINIMAL FLOODING AS PER FEMA FLOOD MAP 47119C0180E WITH AN EFFECTIVE DATE ON 04/16/2007.
2. PROPERTY CURRENTLY ZONED: CRS-PUD
3. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY EFFECT THE USE OR DEVELOPMENT OF THE PARCEL.
4. THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE PERSON, PERSONS, OR ENTITY, IF ANY, NAMED HEREON. THIS DOES NOT EXTEND TO ANY UNNAMED PERSON WITHOUT AN EXPRESS WRITTEN CONSENT BY THE SURVEYOR.
5. HEREON PROPERTY IS SUBJECT TO THE RESTRICTIONS AND REGULATIONS SET FORTH BY THE CITY OF COLUMBIA PLANNING COMMISSION.
6. NO LIABILITY WILL BE ACCEPTED BEYOND THAT OF THE FOUR (4) YEAR STATUTE OF LIMITATIONS (T.C.A. 28-3-114 & T.C.A. 28-3-202) ORIGINATING FROM THE FIELD DATE SHOWN HEREON.
7. THE ENTIRETY OF THE EASTERLY PROPERTY BOUNDARY IS CONTIGUOUS WITH THE BOUNDARY OF NASHVILLE HIGHWAY WITHOUT GAPS, GORES, OR OVERLAPS.
8. THIS PROPERTY SURVEYED AND SHOWN HEREON IS THE SAME PROPERTY AS DESCRIBED IN THE TITLE COMMITMENT BEARING ORDER NO. 211613, WITH AN EFFECTIVE DATE OF AUGUST 5, 2021, PREPARED BY OLD REPUBLIC TITLE INSURANCE COMPANY.
9. NO ABOVE GROUND ENCROACHMENTS OF BUILDINGS, STRUCTURES OR OTHER IMPROVEMENTS FROM THE SUBJECT PROPERTY ONTO THE ADJOINING PROPERTIES OR FROM ADJOINING PROPERTIES ONTO THE SUBJECT PROPERTY OBSERVED IN THE PROCESS OF CONDUCTING THE SURVEY EXCEPT THE POND LOCATED ON THE SOUTHEAST CORNER OF THE PROPERTY.
10. NO EVIDENCE OF RECENT EARTH MOVING WORK OR BUILDING CONSTRUCTION WAS OBSERVED AT THE TIME OF SURVEY.
11. THE SURVEYOR HAS NOT BEEN ADVISED OF ANY DESIGNATED WETLAND AREAS ON THE PROPERTY.
12. NO CEMETERIES OR BURIAL GROUNDS WERE OBSERVED ON THE PROPERTY AT THE TIME OF SURVEY.
13. THE SUBJECT PROPERTY ABUTS AND HAS DIRECT, PHYSICAL ACCESS TO NASHVILLE HIGHWAY (A.K.A. HIGHWAY 31), A PUBLIC DEDICATED RIGHT-OF-WAY.
14. BASE INFORMATION WAS TAKEN FROM A SURVEY PREPARED BY OHM ADVISORS, DATED 9/17/2021, CATALYST DESIGN GROUP AND ANY OTHER OF THEIR CONSULTANTS SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND/OR COMPLETENESS OF THAT INFORMATION SHOW HEREON OR ANY ERRORS OR OMISSIONS RESULTING FROM SUCH.

EXISTING LEGEND

- IRON PIN (FOUND-NOTED)
- CONCRETE MONUMENT (FOUND-NOTED)
- IRON PIN (SET) 5/8" IRON REBAR, 24" IN LENGTH WITH YELLOW CAP LABELED "OHM ADVISORS"
- WATER VALVE
- POWER UTILITY POLE
- WATER METER
- LIGHT POLE/YARD LIGHT
- CLEAN OUT
- STORM DRAIN INLET
- STORM MANHOLE
- SANITARY MANHOLE
- FIRE HYDRANT
- GUY WIRE ANCHOR
- YARD DRAIN
- IRRIGATION CONTROL VALVE
- SIGN
- ELECTRICAL BOX
- GAS METER
- GAS VALVE
- ELECTRIC METER
- SUBJECT PROPERTY LINE
- ADJOINING PROPERTY LINE
- EASEMENT
- FENCE
- SANITARY SEWER LINE
- OVERHEAD ELECTRIC LINE
- UNDERGROUND GAS LINE
- STORM SEWER LINE
- WATER LINE
- M.B.S.L. (MINIMUM BUILDING SETBACK LINE)

PROPOSED LEGEND

- STORM PIPE & CATCH BASIN
- STORM PIPE & CURB INLET
- STORM PIPE & MANHOLE
- STORM PIPE & HEADWALL
- SEWER PIPE & MANHOLE
- SEWER FORCE MAIN
- WATERLINE
- SEWER PUMP STATION
- PUBLIC UTILITY EASEMENT
- PRIVATE DRAINAGE EASEMENT

SURVEYORS CERTIFICATE

I hereby certify that this is a Category I survey and that the Ratio of Precision of the unadjusted survey is greater than 1:10,000 as shown hereon and that this survey was done in compliance with current Tennessee Minimum Standards of Practice.

Jason Moseley, TN RLS # 2644
OHM Advisors
209 10th Avenue South,
Suite 154
Nashville, TN 37203
(615)-649-5264

JASON MOSELEY — 2644 — REGISTERED LAND SURVEYOR — STATE OF TENNESSEE — DEPARTMENT OF AGRICULTURE — DEPARTMENT OF COMMERCE & INSURANCE — TENNESSEE NO. 2644

12/15/2021

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 R2761, page 1144, Maury County Registers 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.

11/29/21
Date

Owner / Andy Pastor

Executive Vice President
Title (if action for partnership or corporation)

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

12/14/21
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 the current local and state government requirements, or a sufficient bond or other surety has been filed to guarantee said installation.

Director of Wastewater Department
Columbia, Tennessee

12/08/2021
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 exception 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

12/14/21
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.

Crystal Gideon
Maury County E911

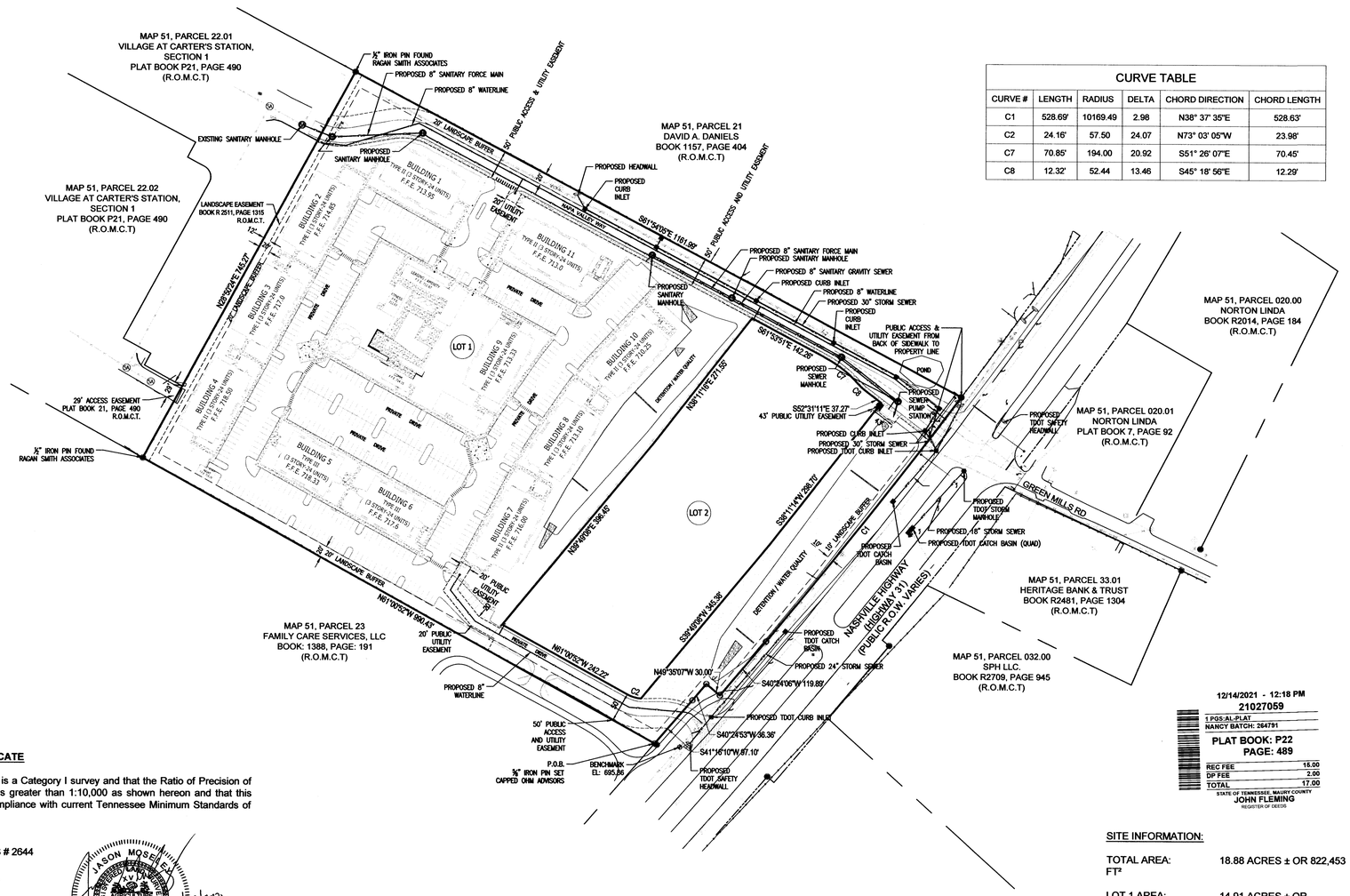
12-16-21
Date

Certificate of Approval of Water System

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Village's at Carter's Creek 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.

12/13/21
Date

Tony Kelly
Name, Title, Agency of Authorized Approving Agent



CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	528.69'	10169.49	2.98	N38° 37' 35"E	528.63'
C2	24.16'	57.50	24.07	N73° 03' 05"W	23.98'
C7	70.85'	194.00	20.92	S51° 26' 07"E	70.45'
C8	12.32'	52.44	13.46	S45° 18' 56"E	12.29'

SITE INFORMATION:

TOTAL AREA: 18.88 ACRES ± OR 822,453 FT²

LOT 1 AREA: 14.91 ACRES ± OR 649,524FT²

LOT 2 AREA: 3.97 ACRES ± OR 172,929 FT²

IMPERVIOUS AREA: 8.04 ACRES ±

PERVIOUS AREA: 10.85 ACRES ±

OHM ADVISORS
209 10th AVENUE SOUTH
SUITE 116
NASHVILLE, TN 37203
615-649-5264

N
W E
S

TENNESSEE GRID NORTH
HORIZONTAL DATUM = NAD83
VERTICAL DATUM= NAVD88
GNSS REFERENCE STATION : TN37

GRAPHIC SCALE 1"= 100'
100' 0 100'

A MAJOR PLAT OF VILLAGES AT CARTER'S CREEK

COLUMBIA, MAURY COUNTY, TENNESSEE

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ALL DRAWINGS AND WRITTEN MATERIALS APPEARING HEREIN CONSTITUTE THE ORIGINAL AND UNPUBLISHED WORK OF OHM AND THE SAME MAY NOT BE DUPLICATED, DISTRIBUTED, OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF OHM.

REVISION TABLE

1.	10/15/2021	REVISIONS FROM TECHNICAL AND DIVISION COMMENTS

12/14/2021 - 12:18 PM
21027059
1 POS:&LPLAT
NANCY BATCH: 264791
PLAT BOOK: P22
PAGE: 489

REC FEE	15.00
DP FEE	2.00
TOTAL	17.00

STATE OF TENNESSEE, MAURY COUNTY
JOHN FLEMING
REGISTER OF DEEDS

SURVEY ORDERED BY: CERCO DEVELOPMENT, INC.
500 WEST 5TH ST, SUITE 700
AUSTIN, TX 78701

PROPERTY ADDRESS: 2425 NASHVILLE HWY
COLUMBIA, TENNESSEE 37174

PROPERTY OWNER: OP II NASH 2425 NASHVILLE HWY LAND LP
500 W 5TH ST #700
AUSTIN, TEXAS 78701

DEED REFERENCE: BOOK R2761, PAGE 1144, R.O.M.C.T.
PLAT REFERENCE: N/A
TAX MAP: 51 GROUP: PARCEL: 22
COLUMBIA, MAURY COUNTY, TENNESSEE

OHM PROJECT#: 1231-21-0020

DRAWN BY: ES	DATE: 10/15/2021
FIELD WORK: ES/SS/TB/MH	DATE: 6/25/2021

"P:\1000_1999\1231210020_Villages_At_Carter_Creek_Plat_Survey\VILLAGES CARTER CREEK FINAL PLAT.dwg"

SHEET 1 OF 1

October 16, 2023

Kevin McCarthy
City Planner
City of Columbia
700 N Garden St
Columbia TN, 38401

Re: Villages at Carter's Creek – Retail Out Parcel Rezoning
Columbia, TN

To Whom it May Concern:

Please let this letter serve as a description of proposed rezoning description and policy compliance statement.

Zoning Description:

The purpose of this request for rezoning is to request a more appropriate straight rezoning and to cancel a portion of the existing PUD on this parcel in order to hopefully attract less specialized type development required by the current PUD and avoid updating to the PUD to current zoning requirements if changes are made. Our intent is for this portion of the property to remain as commercial/retail as originally envisioned along the highway 31 corridor. However, the requested CD-4C would allow a greater variety of potential uses allow the greatest flexibility to a prospective commercial developments.

Comprehensive Plan Compliance Statement:

To the best our knowledge and based on our pre-application meeting, the CD-4C would be appropriate within the Suburban Corridor land use policy. We feel that we are meeting the character area intent within the transition from Suburban to Urban to provide a mix of uses and that the CD-4C would comply under the Comprehensive Plan and Article 3 of the zoning ordinance. The site is unique in that it was master planned with commercial use in mind such that it will have access control with the existing infrastructure on to Nashville highway and will have additional pedestrian connectivity to the developments within the PUD.

The conceptual site plan that has been included with this request indicates potential for a carwash and a convenience store with gas for preliminary review. We feel that there is a multitude of potential uses and opportunity for development with the updated zoning. We have provided the original PUD Traffic Impact study for additional documentation that this site was designed for 68,300 SF of retail and 9,300 SF of restaurant. The recommended improvements are currently under construction.

Thank you for your consideration of this request.

Best Regards,

Catalyst Design Group

Andrew Wisemen, PE
Principal | Project Manager

November 7, 2023
Mr. Andrew Wiseman
Catalyst Design Group
5100 Tennessee Ave
Nashville, TN 37209
Sent via email: awiseman@catalyst-dg.com
RE: Water Availability Letter
Villages of Carters Creek
2425 Highway 31
Columbia, Maury County, TN

Dear Mr. Wiseman:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development is a gas station with convenience store and car wash. CPWS has evaluated the projected water demands for the proposed development in the water system hydraulic model and is able to meet a fire-flow capacity of 2,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 8-inch water mains located on the North and South ends of the property.
- A minimum size 8-inch diameter water main will be installed to loop between the existing 8-inch mains on each end of the property.
- Domestic and fire protection service will be provided through a single fire-rated ultrasonic meter for each lot.
- Since the proposed lane is a private drive, any new hydrants required will be private hydrants on the customer side of the meter.
- Irrigation, if any, was not included in the below fee estimates. If required, it will be provided on a separate meter.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (32.6 SFUs)	$13,562.00

- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $7,000 per 6" ultra-sonic fire-rate meter (2 meters)	$14,000.00
Impact Fee: $25,000 per 2" meter equivalent (2 meters)	$50,000.00
Total Meter and Impact Fees Due =	**$64,000.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 23-054

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: 0810 Nashville Hwy

DATE: 11/7/2023

MODEL BY: Inflo Design Group, LLC

SYS. DEMAND Max Day

DURATION: 2

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Villages at Carters Creek

MODEL DATA

FLOW HYDRANT(S)	0810	n/a	n/a
GPM:	**1300**	0	0

TOTAL FLOW DURING SIMULATION: **1300** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION:

Hydrant 0810

STATIC 92 PSI RESIDUAL: 86 PSI

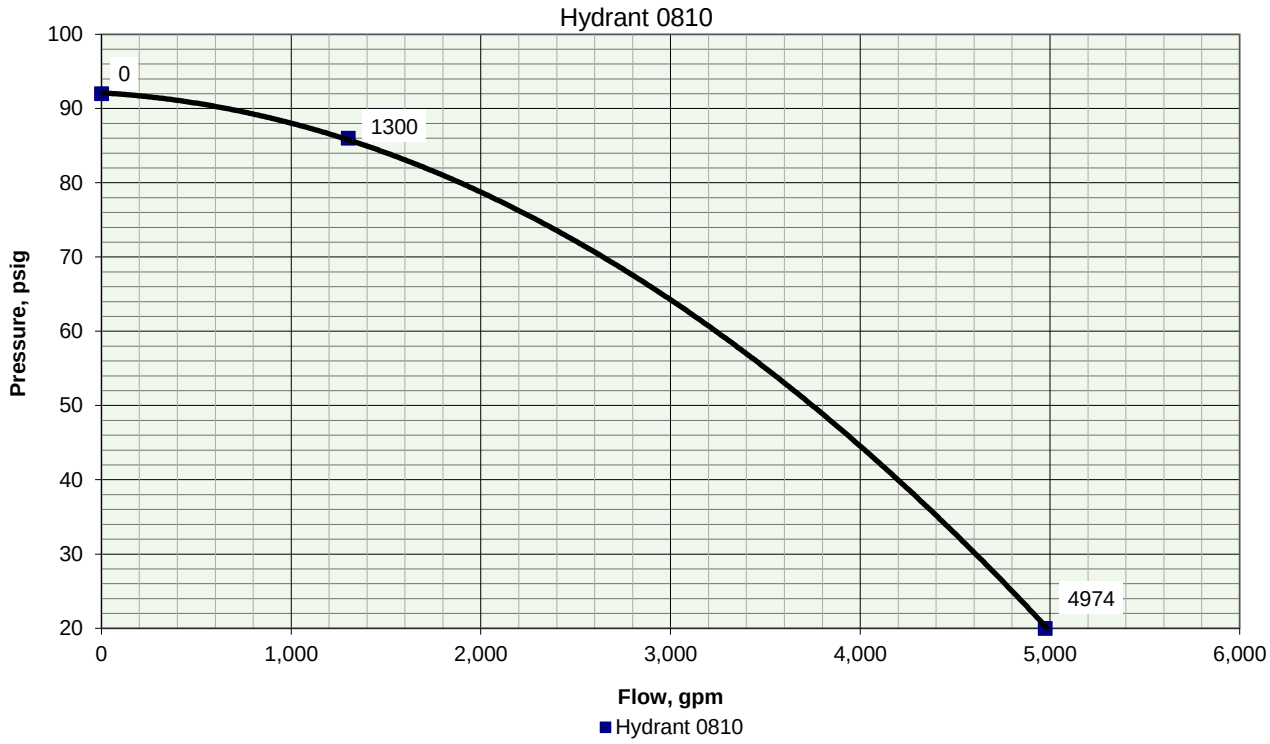
STATIC _____ PSI RESIDUAL: _____ PSI

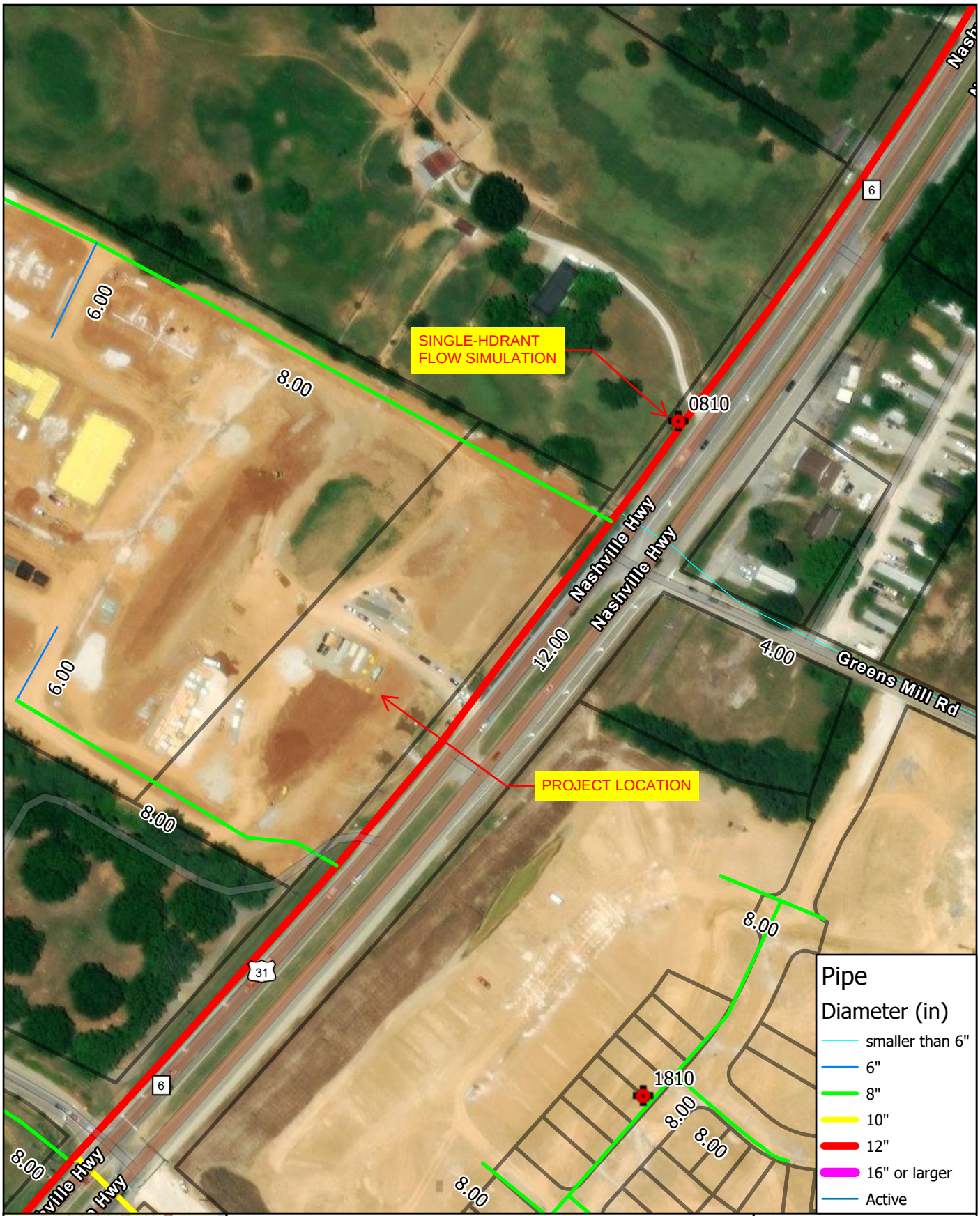
RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 **4974** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevations of 685' and current CPWS water infrastructure and does not account for additional losses associated with development piping.







Flow Test Location Map

Esri Community Maps Contributors, Tennessee STS GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

2023

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 100 200 Feet

0 0.02 0.04 Miles

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 10/3/2023
Name: Andrew Wiseman
Phone: 6156891147
Email: awiseman@catalyst-dg.com
Address/Parcel ID: 2425 Nashville Highway, 051 02203 000
Property Type: ○ Residential ◉ Commercial ○ Industrial
Construction Type: wood frame
Enclosed Area (ft²): car wash (4,900 SF) Gas Station (5,300 SF)

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: _____

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: _____ gpm Duration: _____ hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: _____

Average spacing between hydrants: _____ft.

Maximum distance from frontage to hydrant: _____ ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: _____ gpm Duration: _____ hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: _____

Average spacing between hydrants: _____ft.

Maximum distance from frontage to hydrant: _____ ft.

Fire Plan Reviewer: _____ Date: _____

MAY 2017

TRAFFIC IMPACT STUDY

VILLAGE AT CARTER'S STATION
NASHVILLE, TENNESSEE

PREPARED FOR:
MARTIN CONSULTING AND ENGINEERING, LLC

Transportation Consultants, LLC

1101 17TH AVENUE SOUTH
NASHVILLE, TENNESSEE 37212

TRAFFIC IMPACT STUDY
VILLAGE AT CARTERS STATION
NASHVILLE, TENNESSEE

PREPARED FOR:
MARTIN CONSULTING AND ENGINEERING, LLC



PREPARED BY:
RPM TRANSPORTATION CONSULTANTS, LLC
1101 17th Avenue South
Nashville, TN 37212
615.370.8410 office 615.370.8455 fax
www.rpmtraffic.net

TABLE OF CONTENTS

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EXECUTIVE SUMMARY

Project Description

The proposed Village at Carter's Station mixed-use development is located in Columbia, Tennessee, at the intersection of Nashville Highway and Greens Mill Road. The proposed development is located in an area that is predominately rural and characterized by low density land uses and farmland. According to the civil engineer for the project, Martin Consulting and Engineering, the development consists of approximately 181 apartment units, 108 townhome units, 9,300 square feet of office space, 68,300 square feet of specialty retail space, and 9,300 square feet of restaurant space.

Access to the project will be provided by two accesses on Nashville Highway. The northern proposed Site Access 1 on Nashville Highway is planned to be aligned with Greens Mill Road, and the southern proposed Site Access 2 is planned to be right-in/right-out and located approximately 600 feet south of the Site Access 1. Surface parking is planned to accommodate the development.

Data Collection

In order to provide data for the traffic impact analysis, manual traffic counts were conducted at the following unsignalized intersections:

- Nashville Highway and Greens Mill Road
- Nashville Highway and Arden Village Drive/Grove Park Way
- Nashville Highway and Old Highway 31 North
- Old Highway 31 North and Carters Creek Road

Specifically, RPM Transportation Consultants, LLC, conducted the traffic counts from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday in May 2017 while schools were in session. From the counts, it was determined that the peak hours of traffic flow for the study intersections occurred from 7:15 – 8:15 AM and 4:45 – 5:45 PM.

Projection of Future Traffic Volumes

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established, which includes general background traffic growth. Then the estimated project-generated traffic volumes were

added to the background peak hour traffic volumes in order to obtain the total projected peak hour traffic volumes for the study area intersections.

Conclusions and Recommendations

The analyses presented in this study indicate that the impacts of the proposed Village at Carter's Station mixed-use development on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project. The recommendations are as follows:

- Site Access 1 should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting lanes should be striped to provide an exclusive left turn lane and a shared through/right turn lane.

- A traffic signal should be installed at the intersection of Nashville Highway and Site Access 1/Greens Mill Road based on satisfaction of traffic signal warrants. Protected left turn phasing should be implemented for the northbound and southbound approaches. This signal is projected to be warranted upon completion of approximately 60% of the Village at Carter's Station development. Because the warrant analysis is based on projected traffic volumes, it is recommended that updated signal warrant analysis be conducted at approximately the 60% development level of the Village at Carter's Station to determine if actual traffic volumes meet the signal warrants.

- An exclusive right turn lane with approximately 140 feet of storage should be provided on the southbound approach of Nashville Highway at Site Access 1, as shown in the site plan.

- An exclusive left turn lane with approximately 200 feet of storage should be provided on the northbound approach of Nashville Highway at Site Access 1, as shown in the site plan.

- Site Access 2 should be designed as a Right-In-Right-Out (RIRO) access and should include sufficient width for one entering lane and one exiting lane. The eastbound approach should be stop controlled. This access is necessary due to the size of the development.

- Install one Right Turn Only (R3-5R) sign on the south side of Site Access 2 at the eastbound approach of Site Access 2 at Nashville Highway.

- An exclusive right turn lane with approximately 260 feet of storage should be provided on the southbound approach of Nashville Highway at Site Access 2, as shown in the site plan.

- The existing median break, located approximately 150 feet north of Site Access 2, should be closed.

- Due to its proximity, the existing cemetery access on the southeast area of the project site should either be closed or consolidated with the proposed southern Site Access 2

1. INTRODUCTION

The purpose of this study is to analyze the traffic impacts and access plan associated with the proposed Village at Carter's Station development located in the Columbia, Tennessee, at the intersection of Nashville Highway and Greens Mill Road. According to the civil engineer for the project, Martin Consulting and Engineering, the development consists of approximately 181 apartment units, 108 townhome units, 9,300 square feet of office space, 68,300 square feet of specialty retail space, and 9,300 square feet of restaurant space. It was assumed that the development would be completed by 2020, which is a three-year horizon.

The Village at Carter's Station development is planned to be located on the west side of Nashville Highway. The property is bounded on the east by Nashville Highway, on the south by a cemetery, and on the north and west by vacant land.

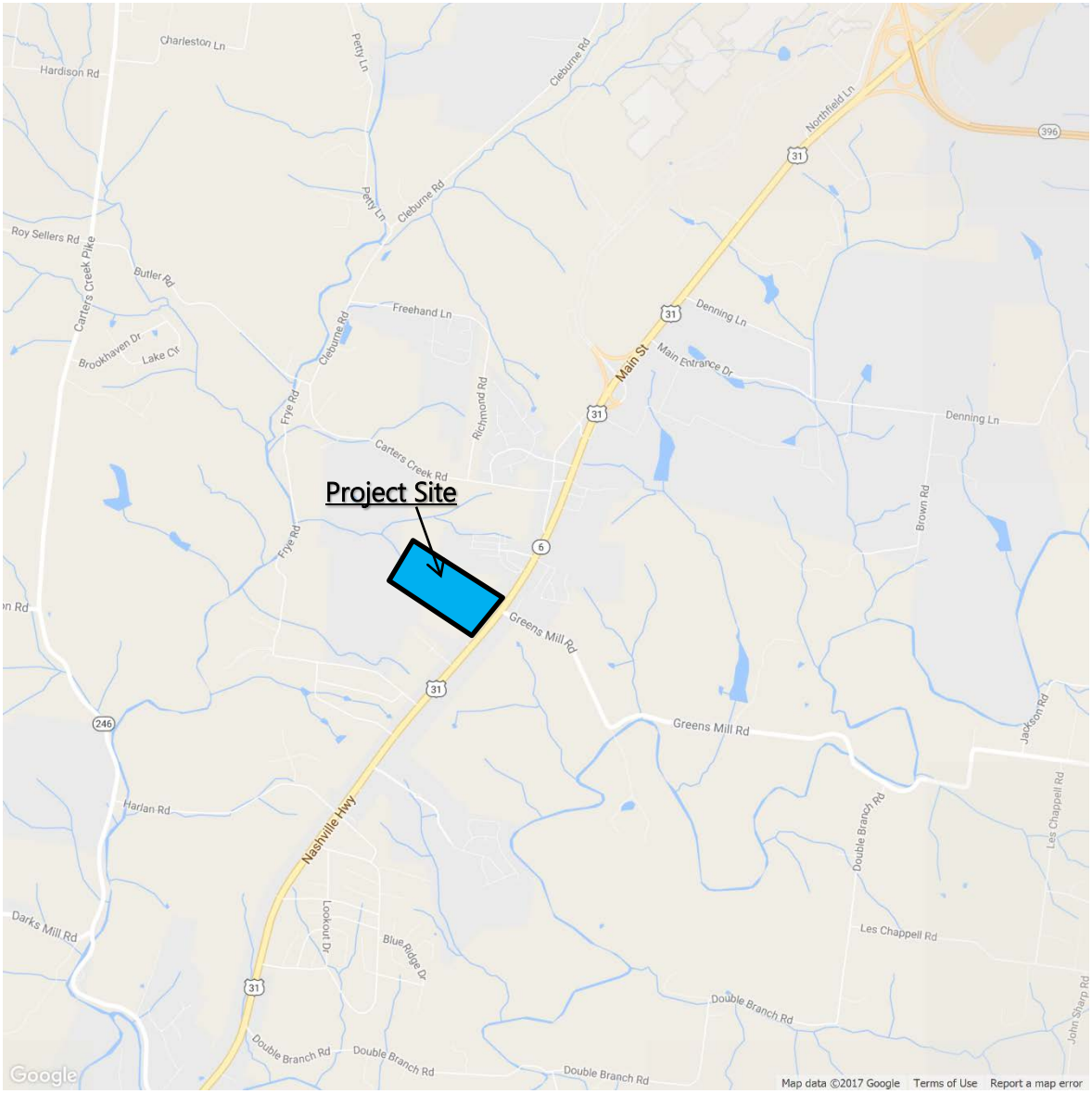
In this study, the current operating characteristics of the adjacent roadways and intersections in the vicinity of the project site are evaluated. The expected trips generated by the proposed development are determined and distributed to the roadway network. The adjacent roadways and intersections are then reevaluated to determine the anticipated traffic impacts of the project. Finally, recommendations are presented, including roadway improvements and/or traffic control improvements that are needed to accommodate the expected traffic.

2. PROJECT DESCRIPTION

The proposed Village at Carter's Station development is located in Columbia, Tennessee, at the intersection of Nashville Highway and Greens Hills Road. The project site is located on the west side of Nashville Highway. As shown in Figure 1, the project site is bounded on the east by Nashville Highway, on the south by a cemetery, and on the west and north by vacant land. The proposed development is within an area that is predominantly rural and characterized by a low density land uses and farmland.

According to the developer, the development consists of approximately 181 apartment units, 108 townhome units, 9,300 square feet of office space, 68,300 square feet of specialty retail space, and 9,300 square feet of restaurant space.

The current concept plan for the Village at Carter's Station site is shown in Appendix A. Surface parking is planned to accommodate the development. Two vehicular access points to the development are planned to be located on Nashville Highway, one northern Site Access 1 aligned with Greens Mill Road, and the second Site Access 2 located approximately 600 feet south of Greens Mill Road.



N

Location of the Project Site
(Not to Scale)

Figure 1.

3. EXISTING CONDITIONS

3.1 Existing Roadway Network

Local access to the site will be provided by Nashville Highway, Greens Mill Road, Old Highway 31 North, Carters Creek Road, Arden Village Drive, and Grove Park Way. A description of these roadways within the project vicinity is as follows:

Nashville Highway (also designated as State Route 6 and US 31) is a two-way roadway that generally travels in the north-south direction with two travel lanes in each direction, separated by a grass median. Nashville Highway provides connection between Columbia, Tennessee, to the south, and Spring Hill, Tennessee, to the north. Nashville Highway is classified as a Principal Arterial by TDOT. The posted speed limit on Nashville Highway is 55 mph. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Nashville Highway.



Nashville Highway Looking South Adjacent to the Project Site

Greens Mill Road is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Greens Mill Road provides connection between Nashville Highway to the west and residential streets along Greens Mill Road. Greens Mill Road is classified as a Major Collector by TDOT. The posted speed limit on Greens Mill Road is 40 mph. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Greens Mill Road.



Greens Mill Road Looking East At Nashville Highway

Old Highway 31 North is a two-way roadway that generally travels in a north-south direction with one travel lane in each direction. Old Highway 31 North provides connection between Nashville Highway to the south and Spring Hill High School to the north. The posted speed limit on Old Highway 31 is 25 mph. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Old Highway 31 North.



Old Highway 31 North Looking East To Nashville Highway

Carters Creek Road is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Carters Creek Road provides connection between Old Highway 31 to the east and Cleburne Road to the west, which in turn provides connection to Spring Hill Middle School to the north. The posted speed limit is 35 mph. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Carters Creek Road.



Carters Creek Road Looking West At Old Highway 31 North

Arden Village Road is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Arden Village Road provides access from Nashville Highway to the Arden Village residential neighborhood to the west. No speed limit is posted on Arden Village Road. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Arden Village Road, except a sidewalk provided on the south side of Arden Village Road.



Arden Village Road Looking West At Nashville Highway

Grove Park Way is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Grove Park Way provides access from Nashville Highway to retail buildings and a church to the east. No speed limit is posted on Grove Park Way. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Grove Park Way.



Grove Park Way Looking West To Nashville Highway

The study area includes four existing intersections described as follows:

Nashville Highway and Greens Mill Road is an unsignalized intersection with three approaches. The westbound approach of Greens Mill Road is stop-controlled and includes one shared left turn/right turn lane. The northbound approach of Nashville Highway includes one through lane and one shared through/right turn lane. The southbound approach of Nashville Highway includes two through lanes and one left turn lane. No pedestrian facilities are provided at the intersection.



Greens Mill Road Looking Westbound At Nashville Highway

Nashville Highway and Arden Village Road/Grove Park Way is an unsignalized intersection with four approaches. The westbound approach of Grove Park Way is stop-controlled and includes a left turn lane and a shared through/right turn lane. The eastbound approach of Arden Village Road is stop controlled and includes a right turn lane and a shared through/left turn lane. The northbound approach of Nashville Highway includes a left turn lane, two through lanes, and a right turn lane. The southbound approach of Nashville Highway includes a left turn lane, two through lanes, and a right turn lane. No pedestrian facilities are provided at the intersection, except a sidewalk on the south side of Arden Village Road that ends at the intersection with a curb ramp.



Arden Village Road Looking Eastbound at Nashville Highway

Nashville Highway and Old Highway 31 North is an unsignalized intersection with three approaches. The eastbound approach of Old Highway 31 North is stop controlled and includes a shared right/left turn lane. The northbound approach of Nashville Highway includes one through lane and one shared through/left turn lane via a median crossing. No pedestrian facilities are provided at the intersection.



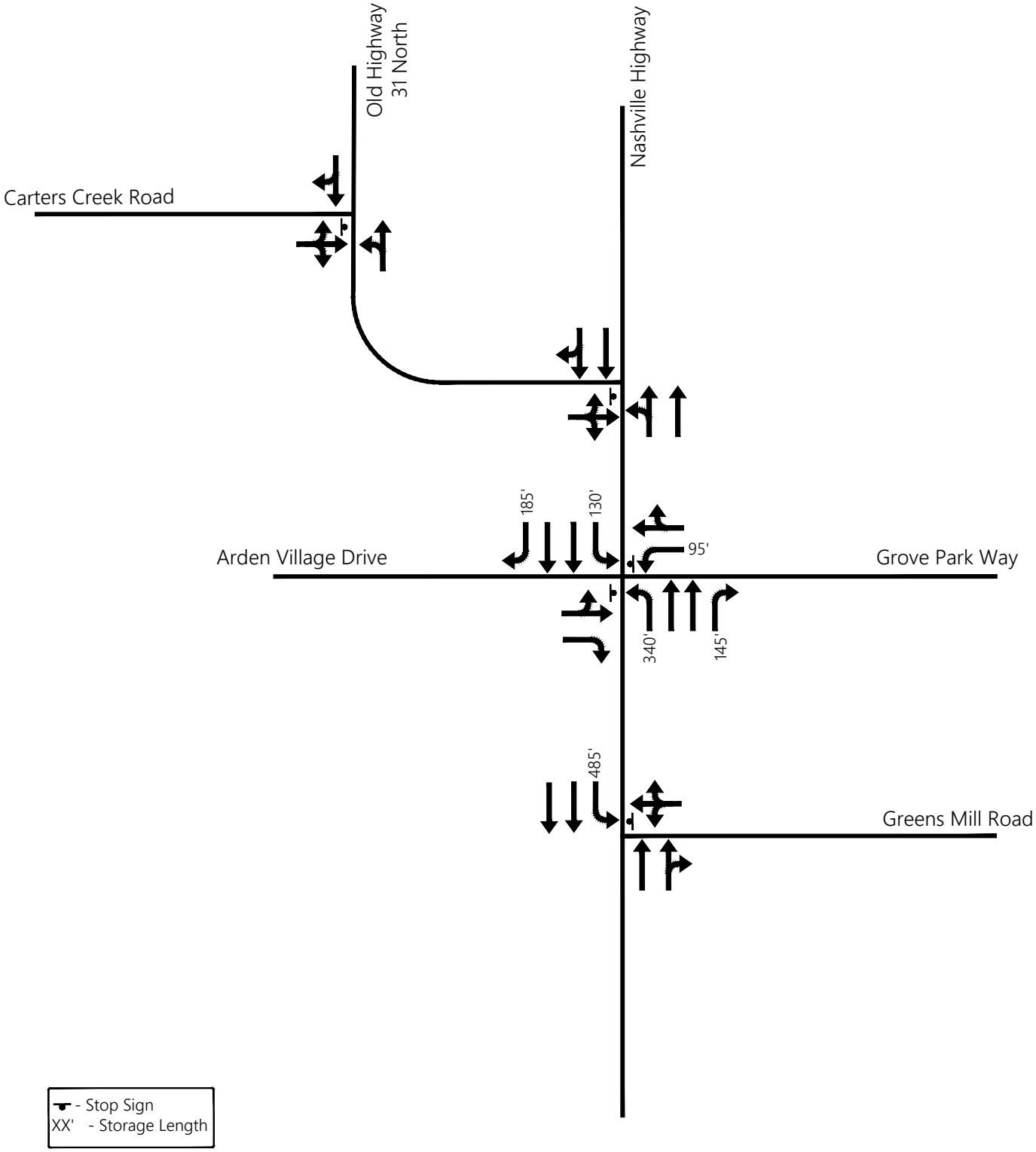
Old Highway 31 Looking Eastbound at Nashville Highway

Old Highway 31 North and Carters Creek Road is an unsignalized intersection with three approaches. The eastbound approach of Carters Creek Road is stop-controlled and includes one shared left/right turn lane. The northbound approach of Old Highway 31 North includes one shared through/left turn lane. The southbound approach of Old Highway 31 North includes one shared through/left turn lane.



Carters Creek Road Looking Eastbound at Old Highway 31

The existing laneage at the study intersections is illustrated in Figure 2.



Existing Laneage
(Not to Scale)

Figure 2.

3.2 Existing Traffic Volumes

In order to provide data for the traffic impact analysis, manual traffic counts were conducted at the following unsignalized intersections:

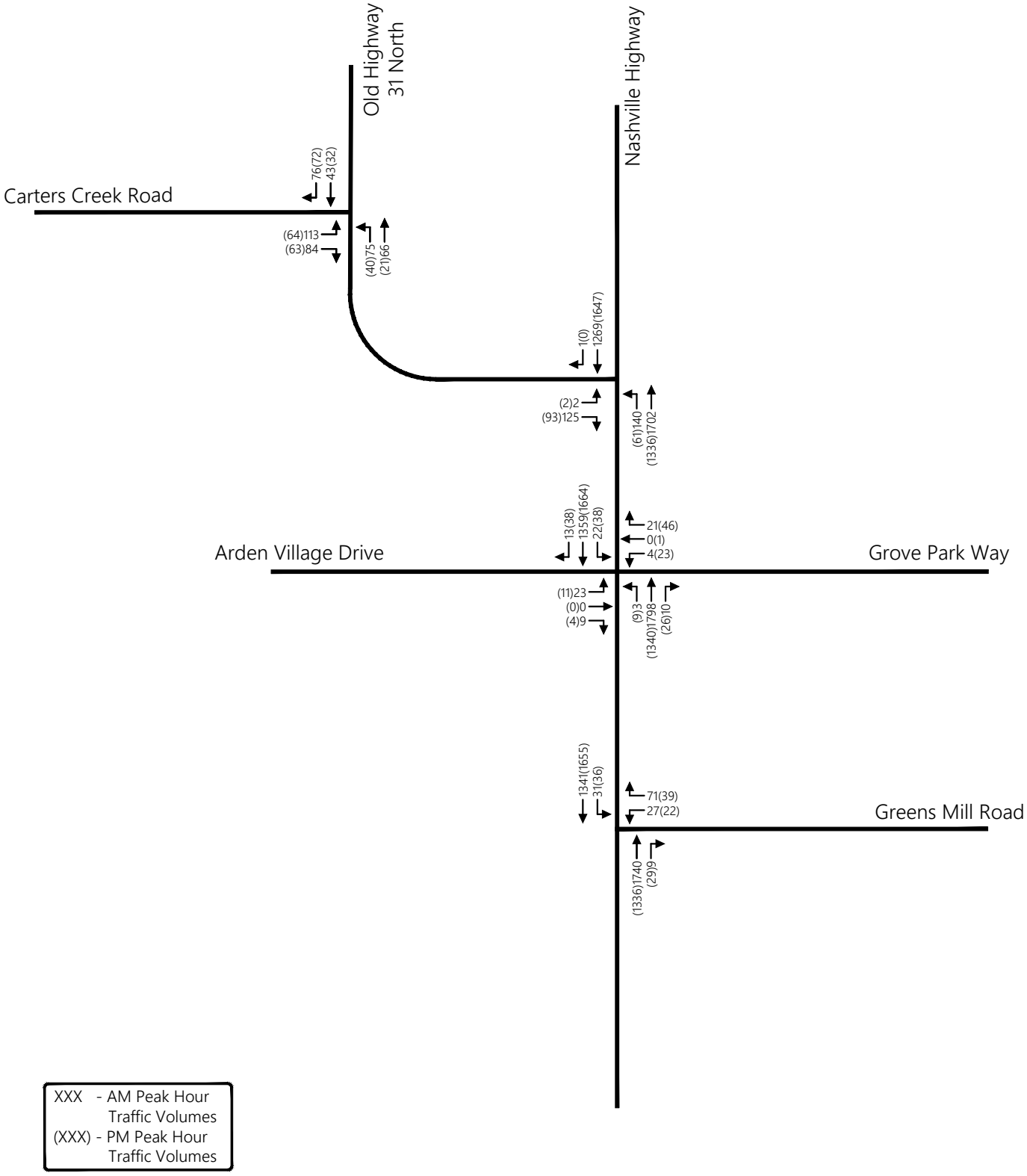
- Nashville Highway and Greens Mill Road
- Nashville Highway and Arden Village Drive/Grove Park Way
- Nashville Highway and Old Highway 31 North
- Old Highway 31 North and Carters Creek Road

Traffic counts for the study intersections were conducted on a typical weekday in May 2017 by RPM Transportation Consultants, LLC (RPM). Specifically, the turning movement counts were conducted from 7:00 – 9:00 AM and 4:00 – 6:00 PM on Wednesday, May 3, 2017, while schools were in session. From the counts, it was determined that the peak hours of traffic flow for the study intersections occurred from 7:15 – 8:15 AM and 4:45 – 5:45 PM. It should be noted that the traffic volumes were balanced between intersections.

The existing peak hour turning movement volumes are presented in Figure 3. A detailed summary of the turning movement counts is included in Appendix B.

In addition to the above information, average daily traffic volumes were obtained from the Tennessee Department of Transportation (TDOT). There are three TDOT count stations located in the vicinity of the project site. There is a count station located on Nashville Highway south of Greens Mill Road. According to TDOT count data, the annual average daily traffic (AADT) in 2015 on Nashville Highway was approximately 34,875 vehicles per day (vpd). There is a count station located on Greens Mill Road east of Nashville Highway. According to TDOT data, the AADT in 2015 on Greens Mill Road was approximately 1,195 vpd. There is a count station located on State Route 396 (the area's primary Interstate access) approximately 3 miles north of the site. According to TDOT data, the AADT in 2015 on State Route 396 was approximately 23,291 vpd.

TDOT Count Station data is included in Appendix C.



Existing Peak Hour Traffic Volumes
(Not to Scale)

Figure 3.

3.3 Existing Traffic Operations

To determine the current operation of the study intersections, capacity analyses were performed for the AM and PM peak hours. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, TRB 2010. The capacity analyses result in the determination of a Level of Service (LOS) for an intersection. The LOS is a concept used to describe how well an intersection or roadway operates. LOS A is the best, while LOS F is the worst. LOS D is typically considered as the minimum acceptable LOS for an intersection in an urbanized area. Table 1A presents the descriptions of LOS for unsignalized intersections, and Table 1B presents the descriptions of LOS for signalized intersections.

TABLE 1A: DESCRIPTIONS OF LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DESCRIPTION	CONTROL DELAY (sec/veh)
A	Little or no delay	$\leq$ 10.0
B	Short traffic delay	>10 and $\leq$ 15
C	Average traffic delay	>15 and $\leq$ 25
D	Long traffic delay	>25 and $\leq$ 35
E	Very long traffic delay	>35 and $\leq$ 50
F	Extreme traffic delay	> 50.0

Source: *Highway Capacity Manual*, TRB 2010

TABLE 1B: DESCRIPTIONS OF LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	DESCRIPTION	CONTROL DELAY (sec/veh)
A	Operations with very low delay. This occurs when progression is extremely favorable. Most vehicles do not stop at all.	≤ 10
B	Operations with stable flows. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	>10 and ≤ 20
C	Operations with stable flow. Occurs with fair progression and/or longer cycle lengths. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	>20 and ≤ 35
D	Approaching unstable flow. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop.	>35 and ≤ 55
E	Unstable flow. This is considered to be the limit for acceptable delay. These high delays generally indicate poor progression, long cycle lengths, and high V/C ratios.	>55 and ≤ 80
F	Unacceptable delay. This condition often occurs with over saturation or with high V/C ratios. Poor progression and long cycle lengths may also cause such delay levels.	>80.0

Source: *Highway Capacity Manual*, TRB 2010

The results of the capacity analyses for the existing conditions at the study intersections are presented in Table 2. As shown, all movements on Nashville Highway operate at acceptable levels of service. However, several minor streets on Nashville Highway have movements with a LOS of D or worse, which is common for unsignalized approaches to major arterial streets.

TABLE 2: EXISTING PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE	
		AM Peak Hour (Average Approach Delay in sec/veh)	PM Peak Hour (Average Approach Delay in sec/veh)
Nashville Highway and Old Highway 31 North	Northbound Left Turn	C (15.5)	C (18.0)
	Eastbound Left Turn	D (26.7)	C (24.7)
Nashville Highway and Greens Mill Road	Westbound Approach	F (300.0*)	F (271.7)
	Southbound Left Turn	C (18.1)	B (13.8)
Nashville Highway and Arden Village Drive/Grove Park Way	Northbound Left Turn	B (13.0)	C (16.0)
	Eastbound Through/Left Turn	F (300.0*)	F (300.0*)
	Eastbound Right Turn	C (15.3)	C (18.1)
	Westbound Left Turn	F (300.0*)	F (300.0*)
	Westbound Through/Right Turn	C (20.8)	D (33.8)
	Southbound Left Turn	C (18.3)	B (13.6)
Old Highway 31 North and Carters Creek Road	Northbound Left Turn	A (7.6)	A (7.5)
	Eastbound Left Turn	B (11.8)	A (9.9)

Note: For stop-controlled intersections, an LOS is presented for each critical turning movement.
* Indicates delay that exceeds 300 seconds

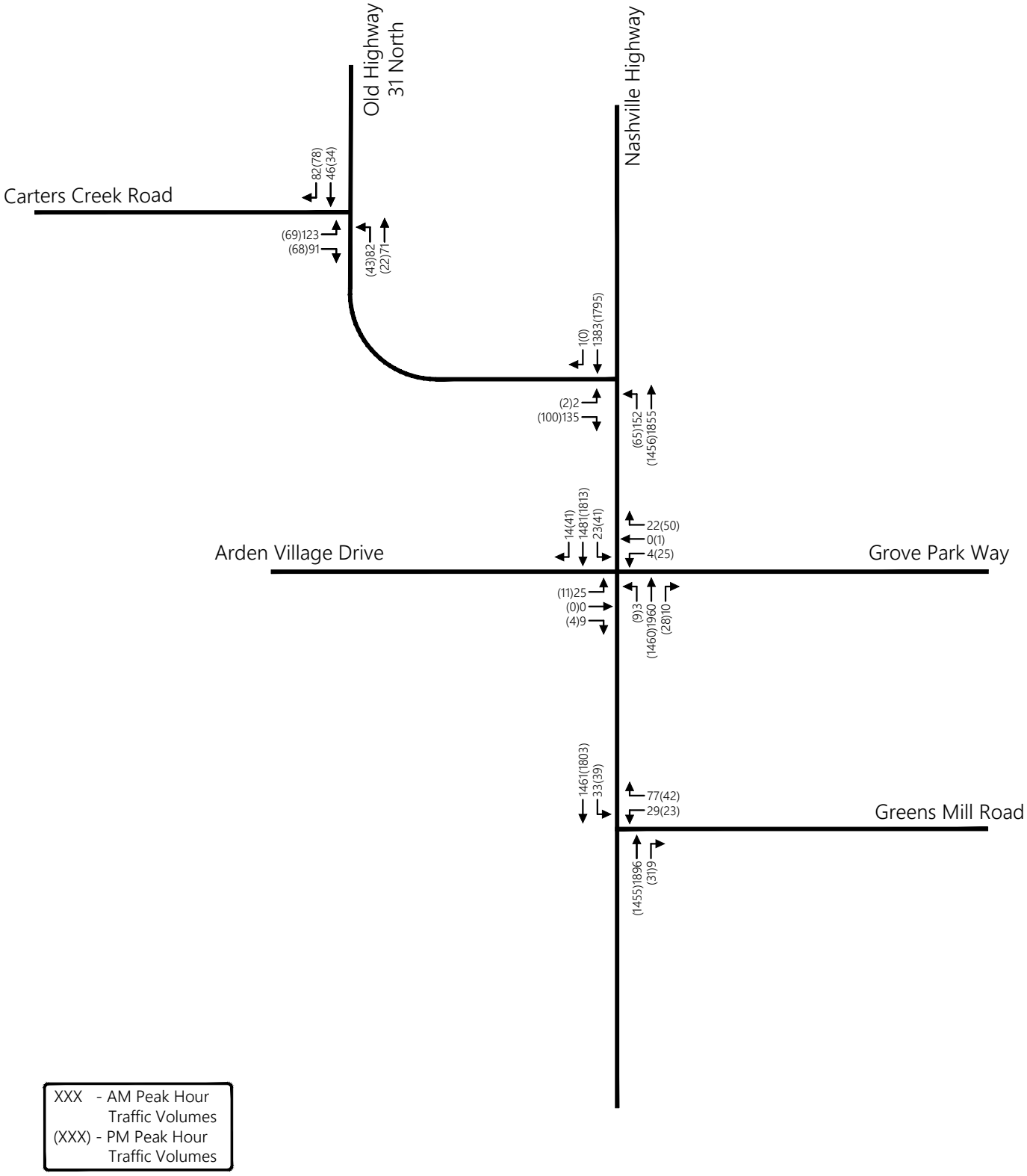
4. BACKGROUND TRAFFIC VOLUMES

4.1 Establishing Background Volumes

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. For the purposes of this traffic study, the proposed development was assumed to be completed by the year 2020, which is a three-year horizon. Historical daily traffic volumes were obtained from the TDOT count stations located on Nashville Highway, Greens Mill Road, and State Route 396 in the vicinity of the project site. Since 2010, the combined traffic at these four TDOT count stations has increased by an average of 2.6% per year. The TDOT count station data is included in Appendix C.

A growth factor was applied to the existing peak hour traffic volumes to account for general background growth for the future conditions. The existing peak hour traffic volumes at the study intersections were conservatively increased by 3% per year for three years to account for background traffic growth within the study area. These volumes represent the peak hour traffic that is expected to be on the roadway in 2020 even if the proposed Village at Carter's Station is not completed.

Figure 4 presents the total background AM and PM peak hour traffic volumes expected in the year 2020.



Background Peak Hour Traffic Volumes - Year 2020
(Not to Scale) Figure 4.

4.2 Background Traffic Operations

To determine the operation of the study area intersections under background conditions, capacity analyses were performed for the AM and PM peak hours. The analyses for the background conditions were based on the same lane configurations as the existing conditions.

As shown in Table 3, under background conditions the capacity analyses indicate that the study intersections are expected to continue to operate at similar levels of service as under the existing conditions with minimal increases in vehicular delay, with a few exceptions. The LOS of the westbound through/right turn lane at the intersection of Nashville Highway and Arden Village Drive/Grove Park Way is expected to deteriorate from LOS D to LOS F in the PM peak hour. Also, the LOS of the eastbound left turn at the intersection of Nashville Highway and Old 31 North is expected to deteriorate from LOS D to LOS E in the AM peak hour and from LOS C to LOS D in the PM peak hour. Also, the southbound left turns from Nashville Highway on to Greens Mill Road will drop from LOS B to LOS C during the PM peak hour, and the eastbound left turns at the intersection of Old Highway 31 North and Carters Creek Road will drop from LOS A to LOS B.

TABLE 3: BACKGROUND PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE	
		AM Peak Hour (Average Approach Delay in sec/veh)	PM Peak Hour (Average Approach Delay in sec/veh)
Nashville Highway and Old Highway 31 North	Northbound Left Turn	C (18.0)	C (20.9)
	Eastbound Left Turn	E (35.6)	D (30.2)
Nashville Highway and Greens Mill Road	Westbound Approach	F (300.0*)	F (300.0*)
	Southbound Left Turn	C (20.7)	C (15.1)
Nashville Highway and Arden Village Drive/Grove Park Way	Northbound Left Turn	B (14.0)	C (17.8)
	Eastbound Through/Left Turn	F (300.0*)	F (300.0*)
	Eastbound Right Turn	C (16.4)	C (19.8)
	Westbound Left Turn	F (300.0*)	F (300.0*)
	Westbound Through/Right Turn	C (23.4)	F (53.7)
	Southbound Left Turn	C (20.9)	B (14.8)
Old Highway 31 North and Carters Creek Road	Northbound Left Turn	A (7.7)	A (7.5)
	Eastbound Left Turn	B (12.4)	B (10.1)

Note: For stop-controlled intersections, an LOS is presented for each critical turning movement.
* Indicates delay that exceeds 300 seconds

5. IMPACTS

5.1 Trip Generation

A traffic generation process was used to estimate the amount of traffic expected to be generated by the proposed Village at Carter's Station mixed-use development. Factors for the trip generation were taken from ITE's *Trip Generation*, Ninth Edition. As previously discussed, the development consists of approximately 181 apartment units, 108 townhome units, 9,300 square feet of office space, 68,300 square feet of specialty retail space, and 9,300 square feet of restaurant space.

The development is characterized by a variety of land uses, which will result in internal trips within the site among the various land uses. Conservatively, 15% of the traffic generated by the proposed commercial land uses was assumed to be due to internal trips. The development is located in a predominantly rural setting with low density and farmland land uses, with no transit, pedestrian, and bicycle facilities. Conservatively, no reductions were taken to account for pass-by trips or alternative transportation modes.

The calculations for trip generation are included in Appendix E.

Table 4 presents the daily, AM, and PM peak hour trip generation for the proposed mixed-use development. As shown in Table 4, the development can be expected to generate approximately 5,853 new vehicle trips per day. The AM and PM peak hour trip generations will equal approximately 332 and 420 new trips, respectively. These trips represent the new traffic that will be generated by the proposed Village at Carter's Station development.

TABLE 4: DEVELOPMENT TRIP GENERATION

LAND USE	SIZE	GENERATED TRAFFIC				
		DAILY TRAFFIC	AM PEAK		PM PEAK	
			Enter	Exit	Enter	Exit
Apartments	181 d.u.	1,037	15	63	65	35
Townhomes	108 d.u.	585	8	39	21	10
Office	9,300 s.f.	88	11	2	2	10
Specialty Retail Center	68,300 s.f.	2,960	57	36	81	104
High-Turnover Sit-Down Restaurant	9,300 s.f.	1,183	56	45	55	37
	SUBTOTAL	5,853	147	185	224	196
	NEW TRIPS	**5,853**	**332**		**420**	

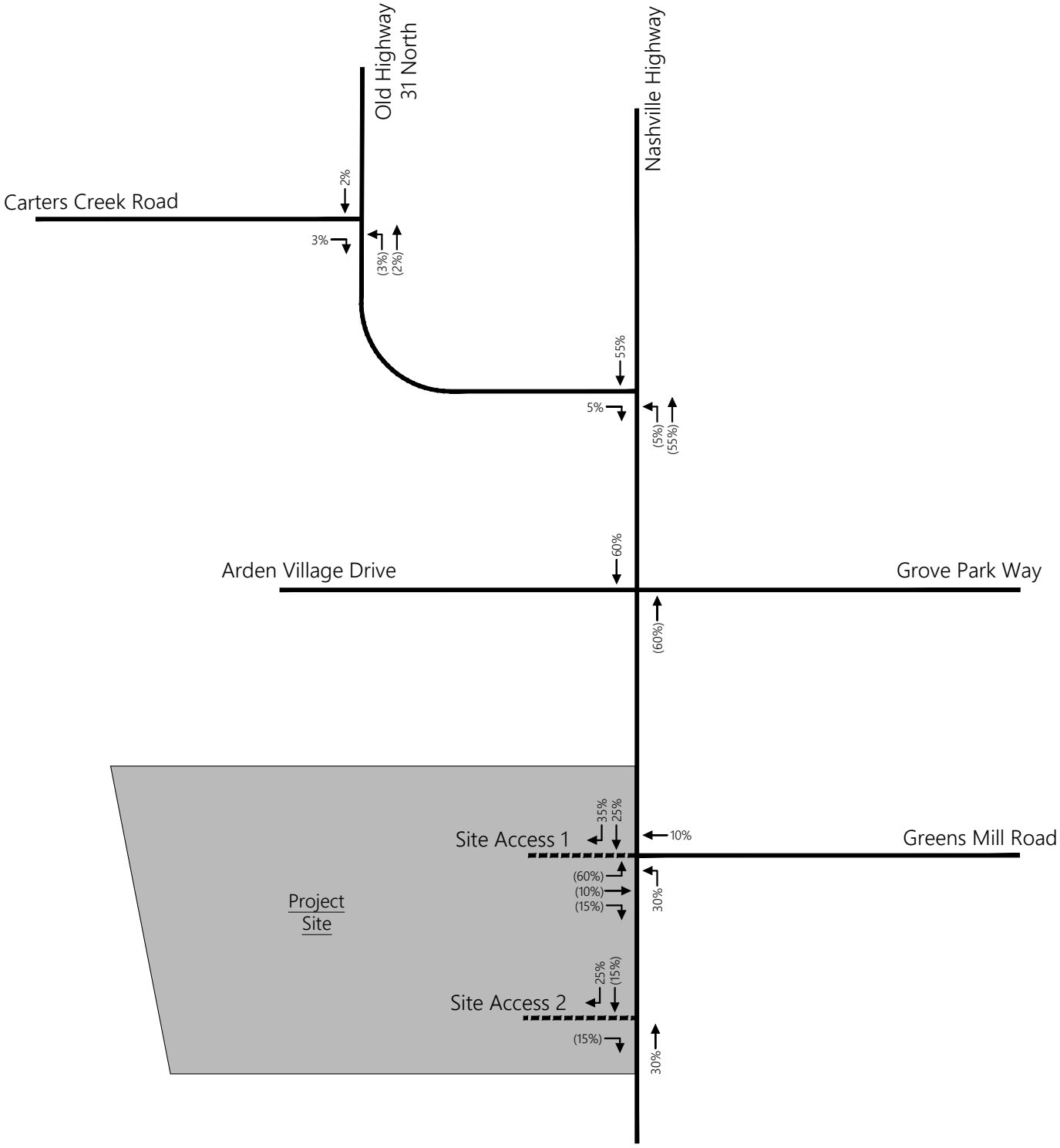
Source: *Trip Generation*, Ninth Edition

5.2 Trip Distribution and Traffic Assignment

A directional distribution of traffic generated by the proposed project was established based on the proposed accesses, the existing roadway network, and the existing travel patterns developed from the existing peak hour traffic counts. As previously discussed, there will be two accesses to the site. The northern Site Access 1 will be aligned with Greens Mill Road, and the southern Site Access 2 will be located approximately 600 feet south.

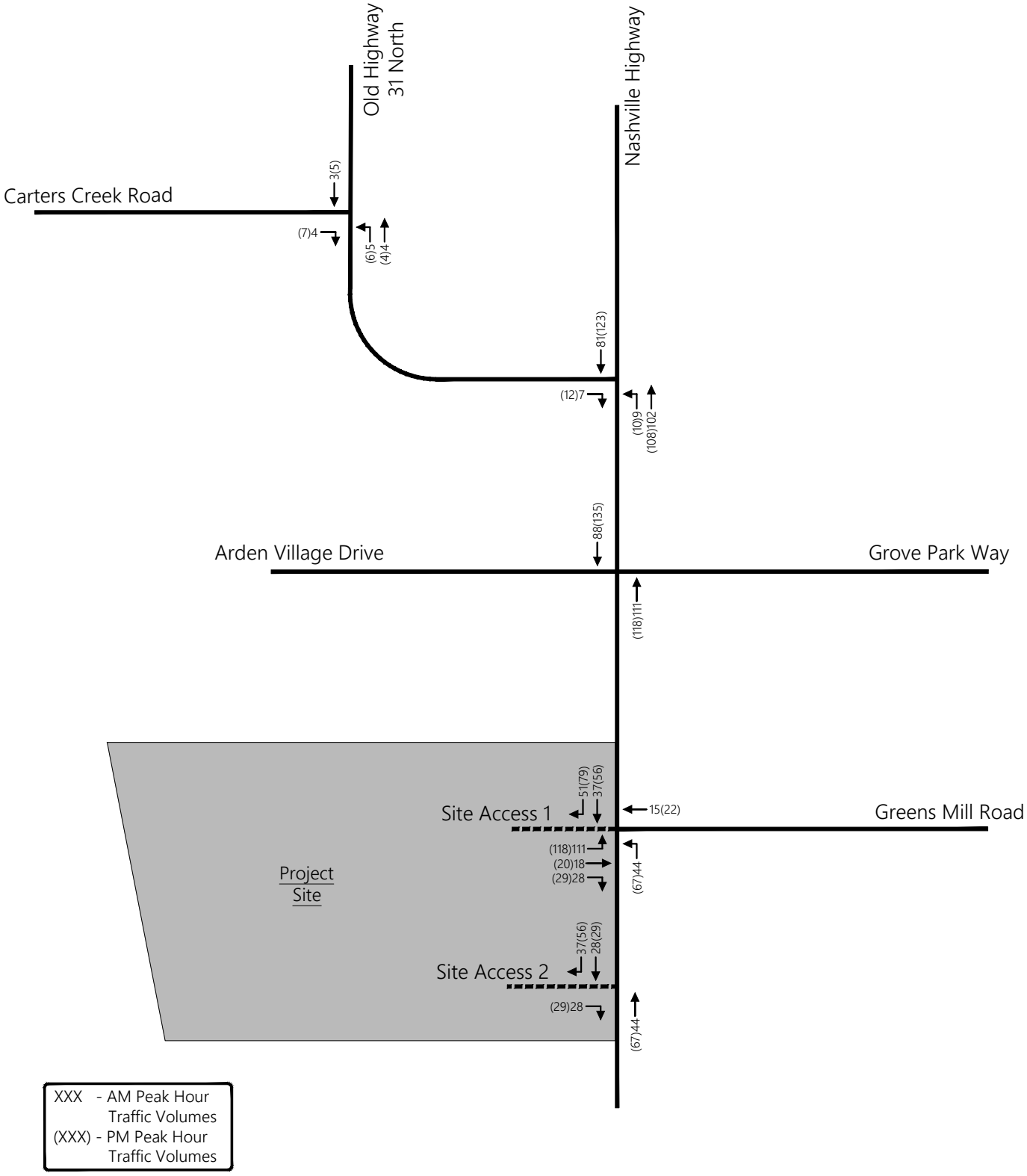
Directional distributions for the proposed development are shown in Figure 5. As shown in the figures, approximately 55% of the traffic generated by the development will be oriented north on Nashville Highway, 2% north on Old Highway 31 North, 3% west on Carters Creek Road, 10% east on Greens Mill Road, and 30% south on Nashville Highway.

Based on these directional distributions, the project-generated traffic was assigned to the roadway network. The total traffic assignment for the proposed mixed-use development is shown in Figure 6.



Distribution of Peak Hour Traffic Volumes Generated by the Project Site

(Not to Scale) Figure 5.



Assignment of Peak Hour Traffic Volumes Generated by the Project Site

(Not to Scale) Figure 6.

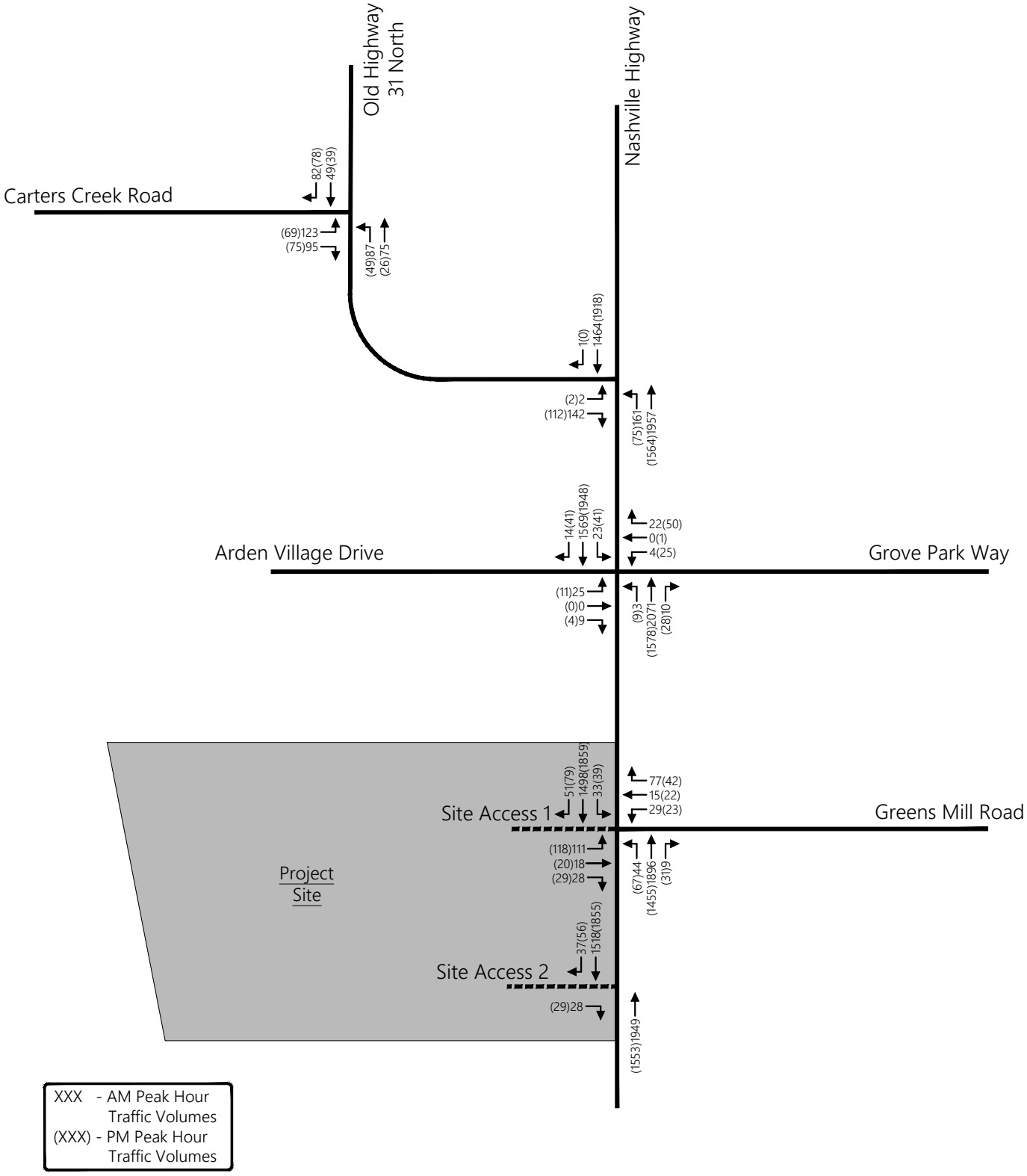
5.3 Capacity / Level of Service Analyses

The total site-generated traffic volumes were added to the background peak hour traffic volumes for the proposed Village at Carter's Station development in order to obtain the total projected traffic volumes for the study intersections. Figure 7 presents the total projected AM and PM peak hour traffic volumes expected at the completion of the proposed development.

Capacity analyses were performed in order to determine the impact of the project on the study intersections. These capacity analyses were also used to evaluate the need for roadway and traffic control improvements at the intersections studied. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, TRB 2010. The results of the capacity analyses for the projected conditions at the study area intersections are presented in Table 5. For the analyses, the intersection configurations were the same as the existing and background conditions. It was assumed the lane configurations at the site accesses aligned with those shown in the site plan in Appendix A. Capacity analyses worksheets are included in Appendix D.

As shown in Table 5, under the projected conditions the capacity analyses indicate that the study intersections are expected to continue to operate at similar levels of service as under the background conditions, with a few exceptions. The LOS of the eastbound left turn at the intersection of Nashville Highway and Old 31 North is expected to deteriorate from LOS E to LOS F in the AM peak hour, and LOS D to LOS E in the PM peak hour, despite minimal traffic being assigned to Old Highway 31 North. Also, at the intersection of Nashville Highway and Arden Village Drive/Grove Park Way, the westbound through/right turn lane will drop from LOS C to LOS D and the southbound left turn lane will drop from LOS B to LOS C.

Capacity analyses were also conducted under projected conditions with the inclusion of a southbound right turn lane and a northbound left turn lane on Nashville Highway at Site Access 1, and a southbound right turn lane on Nashville Highway at Site Access 2. As shown in Table 5, the turn lanes are expected to improve traffic operations on Nashville Highway. However, a traffic signal will be warranted to improve the LOS of Site Access 1 due to the high turning traffic volumes. As shown in Table 5, the proposed signalized intersection of Site Access 1/Greens Mill Road and Nashville Highway is expected to operate at LOS A at both AM and PM peak hours.



Total Projected Peak Hour Traffic Volumes
(Not to Scale) Figure 7.

TABLE 5: PROJECTED PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE	
		AM Peak Hour (Average Approach Delay in sec/veh)	PM Peak Hour (Average Approach Delay in sec/veh)
Nashville Highway and Old Highway 31 North	Northbound Left Turn	C (20.3)	C (24.8)
	Eastbound Left Turn	F (78.1)	E (38.7)
Nashville Highway and Site Access 2 *With Recommended Turn Lanes*	Eastbound Right Turn	C (18.1) *C (17.6)*	C (23.4) *C (22.3)*
Nashville Highway and Site Access 1/Greens Mill Road *With Recommended Turn Lanes* ***With Recommended Traffic Signal***	Northbound Left Turn	C (16.0) *C (15.4)*	C (24.5) *C (22.5)*
	Eastbound Through/Right Turn	F (300.0*)	D (26.1)
	Southbound Left Turn	C (20.7)	C (15.1)
	Overall Intersection	***B (14.5)***	***B (13.1)***
Nashville Highway and Arden Village Drive/Grove Park Way	Northbound Left Turn	B (14.8)	C (19.7)
	Eastbound Through/Left Turn	F (300.0*)	F (300.0*)
	Eastbound Right Turn	C (17.3)	C (21.6)
	Westbound Left Turn	F (300.0*)	F (300.0*)
	Westbound Through/Right Turn	D (25.5)	F (76.1)
	Southbound Left Turn	C (23.0)	C (16.2)
Old Highway 31 North and Carters Creek Road	Northbound Left Turn	A (7.7)	A (7.6)
	Eastbound Left Turn	B (12.7)	B (10.2)

Notes: For signalized and all-way stop-controlled intersections, an overall LOS is presented. For two-way stop-controlled intersections, an LOS is presented for each critical turning movement.
* Indicates delay that exceeds 300 seconds

6. ANALYSIS OF SITE PLAN

6.1 Site Access Review

The proposed development consists of approximately 181 apartment units, 108 townhome units, 9,300 square feet of office space, 68,300 square feet of specialty retail space, and 9,300 square feet of restaurant space.

Two site access points are planned to serve the site. The northern Site Access 1 is shown in the site plan to have one left turn lane and one shared through/right turn lane. The southern Site Access 2 is shown in the site plan to be right turn in/right turn out, and to have one right turn lane. The two site driveways will have spacing of approximately 600 feet and these driveways are well spaced from adjacent access points on Nashville Highway. Site Access 2 is necessary due to the traffic generated by the size of the proposed development. These driveway accesses will be adequate to provide good traffic flow and operations once the traffic signal is installed.

There is an existing cemetery access on the southeast area of the project site. Due to its proximity, this cemetery access should either be closed or consolidated with the proposed Site Access 2

Surface parking is planned to accommodate the development.

6.2 Turn Lane Analysis

Both site access were evaluated for the need to provide turn lanes on Nashville Highway. According to the Intersection Channelization Design Guide (NCHRP 279), a right turn lane is warranted on both the southbound approaches of Nashville Highway at Site Access 1 and Site Access 2.

The northern Site Access 1 was also evaluated using Harmelink Methodology for the need to install a northbound left turn lane on Nashville Highway. Based on the projected traffic volumes in both the AM and PM peak hours, a left turn lane is warranted on the northbound approach of Nashville Highway at Greens Mill Road/Site Access 1. Details of the Harmelink analysis are included in Appendix G.

6.3 Signal Warrant Analysis

Under projected conditions, the eastbound approach of the proposed northern Site Access 1 operates at poor LOS; therefore, the intersection of Nashville Highway

and Greens Mill Road/Site Access 1 was evaluated for the need to provided traffic signal control.

As previously mentioned, access to the development will be provided by two site access driveways, only one of which is a full access driveway. A traffic signal should not normally be installed at an intersection unless specific warrants are satisfied. Therefore, traffic signal warrant analyses were performed with available data for the intersection of Nashville Highway and Site Access 1 based on the anticipated traffic conditions with completion of the development.

The Manual on Uniform Traffic Control Devices (MUTCD) sets forth nine different warrants that have been developed by the traffic engineering profession to facilitate the determination of whether a signal is warranted. These warrants include minimum conditions that normally indicate when a traffic signal is justified at a particular location. The MUTCD states that "traffic control signals should not be installed unless one or more signal warrants as in the manual are met." A complete description of the relevant traffic signal warrants, as presented in the MUTCD, is included in Appendix F.

The 70% reduced warrants were used to analyze the intersection because the posted speed limit on Nashville Highway exceeds 40 mph. For the intersection of Nashville Highway and Greens Mill Road/Site Access 1, traffic signal warrant analyses were based on estimates of the eighth highest hour of a typical day. The method for this estimation is described in the Manual of Traffic Signal Design, by Iris Fullerton and James H. Kell. The results of these analyses are shown in Appendix F.

The results of the warrant analyses indicate that at the completion of the development, the projected traffic volumes at the intersection of Nashville Highway and Greens Mill Road/Site Access 1 will satisfy Signal Warrant 1B, Interruption of Continuous Traffic, Signal Warrant 2, Four-Hour Vehicular Volume, and Warrant 3, Peak Hour Volume. Additional analyses were conducted to determine whether a traffic signal would be needed at the intersection of Nashville Highway and Greens Mill Road/Site Access 1 before the development is completed. The results of these analyses indicate that the traffic signal at this intersection will be warranted upon completion of approximately 60% of the development.

8. CONCLUSIONS AND RECOMMENDATIONS

The analyses presented in this study indicate that the impacts of the proposed Village at Carter's Station mixed-use development on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project. The recommendations are as follows:

- Site Access 1 should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting lanes should be striped to provide an exclusive left turn lane and a shared through/right turn lane.

- A traffic signal should be installed at the intersection of Nashville Highway and Site Access 1/Greens Mill Road based on satisfaction of traffic signal warrants. Protected left turn phasing should be implemented for the northbound and southbound approaches. This signal is projected to be warranted upon completion of approximately 60% of the Village at Carter's Station development. Because the warrant analysis is based on projected traffic volumes, it is recommended that updated signal warrant analysis be conducted at approximately the 60% development level of the Village at Carter's Station to determine if actual traffic volumes meet the signal warrants.

- An exclusive right turn lane with approximately 140 feet of storage should be provided on the southbound approach of Nashville Highway at Site Access 1, as shown in the site plan.

- An exclusive left turn lane with approximately 200 feet of storage should be provided on the northbound approach of Nashville Highway at Site Access 1, as shown in the site plan.

- Site Access 2 should be designed as a Right-In-Right-Out (RIRO) access and should include sufficient width for one entering lane and one exiting lane. The eastbound approach should be stop controlled. This access is necessary due to the size of the development.

- Install one Right Turn Only (R3-5R) sign on the south side of Site Access 2 at the eastbound approach of Site Access 2 at Nashville Highway.

- An exclusive right turn lane with approximately 260 feet of storage should be provided on the southbound approach of Nashville Highway at Site Access 2, as shown in the site plan.

- The existing median break, located approximately 150 feet north of Site Access 2, should be closed.

- Due to its proximity, the existing cemetery access on the southeast area of the project site should either be closed or consolidated with the proposed southern Site Access 2

In summary, based on the analyses conducted, no further recommendations are presented for the proposed Village at Carter's Station development.

APPENDICES

APPENDIX A
PRELIMINARY CONCEPT PLAN

APPENDIX B
DETAILED TURNING MOVEMENT COUNTS

APPENDIX C
TDOT COUNT DATA

APPENDIX D
CAPACITY ANALYSES

APPENDIX E
TRIP GENERATION CALCULATIONS

APPENDIX F
SIGNAL WARRANT ANALYSIS

APPENDIX G
TURN LANE WARRANT ANALYSIS

APPENDIX A
PRELIMINARY CONCEPT PLAN

PURPOSE OF SUBMITTAL - TO ANNEX A PORTION OF THE SITE NOT WITHIN THE CITY LIMITS OF COLUMBIA AND TO REZONE THE ENTIRE PROPERTY TO CRS.

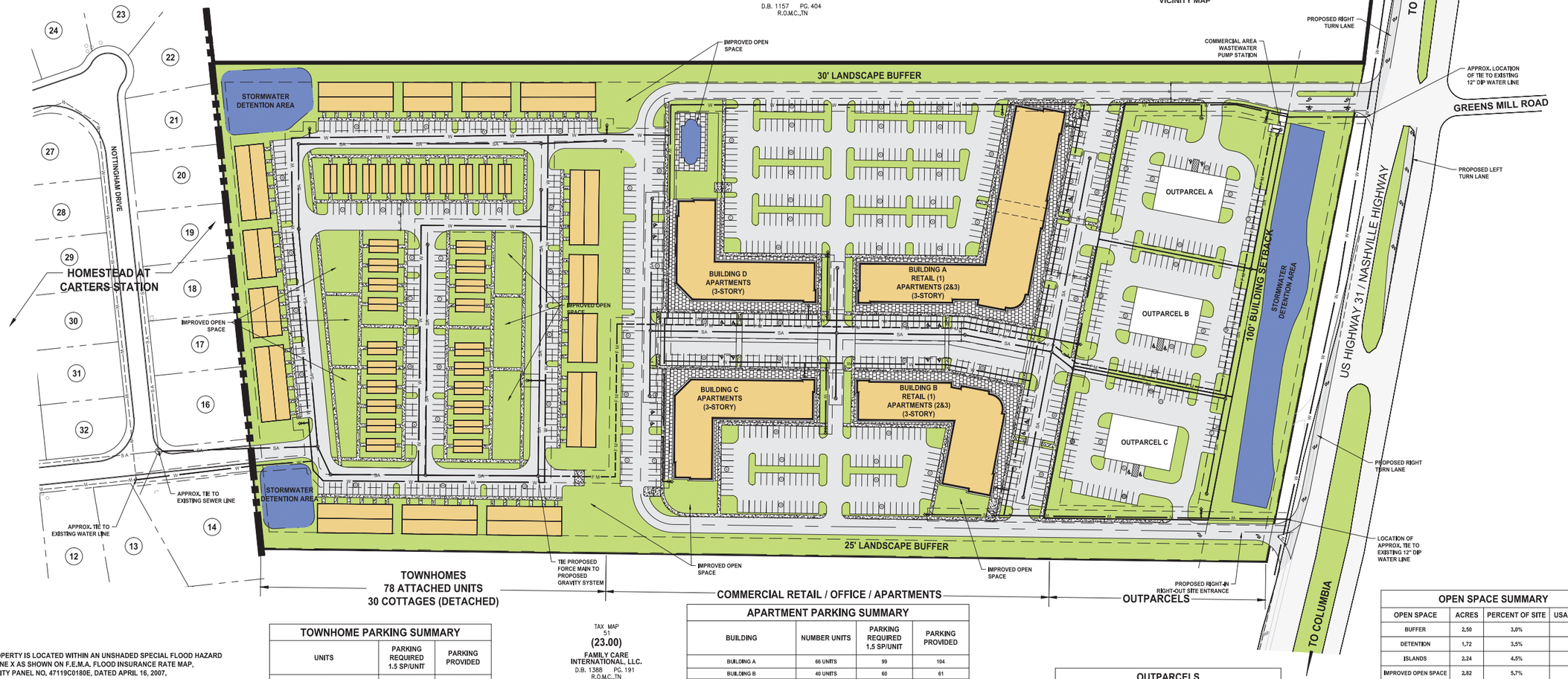
PROPERTY DEVELOPER:
FP TCI CCS, LLC.

PROJECT DESCRIPTION:
ANNEX AND REZONE PROPERTY TO DEVELOP INTO A 214 UNIT APARTMENT AND 108 UNIT TOWNHOME DEVELOPMENT WITH 30,000 SF OF RETAIL AND 19,000 SF OF RESTAURANT WITH 3 COMMERCIAL OUTPARCELS.

ALL ROAD NAMES TO BE APPROVED BY E-911.



VICINITY MAP



TOWNHOME PARKING SUMMARY		
UNITS	PARKING REQUIRED 1.5 SP/UNIT	PARKING PROVIDED
108	162	262
TOTAL	162	262

TAX MAP 51
(23.00)
FAMILY CARE INTERNATIONAL, LLC.
D.B. 1388 PG. 191
R.O.M.C.,TN

APARTMENT PARKING SUMMARY			
BUILDING	NUMBER UNITS	PARKING REQUIRED 1.5 SP/UNIT	PARKING PROVIDED
BUILDING A	66 UNITS	99	104
BUILDING B	40 UNITS	60	61
BUILDING C	54 UNITS	81	101
BUILDING D	54 UNITS	81	120
TOTAL	181 UNITS	321	386

RETAIL OFFICE BUILDING & PARKING					
BUILDING	AREA (SF)	RETAIL PARKING REQUIRED 1 SP/400 SF.	RESTAURANT PARKING REQUIRED 1SP/100 SF.	TOTAL REQUIRED PARKING	PARKING PROVIDED
BUILDING A	37,000	47	119	166	166
BUILDING B	22,000	28	71	99	99
TOTAL	59,000	75	190	265	265

OUTPARCELS	
PARCEL	ACRES
OUTPARCEL A	1,36
OUTPARCEL B	1,15
OUTPARCEL C	1,25
TOTAL	3,76

OPEN SPACE SUMMARY			
OPEN SPACE	ACRES	PERCENT OF SITE	USABLE AREA
BUFFER	2,50	3,0%	1,7
DETENTION	1,72	3,5%	0,3
ISLANDS	2,24	4,5%	0
IMPROVED OPEN SPACE	2,82	5,7%	1,4
TOTAL	9,28	16,7%	3,4

THIS PROPERTY IS LOCATED WITHIN AN UNSHADED SPECIAL FLOOD HAZARD AREA ZONE X AS SHOWN ON F.E.M.A. FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 47119C0180E, DATED APRIL 16, 2007.

TRAFFIC IMPACT STUDY
DEVELOPER WILL CONDUCT TRAFFIC STUDY IMMEDIATELY FOLLOWING THIS SUBMITTAL. DEVELOPER WILL SUBMIT TRAFFIC STUDY TO CITY AND TDOT AND REQUEST PERMISSION TO SIGNALIZE SITE ENTRANCE AT GREENS MILL ROAD AND CONSTRUCT NECESSARY LEFT-HAND TURN LANE AND RIGHT-HAND TURN / DECEL LANE.

LEGEND

- SANITARY SEWER — SA
- WATER LINE — W
- SANITARY SEWER MANHOLE — S
- FIRE HYDRANT ASSEMBLY
- WATER METER — W
- WATER VALVE
- STOP SIGN

VILLAGE AT CARTER'S CREEK MULTI-USE DEVELOPMENT

FP TCI CCS, LLC.
COLUMBIA, TENNESSEE
MAURY COUNTY
APRIL 17, 2017

GRAPHIC SCALE
80 0 40 80
(IN FEET)
1 inch = 80 ft.

MARTIN ENGINEERING & SURVEYING, LLC
5226 Main Street, Suite C-3
Spring Hill, TN 37174
615.812.2147
gary@martinengrg.com

APPENDIX B
DETAILED TURNING MOVEMENT COUNTS

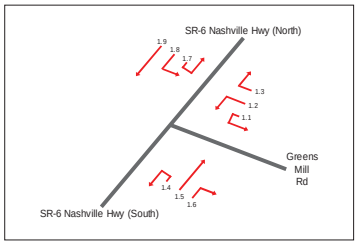
Columbia, TN
Classified Turn Movement Count

Site 1 of 4
Greens Mill Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.702619°, -86.979254°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

0600 - 0900 (Weekday AM Peak)

	Westbound Greens Mill Rd					Northbound SR-6 Nashville Hwy (South)					Southbound SR-6 Nashville Hwy (North)					
TIME	U-Turn 1.1	Left 1.2	Right 1.3	Peds 1a	App Total	U-Turn 1.4	Thru 1.5	Right 1.6	Peds 1b	App Total	U-Turn 1.7	Left 1.8	Thru 1.9	Peds 1c	App Total	Int Total
0600 - 0615	0	3	9	0	12	0	382	0	0	382	1	1	163	0	165	559
0615 - 0630	0	1	5	0	6	0	369	4	0	373	0	6	558	0	564	943
0630 - 0645	0	3	2	0	5	0	360	0	0	360	0	3	392	0	395	760
0645 - 0700	0	3	13	0	16	0	380	0	0	380	1	2	244	0	247	643
Hourly Total	0	10	29	0	**39**	0	1491	4	0	**1495**	2	12	1357	0	**1371**	**2905**
0700 - 0715	1	4	14	0	19	0	370	2	0	372	0	3	249	0	252	643
0715 - 0730	0	9	27	0	36	0	487	0	0	487	0	7	340	0	347	870
0730 - 0745	0	9	25	0	34	0	459	1	0	460	1	11	401	0	413	907
0745 - 0800	0	6	11	0	17	0	379	7	0	386	0	7	315	0	322	725
Hourly Total	1	28	77	0	**106**	0	1695	10	0	**1705**	1	28	1305	0	**1334**	**3145**
0800 - 0815	0	3	8	0	11	0	415	1	0	416	0	6	285	0	291	718
0815 - 0830	0	5	7	0	12	0	335	2	0	337	1	2	249	0	252	601
0830 - 0845	0	8	15	0	23	0	363	6	0	369	1	4	238	0	243	635
0845 - 0900	0	4	9	0	13	0	337	3	0	340	2	3	214	0	219	572
Hourly Total	0	20	39	0	**59**	0	1450	12	0	**1462**	4	15	986	0	**1005**	**2526**
Grand Total	1	58	145	0	**204**	0	4636	26	0	**4662**	7	55	3649	0	**3710**	**8576**
App Percentage	0.49	28.43	71.08	0.00		0.00	99.44	0.56	0.00		0.19	1.48	98.33	0.00		
Int Percentage	0.01	0.68	1.69	0.00	2.38	0.00	54.06	0.30	0.00	54.36	0.08	0.64	42.54	0.00	43.26	
Cars	0	58	142	-	200	0	4410	25	-	4435	6	52	3430	-	3488	
Trucks	1	0	3	-	4	0	226	1	-	227	1	3	218	-	222	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	
Cars (%)	0.00	100.00	97.93	-	98.04	0.00	95.13	96.15	-	95.13	85.71	94.55	94.02	-	94.02	
Trucks (%)	100.00	0.00	2.07	-	1.96	0.00	4.87	3.85	-	4.87	14.29	5.45	5.98	-	5.98	

1500 - 1800 (Weekday PM Peak)

	Westbound Greens Mill Rd					Northbound SR-6 Nashville Hwy (South)					Southbound SR-6 Nashville Hwy (North)					
TIME	U-Turn 1.1	Left 1.2	Right 1.3	Peds 1a	App Total	U-Turn 1.4	Thru 1.5	Right 1.6	Peds 1b	App Total	U-Turn 1.7	Left 1.8	Thru 1.9	Peds 1c	App Total	Int Total
1500 - 1515	0	4	10	0	14	0	260	8	0	268	0	25	432	0	457	739
1515 - 1530	0	5	2	0	7	0	285	8	0	293	1	6	398	0	405	705
1530 - 1545	0	3	4	0	7	0	274	6	0	280	0	11	468	0	479	766
1545 - 1600	1	5	7	0	13	0	317	4	0	321	0	10	425	0	435	769
Hourly Total	1	17	23	0	**41**	0	1136	26	0	**1162**	1	52	1723	0	**1776**	**2979**
1600 - 1615	0	7	7	0	14	0	244	9	0	253	0	8	397	0	405	672
1615 - 1630	0	2	8	0	10	1	299	6	0	306	0	9	455	0	464	780
1630 - 1645	0	4	8	0	12	0	302	6	0	308	1	10	430	0	441	761
1645 - 1700	0	4	10	0	14	0	327	3	0	330	1	10	436	0	447	791
Hourly Total	0	17	33	0	**50**	1	1172	24	0	**1197**	2	37	1718	0	**1757**	**3004**
1700 - 1715	0	7	5	0	12	0	310	9	0	319	0	12	398	0	410	741
1715 - 1730	0	7	13	0	20	0	365	14	0	379	0	8	380	0	388	787
1730 - 1745	0	4	11	0	15	0	327	3	0	330	0	6	420	0	426	771
1745 - 1800	0	3	7	0	10	0	314	4	0	318	0	11	393	0	404	732
Hourly Total	0	21	36	0	**57**	0	1316	30	0	**1346**	0	37	1591	0	**1628**	**3031**
Grand Total	1	55	92	0	**148**	1	3624	80	0	**3705**	3	126	5032	0	**5161**	**9014**
App Percentage	0.68	37.16	62.16	0.00		0.03	97.81	2.16	0.00		0.06	2.44	97.50	0.00		
Int Percentage	0.01	0.61	1.02	0.00	1.64	0.01	40.20	0.89	0.00	41.10	0.03	1.40	55.82	0.00	57.26	
Cars	0	54	91	-	145	1	3454	80	-	3535	3	126	4880	-	5009	
Trucks	1	1	1	-	3	0	170	0	-	170	0	0	151	-	151	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	1	-	1	
Cars (%)	0.00	98.18	98.91	-	97.97	100.00	95.31	100.00	-	95.41	100.00	100.00	97.00	-	97.07	
Trucks (%)	100.00	1.82	1.09	-	2.03	0.00	4.69	0.00	-	4.59	0.00	0.00	3.00	-	2.93	

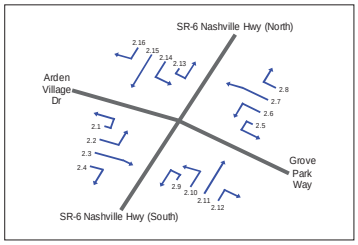
Columbia, TN
Classified Turn Movement Count

Site 2 of 4
Arden Village Dr
Grove Park Way
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.706070°, -86.976722°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

0600 - 0900 (Weekday AM Peak)

	Eastbound Arden Village Dr						Westbound Grove Park Way						Northbound SR-6 Nashville Hwy (South)						Southbound SR-6 Nashville Hwy (North)						
TIME	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds 2a	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds 2b	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds 2c	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds 2d	App Total	Int Total
0600 - 0615	0	4	0	0	0	4	0	0	0	5	0	5	0	2	397	0	0	399	0	0	166	2	0	168	576
0615 - 0630	0	3	0	0	0	3	0	3	0	4	0	7	0	2	372	0	0	374	0	0	574	5	0	579	963
0630 - 0645	0	1	1	2	0	4	0	1	0	4	0	5	1	0	361	1	0	363	0	2	373	1	0	376	748
0645 - 0700	0	6	0	2	0	8	0	0	0	4	0	4	0	1	390	3	0	394	0	3	253	4	0	260	666
Hourly Total	0	14	1	4	0	**19**	0	4	0	17	0	**21**	1	5	1520	4	0	**1530**	0	5	1366	12	0	**1383**	**2953**
0700 - 0715	0	8	0	1	0	9	0	1	0	3	0	4	0	4	376	3	0	383	0	2	240	0	0	242	638
0715 - 0730	0	7	0	3	0	10	0	2	0	5	0	7	0	0	506	1	0	507	0	5	335	3	0	343	867
0730 - 0745	0	5	0	1	0	6	0	0	0	5	0	5	0	2	474	2	0	478	1	7	413	3	0	424	913
0745 - 0800	0	7	0	3	0	10	0	0	0	3	0	3	0	1	386	2	0	389	0	3	297	6	0	306	708
Hourly Total	0	27	0	8	0	**35**	0	3	0	16	0	**19**	0	7	1742	8	0	**1757**	1	17	1285	12	0	**1315**	**3126**
0800 - 0815	0	4	0	2	0	6	0	2	0	8	0	10	0	0	406	5	0	411	0	7	292	1	0	300	727
0815 - 0830	0	3	0	2	0	5	0	0	0	11	0	11	0	2	347	7	1	357	0	5	254	1	0	260	633
0830 - 0845	0	1	0	3	0	4	0	1	0	9	0	10	0	1	377	4	1	383	0	5	239	0	0	244	641
0845 - 0900	0	5	0	2	0	7	0	2	0	11	0	13	0	2	340	5	0	347	0	8	218	2	0	228	595
Hourly Total	0	13	0	9	0	**22**	0	5	0	39	0	**44**	0	5	1470	21	2	**1498**	0	25	1003	4	0	**1032**	**2596**
Grand Total	0	54	1	21	0	**76**	0	12	0	72	0	**84**	1	17	4732	33	2	**4785**	1	47	3654	28	0	**3730**	**8675**
App Percentage	0.00	71.05	1.32	27.63	0.00		0.00	14.29	0.00	85.71	0.00		0.02	0.36	98.89	0.69	0.04		0.03	1.26	97.96	0.75	0.00		
Int Percentage	0.00	0.62	0.01	0.24	0.00	0.88	0.00	0.14	0.00	0.83	0.00	0.97	0.01	0.20	54.55	0.38	0.02	55.16	0.01	0.54	42.12	0.32	0.00	43.00	
Cars	0	54	1	20	-	75	0	10	0	67	-	77	0	17	4504	32	-	4553	1	42	3437	26	-	3506	
Trucks	0	0	0	1	-	1	0	2	0	5	-	7	1	0	228	1	-	230	0	5	217	2	-	224	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	
Cars (%)	0.00	100.00	100.00	95.24	-	98.68	0.00	83.33	0.00	93.06	-	91.67	0.00	100.00	95.18	96.97	-	95.19	100.00	89.36	94.06	92.86	-	93.99	
Trucks (%)	0.00	0.00	0.00	4.76	-	1.32	0.00	16.67	0.00	6.94	-	8.33	100.00	0.00	4.82	3.03	-	4.81	0.00	10.64	5.94	7.14	-	6.01	

1500 - 1800 (Weekday PM Peak)

	Eastbound Arden Village Dr						Westbound Grove Park Way						Northbound SR-6 Nashville Hwy (South)						Southbound SR-6 Nashville Hwy (North)						
TIME	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds 2a	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds 2b	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds 2c	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds 2d	App Total	Int Total
1500 - 1515	0	2	0	0	0	2	0	2	0	5	0	7	0	2	260	7	0	269	1	7	443	8	0	459	737
1515 - 1530	0	2	2	2	0	6	0	6	1	8	0	15	0	1	277	9	0	287	1	6	405	4	0	416	724
1530 - 1545	0	2	1	3	0	6	0	3	2	7	0	12	0	4	262	4	0	270	2	10	437	3	0	452	740
1545 - 1600	0	3	0	1	0	4	0	8	0	9	0	17	1	3	317	2	0	323	0	4	429	8	0	441	785
Hourly Total	0	9	3	6	0	**18**	0	19	3	29	0	**51**	1	10	1116	22	0	**1149**	4	27	1714	23	0	**1768**	**2986**
1600 - 1615	0	5	0	2	0	7	0	5	0	11	0	16	0	1	250	5	0	256	1	13	410	8	0	432	711
1615 - 1630	0	4	0	0	0	4	0	8	0	6	0	14	0	7	291	4	0	302	0	11	440	9	0	460	780
1630 - 1645	0	0	0	3	0	3	0	4	0	6	0	10	0	1	310	7	0	318	0	12	439	2	0	453	784
1645 - 1700	0	2	0	3	0	5	0	9	0	10	0	19	0	0	325	10	0	335	0	11	436	4	0	451	810
Hourly Total	0	11	0	8	0	**19**	0	26	0	33	0	**59**	0	9	1176	26	0	**1211**	1	47	1725	23	0	**1796**	**3085**
1700 - 1715	0	2	0	0	0	2	0	7	1	14	0	22	0	1	316	6	0	323	0	11	419	9	0	439	786
1715 - 1730	0	4	0	0	0	4	0	5	0	10	0	15	0	3	366	7	0	376	0	7	369	8	0	384	779
1730 - 1745	0	3	0	1	0	4	0	2	0	12	0	14	0	5	326	3	0	334	0	9	440	7	0	456	808
1745 - 1800	0	4	0	2	0	6	0	9	0	4	0	13	0	6	307	11	0	324	0	9	385	15	0	409	752
Hourly Total	0	13	0	3	0	**16**	0	23	1	40	0	**64**	0	15	1315	27	0	**1357**	0	36	1613	39	0	**1688**	**3125**
Grand Total	0	33	3	17	0	**53**	0	68	4	102	0	**174**	1	34	3607	75	0	**3717**	5	110	5052	85	0	**5252**	**9196**
App Percentage	0.00	62.26	5.66	32.08	0.00		0.00	39.08	2.30	58.62	0.00		0.03	0.91	97.04	2.02	0.00		0.10	2.09	96.19	1.62	0.00		
Int Percentage	0.00	0.36	0.03	0.18	0.00	0.58	0.00	0.74	0.04	1.11	0.00	1.89	0.01	0.37	39.22	0.82	0.00	40.42	0.05	1.20	54.94	0.92	0.00	57.11	
Cars	0	32	3	16	-	51	0	66	3	101	-	170	1	34	3436	75	-	3546	5	108	4904	85	-	5102	
Trucks	0	1	0	1	-	2	0	2	1	1	-	4	0	0	171	0	-	171	0	2	147	0	-	149	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	
Cars (%)	0.00	96.97	100.00	94.12	-	96.23	0.00	97.06	75.00	99.02	-	97.70	100.00	100.00	95.26	100.00	-	95.40	100.00	98.18	97.09	100.00	-	97.16	
Trucks (%)	0.00	3.03	0.00	5.88	-	3.77	0.00	2.94	25.00	0.98	-	2.30	0.00	0.00	4.74	0.00	-	4.60	0.00	1.82	2.91	0.00	-	2.84	

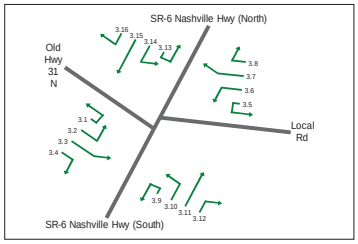
Columbia, TN
Classified Turn Movement Count

Site 3 of 4
Old Hwy 31 N
Local Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.707700°, -86.975686°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

0600 - 0900 (Weekday AM Peak)

	Eastbound Old Hwy 31 N						Westbound Local Rd						Northbound SR-6 Nashville Hwy (South)						Southbound SR-6 Nashville Hwy (North)						
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	Int
TIME	3.1	3.2	3.3	3.4	3a	Total	3.5	3.6	3.7	3.8	3b	Total	3.9	3.10	3.11	3.12	3c	Total	3.13	3.14	3.15	3.16	3d	Total	Total
0600 - 0615	0	0	0	9	0	9	0	0	0	0	0	0	0	13	402	0	0	415	0	0	167	0	0	167	591
0615 - 0630	0	0	0	27	0	27	0	0	0	0	0	0	0	10	370	0	0	380	0	0	554	0	0	554	961
0630 - 0645	0	0	0	9	0	9	0	0	0	0	0	0	1	20	339	0	0	360	0	0	363	0	0	363	732
0645 - 0700	0	0	0	12	0	12	0	0	0	0	0	0	1	38	361	0	0	400	0	0	238	0	0	238	650
Hourly Total	0	0	0	57	0	**57**	0	0	0	0	0	**0**	2	81	1472	0	0	**1555**	0	0	1322	0	0	**1322**	**2934**
0700 - 0715	0	0	0	11	0	11	0	0	0	0	0	0	0	45	336	0	0	381	0	0	230	0	0	230	622
0715 - 0730	0	0	0	35	0	35	0	0	0	0	0	0	0	55	461	0	0	516	1	0	305	0	0	306	857
0730 - 0745	0	0	0	45	0	45	0	0	0	0	0	0	2	46	433	0	0	481	0	0	381	0	0	381	907
0745 - 0800	0	1	0	26	0	27	0	0	0	0	0	0	0	13	400	0	0	413	0	0	285	0	0	285	725
Hourly Total	0	1	0	117	0	**118**	0	0	0	0	0	**0**	2	159	1630	0	0	**1791**	1	0	1201	0	0	**1202**	**3111**
0800 - 0815	0	0	0	17	0	17	0	0	0	0	0	0	0	14	397	0	0	411	0	0	280	1	0	281	709
0815 - 0830	0	0	0	8	0	8	0	0	0	0	0	0	0	14	350	0	0	364	0	0	248	2	0	250	622
0830 - 0845	0	0	0	6	0	6	0	0	0	0	0	0	0	17	366	0	0	383	0	0	240	0	0	240	629
0845 - 0900	0	1	0	9	0	10	0	0	0	0	0	0	1	39	319	0	0	359	0	0	215	0	0	215	584
Hourly Total	0	1	0	40	0	**41**	0	0	0	0	0	**0**	1	84	1432	0	0	**1517**	0	0	983	3	0	**986**	**2544**
Grand Total	0	2	0	214	0	**216**	0	0	0	0	0	**0**	5	324	4534	0	0	**4863**	1	0	3506	3	0	**3510**	**8589**
App Percentage	0.00	0.93	0.00	99.07	0.00		0.00	0.00	0.00	0.00	0.00		0.10	6.66	93.23	0.00	0.00		0.03	0.00	99.89	0.09	0.00		
Int Percentage	0.00	0.02	0.00	2.49	0.00	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.06	3.77	52.79	0.00	0.00	56.62	0.01	0.00	40.82	0.03	0.00	40.87	
Cars	0	2	0	207	-	209	0	0	0	0	-	0	5	318	4307	0	-	4630	1	0	3289	3	-	3293	
Trucks	0	0	0	7	-	7	0	0	0	0	-	0	0	6	227	0	-	233	0	0	217	0	-	217	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	
Cars (%)	0.00	100.00	0.00	96.73	-	96.76	0.00	0.00	0.00	0.00	-	0.00	100.00	98.15	94.99	0.00	-	95.21	100.00	0.00	93.81	100.00	-	93.82	
Trucks (%)	0.00	0.00	0.00	3.27	-	3.24	0.00	0.00	0.00	0.00	-	0.00	0.00	1.85	5.01	0.00	-	4.79	0.00	0.00	6.19	0.00	-	6.18	

1500 - 1800 (Weekday PM Peak)

	Eastbound Old Hwy 31 N						Westbound Local Rd						Northbound SR-6 Nashville Hwy (South)						Southbound SR-6 Nashville Hwy (North)						
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	Int
TIME	3.1	3.2	3.3	3.4	3a	Total	3.5	3.6	3.7	3.8	3b	Total	3.9	3.10	3.11	3.12	3c	Total	3.13	3.14	3.15	3.16	3d	Total	Total
1500 - 1515	0	0	0	46	0	46	0	0	0	0	0	0	0	5	258	0	0	263	1	0	419	1	0	421	730
1515 - 1530	0	0	0	24	0	24	0	0	0	0	0	0	0	13	278	0	0	291	0	0	393	0	0	393	708
1530 - 1545	0	0	0	24	0	24	0	1	1	0	0	2	0	6	272	0	0	278	0	0	438	2	0	440	744
1545 - 1600	0	0	0	18	0	18	0	0	0	0	0	0	0	13	311	1	0	325	0	0	419	2	0	421	764
Hourly Total	0	0	0	112	0	**112**	0	1	1	0	0	**2**	0	37	1119	1	0	**1157**	1	0	1669	5	0	**1675**	**2946**
1600 - 1615	0	0	0	18	0	18	0	0	0	0	0	0	1	11	255	0	0	267	0	0	410	0	0	410	695
1615 - 1630	0	0	0	18	0	18	0	0	0	0	0	0	0	12	285	0	0	297	0	0	439	0	0	439	754
1630 - 1645	0	0	0	26	0	26	0	0	0	0	0	0	0	11	303	0	0	314	0	0	433	0	0	433	773
1645 - 1700	0	0	0	19	0	19	0	0	0	0	0	0	0	8	335	0	0	343	1	0	426	0	0	427	789
Hourly Total	0	0	0	81	0	**81**	0	0	0	0	0	**0**	1	42	1178	0	0	**1221**	1	0	1708	0	0	**1709**	**3011**
1700 - 1715	0	1	0	24	0	25	0	0	0	0	0	0	0	14	315	0	0	329	0	0	412	0	0	412	766
1715 - 1730	0	0	0	23	0	23	0	0	0	0	0	0	0	16	358	0	0	374	0	0	355	0	0	355	752
1730 - 1745	0	1	0	25	0	26	0	0	0	0	0	0	0	14	328	0	0	342	1	0	427	0	0	428	796
1745 - 1800	0	2	0	18	0	20	0	0	0	0	0	0	1	13	308	0	0	322	0	0	392	0	0	392	734
Hourly Total	0	4	0	90	0	**94**	0	0	0	0	0	**0**	1	57	1309	0	0	**1367**	1	0	1586	0	0	**1587**	**3048**
Grand Total	0	4	0	283	0	**287**	0	1	1	0	0	**2**	2	136	3606	1	0	**3745**	3	0	4963	5	0	**4971**	**9005**
App Percentage	0.00	1.39	0.00	98.61	0.00		0.00	50.00	50.00	0.00	0.00		0.05	3.63	96.29	0.03	0.00		0.06	0.00	99.84	0.10	0.00		
Int Percentage	0.00	0.04	0.00	3.14	0.00	3.19	0.00	0.01	0.01	0.00	0.00	0.02	0.02	1.51	40.04	0.01	0.00	41.59	0.03	0.00	55.11	0.06	0.00	55.20	
Cars	0	4	0	277	-	281	0	1	1	0	-	2	2	129	3440	1	-	3572	3	0	4819	5	-	4827	
Trucks	0	0	0	6	-	6	0	0	0	0	-	0	0	7	166	0	-	173	0	0	143	0	-	143	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	
Cars (%)	0.00	100.00	0.00	97.88	-	97.91	0.00	100.00	100.00	0.00	-	100.00	100.00	94.85	95.40	100.00	-	95.38	100.00	0.00	97.12	100.00	-	97.12	
Trucks (%)	0.00	0.00	0.00	2.12	-	2.09	0.00	0.00	0.00	0.00	-	0.00	0.00	5.15	4.60	0.00	-	4.62	0.00	0.00	2.88	0.00	-	2.88	

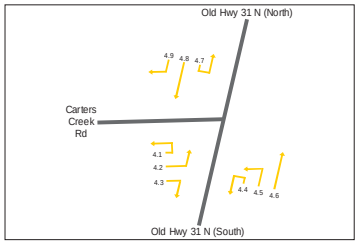
Columbia, TN
Classified Turn Movement Count

Site 4 of 4
Carters Creek Rd
Old Hwy 31 N (South)
Old Hwy 31 N (North)

Lat/Long
35.710390°, -86.975503°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

0600 - 0900 (Weekday AM Peak)

	Eastbound Carters Creek Rd					Northbound Old Hwy 31 N (South)					Southbound Old Hwy 31 N (North)					
	U-Turn	Left	Right	Peds	App	U-Turn	Left	Thru	Peds	App	U-Turn	Thru	Right	Peds	App	Int
TIME	4.1	4.2	4.3	4a	Total	4.4	4.5	4.6	4b	Total	4.7	4.8	4.9	4c	Total	Total
0600 - 0615	0	14	14	0	28	0	11	1	0	12	0	0	6	0	6	46
0615 - 0630	0	18	25	0	43	0	6	2	0	8	0	2	13	0	15	66
0630 - 0645	0	16	9	0	25	0	19	6	0	25	0	1	9	0	10	60
0645 - 0700	0	17	9	0	26	0	29	8	0	37	0	4	7	0	11	74
Hourly Total	0	65	57	0	**122**	0	65	17	0	**82**	0	7	35	0	**42**	**246**
0700 - 0715	0	25	11	0	36	0	30	15	0	45	0	3	22	0	25	106
0715 - 0730	0	41	21	0	62	0	30	28	0	58	0	14	32	0	46	166
0730 - 0745	0	38	21	0	59	0	24	27	0	51	0	24	23	0	47	157
0745 - 0800	0	17	27	0	44	0	9	3	0	12	0	4	11	0	15	71
Hourly Total	0	121	80	0	**201**	0	93	73	0	**166**	0	45	88	0	**133**	**500**
0800 - 0815	0	17	15	0	32	0	11	8	0	19	0	1	10	0	11	62
0815 - 0830	0	23	6	0	29	0	5	9	0	14	0	3	9	0	12	55
0830 - 0845	0	12	5	0	17	0	4	17	0	21	0	2	4	0	6	44
0845 - 0900	0	17	6	0	23	0	14	24	0	38	0	5	13	0	18	79
Hourly Total	0	69	32	0	**101**	0	34	58	0	**92**	0	11	36	0	**47**	**240**
Grand Total	0	255	169	0	**424**	0	192	148	0	**340**	0	63	159	0	**222**	**986**
App Percentage	0.00	60.14	39.86	0.00		0.00	56.47	43.53	0.00		0.00	28.38	71.62	0.00		
Int Percentage	0.00	25.86	17.14	0.00	43.00	0.00	19.47	15.01	0.00	34.48	0.00	6.39	16.13	0.00	22.52	
Cars	0	240	163	-	403	0	186	148	-	334	0	62	146	-	208	
Trucks	0	15	6	-	21	0	6	0	-	6	0	1	13	-	14	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	
Cars (%)	0.00	94.12	96.45	-	95.05	0.00	96.88	100.00	-	98.24	0.00	98.41	91.82	-	93.69	
Trucks (%)	0.00	5.88	3.55	-	4.95	0.00	3.13	0.00	-	1.76	0.00	1.59	8.18	-	6.31	

1500 - 1800 (Weekday PM Peak)

	Eastbound Carters Creek Rd					Northbound Old Hwy 31 N (South)					Southbound Old Hwy 31 N (North)					
	U-Turn	Left	Right	Peds	App	U-Turn	Left	Thru	Peds	App	U-Turn	Thru	Right	Peds	App	Int
TIME	4.1	4.2	4.3	4a	Total	4.4	4.5	4.6	4b	Total	4.7	4.8	4.9	4c	Total	Total
1500 - 1515	0	17	33	0	50	0	5	3	0	8	0	16	42	0	58	116
1515 - 1530	0	21	19	0	40	0	6	4	0	10	0	5	22	0	27	77
1530 - 1545	0	14	16	0	30	0	8	4	0	12	0	9	20	0	29	71
1545 - 1600	0	15	16	0	31	0	13	6	0	19	0	8	20	0	28	78
Hourly Total	0	67	84	0	**151**	0	32	17	0	**49**	0	38	104	0	**142**	**342**
1600 - 1615	0	10	12	0	22	0	13	3	0	16	0	4	15	0	19	57
1615 - 1630	0	13	17	0	30	0	8	2	0	10	0	2	16	0	18	58
1630 - 1645	0	17	19	0	36	0	8	4	0	12	0	8	23	0	31	79
1645 - 1700	0	13	12	0	25	0	8	6	0	14	0	6	20	0	26	65
Hourly Total	0	53	60	0	**113**	0	37	15	0	**52**	0	20	74	0	**94**	**259**
1700 - 1715	0	19	21	0	40	0	12	3	0	15	0	7	24	0	31	86
1715 - 1730	0	13	16	0	29	0	10	6	0	16	0	9	15	0	24	69
1730 - 1745	0	19	14	0	33	0	10	6	0	16	0	10	13	0	23	72
1745 - 1800	0	8	20	0	28	0	10	2	0	12	0	3	32	0	35	75
Hourly Total	0	59	71	0	**130**	0	42	17	0	**59**	0	29	84	0	**113**	**302**
Grand Total	0	179	215	0	**394**	0	111	49	0	**160**	0	87	262	0	**349**	**903**
App Percentage	0.00	45.43	54.57	0.00		0.00	69.38	30.63	0.00		0.00	24.93	75.07	0.00		
Int Percentage	0.00	19.82	23.81	0.00	43.63	0.00	12.29	5.43	0.00	17.72	0.00	9.63	29.01	0.00	38.65	
Cars	0	172	209	-	381	0	106	47	-	153	0	87	256	-	343	
Trucks	0	7	6	-	13	0	5	2	-	7	0	0	6	-	6	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	
Cars (%)	0.00	96.09	97.21	-	96.70	0.00	95.50	95.92	-	95.63	0.00	100.00	97.71	-	98.28	
Trucks (%)	0.00	3.91	2.79	-	3.30	0.00	4.50	4.08	-	4.38	0.00	0.00	2.29	-	1.72	

Grand Total (All Sessions)

	Westbound					Northbound					Southbound					
	Greens Mill Rd					SR-6 Nashville Hwy (South)					SR-6 Nashville Hwy (North)					
TIME	U-Turn 1.1	Left 1.2	Right 1.3	Peds 1a	App Total	U-Turn 1.4	Thru 1.5	Right 1.6	Peds 1b	App Total	U-Turn 1.7	Left 1.8	Thru 1.9	Peds 1c	App Total	Int Total
Grand Total	2	113	237	0	**352**	1	8260	106	0	**8367**	10	181	8680	0	**8871**	**17590**
App Percentage	0.57	32.10	67.33	0.00		0.01	98.72	1.27	0.00		0.11	2.04	97.85	0.00		
Int Percentage	0.01	0.64	1.35	0.00	2.00	0.01	46.96	0.60	0.00	47.57	0.06	1.03	49.35	0.00	50.43	
Cars	0	112	233	-	345	1	7864	105	-	7970	9	178	8310	-	8497	
Trucks	2	1	4	-	7	0	396	1	-	397	1	3	369	-	373	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	1	-	1	
Cars (%)	0.00	99.12	98.31	-	98.01	100.00	95.21	99.06	-	95.26	90.00	98.34	95.75	-	95.79	
Trucks (%)	100.00	0.88	1.69	-	1.99	0.00	4.79	0.94	-	4.74	10.00	1.66	4.25	-	4.21	

Grand Total (All Sessions)

	Eastbound						Westbound						Northbound						Southbound						
	Arden Village Dr						Grove Park Way						SR-6 Nashville Hwy (South)						SR-6 Nashville Hwy (North)						
TIME	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds 2a	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds 2b	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds 2c	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds 2d	App Total	Int Total
Grand Total	0	87	4	38	0	**129**	0	80	4	174	0	**258**	2	51	8339	108	2	**8502**	6	157	8706	113	0	**8982**	**17871**
App Percentage	0.00	67.44	3.10	29.46	0.00		0.00	31.01	1.55	67.44	0.00		0.02	0.60	98.08	1.27	0.02		0.07	1.75	96.93	1.26	0.00		
Int Percentage	0.00	0.49	0.02	0.21	0.00	0.72	0.00	0.45	0.02	0.97	0.00	1.44	0.01	0.29	46.66	0.60	0.01	47.57	0.03	0.88	48.72	0.63	0.00	50.26	
Cars	0	86	4	36	-	126	0	76	3	168	-	247	1	51	7940	107	-	8099	6	150	8341	111	-	8608	
Trucks	0	1	0	2	-	3	0	4	1	6	-	11	1	0	399	1	-	401	0	7	364	2	-	373	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	
Cars (%)	0.00	98.85	100.00	94.74	-	97.67	0.00	95.00	75.00	96.55	-	95.74	50.00	100.00	95.22	99.07	-	95.28	100.00	95.54	95.82	98.23	-	95.85	
Trucks (%)	0.00	1.15	0.00	5.26	-	2.33	0.00	5.00	25.00	3.45	-	4.26	50.00	0.00	4.78	0.93	-	4.72	0.00	4.46	4.18	1.77	-	4.15	

Grand Total (All Sessions)

	Eastbound						Westbound						Northbound						Southbound						
	Old Hwy 31 N						Local Rd						SR-6 Nashville Hwy (South)						SR-6 Nashville Hwy (North)						
TIME	U-Turn 3.1	Left 3.2	Thru 3.3	Right 3.4	Peds 3a	App Total	U-Turn 3.5	Left 3.6	Thru 3.7	Right 3.8	Peds 3b	App Total	U-Turn 3.9	Left 3.10	Thru 3.11	Right 3.12	Peds 3c	App Total	U-Turn 3.13	Left 3.14	Thru 3.15	Right 3.16	Peds 3d	App Total	Int Total
Grand Total	0	6	0	497	0	**503**	0	1	1	0	0	**2**	7	460	8140	1	0	**8608**	4	0	8469	8	0	**8481**	**17594**
App Percentage	0.00	1.19	0.00	98.81	0.00		0.00	50.00	50.00	0.00	0.00		0.08	5.34	94.56	0.01	0.00		0.05	0.00	99.86	0.09	0.00		
Int Percentage	0.00	0.03	0.00	2.82	0.00	2.86	0.00	0.01	0.01	0.00	0.00	0.01	0.04	2.61	46.27	0.01	0.00	48.93	0.02	0.00	48.14	0.05	0.00	48.20	
Cars	0	6	0	484	-	490	0	1	1	0	-	2	7	447	7747	1	-	8202	4	0	8108	8	-	8120	
Trucks	0	0	0	13	-	13	0	0	0	0	-	0	0	13	393	0	-	406	0	0	360	0	-	360	
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	
Cars (%)	0.00	100.00	0.00	97.38	-	97.42	0.00	100.00	100.00	0.00	-	100.00	100.00	97.17	95.17	100.00	-	95.28	100.00	0.00	95.75	100.00	-	95.75	
Trucks (%)	0.00	0.00	0.00	2.62	-	2.58	0.00	0.00	0.00	0.00	-	0.00	0.00	2.83	4.83	0.00	-	4.72	0.00	0.00	4.25	0.00	-	4.25	

Grand Total (All Sessions)

	Eastbound					Northbound					Southbound					
	Carters Creek Rd					Old Hwy 31 N (South)					Old Hwy 31 N (North)					
TIME	U-Turn 4.1	Left 4.2	Right 4.3	Peds 4a	App Total	U-Turn 4.4	Left 4.5	Thru 4.6	Peds 4b	App Total	U-Turn 4.7	Thru 4.8	Right 4.9	Peds 4c	App Total	Int Total
Grand Total	0	434	384	0	**818**	0	303	197	0	**500**	0	150	421	0	**571**	**1889**
App Percentage	0.00	53.06	46.94	0.00		0.00	60.60	39.40	0.00		0.00	26.27	73.73	0.00		
Int Percentage	0.00	22.98	20.33	0.00	43.30	0.00	16.04	10.43	0.00	26.47	0.00	7.94	22.29	0.00	30.23	
Cars	0	412	372	-	784	0	292	195	-	487	0	149	402	-	551	
Trucks	0	22	12	-	34	0	11	2	-	13	0	1	19	-	20	
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	
Cars (%)	0.00	94.93	96.88	-	95.84	0.00	96.37	98.98	-	97.40	0.00	99.33	95.49	-	96.50	
Trucks (%)	0.00	5.07	3.13	-	4.16	0.00	3.63	1.02	-	2.60	0.00	0.67	4.51	-	3.50	

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0715 - 0815 (Intersection Peak Hour)

	Westbound					Northbound					Southbound					
	Greens Mill Rd					SR-6 Nashville Hwy (South)					SR-6 Nashville Hwy (North)					
TIME	U-Turn 1.1	Left 1.2	Right 1.3	Peds 1a	App Total	U-Turn 1.4	Thru 1.5	Right 1.6	Peds 1b	App Total	U-Turn 1.7	Left 1.8	Thru 1.9	Peds 1c	App Total	Int Total
0715 - 0730	0	9	27	0	36	0	487	0	0	487	0	7	340	0	347	870
0730 - 0745	0	9	25	0	34	0	459	1	0	460	1	11	401	0	413	907
0745 - 0800	0	6	11	0	17	0	379	7	0	386	0	7	315	0	322	725
0800 - 0815	0	3	8	0	11	0	415	1	0	416	0	6	285	0	291	718
Hourly Total	0	27	71	0	**98**	0	1740	9	0	**1749**	1	31	1341	0	**1373**	**3220**
Grand Total	0	27	71	0	**98**	0	1740	9	0	**1749**	1	31	1341	0	**1373**	**3220**
App Percentage	0.00	27.55	72.45	0.00		0.00	99.49	0.51	0.00		0.07	2.26	97.67	0.00		
Int Percentage	0.00	0.84	2.20	0.00	3.04	0.00	54.04	0.28	0.00	54.32	0.03	0.96	41.65	0.00	42.64	
Cars	0	27	71	-	98	0	1653	9	-	1662	1	30	1256	-	1287	3047
Trucks	0	0	0	-	0	0	87	0	-	87	0	1	85	-	86	173
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	100.00	-	100.00	0.00	95.00	100.00	-	95.03	100.00	96.77	93.66	-	93.74	94.63
Trucks (%)	0.00	0.00	0.00	-	0.00	0.00	5.00	0.00	-	4.97	0.00	3.23	6.34	-	6.26	5.37
PHF	0.000	0.750	0.657	-	0.681	0.000	0.893	0.321	-	0.898	0.250	0.705	0.836	-	0.831	0.888

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0715 - 0815 (Intersection Peak Hour)

	Eastbound						Westbound						Northbound						Southbound						
	Arden Village Dr						Grove Park Way						SR-6 Nashville Hwy (South)						SR-6 Nashville Hwy (North)						
TIME	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds 2a	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds 2b	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds 2c	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds 2d	App Total	Int Total
0715 - 0730	0	7	0	3	0	10	0	2	0	5	0	7	0	0	506	1	0	507	0	5	335	3	0	343	867
0730 - 0745	0	5	0	1	0	6	0	0	0	5	0	5	0	2	474	2	0	478	1	7	413	3	0	424	913
0745 - 0800	0	7	0	3	0	10	0	0	0	3	0	3	0	1	386	2	0	389	0	3	297	6	0	306	708
0800 - 0815	0	4	0	2	0	6	0	2	0	8	0	10	0	0	406	5	0	411	0	7	292	1	0	300	727
Hourly Total	0	23	0	9	0	**32**	0	4	0	21	0	**25**	0	3	1772	10	0	**1785**	1	22	1337	13	0	**1373**	**3215**
Grand Total	0	23	0	9	0	**32**	0	4	0	21	0	**25**	0	3	1772	10	0	**1785**	1	22	1337	13	0	**1373**	**3215**
App Percentage	0.00	71.88	0.00	28.13	0.00		0.00	16.00	0.00	84.00	0.00		0.00	0.17	99.27	0.56	0.00		0.07	1.60	97.38	0.95	0.00		
Int Percentage	0.00	0.72	0.00	0.28	0.00	1.00	0.00	0.12	0.00	0.65	0.00	0.78	0.00	0.09	55.12	0.31	0.00	55.52	0.03	0.68	41.59	0.40	0.00	42.71	
Cars	0	23	0	8	-	31	0	3	0	20	-	23	0	3	1684	9	-	1696	1	19	1252	12	-	1284	3034
Trucks	0	0	0	1	-	1	0	1	0	1	-	2	0	0	88	1	-	89	0	3	85	1	-	89	181
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	0.00	88.89	-	96.88	0.00	75.00	0.00	95.24	-	92.00	0.00	100.00	95.03	90.00	-	95.01	100.00	86.36	93.64	92.31	-	93.52	94.37
Trucks (%)	0.00	0.00	0.00	11.11	-	3.13	0.00	25.00	0.00	4.76	-	8.00	0.00	0.00	4.97	10.00	-	4.99	0.00	13.64	6.36	7.69	-	6.48	5.63
PHF	0.000	0.821	0.000	0.750	-	0.800	0.000	0.500	0.000	0.656	-	0.625	0.000	0.375	0.875	0.500	-	0.880	0.250	0.786	0.809	0.542	-	0.810	0.880

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0715 - 0815 (Intersection Peak Hour)

	Eastbound						Westbound						Northbound						Southbound						
	Old Hwy 31 N						Local Rd						SR-6 Nashville Hwy (South)						SR-6 Nashville Hwy (North)						
TIME	U-Turn 3.1	Left 3.2	Thru 3.3	Right 3.4	Peds 3a	App Total	U-Turn 3.5	Left 3.6	Thru 3.7	Right 3.8	Peds 3b	App Total	U-Turn 3.9	Left 3.10	Thru 3.11	Right 3.12	Peds 3c	App Total	U-Turn 3.13	Left 3.14	Thru 3.15	Right 3.16	Peds 3d	App Total	Int Total
0715 - 0730	0	0	0	35	0	35	0	0	0	0	0	0	0	55	461	0	0	516	1	0	305	0	0	306	857
0730 - 0745	0	0	0	45	0	45	0	0	0	0	0	0	2	46	433	0	0	481	0	0	381	0	0	381	907
0745 - 0800	0	1	0	26	0	27	0	0	0	0	0	0	0	13	400	0	0	413	0	0	285	0	0	285	725
0800 - 0815	0	0	0	17	0	17	0	0	0	0	0	0	0	14	397	0	0	411	0	0	280	1	0	281	709
Hourly Total	0	1	0	123	0	**124**	0	0	0	0	0	**0**	2	128	1691	0	0	**1821**	1	0	1251	1	0	**1253**	**3198**
Grand Total	0	1	0	123	0	**124**	0	0	0	0	0	**0**	2	128	1691	0	0	**1821**	1	0	1251	1	0	**1253**	**3198**
App Percentage	0.00	0.81	0.00	99.19	0.00		0.00	0.00	0.00	0.00	0.00		0.11	7.03	92.86	0.00	0.00		0.08	0.00	99.84	0.08	0.00		
Int Percentage	0.00	0.03	0.00	3.85	0.00	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.06	4.00	52.88	0.00	0.00	56.94	0.03	0.00	39.12	0.03	0.00	39.18	
Cars	0	1	0	117	-	118	0	0	0	0	-	0	2	126	1604	0	-	1732	1	0	1167	1	-	1169	3019
Trucks	0	0	0	6	-	6	0	0	0	0	-	0	0	2	87	0	-	89	0	0	84	0	-	84	179
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	0.00	95.12	-	95.16	0.00	0.00	0.00	0.00	-	0.00	100.00	98.44	94.86	0.00	-	95.11	100.00	0.00	93.29	100.00	-	93.30	94.40
Trucks (%)	0.00	0.00	0.00	4.88	-	4.84	0.00	0.00	0.00	0.00	-	0.00	0.00	1.56	5.14	0.00	-	4.89	0.00	0.00	6.71	0.00	-	6.70	5.60
PHF	0.000	0.250	0.000	0.683	-	0.689	0.000	0.000	0.000	0.000	-	0.000	0.250	0.582	0.917	0.000	-	0.882	0.250	0.000	0.821	0.250	-	0.822	0.881

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0645 - 0745 (Intersection Peak Hour)

	Eastbound					Northbound					Southbound					
	Carters Creek Rd					Old Hwy 31 N (South)					Old Hwy 31 N (North)					
TIME	U-Turn 4.1	Left 4.2	Right 4.3	Peds 4a	App Total	U-Turn 4.4	Left 4.5	Thru 4.6	Peds 4b	App Total	U-Turn 4.7	Thru 4.8	Right 4.9	Peds 4c	App Total	Int Total
0645 - 0700	0	17	9	0	26	0	29	8	0	37	0	4	7	0	11	74
0700 - 0715	0	25	11	0	36	0	30	15	0	45	0	3	22	0	25	106
0715 - 0730	0	41	21	0	62	0	30	28	0	58	0	14	32	0	46	166
0730 - 0745	0	38	21	0	59	0	24	27	0	51	0	24	23	0	47	157
Hourly Total	0	121	62	0	**183**	0	113	78	0	**191**	0	45	84	0	**129**	**503**
Grand Total	0	121	62	0	**183**	0	113	78	0	**191**	0	45	84	0	**129**	**503**
App Percentage	0.00	66.12	33.88	0.00		0.00	59.16	40.84	0.00		0.00	34.88	65.12	0.00		
Int Percentage	0.00	24.06	12.33	0.00	36.38	0.00	22.47	15.51	0.00	37.97	0.00	8.95	16.70	0.00	25.65	
Cars	0	115	58	-	173	0	111	78	-	189	0	44	77	-	121	483
Trucks	0	6	4	-	10	0	2	0	-	2	0	1	7	-	8	20
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
Cars (%)	0.00	95.04	93.55	-	94.54	0.00	98.23	100.00	-	98.95	0.00	97.78	91.67	-	93.80	96.02
Trucks (%)	0.00	4.96	6.45	-	5.46	0.00	1.77	0.00	-	1.05	0.00	2.22	8.33	-	6.20	3.98
PHF	0.000	0.738	0.738	-	0.738	0.000	0.942	0.696	-	0.823	0.000	0.469	0.656	-	0.686	0.758

Columbia, TN
Classified Turn Movement Count

Site 1 of 4
Greens Mill Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.702619°, -86.979254°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

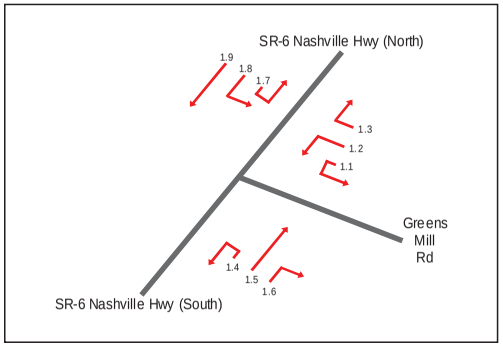
Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

C (Southbound) SR-6 Nashville Hwy (North)

C (In)	C (Out)	C (Tot)
1373	1812	3185

Peds	Thru	Left	U-Turn
0	1341	31	1



A (Westbound) Greens Mill Rd

Peds	0
Right	71
Left	27
U-Turn	0

A (In)	98
A (Out)	40
A (Tot)	138

B (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Thru	Right	Peds
0	1740	9	0

B (Out)	B (In)	B (Tot)
1368	1749	3117

Time Interval

0715 - 0815 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 2 of 4
Arden Village Dr
Grove Park Way
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.706070°, -86.976722°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

D (Southbound) SR-6 Nashville Hwy (North)

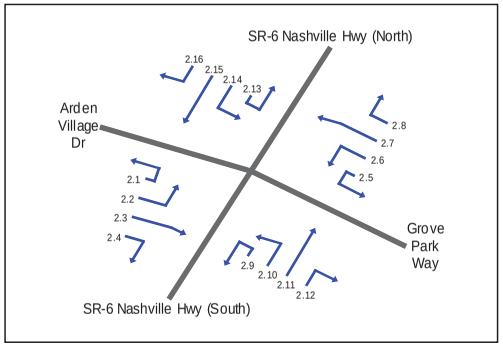
D (In)	D (Out)	D (Tot)
1373	1817	3190

Peds	Right	Thru	Left	U-Turn
0	13	1337	22	1

A (Eastbound) Arden Village Dr

A (Out)	16
A (In)	32
A (Tot)	48

U-Turn	0
Left	23
Thru	0
Right	9
Peds	0



B (Westbound) Grove Park Way

Peds	0
Right	21
Thru	0
Left	4
U-Turn	0

B (In)	25
B (Out)	32
B (Tot)	57

C (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Left	Thru	Right	Peds
0	3	1772	10	0

C (Out)	C (In)	C (Tot)
1350	1785	3135

Time Interval

0715 - 0815 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 3 of 4
Old Hwy 31 N
Local Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.707700°, -86.975686°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

D (Southbound) SR-6 Nashville Hwy (North)

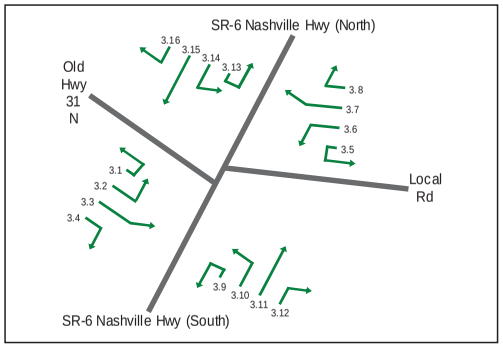
D (In)	D (Out)	D (Tot)
1253	1693	2946

Peds	Right	Thru	Left	U-Turn
0	1	1251	0	1

A (Eastbound) Old Hwy 31 N

A (Out)	129
A (In)	124
A (Tot)	253

U-Turn	0
Left	1
Thru	0
Right	123
Peds	0



B (Westbound) Local Rd

Peds	0
Right	0
Thru	0
Left	0
U-Turn	0

B (In)	0
B (Out)	0
B (Tot)	0

C (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Left	Thru	Right	Peds
2	128	1691	0	0

C (Out)	C (In)	C (Tot)
1376	1821	3197

Time Interval

0715 - 0815 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 4 of 4
Carters Creek Rd
Old Hwy 31 N (South)
Old Hwy 31 N (North)

Lat/Long
35.710390°, -86.975503°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

C (Southbound) Old Hwy 31 N (North)

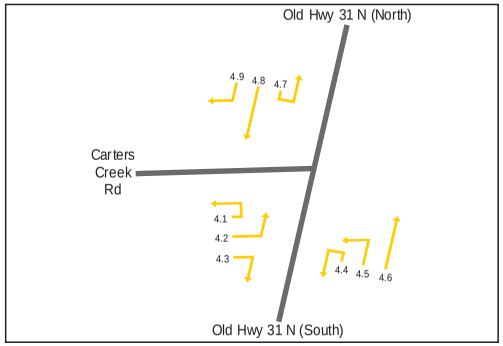
C (In)	C (Out)	C (Tot)
129	199	328

Peds	Right	Thru	U-Turn
0	84	45	0

A (Eastbound) Carters Creek Rd

A (Out)	197
A (In)	183
A (Tot)	380

U-Turn	0
Left	121
Right	62
Peds	0



B (Northbound) Old Hwy 31 N (South)

U-Turn	Left	Thru	Peds
0	113	78	0

B (Out)	B (In)	B (Tot)
107	191	298

Time Interval

0645 - 0745 (Intersection Peak Hour)

Parameter

Grand Total

Peak Hour Window: 1500 - 1800 (Weekday PM Peak)

1645 - 1745 (Intersection Peak Hour)

	Westbound					Northbound					Southbound					
	Greens Mill Rd					SR-6 Nashville Hwy (South)					SR-6 Nashville Hwy (North)					
TIME	U-Turn 1.1	Left 1.2	Right 1.3	Peds 1a	App Total	U-Turn 1.4	Thru 1.5	Right 1.6	Peds 1b	App Total	U-Turn 1.7	Left 1.8	Thru 1.9	Peds 1c	App Total	Int Total
1645 - 1700	0	4	10	0	14	0	327	3	0	330	1	10	436	0	447	791
1700 - 1715	0	7	5	0	12	0	310	9	0	319	0	12	398	0	410	741
1715 - 1730	0	7	13	0	20	0	365	14	0	379	0	8	380	0	388	787
1730 - 1745	0	4	11	0	15	0	327	3	0	330	0	6	420	0	426	771
Hourly Total	0	22	39	0	**61**	0	1329	29	0	**1358**	1	36	1634	0	**1671**	**3090**
Grand Total	0	22	39	0	**61**	0	1329	29	0	**1358**	1	36	1634	0	**1671**	**3090**
App Percentage	0.00	36.07	63.93	0.00		0.00	97.86	2.14	0.00		0.06	2.15	97.79	0.00		
Int Percentage	0.00	0.71	1.26	0.00	1.97	0.00	43.01	0.94	0.00	43.95	0.03	1.17	52.88	0.00	54.08	
Cars	0	22	38	-	60	0	1279	29	-	1308	1	36	1600	-	1637	3005
Trucks	0	0	1	-	1	0	50	0	-	50	0	0	34	-	34	85
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	97.44	-	98.36	0.00	96.24	100.00	-	96.32	100.00	100.00	97.92	-	97.97	97.25
Trucks (%)	0.00	0.00	2.56	-	1.64	0.00	3.76	0.00	-	3.68	0.00	0.00	2.08	-	2.03	2.75
PHF	0.000	0.786	0.750	-	0.763	0.000	0.910	0.518	-	0.896	0.250	0.750	0.937	-	0.935	0.977

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0715 - 0815 (Intersection Peak Hour)

	Eastbound Arden Village Dr						Westbound Grove Park Way						Northbound SR-6 Nashville Hwy (South)						Southbound SR-6 Nashville Hwy (North)						
TIME	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds 2a	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds 2b	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds 2c	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds 2d	App Total	Int Total
0715 - 0730	0	7	0	3	0	10	0	2	0	5	0	7	0	0	506	1	0	507	0	5	335	3	0	343	867
0730 - 0745	0	5	0	1	0	6	0	0	0	5	0	5	0	2	474	2	0	478	1	7	413	3	0	424	913
0745 - 0800	0	7	0	3	0	10	0	0	0	3	0	3	0	1	386	2	0	389	0	3	297	6	0	306	708
0800 - 0815	0	4	0	2	0	6	0	2	0	8	0	10	0	0	406	5	0	411	0	7	292	1	0	300	727
Hourly Total	0	23	0	9	0	**32**	0	4	0	21	0	**25**	0	3	1772	10	0	**1785**	1	22	1337	13	0	**1373**	**3215**
Grand Total	0	23	0	9	0	**32**	0	4	0	21	0	**25**	0	3	1772	10	0	**1785**	1	22	1337	13	0	**1373**	**3215**
App Percentage	0.00	71.88	0.00	28.13	0.00		0.00	16.00	0.00	84.00	0.00		0.00	0.17	99.27	0.56	0.00		0.07	1.60	97.38	0.95	0.00		
Int Percentage	0.00	0.72	0.00	0.28	0.00	1.00	0.00	0.12	0.00	0.65	0.00	0.78	0.00	0.09	55.12	0.31	0.00	55.52	0.03	0.68	41.59	0.40	0.00	42.71	
Cars	0	23	0	8	-	31	0	3	0	20	-	23	0	3	1684	9	-	1696	1	19	1252	12	-	1284	3034
Trucks	0	0	0	1	-	1	0	1	0	1	-	2	0	0	88	1	-	89	0	3	85	1	-	89	181
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	0.00	88.89	-	96.88	0.00	75.00	0.00	95.24	-	92.00	0.00	100.00	95.03	90.00	-	95.01	100.00	86.36	93.64	92.31	-	93.52	94.37
Trucks (%)	0.00	0.00	0.00	11.11	-	3.13	0.00	25.00	0.00	4.76	-	8.00	0.00	0.00	4.97	10.00	-	4.99	0.00	13.64	6.36	7.69	-	6.48	5.63
PHF	0.000	0.821	0.000	0.750	-	0.800	0.000	0.500	0.000	0.656	-	0.625	0.000	0.375	0.875	0.500	-	0.880	0.250	0.786	0.809	0.542	-	0.810	0.880

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0715 - 0815 (Intersection Peak Hour)

	Eastbound						Westbound						Northbound						Southbound						
	Old Hwy 31 N						Local Rd						SR-6 Nashville Hwy (South)						SR-6 Nashville Hwy (North)						
TIME	U-Turn 3.1	Left 3.2	Thru 3.3	Right 3.4	Peds 3a	App Total	U-Turn 3.5	Left 3.6	Thru 3.7	Right 3.8	Peds 3b	App Total	U-Turn 3.9	Left 3.10	Thru 3.11	Right 3.12	Peds 3c	App Total	U-Turn 3.13	Left 3.14	Thru 3.15	Right 3.16	Peds 3d	App Total	Int Total
0715 - 0730	0	0	0	35	0	35	0	0	0	0	0	0	0	55	461	0	0	516	1	0	305	0	0	306	857
0730 - 0745	0	0	0	45	0	45	0	0	0	0	0	0	2	46	433	0	0	481	0	0	381	0	0	381	907
0745 - 0800	0	1	0	26	0	27	0	0	0	0	0	0	0	13	400	0	0	413	0	0	285	0	0	285	725
0800 - 0815	0	0	0	17	0	17	0	0	0	0	0	0	0	14	397	0	0	411	0	0	280	1	0	281	709
Hourly Total	0	1	0	123	0	**124**	0	0	0	0	0	**0**	2	128	1691	0	0	**1821**	1	0	1251	1	0	**1253**	**3198**
Grand Total	0	1	0	123	0	**124**	0	0	0	0	0	**0**	2	128	1691	0	0	**1821**	1	0	1251	1	0	**1253**	**3198**
App Percentage	0.00	0.81	0.00	99.19	0.00		0.00	0.00	0.00	0.00	0.00		0.11	7.03	92.86	0.00	0.00		0.08	0.00	99.84	0.08	0.00		
Int Percentage	0.00	0.03	0.00	3.85	0.00	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.06	4.00	52.88	0.00	0.00	56.94	0.03	0.00	39.12	0.03	0.00	39.18	
Cars	0	1	0	117	-	118	0	0	0	0	-	0	2	126	1604	0	-	1732	1	0	1167	1	-	1169	3019
Trucks	0	0	0	6	-	6	0	0	0	0	-	0	0	2	87	0	-	89	0	0	84	0	-	84	179
P/Cycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Cars (%)	0.00	100.00	0.00	95.12	-	95.16	0.00	0.00	0.00	0.00	-	0.00	100.00	98.44	94.86	0.00	-	95.11	100.00	0.00	93.29	100.00	-	93.30	94.40
Trucks (%)	0.00	0.00	0.00	4.88	-	4.84	0.00	0.00	0.00	0.00	-	0.00	0.00	1.56	5.14	0.00	-	4.89	0.00	0.00	6.71	0.00	-	6.70	5.60
PHF	0.000	0.250	0.000	0.683	-	0.689	0.000	0.000	0.000	0.000	-	0.000	0.250	0.582	0.917	0.000	-	0.882	0.250	0.000	0.821	0.250	-	0.822	0.881

Peak Hour Window: 0600 - 0900 (Weekday AM Peak)

0645 - 0745 (Intersection Peak Hour)

	Eastbound					Northbound					Southbound					
	Carters Creek Rd					Old Hwy 31 N (South)					Old Hwy 31 N (North)					
TIME	U-Turn 4.1	Left 4.2	Right 4.3	Peds 4a	App Total	U-Turn 4.4	Left 4.5	Thru 4.6	Peds 4b	App Total	U-Turn 4.7	Thru 4.8	Right 4.9	Peds 4c	App Total	Int Total
0645 - 0700	0	17	9	0	26	0	29	8	0	37	0	4	7	0	11	74
0700 - 0715	0	25	11	0	36	0	30	15	0	45	0	3	22	0	25	106
0715 - 0730	0	41	21	0	62	0	30	28	0	58	0	14	32	0	46	166
0730 - 0745	0	38	21	0	59	0	24	27	0	51	0	24	23	0	47	157
Hourly Total	0	121	62	0	**183**	0	113	78	0	**191**	0	45	84	0	**129**	**503**
Grand Total	0	121	62	0	**183**	0	113	78	0	**191**	0	45	84	0	**129**	**503**
App Percentage	0.00	66.12	33.88	0.00		0.00	59.16	40.84	0.00		0.00	34.88	65.12	0.00		
Int Percentage	0.00	24.06	12.33	0.00	36.38	0.00	22.47	15.51	0.00	37.97	0.00	8.95	16.70	0.00	25.65	
Cars	0	115	58	-	173	0	111	78	-	189	0	44	77	-	121	483
Trucks	0	6	4	-	10	0	2	0	-	2	0	1	7	-	8	20
P/Cycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
Cars (%)	0.00	95.04	93.55	-	94.54	0.00	98.23	100.00	-	98.95	0.00	97.78	91.67	-	93.80	96.02
Trucks (%)	0.00	4.96	6.45	-	5.46	0.00	1.77	0.00	-	1.05	0.00	2.22	8.33	-	6.20	3.98
PHF	0.000	0.738	0.738	-	0.738	0.000	0.942	0.696	-	0.823	0.000	0.469	0.656	-	0.686	0.758

Columbia, TN
Classified Turn Movement Count

Site 1 of 4
Greens Mill Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.702619°, -86.979254°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

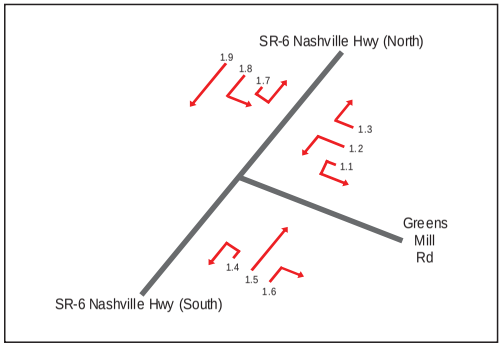
Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

C (Southbound) SR-6 Nashville Hwy (North)

C (In)	C (Out)	C (Tot)
1671	1369	3040

Peds	Thru	Left	U-Turn
0	1634	36	1



A (Westbound) Greens Mill Rd

Peds	0
Right	39
Left	22
U-Turn	0

A (In)	61
A (Out)	65
A (Tot)	126

B (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Thru	Right	Peds
0	1329	29	0

B (Out)	B (In)	B (Tot)
1656	1358	3014

Time Interval

1645 - 1745 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 2 of 4
Arden Village Dr
Grove Park Way
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.706070°, -86.976722°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

D (Southbound) SR-6 Nashville Hwy (North)

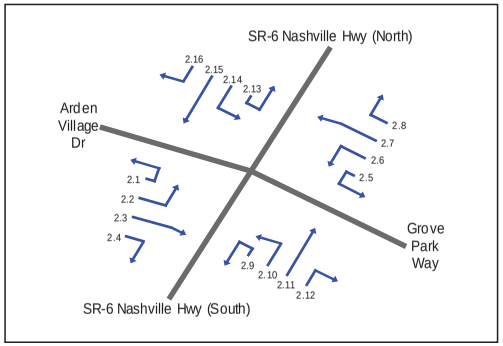
D (In)	D (Out)	D (Tot)
1373	1817	3190

Peds	Right	Thru	Left	U-Turn
0	13	1337	22	1

A (Eastbound) Arden Village Dr

A (Out)	16
A (In)	32
A (Tot)	48

U-Turn	0
Left	23
Thru	0
Right	9
Peds	0



B (Westbound) Grove Park Way

Peds	0
Right	21
Thru	0
Left	4
U-Turn	0

B (In)	25
B (Out)	32
B (Tot)	57

C (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Left	Thru	Right	Peds
0	3	1772	10	0

C (Out)	C (In)	C (Tot)
1350	1785	3135

Time Interval

0715 - 0815 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 3 of 4
Old Hwy 31 N
Local Rd
SR-6 Nashville Hwy (South)
SR-6 Nashville Hwy (North)

Lat/Long
35.707700°, -86.975686°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

D (Southbound) SR-6 Nashville Hwy (North)

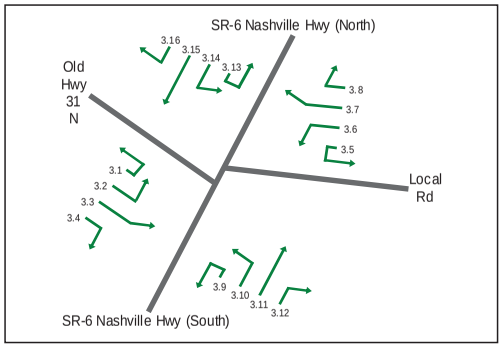
D (In)	D (Out)	D (Tot)
1253	1693	2946

Peds	Right	Thru	Left	U-Turn
0	1	1251	0	1

A (Eastbound) Old Hwy 31 N

A (Out)	129
A (In)	124
A (Tot)	253

U-Turn	0
Left	1
Thru	0
Right	123
Peds	0



B (Westbound) Local Rd

Peds	0
Right	0
Thru	0
Left	0
U-Turn	0

B (In)	0
B (Out)	0
B (Tot)	0

C (Northbound) SR-6 Nashville Hwy (South)

U-Turn	Left	Thru	Right	Peds
2	128	1691	0	0

C (Out)	C (In)	C (Tot)
1376	1821	3197

Time Interval

0715 - 0815 (Intersection Peak Hour)

Parameter

Grand Total

Columbia, TN
Classified Turn Movement Count

Site 4 of 4
Carters Creek Rd
Old Hwy 31 N (South)
Old Hwy 31 N (North)

Lat/Long
35.710390°, -86.975503°

Date
Wednesday 3 May 2017

Weather
Sunny Intervals
Temp: 28°C

Peak Hour Data (Interactive Diagram)

Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
1 (615) 431-6750
1 (800) 615-3765

C (Southbound) Old Hwy 31 N (North)

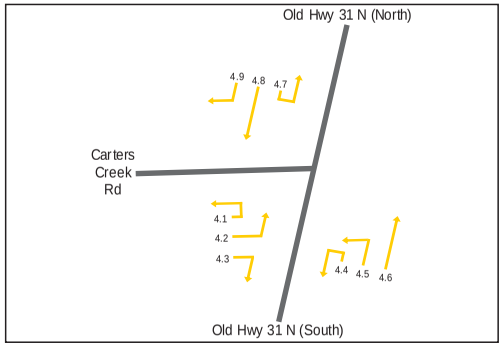
C (In)	C (Out)	C (Tot)
129	199	328

Peds	Right	Thru	U-Turn
0	84	45	0

A (Eastbound) Carters Creek Rd

A (Out)	197
A (In)	183
A (Tot)	380

U-Turn	0
Left	121
Right	62
Peds	0



B (Northbound) Old Hwy 31 N (South)

U-Turn	Left	Thru	Peds
0	113	78	0

B (Out)	B (In)	B (Tot)
107	191	298

Time Interval

0645 - 0745 (Intersection Peak Hour)

Parameter

Grand Total

APPENDIX C
TDOT COUNT DATA

TDOT Station Information

Station	000019	000223	000091
Route	00972	SR396	SR006
Location	SOUTHEAST NEAPOLIS	NEAR SPRING HILL	SOUTH OF NEAPOLIS
County	Maury	Maury	Maury
2015	1195	23291	34875
2014	1072	22575	34235
2013	973	23466	30975
2012	1016	21687	29517
2011	1048	21362	30297
2010	1104	22563	27335
2009	1145	21991	27095
2008	1110	23333	27226
2007	1207	21691	27921
2006	1193	22601	32741
2005	1171	25005	31459
2004	1399	25000	30322
2003	1359	24980	28802
2002	1184	23863	27462
2001	1089	24391	30777
2000	1165	NA	28764
1999	1231	NA	27152
1998	970	NA	26643
1997	963	NA	27282
1996	1056	NA	23600
1995	979	NA	24941
1994	650	NA	22257
1993	640	NA	20906
1992	642	NA	19642
1991	618	NA	19229
1990	640	NA	15303
1989	658	NA	16510
1988	585	NA	11643
1987	474	NA	9833
1986	610	NA	10334
1985	423	NA	9022
1984	NA	NA	NA
1983	NA	NA	NA

APPENDIX D
CAPACITY ANALYSES

EXISTING CONDITIONS CAPACITY ANALYSES

Intersection	
Int Delay, s/veh	1.7

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	140	1702	1269	1	2	125
Future Vol, veh/h	140	1702	1269	1	2	125
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	1850	1379	1	2	136

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1380	0	-	0	2609	690
Stage 1	-	-	-	-	1380	-
Stage 2	-	-	-	-	1229	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	493	-	-	-	20	388
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	239	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	493	-	-	-	20	388
Mov Cap-2 Maneuver	-	-	-	-	20	-
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	239	-

Approach	NB	SB	SE
HCM Control Delay, s	1.2	0	26.7
HCM LOS			D

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	493	-	301	-	-
HCM Lane V/C Ratio	0.309	-	0.459	-	-
HCM Control Delay (s)	15.5	0	26.7	-	-
HCM Lane LOS	C	A	D	-	-
HCM 95th %tile Q(veh)	1.3	-	2.3	-	-

Intersection	
Int Delay, s/veh	23.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	71	1740	9	31	1341
Future Vol, veh/h	27	71	1740	9	31	1341
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	485	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	77	1891	10	34	1458

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2692	951	0	0	1901	0
Stage 1	1896	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 17	260	-	-	309	-
Stage 1	104	-	-	-	-	-
Stage 2	405	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 15	260	-	-	309	-
Mov Cap-2 Maneuver	~ 15	-	-	-	-	-
Stage 1	104	-	-	-	-	-
Stage 2	360	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 765.7	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	47	309	-
HCM Lane V/C Ratio	-	-	2.266	0.109	-
HCM Control Delay (s)	-	-	$ 765.7	18.1	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	11.1	0.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	0	9	4	0	21	3	1798	10	22	1359	13
Future Vol, veh/h	23	0	9	4	0	21	3	1798	10	22	1359	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	0	10	4	0	23	3	1954	11	24	1477	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2509	3486	739	2747	3486	977	1477	0	0	1954	0	0
Stage 1	1525	1525	-	1961	1961	-	-	-	-	-	-	-
Stage 2	984	1961	-	786	1525	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 14	6	360	9	6	250	452	-	-	295	-	-
Stage 1	123	178	-	65	108	-	-	-	-	-	-	-
Stage 2	267	108	-	351	178	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 12	5	360	8	5	250	452	-	-	295	-	-
Mov Cap-2 Maneuver	~ 12	5	-	8	5	-	-	-	-	-	-	-
Stage 1	122	164	-	65	107	-	-	-	-	-	-	-
Stage 2	241	107	-	314	164	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 818.2	129.4	0	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	452	-	-	12	360	8	250	295	-	-
HCM Lane V/C Ratio	0.007	-	-	2.083	0.027	0.543	0.091	0.081	-	-
HCM Control Delay (s)	13	-	-	$ 1132.4	15.3	$ 699.6	20.8	18.3	-	-
HCM Lane LOS	B	-	-	F	C	F	C	C	-	-
HCM 95th %tile Q(veh)	0	-	-	4	0.1	1.1	0.3	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	113	84	75	66	43	76
Future Vol, veh/h	113	84	75	66	43	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	91	82	72	47	83

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	323	88	129	0	-	0
Stage 1	88	-	-	-	-	-
Stage 2	235	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	671	970	1457	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	804	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	631	970	1457	-	-	-
Mov Cap-2 Maneuver	631	-	-	-	-	-
Stage 1	935	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1457	-	741	-	-
HCM Lane V/C Ratio	0.056	-	0.289	-	-
HCM Control Delay (s)	7.6	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	61	1336	1647	0	2	93
Future Vol, veh/h	61	1336	1647	0	2	93
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	1452	1790	0	2	101

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1790	0	-	0	2649	895
Stage 1	-	-	-	-	1790	-
Stage 2	-	-	-	-	859	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	342	-	-	-	19	284
Stage 1	-	-	-	-	119	-
Stage 2	-	-	-	-	375	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	342	-	-	-	0	284
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	119	-
Stage 2	-	-	-	-	0	-

Approach	NB	SB	SE
HCM Control Delay, s	8.7	0	24.7
HCM LOS			C

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	342	-	284	-	-
HCM Lane V/C Ratio	0.194	-	0.364	-	-
HCM Control Delay (s)	18	8.3	24.7	-	-
HCM Lane LOS	C	A	C	-	-
HCM 95th %tile Q(veh)	0.7	-	1.6	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	39	1336	29	36	1655
Future Vol, veh/h	22	39	1336	29	36	1655
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	485	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	42	1452	32	39	1799

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2446	742	0	0	1484	0
Stage 1	1468	-	-	-	-	-
Stage 2	978	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	26	358	-	-	449	-
Stage 1	178	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	24	358	-	-	449	-
Mov Cap-2 Maneuver	24	-	-	-	-	-
Stage 1	178	-	-	-	-	-
Stage 2	297	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	271.7	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	59	449	-
HCM Lane V/C Ratio	-	-	1.124	0.087	-
HCM Control Delay (s)	-	-	271.7	13.8	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	5.5	0.3	-

Intersection	
Int Delay, s/veh	11.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	4	23	1	46	9	1340	26	38	1664	38
Future Vol, veh/h	11	0	4	23	1	46	9	1340	26	38	1664	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	25	1	50	10	1457	28	41	1809	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2639	3367	904	2463	3367	728	1809	0	0	1457	0	0
Stage 1	1891	1891	-	1476	1476	-	-	-	-	-	-	-
Stage 2	748	1476	-	987	1891	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 11	8	280	~ 16	8	366	336	-	-	460	-	-
Stage 1	72	117	-	132	189	-	-	-	-	-	-	-
Stage 2	371	189	-	265	117	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	7	280	~ 14	7	366	336	-	-	460	-	-
Mov Cap-2 Maneuver	~ 8	7	-	~ 14	7	-	-	-	-	-	-	-
Stage 1	70	107	-	128	183	-	-	-	-	-	-	-
Stage 2	309	183	-	238	107	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 831.7	$ 327.2	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	336	-	-	8	280	14	175	460	-	-
HCM Lane V/C Ratio	0.029	-	-	1.495	0.016	1.786	0.292	0.09	-	-
HCM Control Delay (s)	16	-	-	$ 1127.6	18.1	$ 926.7	33.8	13.6	-	-
HCM Lane LOS	C	-	-	F	C	F	D	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.4	0	3.8	1.2	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	64	63	40	21	32	72
Future Vol, veh/h	64	63	40	21	32	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	68	43	23	35	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	184	74	113	0	-	0
Stage 1	74	-	-	-	-	-
Stage 2	110	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	805	988	1476	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	915	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	781	988	1476	-	-	-
Mov Cap-2 Maneuver	781	-	-	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	888	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	4.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1476	-	872	-	-
HCM Lane V/C Ratio	0.029	-	0.158	-	-
HCM Control Delay (s)	7.5	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

BACKGROUND CONDITIONS
CAPACITY ANALYSES

Intersection	
Int Delay, s/veh	2.2

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	152	1855	1383	1	2	135
Future Vol, veh/h	152	1855	1383	1	2	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	2016	1503	1	2	147

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1504	0	-	0	2843	752
Stage 1	-	-	-	-	1504	-
Stage 2	-	-	-	-	1339	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	441	-	-	-	14	353
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	209	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	441	-	-	-	14	353
Mov Cap-2 Maneuver	-	-	-	-	14	-
Stage 1	-	-	-	-	170	-
Stage 2	-	-	-	-	209	-

Approach	NB	SB	SE
HCM Control Delay, s	1.4	0	35.6
HCM LOS			E

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	441	-	261	-	-
HCM Lane V/C Ratio	0.375	-	0.571	-	-
HCM Control Delay (s)	18	0	35.6	-	-
HCM Lane LOS	C	A	E	-	-
HCM 95th %tile Q(veh)	1.7	-	3.2	-	-

Intersection	
Int Delay, s/veh	41.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	77	1896	9	33	1461
Future Vol, veh/h	29	77	1896	9	33	1461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	485	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	84	2061	10	36	1588

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2932	1035	0	0	2071	0
Stage 1	2066	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 12	229	-	-	265	-
Stage 1	83	-	-	-	-	-
Stage 2	372	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 10	229	-	-	265	-
Mov Cap-2 Maneuver	~ 10	-	-	-	-	-
Stage 1	83	-	-	-	-	-
Stage 2	321	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 1371.5	0	0.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	33	265	-
HCM Lane V/C Ratio	-	-	3.491	0.135	-
HCM Control Delay (s)	-	-	$ 1371.5	20.7	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	13.5	0.5	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	15.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	9	4	0	22	3	1960	10	23	1481	14
Future Vol, veh/h	25	0	9	4	0	22	3	1960	10	23	1481	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	10	4	0	24	3	2130	11	25	1610	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2732	3797	805	2992	3797	1065	1610	0	0	2130	0	0
Stage 1	1660	1660	-	2137	2137	-	-	-	-	-	-	-
Stage 2	1072	2137	-	855	1660	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 10	4	325	6	4	219	402	-	-	252	-	-
Stage 1	101	153	-	50	88	-	-	-	-	-	-	-
Stage 2	235	88	-	319	153	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 8	4	325	5	4	219	402	-	-	252	-	-
Mov Cap-2 Maneuver	~ 8	4	-	5	4	-	-	-	-	-	-	-
Stage 1	100	138	-	50	87	-	-	-	-	-	-	-
Stage 2	208	87	-	279	138	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1462.8	208.6	0	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	402	-	-	8	325	5	219	252	-	-
HCM Lane V/C Ratio	0.008	-	-	3.397	0.03	0.87	0.109	0.099	-	-
HCM Control Delay (s)	14	-	-	$ 1983.5	16.4	$ 1227.3	23.4	20.9	-	-
HCM Lane LOS	B	-	-	F	C	F	C	C	-	-
HCM 95th %tile Q(veh)	0	-	-	4.6	0.1	1.2	0.4	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	123	91	82	71	46	82
Future Vol, veh/h	123	91	82	71	46	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	99	89	77	50	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	350	95	139	0	-	0
Stage 1	95	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	647	962	1445	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	606	962	1445	-	-	-
Mov Cap-2 Maneuver	606	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1445	-	719	-	-
HCM Lane V/C Ratio	0.062	-	0.324	-	-
HCM Control Delay (s)	7.7	0	12.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	65	1456	1795	0	2	100
Future Vol, veh/h	65	1456	1795	0	2	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	1583	1951	0	2	109

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1951	0	-	0	2884	976
Stage 1	-	-	-	-	1951	-
Stage 2	-	-	-	-	933	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	296	-	-	-	13	251
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	343	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	296	-	-	-	0	251
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	0	-

Approach	NB	SB	SE
HCM Control Delay, s	10.1	0	30.2
HCM LOS			D

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	296	-	251	-	-
HCM Lane V/C Ratio	0.239	-	0.442	-	-
HCM Control Delay (s)	20.9	9.6	30.2	-	-
HCM Lane LOS	C	A	D	-	-
HCM 95th %tile Q(veh)	0.9	-	2.1	-	-

Intersection	
Int Delay, s/veh	10.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	42	1455	31	39	1803
Future Vol, veh/h	23	42	1455	31	39	1803
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	485	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	46	1582	34	42	1960

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2663	808	0	0	1615	0
Stage 1	1598	-	-	-	-	-
Stage 2	1065	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 18	324	-	-	400	-
Stage 1	151	-	-	-	-	-
Stage 2	292	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 16	324	-	-	400	-
Mov Cap-2 Maneuver	~ 16	-	-	-	-	-
Stage 1	151	-	-	-	-	-
Stage 2	261	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 563	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	41	400	-
HCM Lane V/C Ratio	-	-	1.723	0.106	-
HCM Control Delay (s)	-	-	$ 563	15.1	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	7.3	0.4	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	19.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	4	25	1	50	9	1460	28	41	1813	41
Future Vol, veh/h	11	0	4	25	1	50	9	1460	28	41	1813	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	27	1	54	10	1587	30	45	1971	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2874	3667	985	2681	3667	793	1971	0	0	1587	0	0
Stage 1	2060	2060	-	1607	1607	-	-	-	-	-	-	-
Stage 2	814	1607	-	1074	2060	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 7	5	247	~ 11	5	331	290	-	-	410	-	-
Stage 1	56	96	-	109	163	-	-	-	-	-	-	-
Stage 2	338	163	-	235	96	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 4	4	247	~ 10	4	331	290	-	-	410	-	-
Mov Cap-2 Maneuver	~ 4	4	-	~ 10	4	-	-	-	-	-	-	-
Stage 1	54	85	-	105	157	-	-	-	-	-	-	-
Stage 2	271	157	-	206	85	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1868.2	$ 535.8	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	290	-	-	4	247	10	127	410	-	-
HCM Lane V/C Ratio	0.034	-	-	2.989	0.018	2.717	0.436	0.109	-	-
HCM Control Delay (s)	17.8	-	-	$ 2540.4	19.8	$ 1519.2	53.7	14.8	-	-
HCM Lane LOS	C	-	-	F	C	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.7	0.1	4.4	1.9	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	68	43	22	34	78
Future Vol, veh/h	69	68	43	22	34	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	74	47	24	37	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	196	79	122	0	-	0
Stage 1	79	-	-	-	-	-
Stage 2	117	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	793	981	1465	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	767	981	1465	-	-	-
Mov Cap-2 Maneuver	767	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	860	-	-
HCM Lane V/C Ratio	0.032	-	0.173	-	-
HCM Control Delay (s)	7.5	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

PROJECTED CONDITIONS
CAPACITY ANALYSES

Intersection	
Int Delay, s/veh	3.9

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	161	1957	1464	1	2	142
Future Vol, veh/h	161	1957	1464	1	2	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	175	2127	1591	1	2	154

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1592	0	-	0	3006	796
Stage 1	-	-	-	-	1592	-
Stage 2	-	-	-	-	1414	-
Critical Hdwy	4.14	-	-	-	7.54	6.94
Critical Hdwy Stg 1	-	-	-	-	6.54	-
Critical Hdwy Stg 2	-	-	-	-	6.54	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	408	-	-	-	6	330
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	145	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	408	-	-	-	6	330
Mov Cap-2 Maneuver	-	-	-	-	6	-
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	145	-

Approach	NB	SB	SE
HCM Control Delay, s	1.5	0	78.1
HCM LOS			F

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	408	-	189	-	-
HCM Lane V/C Ratio	0.429	-	0.828	-	-
HCM Control Delay (s)	20.3	0	78.1	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	2.1	-	5.9	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NEL	NET	SWT	SWR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	1949	1518	37
Future Vol, veh/h	0	28	0	1949	1518	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	2118	1650	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	845	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	306	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	306	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NE	SW
HCM Control Delay, s	18.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NET	EBLn1	SWT	SWR
Capacity (veh/h)	-	306	-	-
HCM Lane V/C Ratio	-	0.099	-	-
HCM Control Delay (s)	-	18.1	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	18	28	29	15	77	44	1896	9	33	1498	51
Future Vol, veh/h	111	18	28	29	15	77	44	1896	9	33	1498	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	485	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	121	20	30	32	16	84	48	2061	10	36	1628	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2862	3894	842	3057	3916	1035	1684	0	0	2071	0	0
Stage 1	1728	1728	-	2161	2161	-	-	-	-	-	-	-
Stage 2	1134	2166	-	896	1755	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 8	~ 3	308	~ 5	~ 3	229	376	-	-	265	-	-
Stage 1	~ 92	142	-	48	85	-	-	-	-	-	-	-
Stage 2	216	85	-	301	137	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 3	308	-	~ 3	229	376	-	-	265	-	-
Mov Cap-2 Maneuver	-	~ 3	-	-	~ 3	-	-	-	-	-	-	-
Stage 1	~ 92	123	-	48	85	-	-	-	-	-	-	-
Stage 2	~ 111	85	-	197	118	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.4	0.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	376	-	-	-	8	-	265	-	-
HCM Lane V/C Ratio	0.127	-	-	-	6.25	-	0.135	-	-
HCM Control Delay (s)	16	0	-	-	$ 3267.5	-	20.7	-	-
HCM Lane LOS	C	A	-	-	F	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-	7.7	-	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	20.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	9	4	0	22	3	2071	10	23	1569	14
Future Vol, veh/h	25	0	9	4	0	22	3	2071	10	23	1569	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	10	4	0	24	3	2251	11	25	1705	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2887	4013	853	3161	4013	1126	1705	0	0	2251	0	0
Stage 1	1755	1755	-	2258	2258	-	-	-	-	-	-	-
Stage 2	1132	2258	-	903	1755	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 7	3	302	~ 4	3	199	369	-	-	225	-	-
Stage 1	88	137	-	42	76	-	-	-	-	-	-	-
Stage 2	216	76	-	299	137	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	3	302	~ 4	3	199	369	-	-	225	-	-
Mov Cap-2 Maneuver	~ 6	3	-	~ 4	3	-	-	-	-	-	-	-
Stage 1	87	122	-	42	75	-	-	-	-	-	-	-
Stage 2	188	75	-	257	122	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2034.3	265.9	0	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	369	-	-	6	302	4	199	225	-	-
HCM Lane V/C Ratio	0.009	-	-	4.529	0.032	1.087	0.12	0.111	-	-
HCM Control Delay (s)	14.8	-	-	$ 2760.4	17.3	$ 1588.3	25.5	23	-	-
HCM Lane LOS	B	-	-	F	C	F	D	C	-	-
HCM 95th %tile Q(veh)	0	-	-	4.8	0.1	1.3	0.4	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	123	95	87	75	49	82
Future Vol, veh/h	123	95	87	75	49	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	103	95	82	53	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	369	98	142	0	-	0
Stage 1	98	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	631	958	1441	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	587	958	1441	-	-	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1441	-	706	-	-
HCM Lane V/C Ratio	0.066	-	0.336	-	-
HCM Control Delay (s)	7.7	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.5	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	75	1564	1918	0	2	112
Future Vol, veh/h	75	1564	1918	0	2	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	1700	2085	0	2	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2085	0	-	0	3098	1042
Stage 1	-	-	-	-	2085	-
Stage 2	-	-	-	-	1013	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	262	-	-	-	9	226
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	312	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	262	-	-	-	0	226
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	0	-

Approach	NB	SB	SE
HCM Control Delay, s	11.9	0	38.7
HCM LOS			E

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	262	-	226	-	-
HCM Lane V/C Ratio	0.311	-	0.548	-	-
HCM Control Delay (s)	24.8	11.3	38.7	-	-
HCM Lane LOS	C	B	E	-	-
HCM 95th %tile Q(veh)	1.3	-	3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	29	0	1553	1855	56
Future Vol, veh/h	0	29	0	1553	1855	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	0	1688	2016	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1039	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	227	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	227	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	227	-	-
HCM Lane V/C Ratio	-	0.139	-	-
HCM Control Delay (s)	-	23.4	-	-
HCM Lane LOS	-	C	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	20	29	23	22	42	67	1455	31	39	1859	79
Future Vol, veh/h	118	20	29	23	22	42	67	1455	31	39	1859	79
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	485	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	22	32	25	24	46	73	1582	34	42	2021	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3096	3909	1053	2850	3935	808	2107	0	0	1615	0	0
Stage 1	2148	2148	-	1744	1744	-	-	-	-	-	-	-
Stage 2	948	1761	-	1106	2191	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 5	~ 3	223	~ 8	~ 3	324	257	-	-	400	-	-
Stage 1	~ 49	87	-	90	139	-	-	-	-	-	-	-
Stage 2	280	136	-	224	82	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	223	-	0	324	257	-	-	400	-	-
Mov Cap-2 Maneuver	-	0	-	-	0	-	-	-	-	-	-	-
Stage 1	~ 49	78	-	90	0	-	-	-	-	-	-	-
Stage 2	-	0	-	124	73	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			11.5	0.3
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	257	-	-	-	223	-	400	-	-
HCM Lane V/C Ratio	0.283	-	-	-	0.239	-	0.106	-	-
HCM Control Delay (s)	24.5	11.2	-	-	26.1	-	15.1	-	-
HCM Lane LOS	C	B	-	-	D	-	C	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-	0.9	-	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	30

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	4	25	1	50	9	1578	28	41	1948	41
Future Vol, veh/h	11	0	4	25	1	50	9	1578	28	41	1948	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	27	1	54	10	1715	30	45	2117	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3085	3942	1059	2883	3942	858	2117	0	0	1715	0	0
Stage 1	2207	2207	-	1735	1735	-	-	-	-	-	-	-
Stage 2	878	1735	-	1148	2207	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 5	3	221	~ 7	3	300	255	-	-	366	-	-
Stage 1	45	81	-	91	140	-	-	-	-	-	-	-
Stage 2	309	140	-	211	81	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 3	3	221	~ 6	3	300	255	-	-	366	-	-
Mov Cap-2 Maneuver	~ 3	3	-	~ 6	3	-	-	-	-	-	-	-
Stage 1	43	71	-	87	135	-	-	-	-	-	-	-
Stage 2	241	135	-	181	71	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2565.2	$ 959.1	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	255	-	-	3	221	6	102	366	-	-
HCM Lane V/C Ratio	0.038	-	-	3.986	0.02	4.529	0.543	0.122	-	-
HCM Control Delay (s)	19.7	-	-	$ 3490.2	21.$	$ 2760.4	76.1	16.2	-	-
HCM Lane LOS	C	-	-	F	C	F	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.8	0.1	4.8	2.5	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	75	49	26	39	78
Future Vol, veh/h	69	75	49	26	39	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	82	53	28	42	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	220	85	127	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	768	974	1459	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	740	974	1459	-	-	-
Mov Cap-2 Maneuver	740	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1459	-	846	-	-
HCM Lane V/C Ratio	0.037	-	0.185	-	-
HCM Control Delay (s)	7.6	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

PROJECTED CONDITIONS WITH TURN LANE IMPROVEMENTS CAPACITY ANALYSES

Intersection	
Int Delay, s/veh	3.9

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	161	1957	1464	1	2	142
Future Vol, veh/h	161	1957	1464	1	2	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	175	2127	1591	1	2	154

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1592	0	-	0	3006	796
Stage 1	-	-	-	-	1592	-
Stage 2	-	-	-	-	1414	-
Critical Hdwy	4.14	-	-	-	7.54	6.94
Critical Hdwy Stg 1	-	-	-	-	6.54	-
Critical Hdwy Stg 2	-	-	-	-	6.54	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	408	-	-	-	6	330
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	145	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	408	-	-	-	6	330
Mov Cap-2 Maneuver	-	-	-	-	6	-
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	145	-

Approach	NB	SB	SE
HCM Control Delay, s	1.5	0	78.1
HCM LOS			F

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	408	-	189	-	-
HCM Lane V/C Ratio	0.429	-	0.828	-	-
HCM Control Delay (s)	20.3	0	78.1	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	2.1	-	5.9	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	1949	1518	37
Future Vol, veh/h	0	28	0	1949	1518	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	-	0	-	-	-	140
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	30	0	2118	1650	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	825	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	316	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	316	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	316	-
HCM Lane V/C Ratio	-	0.096	-
HCM Control Delay (s)	-	17.6	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0.3	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	111	18	28	29	15	77	44	1896	9	33	1498	51
Future Vol, veh/h	111	18	28	29	15	77	44	1896	9	33	1498	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	200	-	-	485	-	140
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	121	20	30	32	16	84	48	2061	10	36	1628	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2834	3866	814	3057	3861	1035	1628	0	0	2071	0	0
Stage 1	1700	1700	-	2161	2161	-	-	-	-	-	-	-
Stage 2	1134	2166	-	896	1700	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 8	~ 3	321	~ 5	~ 4	229	395	-	-	265	-	-
Stage 1	~ 96	146	-	48	85	-	-	-	-	-	-	-
Stage 2	216	85	-	301	146	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 2	321	-	~ 3	229	395	-	-	265	-	-
Mov Cap-2 Maneuver	-	~ 2	-	-	~ 3	-	-	-	-	-	-	-
Stage 1	~ 84	126	-	42	75	-	-	-	-	-	-	-
Stage 2	~ 94	75	-	199	126	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.3	0.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	395	-	-	-	5	-	265	-	-
HCM Lane V/C Ratio	0.121	-	-	-	10	-	0.135	-	-
HCM Control Delay (s)	15.4	-	-	$ 5459.4		-	20.7	-	-
HCM Lane LOS	C	-	-	-	F	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-	8	-	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	20.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	9	4	0	22	3	2071	10	23	1569	14
Future Vol, veh/h	25	0	9	4	0	22	3	2071	10	23	1569	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	10	4	0	24	3	2251	11	25	1705	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2887	4013	853	3161	4013	1126	1705	0	0	2251	0	0
Stage 1	1755	1755	-	2258	2258	-	-	-	-	-	-	-
Stage 2	1132	2258	-	903	1755	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 7	3	302	~ 4	3	199	369	-	-	225	-	-
Stage 1	88	137	-	42	76	-	-	-	-	-	-	-
Stage 2	216	76	-	299	137	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	3	302	~ 4	3	199	369	-	-	225	-	-
Mov Cap-2 Maneuver	~ 6	3	-	~ 4	3	-	-	-	-	-	-	-
Stage 1	87	122	-	42	75	-	-	-	-	-	-	-
Stage 2	188	75	-	257	122	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2034.3	265.9	0	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	369	-	-	6	302	4	199	225	-	-
HCM Lane V/C Ratio	0.009	-	-	4.529	0.032	1.087	0.12	0.111	-	-
HCM Control Delay (s)	14.8	-	-	$ 2760.4	17.3	$ 1588.3	25.5	23	-	-
HCM Lane LOS	B	-	-	F	C	F	D	C	-	-
HCM 95th %tile Q(veh)	0	-	-	4.8	0.1	1.3	0.4	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	123	95	87	75	49	82
Future Vol, veh/h	123	95	87	75	49	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	103	95	82	53	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	369	98	142	0	-	0
Stage 1	98	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	631	958	1441	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	587	958	1441	-	-	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	722	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	4.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1441	-	706	-	-
HCM Lane V/C Ratio	0.066	-	0.336	-	-
HCM Control Delay (s)	7.7	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.5	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations						
Traffic Vol, veh/h	75	1564	1918	0	2	112
Future Vol, veh/h	75	1564	1918	0	2	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	1700	2085	0	2	122

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2085	0	-	0	3098	1042
Stage 1	-	-	-	-	2085	-
Stage 2	-	-	-	-	1013	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	262	-	-	-	9	226
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	312	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	262	-	-	-	0	226
Mov Cap-2 Maneuver	-	-	-	-	0	-
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	0	-

Approach	NB	SB	SE
HCM Control Delay, s	11.9	0	38.7
HCM LOS			E

Minor Lane/Major Mvmt	NBL	NBT	SELn1	SBT	SBR
Capacity (veh/h)	262	-	226	-	-
HCM Lane V/C Ratio	0.311	-	0.548	-	-
HCM Control Delay (s)	24.8	11.3	38.7	-	-
HCM Lane LOS	C	B	E	-	-
HCM 95th %tile Q(veh)	1.3	-	3	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	29	0	1553	1855	56
Future Vol, veh/h	0	29	0	1553	1855	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	Free
Storage Length	-	0	-	-	-	140
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	32	0	1688	2016	61

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1008	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	239	0	-	-	0
Stage 1	0	-	0	-	-	0
Stage 2	0	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	-	239	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	239	-
HCM Lane V/C Ratio	-	0.132	-
HCM Control Delay (s)	-	22.3	-
HCM Lane LOS	-	C	-
HCM 95th %tile Q(veh)	-	0.4	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	20	29	23	22	42	67	1455	31	39	1859	79
Future Vol, veh/h	118	20	29	23	22	42	67	1455	31	39	1859	79
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	200	-	-	485	-	140
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	128	22	32	25	24	46	73	1582	34	42	2021	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3053	3866	1010	2850	3849	808	2021	0	0	1615	0	0
Stage 1	2105	2105	-	1744	1744	-	-	-	-	-	-	-
Stage 2	948	1761	-	1106	2105	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 5	~ 3	238	~ 8	~ 4	324	278	-	-	400	-	-
Stage 1	~ 53	91	-	90	139	-	-	-	-	-	-	-
Stage 2	280	136	-	224	91	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 2	238	-	~ 3	324	278	-	-	400	-	-
Mov Cap-2 Maneuver	-	~ 2	-	-	~ 3	-	-	-	-	-	-	-
Stage 1	~ 39	81	-	66	103	-	-	-	-	-	-	-
Stage 2	136	100	-	127	81	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			1	0.3
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	278	-	-	-	5	-	400	-	-
HCM Lane V/C Ratio	0.262	-	-	-	10.652	-	0.106	-	-
HCM Control Delay (s)	22.5	-	-	-	$ 5754.7	-	15.1	-	-
HCM Lane LOS	C	-	-	-	F	-	C	-	-
HCM 95th %tile Q(veh)	1	-	-	-	8.4	-	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	30

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	0	4	25	1	50	9	1578	28	41	1948	41
Future Vol, veh/h	11	0	4	25	1	50	9	1578	28	41	1948	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	95	-	-	340	-	145	130	-	185
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	27	1	54	10	1715	30	45	2117	45

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3085	3942	1059	2883	3942	858	2117	0	0	1715	0	0
Stage 1	2207	2207	-	1735	1735	-	-	-	-	-	-	-
Stage 2	878	1735	-	1148	2207	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 5	3	221	~ 7	3	300	255	-	-	366	-	-
Stage 1	45	81	-	91	140	-	-	-	-	-	-	-
Stage 2	309	140	-	211	81	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 3	3	221	~ 6	3	300	255	-	-	366	-	-
Mov Cap-2 Maneuver	~ 3	3	-	~ 6	3	-	-	-	-	-	-	-
Stage 1	43	71	-	87	135	-	-	-	-	-	-	-
Stage 2	241	135	-	181	71	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 2565.2	$ 959.1	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	255	-	-	3	221	6	102	366	-	-
HCM Lane V/C Ratio	0.038	-	-	3.986	0.02	4.529	0.543	0.122	-	-
HCM Control Delay (s)	19.7	-	-	$ 3490.2	21.$	$ 2760.4	76.1	16.2	-	-
HCM Lane LOS	C	-	-	F	C	F	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.8	0.1	4.8	2.5	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	75	49	26	39	78
Future Vol, veh/h	69	75	49	26	39	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	82	53	28	42	85

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	220	85	127	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	768	974	1459	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	740	974	1459	-	-	-
Mov Cap-2 Maneuver	740	-	-	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1459	-	846	-	-
HCM Lane V/C Ratio	0.037	-	0.185	-	-
HCM Control Delay (s)	7.6	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

PROJECTED CONDITIONS
WITH TURN LANE AND TRAFFIC SIGNAL IMPROVEMENTS
CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	18	28	29	15	77	44	1896	9	33	1498	51
Future Volume (veh/h)	111	18	28	29	15	77	44	1896	9	33	1498	51
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	121	20	30	32	16	84	48	2061	10	36	1628	55
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	89	133	91	42	133	270	2415	12	198	2321	1038
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.04	0.67	0.67	0.03	0.66	0.66
Sat Flow, veh/h	1290	674	1011	259	318	1009	1774	3612	18	1774	3539	1583
Grp Volume(v), veh/h	121	0	50	132	0	0	48	1009	1062	36	1628	55
Grp Sat Flow(s),veh/h/ln	1290	0	1684	1586	0	0	1774	1770	1860	1774	1770	1583
Q Serve(g_s), s	1.4	0.0	2.1	2.9	0.0	0.0	0.7	34.7	34.8	0.5	23.1	1.0
Cycle Q Clear(g_c), s	7.5	0.0	2.1	6.1	0.0	0.0	0.7	34.7	34.8	0.5	23.1	1.0
Prop In Lane	1.00		0.60	0.24		0.64	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	255	0	222	266	0	0	270	1183	1244	198	2321	1038
V/C Ratio(X)	0.47	0.00	0.22	0.50	0.00	0.00	0.18	0.85	0.85	0.18	0.70	0.05
Avail Cap(c_a), veh/h	379	0	384	415	0	0	321	1200	1261	260	2377	1064
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	0.0	30.6	32.3	0.0	0.0	7.8	10.1	10.1	12.7	8.7	4.8
Incr Delay (d2), s/veh	1.4	0.0	0.5	1.4	0.0	0.0	0.3	6.1	5.9	0.4	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	1.0	2.8	0.0	0.0	0.4	18.5	19.4	0.4	11.4	0.4
LnGrp Delay(d),s/veh	34.4	0.0	31.1	33.7	0.0	0.0	8.1	16.1	15.9	13.1	9.6	4.9
LnGrp LOS	C		C	C			A	B	B	B	A	A
Approach Vol, veh/h		171			132			2119			1719	
Approach Delay, s/veh		33.5			33.7			15.9			9.5	
Approach LOS		C			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	57.3		14.9	7.8	56.2		14.9
Change Period (Y+Rc), s	4.0	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	53.5		18.0	5.5	53.0		18.0
Max Q Clear Time (g_c+I1), s	2.5	36.8		9.5	2.7	25.1		8.1
Green Ext Time (p_c), s	0.0	16.0		0.9	0.0	26.0		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		14.5
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	20	29	23	22	42	67	1455	31	39	1859	79
Future Volume (veh/h)	118	20	29	23	22	42	67	1455	31	39	1859	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	128	22	32	25	24	46	73	1582	34	42	2021	86
Adj No. of Lanes	1	1	0	0	1	0	1	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	80	116	89	65	91	222	2393	51	287	2347	1050
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.68	0.68	0.04	0.66	0.66
Sat Flow, veh/h	1325	687	999	274	561	784	1774	3543	76	1774	3539	1583
Grp Volume(v), veh/h	128	0	54	95	0	0	73	789	827	42	2021	86
Grp Sat Flow(s),veh/h/ln	1325	0	1686	1619	0	0	1774	1770	1849	1774	1770	1583
Q Serve(g_s), s	2.2	0.0	2.3	1.1	0.0	0.0	1.0	20.7	20.8	0.6	35.5	1.5
Cycle Q Clear(g_c), s	6.4	0.0	2.3	4.2	0.0	0.0	1.0	20.7	20.8	0.6	35.5	1.5
Prop In Lane	1.00		0.59	0.26		0.48	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	261	0	196	245	0	0	222	1195	1249	287	2347	1050
V/C Ratio(X)	0.49	0.00	0.28	0.39	0.00	0.00	0.33	0.66	0.66	0.15	0.86	0.08
Avail Cap(c_a), veh/h	409	0	383	420	0	0	244	1195	1249	338	2391	1070
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	32.0	32.8	0.0	0.0	16.0	7.5	7.5	6.5	10.5	4.8
Incr Delay (d2), s/veh	1.4	0.0	0.8	1.0	0.0	0.0	0.9	1.4	1.3	0.2	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	1.1	2.0	0.0	0.0	1.1	10.3	10.8	0.3	18.0	0.7
LnGrp Delay(d),s/veh	35.0	0.0	32.7	33.8	0.0	0.0	16.8	8.9	8.9	6.7	13.9	4.8
LnGrp LOS	D		C	C			B	A	A	A	B	A
Approach Vol, veh/h		182			95			1689			2149	
Approach Delay, s/veh		34.4			33.8			9.2			13.4	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	58.0		13.7	8.5	57.0		13.7
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.3	53.2		18.0	5.0	53.5		18.0
Max Q Clear Time (g_c+I1), s	2.6	22.8		8.4	3.0	37.5		6.2
Green Ext Time (p_c), s	0.0	27.9		0.8	0.0	15.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

APPENDIX E
TRIP GENERATION CALCULATIONS

TRIP GENERATION
Church Property at Homestead

Apartment – 181 Units

Use ITE Land Use Code 220 and associated trip generation rates for 24-hour total trips and peak hour trips.

Average Daily Traffic – Use the Fitted Curve Equation for Average Daily Traffic on a Weekday

T = 6.06 (X) + 123.56
T = 6.06 (181) + 123.56
T = 1,220

A.M. Peak Hour - Use the Fitted Curve Equation for the AM Peak Hour of the Adjacent Street Traffic (one hour between 7:00 AM and 9:00 AM) on a Weekday

T = 0.49 (X) + 3.73
T = 0.49 (181) + 3.73
T = 92

Enter = 0.20 (92) = 18
Exit = 0.80 (92) = 74

P.M. Peak Hour - Use the Fitted Curve Equation for the PM Peak Hour of the Adjacent Street Traffic (one hour between 4:00 PM and 6:00 PM) on a Weekday

T = 0.55 (X) + 17.65
T = 0.55 (181) + 17.65
T = 117

Enter = 0.65 (117) = 77
Exit = 0.35 (117) = 41

TRIP GENERATION
Church Property at Homestead

Residential Condominium/Townhouse – 108 Units

Use ITE Land Use Code 230 and associated trip generation rates for 24-hour total trips and peak hour trips.

Average Daily Traffic – Use the Fitted Curve Equation for Average Daily Traffic on a Weekday

Ln(T) = 0.87 Ln(X) + 2.46
Ln(T) = 0.87 Ln(108) + 2.46
T = 688

A.M. Peak Hour - Use the Fitted Curve Equation for the AM Peak Hour of the Adjacent Street Traffic (one hour between 7:00 AM and 9:00 AM) on a Weekday

Ln(T) = 0.80 Ln(X) + 0.26
Ln(T) = 0.80 Ln(108) + 0.26
T = 55

Enter = 0.17 (55) = 9
Exit = 0.83 (55) = 46

P.M. Peak Hour - Use the Fitted Curve Equation for the PM Peak Hour of the Adjacent Street Traffic (one hour between 4:00 PM and 6:00 PM) on a Weekday

Ln(T) = 0.82 Ln(X) + 0.32
Ln(T) = 0.82 Ln(55) + 0.32
T = 37

Enter = 0.67 (37) = 25
Exit = 0.33 (37) = 12

TRIP GENERATION
Church Property at Homestead

Office – 9,300 square feet

Use ITE Land Use Code 710 and associated trip generation rates for 24-hour total trips and peak hour trips.

Average Daily Traffic – Use Average Rate for Average Daily Traffic on a Weekday

T = 11.03 (X)
T = 11.03 (9.3)
T = 103

A.M. Peak Hour - Use Average Rate for AM Peak Hour of the Adjacent Street (between 7:00 AM and 9:00 AM)

T = 1.56 (X)
T = 1.56 (9.3)
T = 15

Enter = 0.88 (15) = 13
Exit = 0.12 (15) = 2

P.M. Peak Hour - Use Average Rate for PM Peak Hour of the Adjacent Street (between 4:00 PM and 6:00 PM)

T = 1.49 (X)
T = 1.49 (9.3)
T = 14

Enter = 0.17 (14) = 2
Exit = 0.83 (14) = 12

TRIP GENERATION
Church Property at Homestead

Specialty Retail – 68,300 square feet

Use ITE Land Use Code 826 and associated trip generation rates for 24-hour total trips and peak hour trips.

Average Daily Traffic

T = 42.78 (X) + 37.66
T = 42.78 (68.3) + 37.66
T = 2960

AM Peak Hour - Assume the AM Peak Hour of the Adjacent Street (between 7:00 AM and 9:00 AM) is 50% of the PM Peak Hour Trip Generation of the Adjacent Street. Assume directional distribution is similar to that of LUC 820 for AM Peak Hour of the Adjacent Street.

T = 0.50 (PM Trips)
T = 0.50 (185)
T = 93

Enter = 0.61(93) = 57
Exit = 0.39(93) = 36

PM Peak Hour - Use PM Peak Hour of the Adjacent Street (between 4:00 and 6:00 PM)

T = 2.40(X) +21.48
T = 2.40(68.3) +21.48
T = 185

Enter = 0.44 (185) = 81
Exit = 0.56 (185) = 104

TRIP GENERATION
Church Property at Homestead

High-Turnover (Sit-Down) Restaurant – 9,300 square feet

Use ITE Land Use Code 932 and associated trip generation rates for 24-hour total trips and peak hour trips.

Average Daily Traffic
T = 127.15 (X)
T = 127.15 (9.3)
T = 1183

A.M. Peak Hour - Use average rate for the AM Peak Hour of the Adjacent Street (between 7:00 AM and 9:00 AM)

T = 10.81(X)
T = 10.81 (9.3)
T = 101

Enter = 0.55 (101) = 56
Exit = 0.45 (101) = 45

P.M. Peak Hour - Use average rate for the PM Peak Hour of the Adjacent Street (between 4:00 PM and 6:00 PM)

T = 9.85 (X)
T = 9.85 (9.3)
T = 92

Enter = 0.60 (92) = 55
Exit = 0.40 (92) = 37

TRIP GENERATION
TOTAL SITE GENERATED TRAFFIC

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HR.		PM PEAK HR.	
			ENTER	EXIT	ENTER	EXIT
Apartments (220)	181 d.u.	1,220	18	74	76	41
Townhomes (230)	108 d.u.	688	9	46	25	12
Office (710)	9,300 s.f.	103	13	2	2	12
Specialty Retail (826)	68,300 s.f.	2,960	57	36	81	104
Restaurant (932)	9,300 s.f.	1,183	56	45	55	37
TOTAL		**6,154**	**153**	**203**	**239**	**206**

TRIP GENERATION
INTERNAL SITE GENERATED TRAFFIC

Assumes: 15% Internal (for Commercial)

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HR.		PM PEAK HR.	
			ENTER	EXIT	ENTER	EXIT
Apartments (220)	181 d.u.	183	3	11	11	6
Townhomes (230)	108 d.u.	103	1	7	4	2
Office (710)	9,300 s.f.	15	2	0	0	2
Specialty Retail (826)	68,300 s.f.	0	0	0	0	0
Restaurant (932)	9,300 s.f.	0	0	0	0	0
TOTAL		**301**	**6**	**18**	**15**	**10**

TRIP GENERATION
EXTERNAL SITE GENERATED TRAFFIC

Assumes: 15% Internal (for Commercial)

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HR.		PM PEAK HR.	
			ENTER	EXIT	ENTER	EXIT
Apartments (220)	181 d.u.	1,037	15	63	65	35
Townhomes (230)	108 d.u.	585	8	39	21	10
Office (710)	9,300 s.f.	88	11	2	2	10
Specialty Retail (826)	68,300 s.f.	2,960	57	36	81	104
Restaurant (932)	9,300 s.f.	1,183	56	45	55	37
TOTAL		**5,853**	**147**	**185**	**224**	**196**

TRIP GENERATION
PASS-BY TRAFFIC

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HR.		PM PEAK HR.	
			ENTER	EXIT	ENTER	EXIT
Apartments (220)	181 d.u.	0	0	0	0	0
Townhomes (230)	108 d.u.	0	0	0	0	0
Office (710)	9,300 s.f.	0	0	0	0	0
Specialty Retail (826)	68,300 s.f.	0	0	0	0	0
Restaurant (932)	9,300 s.f.	0	0	0	0	0
TOTAL		**0**	**0**	**0**	**0**	**0**

TRIP GENERATION
NEW SITE GENERATED TRAFFIC (PRIMARY)

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK HR.		PM PEAK HR.	
			ENTER	EXIT	ENTER	EXIT
Apartments (220)	181 d.u.	1,037	15	63	65	35
Townhomes (230)	108 d.u.	585	8	39	21	10
Office (710)	9,300 s.f.	88	11	2	2	10
Specialty Retail (826)	68,300 s.f.	2,960	57	36	81	104
Restaurant (932)	9,300 s.f.	1,183	56	45	55	37
TOTAL		**5,853**	**147**	**185**	**224**	**196**

APPENDIX F
SIGNAL WARRANT ANALYSIS

DESCRIPTIONS OF TRAFFIC SIGNAL WARRANTS

The *Manual on Uniform Traffic Control Devices* (MUTCD) sets forth nine different warrants that have been developed by the traffic engineering profession to aid in the determination of when a signal is warranted. These warrants present minimum conditions that normally indicate when a traffic signal is justified at a particular location. The MUTCD states that "traffic control signals should not be installed unless one or more of the factors… are met."

Although the MUTCD provides nine different warrants, only four of these are potentially applicable at the intersection under study. These four warrants, described in the MUTCD, are as follows:

Warrant 1A, Minimum Vehicular Volume

The Minimum Vehicular Volume warrant is intended for application where the volume of intersecting traffic is the principal reason for consideration of signal installation. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table F1 exist on the major street and on the higher volume minor street approach to the intersection.

TABLE F1. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1A

Number of lanes for moving traffic on each approach		Vehicles per hour on major street	Vehicles per hour on higher volume minor approach
Major Street	Minor Street	Total of Both Approaches	One Direction Only
1 Lane	1 Lane	500	150
2 Lanes or more	1 Lane	600	150
2 Lanes or more	2 Lanes or more	600	200
1 Lane	2 Lanes or more	500	200

When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or a rural area, or when the intersection lies within the built up area of an isolated community having a population of less than 10,000, the Minimum Vehicular Volume warrant is 70 percent of the requirements stated in Table H1.

Warrant 1B, Interruption of Continuous Traffic

The Interruption of Continuous Traffic warrant applies to operating conditions where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard when entering or crossing the major street. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table F2 exist on the major street and on the higher volume minor street approach to an intersection. Also, the signal installation shall not seriously disrupt progressive traffic flow.

TABLE F2. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1B

Number of lanes for moving traffic on each approach		Vehicles per hour on major street	Vehicles per hour on higher volume minor approach
Major Street	Minor Street	Total of Both Approaches	One Direction Only
1 Lane	1 Lane	750	75
2 Lanes or more	1 Lane	900	75
2 Lanes or more	2 Lanes or more	900	100
1 Lane	2 Lanes or more	750	100

When the 85th percentile speed of major street traffic exceeds 40 mph in either an urban or a rural area, or when the intersection lies within the built up area of an isolated community having a population of less than 10,000, the Interruption of Continuous Traffic warrant is 70 percent of the requirements above.

In exceptional cases, signals occasionally may be justified where no single warrant is satisfied but where Warrants 1A and 1B are satisfied to the extent of 80 percent or more of the stated values. This warrant is referred to as Warrant 1C (Combination Warrant)

Warrant 2, Four Hour Volume

The Four Hour Volume warrant is satisfied when for each of any four high hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curves in Figure I1 for the existing combination of approach lanes.

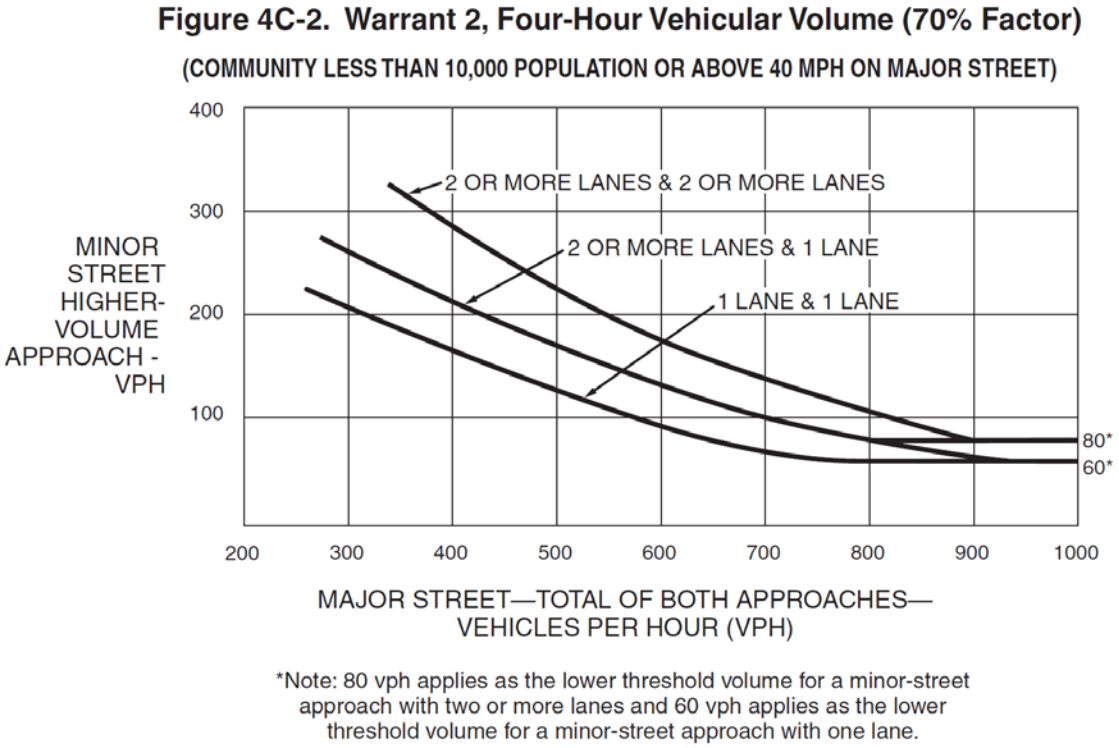


Figure F1. Warrant 2, Four-Hour Vehicular Volume

Warrant 3, Peak Hour Volume

The Peak Hour Volume warrant is intended for application when traffic conditions are such that for one hour of the day, minor street traffic suffers undue traffic delay in entering or crossing the major street. The Peak Hour Volume warrant is satisfied when the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for one hour (any four consecutive 15 minute periods) of an average day falls above the curve in Figure I2 for the existing combination of approach lanes.

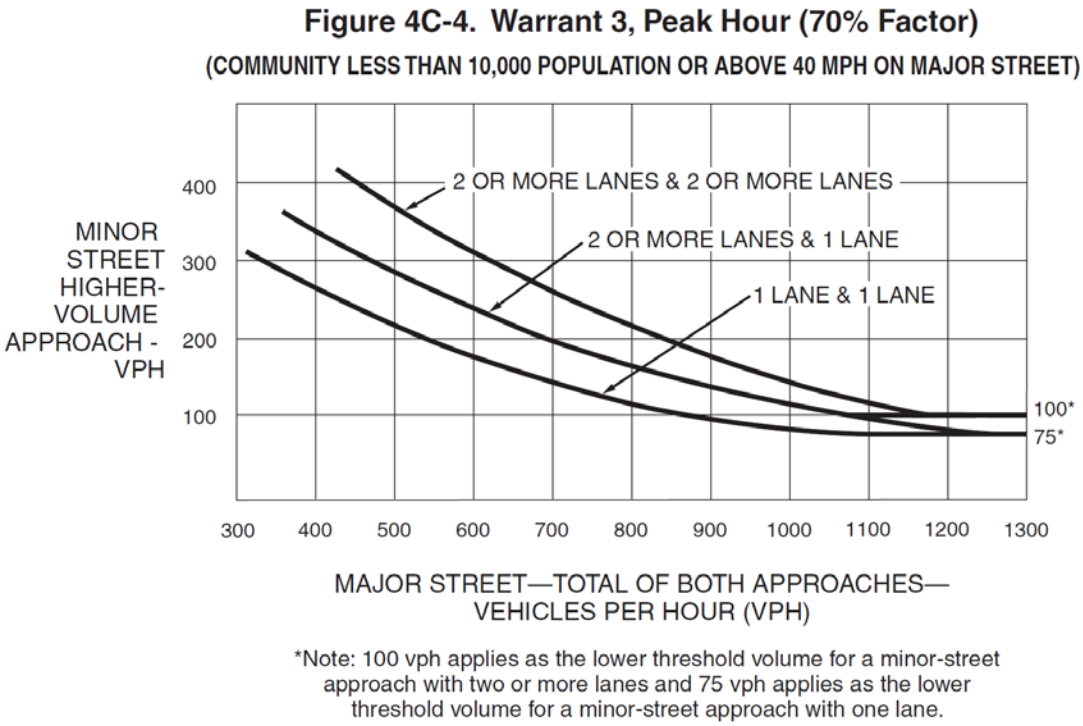


Figure F2. Warrant 3, Peak-Hour Vehicular Volume

APPENDIX G
TURN LANE WARRANT ANALYSIS

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Projected Conditions
Nashville Highway and Site Access #1
Northbound (AM Peak Hour)

4-lane roadway

INPUT

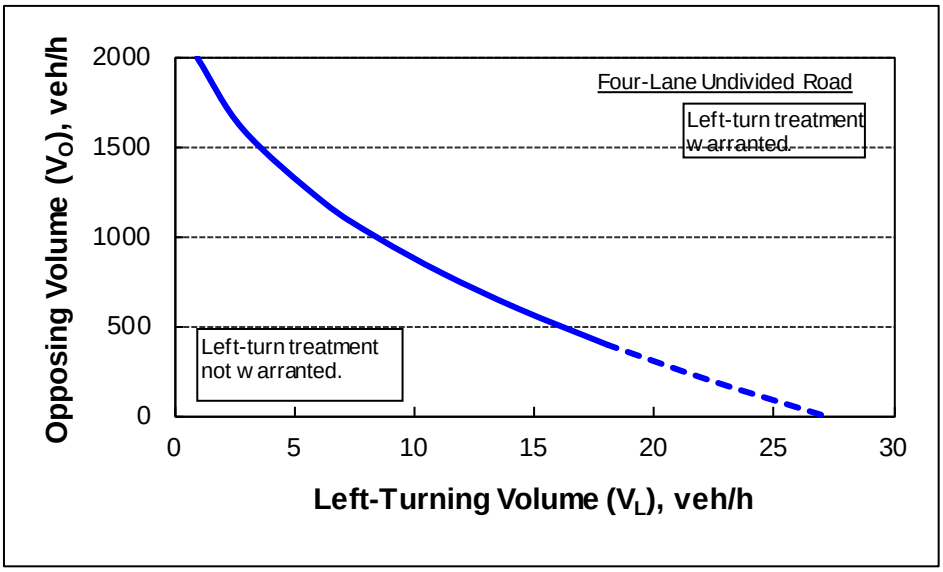
Variable	Value
Left-turning volume (V_L), veh/h:	44
Advancing volume (V_A), veh/h:	1949
Opposing volume (V_O), veh/h:	1582

OUTPUT

Variable	Message
Opposing volume (Vo) check:	O.K.
Combined volume (V_A and V_O) check:	O.K.
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	4.0
Critical headway, s:	6.0



Note: When V_O < 400 veh/h (dashed line), a left-turn lane is not normally warranted unless the advancing volume (V_A) in the same direction as the left-turning traffic exceeds 400 veh/h (V_A > 400 veh/h).

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Projected Conditions
Nashville Highway and Site Access #1
Northbound (PM Peak Hour)

4-lane roadway

INPUT

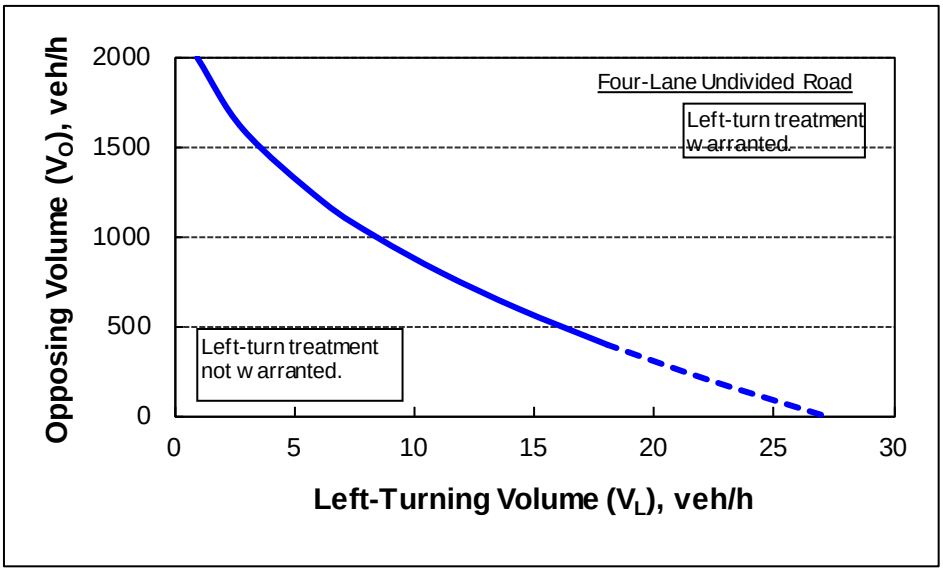
Variable	Value
Left-turning volume (V_L), veh/h:	67
Advancing volume (V_A), veh/h:	1553
Opposing volume (V_O), veh/h:	1977

OUTPUT

Variable	Message
Opposing volume (Vo) check:	O.K.
Combined volume (V_A and V_O) check:	O.K.
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	4.0
Critical headway, s:	6.0

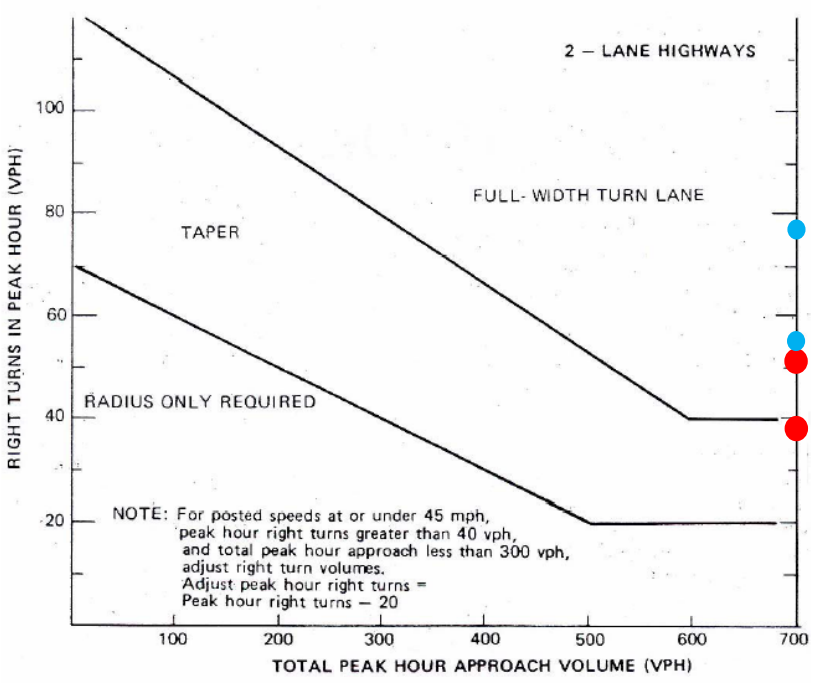


Note: When V_O < 400 veh/h (dashed line), a left-turn lane is not normally warranted unless the advancing volume (V_A) in the same direction as the left-turning traffic exceeds 400 veh/h (V_A > 400 veh/h).

RIGHT TURN LANE WARRANT ANALYSES
(Based on Intersection Channelization Design Guide)

Intersection Approach	AM Peak Hour			PM Peak Hour		
	V_R*	V_A*	Warrant Met?	V_R*	V_A*	Warrant Met?
Southbound Nashville Highway at Site Access #1	51	1,582	Yes	79	1,977	Yes
Southbound Nashville Highway at Site Access #2	37	1,555	Yes	56	1,911	Yes

* V_R = Right Turn Volumes, V_A = Advancing Volumes



A right turn lane is warranted on Nashville Highway at both site accesses based on projected traffic volumes.

October 16, 2023

Kevin McCarthy
City Planner
City of Columbia
700 N Garden St
Columbia TN, 38401

Re: Villages at Carter's Creek – Retail Out Parcel Rezoning
Columbia, TN

To Whom it May Concern:

Please let this letter serve as a description of proposed rezoning description and policy compliance statement.

Zoning Description:

The purpose of this request for rezoning is to request a more appropriate straight rezoning and to cancel a portion of the existing PUD on this parcel in order to hopefully attract less specialized type development required by the current PUD and avoid updating to the PUD to current zoning requirements if changes are made. Our intent is for this portion of the property to remain as commercial/retail as originally envisioned along the highway 31 corridor. However, the requested CD-4C would allow a greater variety of potential uses allow the greatest flexibility to a prospective commercial developments.

Comprehensive Plan Compliance Statement:

To the best our knowledge and based on our pre-application meeting, the CD-4C would be appropriate within the Suburban Corridor land use policy. We feel that we are meeting the character area intent within the transition from Suburban to Urban to provide a mix of uses and that the CD-4C would comply under the Comprehensive Plan and Article 3 of the zoning ordinance. The site is unique in that it was master planned with commercial use in mind such that it will have access control with the existing infrastructure on to Nashville highway and will have additional pedestrian connectivity to the developments within the PUD.

The conceptual site plan that has been included with this request indicates potential for a carwash and a convenience store with gas for preliminary review. We feel that there is a multitude of potential uses and opportunity for development with the updated zoning. We have provided the original PUD Traffic Impact study for additional documentation that this site was designed for 68,300 SF of retail and 9,300 SF of restaurant. The recommended improvements are currently under construction.

Thank you for your consideration of this request.

Best Regards,

Catalyst Design Group

Andrew Wisemen, PE
Principal | Project Manager

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	Villages of Carter's Creek, 2425 Nashville Hwy, Columbia, TN		
	TAX MAP: 55	GROUP:	PARCEL: 22.03
SUMMARY OF NATURE OF REQUEST AND WORK	Requesting the concurrent review and approval of a cancellation of the exiting PUD on the property and Rezoning to CD-4C. This site lies within the suburban Corridor, per the Pre-App this site would meet the comprehensive plan as CD-4C.		

DATE OF PRE-APPLICATION CONFERENCE	8/30	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☐ Annexation ☒ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☒ Other: existing PUD abandonment **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☒ Written Legal Description copy ☒ Requested Zone Listed ☒ Compliance with Comprehensive Plan ~~☐ Annexation Permission Form~~ ☒ Plans and/or Plats conforming to City standards with check list completed ☒ Columbia Water System Availability Letter **Plats/PUDs:** ☒ Project Name (include Sections & Phases) Villages of Carters creek (Retail Parcels) ☒ Total Number of Lots 1 ☒ Total acreage 3.97 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Andrew Wiseman	PHONE	615-689-1147
ADDRESS	5100 Tennessee Ave. , Nashville, TN 37209	EMAIL	awiseman@catalyst-dg.com

PROPERTY OWNER NAME	Nash Spring Hill JV, LP Nelson Crowe	PHONE	512-682-5500
ADDRESS	500 W 5TH ST STE #700 AUSTIN TX 78701	EMAIL	ncrowe@endeavor-re.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

APPLICANT NAME	APPLICANT SIGNATURE	DATE

PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

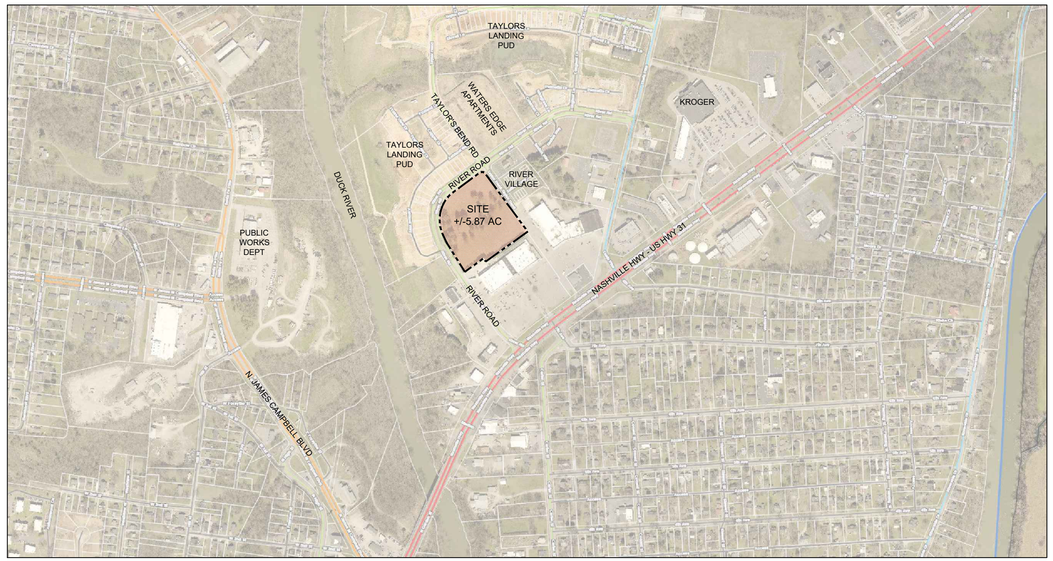
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

RIVER ROAD PROPERTY
SITE DEVELOPMENT PLAN

INTERSECTION OF RIVER ROAD AND TAYLOR'S BEND ROAD
COLUMBIA, TENNESSEE



LOCATION MAP

0 500 1000
GRAPHIC SCALE 1"=500'-0"

SHEET INDEX

C0.0	COVER SHEET
C1.0	SURVEY
C2.0	SITE DEVELOPMENT PLAN
C2.1	PRELIMINARY PLAT
L1.0	LANDSCAPE PLAN
	ARCHITECTURAL ELEVATIONS

OWNER:
DAVID TAYLOR
3006 KNUD DRIVE
COLUMBIA, TN

DEVELOPER:
CPS LAND
213 OVERLOOK CIRCLE, SUITE B2
BRENTWOOD, TN 37027
CLIFF SMITH
cliff.smith@cpsland.com

APPLICANT/ LAND PLANNER:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

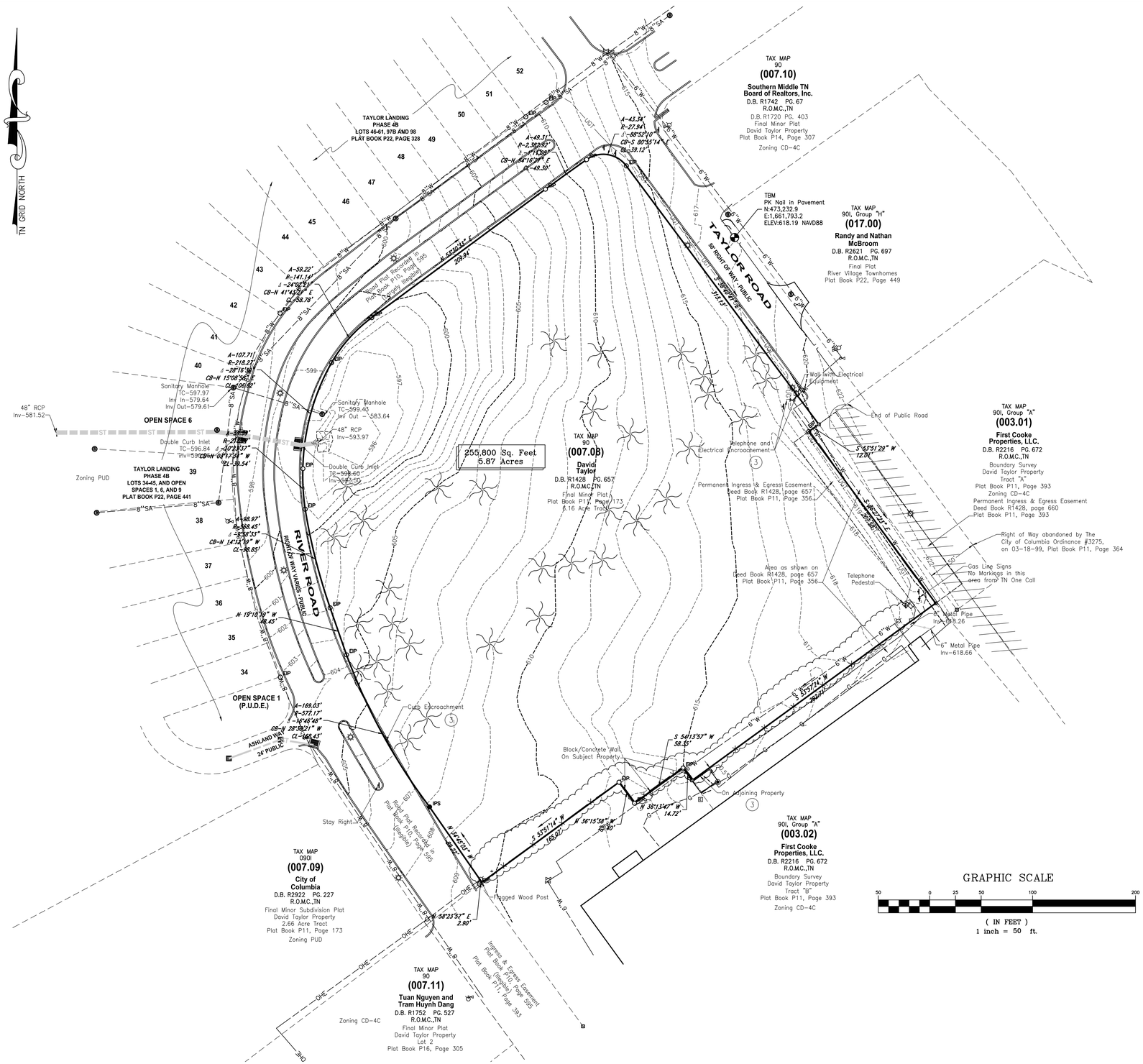
ENGINEER:
KIMLEY-HORN
4031 ASPEN GROVE DRIVE, SUITE 200
FRANKLIN, TN 37067
GRAY HARRISON, P.E.
615.564.2701
gray.harrison@kimley-horn.com

ARCHITECT:
OPEN ARCHITECTURE
ERIC CLAUS
513.403.7019
ERIC.CLAUS@OPENARCHITECTURE.COM

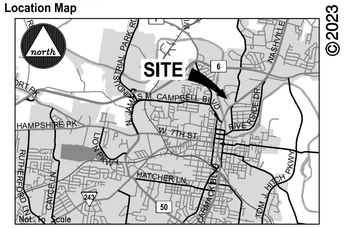
GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT
11.22.23

PRE-APP: August 30, 2023
INITIAL SUBMITTAL: October 16, 2023

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE



Location Map



Current Zoning

No Zoning Letter Provided to Surveyor

Current Zoning: PUD

Old Republic National Title Insurance Company
Commitment No. 226275
Effective Date: January 16, 2023 at 8:00 AM

Schedule B, Section II Items

1. Defects, liens, encumbrances, adverse claims, and matters in the public record are as addressed below.
2. Discrepancies, conflicts, easements, boundary line disputes, any shortages in area, encroachments or protrusions, or overlapping of improvements are as shown hereon.
3. Rights and claims of parties in possession were not addressed as part of this survey.
4. Liens were not addressed as part of this survey.
5. Items not of Public record were not addressed as part of this survey.
6. Items not of Public record were not addressed as part of this survey.
7. Taxes were not addressed as part of this survey.
8. Matters as shown on Plat Book P11, page 173, Plat Book P11, Page 356, and Plat Book P11, Page 364 are as shown hereon.
9. Waterline easement in Book 301, page 419, does not affect the subject property.
10. Water Flowage Easement in Book 385, page 277, does not affect teh subject property.
11. Sewer Line Easement in Book 431, page 419.
12. Right of Way/Ingress/Egress Easement in Book R1428, Page 660.

(#) Shows location of the designated commitment exception on the current survey.

Encroachment Note

1. The curb line of River Road encroaches on the west side of the subject property.
2. The wall along the south side of the property crosses the property line where labeled, ownership of said was is uncertain to the surveyor.

Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure, portions of the survey were done utilizing a Carlson BRX7, utilizing Base and Rover.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category IV as per Standards of Practice adopted by the State Board of Examiners for Land Surveyors for the State of Tennessee, and the precision of the unadjusted survey is greater than 1 foot in 10,000 feet.
3. Information concerning site utility services and appurtenances shown hereon is based on visible evidence noted during the survey, information provided by utility representatives or information shown on original construction plans by other. Information and location of service lines on site should be considered approximate and there may be underground utility lines that are not shown on the survey. Owner(s) and contractor(s) should assume responsibility of locating all underground utility service lines prior to any construction. excavation or any disturbance of the existing ground elevation to avoid hazard of unnecessary expense.
4. Information concerning major utilities or appurtenances shown hereon are based on visible evidence noted during the survey or information provided by utility representatives. Verification of existence, size, location, depth and availability of service should be confirmed by local utility agencies.
5. The property shown hereon is located within the City of Columbia, Maury County, TN. All matters pertoining to construction, use location of improvements, signage, parking, noise, vibration, emissions, fire hazards, radiation, illumination, setback provisions, etc., are subject to City of Columbia's Zoning Regulation as interpreted and regulated by the Department of Planning and Codes.
6. The area of the parcel is as shown hereon.
7. This property currently identified as Tax Map No. 90, Parcel No. 007.08, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: Plat Book P11, page 173
9. Deed reference: Book R1428, Page 657
10. Bearings based on: Tennessee State Plane, Fipzone 4100.
11. 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.
12. This survey was prepared from current deeds of record and title search as provided by others and noted hereon.
13. This survey was prepared for the exclusive use of the person, persons, or entity, if any, named on the certification hereon. Said certificate does not extend to any unnamed person without an express re-certification by the surveyor naming said person.
14. The certification as provided on this survey, is purely a statement of professional opinion based on knowledge, information and belief, based on existing field evidence and documentary evidence provided by others.
15. The certification is not an expressed or implied warranty or guarantee.
16. The property as shown hereon is not located in a Special Flood Hazard Area as shown on F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0170E, dated April 16, 2007, as scaled graphically.
17. Vertical Datum as shown hereon is NAVD88, as established by TDOT CORS.

ALTA/NSPS Surveyor's Certification

To: First American Title Insurance Company, and Barlow Builders :

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1-6, 8, 11, and 17 of Table A thereof. The field work was completed on August 10, 2023.

Allen B. O'Leary, TN RLS #1987 — 8-11-23 Date

I hereby certify this is a true and accurate survey and meets or exceeds the current Minimum Standards and Applications of a Category IV (Remote Sensing) survey as defined in T.C.A. 0820-03-.07(5).

Equipment: Carlson BRX7, Base and Rover
Positional Accuracy: HRMS=0.04 SD=0.008, VRMS=0.075 SD=0.013
Geoid: NGS2012B
Date: August 2023

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — TENNESSEE NO. 1987

allen@wesengineers.com

Legend

- EIP Iron Rod Found
- IPS Iron Rod Set
- I.P.F. Iron Pipe Found
- AXLE Axle Found
- FCM Fence Post
- CM Concrete Monument Existing
- P.K.F. PK Nail Found
- P.K.S. PK Nail Set
- R.R.S.F. Railroad Spike Found
- R.R.S.S. Railroad Spike Set
- Bench Mark
- Stake Found
- Fire Hydrant
- Water Meter
- Water Valve
- Water Reducer
- Clean Out
- Sanitary Sewer Manhole
- Storm Sewer Manhole
- Catch Basin
- Curb Inlet
- Storm Pipe
- Cable Manhole
- Electric Manhole
- Telephone Manhole
- Water Manhole
- Electric Meter
- Cable Riser
- Electric Riser
- Telephone Riser
- Telephone Booth
- Gas Meter
- Gas Valve
- Light Pole
- Power Pole
- Telephone Pole
- Guy Pole
- Power Pole
- Flag Pole
- Guy Wire
- Mailbox
- Parking Block
- Satellite Dish
- Handicap Parking
- Water Spigot
- Bollard
- Evergreen Tree
- Deciduous Tree
- Bush
- Sign
- Adjoining Property Line
- Subject Property Line
- Easement Line
- Building Setback Line
- Centerline
- Edge of Pavement
- Edge of Gravel
- Fence Line
- Landscape
- Woods / Tree line
- Edge of Water
- Ditch / Creek Centerline
- Minor Contour Line
- Index Contour Line
- G— Gas Line
- SA— Sanitary Sewer Line
- W— Water Line
- ST— Storm Sewer Line
- OH— Overhead Utility Line
- OHC— Overhead Cable Line
- OHE— Overhead Electric Line
- OHT— Overhead Telephone Line
- UG— Underground Utility Line
- UGC— Underground Cable Line
- UGE— Underground Electric Line
- UGT— Underground Telephone Line
- F.M.— Forced Main Line

WES Engineers & Surveyors
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com

ENGINEERS & SURVEYORS

Client
BARLOW BUILDERS
3020 Stansberry Lane, #101
Franklin, TN 37069
615-376-1680

A.L.T.A./N.S.P.S. LAND TITLE SURVEY

RIVER ROAD / TAYLOR ROAD
COLUMBIA, TN – MAURY COUNTY

DATE	REVISIONS	Drawn: BG	Checked:	Approved:	Date: 08-11-23

Job. no. 23563
Scale:
Vertical:
Horizontal:

©2023

FILE: J:\WES_Engineers_Surveyors 2023\23563 - Riverbend ALTA - Barlow\Dwg\Survey\23563 Riverbend Survey.dwg

CIVIC SPACE REQUIRED: 5%-20% OF GROSS SITE AREA PROVIDED: 11% (28,200 SF; 0.65AC)		
TYPE:	AREA:	AMENITIES:
SQUARE	23,100 SF	HARDSCAPE/GRAVEL SEATING AREA, SITE FURNISHINGS, FORMAL PLANTINGS, WALKING PATH AND POND OVERLOOK
POCKET PARK	3,500 SF	HARDSCAPE/GRAVEL SEATING AREA, SITE FURNISHINGS, GAS FIRE PIT, FORMAL PLANTINGS
PLAYGROUND	1,600 SF	SEATING AREA, PLAY EQUIPMENT, FORMAL PLANTINGS



SITE DEVELOPMENT PLAN SITE DATA:

TOTAL SITE AREA: 255,800 SF; 5.87 AC
TOTAL DWELLING UNITS: 122 UNITS
TOTAL DENSITY: 20.78 DUA
TOTAL CIVIC SPACE: 28,200 SF; 0.65 AC (11%)
TOTAL SURFACE PARKING LOT: 43,905 SF; 1.01 AC
TOTAL ROW AND ALLEY EASEMENT: 42,199 SF; .97 AC

BUILDING BREAKDOWN:
- TOTAL MULTI-FAMILY UNITS: 92 DWELLING UNITS
  - LARGE MULTI-FAMILY BLDG 1: 18 DU
  - LARGE MULTI-FAMILY BLDG 2: 24 DU
  - LARGE MULTI-FAMILY BLDG 3: 24 DU
  - LARGE MULTI-FAMILY BLDG 4: 18 DU
  - SMALL MULTI-FAMILY BLDG 1: 4 DU; 7-GARAGE PARKING SPACES
  - SMALL MULTI-FAMILY BLDG 2: 4 DU; 8-GARAGE PARKING SPACES
- TOWNHOMES: 30 DWELLING UNITS
- ACCESSORY BUILDINGS:
  - ACCESSORY BLDG 1: 8-CAR GARAGE
  - ACCESSORY BLDG 2: 8-CAR GARAGE

BUILDING SETBACKS:
PRINCIPAL STRUCTURES:
- FRONT SETBACK: 0' MIN/MAX AT CORNERS; 15' MAXIMUM ELSEWHERE
  PROVIDED SETBACK: 8'-14' TOWNHOMES; 0' LARGE MULTI-FAMILY; 12' SMALL MULTI-FAMILY
- FRONT SETBACK SECONDARY: 0' MIN/MAX AT CORNERS; 15' MAXIMUM ELSEWHERE
  PROVIDED SETBACK: 7'-10' TOWNHOMES; 16'-22' LARGE MULTI-FAMILY
- SIDE SETBACK: 0' MIN. - 24' MAXIMUM
  PROVIDED SETBACK: 0'; 15' MINIMUM BETWEEN TOWNHOME BUILDINGS
- REAR SETBACK: NOT REGULATED
  PROVIDED SETBACK: 24' TOWNHOME WITHOUT GARAGE; 5' TOWNHOME WHERE GARAGE FACES ALLEY

ACCESSORY STRUCTURES:
- FRONT SETBACK: 40' MAX FROM REAR PROPERTY LINE
  PROVIDED SETBACK: 23' FROM REAR PROPERTY LINE
- SIDE SETBACK: 3' MAX.
  PROVIDED SETBACK: 3' FROM BUILDING SITE LINE ON ONE SIDE
- REAR SETBACK: 3' MIN.
  PROVIDED SETBACK: 3'

*NOTE: PRIMARY BUILDING CORNER SETBACKS ARE AS CLOSE TO 0' FRONT/0' SIDE AS POSSIBLE. DUE TO THE UNIQUE PROPERTY LINE CONSTRAINTS, BUILDINGS ARE SET BACK TO ALLOW SIDEWALKS AND PLANTING AREAS AND TO AVOID EXISTING EASEMENTS/UTILITIES. ACCESSORY STRUCTURES ARE SET 3' FROM BUILDING SITE LINES ON ONE SIDE. BUILDING SITES ARE WIDER THAN THE ACCESSORY BUILDINGS, PREVENTING 3' SIDE SETBACKS ON BOTH SIDES.

PARKING SUMMARY:
- TOTAL DWELLING UNITS: 122 UNITS
- REQUIRED MINIMUM PARKING RATIO: 1.5 SPACES PER UNIT
- TOTAL REQUIRED RESIDENTIAL PARKING: 183 PARKING SPACES

- TOTAL CIVIC SPACE: 28,200 SF; 0.65 AC
- REQUIRED MINIMUM PARKING RATIO: 1 SPACE PER 5,000 SF GROSS LAND AREA
- TOTAL REQUIRED CIVIC SPACE PARKING: 6 PARKING SPACES

- TOTAL REQUIRED PARKING SPACES: 189 SPACES
- TOTAL PROVIDED PARKING SPACES: 233 SPACES
  - SURFACE PARKING LOT: 108 SPACES
  - SMALL MULTI-FAMILY BUILDING GARAGE: 15 SPACES (10'X20' MINIMUM)
  - STREET A ON-STREET PARKING: 36 SPACES
  - RIVER ROAD ON-STREET PARKING: 16 SPACES
  - TAYLOR'S BEND ROAD ON-STREET PARKING: 5 SPACES
  - TOWNHOME GARAGE SPACES: 7 SPACES (10'X20' MINIMUM)
  - TOWNHOME SURFACE SPACES: 46 SPACES

*NOTE: AN ADDITIONAL 16 GARAGE SPACES ARE PROVIDED IN ACCESSORY BUILDINGS FOR THE MULTI-FAMILY BUILDINGS, AND AN ADDITIONAL 7 TOWNHOME GARAGE SPACES ARE PROVIDED. THESE PARKING SPACES HAVE NOT BEEN INCLUDED IN THE PARKING TOTALS SINCE THEY ARE SMALLER THAN THE MINIMUM 10' X 20' GARAGE SPACE REQUIREMENT.

BIKE PARKING: REQUIRED 1 SPACE PER 20 REQUIRED PARKING SPACES
BIKE PARKING PROVIDED: 183 REQ. PARKING SPACES/20 = 7 BIKE SPACES

FRONTAGE BUILD-OUT: 80% MINIMUM REQUIRED
PROVIDED: 1,458 LF BUILD-OUT/2,081 LF FRONTAGE; 70% PROVIDED
LOT/BUILDING SITE ENFRONTMENT:
- TOTAL NUMBER OF BUILDING SITES: 36
- BUILDING SITES ENFRONTING PEDESTRIAN PATH: 2 (LARGE MULTI-FAMILY BLDG 2 & SMALL MULTI-FAMILY BLDG 2)
- % BUILDING SITES ENFRONTING PEDESTRIAN PATH: 6%

PLEASE SEE ARCHITECTURE ELEVATIONS FOR ALL MULTI-FAMILY BUILDING DIMENSIONS AND ELEVATION COMPLIANCE TABULATIONS.

ARCHITECTURAL NOTES:
1. LARGE MULTI-FAMILY BUILDINGS 1 AND 2 WILL UTILIZE THE SAME ELEVATOR VIA COMMON INTERIOR CORRIDOR.
2. LARGE MULTI-FAMILY BUILDINGS 3 AND 4 WILL UTILIZE THE SAME ELEVATOR VIA COMMON INTERIOR CORRIDOR.
3. LARGE MULTI-FAMILY BUILDINGS: HVAC UNITS TO BE LOCATED ON ROOF.
4. SMALL MULTI-FAMILY BUILDINGS: HVAC LOCATED IN 3RD LAYER.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

RIVER ROAD PROPERTY
SITE DEVELOPMENT PLAN & PRELIMINARY PLAT
RIVER ROAD, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT 11.20.23

Date: NOV. 20, 2023

Revision Date
△
△
△

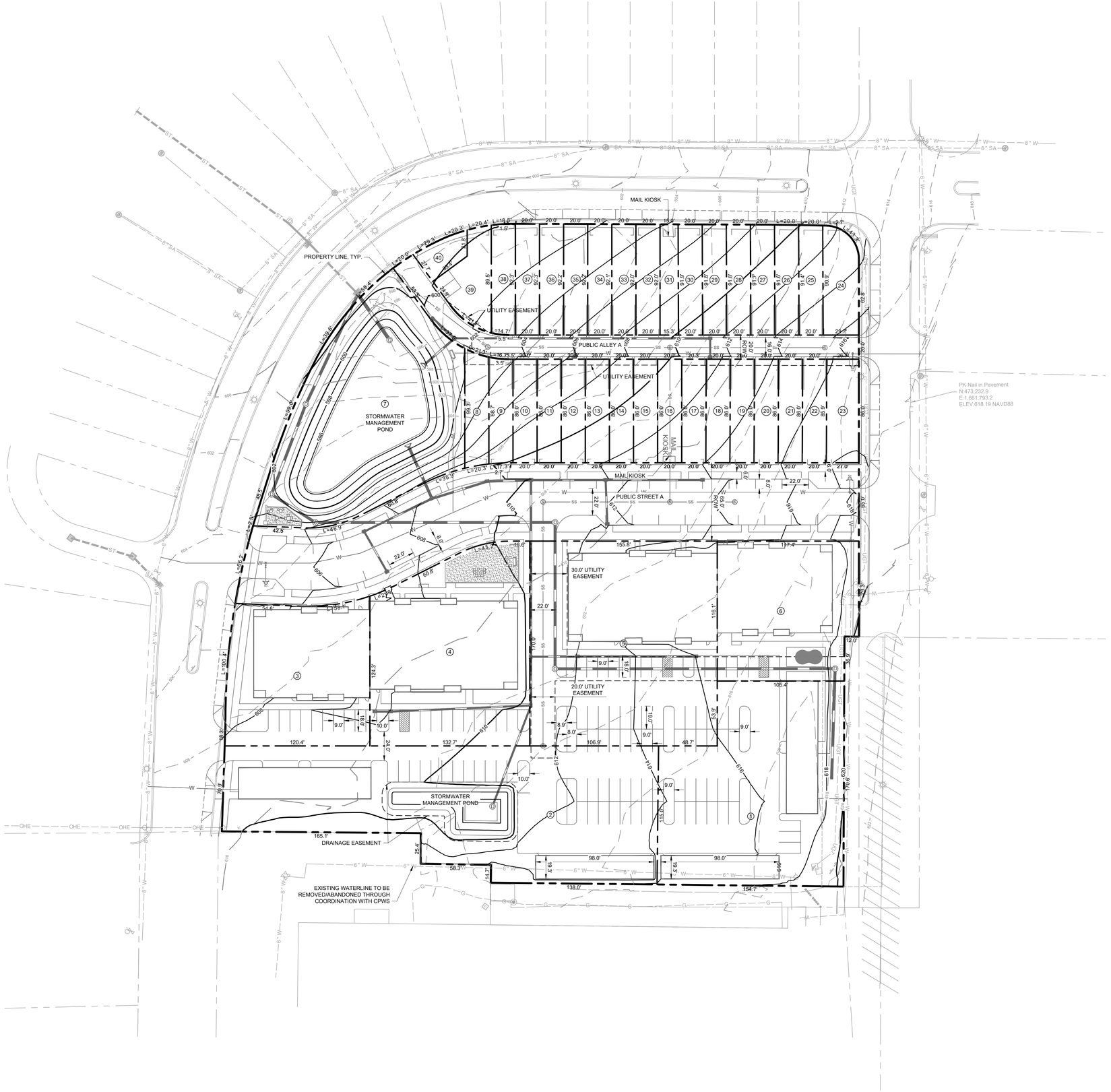
SITE DEVELOPMENT PLAN
SHEET
C2.0

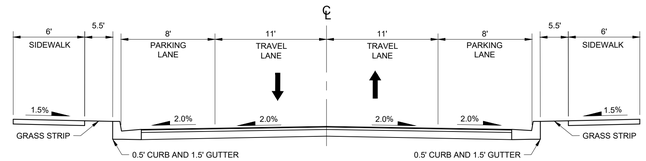
NOTES

1. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE NAD83 COORDINATE SYSTEM.
2. NO PROPOSED BUILDINGS OR PORTION OF THE PROJECT FALLS WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47119C0170E EFFECTIVE APRIL 16, 2007

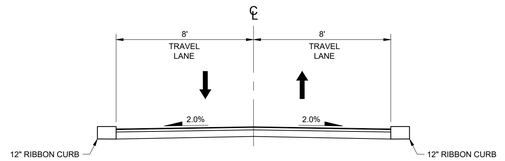
LAND USE CHART

SITE AREA	5.87 AC
CIVIC SPACE AREA	0.65 AC
SURFACE PARKING AREA	1.01 AC
ROW DEDICATION	0.97 AC
DENSITY	20.78 DUA





TYPICAL SECTION - URBAN CENTER STREET (65' PUBLIC ROW)
NTS



TYPICAL SECTION - ALLEY A (20' PUBLIC ROW)
NTS

PARCEL AREA TABLE	
Parcel #	Area
1	23544.57
2	33282.39
3	13872.70
4	20296.86
5	26449.45
6	13204.54
7	23430.95
8	1865.34
9	1734.94
10	1720.00
11	1720.00
12	1720.00
13	1720.00
14	1720.00
15	1720.00
16	1720.00
17	1733.37
18	1720.01
19	1720.01
20	1720.01

PARCEL AREA TABLE	
Parcel #	Area
21	1720.01
22	1719.47
23	2309.70
24	2546.82
25	1823.45
26	1830.42
27	1833.31
28	1834.90
29	1836.21
30	1837.52
31	1392.29
32	1839.79
33	1841.09
34	1842.40
35	1843.71
36	1845.01
37	1846.32
38	1832.22
39	2506.37
40	1038.13

GRAPHIC SCALE IN FEET
0 20 40 80

NORTH

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

Kimley»Horn
4031 Aspen Grove Drive, Suite 200, Franklin, TN 37067
Main: 615.208.5112 | www.kimley-horn.com

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RIVER ROAD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

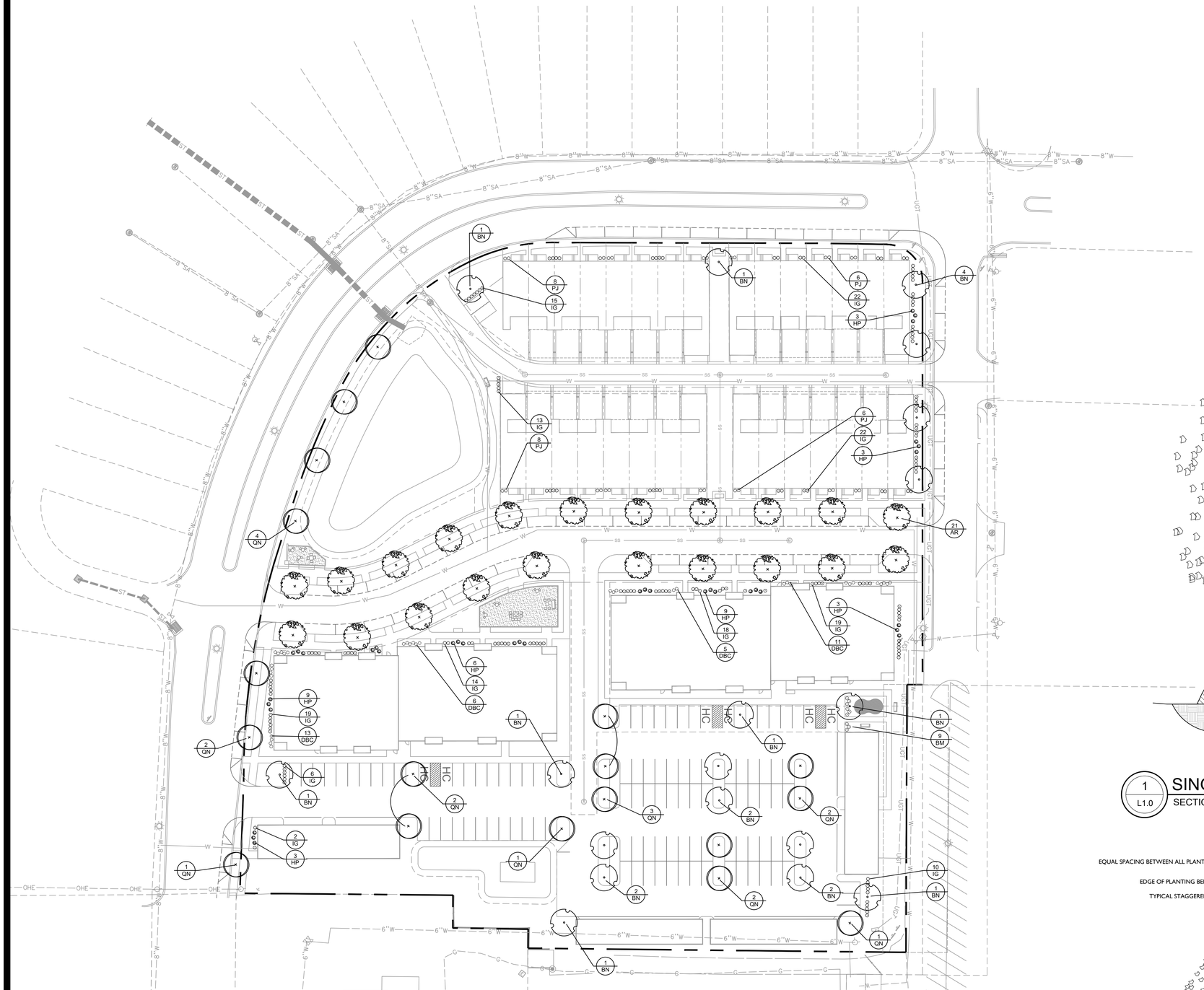
WILLIAM GRAY HARRISON
REGISTERED ENGINEER
No. 127919
STATE OF TENNESSEE

Revision Date
- △ _____
- △ _____
- △ _____
- △ _____

PRELIMINARY PLAT

SHEET
C2.1

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



QTY / SYM — PLANT KEY

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	HEIGHT	SPECIES %	SPACING	NOTES
CANOPY TREES								
21	AR	ACER RUBRUM ' AUTUMN FLAME'	AUTUMN FLAME RED MAPLE	2.5" CAL	10' MIN.	29%	AS SHOWN	SINGLE-STRAIGHT CENTRAL LEADER, EVENLY BRANCHED, FULL SYMMETRICAL CROWN
19	QN	QUERCUS NUTTALLI	NUTTAL OAK	2.5" CAL	10' MIN.	34%	AS SHOWN	SINGLE-STRAIGHT CENTRAL LEADER, EVENLY BRANCHED, FULL SYMMETRICAL CROWN
16	BN	BETULA NIGRA	RIVER BIRCH	2.5" CAL	10' MIN.	38%	AS SHOWN	MULTI-STEM, 3 TO 5 CANES WITH A SUM TOTAL OF EACH CANE TO EQUAL MIN. CALIPER SIZE
SHRUBS								
9	BM	BUXUS MICROPHYLLA VAR. JAPONICA 'WINTER GEM'	WINTER GEM BOXWOOD	#3 CONT.	30" MIN.		36" O.C.	
160	IG	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	#3 CONT.	30" MIN.		36" O.C.	
28	PJ	PIERIS JAPONICA 'FIRE &ICE'	FIRE & ICE PIERIS	#3 CONT.	30" MIN.		36" O.C.	
36	HP	HYDRANGEA PANICULATA 'LIMELIGHT'	LIMELIGHT HYDRANGEA	#3 CONT.	30" MIN.		48" O.C.	
35	DBC	DISTYLLIUM HYBRID 'PIIDIST-II'	BLUE CASCADE EVERGREEN DISTYLLIUM	#3 CONT.	30" MIN.		36" O.C.	

PLANT SIZE IS MINIMUM REQUIRED BY CITY OF COLUMBIA. MINIMUM HEIGHT AND CALIPER MUST BE MET REGARDLESS OF CONTAINER SIZE.

N

0 40 80 120

GRAPHIC SCALE 1"=40'-0"

CODE MINIMUM LANDSCAPE PLAN

THIS LANDSCAPE PLAN HAS BEEN DESIGNED TO MEET THE MINIMUM CODE REQUIREMENTS OF THE CITY OF COLUMBIA TN ZONING ORDINANCE FOR SITE DEVELOPMENT PLAN.

ZONING ORDINANCE 4.3.16 - CD-5 LANDSCAPING:
CONTINUOUS SHRUBS AROUND FOUNDATION AT FACADE. 1 SHRUB EVERY 10 LF
SMALL MULTI-FAMILY BLDG 1: REQ. 3 SHRUBS; PROVIDED: 5 SHRUBS
LARGE MULTI-FAMILY BLDG 1: REQ.18 SHRUBS; PROVIDED: 42 SHRUBS
LARGE MULTI-FAMILY BLDG 2: REQ.13 SHRUBS; PROVIDED: 26 SHRUBS
LARGE MULTI-FAMILY BLDG 3: REQ.13 SHRUBS; PROVIDED: 32 SHRUBS
LARGE MULTI-FAMILY BLDG 4: REQ.18 SHRUBS; PROVIDED: 33 SHRUBS
TOWNHOMES: 2 SHRUBS FRONT; 8 SIDE; PROVIDED: 2 FRONT, 17 SIDE

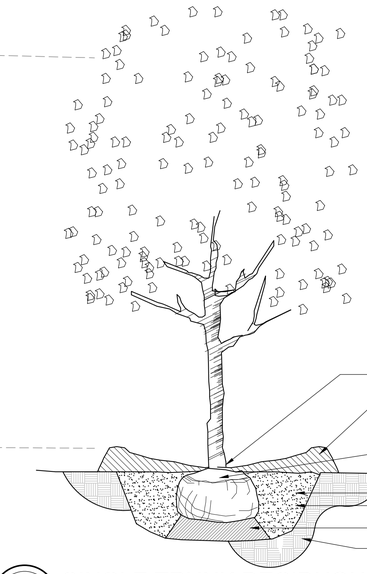
ZONING ORDINANCE 5.2.2.G-1 - URBAN CENTER STREET:
REQUIRED: 1 STREET TREE EVERY 50 LF.
PROVIDED: 1 STREET TREE EVERY 50 LF.

ZONING ORDINANCE 4.13.12.C - PARKING DESIGN:
REQUIRED: 1 SHADE TREE PER ISLAND/ 2 SHADE TREES FOR DOUBLE LENGTH ISLANDS.
PROVIDED: 1 SHADE TREE PER ISLAND/ 2 SHADE TREES FOR DOUBLE LENGTH ISLANDS

REQUIRED: 1 TREE PER 2,000 SF OF PARKING LOT
PROVIDED: 43,905 SF PARKING AREA/ 2,000 SF = 22 TREES REQUIRED. PROVIDED: 23 TREES

REQUIRED: 36" HEDGE TO SCREEN PARKING FROM CIVIC SPACE AND ADJACENT PROPERTY
PROVIDED: HEDGES PROVIDED AS REQUIRED.

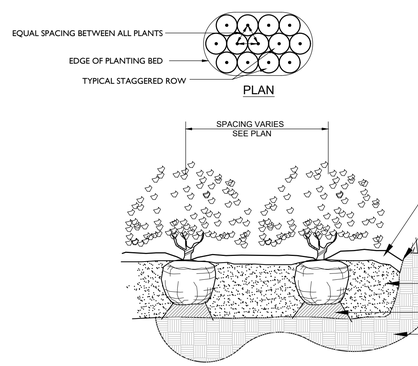
ZONING ORDINANCE 4.3.16.L - TREE PROTECTION:
CD-5 DOES NOT REQUIRED EXISTING TREE CANOPY PRESERVATION.
NO EXISTING TREES ARE DESIGNATED AS PRESERVED.



1 / L1.0 — SINGLE TRUNK DECIDUOUS TREE — SECTION — DETAIL # NTS

GENERAL NOTES:

1. All trees are to be nursery grown, burlap and ball (B&B). Minimum tree size is per schedule (measured 6" above root ball).
2. Remove all treated or plastic-coated burlap, strapping, wire or nylon twine from root ball. After setting in hole, cut away top and sides of wire basket, if any.
3. Install top of plant ball even with or up to 2" above existing grade.
4. Set tree in vertical position; stake if necessary for stabilization.
5. Soak plant ball and pit immediately after installation. Place 3" of seasoned mulch or pine needles around base of tree, 3' diameter minimum.



2 / L1.0 — SHRUB PLANTING — SECTION — DETAIL # NTS

GENERAL NOTES:

1. Install top of plant ball shall be level with finished grade.
2. Tamp planting mix firmly as pit is filled around each plant ball.
3. Soak each plant ball and pit immediately after installation.
4. Cut and remove burlap from top 1/3 of root ball. Non-degradable burlap shall be removed or rolled under ball after replacement of plant.
5. Combustible mulch shall not be applied or maintained within two feet of any building around entire exterior perimeter.

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

RIVER ROAD PROPERTY
SITE DEVELOPMENT PLAN & PRELIMINARY PLAT
RIVER ROAD, Columbia, Tennessee

GREGORY C. GAMBLE — REGISTERED — AGRICULTURE — TENNESSEE — 11/20/2023 — LANDSCAPE ARCHITECT

Date: NOV. 20, 2023

Revision Date
△
△
△

LANDSCAPE PLAN

SHEET L1.0



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 1 & 2

BARLOW BUILDERS

CPS land creating community



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

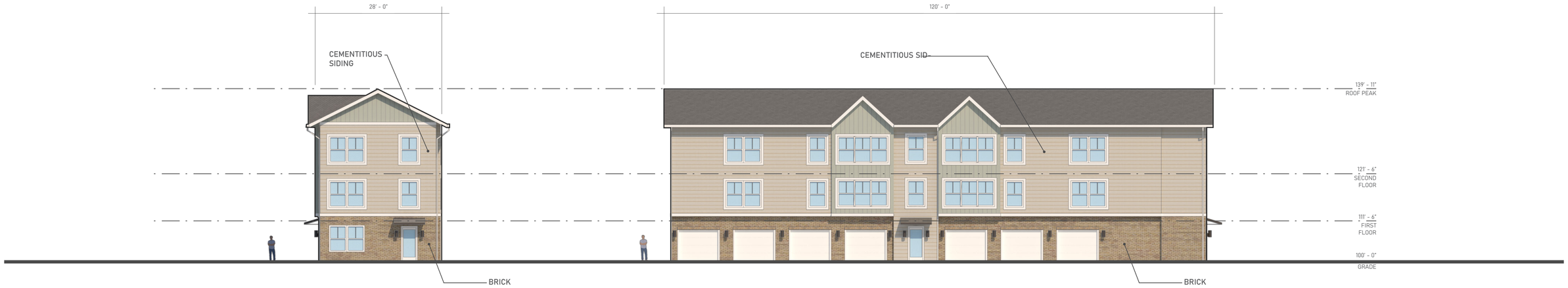
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 3 & 4

BARLOW BUILDERS

CPS land creating community



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

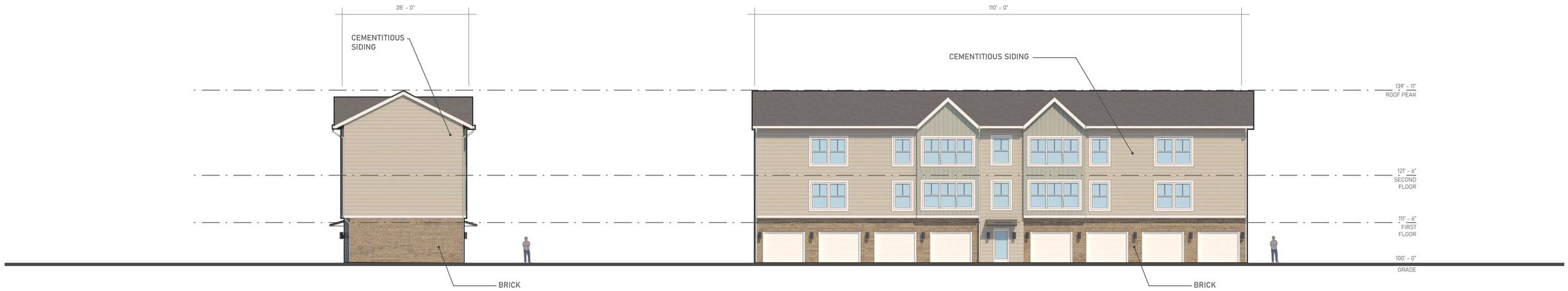
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 1

BARLOW BUILDERS

CPS land creating community



NORTH ELEVATION

WEST ELEVATION



EAST ELEVATION

SOUTH ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

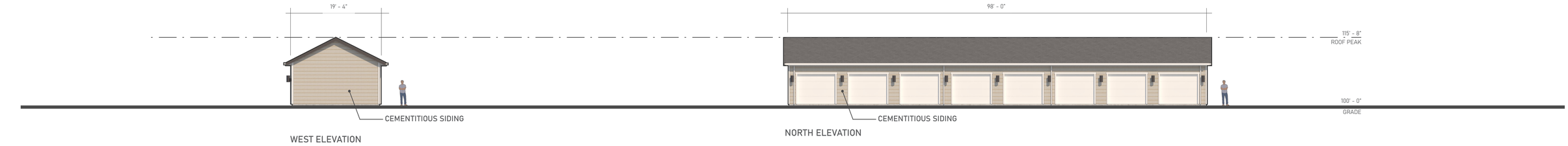
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 2

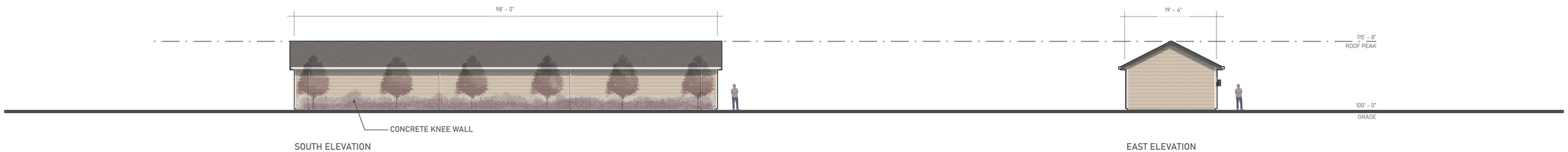
BARLOW BUILDERS

CPS land creating community



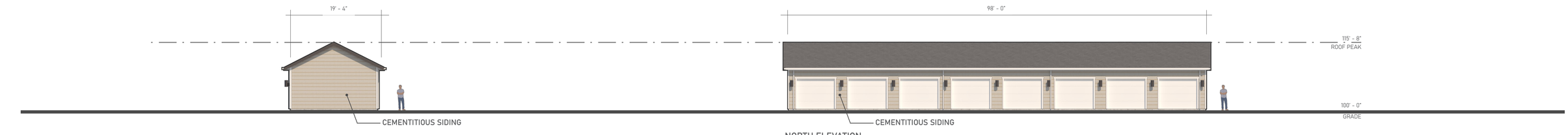
WEST ELEVATION

NORTH ELEVATION



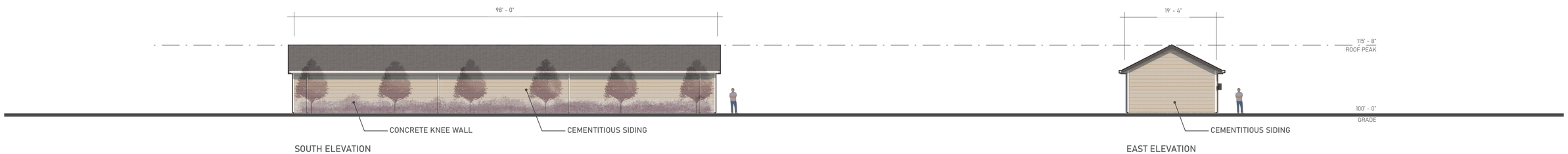
SOUTH ELEVATION

EAST ELEVATION



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

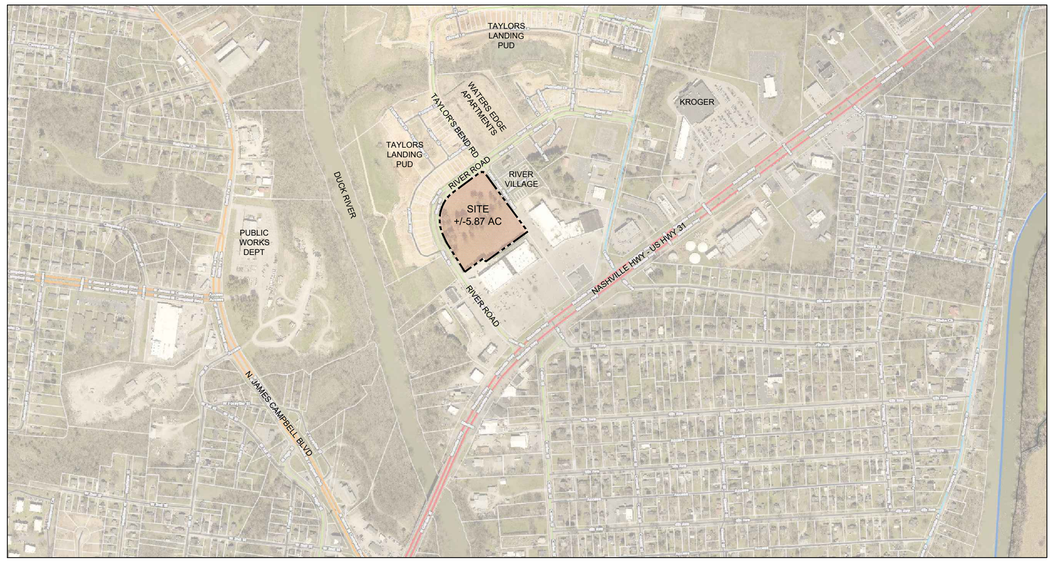
GARAGE 1 & 2

BARLOW BUILDERS

CPS land creating community

RIVER ROAD PROPERTY
SITE DEVELOPMENT PLAN

INTERSECTION OF RIVER ROAD AND TAYLOR'S BEND ROAD
COLUMBIA, TENNESSEE



LOCATION MAP

0 500 1000
GRAPHIC SCALE 1"=500'-0"

SHEET INDEX

C0.0	COVER SHEET
C1.0	SURVEY
C2.0	SITE DEVELOPMENT PLAN
C2.1	PRELIMINARY PLAT
L1.0	LANDSCAPE PLAN
	ARCHITECTURAL ELEVATIONS

OWNER:
DAVID TAYLOR
3006 KNUD DRIVE
COLUMBIA, TN

DEVELOPER:
CPS LAND
213 OVERLOOK CIRCLE, SUITE B2
BRENTWOOD, TN 37027
CLIFF SMITH
cliff.smith@cpsland.com

APPLICANT/ LAND PLANNER:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

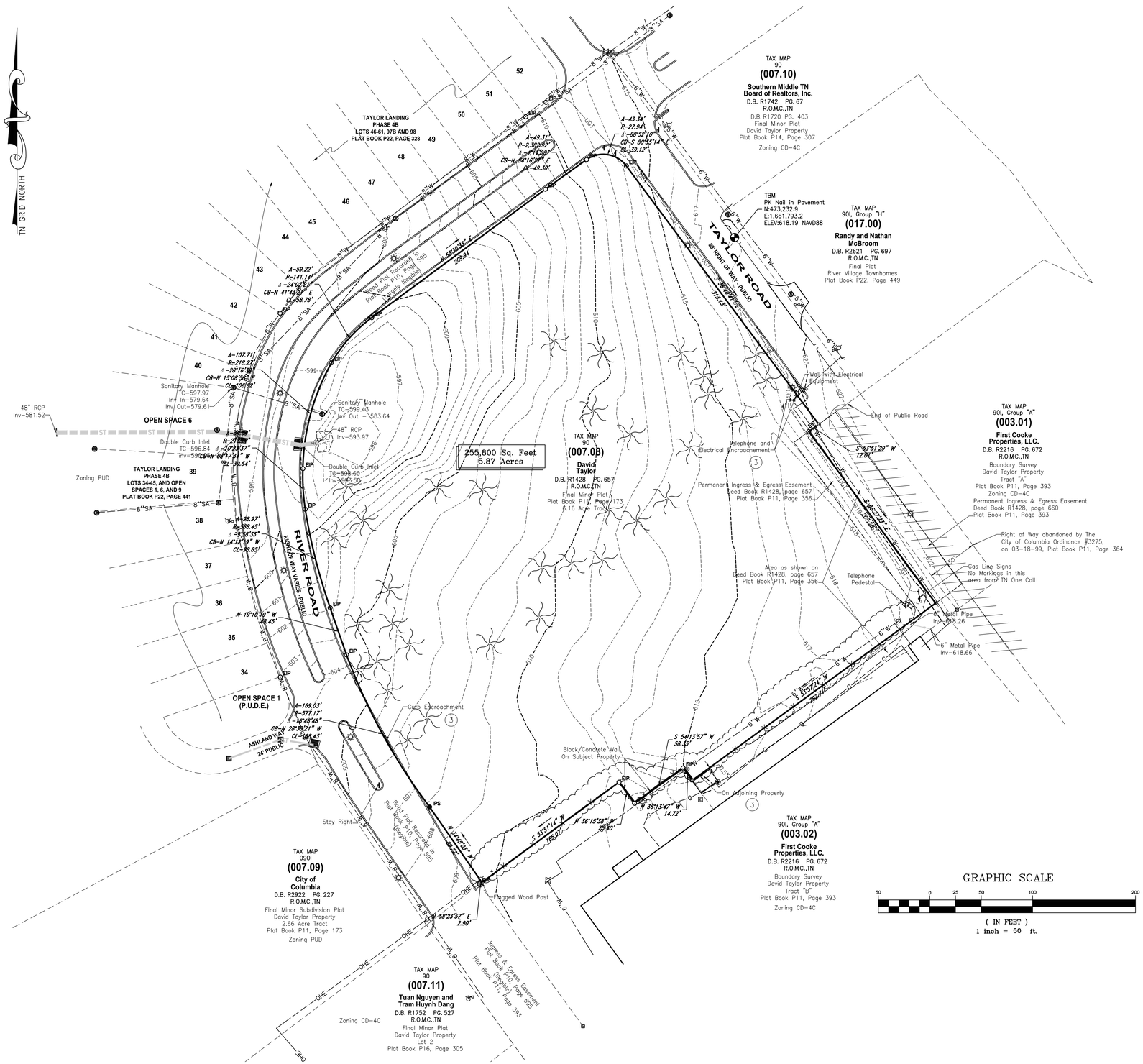
ENGINEER:
KIMLEY-HORN
4031 ASPEN GROVE DRIVE, SUITE 200
FRANKLIN, TN 37067
GRAY HARRISON, P.E.
615.564.2701
gray.harrison@kimley-horn.com

ARCHITECT:
OPEN ARCHITECTURE
ERIC CLAUS
513.403.7019
ERIC.CLAUS@OPENARCHITECTURE.COM

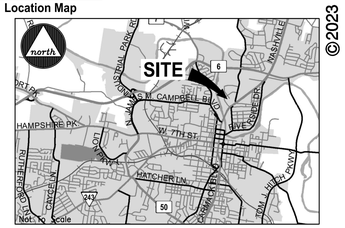
GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT
11.22.23

PRE-APP: August 30, 2023
INITIAL SUBMITTAL: October 16, 2023

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE



Location Map



Current Zoning

No Zoning Letter Provided to Surveyor

Current Zoning: PUD

Old Republic National Title Insurance Company
Commitment No. 226275
Effective Date: January 16, 2023 at 8:00 AM

Schedule B, Section II Items

1. Defects, liens, encumbrances, adverse claims, and matters in the public record are as addressed below.
2. Discrepancies, conflicts, easements, boundary line disputes, any shortages in area, encroachments or protrusions, or overlapping of improvements are as shown hereon.
3. Rights and claims of parties in possession were not addressed as part of this survey.
4. Liens were not addressed as part of this survey.
5. Items not of Public record were not addressed as part of this survey.
6. Items not of Public record were not addressed as part of this survey.
7. Taxes were not addressed as part of this survey.
8. Matters as shown on Plat Book P11, page 173, Plat Book P11, Page 356, and Plat Book P11, Page 364 are as shown hereon.
9. Waterline easement in Book 301, page 419, does not affect the subject property.
10. Water Flowage Easement in Book 385, page 277, does not affect teh subject property.
11. Sewer Line Easement in Book 431, page 419.
12. Right of Way/Ingress/Egress Easement in Book R1428, Page 660.

(#) Shows location of the designated commitment exception on the current survey.

Encroachment Note

1. The curb line of River Road encroaches on the west side of the subject property.
2. The wall along the south side of the property crosses the property line where labeled, ownership of said was is uncertain to the surveyor.

Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure, portions of the survey were done utilizing a Carlson BRX7, utilizing Base and Rover.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category IV as per Standards of Practice adopted by the State Board of Examiners for Land Surveyors for the State of Tennessee, and the precision of the unadjusted survey is greater than 1 foot in 10,000 feet.
3. Information concerning site utility services and appurtenances shown hereon is based on visible evidence noted during the survey, information provided by utility representatives or information shown on original construction plans by other. Information and location of service lines on site should be considered approximate and there may be underground utility lines that are not shown on the survey. Owner(s) and contractor(s) should assume responsibility of locating all underground utility service lines prior to any construction. excavation or any disturbance of the existing ground elevation to avoid hazard of unnecessary expense.
4. Information concerning major utilities or appurtenances shown hereon are based on visible evidence noted during the survey or information provided by utility representatives. Verification of existence, size, location, depth and availability of service should be confirmed by local utility agencies.
5. The property shown hereon is located within the City of Columbia, Maury County, TN. All matters pertoining to construction, use location of improvements, signage, parking, noise, vibration, emissions, fire hazards, radiation, illumination, setback provisions, etc., are subject to City of Columbia's Zoning Regulation as interpreted and regulated by the Department of Planning and Codes.
6. The area of the parcel is as shown hereon.
7. This property currently identified as Tax Map No. 90, Parcel No. 007.08, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: Plat Book P11, page 173
9. Deed reference: Book R1428, Page 657
10. Bearings based on: Tennessee State Plane, Fipzone 4100.
11. 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.
12. This survey was prepared from current deeds of record and title search as provided by others and noted hereon.
13. This survey was prepared for the exclusive use of the person, persons, or entity, if any, named on the certification hereon. Said certificate does not extend to any unnamed person without an express re-certification by the surveyor naming said person.
14. The certification as provided on this survey, is purely a statement of professional opinion based on knowledge, information and belief, based on existing field evidence and documentary evidence provided by others.
15. The certification is not an expressed or implied warranty or guarantee.
16. The property as shown hereon is not located in a Special Flood Hazard Area as shown on F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0170E, dated April 16, 2007, as scaled graphically.
17. Vertical Datum as shown hereon is NAVD88, as established by TDOT CORS.

ALTA/NSPS Surveyor's Certification

To: First American Title Insurance Company, and Barlow Builders :

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1-6, 8, 11, and 17 of Table A thereof. The field work was completed on August 10, 2023.

Allen B. O'Leary, TN RLS #1987 — 8-11-23 Date

I hereby certify this is a true and accurate survey and meets or exceeds the current Minimum Standards and Applications of a Category IV (Remote Sensing) survey as defined in T.C.A. 0820-03-.07(5).

Equipment: Carlson BRX7, Base and Rover
Positional Accuracy: HRMS=0.04 SD=0.008, VRMS=0.075 SD=0.013
Geoid: NGS2012B
Date: August 2023

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — TENNESSEE NO. 1987

allen@wesengineers.com

WES Engineers & Surveyors
CIVIL ENGINEERS & LAND SURVEYORS
2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
PHONE: (931) 388-2329
www.wesengineers.com
ENGINEERS & SURVEYORS

Client
BARLOW BUILDERS
3020 Stansberry Lane, #101
Franklin, TN 37069
615-376-1680

A.L.T.A./N.S.P.S. LAND TITLE SURVEY

RIVER ROAD / TAYLOR ROAD
COLUMBIA, TN – MAURY COUNTY

DATE	REVISIONS

Drawn: BG
Checked:
Approved:
Date: 08-11-23

Job. no. 23563
Scale:
Vertical:
Horizontal:

©2023

FILE: J:\WES_Engineers_Surveyors 2023\23563 - Riverbend ALTA - Barlow\Dwg\Survey\23563 Riverbend Survey.dwg

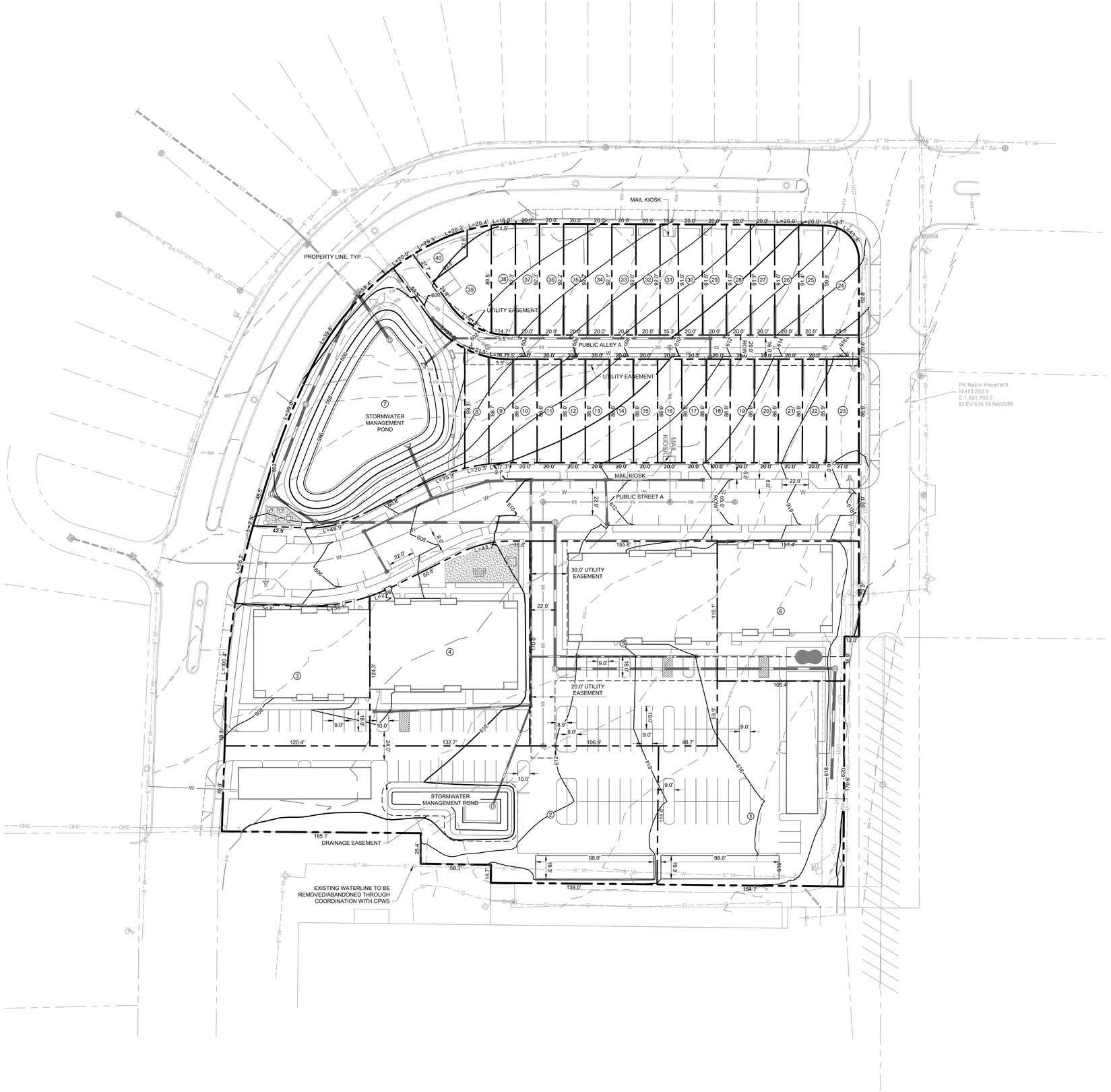
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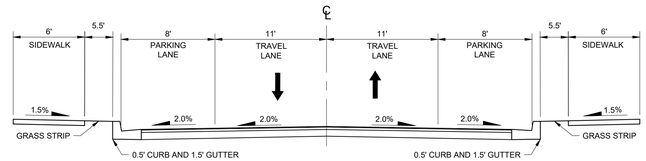
NOTES

1. THE INFORMATION SHOWN ON THIS PLAN IS BASED UPON THE TENNESSEE STATE NAD83 COORDINATE SYSTEM.
2. NO PROPOSED BUILDINGS OR PORTION OF THE PROJECT FALLS WITHIN THE 100 YEAR FLOODPLAIN, PER THE FEMA FIRM MAP NUMBER 47119C0170E EFFECTIVE APRIL 16, 2007

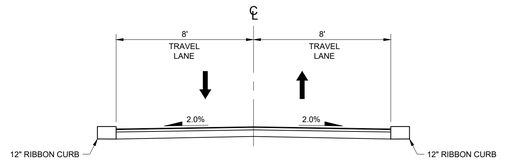
LAND USE CHART

SITE AREA	5.87 AC
CIVIC SPACE AREA	0.65 AC
SURFACE PARKING AREA	1.01 AC
ROW DEDICATION	0.97 AC
DENSITY	20.78 DUA





TYPICAL SECTION - URBAN CENTER STREET (65' PUBLIC ROW)
NTS



TYPICAL SECTION - ALLEY A (20' PUBLIC ROW)
NTS

PARCEL AREA TABLE	
Parcel #	Area
1	23544.57
2	33282.39
3	13872.70
4	20296.86
5	26449.45
6	13204.54
7	23430.95
8	1865.34
9	1734.94
10	1720.00
11	1720.00
12	1720.00
13	1720.00
14	1720.00
15	1720.00
16	1720.00
17	1733.37
18	1720.01
19	1720.01
20	1720.01

PARCEL AREA TABLE	
Parcel #	Area
21	1720.01
22	1719.47
23	2309.70
24	2546.82
25	1823.45
26	1830.42
27	1833.31
28	1834.90
29	1836.21
30	1837.52
31	1392.29
32	1839.79
33	1841.09
34	1842.40
35	1843.71
36	1845.01
37	1846.32
38	1832.22
39	2506.37
40	1038.13

GRAPHIC SCALE IN FEET
0 20 40 80

NORTH

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

Kimley»Horn
4031 Aspen Grove Drive, Suite 200, Franklin, TN 37067
Main: 615.208.5112 | www.kimley-horn.com
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RIVER ROAD
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee

WILLIAM GRAY HARRISON
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 127919
STATE OF TENNESSEE

Revision Date
- △ _____
- △ _____
- △ _____
- △ _____

PRELIMINARY PLAT

SHEET
C2.1



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 1 & 2

GAMBLE DESIGN COLLABORATIVE

BARLOW BUILDERS

CPS land creating community



WEST ELEVATION

NORTH ELEVATION

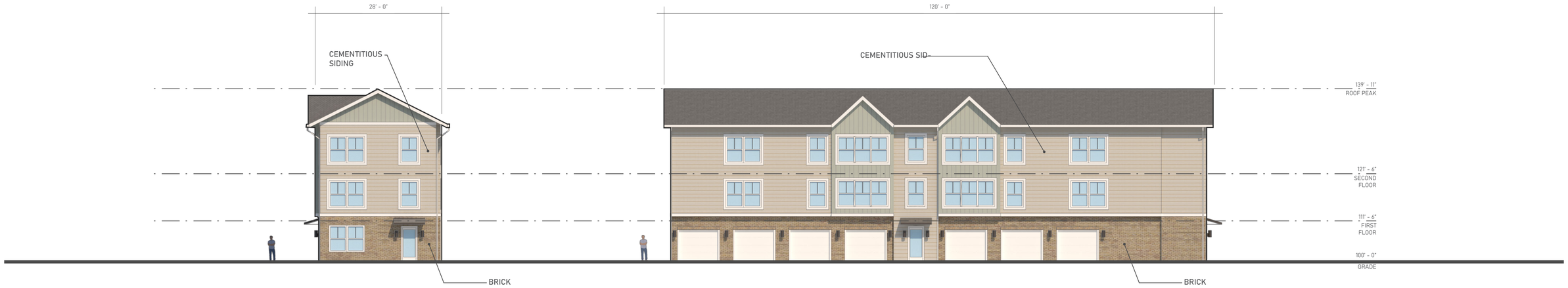


SOUTH ELEVATION

EAST ELEVATION

RIVER ROAD PROPERTY
EXTERIOR ELEVATIONS
NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 3 & 4



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

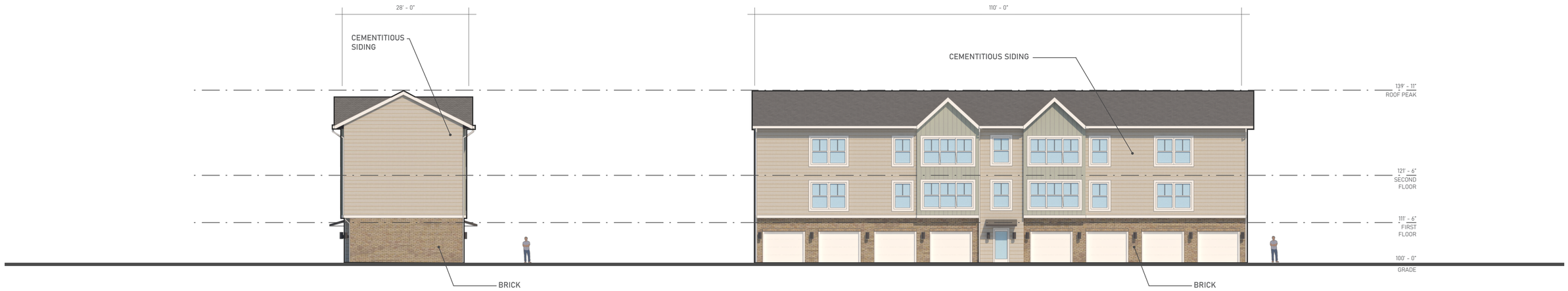
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 1

BARLOW BUILDERS

CPS land creating community



NORTH ELEVATION

WEST ELEVATION



EAST ELEVATION

SOUTH ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

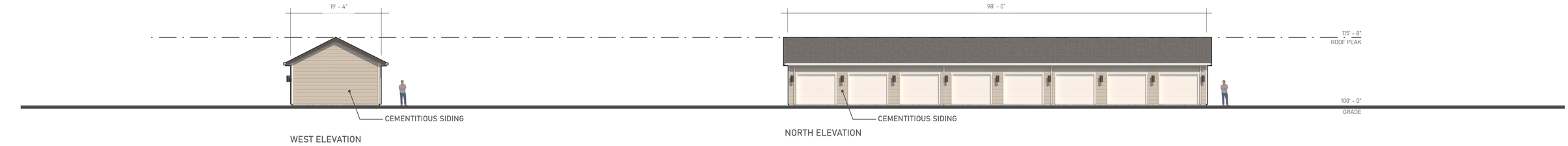
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 2

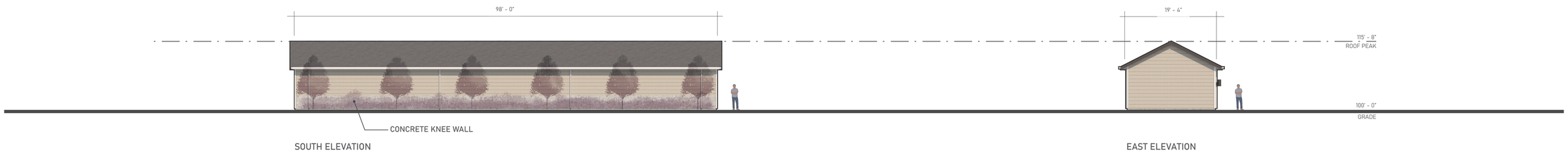
BARLOW BUILDERS

CPS land creating community



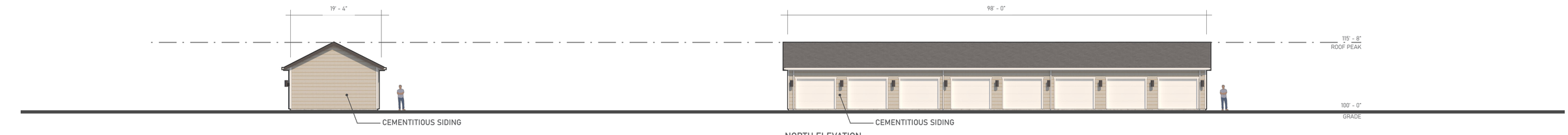
WEST ELEVATION

NORTH ELEVATION



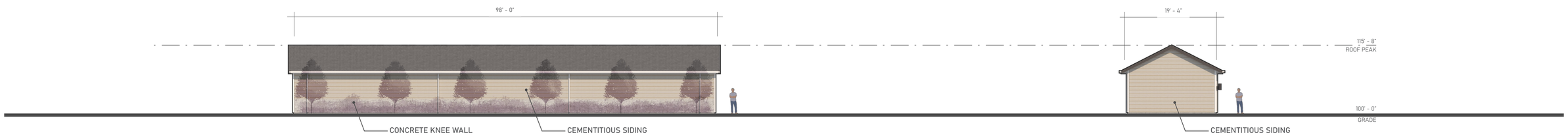
SOUTH ELEVATION

EAST ELEVATION



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

GARAGE 1 & 2

BARLOW BUILDERS

CPS land creating community



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 1 & 2

GAMBLE DESIGN COLLABORATIVE

BARLOW BUILDERS

CPS land creating community



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

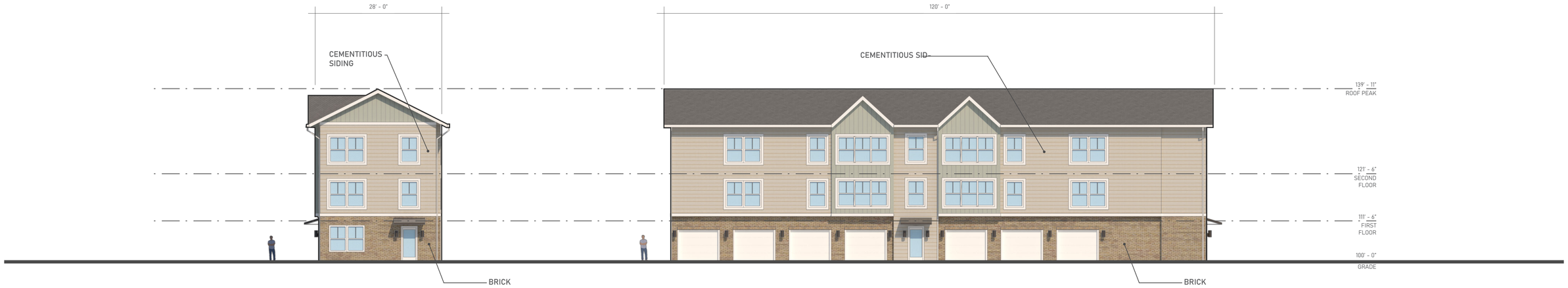
EAST ELEVATION

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

MULTIFAMILY BUILDINGS 3 & 4



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

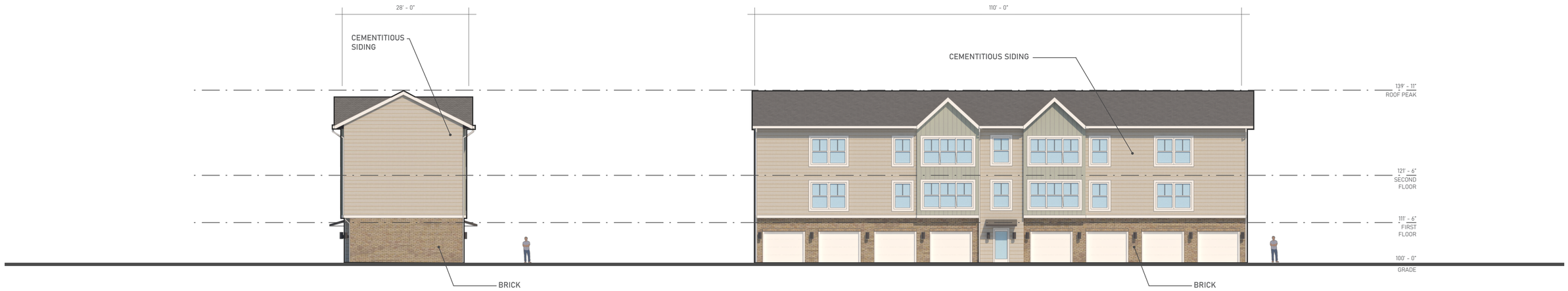
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 1

BARLOW BUILDERS

CPS land creating community



NORTH ELEVATION

WEST ELEVATION



EAST ELEVATION

SOUTH ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

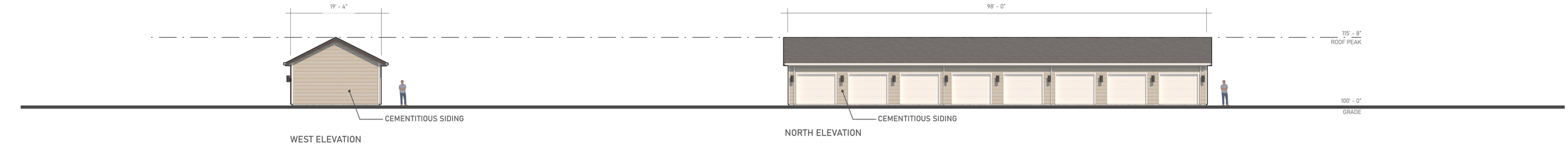
EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

CARRIAGE HOUSE 2

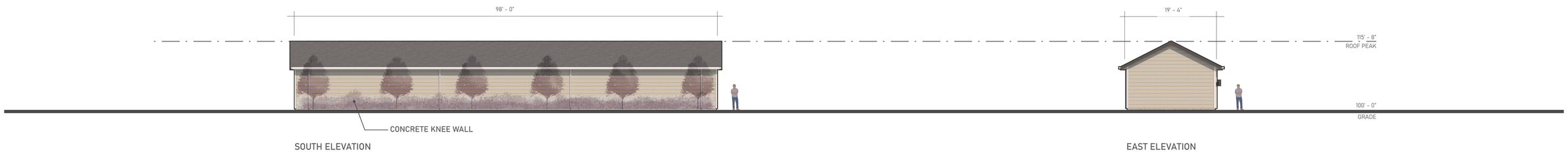
BARLOW BUILDERS

CPS land creating community



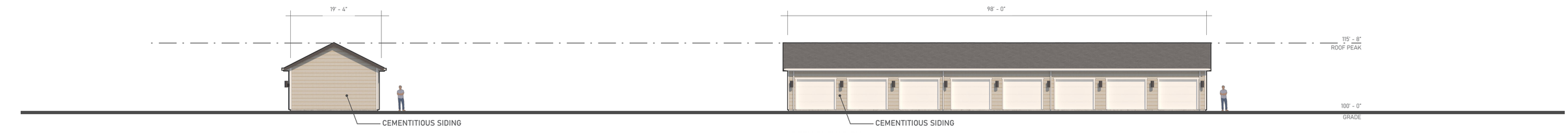
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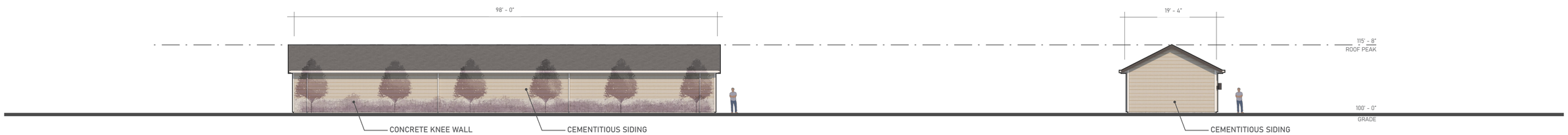
SOUTH ELEVATION

EAST ELEVATION



WEST ELEVATION

NORTH ELEVATION



SOUTH ELEVATION

EAST ELEVATION

GAMBLE DESIGN COLLABORATIVE

RIVER ROAD PROPERTY

EXTERIOR ELEVATIONS

NOVEMBER 20, 2023

GARAGE 1 & 2

BARLOW BUILDERS

CPS land creating community

CPWS

November 19, 2023
Mr. Cliff Smith
CPS Land, LLC
213 Overlook Circle
Brentwood, TN 37027
Sent via email: cliff.smith@cpsland.com; sbernick@ragansmith.com
RE: Water Availability Letter
River Road Mixed Use
Tax Map 90, Parcel 7.08
Columbia, Maury County, TN

Dear Mr. Smith:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development includes 30 townhome residences and 92 units in multi-family buildings. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,563 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connections will be made to the existing 8-inch water main on River Road.
- Rental units will be served by redundant master meters at separate entrances. Any sub-metering will be the responsibility of the applicant. Irrigation will be served as a separate metered connection.

All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed a water service agreement.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings.
- Remit to CPWS new water service fees:

New Water Service Fee: $1,500 + $370 per SFU (140.3 SFUs)	$53,411.00

- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid.

Meter Fee: $710 per 1" irrigation meter (1 meter)	$710.00
Meter Fee: $7,000 per 6" fire-rated ultra-sonic meter (2 meters)	$14,000.00
Impact Fee: $7,500 per 1" irrigation meter (1 meter)	$7,500.00
Impact Fee: $375,000 per 6" meter equivalent (1 equivalent)	$375,000.00
Total Meter and Impact Fees Due =	**$397,210.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-093

CPWS
Columbia Power & Water Systems

201 Pickens Lane
P.O. Box 379
Columbia, TN 38402

P 931.388.4833
F 931.388.5287
www.cpws.com

November 17, 2023

Claudia M. Forrester
4031 Aspen Grove Drive
Suite 200
Franklin, TN 37067

Re: River Road Project, Parcel: 090 007.08. Mixed residential development with townhomes, multi-family buildings, public roadway infrastructure and surface parking.

Dear Sir:

Columbia Power System has an existing power line near your proposed development.

We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.

• Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters or transformers appropriate for your development.

Yours truly,

COLUMBIA POWER SYSTEM

Ryan Massey, P.E.
Vice President of Power Operations

so

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

28 February 2023

Cliff Smith
CPS Land, LLC
213 Overlook Circle Suite B-2
Brentwood, TN 37027

RE: River Road 5.8 Map 090, Parcel 007.08

Cliff,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

Columbia Fire & Rescue

Fire Flow Requirements

Water Purveyor: Columbia Power & Water System

Date: 11/8/23
Name: Cliff Smith
Phone: 615-477-3186
Email: cliff.smith@cpsland.com
Address/Parcel ID: 090 007.08
Property Type: (•) Residential ( ) Commercial ( ) Industrial
Construction Type: 5A
Enclosed Area (ft^2): 55,183

FILLED OUT BY COLUMBIA FIRE AND RESCUE

NFPA Sprinkler Type: NFPA13R

Water System Demand without Sprinkler Credit

Fire flow Requirements (International Fire Code Appendix B)

Fire Flow: _____ gpm Duration: _____ hours

Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: _____

Average spacing between hydrants: _____ft.

Maximum distance from frontage to hydrant: _____ ft.

Water System Demand with Sprinkler Credit

Fire flow requirements (International Fire Code Appendix B)

Fire Flow: 1,563 gpm Duration: 2 hours

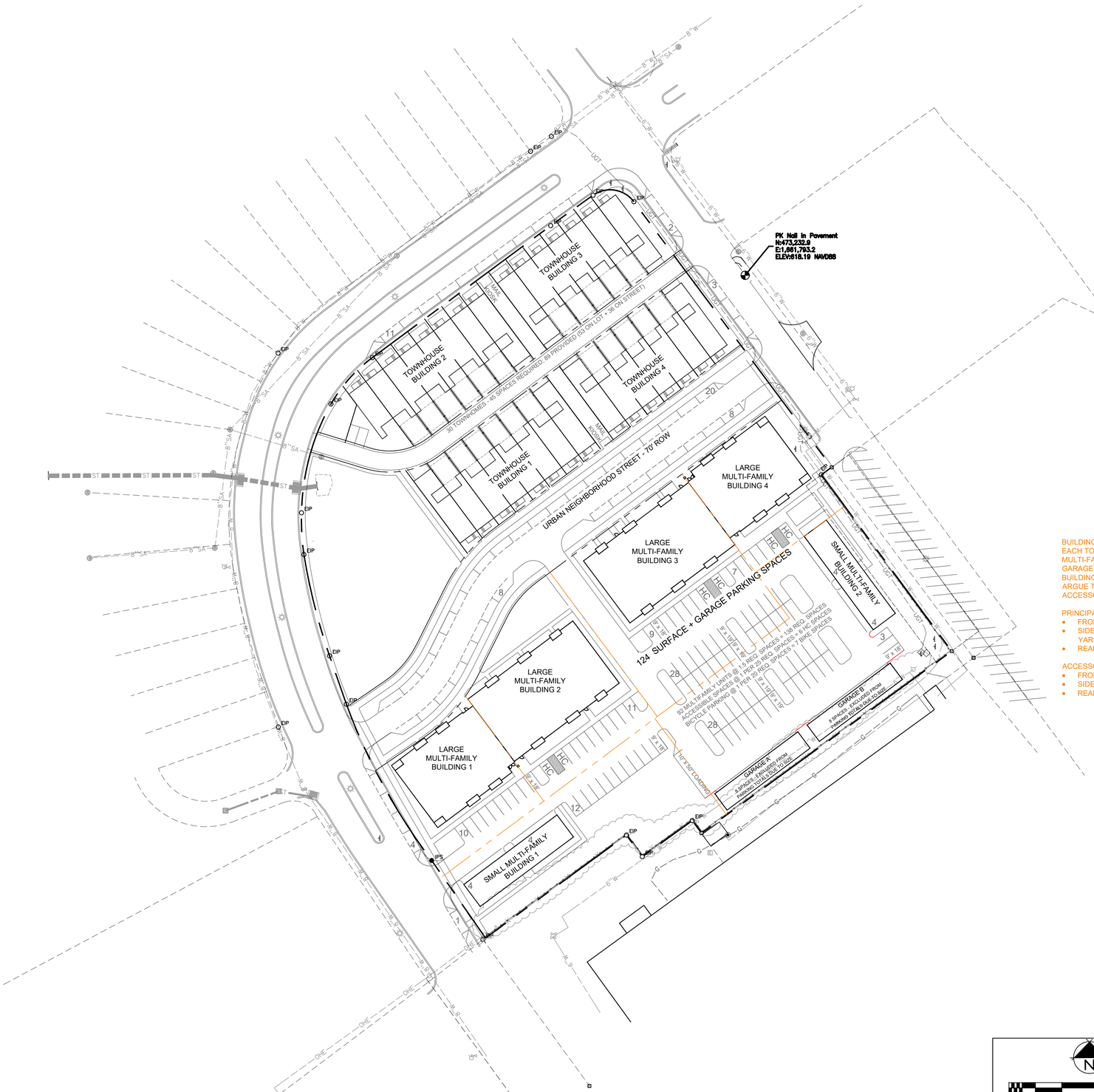
Fire Hydrant Location and Distribution (International Fire Code Appendix C)

Minimum number of hydrants: 1

Average spacing between hydrants: 500 ft.

Maximum distance from frontage to hydrant: 250 ft.

Fire Plan Reviewer: Brad Massey Date: 11-13-2023



BUILDING SITE BOUNDARY LINES FOR DISCUSSION:
EACH TOWNHOME WILL BE ON ITS OWN BUILDING SITE. EACH MULTI-FAMILY BUILDING WILL BE ON ITS OWN BUILDING SITE. AS DRAWN, GARAGE A AND B ARE ON THE BUILDING SITE WITH SMALL MULTI-FAMILY BUILDING 2. SINCE SMF2 DOESN'T HAVE A ROW FRONTAGE, I WOULD ARGUE THAT OUR NEW ROW WOULD BE IT'S FRONTAGE, THEREFORE THE ACCESSORY BUILDINGS WOULD CONFORM TO THE SITE SETBACKS.

PRINCIPAL BUILDINGS:
- FRONT SETBACK: 15' MAX (ZERO AT CORNERS)
- SIDE SETBACK: 15' MAX ON CORNER LOTS, 24' MAX ALL OTHER SIDE YARDS, (ZERO AT CORNER)
- REAR SETBACK: NOT REGULATED

ACCESSORY BUILDING (GARAGE):
- FRONT SETBACK: 40' FROM REAR PROPERTY LINE
- SIDE SETBACK: 3'
- REAR SETBACK: 3', 5' WHEN GARAGE DOOR FACES ALLEY

RIVER ROAD - CONCEPT PLAN - 11.8.2023

N

0 50 100 150
GRAPHIC SCALE 1"=50'-0"

Traffic Impact Study

River Road Columbia

November 2023

FOR SUBMITTAL TO:

City of Columbia, Tennessee

PREPARED FOR:

CPS Land

Kimley»Horn

Traffic Impact Study

River Road Columbia

FOR SUBMITTAL TO:

City of Columbia, Tennessee

PREPARED FOR:

CPS Land

PREPARED BY:

Kimley»Horn
4031 Aspen Grove Drive, Suite 200
Franklin, Tennessee 37067
615.564.2701

November 2023

Project Number 118119002



11/17/2023

Kimley»Horn

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1.1 Development Improvement Recommendations 3

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3.2 Vehicular Volumes 7

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Appendix B: Traffic Count Data
Appendix C: Volume Development
Appendix D: *Synchro* Reports
Appendix E: Turn Lane Evaluation
Appendix F: Sight Distance

1.0 EXECUTIVE SUMMARY

This traffic study evaluated the anticipated traffic impacts associated with the *River Road Columbia* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of approximately 30 single-family attached housing units and 96 multifamily units. The site is located in the southwest quadrant at the intersection of River Road and Taylor Bend in the City of Columbia, Tennessee.

This following scenarios were considered in this analysis:

- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions

The study network for this analysis includes the following intersections:

1. Taylor Bend at River Road
2. River Road at Theta Pike
3. Nashville Highway at Theta Pike
4. Nashville Highway at 7th Avenue
5. Nashville Highway at River Road

The results of the analyses show that all study intersections currently operate at an acceptable overall LOS during the AM and PM peak hours. Under the projected 2025 No-Build and Build conditions, all study intersections are projected to continue to operate at an acceptable overall LOS during the AM and PM peak hours.

1.1 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *River Road Columbia* development).

- Intersection 6 – River Road at Site Driveway A
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site.
- Intersection 7 – River Road at Site Driveway B
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 8 – River Road at Site Driveway C
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 9 – Taylor Bend at Site Driveway C
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 10 – Taylor Bend at Site Driveway B
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site

2.0 INTRODUCTION

This report presents the analysis of the anticipated traffic impacts associated with the *River Road Columbia* development, which is expected to be completed in 2025 (referred to herein as build-out year). As currently envisioned, the development will consist of approximately 30 single-family attached housing units and 96 multifamily units. The site is located in the southwest quadrant at the intersection of River Road and Taylor Bend in the City of Columbia, Tennessee.

This report will summarize the analyses of the following scenarios:

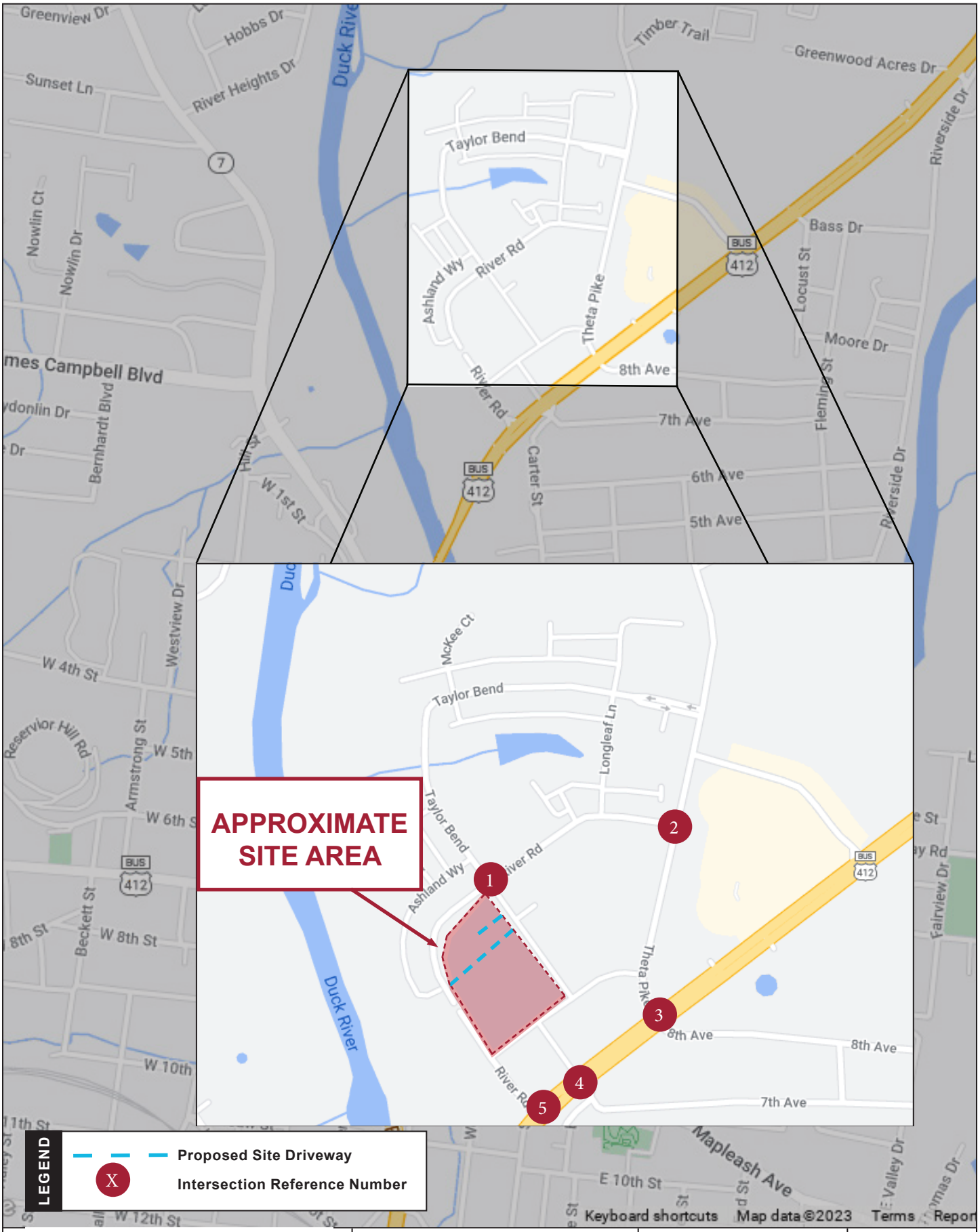
- Existing 2023 Conditions
- Projected 2025 No-Build Conditions
- Projected 2025 Build Conditions

The study network for this analysis includes the following intersections:

1. Taylor Bend at River Road
2. River Road at Theta Pike
3. Nashville Highway at Theta Pike
4. Nashville Highway at 7th Avenue
5. Nashville Highway at River Road

For the purposes of this traffic impact study, Nashville Highway, River Road (Intersections 1 and 2), Site Driveway A, Site Driveway B, and Site Driveway C are considered to have an east-west orientation. Taylor Bend, Theta Pike, 7th Avenue, 8th Avenue, River Road (Intersections 5, 6, 7, and 8), and Site Driveway C (Intersection 8) are considered to have a north-south orientation.

Figure 1 provides a location map of the project site. **Figure 2** provides an aerial image of the project site. A site plan is also included in **Appendix A**.



Kimley»Horn	River Road Columbia Traffic Impact Study	Site Location Map	Figure 1

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Kimley»Horn	River Road Columbia Traffic Impact Study	Site Aerial	Figure 2

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3.0 EXISTING CONDITIONS

3.1 VEHICULAR NETWORK

Characteristics for the roadways within the study are summarized in **Table 1**.

Table 1: Roadway Network

Roadway	Number of Lanes	Posted Speed Limit (MPH)	Functional Classification	2022 TDOT AADT
Nashville Highway	4	45	Principal Arterial	29,584
River Road	2	N/A	N/A	N/A
Taylor Bend	2	N/A	N/A	N/A
7th Avenue	2	N/A	N/A	N/A
Theta Pike	2	35	N/A	N/A

The existing road geometry is illustrated in **Figure 3.**

3.2 VEHICULAR VOLUMES

Vehicle peak hour turning movement counts (TMCs) were performed at each study intersection. The TMCs were collected during the AM period (7:00 AM – 9:00 AM) and the PM period (4:00 PM – 6:00 PM) on Tuesday, October 24, 2023. Peak hours for the study intersection are shown in **Table 2**.

Table 2: Intersection Peak Hours

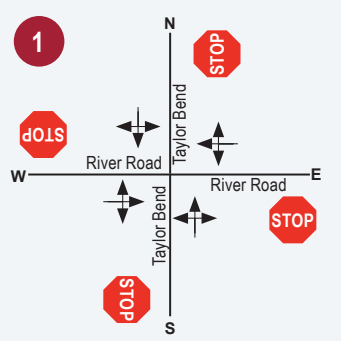
Intersection	AM Peak Hour	PM Peak Hour
1. Taylor Bend at River Road	7:15 AM – 8:15 AM	5:00 PM – 6:00 PM
2. River Road at Theta Pike	7:45 AM – 8:45 AM	4:45 PM – 5:45 PM
3. Nashville Highway at Theta Pike	7:15 AM – 8:15 AM	4:15 PM – 5:15 PM
4. Nashville Highway at 7th Avenue	7:15 AM – 8:15 AM	4:15 PM – 5:15 PM
5. Nashville Highway at River Road	7:15 AM – 8:15 AM	4:15 PM – 5:15 PM

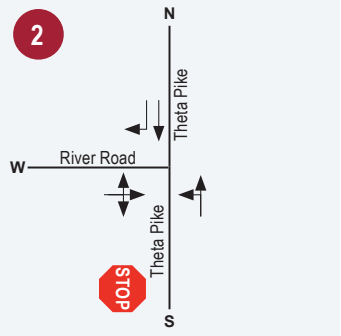
In addition to the TMCs, a 24-hour average daily traffic (ADT) count was also collected at the following location:

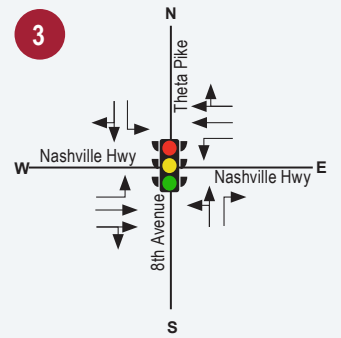
- Theta Pike south of River Road (3,348 daily vehicles – 1,758 NB, 1,590 SB)
  - Speed limit: 35 MPH; 85th percentile speed: 37 MPH
- Nashville Highway southwest of River Road (32,797 daily vehicles – 16,718 NB, 16,079 SB)
  - Speed limit: 45 MPH; 85th percentile speed: 46 MPH

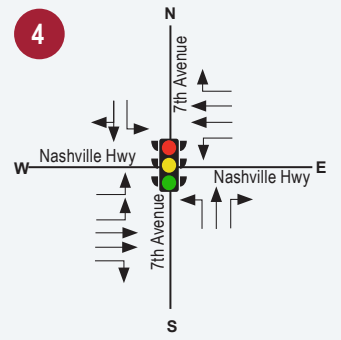
The Existing 2023 peak hour traffic volumes are shown in **Figure 4**. The complete traffic count data is provided in **Appendix B**.













LEGEND

- Existing Laneage
- Existing Traffic Signal
- Existing Stop Sign

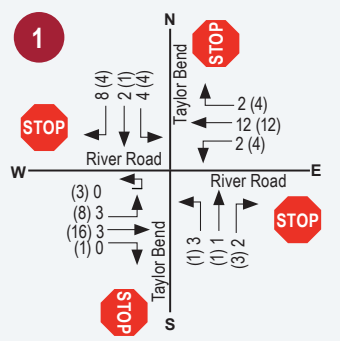
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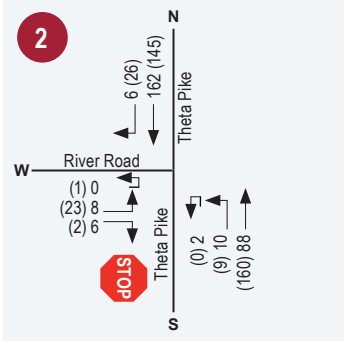
Kimley»Horn

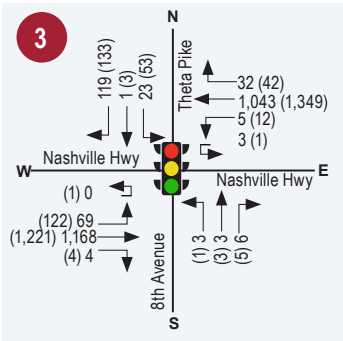
River Road Columbia Traffic Impact Study	Existing 2023 Geometry	Figure 3

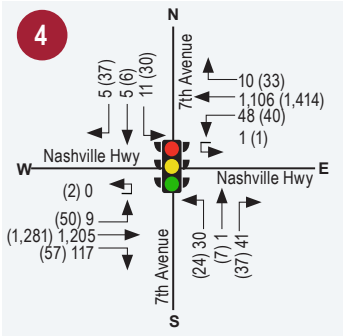
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LEGEND

→	Existing Laneage	XX	AM Peak Hour Traffic Volumes
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volumes
STOP	Existing Stop Sign		

N

Kimley»Horn

River Road Columbia Traffic Impact Study	2023 Existing Intersection Volumes	Figure 4

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4.0 NO-BUILD CONDITIONS

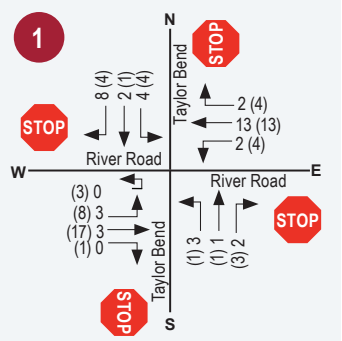
Background traffic is defined as expected traffic on the roadway in future year(s) absent the construction and opening of the proposed project. Background traffic can include a base growth rate based on historical count data as well as population growth data and estimates.

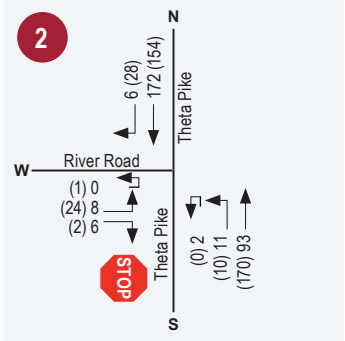
To account for background traffic, the Existing 2023 traffic volumes were increased by 3.0% per year to account for the expected background growth through year 2025.

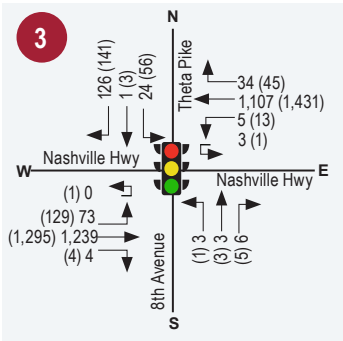
Figure 5 illustrates the Projected 2025 No-Build traffic volumes.

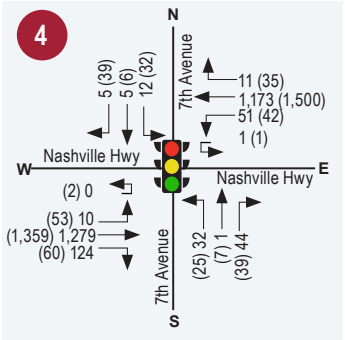
No lane configuration changes at any of the study intersections were identified in the scoping meeting to incorporate in the No-Build analysis.

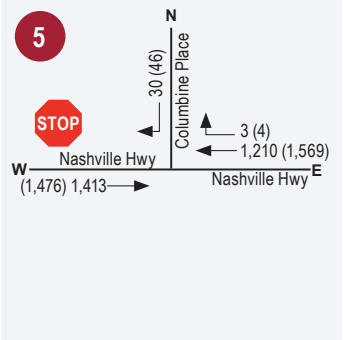












LEGEND

→	Existing Laneage	XX	AM Peak Hour Traffic Volumes
	Existing Traffic Signal	(XX)	PM Peak Hour Traffic Volumes
STOP	Existing Stop Sign		

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River Road Columbia Traffic Impact Study	2025 No-Build Traffic Volumes	Figure 5

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5.0 BUILD CONDITIONS

5.1 SITE ACCESS AND CIRCULATION

A brief description of the site access is as follows:

- Site Driveway A
    - Driveway A is a proposed full-movement driveway along Rover Road located approximately 740' north of Nashville Highway. The driveway is proposed to have one (1) ingress lane entering the site, one (1) egress lane exiting the site, and operate under stop control at both connection points. Driveway A is proposed to provide access to the multifamily apartment units.
- Site Driveway B
    - Driveway B is a proposed roadway connection through site with connection to River Road approximately 890' north of Nashville Highway and connection to Taylor Bend approximately 260' south of River Road. The driveway access points are proposed to be full-movement at both the River Road and Taylor Bend connections. Driveway B is proposed to have one (1) ingress lane entering the site, one (1) egress lane exiting the site, and operate under stop control at both connection points. Driveway B is proposed to provide access to the multifamily apartment units.
- Site Driveway C
    - Driveway B is a proposed roadway connection through site with connection to River Road approximately 420' west of Taylor Bend and connection to Taylor Bend approximately 135' south of River Road. The driveway access points are proposed to be full-movement at both the River Road and Taylor Bend connections. Driveway C is proposed to have one (1) ingress lane entering the site, one (1) egress lane exiting the site, and operate under stop control at both connection points. Driveway C is proposed to provide access to the attached single-family (townhome) units.

Refer to the site plan in **Appendix A** for a visual representation of vehicular access and circulation throughout the proposed development.

5.2 SIGHT DISTANCE

Intersection sight distance measurements and calculations were performed for all site access points using methodology provided in *A Policy on Geometric Design of Highways and Streets, 6th Edition (2011)*, published by the American Association of State Highways and Transportation Officials (AASHTO).

River Road and Taylor Bend currently do not have posted speed limit signs and were assumed to be 25 MPH. Also, due to the median and wider pavement width along River Road, the time gap for left-turns from driveways along River Road was adjusted to 8.5 seconds. The required and available sight distance at each access point is summarized in the table below. A sight distance exhibit as well as site photos can be found in **Appendix F.**

Table 3: Intersection Sight Distance

Intersection	Direction	SSD	ISD	Available
6. River Road at Driveway A	WBL (Looking Right)	200’	375’	1000’+
	WBR (Looking Left)	200’	290’	670’
7. River Road at Driveway B	WBL (Looking Right)	200’	375’	1000’+
	WBR (Looking Left)	200’	290’	800’
8. River Road at Driveway C	WBL (Looking Right)	200’	375’	1000’+
	WBR (Looking Left)	200’	290’	470’
9. Taylor Bend at Driveway C	EBL (Looking Right)	200’	335’	1000’+
	EBR (Looking Left)	200’	290’	1000’+
10. Taylor Bend at Driveway B	EBL (Looking Right)	200’	335’	1000’+
	EBR (Looking Left)	200’	290’	1000’+

5.3 TURN LANE EVALUATION

TDOT HSAM Vol 3 Geometric Design Criteria was used to evaluate if turn lanes should be implemented along the major road at the unsignalized site driveways. From the TDOT HSAM, the following methodologies were applied to perform these evaluations:

- Figure 3-17 (“Left-Turn Warrant Along Four-Lane Rural Roadways (Unsignalized)
- Figure 3-18 (“Right-Turn Lane Warrant Along Four-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control”)

The results of the turn lane warrants are summarized in **Table 4**. **Appendix E** provides the TDOT Turn Lane Warrant charts used for the analysis.

Table 4: Turn Lane Warrants				
Intersection	**Movement**	**Analysis Scenario**	**AM Peak Hour**	**PM Peak Hour**
2. River Road at Theta Pike	NBL	Build 2026	Not Warranted	Warranted

Per the TDOT HSAM, "The volume-based warrants indicate situations where turn lanes would help to mitigate traffic conflicts, not necessarily situations where a turn lane is required or must be constructed. Turn lanes can have an adverse safety and operational effect for pedestrians and bicyclists. All existing and future users of the roadway should be considered when determining turn lane needs."

A southbound left-turn lane is warranted at the intersection of River Road and Theta Pike (Intersection 2) during the PM peak hour but not during the AM peak hour. It should be noted that the threshold to warrant a left-turn lane for the geometric and volume conditions at this intersection is 160 vehicles per lane per hour for 29 vehicles turning left in the PM peak hour. The projected vehicles per lane per hour are estimated to be 162 during the PM peak hour.

5.4 TRIP GENERATION

Traffic for the proposed development was calculated using equations contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *11th Edition*, using equations where available.

Internal capture (or mixed-use) reductions represent the concept that trips generated by individual land uses within a site may remain internal to the site. Mixed-use vehicle trip reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Alternative modes of transportation include pedestrians, bicyclists, and transit users. Alternate mode reductions account for the notion that some site-generated trips will occur by a means other than automobile.

A pass-by trip occurs when a proposed development diverts traffic that is already traveling on a street adjacent to the site. Pass-by reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*.

Due to the location and proposed uses for the development, the trip generation for the site was performed with no reductions to gross trips.

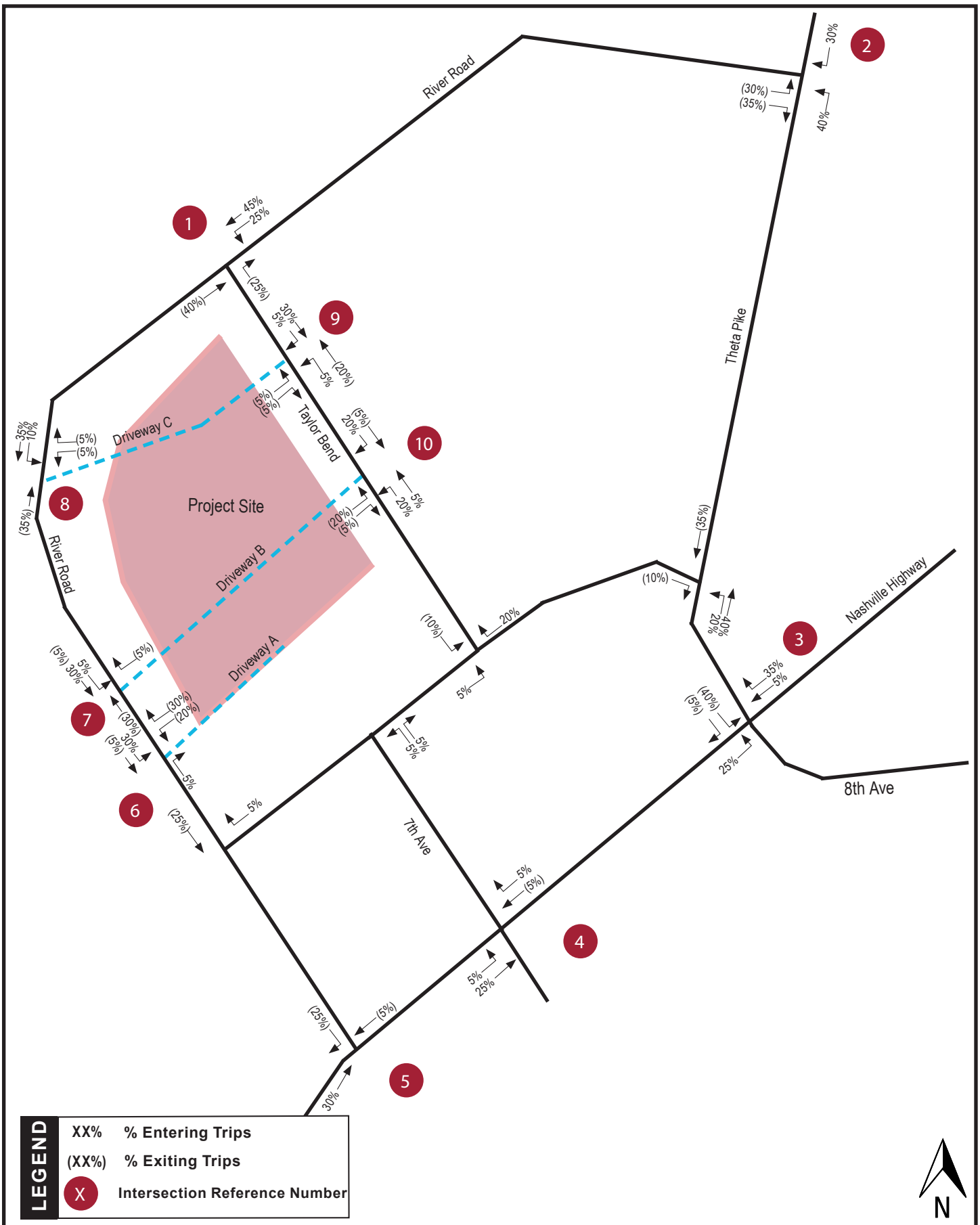
Table 5 summarizes the project trip generation. **Appendix C** provides a detailed trip generation worksheet for the proposed development.

Table 5: Trip Generation

ITE Code	Land Use	Density	Daily		AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit	Enter	Exit
215	Single-Family Attached Housing	30 units	89	89	3	7	8	6
220	Multifamily Housing (Low-Rise)	96 units	345	345	13	40	39	23
Gross Trips			**434**	**434**	**16**	**47**	**47**	**29**

5.5 TRIP DISTRIBUTION AND ASSIGNMENT

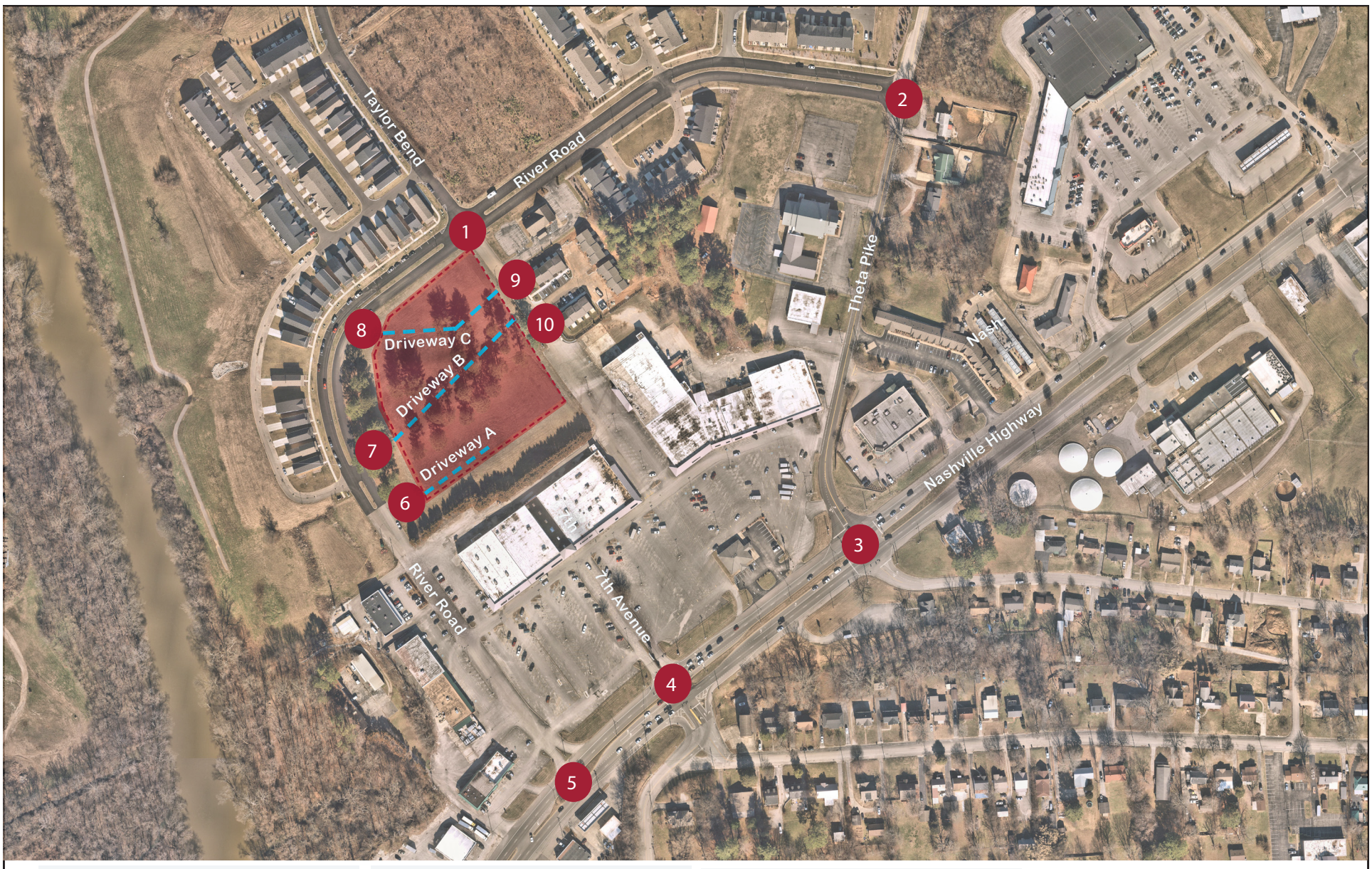
The directional distribution and assignment of new project trips was based on a review of land uses and population densities in the area and the existing peak hour turning movement counts. **Figure 6** provides the directional distribution and assignment of new project trips. **Figure 7** illustrates the assignment of project trips to the study network. The Projected 2025 Build peak hour volumes are shown in **Figure 8**. **Appendix C** provides intersection volume worksheets for all intersections and driveways within the study network.

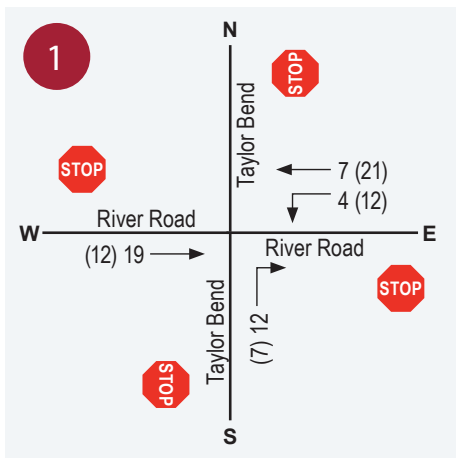


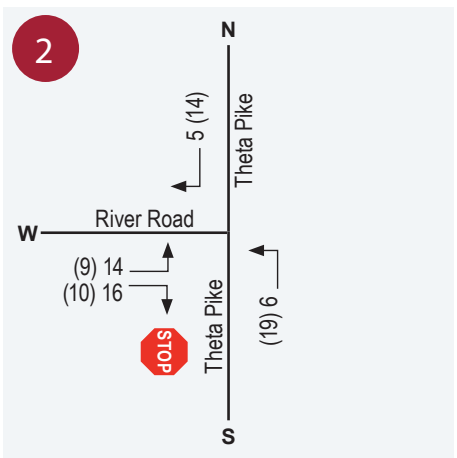
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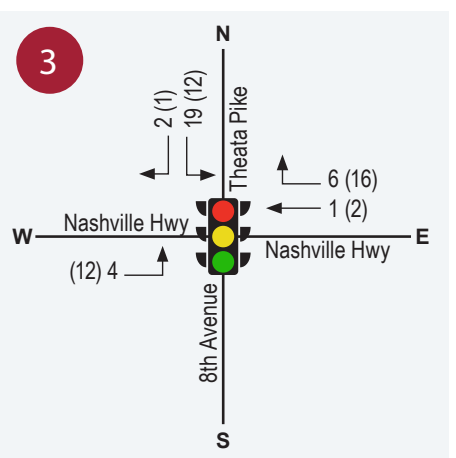
River Road Columbia Traffic Impact Study	Trip Distribution and Assignment	Figure 6

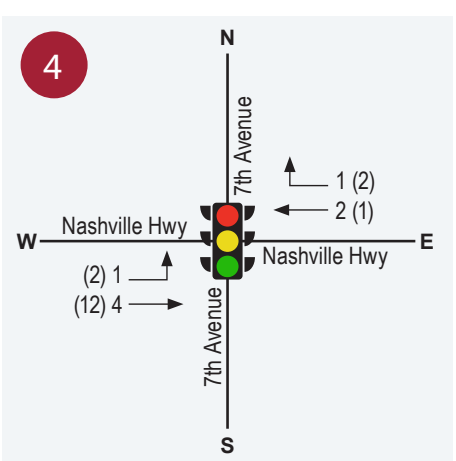
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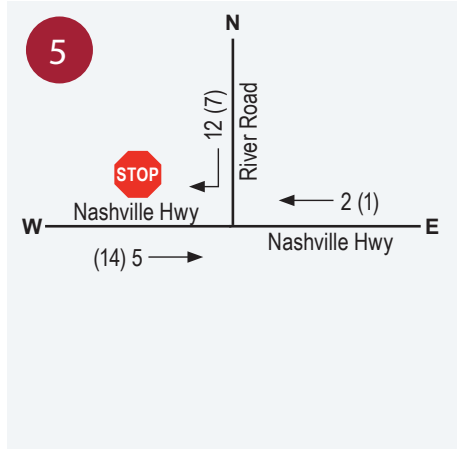


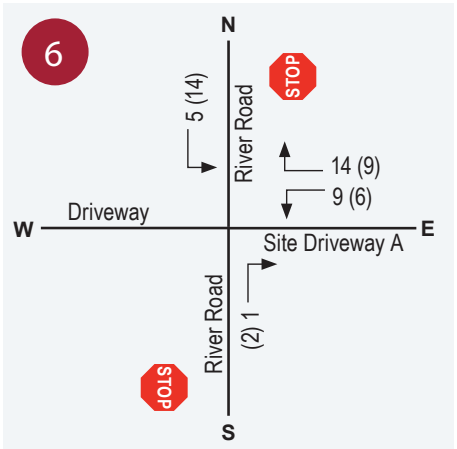


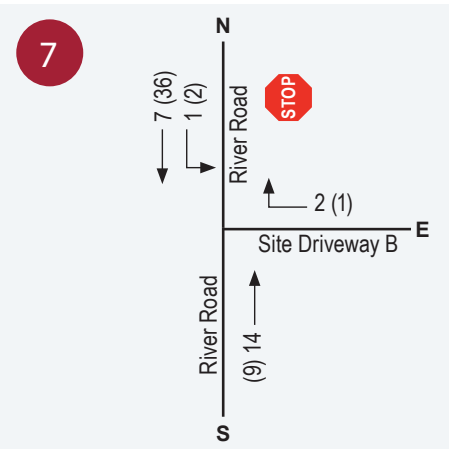


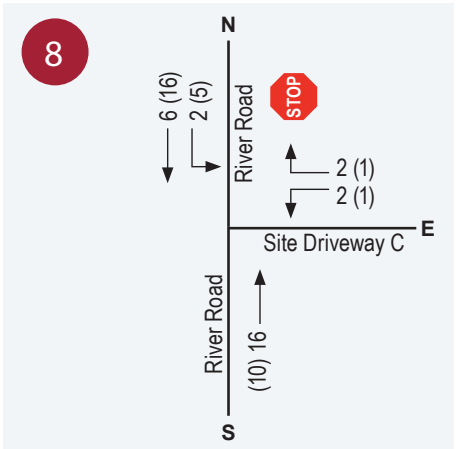


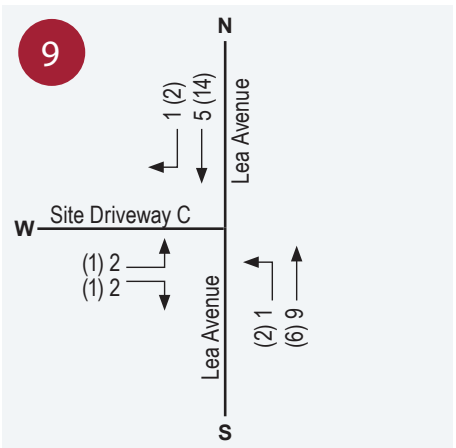


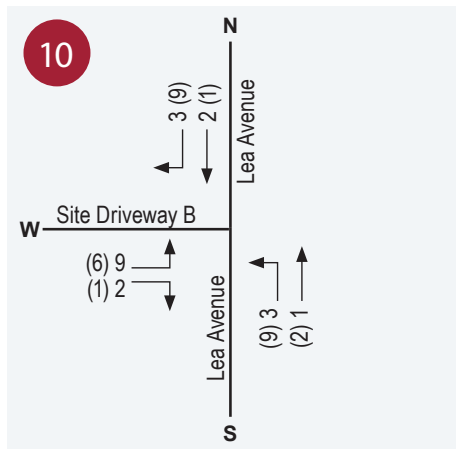


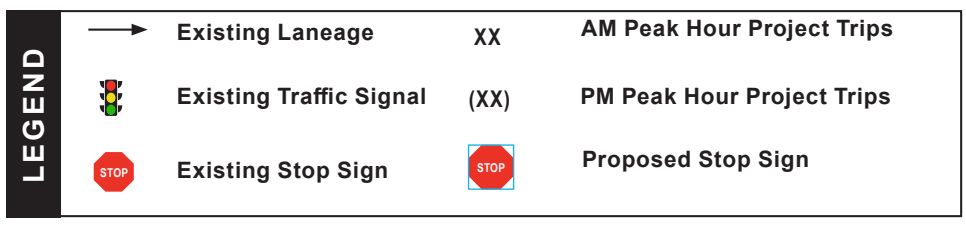








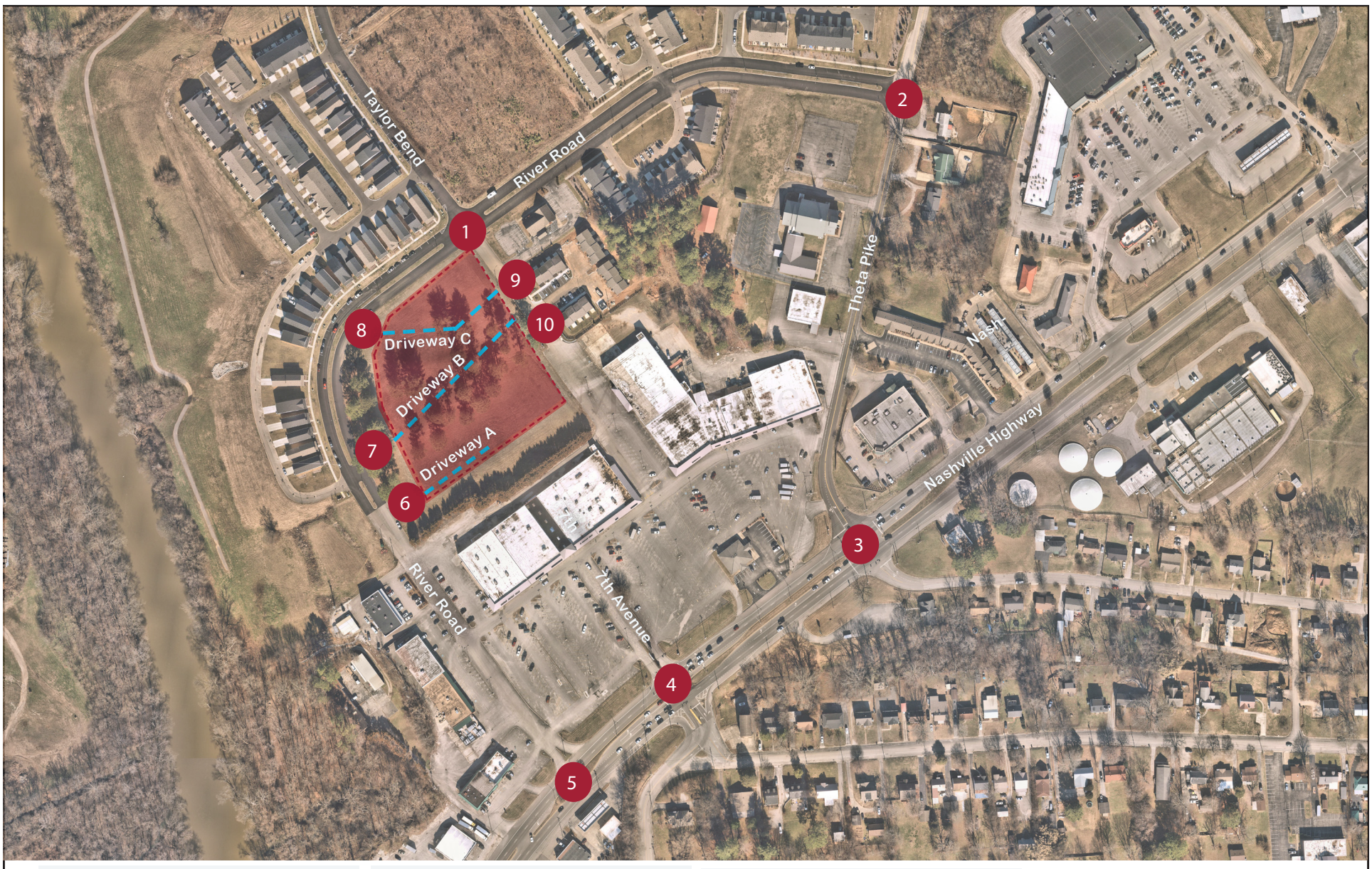


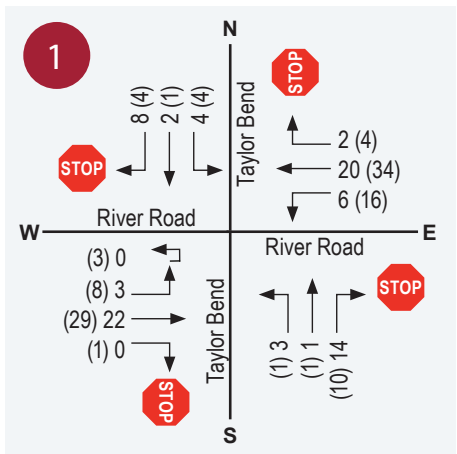


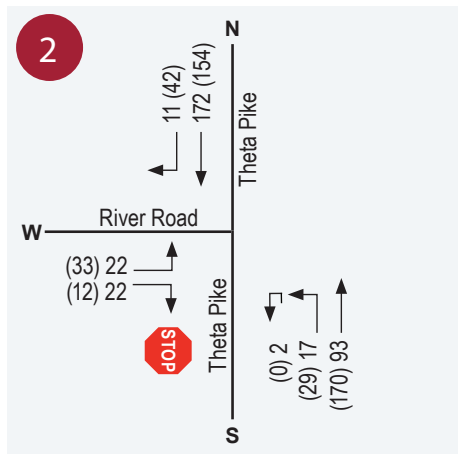
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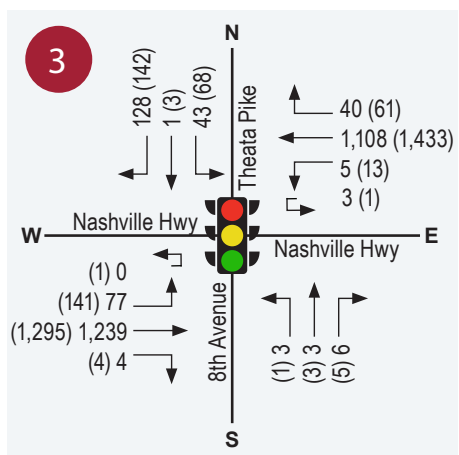
River Road Columbia Traffic Impact Study | **Project Trips** | **Figure 7**

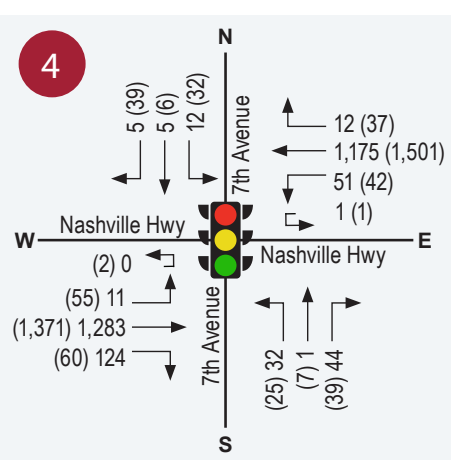
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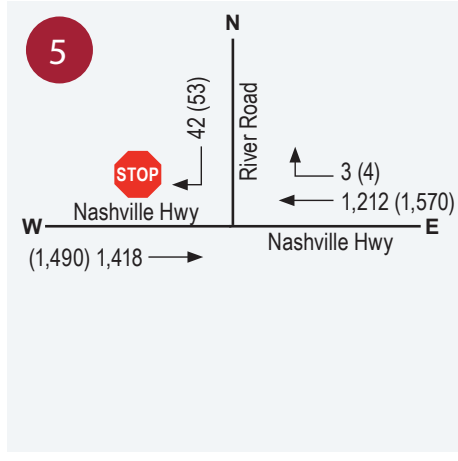


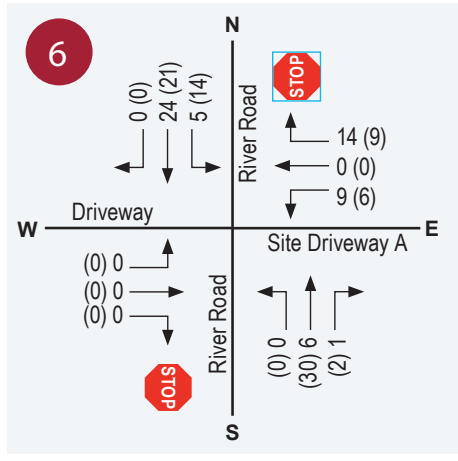


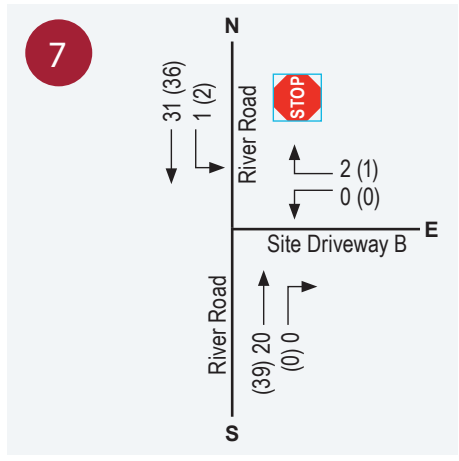


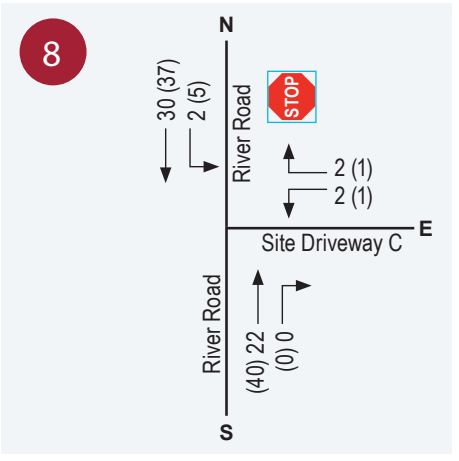


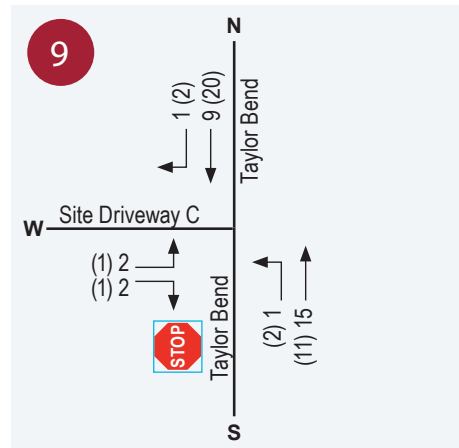


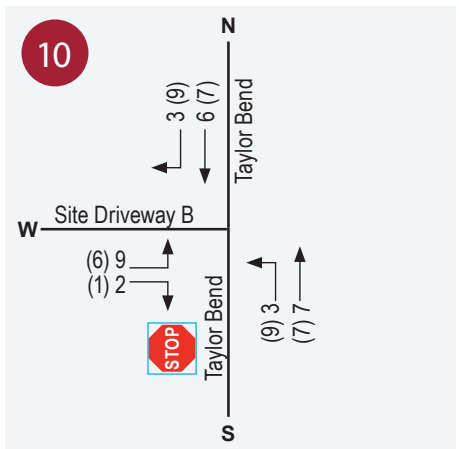












LEGEND

Existing Laneage	XX	AM Peak Hour Project Trips
Existing Traffic Signal	(XX)	PM Peak Hour Project Trips
Existing Stop Sign	STOP	Proposed Stop Sign

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River Road Columbia Traffic Impact Study	Build Intersection Geometry	Figure 8

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6.0 CAPACITY ANALYSES

Level-of-service (LOS) determinations were made for the weekday AM and PM peak hours for the study network intersections using *Synchro, Version 11.0. Synchro* software uses methodologies contained in the *Highway Capacity Manual, 6th Edition* to determine the operating characteristics of an intersection. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a specified period under prevailing roadway, traffic, and control conditions.

LOS is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions of a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F the worst.

Levels-of-service for unsignalized intersections, with stop control on the minor street only, are reported for the side-street approaches and major street left-turns. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway.

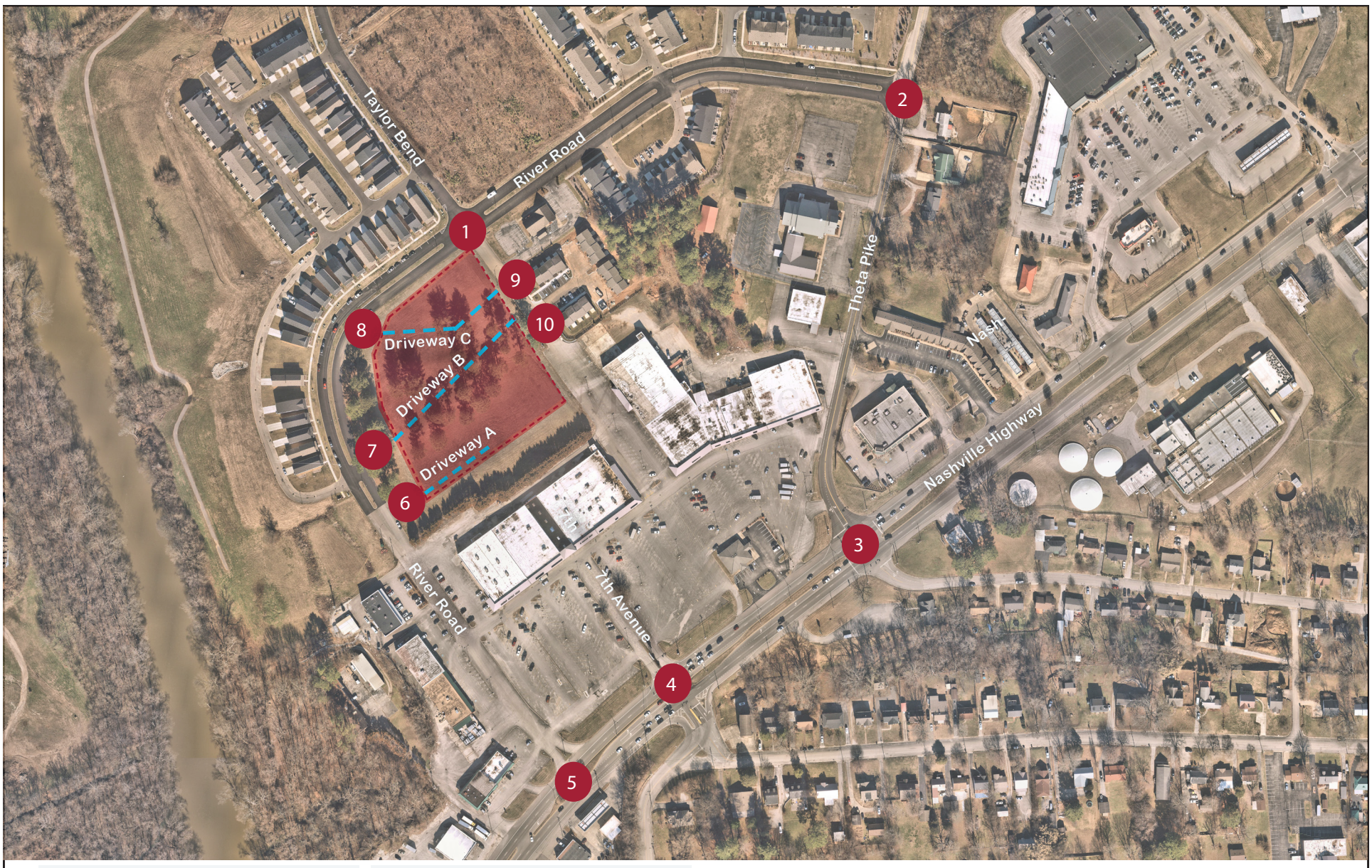
Levels-of-service for signalized and all-way stop controlled (AWSC) intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

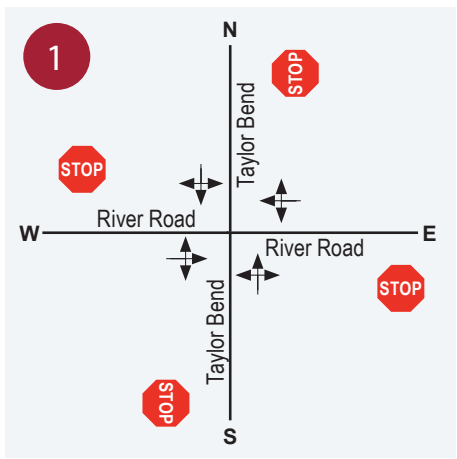
The results of the capacity analyses are summarized in **Table 13**. The *Synchro* analyses reports are included in **Appendix D**.

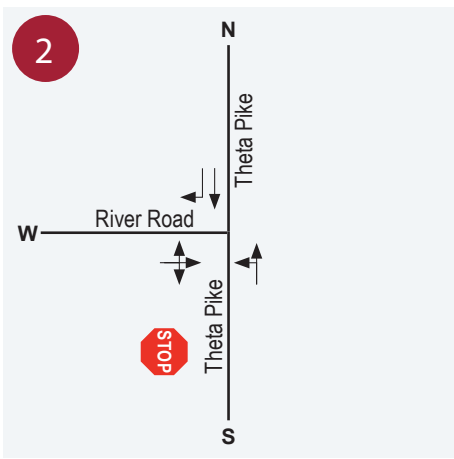
Although no improvements were identified in the capacity analyses, the recommended lane configuration for site driveways is shown visually in **Figure 9**.

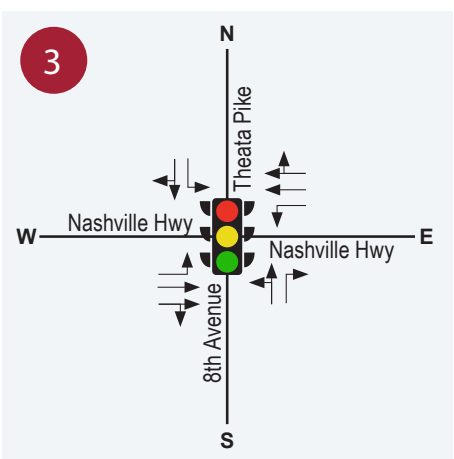
				Existing AM		Existing PM		No-Build AM		No-Build PM		Build AM		Build PM	
ID	**Intersection**	**Control**	**Movement**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
1	River Road at Taylor Bend	Unsignalized (AWSC)	NB	A	6.9			A	7	A	6.8	A	6.8	A	6.8
			SB	A	6.8			A	6.8	A	6.9	A	6.9	A	7.1
			EB	A	7.1			A	7.1	A	7.2	A	7.2	A	7.4
			WB	A	7			A	7.1	A	7	A	7.2	A	7.4
			Intersection	A	6.9	A	7.1	A	7	A	7.1	A	7.1	A	7.3
2	Theta Pike at River Road	Unsignalized (TWSC)	NBL	A	7.6	s	s	A	7.7	A	7.6	A	7.7	A	7.7
			EB	A	9.9	B	10.7	A	10	B	10.9	B	10.3	B	11.1
3	Nashville Hwy at 8th Ave	Signalized	NBL	s	s	s	s	s	s	s	s	s	s	s	s
			NBT	A	0	A	0	A	0	A	0	A	0	A	0
			NBR	D	43.2	D	40.8	D	42.7	D	40.1	D	41.3	D	39.4
			SBL	D	52.2	D	51.4	D	52.2	D	51.3	D	51.6	D	51
			SBT	A	0	A	0	A	0	A	0	A	0	A	0
			SBR	s	s	s	s	s	s	s	s	s	s	s	s
			EBL	A	5.1	A	9	A	5.7	B	10.9	A	6.4	B	12.5
			EBT	A	1.2	A	1.2	A	1.3	A	1.4	A	1.4	A	1.5
			EBR	s	s	s	s	s	s	s	s	s	s	s	s
			WBL	A	4.7	A	5.6	A	4.9	A	5.8	A	5.4	A	6.1
			WBT	A	8.6	B	12.1	A	9.3	B	13.4	B	10.2	B	14.4
			WBR	s	s	s	s	s	s	s	s	s	s	s	s
			NB	D	43.3	D	40.8	D	42.8	D	40.2	D	41.5	D	39.4
			SB	D	49.2	D	47.2	D	49	D	47.3	D	47.7	D	46.8
			EB	A		A	1.9	A	1.5	A	2.2	A	1.6	A	2.5
			WB	A	8.6	B	12	A	9.2	B	13.3	B	10.2	B	14.3
			Intersection	A	7.5	A	9.7	A	7.8	B	10.5	A	8.5	B	11.2
4	Nashville Hwy at 7th Ave	Signalized	NBL	D	52.3	D	52.5	D	52.2	D	52.4	D	52.2	D	52.4
			NBT	D	49.9	D	48.3	D	49.7	D	48	D	49.7	D	48
			NBR	D	54.3	D	50.1	D	54.3	D	49.8	D	54.3	D	49.8
			SBT	A	0	A	0	A	0	A	0	A	0	A	0
			SBR	s	s	s	s	s	s	s	s	s	s	s	s
			EBL	D	55	D	52.7	D	54.8	D	52.7	D	54.6	D	52.7
			EBT	A	5.8	A	6.2	A	6.3	A	6.7	A	6.3	A	6.7
			EBR	A	3.6	A	3.7	A	3.8	A	3.8	A	3.8	A	3.8
			WBL	E	58.6	E	57.6	E	57.9	E	57.7	E	57.8	E	57.5
			WBT	A	4.3	A	6.7	A	4.6	A	7.2	A	4.6	A	7.2
			WBR	A	2.6	A	3.7	A	2.6	A	3.8	A	2.7	A	3.9
			NB	D	53.4	D	50.7	D	53.4		50.5	D	53.4	D	50.5
			SB	D	51.6	D	54.8	D	51.3	D	54.4	D	51.3	D	54.4
			EB	A	5.9	A	7.8	A	6.4	A	8.3	A	6.4	A	8.4
			WB	A	6.5	A	8.1	A	6.8	A	8.5	A	6.8	A	8.5
			Intersection	A	7.9	A	10	A	8.2	B	10.5	A	8.3	B	10.5

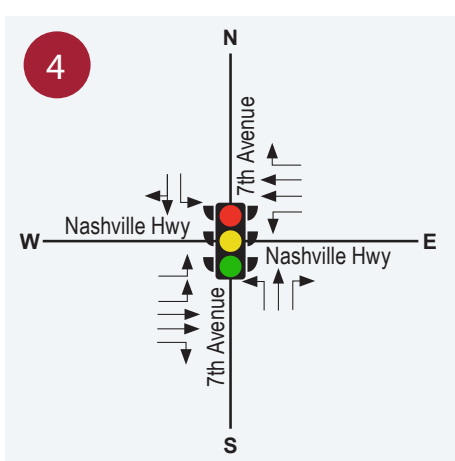
				Existing AM		Existing PM		No-Build AM		No-Build PM		Build AM		Build PM	
ID	**Intersection**	**Control**	**Movement**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
5	Nashville Hwy at River Road	Unsignalized (RIRO)	WBR	s	s	s	s	s	s	s	s	s	s	s	s
			SB	B	14	C	17.1	B	14.6	C	18.3	B	15	C	18.7
6	River Road at Driveway A	Unsignalized (TWSC)	SBL	A	0	s	s	A	0	A	0	A	7.2	A	7.3
			WB	A	0	A	0	A	0	A	0	A	8.6	A	8.8
7	River Road at Driveway B	Unsignalized (TWSC)	SBL									A	7.3	A	7.3
			WB									A	8.4	A	8.5
8	River Road at Driveway C	Unsignalized (TWSC)	SBL									A	7.3	A	7.3
			WB									A	8.7	A	8.8
9	Taylor Bend at Driveway C	Unsignalized (TWSC)	NBL									A	7.2	A	7.4
			EB									A	8.5	A	9
10	Taylor Bend at Driveway B	Unsignalized (TWSC)	NBL									A	7.2	A	7.4
			EB									A	8.7	A	9.4

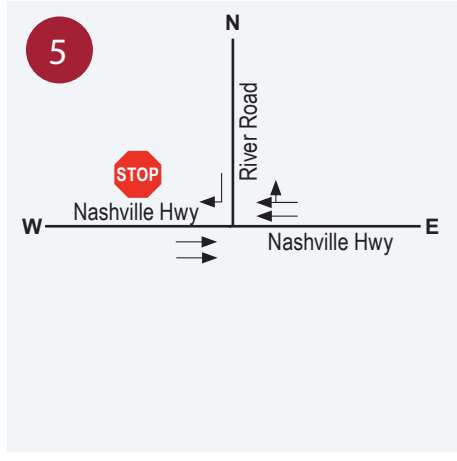


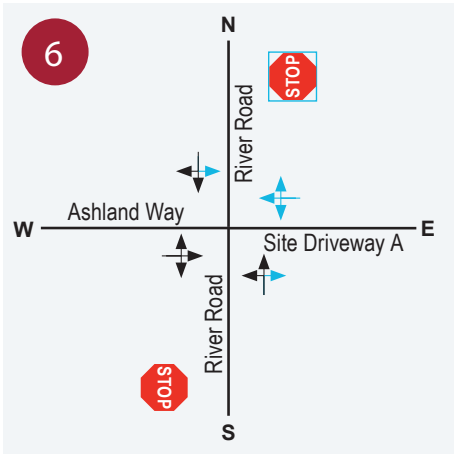


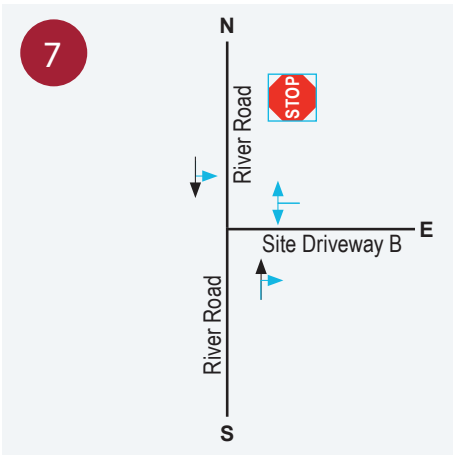


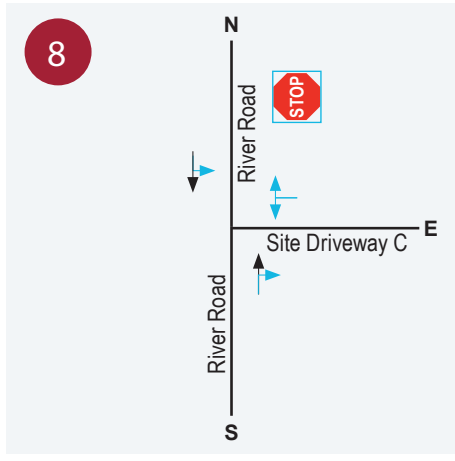


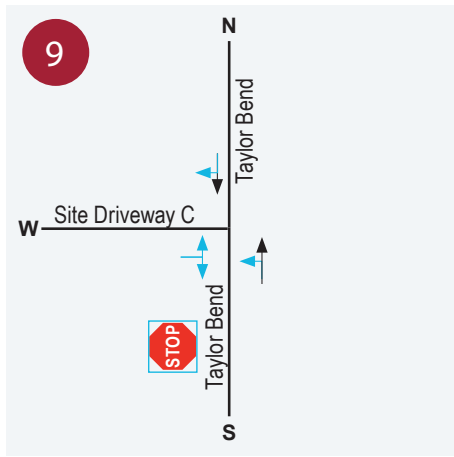


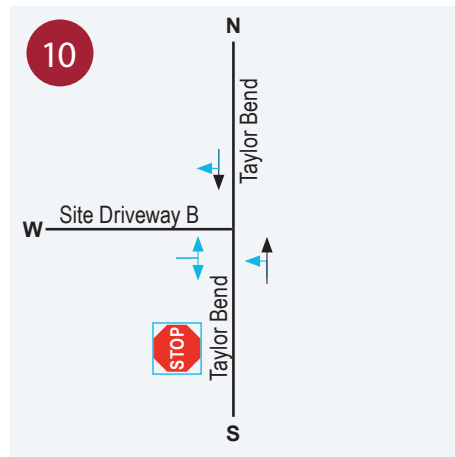


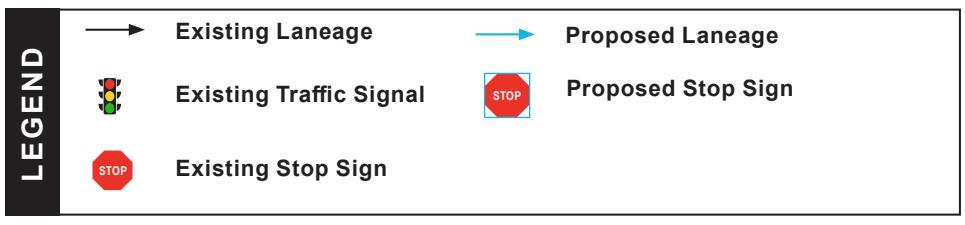












Kimley»Horn

River Road Columbia Traffic Impact Study	2025 Build Traffic Volumes	Figure 9

K:\FRA_LDEV\118119002 - River Road\5-Traffic\4-Report\Figures

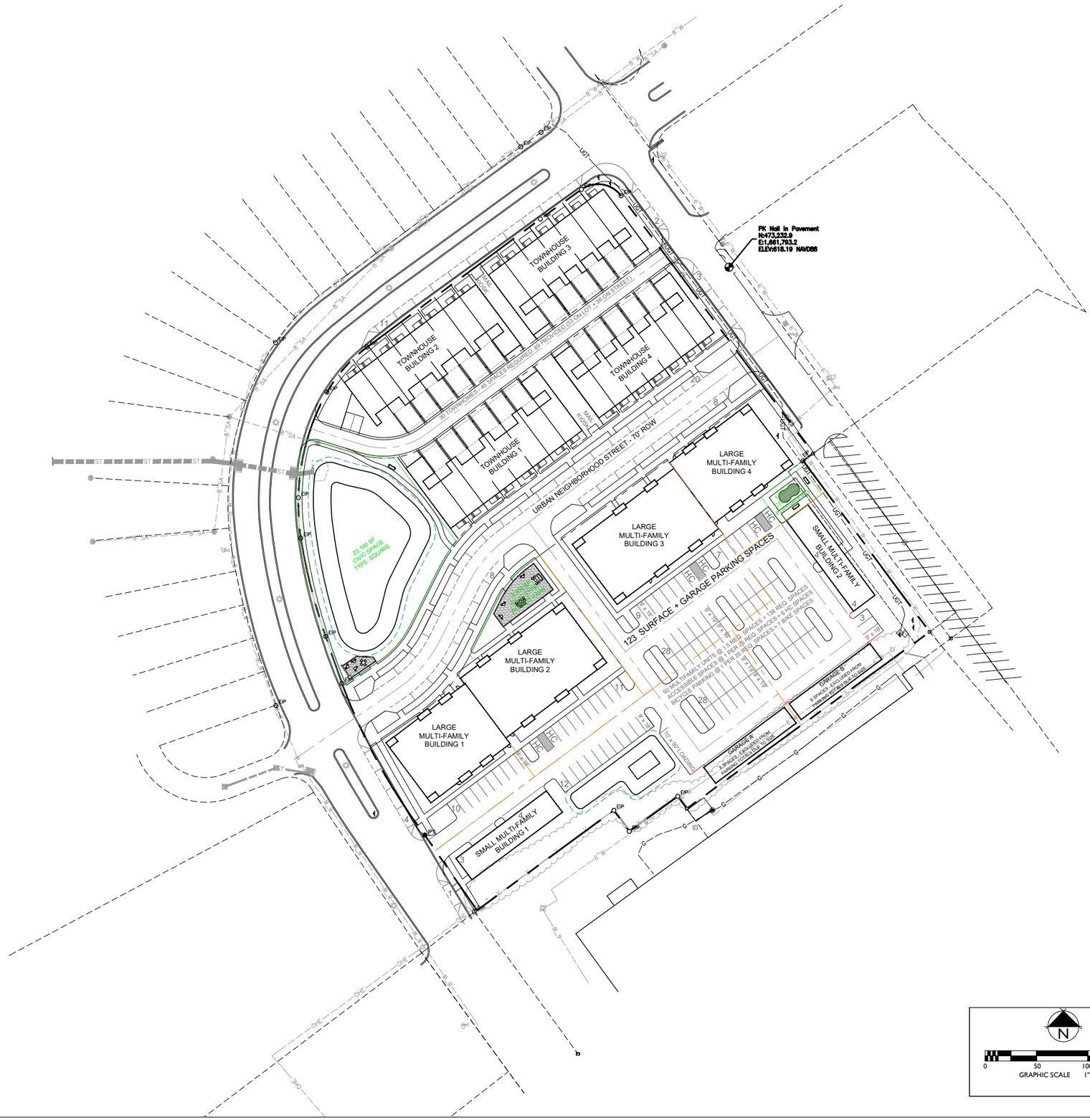
7.0 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The following development improvements are recommended to serve the Projected 2025 Build traffic conditions (Note: this would be the improvements needed to serve the traffic associated with the *River Road Columbia* development).

- Intersection 6 – River Road at Site Driveway A
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site.
- Intersection 7 – River Road at Site Driveway B
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 8 – River Road at Site Driveway C
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 9 – Taylor Bend at Site Driveway C
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site
- Intersection 10 – Taylor Bend at Site Driveway B
    - Construct one (1) ingress lane entering the site and one (1) egress lane exiting the site

APPENDIX A

Site Plan



RIVER ROAD - CONCEPT PLAN - 11.16.2023

APPENDIX B

Traffic Count Data

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	0700 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	3	0	0	-	0	3	2	0	4	-	0	6	0	0	0	-	0	0	0	2	1	-	0	3	12
0730 - 0745	0	0	1	-	0	1	2	1	0	-	0	3	0	2	0	-	0	2	0	7	1	-	0	8	14
0745 - 0800	0	1	1	-	0	2	0	1	2	-	0	3	1	0	0	-	0	1	0	1	0	-	0	1	7
0800 - 0815	0	0	0	-	0	0	0	0	2	-	0	2	2	1	0	-	0	3	2	2	0	-	0	4	9
Total	3	1	2	0	0	6	4	2	8	0	0	14	3	3	0	0	0	6	2	12	2	0	0	16	42
Approach %	50.00	16.67	33.33	0.00	0.00	-	28.57	14.29	57.14	0.00	0.00	-	50.00	50.00	0.00	0.00	0.00	-	12.50	75.00	12.50	0.00	0.00	-	
PHF	0.25	0.25	0.50	0.00	0.00	**0.50**	0.50	0.50	0.50	0.00	0.00	**0.58**	0.38	0.38	0.00	0.00	0.00	**0.50**	0.25	0.43	0.50	0.00	0.00	**0.50**	**0.75**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	3	0	0	-	0	3	2	0	4	-	0	6	0	0	0	-	0	0	0	2	0	-	0	2	11
0730 - 0745	0	0	1	-	0	1	2	1	0	-	0	3	0	2	0	-	0	2	0	7	1	-	0	8	14
0745 - 0800	0	1	1	-	0	2	0	1	2	-	0	3	1	0	0	-	0	1	0	1	0	-	0	1	7
0800 - 0815	0	0	0	-	0	0	0	0	2	-	0	2	2	1	0	-	0	3	2	2	0	-	0	4	9
Total	3	1	2	0	0	6	4	2	8	0	0	14	3	3	0	0	0	6	2	12	1	0	0	15	41
Approach %	50.00	16.67	33.33	0.00	0.00	-	28.57	14.29	57.14	0.00	0.00	-	50.00	50.00	0.00	0.00	0.00	-	13.33	80.00	6.67	0.00	0.00	-	
PHF	0.25	0.25	0.50	0.00	0.00	**0.50**	0.50	0.50	0.50	0.00	0.00	**0.58**	0.38	0.38	0.00	0.00	0.00	**0.50**	0.25	0.43	0.25	0.00	0.00	**0.47**	**0.73**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	1	-	0	1	1
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	0.00	**0.25**	**0.25**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Click here for Map

Columbia, TN

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	1600 - 1800
Peak Hour	1700 - 1800

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1700 - 1715	0	0	1	-	0	1	2	1	1	-	0	4	3	4	0	-	0	7	1	3	0	-	0	4	16
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	1	5	1	-	0	7	2	3	0	-	0	5	12
1730 - 1745	0	0	2	-	0	2	0	0	1	-	0	1	2	4	0	-	2	8	1	0	2	-	0	3	14
1745 - 1800	1	1	0	-	0	2	2	0	2	-	0	4	2	3	0	-	1	6	0	6	2	-	0	8	20
Total	1	1	3	0	0	5	4	1	4	0	0	9	8	16	1	0	3	28	4	12	4	0	0	20	62
Approach %	20.00	20.00	60.00	0.00	0.00	-	44.44	11.11	44.44	0.00	0.00	-	28.57	57.14	3.57	0.00	10.71	-	20.00	60.00	20.00	0.00	0.00	-	
PHF	0.25	0.25	0.38	0.00	0.00	**0.63**	0.50	0.25	0.50	0.00	0.00	**0.56**	0.67	0.80	0.25	0.00	0.38	**0.88**	0.50	0.50	0.50	0.00	0.00	**0.63**	**0.78**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1745 - 1800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1700 - 1715	0	0	1	-	0	1	2	1	1	-	0	4	3	4	0	-	0	7	1	3	0	-	0	4	16
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	1	5	1	-	0	7	2	3	0	-	0	5	12
1730 - 1745	0	0	2	-	0	2	0	0	1	-	0	1	2	4	0	-	2	8	1	0	2	-	0	3	14
1745 - 1800	1	1	0	-	0	2	2	0	2	-	0	4	2	3	0	-	1	6	0	6	2	-	0	8	20
Total	1	1	3	0	0	5	4	1	4	0	0	9	8	16	1	0	3	28	4	12	4	0	0	20	62
Approach %	20.00	20.00	60.00	0.00	0.00	-	44.44	11.11	44.44	0.00	0.00	-	28.57	57.14	3.57	0.00	10.71	-	20.00	60.00	20.00	0.00	0.00	-	
PHF	0.25	0.25	0.38	0.00	0.00	**0.63**	0.50	0.25	0.50	0.00	0.00	**0.56**	0.67	0.80	0.25	0.00	0.38	**0.88**	0.50	0.50	0.50	0.00	0.00	**0.63**	**0.78**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1745 - 1800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Taylor Bend						River Rd (West)						River Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1745 - 1800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, October 24, 2023	
Period	0700 - 0900
Peak Hour	0745 - 0845

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
0745 - 0800	0	18	-	-	0	18	-	49	0	-	0	49	1	-	1	-	0	2	-	-	-	-	-	0	69
0800 - 0815	3	30	-	-	0	33	-	43	3	-	0	46	0	-	0	-	0	0	-	-	-	-	-	0	79
0815 - 0830	0	14	-	-	0	14	-	43	0	-	0	43	4	-	0	-	0	4	-	-	-	-	-	0	61
0830 - 0845	7	26	-	-	2	35	-	27	3	-	0	30	3	-	5	-	0	8	-	-	-	-	-	0	73
Total	10	88	0	0	2	100	0	162	6	0	0	168	8	0	6	0	0	14	0	0	0	0	0	0	282
Approach %	10.00	88.00	0.00	0.00	2.00	-	0.00	96.43	3.57	0.00	0.00	-	57.14	0.00	42.86	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.36	0.73	0.00	0.00	0.25	**0.71**	0.00	0.83	0.50	0.00	0.00	**0.86**	0.50	0.00	0.30	0.00	0.00	**0.44**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.89**

Bikes

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
0745 - 0800	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
0800 - 0815	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
0815 - 0830	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
0830 - 0845	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
0745 - 0800	0	18	-	-	0	18	-	49	0	-	0	49	1	-	1	-	0	2	-	-	-	-	-	0	69
0800 - 0815	3	28	-	-	0	31	-	43	3	-	0	46	0	-	0	-	0	0	-	-	-	-	-	0	77
0815 - 0830	0	14	-	-	0	14	-	40	0	-	0	40	4	-	0	-	0	4	-	-	-	-	-	0	58
0830 - 0845	7	25	-	-	2	34	-	27	3	-	0	30	3	-	5	-	0	8	-	-	-	-	-	0	72
Total	10	85	0	0	2	97	0	159	6	0	0	165	8	0	6	0	0	14	0	0	0	0	0	0	276
Approach %	10.31	87.63	0.00	0.00	2.06	-	0.00	96.36	3.64	0.00	0.00	-	57.14	0.00	42.86	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.36	0.76	0.00	0.00	0.25	**0.71**	0.00	0.81	0.50	0.00	0.00	**0.84**	0.50	0.00	0.30	0.00	0.00	**0.44**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.90**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
0745 - 0800	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
0800 - 0815	0	1	-	-	0	1	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	1
0815 - 0830	0	0	-	-	0	0	-	1	0	-	0	1	0	-	0	-	0	0	-	-	-	-	-	0	1
0830 - 0845	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
Total	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
0745 - 0800	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
0800 - 0815	0	1	-	-	0	1	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	1
0815 - 0830	0	0	-	-	0	0	-	2	0	-	0	2	0	-	0	-	0	0	-	-	-	-	-	0	2
0830 - 0845	0	1	-	-	0	1	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	1
Total	0	2	0	0	0	2	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Peak Hour Turning Movement Count

Click here for Map

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, October 24, 2023	
Period	1600 - 1800
Peak Hour	1645 - 1745

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

All vehicles

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
1645 - 1700	0	40	-	-	0	40	-	44	6	-	0	50	6	-	0	-	0	6	-	-	-	-	-	0	96
1700 - 1715	2	40	-	-	0	42	-	37	6	-	0	43	4	-	1	-	0	5	-	-	-	-	-	0	90
1715 - 1730	4	45	-	-	0	49	-	32	8	-	0	40	3	-	0	-	1	4	-	-	-	-	-	0	93
1730 - 1745	3	35	-	-	0	38	-	32	6	-	0	38	10	-	1	-	0	11	-	-	-	-	-	0	87
Total	9	160	0	0	0	169	0	145	26	0	0	171	23	0	2	0	1	26	0	0	0	0	0	0	366
Approach %	5.33	94.67	0.00	0.00	0.00	-	0.00	84.80	15.20	0.00	0.00	-	88.46	0.00	7.69	0.00	3.85	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.56	0.89	0.00	0.00	0.00	**0.86**	0.00	0.82	0.81	0.00	0.00	**0.86**	0.58	0.00	0.50	0.00	0.25	**0.59**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.95**

Bikes

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
1645 - 1700	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1700 - 1715	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1715 - 1730	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1730 - 1745	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
1645 - 1700	0	39	-	-	0	39	-	42	6	-	0	48	6	-	0	-	0	6	-	-	-	-	-	0	93
1700 - 1715	2	40	-	-	0	42	-	37	6	-	0	43	4	-	1	-	0	5	-	-	-	-	-	0	90
1715 - 1730	4	45	-	-	0	49	-	32	8	-	0	40	3	-	0	-	1	4	-	-	-	-	-	0	93
1730 - 1745	3	35	-	-	0	38	-	31	6	-	0	37	10	-	1	-	0	11	-	-	-	-	-	0	86
Total	9	159	0	0	0	168	0	142	26	0	0	168	23	0	2	0	1	26	0	0	0	0	0	0	362
Approach %	5.36	94.64	0.00	0.00	0.00	-	0.00	84.52	15.48	0.00	0.00	-	88.46	0.00	7.69	0.00	3.85	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.56	0.88	0.00	0.00	0.00	**0.86**	0.00	0.85	0.81	0.00	0.00	**0.88**	0.58	0.00	0.50	0.00	0.25	**0.59**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.97**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
1645 - 1700	0	1	-	-	0	1	-	1	0	-	0	1	0	-	0	-	0	0	-	-	-	-	-	0	2
1700 - 1715	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1715 - 1730	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1730 - 1745	0	0	-	-	0	0	-	1	0	-	0	1	0	-	0	-	0	0	-	-	-	-	-	0	1
Total	0	1	0	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.38**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound												
	Theta Pike (South)						Theta Pike (North)						River Rd												
Time	Left 2.1	Thru 2.2			U-Turn 2.3	App Total		Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7		Right 2.8		U-Turn 2.9	App Total						App Total	Int Total
1645 - 1700	0	0	-	-	0	0	-	1	0	-	0	1	0	-	0	-	0	0	-	-	-	-	-	0	1
1700 - 1715	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1715 - 1730	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
1730 - 1745	0	0	-	-	0	0	-	0	0	-	0	0	0	-	0	-	0	0	-	-	-	-	-	0	0
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.25**

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	0700 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0715 - 0730	1	0	2	-	0	3	7	0	29	-	0	36	12	258	1	-	0	271	1	238	5	-	1	245	555
0730 - 0745	1	1	1	-	0	3	5	0	30	-	0	35	15	296	1	-	0	312	2	281	7	-	0	290	640
0745 - 0800	1	0	1	-	0	2	7	1	33	-	0	41	14	322	1	-	0	337	2	274	7	-	0	283	663
0800 - 0815	0	2	2	-	0	4	4	0	27	-	0	31	28	292	1	-	0	321	0	250	13	-	2	265	621
Total	3	3	6	0	0	12	23	1	119	0	0	143	69	1168	4	0	0	1241	5	1043	32	0	3	1083	2479
Approach %	25.00	25.00	50.00	0.00	0.00	-	16.08	0.70	83.22	0.00	0.00	-	5.56	94.12	0.32	0.00	0.00	-	0.46	96.31	2.95	0.00	0.28	-	
PHF	0.75	0.38	0.75	0.00	0.00	**0.75**	0.82	0.25	0.90	0.00	0.00	**0.87**	0.62	0.91	1.00	0.00	0.00	**0.92**	0.63	0.93	0.62	0.00	0.38	**0.93**	**0.93**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0715 - 0730	1	0	2	-	0	3	7	0	28	-	0	35	12	249	1	-	0	262	1	228	3	-	1	233	533
0730 - 0745	1	1	1	-	0	3	5	0	30	-	0	35	14	284	1	-	0	299	2	274	6	-	0	282	619
0745 - 0800	1	0	1	-	0	2	7	1	33	-	0	41	14	307	1	-	0	322	2	266	7	-	0	275	640
0800 - 0815	0	2	2	-	0	4	4	0	27	-	0	31	27	272	1	-	0	300	0	240	13	-	2	255	590
Total	3	3	6	0	0	12	23	1	118	0	0	142	67	1112	4	0	0	1183	5	1008	29	0	3	1045	2382
Approach %	25.00	25.00	50.00	0.00	0.00	-	16.20	0.70	83.10	0.00	0.00	-	5.66	94.00	0.34	0.00	0.00	-	0.48	96.46	2.78	0.00	0.29	-	
PHF	0.75	0.38	0.75	0.00	0.00	**0.75**	0.82	0.25	0.89	0.00	0.00	**0.87**	0.62	0.91	1.00	0.00	0.00	**0.92**	0.63	0.92	0.56	0.00	0.38	**0.93**	**0.93**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	1	-	0	1	0	9	0	-	0	9	0	7	2	-	0	9	19
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	8	0	-	0	8	0	5	0	-	0	5	13
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	8	0	-	0	8	0	4	0	-	0	4	12
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	13	0	-	0	13	0	8	0	-	0	8	21
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	38	0	0	0	38	0	24	2	0	0	26	65
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	92.31	7.69	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	0.00	**0.25**	0.00	0.73	0.00	0.00	0.00	**0.73**	0.00	0.75	0.25	0.00	0.00	**0.72**	**0.77**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	3
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	1	4	0	-	0	5	0	2	1	-	0	3	8
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	7	0	-	0	7	0	4	0	-	0	4	11
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	1	7	0	-	0	8	0	2	0	-	0	2	10
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	18	0	0	0	20	0	11	1	0	0	12	32
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	10.00	90.00	0.00	0.00	0.00	-	0.00	91.67	8.33	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.50	0.64	0.00	0.00	0.00	**0.63**	0.00	0.69	0.25	0.00	0.00	**0.75**	**0.73**

Peak Hour Turning Movement Count

Columbia, TN

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Marr Traffic DATA COLLECTION

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Tuesday, October 24, 2023	
Period	1600 - 1800
Peak Hour	1615 - 1715

* the Peak Hour Diagram does not include Bikes



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1615 - 1630	0	0	2	-	0	2	13	0	40	-	0	53	37	289	0	-	0	326	4	333	9	-	0	346	727
1630 - 1645	1	1	0	-	0	2	11	1	24	-	0	36	28	337	3	-	0	368	4	336	12	-	0	352	758
1645 - 1700	0	2	2	-	0	4	16	0	33	-	0	49	29	279	1	-	0	309	2	343	9	-	1	355	717
1700 - 1715	0	0	1	-	0	1	13	2	36	-	0	51	28	316	0	-	1	345	2	337	12	-	0	351	748
Total	1	3	5	0	0	9	53	3	133	0	0	189	122	1221	4	0	1	1348	12	1349	42	0	1	1404	2950
Approach %	11.11	33.33	55.56	0.00	0.00	-	28.04	1.59	70.37	0.00	0.00	-	9.05	90.58	0.30	0.00	0.07	-	0.85	96.08	2.99	0.00	0.07	-	
PHF	0.25	0.38	0.63	0.00	0.00	**0.56**	0.83	0.38	0.83	0.00	0.00	**0.89**	0.82	0.91	0.33	0.00	0.25	**0.92**	0.75	0.98	0.88	0.00	0.25	**0.99**	**0.97**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1615 - 1630	0	0	2	-	0	2	13	0	39	-	0	52	37	284	0	-	0	321	4	327	8	-	0	339	714
1630 - 1645	1	1	0	-	0	2	11	1	22	-	0	34	28	329	2	-	0	359	4	330	12	-	0	346	741
1645 - 1700	0	2	2	-	0	4	16	0	32	-	0	48	28	274	1	-	0	303	2	336	9	-	1	348	703
1700 - 1715	0	0	1	-	0	1	13	2	36	-	0	51	28	315	0	-	1	344	2	331	12	-	0	345	741
Total	1	3	5	0	0	9	53	3	129	0	0	185	121	1202	3	0	1	1327	12	1324	41	0	1	1378	2899
Approach %	11.11	33.33	55.56	0.00	0.00	-	28.65	1.62	69.73	0.00	0.00	-	9.12	90.58	0.23	0.00	0.08	-	0.87	96.08	2.98	0.00	0.07	-	
PHF	0.25	0.38	0.63	0.00	0.00	**0.56**	0.83	0.38	0.83	0.00	0.00	**0.89**	0.82	0.91	0.38	0.00	0.25	**0.92**	0.75	0.99	0.85	0.00	0.25	**0.99**	**0.98**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	0	1	-	0	1	0	4	0	-	0	4	0	4	1	-	0	5	10
1630 - 1645	0	0	0	-	0	0	0	0	1	-	0	1	0	6	1	-	0	7	0	4	0	-	0	4	12
1645 - 1700	0	0	0	-	0	0	0	0	1	-	0	1	1	4	0	-	0	5	0	5	0	-	0	5	11
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	3
Total	0	0	0	0	0	0	0	0	3	0	0	3	1	14	1	0	0	16	0	16	1	0	0	17	36
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	6.25	87.50	6.25	0.00	0.00	-	0.00	94.12	5.88	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.75	0.00	0.00	**0.75**	0.25	0.58	0.25	0.00	0.00	**0.57**	0.00	0.80	0.25	0.00	0.00	**0.85**	**0.75**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	8th Ave						Theta Pike						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	2	0	-	0	2	3
1630 - 1645	0	0	0	-	0	0	0	0	1	-	0	1	0	2	0	-	0	2	0	2	0	-	0	2	5
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	2	0	-	0	2	3
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	0	5	0	9	0	0	0	9	15
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	0.00	**0.25**	0.00	0.63	0.00	0.00	0.00	**0.63**	0.00	0.75	0.00	0.00	0.00	**0.75**	**0.75**

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	0700 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	7	0	7	-	0	14	1	3	2	-	0	6	2	258	15	-	0	275	6	258	0	-	0	264	559
0730 - 0745	7	0	9	-	0	16	3	1	1	-	0	5	1	304	38	-	0	343	13	302	3	-	1	319	683
0745 - 0800	9	0	6	-	0	15	5	1	1	-	0	7	4	337	35	-	0	376	18	287	2	-	0	307	705
0800 - 0815	7	1	19	-	0	27	2	0	1	-	0	3	2	306	29	-	0	337	11	259	5	-	0	275	642
Total	30	1	41	0	0	72	11	5	5	0	0	21	9	1205	117	0	0	1331	48	1106	10	0	1	1165	2589
Approach %	41.67	1.39	56.94	0.00	0.00	-	52.38	23.81	23.81	0.00	0.00	-	0.68	90.53	8.79	0.00	0.00	-	4.12	94.94	0.86	0.00	0.09	-	
PHF	0.83	0.25	0.54	0.00	0.00	**0.67**	0.55	0.42	0.63	0.00	0.00	**0.75**	0.56	0.89	0.77	0.00	0.00	**0.88**	0.67	0.92	0.50	0.00	0.25	**0.91**	**0.92**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	7	0	7	-	0	14	1	2	2	-	0	5	2	251	14	-	0	267	6	252	0	-	0	258	544
0730 - 0745	5	0	9	-	0	14	3	1	1	-	0	5	1	293	37	-	0	331	13	292	3	-	1	309	659
0745 - 0800	8	0	6	-	0	14	4	1	1	-	0	6	4	324	34	-	0	362	18	278	2	-	0	298	680
0800 - 0815	7	1	17	-	0	25	2	0	1	-	0	3	2	289	28	-	0	319	11	249	4	-	0	264	611
Total	27	1	39	0	0	67	10	4	5	0	0	19	9	1157	113	0	0	1279	48	1071	9	0	1	1129	2494
Approach %	40.30	1.49	58.21	0.00	0.00	-	52.63	21.05	26.32	0.00	0.00	-	0.70	90.46	8.84	0.00	0.00	-	4.25	94.86	0.80	0.00	0.09	-	
PHF	0.84	0.25	0.57	0.00	0.00	**0.67**	0.63	0.50	0.63	0.00	0.00	**0.79**	0.56	0.89	0.76	0.00	0.00	**0.88**	0.67	0.92	0.56	0.00	0.25	**0.91**	**0.92**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	1	0	-	0	1	0	6	1	-	0	7	0	3	0	-	0	3	11
0730 - 0745	2	0	0	-	0	2	0	0	0	-	0	0	0	9	1	-	0	10	0	8	0	-	0	8	20
0745 - 0800	0	0	0	-	0	0	1	0	0	-	0	1	0	6	1	-	0	7	0	5	0	-	0	5	13
0800 - 0815	0	0	2	-	0	2	0	0	0	-	0	0	0	10	1	-	0	11	0	8	1	-	0	9	22
Total	2	0	2	0	0	4	1	1	0	0	0	2	0	31	4	0	0	35	0	24	1	0	0	25	66
Approach %	50.00	0.00	50.00	0.00	0.00	-	50.00	50.00	0.00	0.00	0.00	-	0.00	88.57	11.43	0.00	0.00	-	0.00	96.00	4.00	0.00	0.00	-	
PHF	0.25	0.00	0.25	0.00	0.00	**0.50**	0.25	0.25	0.00	0.00	0.00	**0.50**	0.00	0.78	1.00	0.00	0.00	**0.80**	0.00	0.75	0.25	0.00	0.00	**0.69**	**0.75**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	0	2	0	-	0	2	4
0745 - 0800	1	0	0	-	0	1	0	0	0	-	0	0	0	7	0	-	0	7	0	4	0	-	0	4	12
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	7	0	-	0	7	0	2	0	-	0	2	9
Total	1	0	0	0	0	1	0	0	0	0	0	0	0	17	0	0	0	17	0	11	0	0	0	11	29
Approach %	100.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.25	0.00	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.61	0.00	0.00	0.00	**0.61**	0.00	0.69	0.00	0.00	0.00	**0.69**	**0.60**

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, October 24, 2023	
Period	1600 - 1800
Peak Hour	1615 - 1715

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1615 - 1630	8	2	7	-	0	17	8	2	8	-	0	18	11	297	11	-	0	319	9	356	11	-	0	376	730
1630 - 1645	5	1	9	-	0	15	6	1	10	-	0	17	15	358	7	-	0	380	8	345	8	-	1	362	774
1645 - 1700	7	3	10	-	0	20	6	1	8	-	0	15	12	300	25	-	1	338	12	360	9	-	0	381	754
1700 - 1715	4	1	11	-	0	16	10	2	11	-	0	23	12	326	14	-	1	353	11	353	5	-	0	369	761
Total	24	7	37	0	0	68	30	6	37	0	0	73	50	1281	57	0	2	1390	40	1414	33	0	1	1488	3019
Approach %	35.29	10.29	54.41	0.00	0.00	-	41.10	8.22	50.68	0.00	0.00	-	3.60	92.16	4.10	0.00	0.14	-	2.69	95.03	2.22	0.00	0.07	-	
PHF	0.75	0.58	0.84	0.00	0.00	**0.85**	0.75	0.75	0.84	0.00	0.00	**0.79**	0.83	0.89	0.57	0.00	0.50	**0.91**	0.83	0.98	0.75	0.00	0.25	**0.98**	**0.98**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1615 - 1630	8	2	7	-	0	17	8	1	8	-	0	17	11	292	11	-	0	314	9	351	11	-	0	371	719
1630 - 1645	5	1	9	-	0	15	6	1	10	-	0	17	15	350	7	-	0	372	8	340	8	-	1	357	761
1645 - 1700	7	3	10	-	0	20	6	1	8	-	0	15	12	294	25	-	1	332	12	349	9	-	0	370	737
1700 - 1715	4	1	11	-	0	16	10	2	11	-	0	23	12	324	14	-	1	351	10	348	5	-	0	363	753
Total	24	7	37	0	0	68	30	5	37	0	0	72	50	1260	57	0	2	1369	39	1388	33	0	1	1461	2970
Approach %	35.29	10.29	54.41	0.00	0.00	-	41.67	6.94	51.39	0.00	0.00	-	3.65	92.04	4.16	0.00	0.15	-	2.67	95.00	2.26	0.00	0.07	-	
PHF	0.75	0.58	0.84	0.00	0.00	**0.85**	0.75	0.63	0.84	0.00	0.00	**0.78**	0.83	0.90	0.57	0.00	0.50	**0.92**	0.81	0.99	0.75	0.00	0.25	**0.98**	**0.98**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	1	0	-	0	1	0	4	0	-	0	4	0	3	0	-	0	3	8
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	7	0	-	0	7	0	2	0	-	0	2	9
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	0	4	0	9	0	-	0	9	13
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1	2	0	-	0	3	4
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	16	0	0	0	16	1	16	0	0	0	17	34
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	5.88	94.12	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.57	0.00	0.00	0.00	**0.57**	0.25	0.44	0.00	0.00	0.00	**0.47**	**0.65**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	7th Ave						Driveway						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1615 - 1630	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	2	0	-	0	2	3
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	0	2	0	-	0	2	4
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10	0	0	0	10	15
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.63	0.00	0.00	0.00	**0.63**	0.00	0.83	0.00	0.00	0.00	**0.83**	**0.94**

Peak Hour Turning Movement Count

Click here for Map

Columbia, TN

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	0700 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
0715 - 0730	-	-	0	-	-	0	-	-	11	-	-	11	-	291	-	-	-	291	-	268	1	-	-	269	571
0730 - 0745	-	-	0	-	-	0	-	-	5	-	-	5	-	340	-	-	-	340	-	309	0	-	-	309	654
0745 - 0800	-	-	0	-	-	0	-	-	8	-	-	8	-	372	-	-	-	372	-	298	1	-	-	299	679
0800 - 0815	-	-	0	-	-	0	-	-	4	-	-	4	-	329	-	-	-	329	-	265	1	-	-	266	599
Total	0	0	0	0	0	0	0	0	28	0	0	28	0	1332	0	0	0	1332	0	1140	3	0	0	1143	2503
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	99.74	0.26	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.64	0.00	0.00	**0.64**	0.00	0.90	0.00	0.00	0.00	**0.90**	0.00	0.92	0.75	0.00	0.00	**0.92**	**0.92**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
0715 - 0730	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
0730 - 0745	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
0745 - 0800	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
0800 - 0815	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
0715 - 0730	-	-	0	-	-	0	-	-	11	-	-	11	-	279	-	-	-	279	-	258	1	-	-	259	549
0730 - 0745	-	-	0	-	-	0	-	-	5	-	-	5	-	332	-	-	-	332	-	299	0	-	-	299	636
0745 - 0800	-	-	0	-	-	0	-	-	8	-	-	8	-	359	-	-	-	359	-	288	1	-	-	289	656
0800 - 0815	-	-	0	-	-	0	-	-	4	-	-	4	-	312	-	-	-	312	-	257	1	-	-	258	574
Total	0	0	0	0	0	0	0	0	28	0	0	28	0	1282	0	0	0	1282	0	1102	3	0	0	1105	2415
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	99.73	0.27	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.64	0.00	0.00	**0.64**	0.00	0.89	0.00	0.00	0.00	**0.89**	0.00	0.92	0.75	0.00	0.00	**0.92**	**0.92**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
0715 - 0730	-	-	0	-	-	0	-	-	0	-	-	0	-	11	-	-	-	11	-	7	0	-	-	7	18
0730 - 0745	-	-	0	-	-	0	-	-	0	-	-	0	-	5	-	-	-	5	-	8	0	-	-	8	13
0745 - 0800	-	-	0	-	-	0	-	-	0	-	-	0	-	7	-	-	-	7	-	5	0	-	-	5	12
0800 - 0815	-	-	0	-	-	0	-	-	0	-	-	0	-	11	-	-	-	11	-	6	0	-	-	6	17
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	34	0	0	0	34	0	26	0	0	0	26	60
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.77	0.00	0.00	0.00	**0.77**	0.00	0.81	0.00	0.00	0.00	**0.81**	**0.83**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
0715 - 0730	-	-	0	-	-	0	-	-	0	-	-	0	-	1	-	-	-	1	-	3	0	-	-	3	4
0730 - 0745	-	-	0	-	-	0	-	-	0	-	-	0	-	3	-	-	-	3	-	2	0	-	-	2	5
0745 - 0800	-	-	0	-	-	0	-	-	0	-	-	0	-	6	-	-	-	6	-	5	0	-	-	5	11
0800 - 0815	-	-	0	-	-	0	-	-	0	-	-	0	-	6	-	-	-	6	-	2	0	-	-	2	8
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	16	0	12	0	0	0	12	28
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.67	0.00	0.00	0.00	**0.67**	0.00	0.60	0.00	0.00	0.00	**0.60**	**0.64**

Peak Hour Turning Movement Count

Click here for Map

Columbia, TN

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, October 24, 2023	
Period	1600 - 1800
Peak Hour	1615 - 1715

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
1615 - 1630	-	-	2	-	-	2	-	-	10	-	-	10	-	316	-	-	-	316	-	370	2	-	-	372	700
1630 - 1645	-	-	3	-	-	3	-	-	7	-	-	7	-	384	-	-	-	384	-	364	2	-	-	366	760
1645 - 1700	-	-	6	-	-	6	-	-	12	-	-	12	-	328	-	-	-	328	-	374	0	-	-	374	720
1700 - 1715	-	-	1	-	-	1	-	-	14	-	-	14	-	363	-	-	-	363	-	371	0	-	-	371	749
Total	0	0	12	0	0	12	0	0	43	0	0	43	0	1391	0	0	0	1391	0	1479	4	0	0	1483	2929
Approach %	0.00	0.00	100.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	99.73	0.27	0.00	0.00	-	
PHF	0.00	0.00	0.50	0.00	0.00	**0.50**	0.00	0.00	0.77	0.00	0.00	**0.77**	0.00	0.91	0.00	0.00	0.00	**0.91**	0.00	0.99	0.50	0.00	0.00	**0.99**	**0.96**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
1615 - 1630	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
1630 - 1645	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
1645 - 1700	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
1700 - 1715	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
1615 - 1630	-	-	2	-	-	2	-	-	10	-	-	10	-	312	-	-	-	312	-	364	2	-	-	366	690
1630 - 1645	-	-	3	-	-	3	-	-	6	-	-	6	-	374	-	-	-	374	-	357	2	-	-	359	742
1645 - 1700	-	-	6	-	-	6	-	-	12	-	-	12	-	322	-	-	-	322	-	362	0	-	-	362	702
1700 - 1715	-	-	1	-	-	1	-	-	14	-	-	14	-	360	-	-	-	360	-	367	0	-	-	367	742
Total	0	0	12	0	0	12	0	0	42	0	0	42	0	1368	0	0	0	1368	0	1450	4	0	0	1454	2876
Approach %	0.00	0.00	100.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	99.72	0.28	0.00	0.00	-	
PHF	0.00	0.00	0.50	0.00	0.00	**0.50**	0.00	0.00	0.75	0.00	0.00	**0.75**	0.00	0.91	0.00	0.00	0.00	**0.91**	0.00	0.99	0.50	0.00	0.00	**0.99**	**0.97**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
1615 - 1630	-	-	0	-	-	0	-	-	0	-	-	0	-	3	-	-	-	3	-	5	0	-	-	5	8
1630 - 1645	-	-	0	-	-	0	-	-	1	-	-	1	-	9	-	-	-	9	-	5	0	-	-	5	15
1645 - 1700	-	-	0	-	-	0	-	-	0	-	-	0	-	4	-	-	-	4	-	9	0	-	-	9	13
1700 - 1715	-	-	0	-	-	0	-	-	0	-	-	0	-	3	-	-	-	3	-	3	0	-	-	3	6
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	19	0	0	0	19	0	22	0	0	0	22	42
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	0.00	**0.25**	0.00	0.53	0.00	0.00	0.00	**0.53**	0.00	0.61	0.00	0.00	0.00	**0.61**	**0.70**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						River Rd						TN-99 Nashville Hwy (West)						TN-99 Nashville Hwy (East)						
Time			Right 5.1			App Total			Right 5.2			App Total		Thru 5.3				App Total		Thru 5.4	Right 5.5			App Total	Int Total
1615 - 1630	-	-	0	-	-	0	-	-	0	-	-	0	-	1	-	-	-	1	-	1	0	-	-	1	2
1630 - 1645	-	-	0	-	-	0	-	-	0	-	-	0	-	1	-	-	-	1	-	2	0	-	-	2	3
1645 - 1700	-	-	0	-	-	0	-	-	0	-	-	0	-	2	-	-	-	2	-	3	0	-	-	3	5
1700 - 1715	-	-	0	-	-	0	-	-	0	-	-	0	-	0	-	-	-	0	-	1	0	-	-	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	7	0	0	0	7	11
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.58	0.00	0.00	0.00	**0.58**	**0.55**

Bi-Directional Speed & Class Count || Volume Summary 15min

Columbia, TN

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 1
Theta Pike,
south of River Rd

Date
Tuesday, October 24, 2023

Lat/Long
35.628853°, -87.029336°

Click here for Map

Weather
Mostly Cloudy
67°F

Click here for Detailed Weather

0000 - 2400 (Weekday 24h Session)
Volume Summary 15min

	Volume Summary 15min		15min	60min
Time	NB	SB	Total	Total
0000 - 0015	1	1	**2**	
0015 - 0030	1	1	**2**	
0030 - 0045	4	1	**5**	
0045 - 0100	1	0	**1**	**10**
0100 - 0115	1	0	**1**	
0115 - 0130	1	3	**4**	
0130 - 0145	2	2	**4**	
0145 - 0200	1	0	**1**	**10**
0200 - 0215	0	0	**0**	
0215 - 0230	0	1	**1**	
0230 - 0245	0	0	**0**	
0245 - 0300	0	1	**1**	**2**
0300 - 0315	2	0	**2**	
0315 - 0330	0	3	**3**	
0330 - 0345	2	2	**4**	
0345 - 0400	0	2	**2**	**11**
0400 - 0415	0	0	**0**	
0415 - 0430	1	0	**1**	
0430 - 0445	2	1	**3**	
0445 - 0500	0	4	**4**	**8**
0500 - 0515	2	2	**4**	
0515 - 0530	7	3	**10**	
0530 - 0545	3	3	**6**	
0545 - 0600	5	4	**9**	**29**
0600 - 0615	5	8	**13**	
0615 - 0630	9	17	**26**	
0630 - 0645	4	6	**10**	
0645 - 0700	15	19	**34**	**83**
0700 - 0715	14	24	**38**	
0715 - 0730	15	41	**56**	
0730 - 0745	20	37	**57**	
0745 - 0800	16	45	**61**	**212**
0800 - 0815	43	30	**73**	
0815 - 0830	42	29	**71**	
0830 - 0845	19	21	**40**	
0845 - 0900	17	24	**41**	**225**
0900 - 0915	19	25	**44**	
0915 - 0930	28	26	**54**	
0930 - 0945	17	29	**46**	
0945 - 1000	25	16	**41**	**185**
1000 - 1015	20	26	**46**	
1015 - 1030	21	10	**31**	
1030 - 1045	14	31	**45**	
1045 - 1100	17	30	**47**	**169**
1100 - 1115	16	23	**39**	
1115 - 1130	28	23	**51**	
1130 - 1145	31	28	**59**	
1145 - 1200	19	23	**42**	**191**
1200 - 1215	37	18	**55**	
1215 - 1230	28	24	**52**	
1230 - 1245	34	25	**59**	
1245 - 1300	32	30	**62**	**228**
1300 - 1315	19	25	**44**	
1315 - 1330	33	27	**60**	
1330 - 1345	18	21	**39**	
1345 - 1400	33	27	**60**	**203**
1400 - 1415	40	39	**79**	
1415 - 1430	40	34	**74**	
1430 - 1445	33	28	**61**	
1445 - 1500	33	27	**60**	**274**
1500 - 1515	38	30	**68**	
1515 - 1530	57	47	**104**	
1530 - 1545	41	41	**82**	
1545 - 1600	31	43	**74**	**328**
1600 - 1615	47	30	**77**	
1615 - 1630	46	36	**82**	
1630 - 1645	42	29	**71**	
1645 - 1700	37	41	**78**	**308**
1700 - 1715	42	36	**78**	
1715 - 1730	51	32	**83**	
1730 - 1745	30	24	**54**	
1745 - 1800	33	36	**69**	**284**
1800 - 1815	35	19	**54**	
1815 - 1830	33	23	**56**	
1830 - 1845	28	15	**43**	
1845 - 1900	18	23	**41**	**194**
1900 - 1915	36	14	**50**	
1915 - 1930	33	19	**52**	
1930 - 1945	22	8	**30**	
1945 - 2000	20	11	**31**	**163**
2000 - 2015	17	10	**27**	
2015 - 2030	14	11	**25**	
2030 - 2045	16	8	**24**	
2045 - 2100	13	14	**27**	**103**
2100 - 2115	22	6	**28**	
2115 - 2130	10	7	**17**	
2130 - 2145	15	4	**19**	
2145 - 2200	3	6	**9**	**73**
2200 - 2215	5	2	**7**	
2215 - 2230	6	3	**9**	
2230 - 2245	8	1	**9**	
2245 - 2300	2	4	**6**	**31**
2300 - 2315	7	4	**11**	
2315 - 2330	3	0	**3**	
2330 - 2345	3	2	**5**	
2345 - 0000	4	1	**5**	**24**

Session Total	1758	1590	**3348**
Session Average	18.31	16.56	**34.88**
Session Percentage	52.51	47.49	

Bi-Directional Speed & Class Count || Bi-Directional Speed 15min

Columbia, TN

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 1
Theta Pike,
south of River Rd

Date
Tuesday, October 24, 2023

Lat/Long
35.628853°, -87.029336°

Click here for Map

Weather
Mostly Cloudy
67°F

Click here for Detailed Weather

0000 - 2400 (Weekday 24h Session)
Bi-Directional Speed 15min

	Bi-Directional 15min															15min
Time	5-14 mph	15-19 mph	20-24 mph	25-29 mph	30-34 mph	35-39 mph	40-44 mph	45-49 mph	50-54 mph	55-59 mph	60-64 mph	65-69 mph	70-74 mph	75-79 mph	80-99 mph	Total
0000 - 0015	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	2
0015 - 0030	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
0030 - 0045	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	5
0045 - 0100	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0100 - 0115	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0115 - 0130	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4
0130 - 0145	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	4
0145 - 0200	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
0200 - 0215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0215 - 0230	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
0230 - 0245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0245 - 0300	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
0300 - 0315	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
0315 - 0330	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	3
0330 - 0345	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0	4
0345 - 0400	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
0400 - 0415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0415 - 0430	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0430 - 0445	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	3
0445 - 0500	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4
0500 - 0515	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4
0515 - 0530	0	0	0	1	4	3	2	0	0	0	0	0	0	0	0	10
0530 - 0545	0	0	0	1	1	3	1	0	0	0	0	0	0	0	0	6
0545 - 0600	0	0	0	1	2	6	0	0	0	0	0	0	0	0	0	9
0600 - 0615	0	0	1	1	5	6	0	0	0	0	0	0	0	0	0	13
0615 - 0630	0	1	1	4	9	5	6	0	0	0	0	0	0	0	0	26
0630 - 0645	0	0	0	0	5	3	2	0	0	0	0	0	0	0	0	10
0645 - 0700	0	1	0	4	13	14	1	1	0	0	0	0	0	0	0	34
0700 - 0715	0	0	1	4	13	13	5	2	0	0	0	0	0	0	0	38
0715 - 0730	0	3	2	9	16	19	7	0	0	0	0	0	0	0	0	56
0730 - 0745	1	1	5	8	16	14	11	1	0	0	0	0	0	0	0	57
0745 - 0800	0	1	5	7	16	21	9	2	0	0	0	0	0	0	0	61
0800 - 0815	1	2	6	22	27	12	3	0	0	0	0	0	0	0	0	73
0815 - 0830	3	7	18	22	12	6	3	0	0	0	0	0	0	0	0	71
0830 - 0845	3	1	7	8	12	9	0	0	0	0	0	0	0	0	0	40
0845 - 0900	0	1	1	9	22	7	0	1	0	0	0	0	0	0	0	41
0900 - 0915	2	1	4	15	14	5	1	2	0	0	0	0	0	0	0	44
0915 - 0930	0	0	2	19	21	8	2	2	0	0	0	0	0	0	0	54
0930 - 0945	1	2	9	14	7	9	4	0	0	0	0	0	0	0	0	46
0945 - 1000	0	0	3	11	12	12	2	1	0	0	0	0	0	0	0	41
1000 - 1015	0	1	1	9	24	5	6	0	0	0	0	0	0	0	0	46
1015 - 1030	0	1	5	4	10	10	1	0	0	0	0	0	0	0	0	31
1030 - 1045	0	1	3	7	10	16	7	1	0	0	0	0	0	0	0	45
1045 - 1100	0	0	1	10	17	11	6	2	0	0	0	0	0	0	0	47
1100 - 1115	0	2	3	4	16	10	1	2	1	0	0	0	0	0	0	39
1115 - 1130	0	1	7	10	20	12	1	0	0	0	0	0	0	0	0	51
1130 - 1145	0	4	9	16	12	14	4	0	0	0	0	0	0	0	0	59
1145 - 1200	0	3	4	12	10	10	2	1	0	0	0	0	0	0	0	42
1200 - 1215	0	1	12	13	19	6	3	0	1	0	0	0	0	0	0	55
1215 - 1230	0	1	9	11	23	7	0	1	0	0	0	0	0	0	0	52
1230 - 1245	0	1	9	20	19	6	4	0	0	0	0	0	0	0	0	59
1245 - 1300	0	2	8	20	22	9	0	0	0	0	1	0	0	0	0	62
1300 - 1315	0	3	7	10	7	15	2	0	0	0	0	0	0	0	0	44
1315 - 1330	0	0	5	13	24	16	1	0	1	0	0	0	0	0	0	60
1330 - 1345	0	1	5	7	14	10	2	0	0	0	0	0	0	0	0	39
1345 - 1400	1	0	6	18	22	12	1	0	0	0	0	0	0	0	0	60
1400 - 1415	1	4	13	23	25	9	4	0	0	0	0	0	0	0	0	79
1415 - 1430	1	3	9	29	18	9	4	0	1	0	0	0	0	0	0	74
1430 - 1445	0	0	9	19	14	15	4	0	0	0	0	0	0	0	0	61
1445 - 1500	0	0	9	13	24	11	2	1	0	0	0	0	0	0	0	60
1500 - 1515	2	2	3	18	27	14	1	0	1	0	0	0	0	0	0	68
1515 - 1530	2	1	8	53	28	5	5	1	0	1	0	0	0	0	0	104
1530 - 1545	0	1	6	22	26	20	6	1	0	0	0	0	0	0	0	82
1545 - 1600	0	2	9	7	34	18	4	0	0	0	0	0	0	0	0	74
1600 - 1615	0	1	6	16	33	16	4	1	0	0	0	0	0	0	0	77
1615 - 1630	0	1	4	18	35	18	6	0	0	0	0	0	0	0	0	82
1630 - 1645	0	0	5	17	28	17	2	0	1	1	0	0	0	0	0	71
1645 - 1700	0	2	2	17	29	21	7	0	0	0	0	0	0	0	0	78
1700 - 1715	1	6	5	14	24	22	6	0	0	0	0	0	0	0	0	78
1715 - 1730	0	1	4	10	34	28	6	0	0	0	0	0	0	0	0	83
1730 - 1745	0	0	2	12	27	10	2	1	0	0	0	0	0	0	0	54
1745 - 1800	0	2	1	15	29	16	5	1	0	0	0	0	0	0	0	69
1800 - 1815	0	0	6	12	24	8	3	1	0	0	0	0	0	0	0	54
1815 - 1830	0	1	3	8	23	13	7	1	0	0	0	0	0	0	0	56
1830 - 1845	0	0	1	18	14	8	2	0	0	0	0	0	0	0	0	43
1845 - 1900	0	0	0	11	18	9	3	0	0	0	0	0	0	0	0	41
1900 - 1915	0	0	7	11	20	9	2	0	0	0	0	0	0	0	1	50
1915 - 1930	1	0	7	13	17	8	6	0	0	0	0	0	0	0	0	52
1930 - 1945	0	0	2	10	9	5	3	0	1	0	0	0	0	0	0	30
1945 - 2000	0	1	4	4	15	6	0	0	0	1	0	0	0	0	0	31
2000 - 2015	0	0	5	5	8	3	3	2	1	0	0	0	0	0	0	27
2015 - 2030	0	1	0	7	9	7	0	1	0	0	0	0	0	0	0	25
2030 - 2045	0	0	0	4	11	7	2	0	0	0	0	0	0	0	0	24
2045 - 2100	0	2	0	1	12	11	1	0	0	0	0	0	0	0	0	27
2100 - 2115	0	0	1	8	10	7	1	1	0	0	0	0	0	0	0	28
2115 - 2130	0	1	3	0	9	2	2	0	0	0	0	0	0	0	0	17
2130 - 2145	0	0	1	7	5	4	2	0	0	0	0	0	0	0	0	19
2145 - 2200	0	0	0	1	2	5	1	0	0	0	0	0	0	0	0	9
2200 - 2215	0	0	1	1	3	1	1	0	0	0	0	0	0	0	0	7
2215 - 2230	0	1	0	2	1	4	1	0	0	0	0	0	0	0	0	9
2230 - 2245	0	1	0	0	4	3	1	0	0	0	0	0	0	0	0	9
2245 - 2300	0	0	0	1	4	0	1	0	0	0	0	0	0	0	0	6
2300 - 2315	0	0	0	2	4	4	1	0	0	0	0	0	0	0	0	11
2315 - 2330	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
2330 - 2345	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	5
2345 - 2400	0	0	1	2	0	2	0	0	0	0	0	0	0	0	0	5
Session Total	20	77	296	782	1178	733	216	32	9	3	1	0	0	0	1	3348

10mph Pace Speed	Number in Pace
27-36	2070 (61.8%)

15th Percentile	50th Percentile	Average	85th Percentile	95th Percentile
25	32	31	37	41

Bi-Directional Speed & Class Count || Volume Summary 15min

Columbia, TN

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 2
SR-99 U.S. Hwy 31,
south of River Rd

Date
Tuesday, October 24, 2023

Lat/Long
35.624448°, -87.032657°

Click here for Map

Weather
Mostly Cloudy
67°F

Click here for Detailed Weather

0000 - 2400 (Weekday 24h Session)
Volume Summary 15min

	Volume Summary 15min		15min	60min
Time	NB	SB	Total	Total
0000 - 0015	10	21	**31**	
0015 - 0030	18	30	**48**	
0030 - 0045	13	45	**58**	
0045 - 0100	9	32	**41**	**178**
0100 - 0115	8	10	**18**	
0115 - 0130	3	35	**38**	
0130 - 0145	13	76	**89**	
0145 - 0200	9	34	**43**	**188**
0200 - 0215	5	17	**22**	
0215 - 0230	8	18	**26**	
0230 - 0245	15	8	**23**	
0245 - 0300	10	12	**22**	**93**
0300 - 0315	16	12	**28**	
0315 - 0330	26	16	**42**	
0330 - 0345	42	19	**61**	
0345 - 0400	24	12	**36**	**167**
0400 - 0415	25	27	**52**	
0415 - 0430	46	30	**76**	
0430 - 0445	72	17	**89**	
0445 - 0500	84	22	**106**	**323**
0500 - 0515	162	27	**189**	
0515 - 0530	197	33	**230**	
0530 - 0545	198	33	**231**	
0545 - 0600	193	72	**265**	**915**
0600 - 0615	181	84	**265**	
0615 - 0630	195	126	**321**	
0630 - 0645	220	145	**365**	
0645 - 0700	244	179	**423**	**1374**
0700 - 0715	230	201	**431**	
0715 - 0730	271	295	**566**	
0730 - 0745	334	270	**604**	
0745 - 0800	332	268	**600**	**2201**
0800 - 0815	273	230	**503**	
0815 - 0830	228	240	**468**	
0830 - 0845	218	229	**447**	
0845 - 0900	242	227	**469**	**1887**
0900 - 0915	224	212	**436**	
0915 - 0930	237	227	**464**	
0930 - 0945	191	222	**413**	
0945 - 1000	235	229	**464**	**1777**
1000 - 1015	216	208	**424**	
1015 - 1030	237	197	**434**	
1030 - 1045	235	239	**474**	
1045 - 1100	215	253	**468**	**1800**
1100 - 1115	241	253	**494**	
1115 - 1130	236	270	**506**	
1130 - 1145	281	261	**542**	
1145 - 1200	248	273	**521**	**2063**
1200 - 1215	285	256	**541**	
1215 - 1230	285	276	**561**	
1230 - 1245	281	255	**536**	
1245 - 1300	266	258	**524**	**2162**
1300 - 1315	265	277	**542**	
1315 - 1330	264	254	**518**	
1330 - 1345	258	285	**543**	
1345 - 1400	259	263	**522**	**2125**
1400 - 1415	330	274	**604**	
1415 - 1430	282	307	**589**	
1430 - 1445	322	288	**610**	
1445 - 1500	313	319	**632**	**2435**
1500 - 1515	381	283	**664**	
1515 - 1530	381	319	**700**	
1530 - 1545	285	325	**610**	
1545 - 1600	296	334	**630**	**2604**
1600 - 1615	347	333	**680**	
1615 - 1630	304	329	**633**	
1630 - 1645	358	331	**689**	
1645 - 1700	311	332	**643**	**2645**
1700 - 1715	335	328	**663**	
1715 - 1730	306	320	**626**	
1730 - 1745	292	335	**627**	
1745 - 1800	233	322	**555**	**2471**
1800 - 1815	219	257	**476**	
1815 - 1830	218	282	**500**	
1830 - 1845	221	237	**458**	
1845 - 1900	194	215	**409**	**1843**
1900 - 1915	183	184	**367**	
1915 - 1930	176	207	**383**	
1930 - 1945	138	167	**305**	
1945 - 2000	158	133	**291**	**1346**
2000 - 2015	111	116	**227**	
2015 - 2030	126	118	**244**	
2030 - 2045	113	81	**194**	
2045 - 2100	88	113	**201**	**866**
2100 - 2115	99	108	**207**	
2115 - 2130	93	81	**174**	
2130 - 2145	92	78	**170**	
2145 - 2200	42	81	**123**	**674**
2200 - 2215	43	67	**110**	
2215 - 2230	41	82	**123**	
2230 - 2245	37	60	**97**	
2245 - 2300	26	56	**82**	**412**
2300 - 2315	29	51	**80**	
2315 - 2330	20	40	**60**	
2330 - 2345	23	30	**53**	
2345 - 0000	19	36	**55**	**248**

Session Total	16718	16079	**32797**
Session Average	174.15	167.49	**341.64**
Session Percentage	50.97	49.03	

Bi-Directional Speed & Class Count || Bi-Directional Speed 15min

Columbia, TN

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 2
SR-99 U.S. Hwy 31,
south of River Rd

Date
Tuesday, October 24, 2023

Lat/Long
35.624448°, -87.032657°

Weather
Mostly Cloudy
67°F

Click here for Detailed Weather

Click here for Map

0000 - 2400 (Weekday 24h Session)
Bi-Directional Speed 15min

	Bi-Directional 15min															15min
Time	5-14 mph	15-19 mph	20-24 mph	25-29 mph	30-34 mph	35-39 mph	40-44 mph	45-49 mph	50-54 mph	55-59 mph	60-64 mph	65-69 mph	70-74 mph	75-79 mph	80-99 mph	Total
0000 - 0015	0	0	0	0	1	2	17	10	1	0	0	0	0	0	0	31
0015 - 0030	0	0	0	0	2	5	15	19	7	0	0	0	0	0	0	48
0030 - 0045	0	0	0	0	3	8	29	16	2	0	0	0	0	0	0	58
0045 - 0100	0	0	0	0	2	8	14	14	3	0	0	0	0	0	0	41
0100 - 0115	0	0	0	1	0	5	8	3	1	0	0	0	0	0	0	18
0115 - 0130	0	0	0	0	1	7	16	7	6	0	1	0	0	0	0	38
0130 - 0145	0	0	0	0	1	9	36	37	4	1	1	0	0	0	0	89
0145 - 0200	0	0	0	0	2	7	19	12	3	0	0	0	0	0	0	43
0200 - 0215	0	0	0	0	2	3	7	7	1	2	0	0	0	0	0	22
0215 - 0230	0	0	0	0	3	8	9	5	1	0	0	0	0	0	0	26
0230 - 0245	0	0	0	0	1	5	12	4	1	0	0	0	0	0	0	23
0245 - 0300	0	0	0	0	3	3	11	3	2	0	0	0	0	0	0	22
0300 - 0315	0	0	0	0	0	1	14	13	0	0	0	0	0	0	0	28
0315 - 0330	0	0	0	0	0	9	17	14	2	0	0	0	0	0	0	42
0330 - 0345	0	0	0	0	2	3	30	16	7	2	1	0	0	0	0	61
0345 - 0400	0	0	0	0	1	3	19	11	2	0	0	0	0	0	0	36
0400 - 0415	0	0	0	0	0	11	12	27	2	0	0	0	0	0	0	52
0415 - 0430	0	0	0	0	1	11	28	32	3	1	0	0	0	0	0	76
0430 - 0445	0	0	0	0	3	11	34	33	7	1	0	0	0	0	0	89
0445 - 0500	0	0	0	0	0	11	48	40	6	1	0	0	0	0	0	106
0500 - 0515	0	0	0	0	0	21	79	73	14	1	1	0	0	0	0	189
0515 - 0530	0	0	0	1	0	10	74	113	27	5	0	0	0	0	0	230
0530 - 0545	0	0	0	1	2	21	94	89	20	3	1	0	0	0	0	231
0545 - 0600	0	0	0	0	6	20	116	93	25	5	0	0	0	0	0	265
0600 - 0615	1	0	0	1	1	24	105	106	22	4	1	0	0	0	0	265
0615 - 0630	0	1	0	1	6	49	133	100	25	6	0	0	0	0	0	321
0630 - 0645	1	1	0	1	3	53	169	114	23	0	0	0	0	0	0	365
0645 - 0700	0	0	0	0	11	69	188	128	22	5	0	0	0	0	0	423
0700 - 0715	0	0	0	0	5	78	208	114	25	1	0	0	0	0	0	431
0715 - 0730	1	0	0	6	22	115	256	137	26	3	0	0	0	0	0	566
0730 - 0745	0	0	1	1	20	142	280	128	27	5	0	0	0	0	0	604
0745 - 0800	1	1	0	12	56	164	239	103	20	3	0	1	0	0	0	600
0800 - 0815	0	0	2	2	14	110	230	122	21	2	0	0	0	0	0	503
0815 - 0830	0	1	0	3	15	56	202	162	27	2	0	0	0	0	0	468
0830 - 0845	1	0	0	3	15	100	219	93	14	2	0	0	0	0	0	447
0845 - 0900	1	0	1	2	23	121	189	116	16	0	0	0	0	0	0	469
0900 - 0915	0	1	2	0	17	99	205	102	5	5	0	0	0	0	0	436
0915 - 0930	0	0	2	4	34	128	202	83	7	1	2	1	0	0	0	464
0930 - 0945	0	0	0	1	31	111	164	89	15	2	0	0	0	0	0	413
0945 - 1000	0	0	0	2	3	112	235	97	14	1	0	0	0	0	0	464
1000 - 1015	1	0	1	1	7	98	210	95	11	0	0	0	0	0	0	424
1015 - 1030	0	1	1	2	14	112	204	88	10	2	0	0	0	0	0	434
1030 - 1045	1	3	2	13	24	112	214	95	10	0	0	0	0	0	0	474
1045 - 1100	2	1	2	4	27	114	207	92	17	2	0	0	0	0	0	468
1100 - 1115	2	2	1	4	20	103	232	109	18	2	1	0	0	0	0	494
1115 - 1130	3	1	3	7	19	117	219	116	17	4	0	0	0	0	0	506
1130 - 1145	1	1	0	8	28	155	210	125	14	0	0	0	0	0	0	542
1145 - 1200	2	2	2	3	27	136	210	118	15	6	0	0	0	0	0	521
1200 - 1215	8	3	5	9	52	177	202	79	6	0	0	0	0	0	0	541
1215 - 1230	1	1	2	8	22	161	257	95	14	0	0	0	0	0	0	561
1230 - 1245	1	2	4	10	65	141	223	76	13	1	0	0	0	0	0	536
1245 - 1300	0	0	6	13	50	133	214	92	12	3	1	0	0	0	0	524
1300 - 1315	1	4	3	2	21	154	230	103	24	0	0	0	0	0	0	542
1315 - 1330	1	0	2	4	26	121	231	109	21	3	0	0	0	0	0	518
1330 - 1345	0	0	2	11	59	182	221	56	10	2	0	0	0	0	0	543
1345 - 1400	2	1	1	4	44	138	224	95	10	1	2	0	0	0	0	522
1400 - 1415	1	2	1	9	39	203	230	104	14	1	0	0	0	0	0	604
1415 - 1430	1	1	4	5	48	198	239	83	9	1	0	0	0	0	0	589
1430 - 1445	1	0	1	6	50	165	257	109	16	5	0	0	0	0	0	610
1445 - 1500	2	2	2	2	25	162	300	105	28	4	0	0	0	0	0	632
1500 - 1515	1	3	5	18	64	178	271	112	11	0	1	0	0	0	0	664
1515 - 1530	5	4	4	11	50	219	285	108	13	1	0	0	0	0	0	700
1530 - 1545	0	0	2	0	14	124	297	150	22	1	0	0	0	0	0	610
1545 - 1600	1	2	3	19	65	195	238	90	17	0	0	0	0	0	0	630
1600 - 1615	1	0	2	19	39	223	262	115	17	1	1	0	0	0	0	680
1615 - 1630	0	0	5	7	34	150	267	150	20	0	0	0	0	0	0	633
1630 - 1645	2	3	3	18	87	203	261	99	13	0	0	0	0	0	0	689
1645 - 1700	2	0	1	14	40	178	265	127	14	2	0	0	0	0	0	643
1700 - 1715	0	4	12	32	79	228	223	78	7	0	0	0	0	0	0	663
1715 - 1730	0	0	0	3	25	137	254	172	33	1	1	0	0	0	0	626
1730 - 1745	0	3	6	7	25	171	289	110	16	0	0	0	0	0	0	627
1745 - 1800	0	0	0	3	25	126	247	131	20	3	0	0	0	0	0	555
1800 - 1815	0	1	1	6	14	84	217	124	27	1	1	0	0	0	0	476
1815 - 1830	2	1	0	1	34	145	204	97	15	1	0	0	0	0	0	500
1830 - 1845	0	0	0	0	37	138	197	79	5	2	0	0	0	0	0	458
1845 - 1900	0	0	0	0	12	81	230	76	10	0	0	0	0	0	0	409
1900 - 1915	0	0	0	2	7	78	181	83	15	1	0	0	0	0	0	367
1915 - 1930	0	0	0	0	18	82	172	97	13	1	0	0	0	0	0	383
1930 - 1945	0	0	0	0	13	81	137	64	8	2	0	0	0	0	0	305
1945 - 2000	0	0	0	0	13	66	128	69	13	2	0	0	0	0	0	291
2000 - 2015	0	0	0	0	2	35	111	70	6	2	1	0	0	0	0	227
2015 - 2030	0	0	0	0	12	53	118	49	10	1	1	0	0	0	0	244
2030 - 2045	0	0	1	0	9	46	79	44	12	3	0	0	0	0	0	194
2045 - 2100	0	0	0	0	5	33	88	59	14	1	1	0	0	0	0	201
2100 - 2115	0	0	0	0	5	33	100	61	7	1	0	0	0	0	0	207
2115 - 2130	0	0	0	1	3	28	75	58	7	2	0	0	0	0	0	174
2130 - 2145	0	0	0	0	3	22	78	55	12	0	0	0	0	0	0	170
2145 - 2200	0	0	0	1	7	20	58	34	2	0	1	0	0	0	0	123
2200 - 2215	0	1	0	0	2	16	48	32	10	1	0	0	0	0	0	110
2215 - 2230	0	0	0	0	0	16	47	51	9	0	0	0	0	0	0	123
2230 - 2245	0	0	0	1	1	16	43	29	7	0	0	0	0	0	0	97
2245 - 2300	0	0	0	0	3	12	34	29	2	2	0	0	0	0	0	82
2300 - 2315	0	0	0	3	0	14	30	27	6	0	0	0	0	0	0	80
2315 - 2330	0	0	0	1	1	21	25	10	2	0	0	0	0	0	0	60
2330 - 2345	0	0	0	0	2	11	23	16	1	0	0	0	0	0	0	53
2345 - 2400	0	0	0	1	2	12	27	12	1	0	0	0	0	0	0	55
Session Total	51	54	98	335	1731	7890	14125	7196	1162	133	20	2	0	0	0	32797

10mph Pace Speed	Number in Pace
37-46	23988 (73.1%)

15th Percentile	50th Percentile	Average	85th Percentile	95th Percentile
37	42	41	46	49

APPENDIX C

Volume Development

Proposed Trip Generation - River Road Residential

ITE Code	Land Use	Density		Daily			AM Peak Hour			PM Peak Hour		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
215	Single-Family Attached Housing	30	d.u.	178	89	89	10	3	7	14	8	6
220	Multifamily Housing (Low-Rise)	96	d.u.	690	345	345	53	13	40	62	39	23
GROSS PROPOSED TRIPS				868	434	434	63	16	47	76	47	29

INTERSECTION VOLUME WORKSHEET

INTERSECTION 1

River Rd at Taylor Bend

AM PEAK HOUR

	River Rd Eastbound				River Rd Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	3	3	0	0	2	12	2	0	3	1	2	0	4	2	8	42
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians		2		1		1		2		1		2		2		1	
Heavy Vehicles	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	50	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
No-Build 2025 AM Volumes (Growth Only)	0	3	3	0	0	2	13	2	0	3	1	2	0	4	2	8	43
Project Traffic																	
Trip Distribution IN						25%	45%										
Trip Distribution OUT			40%									25%					
Project Trips	0	0	19	0	0	4	7	0	0	0	0	12	0	0	0	0	42
Build 2025 AM Volumes (Growth Only)	0	3	22	0	0	6	20	2	0	3	1	14	0	4	2	8	85
% from Existing (Build-Out)	0.0%	100.0%	13.6%	0.0%	0.0%	33.3%	60.0%	100.0%	0.0%	100.0%	100.0%	14.3%	0.0%	100.0%	100.0%	100.0%	49.4%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
% from Project Trips (Build-Out)	0.0%	0.0%	86.4%	0.0%	0.0%	66.7%	35.0%	0.0%	0.0%	0.0%	0.0%	85.7%	0.0%	0.0%	0.0%	0.0%	49.4%

PM PEAK HOUR

	River Rd Eastbound				River Rd Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	3	8	16	1	0	4	12	4	0	1	1	3	0	4	1	4	62
Existing Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Conflicting Pedestrians		3		0		0		3		0		4		4		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
No-Build 2025 PM Volumes (Growth Only)	3	8	17	1	0	4	13	4	0	1	1	3	0	4	1	4	64
Project Traffic																	
Trip Distribution IN						25%	45%										
Trip Distribution OUT			40%									25%					
Project Trips	0	0	12	0	0	12	21	0	0	0	0	7	0	0	0	0	52
Build 2025 PM Volumes (Growth Only)	3	8	29	1	0	16	34	4	0	1	1	10	0	4	1	4	116
% from Existing (Build-Out)	100.0%	100.0%	55.2%	100.0%	0.0%	25.0%	35.3%	100.0%	0.0%	100.0%	100.0%	30.0%	0.0%	100.0%	100.0%	100.0%	53.4%
% from Background Growth (Build-Out)	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
% from Project Trips (Build-Out)	0.0%	0.0%	41.4%	0.0%	0.0%	75.0%	61.8%	0.0%	0.0%	0.0%	0.0%	70.0%	0.0%	0.0%	0.0%	0.0%	44.8%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 2

River Rd at Theta Pike

AM PEAK HOUR

	River Rd Eastbound				Westbound				Theta Pike Northbound				Theta Pike Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	8	0	6	0	0	0	0	2	10	88	0	0	0	162	6	282
Existing Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	1	5	0	0	0	10	0	16
No-Build 2025 AM Volumes (Growth Only)	0	8	0	6	0	0	0	0	2	11	93	0	0	0	172	6	298
Project Traffic																	
Trip Distribution IN										40%						30%	
Trip Distribution OUT		30%		35%													
Project Trips	0	14	0	16	0	0	0	0	0	6	0	0	0	0	0	5	41
Build 2025 AM Volumes (Growth Only)	0	22	0	22	0	0	0	0	2	17	93	0	0	0	172	11	339
% from Existing (Build-Out)	0.0%	36.4%	0.0%	27.3%	0.0%	0.0%	0.0%	0.0%	100.0%	58.8%	94.6%	0.0%	0.0%	0.0%	94.2%	54.5%	83.2%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	5.4%	0.0%	0.0%	0.0%	5.8%	0.0%	4.7%
% from Project Trips (Build-Out)	0.0%	63.6%	0.0%	72.7%	0.0%	0.0%	0.0%	0.0%	0.0%	35.3%	0.0%	0.0%	0.0%	0.0%	0.0%	45.5%	12.1%

PM PEAK HOUR

	River Rd Eastbound				Westbound				Theta Pike Northbound				Theta Pike Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	1	23	0	2	0	0	0	0	0	9	160	0	0	0	145	26	366
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Conflicting Pedestrians		0		0		0		0		1		0		0		1	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	1	0	0	0	0	0	0	0	1	10	0	0	0	9	2	23
No-Build 2025 PM Volumes (Growth Only)	1	24	0	2	0	0	0	0	0	10	170	0	0	0	154	28	389
Project Traffic																	
Trip Distribution IN										40%						30%	
Trip Distribution OUT		30%		35%													
Project Trips	0	9	0	10	0	0	0	0	0	19	0	0	0	0	0	14	52
Build 2025 PM Volumes (Growth Only)	1	33	0	12	0	0	0	0	0	29	170	0	0	0	154	42	441
% from Existing (Build-Out)	100.0%	69.7%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	31.0%	94.1%	0.0%	0.0%	0.0%	94.2%	61.9%	83.0%
% from Background Growth (Build-Out)	0.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%	5.9%	0.0%	0.0%	0.0%	5.8%	4.8%	5.2%
% from Project Trips (Build-Out)	0.0%	27.3%	0.0%	83.3%	0.0%	0.0%	0.0%	0.0%	0.0%	65.5%	0.0%	0.0%	0.0%	0.0%	0.0%	33.3%	11.8%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

TN-99 Nashville Hwy at 8th Ave/Theta Pike

AM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				8th Ave Northbound				Theta Pike Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	69	1168	4	3	5	1043	32	0	3	3	6	0	23	1	119	2479
Existing Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	2	56	0	0	0	35	3	0	0	0	0	0	0	0	1	
Heavy Vehicle %	2	3	5	2	2	2	3	9	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	4	71	0	0	0	64	2	0	0	0	0	0	1	0	7	149
No-Build 2025 AM Volumes (Growth Only)	0	73	1239	4	3	5	1107	34	0	3	3	6	0	24	1	126	2628
Project Traffic																	
Trip Distribution IN		25%					5%	35%									
Trip Distribution OUT														40%		5%	
Project Trips	0	4	0	0	0	0	1	6	0	0	0	0	0	19	0	2	32
Build 2025 AM Volumes (Growth Only)	0	77	1239	4	3	5	1108	40	0	3	3	6	0	43	1	128	2660
% from Existing (Build-Out)	0.0%	89.6%	94.3%	100.0%	100.0%	100.0%	94.1%	80.0%	0.0%	100.0%	100.0%	100.0%	0.0%	53.5%	100.0%	93.0%	93.2%
% from Background Growth (Build-Out)	0.0%	5.2%	5.7%	0.0%	0.0%	0.0%	5.8%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	0.0%	5.5%	5.6%
% from Project Trips (Build-Out)	0.0%	5.2%	0.0%	0.0%	0.0%	0.0%	0.1%	15.0%	0.0%	0.0%	0.0%	0.0%	0.0%	44.2%	0.0%	1.6%	1.2%

PM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				8th Ave Northbound				Theta Pike Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	1	122	1221	4	1	12	1349	42	0	1	3	5	0	53	3	133	2950
Existing Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Conflicting Pedestrians		1		0		0		1		0		0		0		0	
Heavy Vehicles	0	1	19	1	0	0	25	1	0	0	0	0	0	0	0	4	
Heavy Vehicle %	2	2	2	25	2	2	2	2	2	2	2	2	2	2	2	3	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	7	74	0	0	1	82	3	0	0	0	0	0	3	0	8	178
No-Build 2025 PM Volumes (Growth Only)	1	129	1295	4	1	13	1431	45	0	1	3	5	0	56	3	141	3128
Project Traffic																	
Trip Distribution IN		25%					5%	35%									
Trip Distribution OUT														40%		5%	
Project Trips	0	12	0	0	0	0	2	16	0	0	0	0	0	12	0	1	43
Build 2025 PM Volumes (Growth Only)	1	141	1295	4	1	13	1433	61	0	1	3	5	0	68	3	142	3171
% from Existing (Build-Out)	100.0%	86.5%	94.3%	100.0%	100.0%	92.3%	94.1%	68.9%	0.0%	100.0%	100.0%	100.0%	0.0%	77.9%	100.0%	93.7%	93.0%
% from Background Growth (Build-Out)	0.0%	5.0%	5.7%	0.0%	0.0%	7.7%	5.7%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%	0.0%	5.6%	5.6%
% from Project Trips (Build-Out)	0.0%	8.5%	0.0%	0.0%	0.0%	0.0%	0.1%	26.2%	0.0%	0.0%	0.0%	0.0%	0.0%	17.6%	0.0%	0.7%	1.4%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

TN-99 Nashville Hwy at 7th Ave/7th Avenue

AM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				7th Ave Northbound				7th Avenue Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	9	1205	117	1	48	1106	10	0	30	1	41	0	11	5	5	2589
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians		1		0		0		1		0		0		0		0	
Heavy Vehicles	0	0	48	4	0	0	35	1	0	3	0	2	0	1	1	0	
Heavy Vehicle %	2	2	4	3	2	2	3	10	2	10	2	5	2	9	20	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	1	74	7	0	3	67	1	0	2	0	3	0	1	0	0	159
No-Build 2025 AM Volumes (Growth Only)	0	10	1279	124	1	51	1173	11	0	32	1	44	0	12	5	5	2748
Project Traffic																	
Trip Distribution IN		5%	25%					5%									
Trip Distribution OUT							5%										
Project Trips	0	1	4	0	0	0	2	1	0	0	0	0	0	0	0	0	8
Build 2025 AM Volumes (Growth Only)	0	11	1283	124	1	51	1175	12	0	32	1	44	0	12	5	5	2756
% from Existing (Build-Out)	0.0%	81.8%	93.9%	94.4%	100.0%	94.1%	94.1%	83.3%	0.0%	93.8%	100.0%	93.2%	0.0%	91.7%	100.0%	100.0%	93.9%
% from Background Growth (Build-Out)	0.0%	9.1%	5.8%	5.6%	0.0%	5.9%	5.7%	8.3%	0.0%	6.3%	0.0%	6.8%	0.0%	8.3%	0.0%	0.0%	5.8%
% from Project Trips (Build-Out)	0.0%	9.1%	0.3%	0.0%	0.0%	0.0%	0.2%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%

PM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				7th Ave Northbound				7th Avenue Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	2	50	1281	57	1	40	1414	33	0	24	7	37	0	30	6	37	3019
Existing Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Conflicting Pedestrians		1		0		0		1		0		0		0		0	
Heavy Vehicles	0	0	21	0	0	1	26	0	0	0	0	0	0	0	1	0	
Heavy Vehicle %	2	2	2	2	2	3	2	2	2	2	2	2	2	2	17	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	3	78	3	0	2	86	2	0	1	0	2	0	2	0	2	181
No-Build 2025 PM Volumes (Growth Only)	2	53	1359	60	1	42	1500	35	0	25	7	39	0	32	6	39	3200
Project Traffic																	
Trip Distribution IN		5%	25%					5%									
Trip Distribution OUT							5%										
Project Trips	0	2	12	0	0	0	1	2	0	0	0	0	0	0	0	0	17
Build 2025 PM Volumes (Growth Only)	2	55	1371	60	1	42	1501	37	0	25	7	39	0	32	6	39	3217
% from Existing (Build-Out)	100.0%	90.9%	93.4%	95.0%	100.0%	95.2%	94.2%	89.2%	0.0%	96.0%	100.0%	94.9%	0.0%	93.8%	100.0%	94.9%	93.8%
% from Background Growth (Build-Out)	0.0%	5.5%	5.7%	5.0%	0.0%	4.8%	5.7%	5.4%	0.0%	4.0%	0.0%	5.1%	0.0%	6.3%	0.0%	5.1%	5.6%
% from Project Trips (Build-Out)	0.0%	3.6%	0.9%	0.0%	0.0%	0.0%	0.1%	5.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 5

TN-99 Nashville Hwy at Driveway/River Rd

AM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				Driveway Northbound				River Rd Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	0	1332	0	0	0	1140	3	0	0	0	0	0	0	0	28	2503
Existing Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	50	0	0	0	38	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	4	2	2	2	3	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	81	0	0	0	70	0	0	0	0	0	0	0	0	2	153
No-Build 2025 AM Volumes (Growth Only)	0	0	1413	0	0	0	1210	3	0	0	0	0	0	0	0	30	2656
Project Traffic																	
Trip Distribution IN			30%														
Trip Distribution OUT							5%									25%	
Project Trips	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	12	19
Build 2025 AM Volumes (Growth Only)	0	0	1418	0	0	0	1212	3	0	0	0	0	0	0	0	42	2675
% from Existing (Build-Out)	0.0%	0.0%	93.9%	0.0%	0.0%	0.0%	94.1%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	93.6%
% from Background Growth (Build-Out)	0.0%	0.0%	5.7%	0.0%	0.0%	0.0%	5.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.8%	5.7%
% from Project Trips (Build-Out)	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%	0.7%

PM PEAK HOUR

	TN-99 Nashville Hwy Eastbound				TN-99 Nashville Hwy Westbound				Driveway Northbound				River Rd Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	0	0	1391	0	0	0	1479	4	0	0	0	12	0	0	0	43	2929
Existing Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Conflicting Pedestrians		0		0		0		0		1		0		0		1	
Heavy Vehicles	0	0	23	0	0	0	29	0	0	0	0	0	0	0	0	1	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	85	0	0	0	90	0	0	0	0	1	0	0	0	3	179
No-Build 2025 PM Volumes (Growth Only)	0	0	1476	0	0	0	1569	4	0	0	0	13	0	0	0	46	3108
Project Traffic																	
Trip Distribution IN			30%														
Trip Distribution OUT							5%									25%	
Project Trips	0	0	14	0	0	0	1	0	0	0	0	0	0	0	0	7	22
Build 2025 PM Volumes (Growth Only)	0	0	1490	0	0	0	1570	4	0	0	0	13	0	0	0	53	3130
% from Existing (Build-Out)	0.0%	0.0%	93.4%	0.0%	0.0%	0.0%	94.2%	100.0%	0.0%	0.0%	0.0%	92.3%	0.0%	0.0%	0.0%	81.1%	93.6%
% from Background Growth (Build-Out)	0.0%	0.0%	5.7%	0.0%	0.0%	0.0%	5.7%	0.0%	0.0%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	5.7%	5.7%
% from Project Trips (Build-Out)	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	13.2%	0.7%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 6

Ashland Way/Site Driveway A at River Road

AM PEAK HOUR

	Ashland Way Eastbound				Site Driveway A Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes											6				23		29
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
No-Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	6	0	0	0	24	0	30
Project Traffic																	
Trip Distribution IN												5%		30%			
Trip Distribution OUT						20%		30%									
Project Trips	0	0	0	0	0	9	0	14	0	0	0	1	0	5	0	0	29
Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	9	0	14	0	0	6	1	0	5	24	0	59
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	95.8%	0.0%	49.2%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.2%	0.0%	1.7%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	49.2%

PM PEAK HOUR

	Ashland Way Eastbound				Site Driveway A Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes											28				20		48
Existing Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
No-Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	30	0	0	0	21	0	51
Project Traffic																	
Trip Distribution IN												5%		30%			
Trip Distribution OUT						20%		30%									
Project Trips	0	0	0	0	0	6	0	9	0	0	0	2	0	14	0	0	31
Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	6	0	9	0	0	30	2	0	14	21	0	82
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	93.3%	0.0%	0.0%	0.0%	95.2%	0.0%	58.5%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	0.0%	0.0%	0.0%	4.8%	0.0%	3.7%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	37.8%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 7

Site Driveway B at River Road

AM PEAK HOUR

	Eastbound				Site Driveway B Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes											6				23		29
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
No-Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	6	0	0	0	24	0	30
Project Traffic																	
Trip Distribution IN														5%	30%		
Trip Distribution OUT								5%			30%				5%		
Project Trips	0	0	0	0	0	0	0	2	0	0	14	0	0	1	7	0	24
Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	2	0	0	20	0	0	1	31	0	54
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.0%	0.0%	0.0%	0.0%	74.2%	0.0%	53.7%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	1.9%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	70.0%	0.0%	0.0%	100.0%	22.6%	0.0%	44.4%

PM PEAK HOUR

	0 Eastbound				Site Driveway B Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes											28				20		48
Existing Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
No-Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	30	0	0	0	21	0	51
Project Traffic																	
Trip Distribution IN														5%	30%		
Trip Distribution OUT								5%			30%				5%		
Project Trips	0	0	0	0	0	0	0	1	0	0	9	0	0	2	15	0	27
Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	1	0	0	39	0	0	2	36	0	78
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	71.8%	0.0%	0.0%	0.0%	55.6%	0.0%	61.5%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	0.0%	0.0%	2.8%	0.0%	3.8%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	23.1%	0.0%	0.0%	100.0%	41.7%	0.0%	34.6%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 8

Site Driveway C at River Road

AM PEAK HOUR

	Eastbound				Site Driveway C Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes											6				23		29
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
No-Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	6	0	0	0	24	0	30
Project Traffic																	
Trip Distribution IN														10%	35%		
Trip Distribution OUT						5%		5%			35%						
Project Trips	0	0	0	0	0	2	0	2	0	0	16	0	0	2	6	0	28
Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	2	0	2	0	0	22	0	0	2	30	0	58
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	27.3%	0.0%	0.0%	0.0%	76.7%	0.0%	50.0%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	1.7%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	72.7%	0.0%	0.0%	100.0%	20.0%	0.0%	48.3%

PM PEAK HOUR

	0 Eastbound				Site Driveway C Westbound				River Road Northbound				River Road Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes											28				20		48
Existing Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	
Conflicting Pedestrians																	
Heavy Vehicles											0				0		
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
No-Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	30	0	0	0	21	0	51
Project Traffic																	
Trip Distribution IN														10%	35%		
Trip Distribution OUT						5%		5%			35%						
Project Trips	0	0	0	0	0	1	0	1	0	0	10	0	0	5	16	0	33
Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	1	0	1	0	0	40	0	0	5	37	0	84
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	70.0%	0.0%	0.0%	0.0%	54.1%	0.0%	57.1%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%	0.0%	2.7%	0.0%	3.6%
% from Project Trips (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	25.0%	0.0%	0.0%	100.0%	43.2%	0.0%	39.3%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 9

Site Driveway C at Taylor Bend

AM PEAK HOUR

	Site Driveway C Eastbound				Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	10
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	10
Project Traffic																	
Trip Distribution IN										5%					30%	5%	
Trip Distribution OUT		5%		5%							20%						
Project Trips	0	2	0	2	0	0	0	0	0	1	9	0	0	0	5	1	20
Build 2025 AM Volumes (Growth Only)	0	2	0	2	0	0	0	0	0	1	15	0	0	0	9	1	30
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	40.0%	0.0%	0.0%	0.0%	44.4%	0.0%	33.3%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% from Project Trips (Build-Out)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	60.0%	0.0%	0.0%	0.0%	55.6%	100.0%	66.7%

PM PEAK HOUR

	Site Driveway C Eastbound				Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11
Existing Peak Hour Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11
Project Traffic																	
Trip Distribution IN										5%					30%	5%	
Trip Distribution OUT		5%		5%							20%						
Project Trips	0	1	0	1	0	0	0	0	0	2	6	0	0	0	14	2	26
Build 2025 PM Volumes (Growth Only)	0	1	0	1	0	0	0	0	0	2	11	0	0	0	20	2	37
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	45.5%	0.0%	0.0%	0.0%	30.0%	0.0%	29.7%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% from Project Trips (Build-Out)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	54.5%	0.0%	0.0%	0.0%	70.0%	100.0%	70.3%

INTERSECTION VOLUME WORKSHEET

INTERSECTION 10

Site Driveway B at Taylor Bend

AM PEAK HOUR

	Site Driveway B Eastbound				Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 AM Volumes	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	10
Existing Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor (Build-Out)	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips (Build-Out)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build 2025 AM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	10
Project Traffic																	
Trip Distribution IN										20%	5%					20%	
Trip Distribution OUT		20%		5%											5%		
Project Trips	0	9	0	2	0	0	0	0	0	3	1	0	0	0	2	3	20
Build 2025 AM Volumes (Growth Only)	0	9	0	2	0	0	0	0	0	3	7	0	0	0	6	3	30
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	85.7%	0.0%	0.0%	0.0%	66.7%	0.0%	33.3%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% from Project Trips (Build-Out)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	14.3%	0.0%	0.0%	0.0%	33.3%	100.0%	66.7%

PM PEAK HOUR

	Site Driveway B Eastbound				Westbound				Taylor Bend Northbound				Taylor Bend Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2023 PM Volumes	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11
Existing Peak Hour Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Conflicting Pedestrians		0		0		0		0		0		0		0		0	
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Growth Factor	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	1.061	
Growth Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No-Build 2025 PM Volumes (Growth Only)	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11
Project Traffic																	
Trip Distribution IN										20%	5%					20%	
Trip Distribution OUT		20%		5%											5%		
Project Trips	0	6	0	1	0	0	0	0	0	9	2	0	0	0	1	9	28
Build 2025 PM Volumes (Growth Only)	0	6	0	1	0	0	0	0	0	9	7	0	0	0	7	9	39
% from Existing (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	71.4%	0.0%	0.0%	0.0%	85.7%	0.0%	28.2%
% from Background Growth (Build-Out)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
% from Project Trips (Build-Out)	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	28.6%	0.0%	0.0%	0.0%	14.3%	100.0%	71.8%

APPENDIX D

Synchro Reports

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	0	2	12	2	3	1	2	4	2	8
Future Vol, veh/h	3	3	0	2	12	2	3	1	2	4	2	8
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	2	2	2
Mvmt Flow	4	4	0	3	16	3	4	1	3	5	3	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7	6.9	6.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	50%	12%	29%
Vol Thru, %	17%	50%	75%	14%
Vol Right, %	33%	0%	12%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	6	16	14
LT Vol	3	3	2	4
Through Vol	1	3	12	2
RT Vol	2	0	2	8
Lane Flow Rate	8	8	21	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.009	0.009	0.023	0.019
Departure Headway (Hd)	3.899	4.097	3.937	3.705
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	920	876	913	969
Service Time	1.913	2.108	1.946	1.718
HCM Lane V/C Ratio	0.009	0.009	0.023	0.02
HCM Control Delay	6.9	7.1	7	6.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.1	0.1

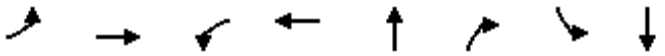
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	6	12	88	162	6
Future Vol, veh/h	8	6	12	88	162	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	9	7	13	99	182	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	307	182	189	0	-	0
Stage 1	182	-	-	-	-	-
Stage 2	125	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	685	861	1385	-	-	-
Stage 1	849	-	-	-	-	-
Stage 2	901	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	678	861	1385	-	-	-
Mov Cap-2 Maneuver	678	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	901	-	-	-	-	-

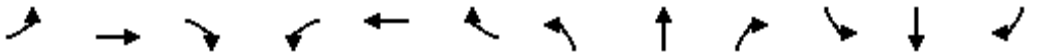
Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1385	-	746	-	-
HCM Lane V/C Ratio	0.01	-	0.021	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	74	1260	9	1156	6	6	25	129
v/c Ratio	0.18	0.45	0.02	0.44	0.09	0.04	0.28	0.59
Control Delay	2.5	3.1	2.0	6.3	50.0	0.3	56.2	19.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.5	3.1	2.0	6.3	50.0	0.3	56.2	19.9
Queue Length 50th (ft)	6	85	1	142	4	0	17	1
Queue Length 95th (ft)	15	102	3	218	17	0	44	58
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	519	2796	525	2623	179	341	249	386
Starvation Cap Reductn	0	84	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.46	0.02	0.44	0.03	0.02	0.10	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	1168	4	8	1043	32	3	3	6	23	1	119
Future Volume (veh/h)	69	1168	4	8	1043	32	3	3	6	23	1	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1856	1767	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	1256	4	9	1122	34	3	3	6	25	1	128
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	5	2	2	3	9	2	2	2	2	2	2
Cap, veh/h	405	2583	8	392	2439	74	77	62	183	118	1	182
Arrive On Green	0.08	1.00	1.00	0.01	0.70	0.70	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1767	3547	11	1781	3493	106	244	535	1585	1406	12	1575
Grp Volume(v), veh/h	74	614	646	9	566	590	6	0	6	25	0	129
Grp Sat Flow(s),veh/h/ln	1767	1735	1824	1781	1763	1836	779	0	1585	1406	0	1587
Q Serve(g_s), s	1.2	0.0	0.0	0.2	15.7	15.7	0.0	0.0	0.4	1.9	0.0	8.6
Cycle Q Clear(g_c), s	1.2	0.0	0.0	0.2	15.7	15.7	8.6	0.0	0.4	10.5	0.0	8.6
Prop In Lane	1.00		0.01	1.00		0.06	0.50		1.00	1.00		0.99
Lane Grp Cap(c), veh/h	405	1263	1328	392	1231	1282	139	0	183	118	0	183
V/C Ratio(X)	0.18	0.49	0.49	0.02	0.46	0.46	0.04	0.00	0.03	0.21	0.00	0.70
Avail Cap(c_a), veh/h	582	1263	1328	624	1231	1282	232	0	281	205	0	281
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.9	0.0	0.0	4.7	7.4	7.4	43.4	0.0	43.2	51.9	0.0	46.8
Incr Delay (d2), s/veh	0.2	1.2	1.1	0.0	1.2	1.2	0.0	0.0	0.0	0.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.4	0.4	0.1	5.1	5.3	0.1	0.0	0.1	0.7	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.1	1.2	1.1	4.7	8.6	8.6	43.4	0.0	43.2	52.2	0.0	48.7
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h		1334			1165			12			154	
Approach Delay, s/veh		1.4			8.6			43.3			49.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	86.1		18.2	9.0	82.8		18.2				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.2	2.0		10.6	3.2	17.7		12.5				
Green Ext Time (p_c), s	0.0	24.2		0.0	0.1	18.6		0.2				

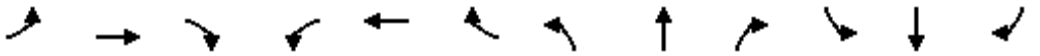
Intersection Summary		
HCM 6th Ctrl Delay		7.5
HCM 6th LOS		A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	1310	127	53	1202	11	33	1	45	12	10
v/c Ratio	0.06	0.50	0.11	0.45	0.41	0.01	0.34	0.01	0.24	0.12	0.08
Control Delay	51.2	8.4	2.9	79.2	1.3	0.0	57.4	46.0	6.0	48.8	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	8.4	2.9	79.2	1.3	0.0	57.4	46.0	6.0	48.8	35.6
Queue Length 50th (ft)	3	204	9	40	7	0	22	1	0	8	3
Queue Length 95th (ft)	12	306	32	81	33	m0	54	6	12	27	21
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2612	1199	241	2906	1215	224	321	331	228	277
Starvation Cap Reductn	0	0	0	0	229	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.50	0.11	0.22	0.45	0.01	0.15	0.00	0.14	0.05	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1205	117	49	1106	10	30	1	41	11	5	5
Future Volume (veh/h)	9	1205	117	49	1106	10	30	1	41	11	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1856	1870	1856	1752	1752	1870	1826	1767	1604	1870
Adj Flow Rate, veh/h	10	1310	127	53	1202	11	33	1	45	12	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	3	2	3	10	10	2	5	9	20	2
Cap, veh/h	41	2656	1193	68	2770	1166	120	89	74	126	35	35
Arrive On Green	0.01	0.76	0.76	0.04	0.79	0.79	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	3456	3497	1571	1781	3526	1484	1316	1870	1547	1284	736	736
Grp Volume(v), veh/h	10	1310	127	53	1202	11	33	1	45	12	0	10
Grp Sat Flow(s),veh/h/ln	1728	1749	1571	1781	1763	1484	1316	1870	1547	1284	0	1471
Q Serve(g_s), s	0.3	15.9	2.3	3.2	12.2	0.2	2.7	0.1	3.1	1.0	0.0	0.7
Cycle Q Clear(g_c), s	0.3	15.9	2.3	3.2	12.2	0.2	3.4	0.1	3.1	1.0	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	41	2656	1193	68	2770	1166	120	89	74	126	0	70
V/C Ratio(X)	0.24	0.49	0.11	0.78	0.43	0.01	0.28	0.01	0.61	0.10	0.00	0.14
Avail Cap(c_a), veh/h	471	2656	1193	243	2770	1166	284	323	267	287	0	254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.90	0.90	0.90	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	5.1	3.5	52.4	3.8	2.5	51.9	49.9	51.4	50.4	0.0	50.2
Incr Delay (d2), s/veh	1.1	0.7	0.2	6.2	0.4	0.0	0.5	0.0	3.0	0.7	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.2	0.6	1.5	2.9	0.0	0.9	0.0	1.3	0.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	5.8	3.6	58.6	4.3	2.6	52.3	49.9	54.3	51.1	0.0	52.2
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	D
Approach Vol, veh/h		1447			1266			79			22	
Approach Delay, s/veh		5.9			6.5			53.4			51.6	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	92.4		11.3	9.2	89.5		11.3				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	2.3	14.2		5.4	5.2	17.9		3.0				
Green Ext Time (p_c), s	0.0	21.5		0.1	0.0	24.4		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		7.9	
HCM 6th LOS		A	

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1332	1140	3	0	28
Future Vol, veh/h	0	1332	1140	3	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	3	2	2	2
Mvmt Flow	0	1448	1239	3	0	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	621
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	430
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	430
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	430
HCM Lane V/C Ratio	-	-	-	0.071
HCM Control Delay (s)	-	-	-	14
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	16	1	4	12	4	1	1	3	4	1	4
Future Vol, veh/h	11	16	1	4	12	4	1	1	3	4	1	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	21	1	5	15	5	1	1	4	5	1	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7	6.8	6.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	39%	20%	44%
Vol Thru, %	20%	57%	60%	11%
Vol Right, %	60%	4%	20%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	28	20	9
LT Vol	1	11	4	4
Through Vol	1	16	12	1
RT Vol	3	1	4	4
Lane Flow Rate	6	36	26	12
Geometry Grp	1	1	1	1
Degree of Util (X)	0.007	0.04	0.028	0.012
Departure Headway (Hd)	3.73	4.042	3.912	3.869
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	959	889	918	924
Service Time	1.756	2.052	1.925	1.895
HCM Lane V/C Ratio	0.006	0.04	0.028	0.013
HCM Control Delay	6.8	7.2	7	6.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0

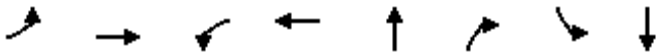
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	2	9	160	145	26
Future Vol, veh/h	24	2	9	160	145	26
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	2	9	168	153	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	340	154	181	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	186	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	656	892	1394	-	-	-
Stage 1	874	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	650	891	1393	-	-	-
Mov Cap-2 Maneuver	650	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	845	-	-	-	-	-

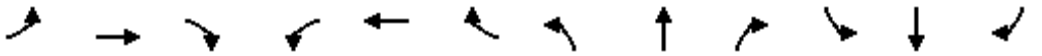
Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1393	-	664	-	-
HCM Lane V/C Ratio	0.007	-	0.041	-	-
HCM Control Delay (s)	7.6	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	127	1263	13	1434	4	5	55	140
v/c Ratio	0.41	0.46	0.04	0.58	0.03	0.03	0.49	0.56
Control Delay	12.3	3.9	2.6	9.8	44.8	0.2	62.2	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	4.0	2.6	9.8	44.8	0.2	62.2	17.3
Queue Length 50th (ft)	12	84	1	225	3	0	38	2
Queue Length 95th (ft)	61	112	5	364	14	0	78	60
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	423	2751	515	2489	282	341	249	391
Starvation Cap Reductn	0	119	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.48	0.03	0.58	0.01	0.01	0.22	0.36

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	123	1221	4	13	1349	42	1	3	5	53	3	133
Future Volume (veh/h)	123	1221	4	13	1349	42	1	3	5	53	3	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1530	1870	1870	1870	1870	1870	1870	1870	1870	1856
Adj Flow Rate, veh/h	127	1259	4	13	1391	43	1	3	5	55	3	137
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	25	2	2	2	2	2	2	2	2	3
Cap, veh/h	313	2540	8	386	2355	73	65	163	223	147	5	219
Arrive On Green	0.09	1.00	1.00	0.01	0.67	0.67	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	3634	12	1781	3519	109	171	1160	1585	1407	34	1556
Grp Volume(v), veh/h	127	616	647	13	702	732	4	0	5	55	0	140
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	1781	1777	1851	1331	0	1585	1407	0	1590
Q Serve(g_s), s	2.4	0.0	0.0	0.3	23.7	23.8	0.0	0.0	0.3	4.2	0.0	9.1
Cycle Q Clear(g_c), s	2.4	0.0	0.0	0.3	23.7	23.8	9.1	0.0	0.3	13.3	0.0	9.1
Prop In Lane	1.00		0.01	1.00		0.06	0.25		1.00	1.00		0.98
Lane Grp Cap(c), veh/h	313	1242	1306	386	1189	1239	228	0	223	147	0	224
V/C Ratio(X)	0.41	0.50	0.50	0.03	0.59	0.59	0.02	0.00	0.02	0.37	0.00	0.63
Avail Cap(c_a), veh/h	485	1242	1306	610	1189	1239	289	0	281	199	0	282
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	0.0	5.5	9.9	10.0	40.8	0.0	40.7	50.8	0.0	44.5
Incr Delay (d2), s/veh	0.7	1.2	1.2	0.0	2.2	2.1	0.0	0.0	0.0	0.6	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.4	0.4	0.1	8.3	8.6	0.1	0.0	0.1	1.5	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	1.2	1.2	5.6	12.1	12.0	40.8	0.0	40.8	51.4	0.0	45.6
LnGrp LOS	A	A	A	A	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1390			1447			9			195	
Approach Delay, s/veh		1.9			12.0			40.8			47.2	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.1	82.9		21.0	9.4	79.6		21.0				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	2.0		11.1	4.4	25.8		15.3				
Green Ext Time (p_c), s	0.0	24.2		0.0	0.2	21.7		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			9.7									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	53	1307	58	42	1443	34	24	7	38	31	44
v/c Ratio	0.29	0.48	0.05	0.39	0.54	0.03	0.21	0.04	0.18	0.25	0.25
Control Delay	53.9	7.9	1.0	77.8	2.4	0.0	49.5	44.7	2.8	50.4	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	7.9	1.0	77.8	2.4	0.0	49.5	44.7	2.8	50.4	20.6
Queue Length 50th (ft)	19	207	0	32	14	0	16	5	0	21	4
Queue Length 95th (ft)	39	311	9	m56	34	m0	42	19	4	50	37
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2708	1230	238	2673	1200	234	321	338	242	305
Starvation Cap Reductn	0	0	0	0	111	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.48	0.05	0.18	0.56	0.03	0.10	0.02	0.11	0.13	0.14

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	1281	57	41	1414	33	24	7	37	30	6	37
Future Volume (veh/h)	52	1281	57	41	1414	33	24	7	37	30	6	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	1870	1870	1870	1870	1648	1870
Adj Flow Rate, veh/h	53	1307	58	42	1443	34	24	7	38	31	6	38
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	2	2	2	2	2	2	17	2
Cap, veh/h	126	2657	1184	58	2644	1179	113	122	103	149	13	80
Arrive On Green	0.04	0.75	0.75	0.03	0.74	0.74	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	3456	3554	1584	1767	3554	1584	1362	1870	1585	1361	194	1232
Grp Volume(v), veh/h	53	1307	58	42	1443	34	24	7	38	31	0	44
Grp Sat Flow(s),veh/h/ln	1728	1777	1584	1767	1777	1584	1362	1870	1585	1361	0	1426
Q Serve(g_s), s	1.7	16.2	1.1	2.6	19.3	0.6	1.9	0.4	2.5	2.4	0.0	3.3
Cycle Q Clear(g_c), s	1.7	16.2	1.1	2.6	19.3	0.6	5.2	0.4	2.5	2.8	0.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.86
Lane Grp Cap(c), veh/h	126	2657	1184	58	2644	1179	113	122	103	149	0	93
V/C Ratio(X)	0.42	0.49	0.05	0.72	0.55	0.03	0.21	0.06	0.37	0.21	0.00	0.47
Avail Cap(c_a), veh/h	471	2657	1184	241	2644	1179	260	323	274	296	0	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.9	5.5	3.6	52.7	6.1	3.7	52.1	48.3	49.3	49.6	0.0	49.6
Incr Delay (d2), s/veh	0.8	0.7	0.1	4.9	0.6	0.0	0.3	0.1	0.8	1.5	0.0	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	0.3	1.2	5.4	0.2	0.7	0.2	1.0	0.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	6.2	3.7	57.6	6.7	3.7	52.5	48.3	50.1	51.0	0.0	57.5
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	E
Approach Vol, veh/h		1418			1519			69			75	
Approach Delay, s/veh		7.8			8.1			50.7			54.8	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	87.8		13.2	8.6	88.2		13.2				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	3.7	21.3		7.2	4.6	18.2		5.3				
Green Ext Time (p_c), s	0.0	24.7		0.1	0.0	23.4		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		10.0	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1391	1479	4	0	43
Future Vol, veh/h	0	1391	1479	4	0	43
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1449	1541	4	0	45

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	774
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	341
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	341
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	341
HCM Lane V/C Ratio	-	-	-	0.131
HCM Control Delay (s)	-	-	-	17.1
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Intersection Delay, s/veh	7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	0	2	13	2	3	1	2	4	2	8
Future Vol, veh/h	3	3	0	2	13	2	3	1	2	4	2	8
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	2	2	2
Mvmt Flow	4	4	0	3	17	3	4	1	3	5	3	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.1	7.1	7	6.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	50%	12%	29%
Vol Thru, %	17%	50%	76%	14%
Vol Right, %	33%	0%	12%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	6	17	14
LT Vol	3	3	2	4
Through Vol	1	3	13	2
RT Vol	2	0	2	8
Lane Flow Rate	8	8	23	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.009	0.009	0.025	0.019
Departure Headway (Hd)	3.901	4.098	3.94	3.707
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	919	876	912	967
Service Time	1.917	2.11	1.949	1.722
HCM Lane V/C Ratio	0.009	0.009	0.025	0.02
HCM Control Delay	7	7.1	7.1	6.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0	0.1	0.1

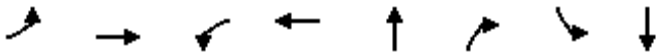
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	6	13	93	172	6
Future Vol, veh/h	8	6	13	93	172	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	9	7	15	104	193	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	327	193	200	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	134	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	667	849	1372	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	892	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	659	849	1372	-	-	-
Mov Cap-2 Maneuver	659	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	892	-	-	-	-	-

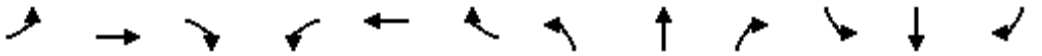
Approach	EB	NB	SB
HCM Control Delay, s	10	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1372	-	729	-	-
HCM Lane V/C Ratio	0.011	-	0.022	-	-
HCM Control Delay (s)	7.7	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	78	1336	9	1227	6	6	26	136
v/c Ratio	0.21	0.48	0.03	0.47	0.10	0.04	0.29	0.60
Control Delay	2.7	3.2	2.0	6.6	50.2	0.3	56.1	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	3.2	2.0	6.6	50.2	0.3	56.1	19.8
Queue Length 50th (ft)	6	90	1	156	4	0	18	1
Queue Length 95th (ft)	16	108	4	242	17	0	45	59
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	495	2792	499	2615	167	341	249	392
Starvation Cap Reductn	0	83	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.49	0.02	0.47	0.04	0.02	0.10	0.35

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	1239	4	8	1107	34	3	3	6	24	1	126
Future Volume (veh/h)	73	1239	4	8	1107	34	3	3	6	24	1	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1856	1767	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	78	1332	4	9	1190	37	3	3	6	26	1	135
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	5	2	2	3	9	2	2	2	2	2	2
Cap, veh/h	379	2565	8	369	2418	75	78	62	191	119	1	190
Arrive On Green	0.08	1.00	1.00	0.01	0.69	0.69	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1767	3548	11	1781	3490	108	238	518	1585	1406	12	1575
Grp Volume(v), veh/h	78	651	685	9	601	626	6	0	6	26	0	136
Grp Sat Flow(s),veh/h/ln	1767	1735	1824	1781	1763	1836	756	0	1585	1406	0	1587
Q Serve(g_s), s	1.3	0.0	0.0	0.2	17.5	17.5	0.0	0.0	0.4	2.0	0.0	9.1
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.2	17.5	17.5	9.1	0.0	0.4	11.1	0.0	9.1
Prop In Lane	1.00		0.01	1.00		0.06	0.50		1.00	1.00		0.99
Lane Grp Cap(c), veh/h	379	1254	1319	369	1221	1272	140	0	191	119	0	191
V/C Ratio(X)	0.21	0.52	0.52	0.02	0.49	0.49	0.04	0.00	0.03	0.22	0.00	0.71
Avail Cap(c_a), veh/h	555	1254	1319	600	1221	1272	225	0	281	199	0	281
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.4	0.0	0.0	4.9	7.9	7.9	42.9	0.0	42.7	51.8	0.0	46.5
Incr Delay (d2), s/veh	0.2	1.3	1.2	0.0	1.4	1.4	0.0	0.0	0.0	0.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.5	0.5	0.1	5.8	6.0	0.1	0.0	0.1	0.7	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	1.3	1.2	4.9	9.3	9.2	42.9	0.0	42.7	52.2	0.0	48.4
LnGrp LOS	A	A	A	A	A	A	D	A	D	D	A	D
Approach Vol, veh/h		1414			1236			12			162	
Approach Delay, s/veh		1.5			9.2			42.8			49.0	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	85.5		18.8	9.0	82.2		18.8				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.2	2.0		11.1	3.3	19.5		13.1				
Green Ext Time (p_c), s	0.0	26.7		0.0	0.1	19.8		0.3				

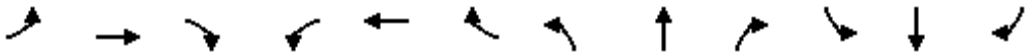
Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	11	1390	135	57	1275	12	35	1	48	13	10
v/c Ratio	0.07	0.53	0.11	0.47	0.44	0.01	0.36	0.01	0.26	0.12	0.08
Control Delay	51.3	9.0	3.1	79.3	1.3	0.0	57.8	45.0	7.0	48.8	35.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	9.0	3.1	79.3	1.4	0.0	57.8	45.0	7.0	48.8	35.3
Queue Length 50th (ft)	4	228	11	43	8	0	24	1	0	9	3
Queue Length 95th (ft)	13	342	35	87	35	m0	57	6	15	28	20
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2602	1195	241	2902	1214	224	321	331	228	277
Starvation Cap Reductn	0	0	0	0	158	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.53	0.11	0.24	0.46	0.01	0.16	0.00	0.15	0.06	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1279	124	52	1173	11	32	1	44	12	5	5
Future Volume (veh/h)	10	1279	124	52	1173	11	32	1	44	12	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1856	1870	1856	1752	1752	1870	1826	1767	1604	1870
Adj Flow Rate, veh/h	11	1390	135	57	1275	12	35	1	48	13	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	3	2	3	10	10	2	5	9	20	2
Cap, veh/h	45	2639	1186	74	2760	1162	122	93	77	128	37	37
Arrive On Green	0.01	0.75	0.75	0.04	0.78	0.78	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	3456	3497	1571	1781	3526	1484	1316	1870	1547	1281	736	736
Grp Volume(v), veh/h	11	1390	135	57	1275	12	35	1	48	13	0	10
Grp Sat Flow(s),veh/h/ln	1728	1749	1571	1781	1763	1484	1316	1870	1547	1281	0	1471
Q Serve(g_s), s	0.3	17.8	2.5	3.5	13.5	0.2	2.9	0.1	3.3	1.1	0.0	0.7
Cycle Q Clear(g_c), s	0.3	17.8	2.5	3.5	13.5	0.2	3.6	0.1	3.3	1.1	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	45	2639	1186	74	2760	1162	122	93	77	128	0	73
V/C Ratio(X)	0.25	0.53	0.11	0.78	0.46	0.01	0.29	0.01	0.62	0.10	0.00	0.14
Avail Cap(c_a), veh/h	471	2639	1186	243	2760	1162	284	323	267	286	0	254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	5.5	3.6	52.2	4.1	2.6	51.7	49.7	51.3	50.2	0.0	50.0
Incr Delay (d2), s/veh	1.0	0.8	0.2	5.6	0.5	0.0	0.5	0.0	3.1	0.7	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.9	0.6	1.6	3.3	0.0	1.0	0.0	1.4	0.4	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.8	6.3	3.8	57.9	4.6	2.6	52.2	49.7	54.3	51.0	0.0	51.8
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	D
Approach Vol, veh/h		1536			1344			84			23	
Approach Delay, s/veh		6.4			6.8			53.4			51.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	92.1		11.5	9.5	89.0		11.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	2.3	15.5		5.6	5.5	19.8		3.1				
Green Ext Time (p_c), s	0.0	23.0		0.1	0.0	25.4		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		8.2
HCM 6th LOS		A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1413	1210	3	0	30
Future Vol, veh/h	0	1413	1210	3	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	3	2	2	2
Mvmt Flow	0	1536	1315	3	0	33

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	659
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	406
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	406
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	406
HCM Lane V/C Ratio	-	-	-	0.08
HCM Control Delay (s)	-	-	-	14.6
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0.3

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	17	1	4	13	4	1	1	3	4	1	4
Future Vol, veh/h	11	17	1	4	13	4	1	1	3	4	1	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	22	1	5	17	5	1	1	4	5	1	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7	6.8	6.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	38%	19%	44%
Vol Thru, %	20%	59%	62%	11%
Vol Right, %	60%	3%	19%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	29	21	9
LT Vol	1	11	4	4
Through Vol	1	17	13	1
RT Vol	3	1	4	4
Lane Flow Rate	6	37	27	12
Geometry Grp	1	1	1	1
Degree of Util (X)	0.007	0.042	0.029	0.012
Departure Headway (Hd)	3.733	4.041	3.917	3.872
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	957	889	916	923
Service Time	1.762	2.051	1.93	1.9
HCM Lane V/C Ratio	0.006	0.042	0.029	0.013
HCM Control Delay	6.8	7.2	7	6.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.1	0.1	0

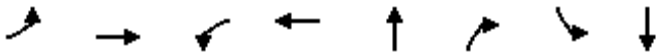
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	2	10	170	154	28
Future Vol, veh/h	25	2	10	170	154	28
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	2	11	179	162	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	364	163	192	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	635	882	1381	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	628	881	1380	-	-	-
Mov Cap-2 Maneuver	628	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	832	-	-	-	-	-

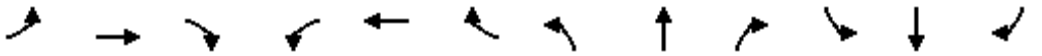
Approach	EB	NB	SB
HCM Control Delay, s	10.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1380	-	642	-	-
HCM Lane V/C Ratio	0.008	-	0.044	-	-
HCM Control Delay (s)	7.6	0	10.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	134	1339	14	1521	4	5	58	148
v/c Ratio	0.45	0.49	0.04	0.62	0.03	0.03	0.51	0.57
Control Delay	17.1	4.1	2.9	11.3	44.5	0.2	62.7	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	4.1	2.9	11.3	44.5	0.2	62.7	16.9
Queue Length 50th (ft)	13	88	1	256	3	0	40	2
Queue Length 95th (ft)	82	118	5	435	13	0	80	61
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	398	2744	490	2448	271	341	249	398
Starvation Cap Reductn	0	117	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.51	0.03	0.62	0.01	0.01	0.23	0.37

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	1295	4	14	1431	45	1	3	5	56	3	141
Future Volume (veh/h)	130	1295	4	14	1431	45	1	3	5	56	3	141
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1530	1870	1870	1870	1870	1870	1870	1870	1870	1856
Adj Flow Rate, veh/h	134	1335	4	14	1475	46	1	3	5	58	3	145
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	25	2	2	2	2	2	2	2	2	3
Cap, veh/h	288	2513	8	364	2331	73	66	167	233	150	5	229
Arrive On Green	0.09	1.00	1.00	0.02	0.66	0.66	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1781	3634	11	1781	3518	110	169	1131	1585	1407	32	1558
Grp Volume(v), veh/h	134	653	686	14	744	777	4	0	5	58	0	148
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	1781	1777	1851	1300	0	1585	1407	0	1590
Q Serve(g_s), s	2.7	0.0	0.0	0.3	26.7	26.9	0.0	0.0	0.3	4.4	0.0	9.6
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.3	26.7	26.9	9.6	0.0	0.3	14.0	0.0	9.6
Prop In Lane	1.00		0.01	1.00		0.06	0.25		1.00	1.00		0.98
Lane Grp Cap(c), veh/h	288	1229	1292	364	1177	1226	232	0	233	150	0	234
V/C Ratio(X)	0.46	0.53	0.53	0.04	0.63	0.63	0.02	0.00	0.02	0.39	0.00	0.63
Avail Cap(c_a), veh/h	460	1229	1292	587	1177	1226	282	0	281	192	0	282
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	0.0	5.7	10.8	10.8	40.2	0.0	40.1	50.7	0.0	44.1
Incr Delay (d2), s/veh	1.0	1.4	1.3	0.0	2.6	2.5	0.0	0.0	0.0	0.6	0.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.5	0.5	0.1	9.5	9.9	0.1	0.0	0.1	1.6	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.9	1.4	1.3	5.8	13.4	13.3	40.2	0.0	40.1	51.3	0.0	45.8
LnGrp LOS	B	A	A	A	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1473			1535			9			206	
Approach Delay, s/veh		2.2			13.3			40.2			47.3	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	82.1		21.7	9.4	78.9		21.7				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	2.0		11.6	4.7	28.9		16.0				
Green Ext Time (p_c), s	0.0	26.7		0.0	0.2	21.6		0.2				

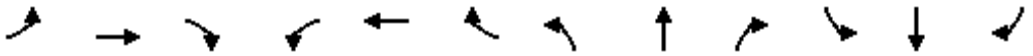
Intersection Summary												
HCM 6th Ctrl Delay			10.5									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	56	1387	61	44	1531	36	26	7	40	33	46
v/c Ratio	0.30	0.53	0.05	0.40	0.57	0.03	0.22	0.04	0.19	0.26	0.25
Control Delay	54.0	9.2	1.1	76.3	2.1	0.0	49.8	44.6	3.5	50.7	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	9.2	1.1	76.3	2.1	0.0	49.8	44.6	3.5	50.7	20.1
Queue Length 50th (ft)	20	230	0	33	15	0	17	5	0	22	4
Queue Length 95th (ft)	40	345	10	m55	36	m0	45	19	7	52	39
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2634	1198	238	2667	1197	233	321	338	242	307
Starvation Cap Reductn	0	0	0	0	109	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.53	0.05	0.18	0.60	0.03	0.11	0.02	0.12	0.14	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	1359	60	43	1500	35	25	7	39	32	6	39
Future Volume (veh/h)	55	1359	60	43	1500	35	25	7	39	32	6	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	1870	1870	1870	1870	1648	1870
Adj Flow Rate, veh/h	56	1387	61	44	1531	36	26	7	40	33	6	40
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	2	2	2	2	2	2	17	2
Cap, veh/h	129	2643	1178	59	2631	1173	116	127	108	153	13	84
Arrive On Green	0.04	0.74	0.74	0.03	0.74	0.74	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	3456	3554	1584	1767	3554	1584	1360	1870	1585	1359	186	1239
Grp Volume(v), veh/h	56	1387	61	44	1531	36	26	7	40	33	0	46
Grp Sat Flow(s),veh/h/ln	1728	1777	1584	1767	1777	1584	1360	1870	1585	1359	0	1425
Q Serve(g_s), s	1.7	18.0	1.1	2.7	21.6	0.7	2.1	0.4	2.7	2.6	0.0	3.4
Cycle Q Clear(g_c), s	1.7	18.0	1.1	2.7	21.6	0.7	5.5	0.4	2.7	2.9	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	129	2643	1178	59	2631	1173	116	127	108	153	0	97
V/C Ratio(X)	0.44	0.52	0.05	0.74	0.58	0.03	0.22	0.06	0.37	0.22	0.00	0.47
Avail Cap(c_a), veh/h	471	2643	1178	241	2631	1173	258	323	274	295	0	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	5.9	3.8	52.7	6.5	3.8	52.0	48.0	49.0	49.3	0.0	49.4
Incr Delay (d2), s/veh	0.9	0.7	0.1	5.0	0.7	0.0	0.4	0.1	0.8	1.5	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.1	0.3	1.3	6.1	0.2	0.7	0.2	1.1	0.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	6.7	3.8	57.7	7.2	3.8	52.4	48.0	49.8	50.8	0.0	56.9
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	E
Approach Vol, veh/h		1504			1611			73			79	
Approach Delay, s/veh		8.3			8.5			50.5			54.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.1	87.4		13.5	8.7	87.8		13.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	3.7	23.6		7.5	4.7	20.0		5.4				
Green Ext Time (p_c), s	0.0	25.1		0.1	0.0	24.4		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		10.5	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1476	1569	4	0	46
Future Vol, veh/h	0	1476	1569	4	0	46
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1538	1634	4	0	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	820
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	318
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	318
HCM Lane V/C Ratio	-	-	-	0.151
HCM Control Delay (s)	-	-	-	18.3
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.5

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	22	0	6	20	2	3	1	14	4	2	8
Future Vol, veh/h	3	22	0	6	20	2	3	1	14	4	2	8
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	50	2	2	2	2	2	2
Mvmt Flow	4	29	0	8	27	3	4	1	19	5	3	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.2	6.8	6.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	12%	21%	29%
Vol Thru, %	6%	88%	71%	14%
Vol Right, %	78%	0%	7%	57%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	25	28	14
LT Vol	3	3	6	4
Through Vol	1	22	20	2
RT Vol	14	0	2	8
Lane Flow Rate	24	33	37	19
Geometry Grp	1	1	1	1
Degree of Util (X)	0.024	0.038	0.042	0.02
Departure Headway (Hd)	3.638	4.06	4.034	3.789
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	980	883	889	942
Service Time	1.673	2.08	2.052	1.824
HCM Lane V/C Ratio	0.024	0.037	0.042	0.02
HCM Control Delay	6.8	7.2	7.2	6.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.1	0.1

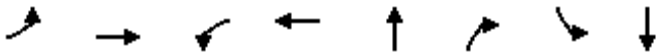
Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	22	19	93	172	11
Future Vol, veh/h	22	22	19	93	172	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	3	2	2
Mvmt Flow	25	25	21	104	193	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	339	193	205	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	657	849	1366	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	646	849	1366	-	-	-
Mov Cap-2 Maneuver	646	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	881	-	-	-	-	-

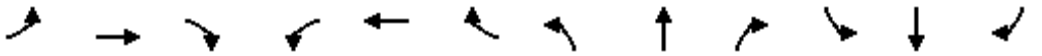
Approach	EB	NB	SB
HCM Control Delay, s	10.3	1.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1366	-	734	-	-
HCM Lane V/C Ratio	0.016	-	0.067	-	-
HCM Control Delay (s)	7.7	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	83	1336	9	1234	6	6	46	139
v/c Ratio	0.23	0.48	0.03	0.48	0.07	0.03	0.44	0.57
Control Delay	3.0	3.4	2.2	7.3	47.0	0.3	60.9	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	3.5	2.2	7.3	47.0	0.3	60.9	17.5
Queue Length 50th (ft)	7	91	1	168	4	0	32	1
Queue Length 95th (ft)	18	108	4	253	17	0	68	59
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	486	2757	493	2575	212	341	249	394
Starvation Cap Reductn	0	85	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.50	0.02	0.48	0.03	0.02	0.18	0.35

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	1239	4	8	1108	40	3	3	6	43	1	128
Future Volume (veh/h)	77	1239	4	8	1108	40	3	3	6	43	1	128
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1870	1870	1856	1767	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	83	1332	4	9	1191	43	3	3	6	46	1	138
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	5	2	2	3	9	2	2	2	2	2	2
Cap, veh/h	367	2514	8	362	2352	85	88	73	214	139	2	213
Arrive On Green	0.08	1.00	1.00	0.01	0.68	0.68	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1767	3548	11	1781	3471	125	289	540	1585	1406	11	1575
Grp Volume(v), veh/h	83	651	685	9	605	629	6	0	6	46	0	139
Grp Sat Flow(s),veh/h/ln	1767	1735	1824	1781	1763	1833	829	0	1585	1406	0	1587
Q Serve(g_s), s	1.5	0.0	0.0	0.2	18.5	18.5	0.0	0.0	0.4	3.5	0.0	9.1
Cycle Q Clear(g_c), s	1.5	0.0	0.0	0.2	18.5	18.5	9.1	0.0	0.4	12.6	0.0	9.1
Prop In Lane	1.00		0.01	1.00		0.07	0.50		1.00	1.00		0.99
Lane Grp Cap(c), veh/h	367	1229	1293	362	1195	1242	161	0	214	139	0	214
V/C Ratio(X)	0.23	0.53	0.53	0.02	0.51	0.51	0.04	0.00	0.03	0.33	0.00	0.65
Avail Cap(c_a), veh/h	542	1229	1293	594	1195	1242	224	0	281	198	0	281
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.1	0.0	0.0	5.4	8.7	8.7	41.5	0.0	41.3	51.1	0.0	45.1
Incr Delay (d2), s/veh	0.3	1.4	1.3	0.0	1.5	1.5	0.0	0.0	0.0	0.5	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.5	0.5	0.1	6.3	6.5	0.1	0.0	0.1	1.2	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.4	1.4	1.3	5.4	10.2	10.2	41.6	0.0	41.3	51.6	0.0	46.4
LnGrp LOS	A	A	A	A	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1419			1243			12			185	
Approach Delay, s/veh		1.6			10.2			41.5			47.7	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	84.0		20.3	9.1	80.6		20.3				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.2	2.0		11.1	3.5	20.5		14.6				
Green Ext Time (p_c), s	0.0	26.7		0.0	0.1	19.7		0.2				

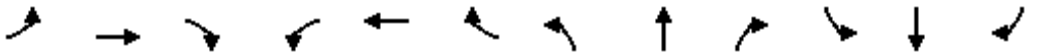
Intersection Summary												
HCM 6th Ctrl Delay			8.5									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	12	1395	135	57	1277	13	35	1	48	13	10
v/c Ratio	0.08	0.54	0.11	0.47	0.44	0.01	0.36	0.01	0.26	0.12	0.08
Control Delay	51.4	9.0	3.1	80.6	1.2	0.0	57.8	45.0	7.0	48.8	35.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	9.0	3.1	80.6	1.2	0.0	57.8	45.0	7.0	48.8	35.3
Queue Length 50th (ft)	4	230	11	43	8	0	24	1	0	9	3
Queue Length 95th (ft)	14	344	35	0	35	m0	57	6	15	28	20
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2602	1195	241	2902	1214	224	321	331	228	277
Starvation Cap Reductn	0	0	0	0	142	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.54	0.11	0.24	0.46	0.01	0.16	0.00	0.15	0.06	0.04

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1283	124	52	1175	12	32	1	44	12	5	5
Future Volume (veh/h)	11	1283	124	52	1175	12	32	1	44	12	5	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1841	1856	1870	1856	1752	1752	1870	1826	1767	1604	1870
Adj Flow Rate, veh/h	12	1395	135	57	1277	13	35	1	48	13	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	3	2	3	10	10	2	5	9	20	2
Cap, veh/h	48	2639	1186	74	2756	1160	122	93	77	128	37	37
Arrive On Green	0.01	0.75	0.75	0.04	0.78	0.78	0.05	0.05	0.05	0.05	0.05	0.05
Sat Flow, veh/h	3456	3497	1571	1781	3526	1484	1316	1870	1547	1281	736	736
Grp Volume(v), veh/h	12	1395	135	57	1277	13	35	1	48	13	0	10
Grp Sat Flow(s),veh/h/ln	1728	1749	1571	1781	1763	1484	1316	1870	1547	1281	0	1471
Q Serve(g_s), s	0.4	17.9	2.5	3.5	13.6	0.2	2.9	0.1	3.3	1.1	0.0	0.7
Cycle Q Clear(g_c), s	0.4	17.9	2.5	3.5	13.6	0.2	3.6	0.1	3.3	1.1	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	48	2639	1186	74	2756	1160	122	93	77	128	0	73
V/C Ratio(X)	0.25	0.53	0.11	0.78	0.46	0.01	0.29	0.01	0.62	0.10	0.00	0.14
Avail Cap(c_a), veh/h	471	2639	1186	243	2756	1160	284	323	267	286	0	254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.7	5.5	3.6	52.2	4.1	2.6	51.7	49.7	51.3	50.2	0.0	50.0
Incr Delay (d2), s/veh	1.0	0.8	0.2	5.6	0.5	0.0	0.5	0.0	3.1	0.7	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.9	0.6	1.6	3.3	0.0	1.0	0.0	1.4	0.4	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	6.3	3.8	57.8	4.6	2.7	52.2	49.7	54.3	51.0	0.0	51.8
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	D
Approach Vol, veh/h		1542			1347			84			23	
Approach Delay, s/veh		6.4			6.8			53.4			51.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	92.0		11.5	9.5	89.0		11.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	2.4	15.6		5.6	5.5	19.9		3.1				
Green Ext Time (p_c), s	0.0	23.0		0.1	0.0	25.5		0.1				

Intersection Summary		
HCM 6th Ctrl Delay		8.3
HCM 6th LOS		A

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1418	1212	3	0	42
Future Vol, veh/h	0	1418	1212	3	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	4	3	2	2	2
Mvmt Flow	0	1541	1317	3	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	660
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	406
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	406
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	406
HCM Lane V/C Ratio	-	-	-	0.112
HCM Control Delay (s)	-	-	-	15
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	14	6	1	5	24
Future Vol, veh/h	9	14	6	1	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	19	8	1	7	32

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	55	9	0	0	9	0
Stage 1	9	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	953	1073	-	-	1611	-
Stage 1	1014	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	949	1073	-	-	1611	-
Mov Cap-2 Maneuver	949	-	-	-	-	-
Stage 1	1014	-	-	-	-	-
Stage 2	972	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	1.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1021	1611	-
HCM Lane V/C Ratio	-	-	0.03	0.004	-
HCM Control Delay (s)	-	-	8.6	7.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	20	0	1	31
Future Vol, veh/h	0	2	20	0	1	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	27	0	1	41

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	70	27	0	0	27	0
Stage 1	27	-	-	-	-	-
Stage 2	43	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	934	1048	-	-	1587	-
Stage 1	996	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	933	1048	-	-	1587	-
Mov Cap-2 Maneuver	933	-	-	-	-	-
Stage 1	996	-	-	-	-	-
Stage 2	978	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.4	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1048	1587	-
HCM Lane V/C Ratio	-	-	0.003	0.001	-
HCM Control Delay (s)	-	-	8.4	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	2	22	0	2	30
Future Vol, veh/h	2	2	22	0	2	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	29	0	3	40

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	75	29	0	0	29	0
Stage 1	29	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	928	1046	-	-	1584	-
Stage 1	994	-	-	-	-	-
Stage 2	976	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	926	1046	-	-	1584	-
Mov Cap-2 Maneuver	926	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	974	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	0.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	982	1584	-
HCM Lane V/C Ratio	-	-	0.005	0.002	-
HCM Control Delay (s)	-	-	8.7	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	2	1	15	9	1
Future Vol, veh/h	2	2	1	15	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	3	1	20	12	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	35	13	13	0	-	0
Stage 1	13	-	-	-	-	-
Stage 2	22	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	978	1067	1606	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1001	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	977	1067	1606	-	-	-
Mov Cap-2 Maneuver	977	-	-	-	-	-
Stage 1	1009	-	-	-	-	-
Stage 2	1001	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.5	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1606	-	1020	-	-
HCM Lane V/C Ratio	0.001	-	0.005	-	-
HCM Control Delay (s)	7.2	0	8.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	2	3	7	6	3
Future Vol, veh/h	9	2	3	7	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	3	4	9	8	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	27	10	12	0	-	0
Stage 1	10	-	-	-	-	-
Stage 2	17	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	988	1071	1607	-	-	-
Stage 1	1013	-	-	-	-	-
Stage 2	1006	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	985	1071	1607	-	-	-
Mov Cap-2 Maneuver	985	-	-	-	-	-
Stage 1	1010	-	-	-	-	-
Stage 2	1006	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.7	2.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1607	-	1000	-	-
HCM Lane V/C Ratio	0.002	-	0.015	-	-
HCM Control Delay (s)	7.2	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	29	1	16	34	4	1	1	10	4	1	4
Future Vol, veh/h	11	29	1	16	34	4	1	1	10	4	1	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	37	1	21	44	5	1	1	13	5	1	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.4	6.8	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	27%	30%	44%
Vol Thru, %	8%	71%	63%	11%
Vol Right, %	83%	2%	7%	44%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	41	54	9
LT Vol	1	11	16	4
Through Vol	1	29	34	1
RT Vol	10	1	4	4
Lane Flow Rate	15	53	69	12
Geometry Grp	1	1	1	1
Degree of Util (X)	0.016	0.059	0.078	0.013
Departure Headway (Hd)	3.67	4.072	4.035	3.98
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	966	880	889	892
Service Time	1.727	2.096	2.055	2.036
HCM Lane V/C Ratio	0.016	0.06	0.078	0.013
HCM Control Delay	6.8	7.4	7.4	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.2	0.3	0

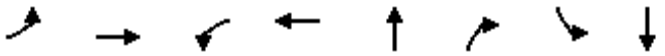
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	12	29	170	154	42
Future Vol, veh/h	34	12	29	170	154	42
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	13	31	179	162	44

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	404	163	207	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	241	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	603	882	1364	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	587	881	1363	-	-	-
Mov Cap-2 Maneuver	587	-	-	-	-	-
Stage 1	843	-	-	-	-	-
Stage 2	798	-	-	-	-	-

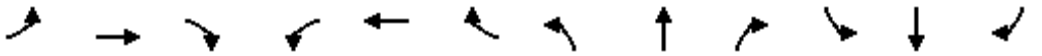
Approach	EB	NB	SB
HCM Control Delay, s	11.1	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1363	-	643	-	-
HCM Lane V/C Ratio	0.022	-	0.075	-	-
HCM Control Delay (s)	7.7	0	11.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	146	1339	14	1540	4	5	70	149
v/c Ratio	0.49	0.49	0.04	0.64	0.03	0.02	0.56	0.54
Control Delay	21.7	4.2	3.2	12.6	43.2	0.2	63.7	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	4.3	3.2	12.6	43.2	0.2	63.7	15.7
Queue Length 50th (ft)	22	89	1	280	3	0	48	2
Queue Length 95th (ft)	100	118	6	475	13	0	92	61
Internal Link Dist (ft)		479		806	665			1060
Turn Bay Length (ft)	295		90				65	
Base Capacity (vph)	387	2716	486	2397	300	341	249	399
Starvation Cap Reductn	0	125	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.52	0.03	0.64	0.01	0.01	0.28	0.37

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	1295	4	14	1433	61	1	3	5	68	3	142
Future Volume (veh/h)	142	1295	4	14	1433	61	1	3	5	68	3	142
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1530	1870	1870	1870	1870	1870	1870	1870	1870	1856
Adj Flow Rate, veh/h	146	1335	4	14	1477	63	1	3	5	70	3	146
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	25	2	2	2	2	2	2	2	2	3
Cap, veh/h	282	2484	7	360	2265	96	69	178	246	161	5	242
Arrive On Green	0.09	1.00	1.00	0.02	0.65	0.65	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	1781	3634	11	1781	3473	148	181	1145	1585	1407	32	1558
Grp Volume(v), veh/h	146	653	686	14	754	786	4	0	5	70	0	149
Grp Sat Flow(s),veh/h/ln	1781	1777	1868	1781	1777	1844	1327	0	1585	1407	0	1590
Q Serve(g_s), s	3.0	0.0	0.0	0.3	28.2	28.4	0.0	0.0	0.3	5.4	0.0	9.6
Cycle Q Clear(g_c), s	3.0	0.0	0.0	0.3	28.2	28.4	9.6	0.0	0.3	14.9	0.0	9.6
Prop In Lane	1.00		0.01	1.00		0.08	0.25		1.00	1.00		0.98
Lane Grp Cap(c), veh/h	282	1215	1277	360	1159	1203	247	0	246	161	0	247
V/C Ratio(X)	0.52	0.54	0.54	0.04	0.65	0.65	0.02	0.00	0.02	0.43	0.00	0.60
Avail Cap(c_a), veh/h	449	1215	1277	583	1159	1203	283	0	281	192	0	282
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	0.0	0.0	6.1	11.5	11.6	39.4	0.0	39.4	50.3	0.0	43.3
Incr Delay (d2), s/veh	1.3	1.5	1.4	0.0	2.8	2.8	0.0	0.0	0.0	0.7	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.5	0.5	0.1	10.2	10.6	0.1	0.0	0.1	1.9	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.5	1.5	1.4	6.1	14.4	14.4	39.4	0.0	39.4	51.0	0.0	44.8
LnGrp LOS	B	A	A	A	B	B	D	A	D	D	A	D
Approach Vol, veh/h		1485			1554			9			219	
Approach Delay, s/veh		2.5			14.3			39.4			46.8	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	81.2		22.6	9.7	77.7		22.6				
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5				
Max Green Setting (Gmax), s	15.5	59.0		19.5	15.5	59.0		19.5				
Max Q Clear Time (g_c+I1), s	2.3	2.0		11.6	5.0	30.4		16.9				
Green Ext Time (p_c), s	0.0	26.7		0.0	0.2	21.0		0.2				

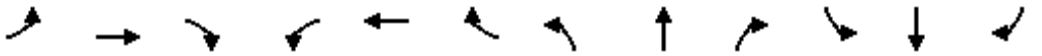
Intersection Summary												
HCM 6th Ctrl Delay			11.2									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	58	1399	61	44	1532	38	26	7	40	33	46
v/c Ratio	0.31	0.53	0.05	0.40	0.57	0.03	0.22	0.04	0.19	0.26	0.25
Control Delay	54.0	9.2	1.1	74.8	1.7	0.0	49.8	44.6	3.5	50.7	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	9.2	1.1	74.8	1.8	0.0	49.8	44.6	3.5	50.7	20.1
Queue Length 50th (ft)	20	233	0	33	15	0	17	5	0	22	4
Queue Length 95th (ft)	41	351	10	m54	36	m0	45	19	7	52	39
Internal Link Dist (ft)		244			479			629			278
Turn Bay Length (ft)	200		120	100		100			50		
Base Capacity (vph)	468	2634	1198	238	2665	1196	233	321	338	242	307
Starvation Cap Reductn	0	0	0	0	122	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.53	0.05	0.18	0.60	0.03	0.11	0.02	0.12	0.14	0.15

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1371	60	43	1501	37	25	7	39	32	6	39
Future Volume (veh/h)	57	1371	60	43	1501	37	25	7	39	32	6	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1870	1870	1870	1870	1870	1870	1648	1870
Adj Flow Rate, veh/h	58	1399	61	44	1532	38	26	7	40	33	6	40
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	3	2	2	2	2	2	2	17	2
Cap, veh/h	130	2643	1178	59	2629	1172	116	127	108	153	13	84
Arrive On Green	0.04	0.74	0.74	0.03	0.74	0.74	0.07	0.07	0.07	0.07	0.07	0.07
Sat Flow, veh/h	3456	3554	1584	1767	3554	1584	1360	1870	1585	1359	186	1239
Grp Volume(v), veh/h	58	1399	61	44	1532	38	26	7	40	33	0	46
Grp Sat Flow(s),veh/h/ln	1728	1777	1584	1767	1777	1584	1360	1870	1585	1359	0	1425
Q Serve(g_s), s	1.8	18.3	1.1	2.7	21.7	0.7	2.1	0.4	2.7	2.6	0.0	3.4
Cycle Q Clear(g_c), s	1.8	18.3	1.1	2.7	21.7	0.7	5.5	0.4	2.7	2.9	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	130	2643	1178	59	2629	1172	116	127	108	153	0	97
V/C Ratio(X)	0.44	0.53	0.05	0.74	0.58	0.03	0.22	0.06	0.37	0.22	0.00	0.47
Avail Cap(c_a), veh/h	471	2643	1178	241	2629	1172	258	323	274	295	0	246
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	6.0	3.8	52.7	6.5	3.8	52.0	48.0	49.0	49.3	0.0	49.4
Incr Delay (d2), s/veh	0.9	0.8	0.1	4.8	0.7	0.0	0.4	0.1	0.8	1.5	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.2	0.3	1.2	6.2	0.2	0.7	0.2	1.1	0.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	6.7	3.8	57.5	7.2	3.9	52.4	48.0	49.8	50.8	0.0	56.9
LnGrp LOS	D	A	A	E	A	A	D	D	D	D	A	E
Approach Vol, veh/h		1518			1614			73			79	
Approach Delay, s/veh		8.4			8.5			50.5			54.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	87.4		13.5	8.7	87.8		13.5				
Change Period (Y+Rc), s	5.0	6.0		6.0	5.0	6.0		6.0				
Max Green Setting (Gmax), s	15.0	59.0		19.0	15.0	59.0		19.0				
Max Q Clear Time (g_c+I1), s	3.8	23.7		7.5	4.7	20.3		5.4				
Green Ext Time (p_c), s	0.0	25.1		0.1	0.0	24.6		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		10.5	
HCM 6th LOS		B	

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1490	1570	4	0	53
Future Vol, veh/h	0	1490	1570	4	0	53
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1552	1635	4	0	55

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	821
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	318
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	318
HCM Lane V/C Ratio	-	-	-	0.174
HCM Control Delay (s)	-	-	-	18.7
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.6

Intersection	
Int Delay, s/veh	2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	9	30	2	14	21
Future Vol, veh/h	6	9	30	2	14	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	12	38	3	18	27

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	103	40	0	0	41	0
Stage 1	40	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	895	1031	-	-	1568	-
Stage 1	982	-	-	-	-	-
Stage 2	960	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	884	1031	-	-	1568	-
Mov Cap-2 Maneuver	884	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	967	1568	-
HCM Lane V/C Ratio	-	-	0.02	0.011	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	1	39	0	2	36
Future Vol, veh/h	0	1	39	0	2	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	50	0	3	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	102	50	0	0	50	0
Stage 1	50	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	896	1018	-	-	1557	-
Stage 1	972	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	894	1018	-	-	1557	-
Mov Cap-2 Maneuver	894	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	968	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	1018	1557	-
HCM Lane V/C Ratio	-	-	0.001	0.002	-
HCM Control Delay (s)	-	-	8.5	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	40	0	5	37
Future Vol, veh/h	1	1	40	0	5	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	51	0	6	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	110	51	0	0	51	0
Stage 1	51	-	-	-	-	-
Stage 2	59	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	887	1017	-	-	1555	-
Stage 1	971	-	-	-	-	-
Stage 2	964	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	883	1017	-	-	1555	-
Mov Cap-2 Maneuver	883	-	-	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	960	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	945	1555	-
HCM Lane V/C Ratio	-	-	0.003	0.004	-
HCM Control Delay (s)	-	-	8.8	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	11	20	2
Future Vol, veh/h	1	1	2	11	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	25	25	25	25
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	4	8	44	80	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	144	84	88	0	-	0
Stage 1	84	-	-	-	-	-
Stage 2	60	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	849	975	1508	-	-	-
Stage 1	939	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	845	975	1508	-	-	-
Mov Cap-2 Maneuver	845	-	-	-	-	-
Stage 1	934	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1508	-	905	-	-
HCM Lane V/C Ratio	0.005	-	0.009	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	1	9	7	7	9
Future Vol, veh/h	6	1	9	7	7	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	25	25	25	25	25	25
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	4	36	28	28	36

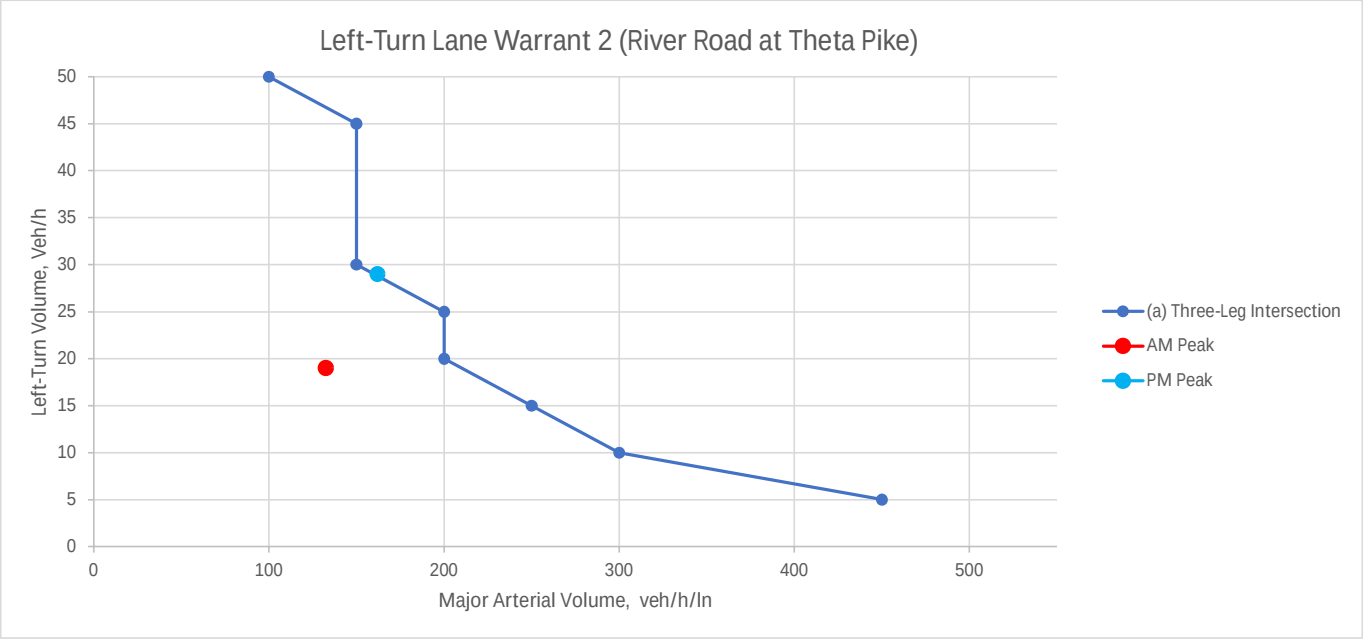
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	146	46	64	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	100	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	846	1023	1538	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	924	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	826	1023	1538	-	-	-
Mov Cap-2 Maneuver	826	-	-	-	-	-
Stage 1	953	-	-	-	-	-
Stage 2	924	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	4.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1538	-	849	-	-
HCM Lane V/C Ratio	0.023	-	0.033	-	-
HCM Control Delay (s)	7.4	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

APPENDIX E

Turn Lane Evaluation


Left-Turn Lane Warrant 2 (River Road at Theta Pike)
Left-Turn Volume, Veh/h
50
45
40
35
30
25
20
15
10
5
0
0
100
200
300
400
500
Major Arterial Volume, veh/h/ln
(a) Three-Leg Intersection
AM Peak
PM Peak

APPENDIX F

Sight Distance



Kimley»Horn

RIVER ROAD

INTERSECTION SIGHT DISTANCE

November 6, 2023

0 40 80 160

NORTH

Kimley»Horn
4031 Aspen Grove Drive
Franklin, TN 37069

CPS Land

Photograph Sheet

KHA Job No.: 118119002
KHA Rep.: BG
Date: November 14, 2023
Page: 1 of 5

Site Name: River Road

Photo No. 1



Comments: Site Driveway B at Taylor Bend, EBR (Looking Left)

Photo No. 2



Comments: Site Driveway B at Taylor Bend, EBL (Looking Right)

Kimley»Horn
4031 Aspen Grove Drive
Franklin, TN 37069

CPS Land

Photograph Sheet

KHA Job No.: 118119002
KHA Rep.: BG
Date: November 14, 2023
Page: 2 of 5

Site Name: River Road

Photo No. 3



Comments: Site Driveway C at Taylor Bend, EBR (Looking Left)

Photo No. 4



Comments: Site Driveway C at Taylor Bend, EBL (Looking Right)

Kimley»Horn
4031 Aspen Grove Drive
Franklin, TN 37069

CPS Land

Photograph Sheet

KHA Job No.: 118119002
KHA Rep.: BG
Date: November 14, 2023
Page: 3 of 5

Site Name: River Road

Photo No. 5



Comments: Site Driveway B at River Road, EBR (Looking Left)

Photo No. 6



Comments: Site Driveway B at River Road, EBL (Looking Right)

Kimley»Horn
4031 Aspen Grove Drive
Franklin, TN 37069

CPS Land

Photograph Sheet

KHA Job No.: 118119002
KHA Rep.: BG
Date: November 14, 2023
Page: 4 of 5

Site Name: River Road

Photo No. 7



Comments: Site Driveway A at River Road, EBR (Looking Left)

Photo No. 8



Comments: Site Driveway A at River Road, EBL (Looking Right)

Kimley»Horn
4031 Aspen Grove Drive
Franklin, TN 37069

CPS Land

Photograph Sheet

KHA Job No.: 118119002
KHA Rep.: BG
Date: November 14, 2023
Page: 5 of 5

Site Name: River Road

Photo No. 9



Comments: Site Driveway C at River Road, EBL (Looking Right)

Photo No. 10



Comments: Site Driveway C at River Road, EBR (Looking Left)

CITY OF COLUMBIA – DEVELOPMENT SERVICES

TRAFFIC IMPACT STUDY (TIS) MEMORANDUM OF UNDERSTANDING (MOU) & AGREEMENT

CONTACT INFO (Identify primary point of contact)	
DEVELOPER/OWNER ☐ PRIMARY CONTACT	CIVIL CONSULTANT ☑ PRIMARY CONTACT
Contact Name: Cliff Smith	Contact Name: Gray Harrison
Company: CPS Land	Company: Kimley-Horn
Address: 213 Overlook Circle Suite B2 Brentwood, TN 37027	Address: 4031 Aspen Grove Drive, Suite 200, Franklin,TN 37069
Email: cliff.smith@cpsland.com	Email: Gray.Harrison@Kimley-Horn.com
Phone: 615 477 3106	Phone: 615.564.2701

DEVELOPERS TIS CONSULTANT CONTACT INFO: *complete if study was completed by Developer's consultant.*			
Contact Name:	Kennedy Adams	Company:	Kimley-Horn
Address:	4031 Aspen Grove Drive, Suite 200, Franklin, TN 37069		
Email:	Kennedy.Adams@Kimley-Horn.com	Phone:	615.564.2701

INDICATE THE LEVEL OF TIS REVIEW TO BE PERFORMED BY 3RD PARTY CONSULTANT AND CORRESPONDING FEE (SUBJECT TO STAFF CONFIRMATION):

* Level of TIS determined by the number of Daily & Peak Hour Trips per estimated trip generation calculation.

☐ Traffic Access Study ($2,900) ☑ Level I TIS ($3,900) ☐ Level II TIS ($4,800) ☐ Level III TIS (Fee TBD)

TRANSPORTATION IMPACT STUDY – MEMORANDUM OF UNDERSTANDING (MOU)

This MOU acknowledges that the transportation impact study for the following project will be prepared in accordance with the latest version of the City of Columbia Land Development Regulations.

PROJECT INFORMATION:

Name:	River Road
Address:	
Description:	Located along the south and east side of River Road and west side of Taylor Bend Road in Columbia, TN
Existing Land Use (be specific):	Vacant
Proposed Land Use (be specific):	CD-5 (mixed residential town homes and multi-family)
Reason for Request: (Planned Unit Development, Site Plan, Rezoning)	Site Plan
Potential Development Yield (number of residential units; building square footage, projected number of employees, hours of operations):	126 Units (30 town homes and 96 multi-family)

☑ Attach a site map and a trip generation table with a description of the proposed land uses, ITE rates, estimated daily, morning, midday and afternoon peak hour volumes (ins/outs/totals), proposed trip credits, etc.

☑ Attach a conceptual development plan showing all access points and adjacent streets.

Project Buildout Year: 2025	Ambient or CMP Growth Rate (% Per Year): 3%

STUDY INTERSECTIONS: *use additional pages as necessary	
1. Taylor Bend at River Road	9.
2. River Road at Theta Pike	10.
3. Nashville Highway at Theta Pike	11.
4. Nashville Highway at 7th Avenue	12.
5. Nashville Highway at River Road	13.
6.	14.
7.	15.
8.	16.

TRIP CREDITS (EXACT AMOUNT OF CREDIT SUBJECT TO APPROVAL BY CITY OF COLUMBIA):

	YES	(indicate ☐% of total trips)	NO
Transit Usage	◯	%	☑
Existing Active Land Use	☐	%	☑
Previous Land Use	☐	%	☑
Internal Trip	☐	%	☑
Pass-By Trip	☐	%	☑

3RD PARTY TRAFFIC CONSULTANT CONTACT INFO:	☐ NEEL SCHAFFER	☐ VOLKERT	
NEEL SCHAFFER - GREG JUDY		VOLKERT – DYAN DAMRON	
201 E. Main Street, Suite 325 Murfreesboro, TN 37130		302 Innovation Drive, Suite 100 Franklin, TN 37067	
greg.judy@neel-schaffer.com	615-217-0500	dyan.damron@volkert.com	615-656-1845

MEMORANDUM OF UNDERSTANDING SIGN OFF:

APPLICANT: Cliff Smith (Name) — Cliff Smith (Signature) — 11/1/23 (Date)

*As applicant, I agree to pay 100% of the review fee. *Paid to the City of Columbia.*
I understand that no work will commence until FULL payment is received and that it is NON-REFUNDABLE.

3RD PARTY TRAFFIC CONSULTANT: Dyan Damron, PE, PTP (Name) — Dyan C Damron (Signature) — 11/3/23 (Date)

CITY ENGINEER: _____ (Name) _____ (Signature) _____ (Date)

DIRECTOR OF DEVELOPMENT SERVICES: _____ (Name) _____ (Signature) _____ (Date)

Questions may be submitted and the completed form shall be emailed for review to: Glenn Harper, City Engineer gharper@columbiatn.com.

River Road Columbia Scoping Summary

We have a project located along the south and east side of River Road and west of Taylor Bend Road in Columbia, Tennessee. Please see some notes for our assumptions listed below. Supporting documentation is also attached.

Land Uses/Densities

- Multifamily Housing (Low-Rise) – 96 Units
- Single-Family Attached Housing – 30 Units

Study Type

- Traffic Impact Analysis

Trip Generation

- The calculations shown are based on the general urban/suburban setting

Growth Rate

- 3%

Background Developments

- TBD

Build Out Year

- 2025

Study Intersections

- Taylor Bend at River Road
- River Road at Theta Pike
- Nashville Highway at Theta Pike
- Nashville Highway at 7th Avenue
- Nashville Highway at River Road

Site access:

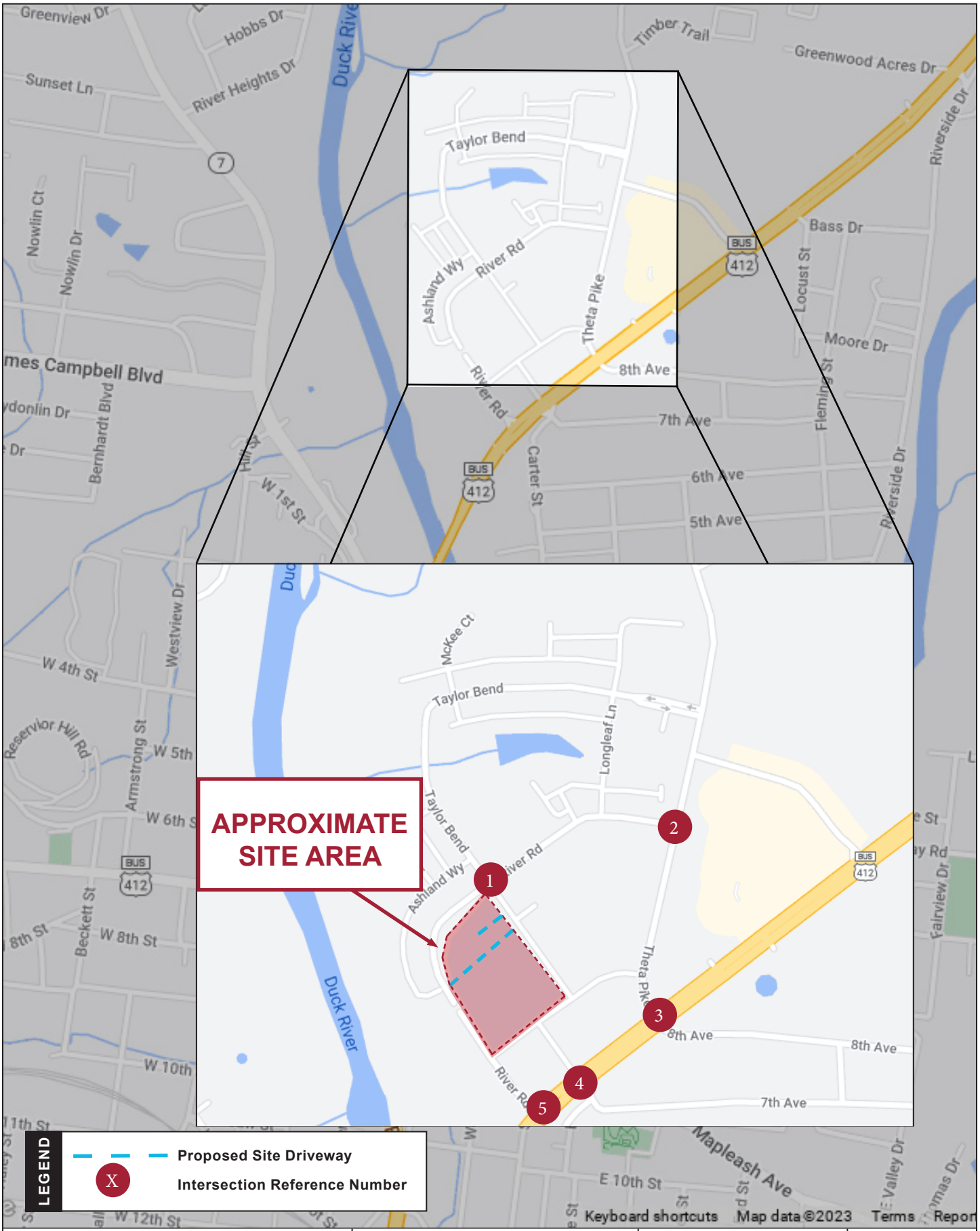
- One full movement driveway along Taylor Road
- One full movement driveway along River Road
- One driveway along Taylor Road via alley access

Additional Notes:

- Perform TDOT Turn Lane warrants.
- Kimley-Horn to measure sight distance in the field.
- Will put together exhibits with identified improvements.

Trip Generation - River Road Columbia

ITE Code	Land Use	Setting/Location	Density		Daily			AM Peak Hour			PM Peak Hour		
					Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
215	Single-Family Attached Housing	General Urban/Suburban	30	d.u.	178	89	89	10	3	7	14	8	6
220	Multifamily Housing (Low-Rise)	General Urban/Suburban	96	d.u.	690	345	345	53	13	40	62	39	23
GROSS TRIPS					868	434	434	63	16	47	76	47	29



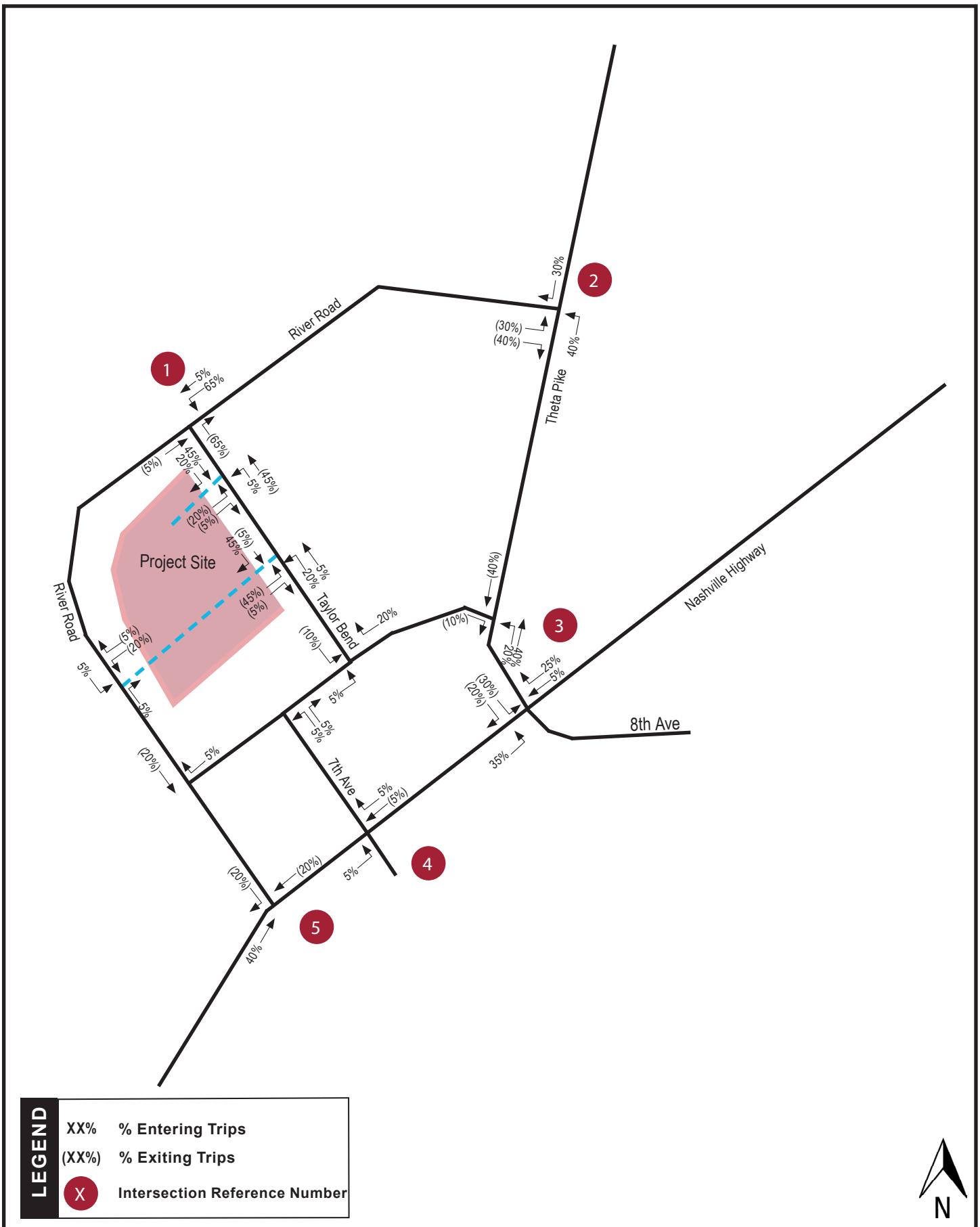
Kimley»Horn	River Road Columbia Traffic Impact Study	Site Location Map	Figure 1

K:\FRA_LDEV\118119002 - River Road\5-Traffic\4-Report\Figures



Kimley»Horn	River Road Columbia Traffic Impact Study	Site Aerial	Figure 2

K:\FRA_LDEV\118119002 - River Road\5-Traffic\4-Report\Figures



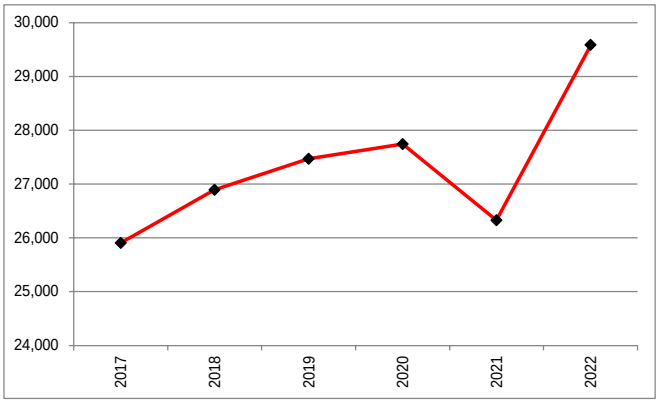
Kimley»Horn	River Road Columbia Traffic Impact Study	Trip Distribution and Assignment	Figure 3

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Growth Rate Calculations - River Road Columbia

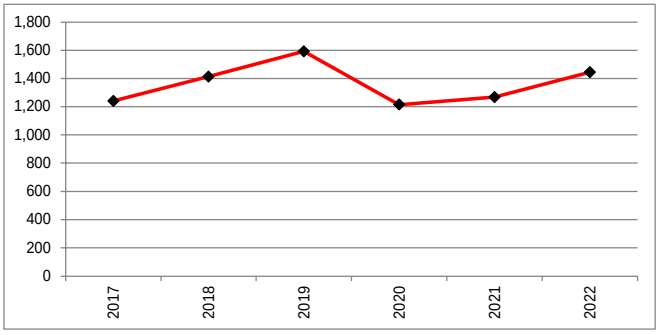
Station	600000046		
Route	SR007 Columbia		
Location	North-East of Bass Dr		
Count Type	Count Year	AADT	Annual Growth Rate
Estimated	2017	25,904	
Estimated	2018	26,893	3.8%
Actual	2019	27,466	2.1%
Estimated	2020	27,741	1.0%
Combined From Child AADT	2021	26,329	-5.1%
Actual	2022	29,584	12.4%

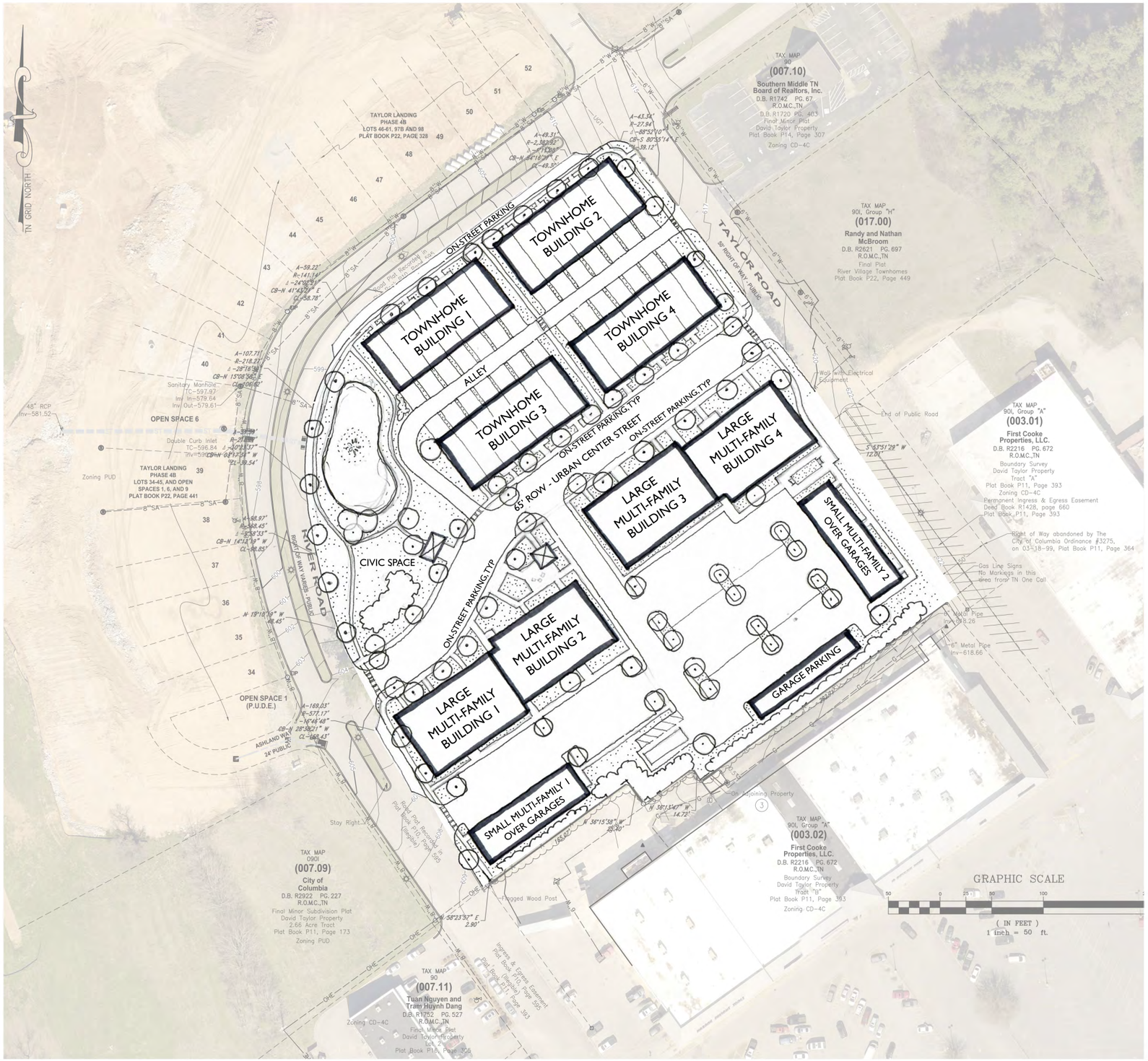
	AADT
5 Year Growth Rate	2.7%
Average 1 Year Growth Rate	2.8%
Most Recent Actual Count Growth Rate	12.4%



Station	600000151		
Route	Carter Street		
Location	South of U.S. Hwy 31		
Count Type	Count Year	AADT	Annual Growth Rate
Actual	2017	1,241	
Actual	2018	1,414	13.9%
Actual	2019	1,593	12.7%
Actual	2020	1,215	-23.7%
Actual	2021	1,267	4.3%
Actual	2022	1,444	14.0%

	AADT
5 Year Growth Rate	3.1%
Average 1 Year Growth Rate	4.2%
Most Recent Actual Count Growth Rate	14.0%





RIVER ROAD PROPERTY
CONCEPT PLAN
Septemebr 29, 2023

CIVIC SPACE REQUIRED: 5%-20% OF GROSS SITE AREA PROVIDED: 11% (28,200 SF; 0.65AC)		
TYPE:	AREA:	AMENITIES:
SQUARE	23,100 SF	HARDSCAPE/GRAVEL SEATING AREA, SITE FURNISHINGS, FORMAL PLANTINGS, WALKING PATH AND POND OVERLOOK
POCKET PARK	3,500 SF	HARDSCAPE/GRAVEL SEATING AREA, SITE FURNISHINGS, GAS FIRE PIT, FORMAL PLANTINGS
PLAYGROUND	1,600 SF	SEATING AREA, PLAY EQUIPMENT, FORMAL PLANTINGS



SITE DEVELOPMENT PLAN SITE DATA:

TOTAL SITE AREA: 255,800 SF; 5.87 AC
TOTAL DWELLING UNITS: 122 UNITS
TOTAL DENSITY: 20.78 DUA
TOTAL CIVIC SPACE: 28,200 SF; 0.65 AC (11%)
TOTAL SURFACE PARKING LOT: 43,905 SF; 1.01 AC
TOTAL ROW AND ALLEY EASEMENT: 42,199 SF; .97 AC

BUILDING BREAKDOWN:
- TOTAL MULTI-FAMILY UNITS: 92 DWELLING UNITS
  - LARGE MULTI-FAMILY BLDG 1: 18 DU
  - LARGE MULTI-FAMILY BLDG 2: 24 DU
  - LARGE MULTI-FAMILY BLDG 3: 24 DU
  - LARGE MULTI-FAMILY BLDG 4: 18 DU
  - SMALL MULTI-FAMILY BLDG 1: 4 DU; 7-GARAGE PARKING SPACES
  - SMALL MULTI-FAMILY BLDG 2: 4 DU; 8-GARAGE PARKING SPACES
- TOWNHOMES: 30 DWELLING UNITS
- ACCESSORY BUILDINGS:
  - ACCESSORY BLDG 1: 8-CAR GARAGE
  - ACCESSORY BLDG 2: 8-CAR GARAGE

BUILDING SETBACKS:
PRINCIPAL STRUCTURES:
- FRONT SETBACK: 0' MIN/MAX AT CORNERS; 15' MAXIMUM ELSEWHERE
  PROVIDED SETBACK: 8'-14' TOWNHOMES; 0' LARGE MULTI-FAMILY; 12' SMALL MULTI-FAMILY
- FRONT SETBACK SECONDARY: 0' MIN/MAX AT CORNERS; 15' MAXIMUM ELSEWHERE
  PROVIDED SETBACK: 7'-10' TOWNHOMES; 16'-22' LARGE MULTI-FAMILY
- SIDE SETBACK: 0' MIN. - 24' MAXIMUM
  PROVIDED SETBACK: 0'; 15' MINIMUM BETWEEN TOWNHOME BUILDINGS
- REAR SETBACK: NOT REGULATED
  PROVIDED SETBACK: 24' TOWNHOME WITHOUT GARAGE; 5' TOWNHOME WHERE GARAGE FACES ALLEY

ACCESSORY STRUCTURES:
- FRONT SETBACK: 40' MAX FROM REAR PROPERTY LINE
  PROVIDED SETBACK: 23' FROM REAR PROPERTY LINE
- SIDE SETBACK: 3' MAX.
  PROVIDED SETBACK: 3' FROM BUILDING SITE LINE ON ONE SIDE
- REAR SETBACK: 3' MIN.
  PROVIDED SETBACK: 3'

*NOTE: PRIMARY BUILDING CORNER SETBACKS ARE AS CLOSE TO 0' FRONT/0' SIDE AS POSSIBLE. DUE TO THE UNIQUE PROPERTY LINE CONSTRAINTS, BUILDINGS ARE SET BACK TO ALLOW SIDEWALKS AND PLANTING AREAS AND TO AVOID EXISTING EASEMENTS/UTILITIES. ACCESSORY STRUCTURES ARE SET 3' FROM BUILDING SITE LINES ON ONE SIDE. BUILDING SITES ARE WIDER THAN THE ACCESSORY BUILDINGS, PREVENTING 3' SIDE SETBACKS ON BOTH SIDES.

PARKING SUMMARY:
- TOTAL DWELLING UNITS: 122 UNITS
- REQUIRED MINIMUM PARKING RATIO: 1.5 SPACES PER UNIT
- TOTAL REQUIRED RESIDENTIAL PARKING: 183 PARKING SPACES

- TOTAL CIVIC SPACE: 28,200 SF; 0.65 AC
- REQUIRED MINIMUM PARKING RATIO: 1 SPACE PER 5,000 SF GROSS LAND AREA
- TOTAL REQUIRED CIVIC SPACE PARKING: 6 PARKING SPACES

- TOTAL REQUIRED PARKING SPACES: 189 SPACES
- TOTAL PROVIDED PARKING SPACES: 233 SPACES
  - SURFACE PARKING LOT: 108 SPACES
  - SMALL MULTI-FAMILY BUILDING GARAGE: 15 SPACES (10'X20' MINIMUM)
  - STREET A ON-STREET PARKING: 36 SPACES
  - RIVER ROAD ON-STREET PARKING: 16 SPACES
  - TAYLOR'S BEND ROAD ON-STREET PARKING: 5 SPACES
  - TOWNHOME GARAGE SPACES: 7 SPACES (10'X20' MINIMUM)
  - TOWNHOME SURFACE SPACES: 46 SPACES

*NOTE: AN ADDITIONAL 16 GARAGE SPACES ARE PROVIDED IN ACCESSORY BUILDINGS FOR THE MULTI-FAMILY BUILDINGS, AND AN ADDITIONAL 7 TOWNHOME GARAGE SPACES ARE PROVIDED. THESE PARKING SPACES HAVE NOT BEEN INCLUDED IN THE PARKING TOTALS SINCE THEY ARE SMALLER THAN THE MINIMUM 10' X 20' GARAGE SPACE REQUIREMENT.

BIKE PARKING: REQUIRED 1 SPACE PER 20 REQUIRED PARKING SPACES
BIKE PARKING PROVIDED: 183 REQ. PARKING SPACES/20 = 7 BIKE SPACES

FRONTAGE BUILD-OUT: 80% MINIMUM REQUIRED
PROVIDED: 1,458 LF BUILD-OUT/2,081 LF FRONTAGE; 70% PROVIDED
LOT/BUILDING SITE ENFRONTMENT:
- TOTAL NUMBER OF BUILDING SITES: 36
- BUILDING SITES ENFRONTING PEDESTRIAN PATH: 2 (LARGE MULTI-FAMILY BLDG 2 & SMALL MULTI-FAMILY BLDG 2)
- % BUILDING SITES ENFRONTING PEDESTRIAN PATH: 6%

PLEASE SEE ARCHITECTURE ELEVATIONS FOR ALL MULTI-FAMILY BUILDING DIMENSIONS AND ELEVATION COMPLIANCE TABULATIONS.

ARCHITECTURAL NOTES:
1. LARGE MULTI-FAMILY BUILDINGS 1 AND 2 WILL UTILIZE THE SAME ELEVATOR VIA COMMON INTERIOR CORRIDOR.
2. LARGE MULTI-FAMILY BUILDINGS 3 AND 4 WILL UTILIZE THE SAME ELEVATOR VIA COMMON INTERIOR CORRIDOR.
3. LARGE MULTI-FAMILY BUILDINGS: HVAC UNITS TO BE LOCATED ON ROOF.
4. SMALL MULTI-FAMILY BUILDINGS: HVAC LOCATED IN 3RD LAYER.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

RIVER ROAD PROPERTY
SITE DEVELOPMENT PLAN & PRELIMINARY PLAT
RIVER ROAD, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT 11.20.23

Date: NOV. 20, 2023

Revision Date
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△
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SITE DEVELOPMENT PLAN
SHEET
C2.0

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

ADDRESS/LOCATION	River Road		
	TAX MAP: 90	GROUP:	PARCEL: 7.08
SUMMARY OF NATURE OF REQUEST AND WORK	Site Development Plan + Preliminary Plat for a +/-5.87 acre CD-5 Zoned property located on River Road at the intersection with Taylors Bend Rd. Plan includes 122 dwelling units in Townhomes, Small and Large Multi-Family buildings with associated civic spaces and parking.		

DATE OF PRE-APPLICATION CONFERENCE	10/04/2023	

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ☒ Preliminary Plat ❑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ☒ Other: Site Development Plan	**Annexations/Rezoning/PUD's:** ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards with check list completed ❑ Columbia Water System Availability Letter **Plats/PUDs:** ❑ Project Name (include Sections & Phases) _____ ❑ Total Number of Lots _____ ❑ Total acreage 5.87 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

NAME	Greg Gamble - Gamble Design Collaborative	PHONE	615.975.5765
ADDRESS	3020 Stansberry Lane, STE 201, Franklin	EMAIL	info@gdc-tn.com

PROPERTY OWNER NAME	David Taylor	PHONE	
ADDRESS	3006 Knud Dr., Columbia TN	EMAIL	

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

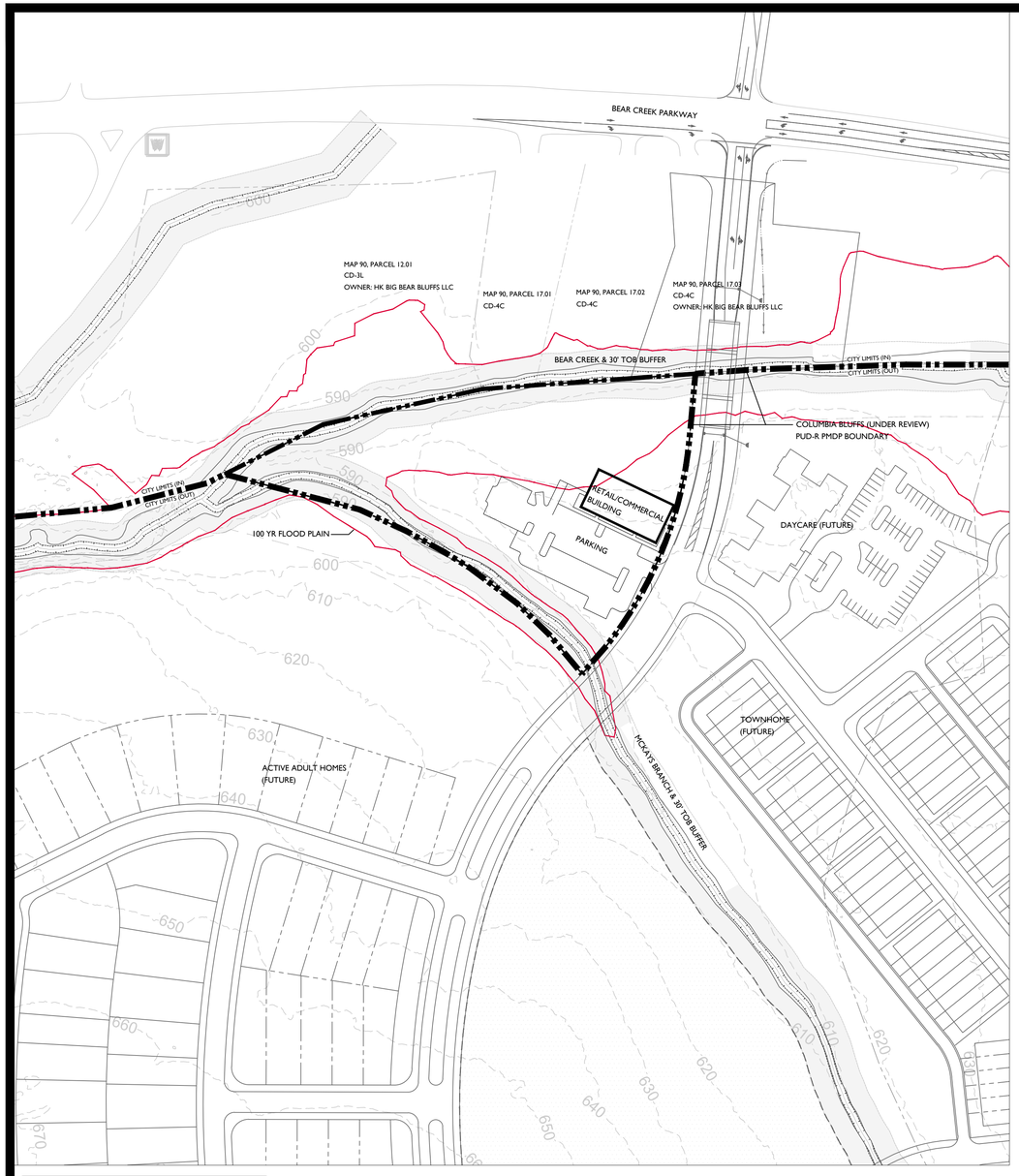
Greg Gamble		11/20/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
David Taylor	Laura Taylor	11-16-23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

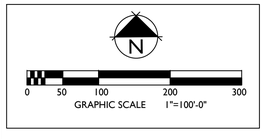
STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	





CONCEPTUAL DEVELOPMENT PLAN CD-4 DESIGN CRITERIA:

GROSS SITE AREA: +/-3.36 AC

7,200 SF NON-RESIDENTIAL BUILDING (60'X120')

TOTAL IMPERVIOUS SURFACE RATIO: 80% MAX
MAXIMUM BUILDING LENGTH: 120'

SETBACKS:
FRONT: 6' - 20'
SIDE: 6' MIN.
REAR: 3' MIN.

PARKING PER ZONING ORDINANCE STANDARD
PARKING PROVIDED: SURFACE IN 3RD LAYER
+/- 54 PARKING SPACES SHOWN ON PLAN (1 PER 133 SF)

LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION
FOR ANNEXATION REQUEST – 3.36 ACRES
A PORTION OF MAP 90, PARCEL 12.01
DEED BOOK R2827, PAGE 587
HK BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242), AMIT J. PATEL AND WIFE, MINAXIBEN G. PATEL (BK R2411, PAGE 1348), HK BIG BEAR BLUFFS, LLC (R2870, PG 961), AND WEST, SOUTH, AND EAST BY REMAINING PORTIONS OF BIG BEAR BLUFFS, LLC (2827, PG 587) REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN), AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,672,944.21;

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S 08°01'15" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
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SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET, CHORD BEARING S 24°32'52" W WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT ALONG THE CENTER OF MCKAY BRANCH;

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LOCATION MAP



PROJECT INFORMATION:

PARCEL: PORTION OF MAP 90 PARCEL 12.01
ADDRESS: PORTION OF 400 BEAR CREEK PARKWAY

PROPOSED USE: NEIGHBORHOOD SERVING COMMERCIAL CONFORMING TO THE APPROVED CD-4 USES.

CONTACT:

APPLICANT/LANDSCAPE ARCHITECT:
GREG GAMBLE OR KELI FRYMIRE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069
615-975-5765
greg.gamble@gdc-tn.com
keli@gdc-tn.com

DEVELOPER:
KOLTER LAND
JIM HARVEY OR
JOSHUA GIBBS
615-582-3253
jgibbs@kolter.com

OWNER:
HK BIG BEAR BLUFFS LLC
JIM HARVEY

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-3.36 ACRES AND REZONE TO CD-4
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed commercial parcel would be adjacent to CD-4C zoned properties on Bear Creek Parkway and would serve to provide neighborhood commercial and personal service options for the residents of the proposed Columbia Bluffs development. The parcels along Bear Creek Parkway are within an area of change. With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity. Additionally, new development should create a pedestrian-friendly environment by adding sidewalks and/or creating other pedestrian-friendly multiuse trail/bike routes linking current and future neighborhoods and major destinations such as libraries, neighborhood centers, health facilities, commercial clusters, parks, schools, or other such uses.
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GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

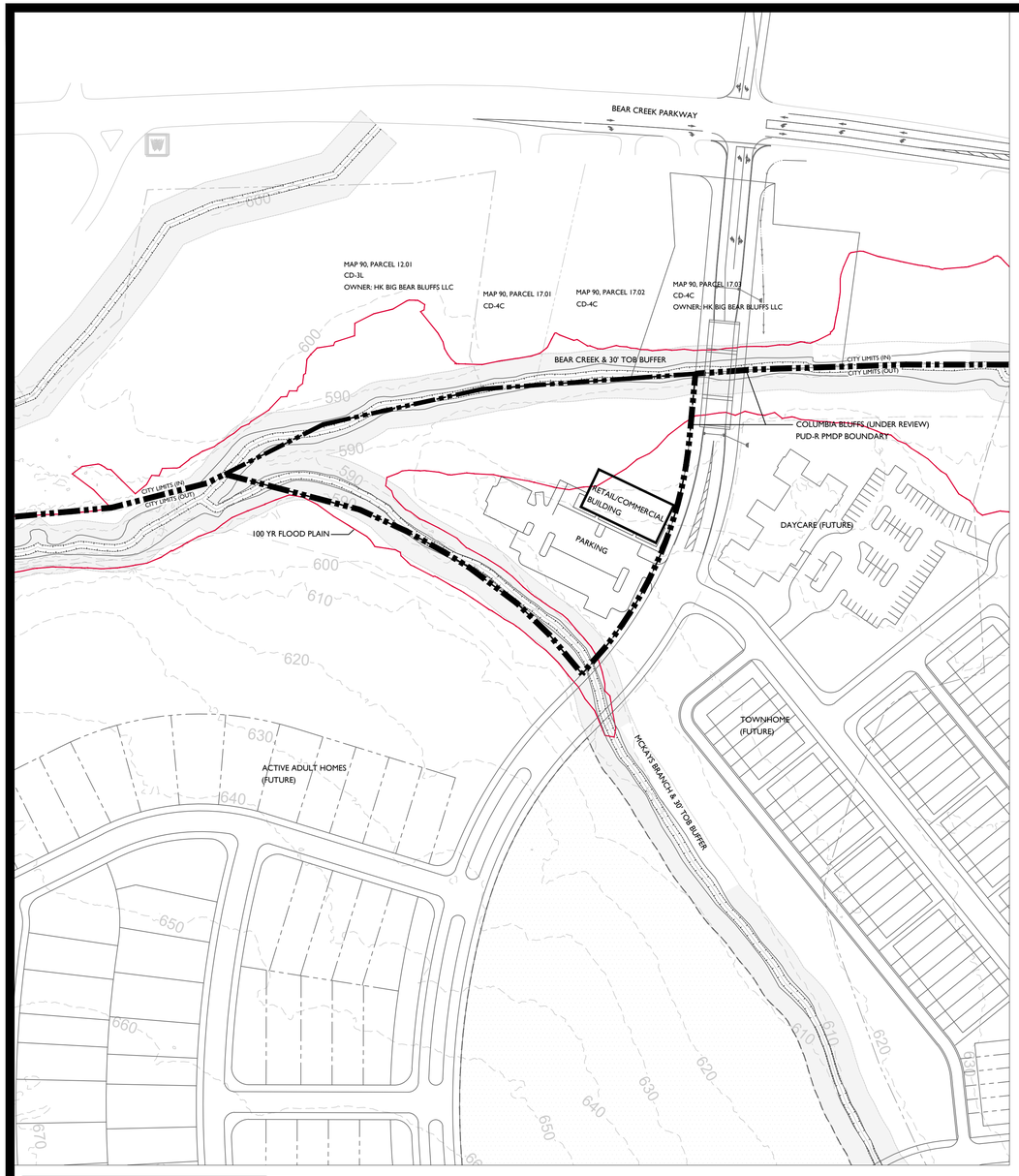


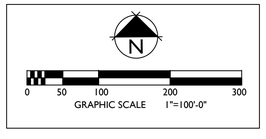
Date: OCTOBER 16, 2023

Revision Date
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CONCEPTUAL DEVELOPMENT PLAN

SHEET
L1.0





CONCEPTUAL DEVELOPMENT PLAN CD-4 DESIGN CRITERIA:

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7,200 SF NON-RESIDENTIAL BUILDING (60'X120')

TOTAL IMPERVIOUS SURFACE RATIO: 80% MAX
MAXIMUM BUILDING LENGTH: 120'

SETBACKS:
FRONT: 6' - 20'
SIDE: 6' MIN.
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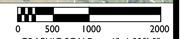
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CONTACT:

APPLICANT/LANDSCAPE ARCHITECT:
GREG GAMBLE OR KELI FRYMIRE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069
615-975-5765
greg.gamble@gdc-tn.com
keli@gdc-tn.com

DEVELOPER:
KOLTER LAND
JIM HARVEY OR
JOSHUA GIBBS
615-582-3253
jgibbs@kolter.com

OWNER:
HK BIG BEAR BLUFFS LLC
JIM HARVEY

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-3.36 ACRES AND REZONE TO CD-4
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

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GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee



Date: OCTOBER 16, 2023

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CONCEPTUAL DEVELOPMENT PLAN

SHEET
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N 61°08'47" W, 61.78 FEET TO A POINT;

N 65°15'03" W, 74.45 FEET TO A POINT;

N 75°17'27" W, 201.23 FEET TO A POINT WHERE MCKAY BRANCH CREEK INTERSECTS WITH BEAR CREEK;

THENCE, ALONG BEAR CREEK, THE FOLLOWING 2 CALLS:

N 63°11'05" E, 159.96 FEET TO A POINT;

N 77°31'10" E, 234.79 FEET TO THE POINT OF BEGINNING CONTAINING 3.36 ACRES (146,345.13 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2827, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.

CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES

I, HK Big Bear Bluffs, LLC_being the sole ownership of the property__ more particularly described as 090 012.01; 090-16.00____ on Plat of Record in Plat Book **R2827** Page **576-586** in the Maury County Register of Deeds office, do hereby, formally, request that the City of Columbia, Tennessee annex such property into such City.

James P. Harvey
Print Name

11/10/2022
Date

Signature

STAFF USE ONLY	
Docket Number:	Requested Agenda:

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
*Fold hard copy **submittals larger than 8½"x11"***

ADDRESS/LOCATION	400 Bear Creek Pike		
	TAX MAP: 90	GROUP:	PARCEL: 12.01
SUMMARY OF NATURE OF REQUEST AND WORK	Annexation request and CD4 Rezoning Request for a parcel of about 3 and a quarter acres between Bear Creek and McKay's Branch adjacent to and accessed from the main entry road of the Columbia Bluffs PUD-R property.		

DATE OF PRE-APPLICATION CONFERENCE	8/30/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☒ Annexation ☒ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Columbia Bluffs Annexation/Commercial CD4 Rezoning ☐ Total Number of Lots 1 non-residential lot ☐ Total acreage +/-3.27 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Greg Gamble - Gamble Design	PHONE	615-975-5765
ADDRESS	3020 Stansberry Lane, Suite 201, Franklin	EMAIL	info@gdc-tn.com

PROPERTY OWNER NAME	HK Big Bear Bluffs, LLC	PHONE	813-615-1244
ADDRESS	14025 Riveredge Dr. Ste 175 Tampa FL 33637	EMAIL	jgibbs@kolter.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Greg Gamble		10/16/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
HK Big Bear Bluffs LLC James P. Harvey		10/10/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

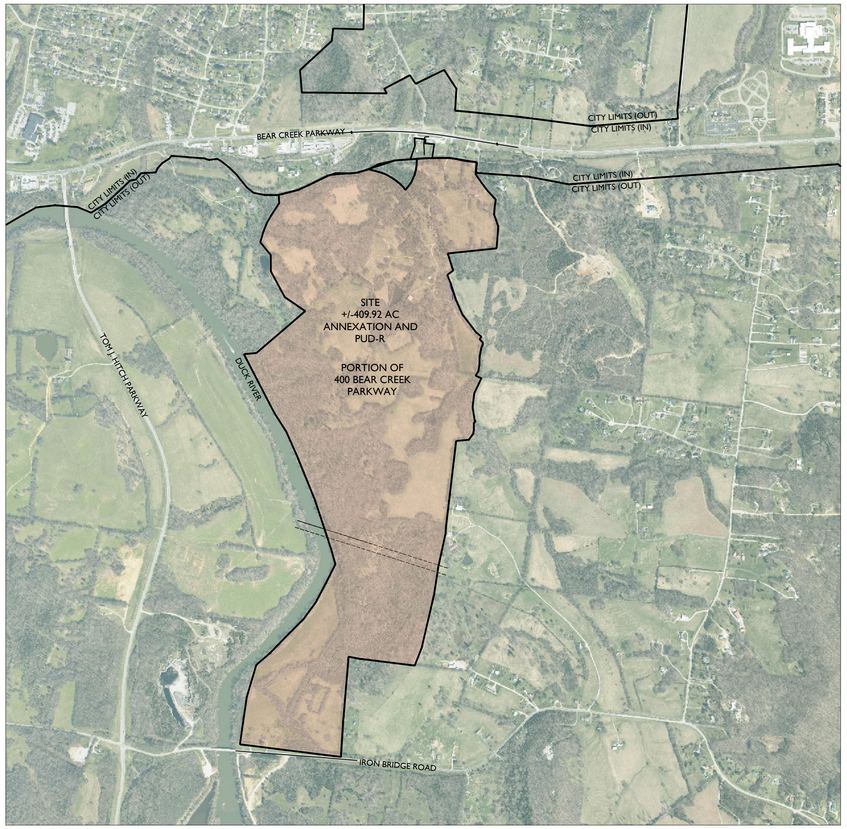
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 BEAR CREEK PARKWAY
COLUMBIA, TENNESSEE



LOCATION MAP

0 500 1000 2000
GRAPHIC SCALE 1"=1,000'-0"

OWNER:
HK BIG BEAR BLUFFS, LLC
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY

DEVELOPER:
KOLTER LAND
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY OR JOSHUA GIBBS
615.582.3253
jgibbs@kolter.com

APPLICANT/ LAND PLANNER:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
CSDG
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211
JIM HARRISON
615-248-9999
jimh@csdgtn.com

COMMITMENT TO ENVIRONMENTAL STEWARDSHIP

1. Strategy for Resource Protection utilizing a PUD Planning and Design Approach

a. Establish a Limits of Disturbance along the Duck River and its tributaries based upon slopes, natural drainage ways, floodplain areas, and mature tree canopy.

b. Design new development around open space areas to highlight them as community amenities with pedestrian systems that will connect the entire conservation design open space throughout the community.

c. Pedestrian circulation and trails are highly encouraged along the river, along stream corridors, and through scenic areas.

d. The quantity of Open Space preservation should greatly exceed any established base zone district.

e. New home lots should generally be smaller, clustered areas away from the protected banks of the Duck River.

f. Document on-site natural resources through a State approved Hydrologist and concurrence reports with local, state, and federal agencies.

g. Remove debris removal along creek banks to prevent impact to Bear Creek (shoes, clothing, random bottles, containers, fencing, wood)

h. Use Best Management Practices for Stormwater Pollution Prevention Plans during construction.

i. Use only one crossing point (< less than approx. 50' - 60' feet that spans the creek with no structures within Bear Creek (similar to several crossings visible from US (Highway 412).

2. Strategy for Protection through Construction

Implementation of the Plan requires protective measures. PUD phasing and areas of disturbance should be documented and considered through the PUD process. Protection practices shall include:

A. Storm water erosion control applications I.E.

i. Stormwater Detention Areas,

ii. natural riparian buffers

iii. silt fencing

iv. sediment ponds

v. Check dams

vi. Ongoing stormwater monitoring of Environmental Controls of water runoff areas and tributaries

B. Compliance with CGP, ARAP and NPDES permitting to address the protections that provide additional oversight to the project.

Throughout the duration of the project, these types of practices within the action areas will ensure environmental compliance with local, state and federal requirements.

3. Strategy for Protection when construction is completed.

Once development is completed permanent storm water detention areas and water out fall locations will be cleaned and stabilized in accordance with the local, state, and federal guidelines.

SHEET INDEX

C0.0	COVER SHEET
C0.01	EXISTING CONDITIONS
C1.0	PHASING PLAN
C2.0	OVERALL PRELIMINARY MASTER DEVELOPMENT PLAN
C2.1	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.2	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.3	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.3	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.4	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.5	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.6	PROPOSED LOT DIAGRAMS
C3.00	OVERALL SITE UTILITY PLAN
C3.01	SITE UTILITY PLAN
C3.02	SITE UTILITY PLAN
C3.03	SITE UTILITY PLAN
C3.04	SITE UTILITY PLAN
C4.00	OVERALL GRADING & DRAINAGE PLAN
C4.01	GRADING & DRAINAGE PLAN
C4.02	GRADING & DRAINAGE PLAN
C4.03	GRADING & DRAINAGE PLAN
C4.04	GRADING & DRAINAGE PLAN
L1.0	OVERALL CIVIC SPACE PLAN
L1.1	CIVIC SPACE ENLARGEMENT
L1.2	CIVIC SPACE ENLARGEMENT
L1.3	CIVIC SPACE ENLARGEMENT
L1.4	CIVIC SPACE ENLARGEMENT
L1.5	CIVIC SPACE ENLARGEMENT
L1.6	CIVIC SPACE ENLARGEMENT

GREGORY C. GAMBLE
TENNESSEE REGISTERED
LANDSCAPE ARCHITECT

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PRE-APP: August 30, 2023
INITIAL SUBMITTAL: October 16, 2023



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

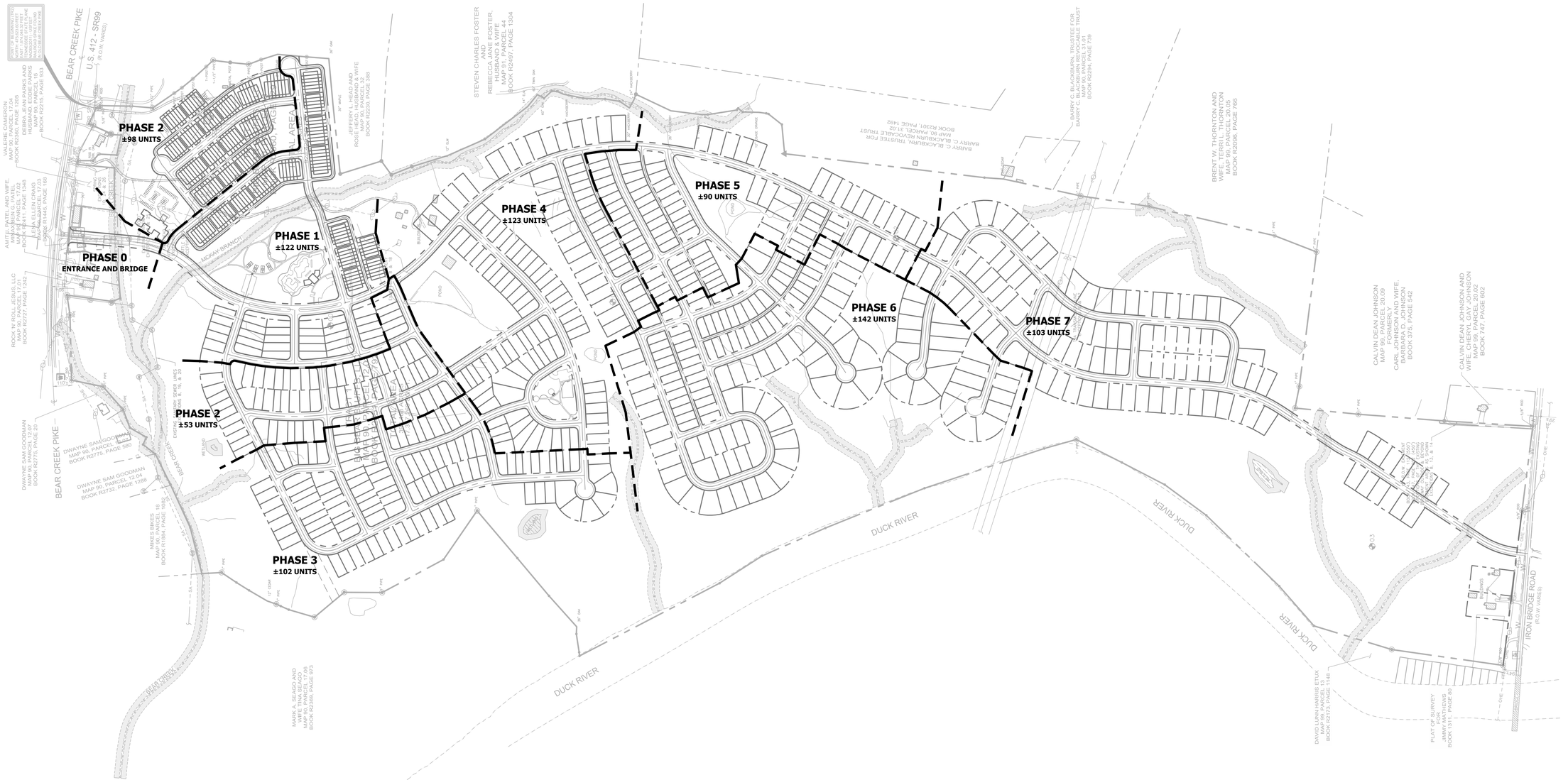
DRAWN BY: TWG
CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C0.01 - Existing Conditions Plan.dwg



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON IV
REGISTERED
PROFESSIONAL
ENGINEER
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

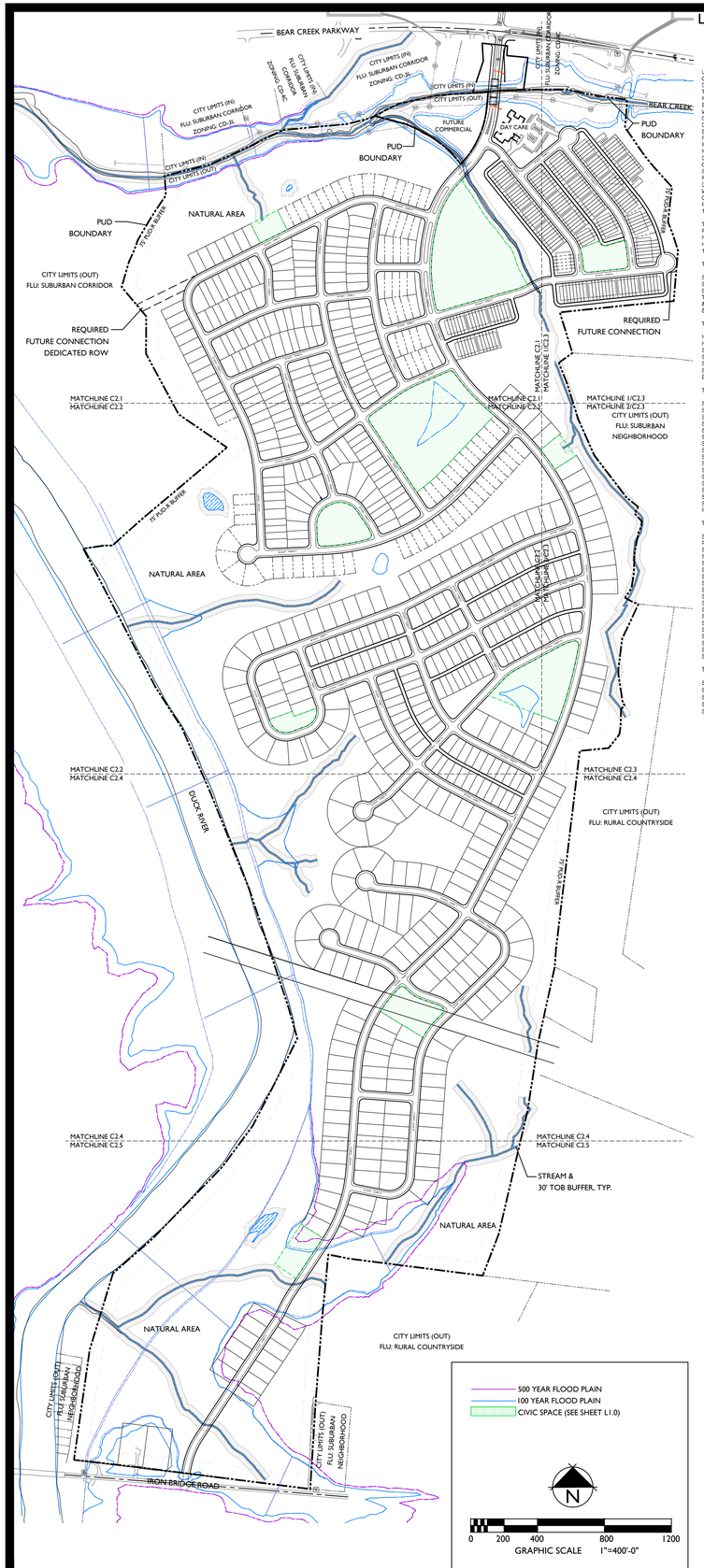
Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

PHASING PLAN

C1.00
PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C1.00 - Phasing Plan.dwg



LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN); AMIT J. PATEL AND WIFE, MINAXBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN; HK BIG BEAR BLUFFS, LLC (R BOOK R2678, PAGE 961, ROMCTN; ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1334, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R0396, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 543, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK R2411, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2115, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,872,344.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 05°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 89°39'27" E, FOR A DISTANCE OF 118.80 FEET TO A POINT;
S 89°57'56" E, FOR A DISTANCE OF 168.93 FEET TO A POINT;
S 81°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'43" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;
S 83°35'45" E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°56'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2" PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.87 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 64.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2" PIPE FOUND;
S 7°06'58" W, FOR A DISTANCE OF 101.11 FEET TO A 3" METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2" PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24" CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36" OAK;
S 84°46'29" W, FOR A DISTANCE OF 270.35 FEET TO 20" MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6" ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'5" W, FOR A DISTANCE OF 100.29 FEET TO 6" ROTTED HACKBERRY FENCE POST;
S 21°03'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12" ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14" ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60" TWIN OAK;
S 28°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60" OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14" HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.75 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.94 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°58'56" W, FOR A DISTANCE OF 69.04 FEET TO A 30" HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24" HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12" CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 225.44 FEET TO A 36" HACKBERRY;
S 7°09'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8" DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24" HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6" FENCE POST;
S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'16" W, FOR A DISTANCE OF 95.58 FEET TO A 12" OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6" ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6" TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14" ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°40'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.89 FEET TO A 26" CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'46" W, FOR A DISTANCE OF 411.13 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1" PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1" PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 600.97 FEET TO 1" PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°33'34" W, FOR A DISTANCE OF 375.75 FEET TO 1" PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 5°35'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8" IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8" IRON PIN FOUND;
N 82°46'22" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8" IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 864.54 FEET TO 1/2" IRON PIN FOUND;
N 1°16'09" E, FOR A DISTANCE OF 478.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.82 FEET TO A POINT;
N 26°51'08" E, FOR A DISTANCE OF 301.40 FEET TO 1" PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°27'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 031.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 286.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT, AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°29'25" E, FOR A DISTANCE OF 42.46 FEET TO 26" OAK;
N 46°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 46°56'39" E, FOR A DISTANCE OF 291.18 FEET TO 10" HACKBERRY AND 8" CEDAR;
N 49°46'28" E, FOR A DISTANCE OF 367.28 FEET TO 1" PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1" PIPE FOUND;
N 71°17'50" E, FOR A DISTANCE OF 220.64 FEET TO AN IRON PIN FOUND;
N 39°36'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 27°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1" PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12" CEDAR;
N 30°13'56" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.89 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1" PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 85°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

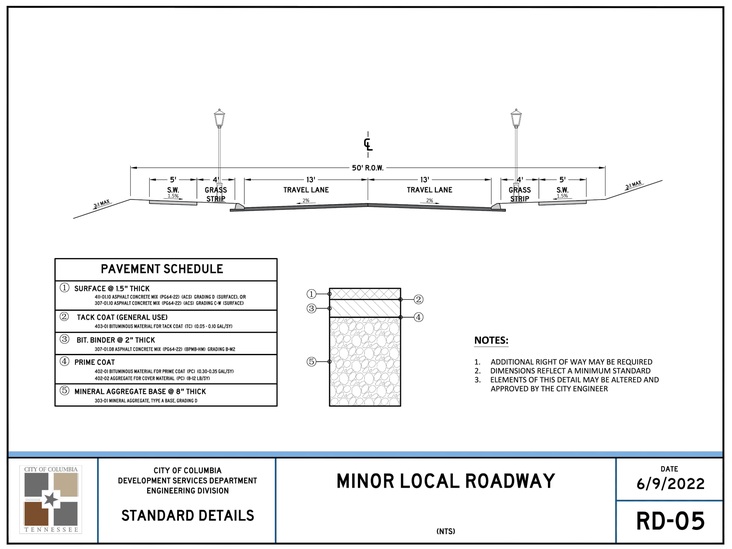
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

N 84°40'48" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 83°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:
S 7°51'27" E, FOR A DISTANCE OF 201.29 FEET TO A POINT;
S 85°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;
S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 51°12'54" E, FOR A DISTANCE OF 88.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°48'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.50 FEET, CHORD BEARING N 24°33'52" E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 84.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2837, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.



REQUESTED STREET SECTION

PROJECT DESCRIPTION AND SITE DATA:

REQUEST TO ANNEX AND REZONE THE COLUMBIA BLUFFS PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN.

THE PUD-R PLAN PROPOSES AN ENVIRONMENTALLY SENSITIVE MASTER PLAN FOR A DIVERSE RESIDENTIAL DEVELOPMENT. APPROXIMATELY ONE-THIRD OF THE PROPOSED DEVELOPMENT IS RESERVED FOR ACTIVE ADULT/AGE RESTRICTED SINGLE-FAMILY HOMES. ADDITIONALLY, TOWN HOMES AND A VARIETY OF DETACHED SINGLE-FAMILY HOMES ARE PROPOSED.

IN ADDITION TO THE RESIDENTIAL COMPONENT, THE PUD-R PLANS PROPOSES A DAY CARE FACILITY AND A VARIETY OF NEIGHBORHOOD AMENITIES.

TOTAL SITE AREA: 409.92 ACRES
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

TOTAL DWELLING UNITS: 860 HOMES
OVERALL SITE DENSITY: 2.1 DUA

RESIDENTIAL BREAKDOWN		NON RESIDENTIAL
ACTIVE ADULT HOMES:	293	DAYCARE 12,000 - 14,000 SF
TOWNHOMES:	189	
ALLEY SINGLE-FAMILY:	144	
COURTYARD HOMES:	104	
LARGE LOT HOMES:	130	

EXISTING TREE CANOPY COVERAGE: 262.2 ACS; 64% OF TOTAL SITE
REQUIRED TREE CANOPY RETENTION: 36%; REQUIRED WITH FMDP

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA
OPEN SPACE BREAKDOWN
CIVIC SPACE: 22.2 AC
ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC
ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC
CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

PARKING: SEE LOT DIAGRAMS (C2.6) FOR PROPOSED RESIDENTIAL PARKING;
AND SHEETS L1.0-L1.6 FOR CIVIC SPACE PARKING
RESIDENTIAL: 2 PARKING SPACES PER UNIT
DAYCARE: 1 PER STAFF + 0.5 PER CHILD
CIVIC SPACE: 1 PER 5,000 SF

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-409.92 ACRES AND REZONE TO PUD-R
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed Columbia Bluffs subdivision is 2 miles from the downtown core. Density and lot size transitions from higher density/intensity at the north, along the Bear Creek Parkway corridor to the south, where a more rural character is appropriate adjacent to Iron Bridge Rd and the Yanahli Park. The properties along Bear Creek Parkway have been identified as "area of change." With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Connectivity, directly through street, sidewalks, bikeways, greenways, and trails, and indirectly, through a mixture of housing and business types, should be encouraged throughout Columbia..
Response: In addition to roadway and sidewalk connections, Columbia Bluffs proposes nature trails through out the property. The development will also provide a roadway connection between Bear Creek Parkway and Iron Bridge Road. A variety of housing types are proposed, including an age restricted Active Adult neighborhood.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity.
Response: Columbia Bluffs proposes a variety of housing styles
Near-term Priorities: HOUSING MIX/TYPES: Promote mastered planned housing opportunities for a "full-life cycle" community to accommodate retirees and young professionals. Review Zoning standards to permit smaller lot and home sizes to encourage such developments.

MODIFICATIONS FROM STANDARD PUD-R ZONING REQUEST:

RESIDENTIAL LOT DIAGRAMS: SEE SHEET C2.6
1. ACTIVE ADULT AND PRIMARY ALLEY LOADED HOMES SIDE-SETBACK REDUCED TO 5'.
2. OTHER PRIMARY RESIDENTIAL SIDE-SETBACK REDUCED TO 7.5'.
3. ACTIVE ADULT, COURTYARD, AND LARGE LOT GARAGE LOCATED IN 2ND LAYER
4. ACTIVE ADULT, COURTYARD, AND LARGE LOT ALLOWED DOUBLE CAR GARAGE DOORS, WITH A MAXIMUM WIDTH OF 16'
5. ACTIVE ADULT DRIVEWAYS TO BE 18' IN FIRST LAYER.
6. COURTYARD AND LARGE LOT DRIVEWAY TO BE 12' IN FIRST LAYER.

THOROUGHFARE STANDARDS:
1. UTILIZATION OF 50' ROW INSTEAD OF 70' ROW.

CIVIC SPACE:
1. ACTIVE ADULT NEIGHBORHOOD TO BE EXCLUDED FROM REQUIRED PLAYGROUND CRITERIA.

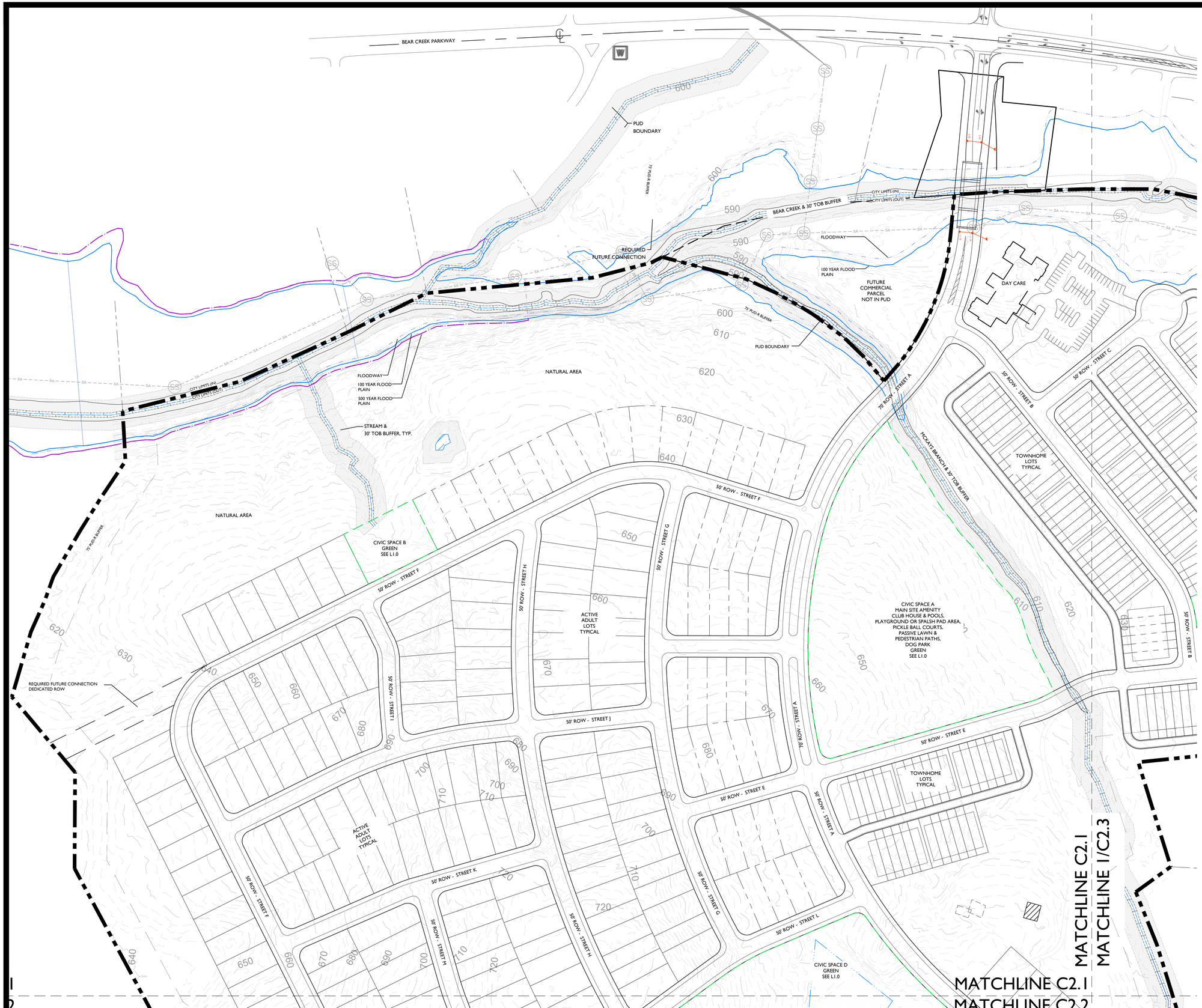
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE REGISTERED LANDSCAPE ARCHITECT
10/16/2023

Date: October 16, 2023
Revision Date
△
△
△

OVERALL PUD-R PMDP
SHEET
C2.0



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10/16/23

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OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP

SHEET C2.1

MATCHLINE C2.1
MATCHLINE C2.2

MATCHLINE C2.1
MATCHLINE C2.2

ACTIVE ADULT LOTS TYPICAL

CIVIC SPACE D
MAIL KIOSK
SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN
SEE L1.0

50' ROW - STREET A

50' ROW - STREET L

50' ROW - STREET F

50' ROW - STREET M

50' ROW - STREET N

50' ROW - STREET H

50' ROW - STREET O

CIVIC SPACE G
ACTIVE ADULT AMENITY
COVERED SEATING, PASSIVE LAWN &
PEDESTRIAN PATHS,
DOG PARK,
COMMUNITY GARDEN,
GREEN
SEE L1.0

NATURAL AREA

ACTIVE ADULT LOTS TYPICAL

75' M.D.R BUFFER

75' M.D.R BUFFER

NATURAL AREA

COURTYARD LOTS TYPICAL

50' ROW - STREET P

50' ROW - STREET R

50' ROW - STREET Q

FLOODWAY

100 YEAR FLOOD PLAIN

STREAM &
30' TOB BUFFER, TYP.

LARGE LOTS TYPICAL

50' ROW - STREET S

DUCK RIVER

50' ROW - STREET P

ALLEY HOMES TYPICAL

50' ROW - STREET Q

50' ROW - STREET P

50' ROW - STREET T

ALLEY HOMES TYPICAL

50' ROW - STREET R

CIVIC SPACE E
MAIL KIOSK, PASSIVE LAWN & PEDESTRIAN PATHS, PLAYGROUND
GREEN
SEE L1.0

PEDESTRIAN WALKWAY & PARK

NATURAL AREA

CIVIC SPACE H
PASSIVE LAWN & PEDESTRIAN PATHS, PLAYGROUND
GREEN
SEE L1.0

NATURAL AREA

COURTYARD LOTS TYPICAL

50' ROW - STREET W

50' ROW - STREET S

LARGE LOTS TYPICAL

NATURAL AREA

MATCHLINE C2.2
MATCHLINE C2.4

MATCHLINE C2.2
MATCHLINE C2.3

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT

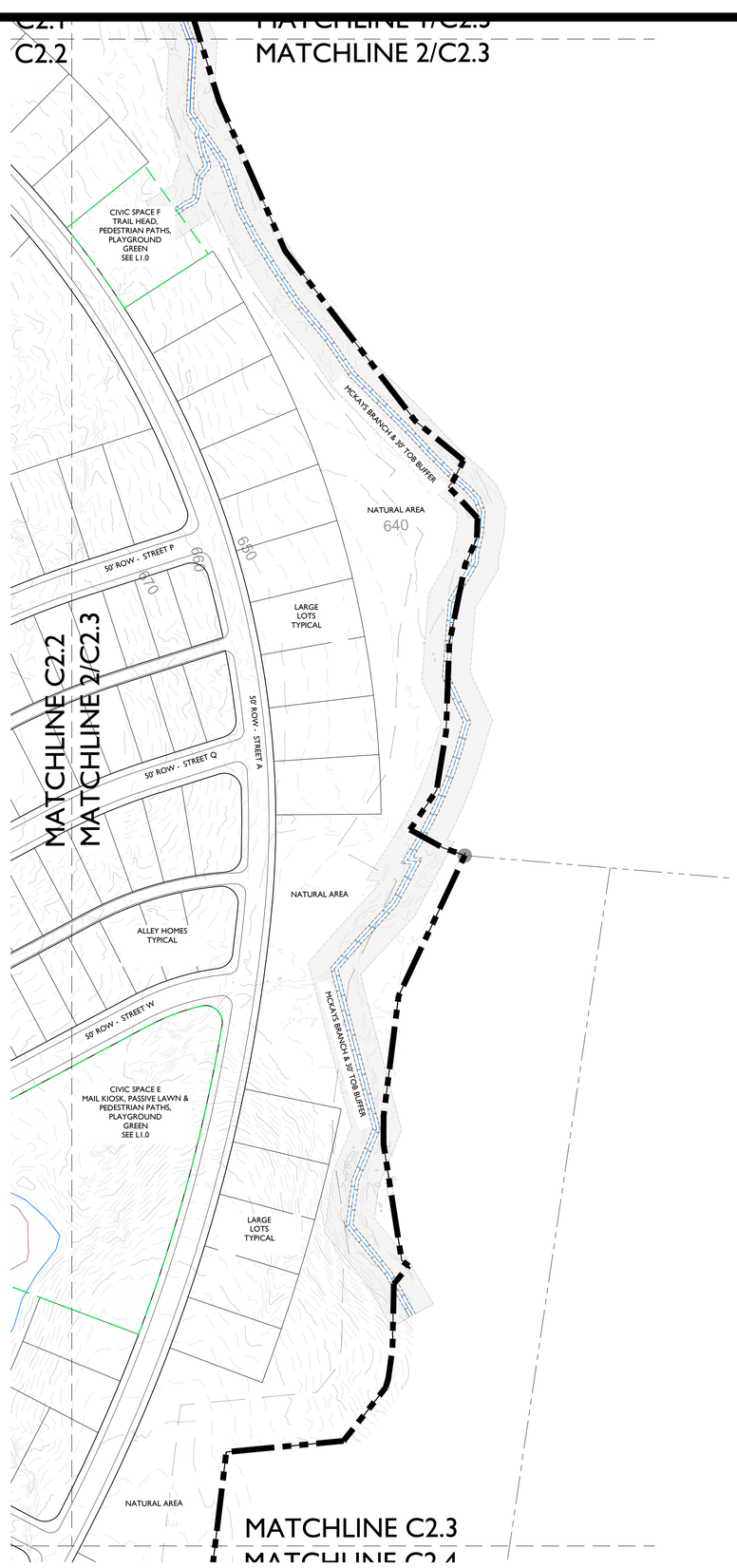
Date: October 16, 2023

Revision Date
△
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ENLARGED PUD-R PMDP

SHEET
C2.2





GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE REGISTERED LANDSCAPE ARCHITECT
LA001622

Date: October 16, 2023

Revision Date
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OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

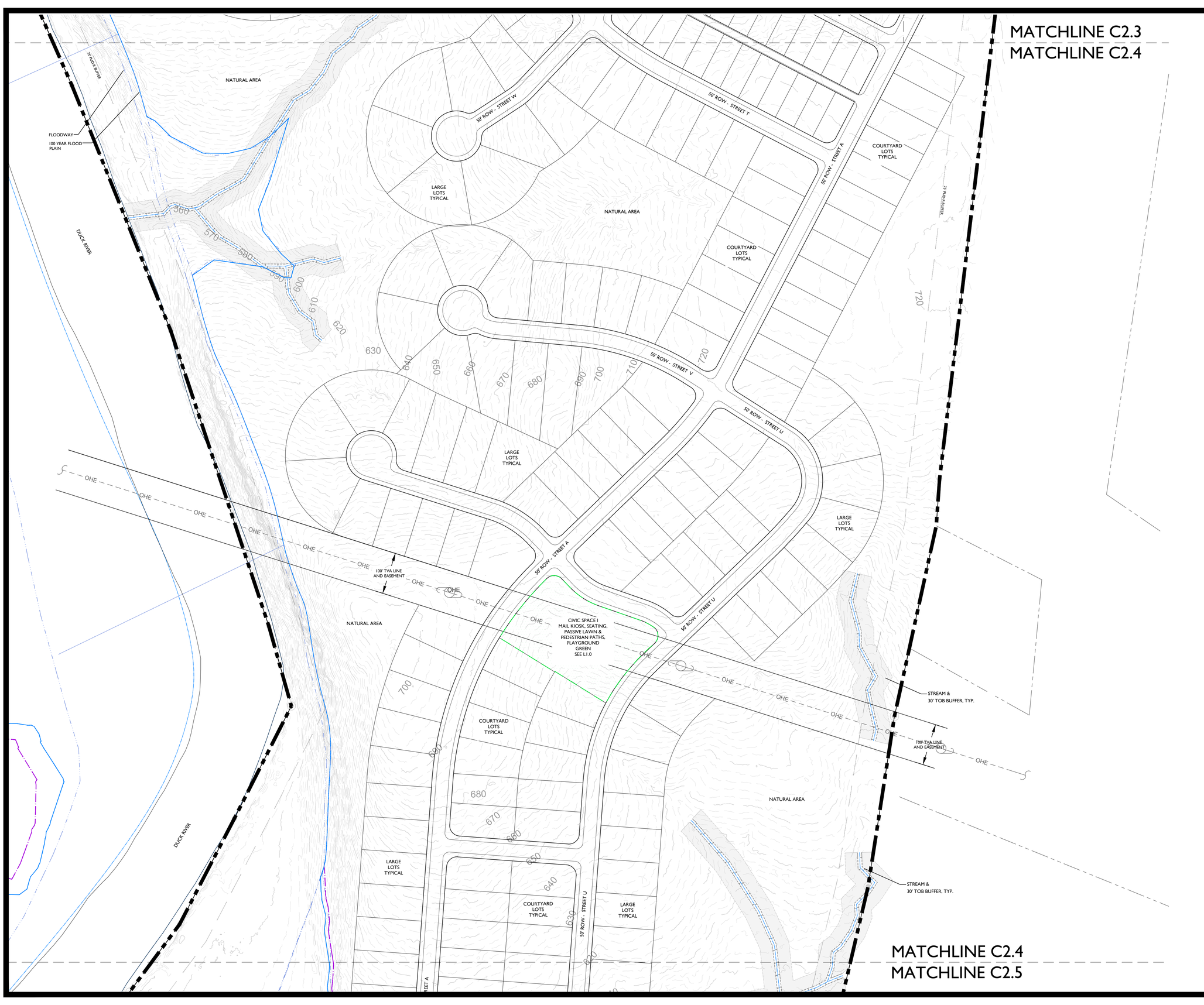
GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP

SHEET

C2.3

MATCHLINE C2.3
MATCHLINE C2.4



MATCHLINE C2.4
MATCHLINE C2.5

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED LANDSCAPE ARCHITECT
TENNESSEE REGISTRATION NO. 369
LANDSCAPE ARCHITECT
10-16-23

Date: October 16, 2023

Revision Date
△
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ENLARGED PUD-R PMDP

SHEET
C2.4

MATCHLINE C2.4
MATCHLINE C2.5

NATURAL AREA
DUCK RIVER
50' ROW - STREET A
50' ROW - STREET U
COURTYARD LOTS TYPICAL
LARGE LOTS TYPICAL
STREAM & 30' TOB BUFFER, TYP.
CIVIC SPACE J TRAIL HEAD, SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN SEE L1.0
500 YEAR FLOOD PLAIN
FLOODWAY
100 YEAR FLOOD PLAIN
75' PUD-R BUFFER
100 YEAR FLOOD PLAIN
500 YEAR FLOOD PLAIN
570
580
590
600
610
620
630
640
650
660

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
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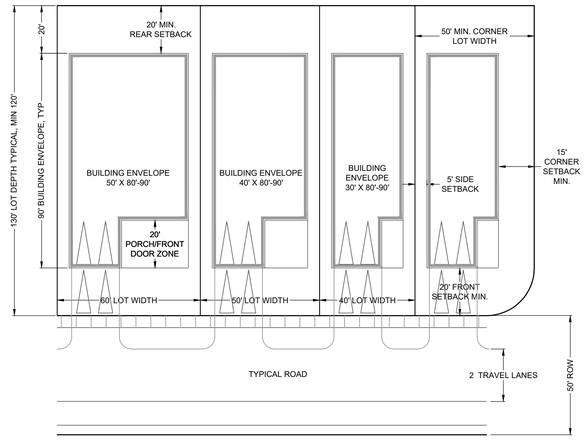
GREGORY C. GAMBLE
REGISTERED LANDSCAPE ARCHITECT
TENNESSEE
10/16/23

Date: October 16, 2023
Revision Date
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ENLARGED PUD-R PMDP
SHEET
C2.5

ACTIVE ADULT/ AGE RESTRICTED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

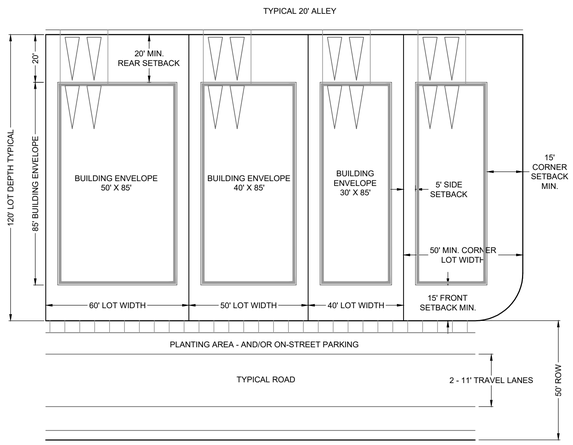
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



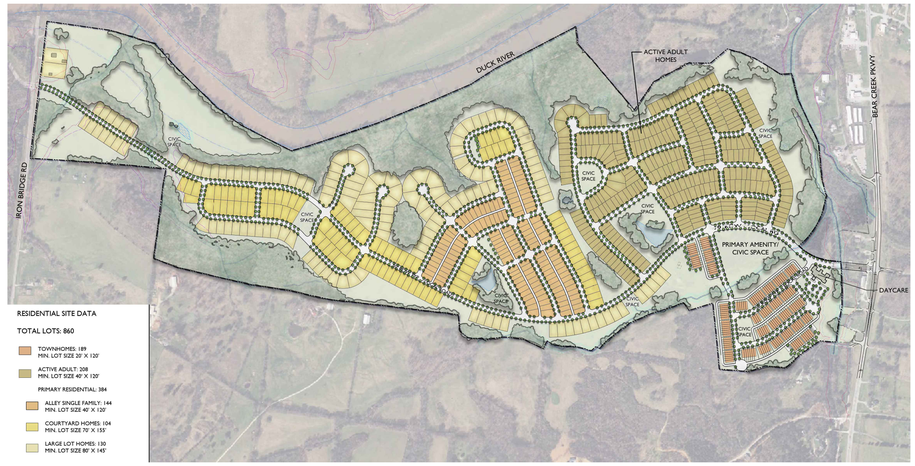
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL - ALLEY LOADED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



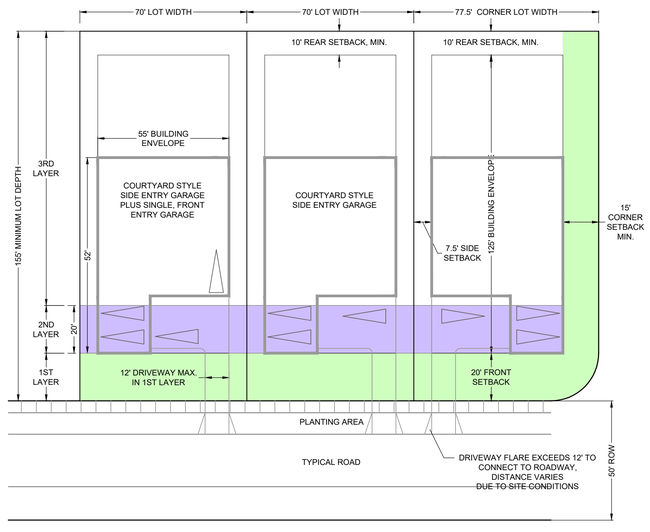
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

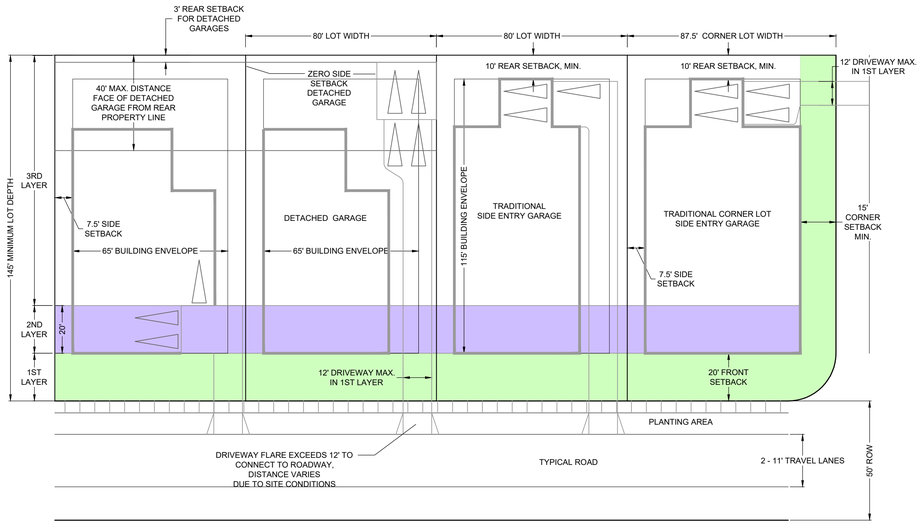
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

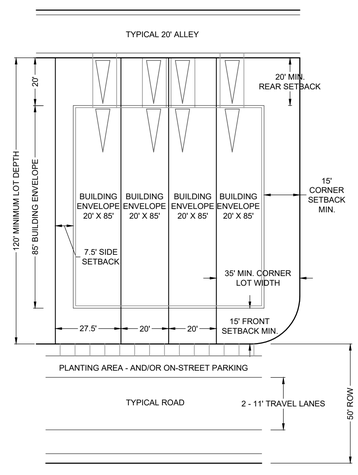
SETBACKS:	MODIFICATION REQUESTS:
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SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



5 C2.6 LARGE LOT HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL ALLEY LOADED TOWN HOMES
TYPICAL INTERIOR LOT DIMENSIONS 20' MIN. X 120'
UNITS PER BUILDING: 4, 6, 7, OR 8

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 15' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



6 C2.6 TOWN HOME LOT DIAGRAM N.T.S

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
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400 Bear Creek Parkway, Columbia, Tennessee

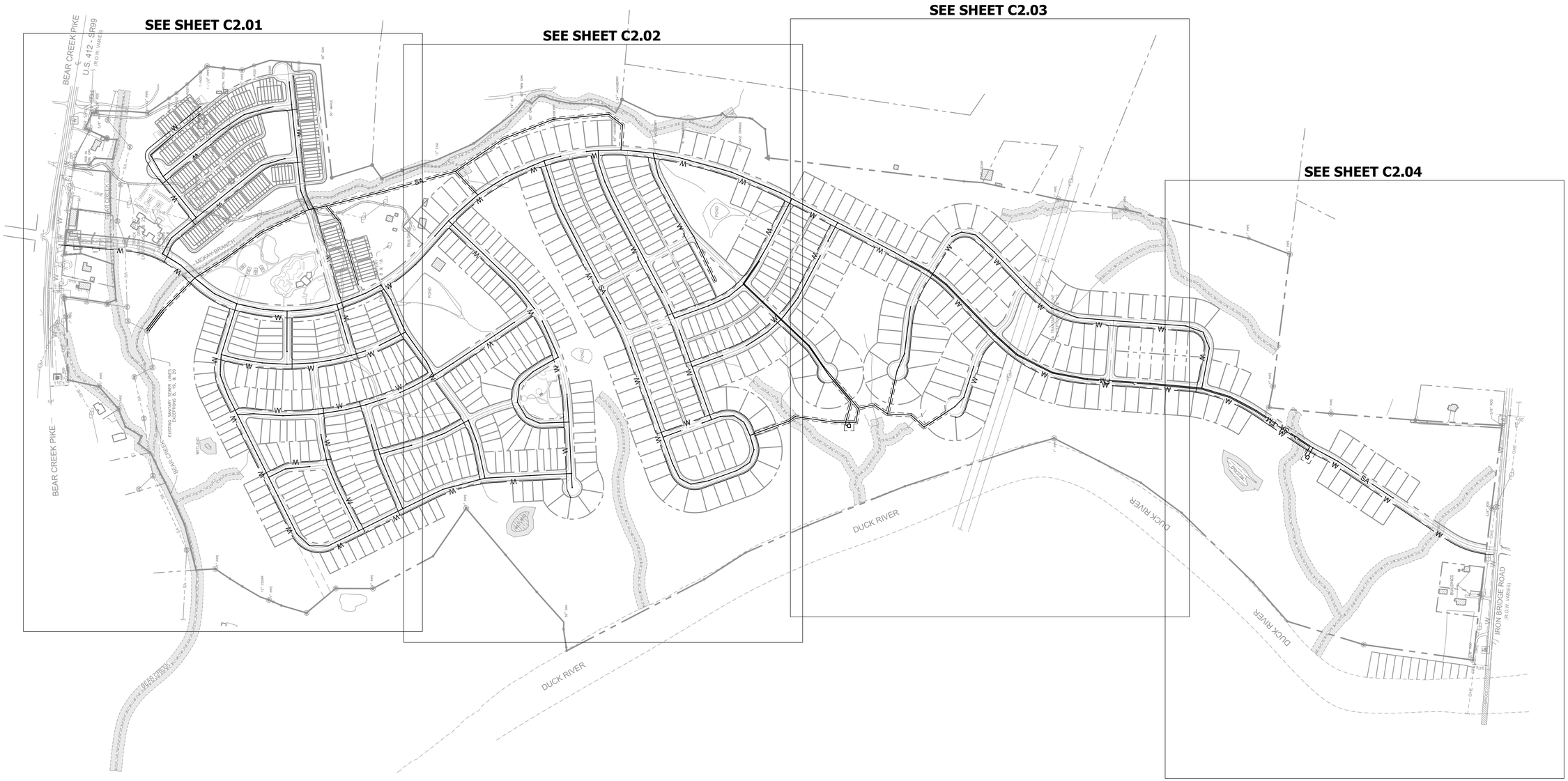
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
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LOT DIAGRAMS

SHEET C2.6



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
PROFESSIONAL
ENGINEER
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

OVERALL UTILITY PLAN

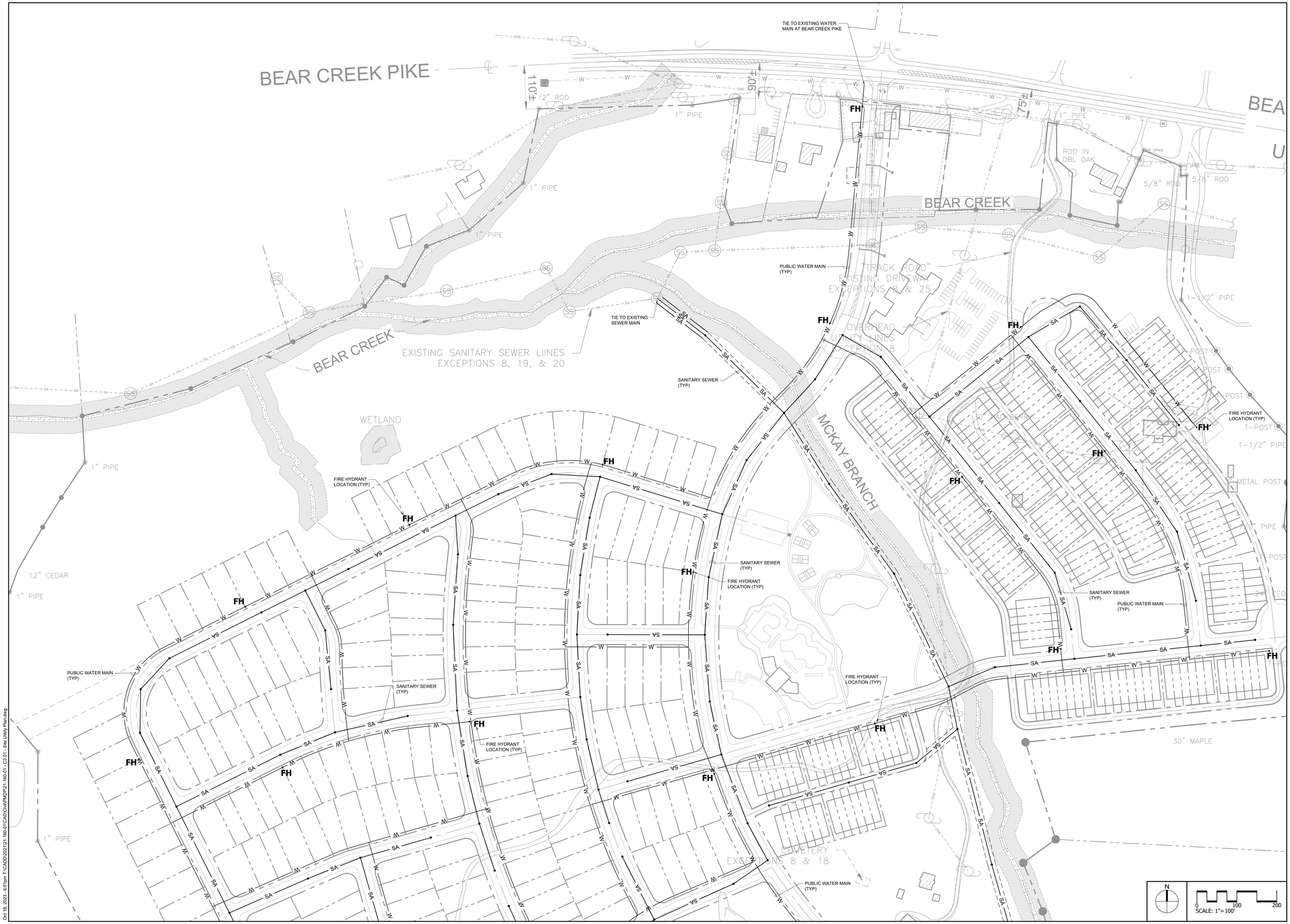
C3.00

PROJECT NO.: 21-160-01

N

0 300 600
SCALE: 1"= 300'

Oct 18, 2023 - 6:00pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.00 - Overall Utility Plan.dwg


BEAR CREEK PIKE
TIE TO EXISTING WATER MAIN AT BEAR CREEK PIKE
110'+/-
1/2" ROD
1" PIPE
1" PIPE
1" PIPE



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SEAL

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PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

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INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.02
PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:01pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.02 - Site Utility Plan.dwg



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SEAL

JAMES T. HARRISON IV
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LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
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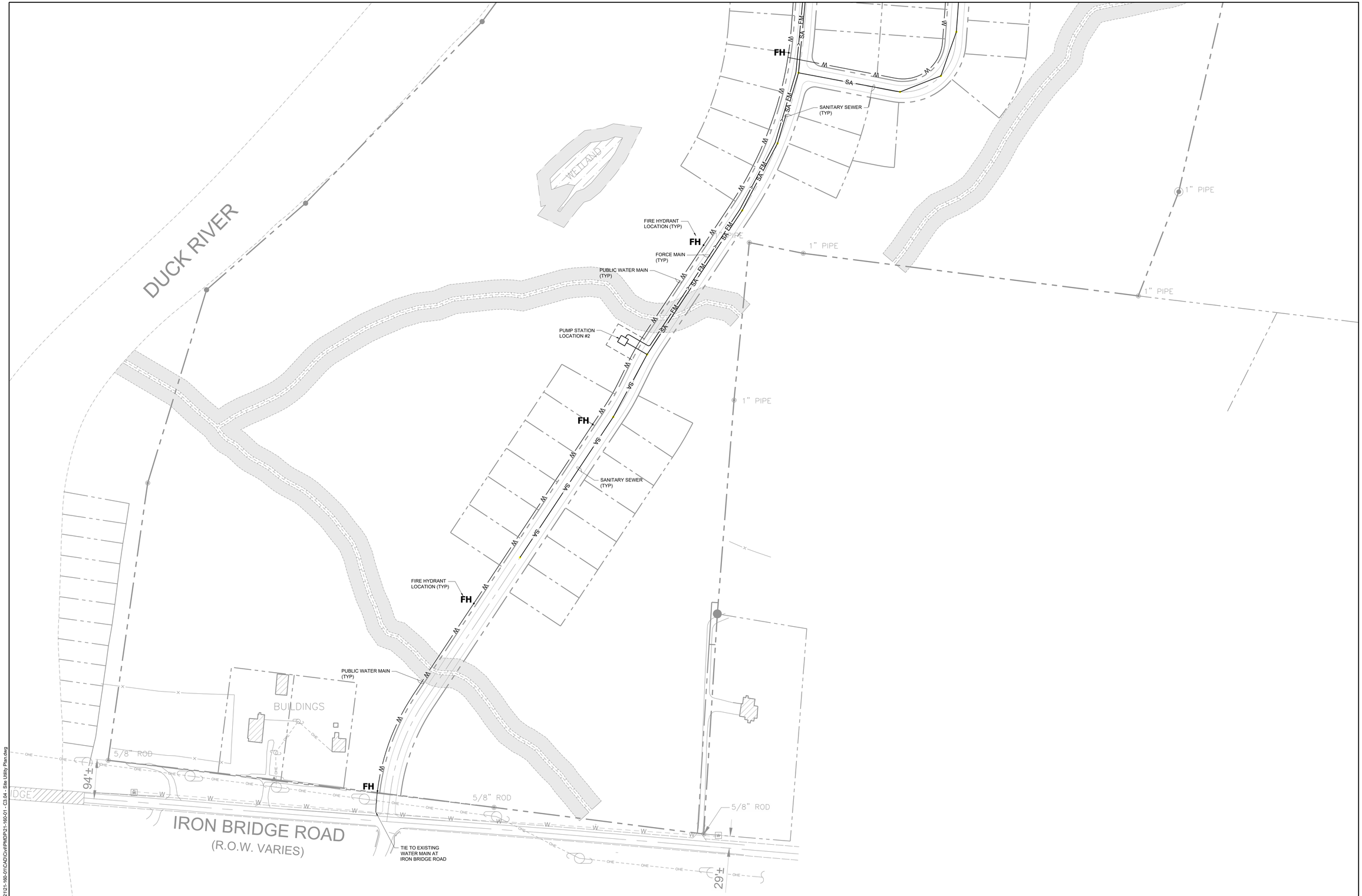
DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.03
PROJECT NO.: 21-160-01

N
0 100 200
SCALE: 1"= 100'

Oct 18, 2023 - 6:01pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.03 - Site Utility Plan.dwg



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Landscape Architecture
2305 Kline Ave, Ste 300
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615.248.9999
csdgtn.com

SEAL



COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

N

0 100 200
SCALE: 1"= 100'

C3.04
PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:01pm T:\CADD\202\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.04 - Site Utility Plan.dwg



N

0 300 600
SCALE: 1"= 300'

CSDG
Planning | Engineering
Landscape Architecture

2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
PROFESSIONAL
ENGINEER
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

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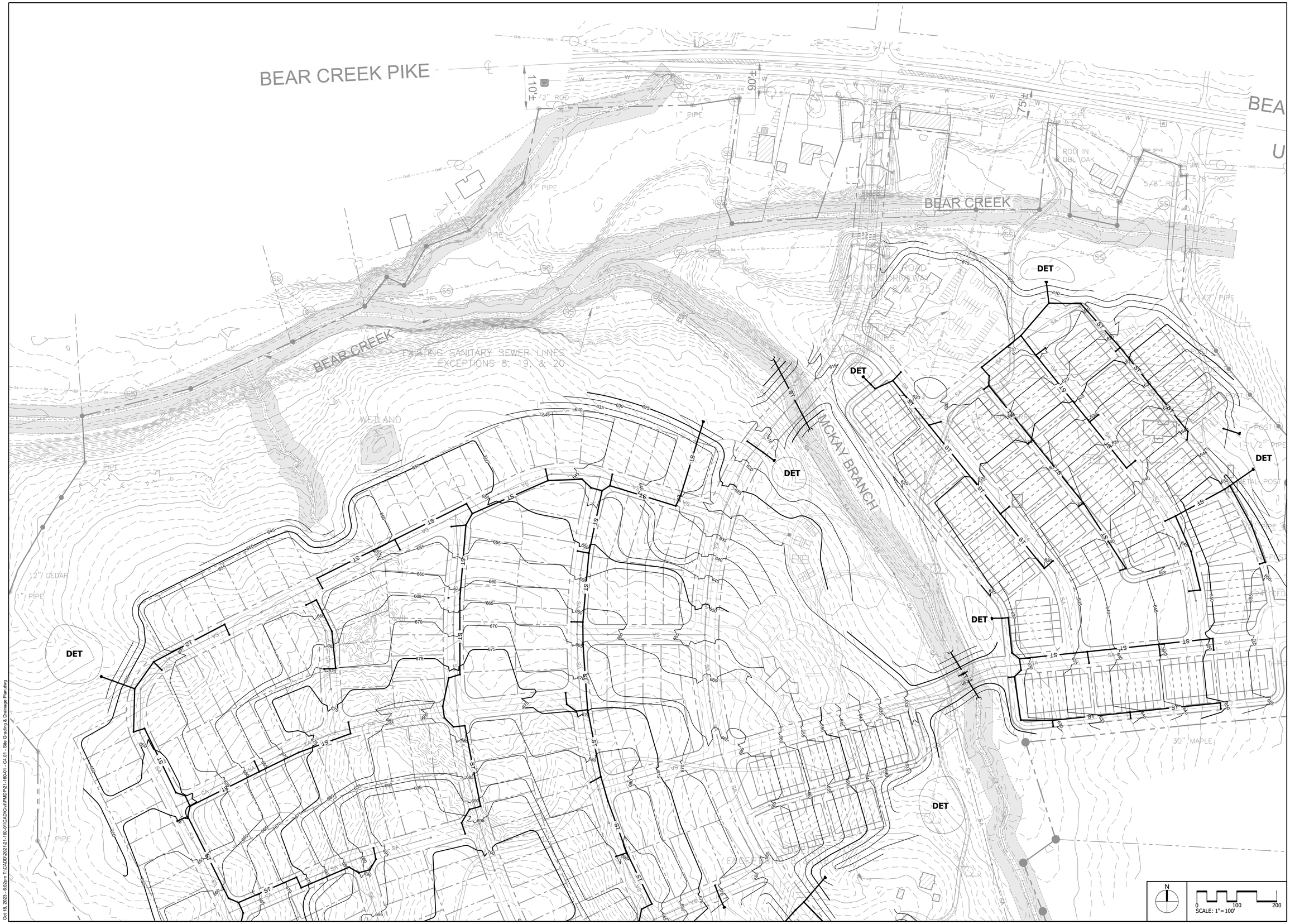
DRAWN BY: TWG
CHECKED BY: TWG

OVERALL GRADING & DRAINAGE PLAN

C4.00

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:02pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.00 - Overall Grading & Drainage Plan.dwg



Oct 18, 2023 - 6:02pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.01 - Site Grading & Drainage Plan.dwg

CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON IV
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE GRADING & DRAINAGE PLAN

C4.01

PROJECT NO.: 21-160-01



N

0 100 200
SCALE: 1"= 100'

Oct 18, 2023 - 6:02pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.02 - Site Grading & Drainage Plan.dwg

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SEAL

JAMES T. HARRISON IV
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PROFESSIONAL
ENGINEER
AGRICULTURE
COMMERCE
No. 021998
STATE OF TENNESSEE
10-16-23

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

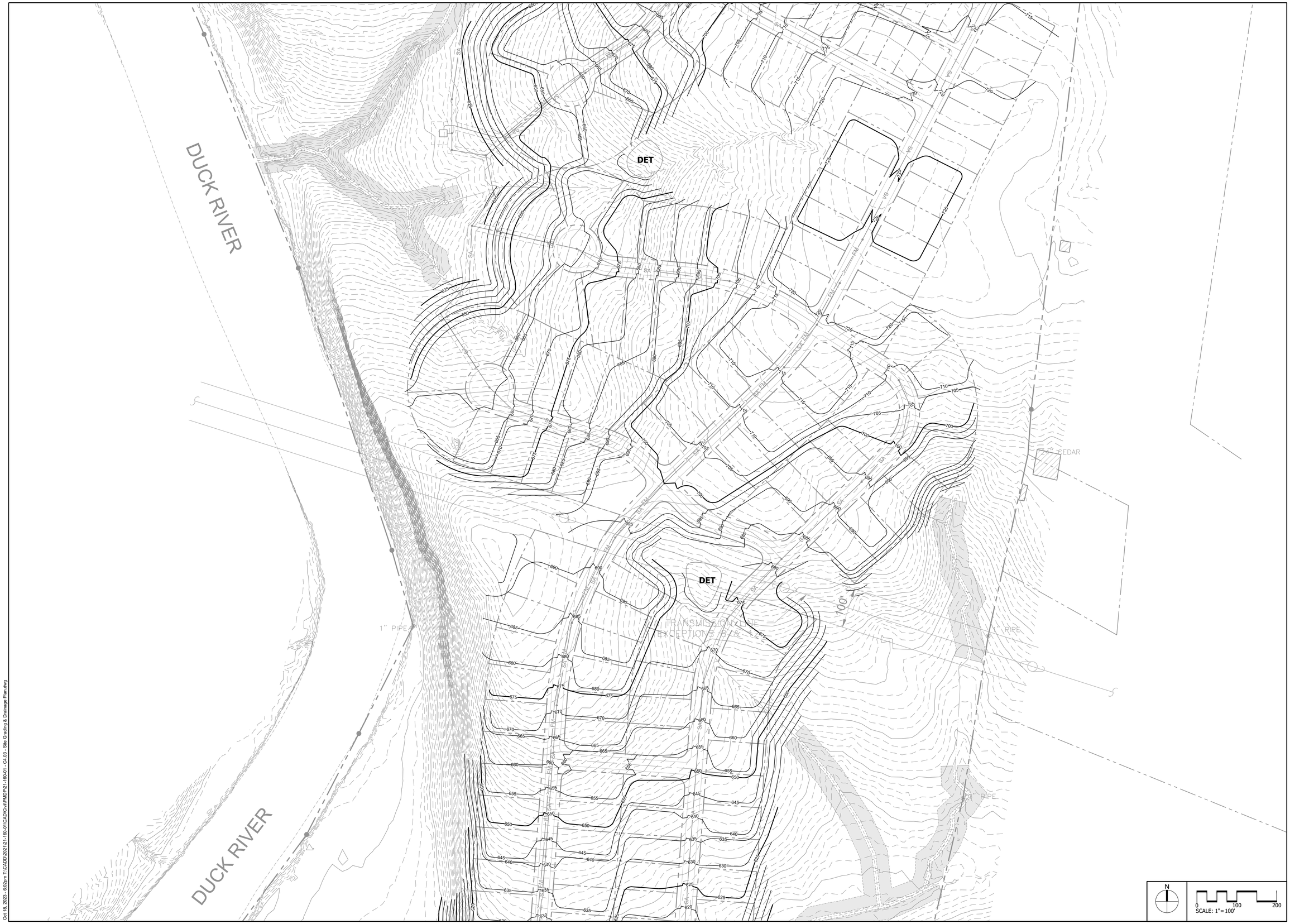
Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE GRADING & DRAINAGE PLAN

C4.02

PROJECT NO.: 21-160-01



Oct 18, 2023 - 6:02pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.03 - Site Grading & Drainage Plan.dwg

CSDG
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Landscape Architecture
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SEAL

JAMES T. HARRISON IV
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

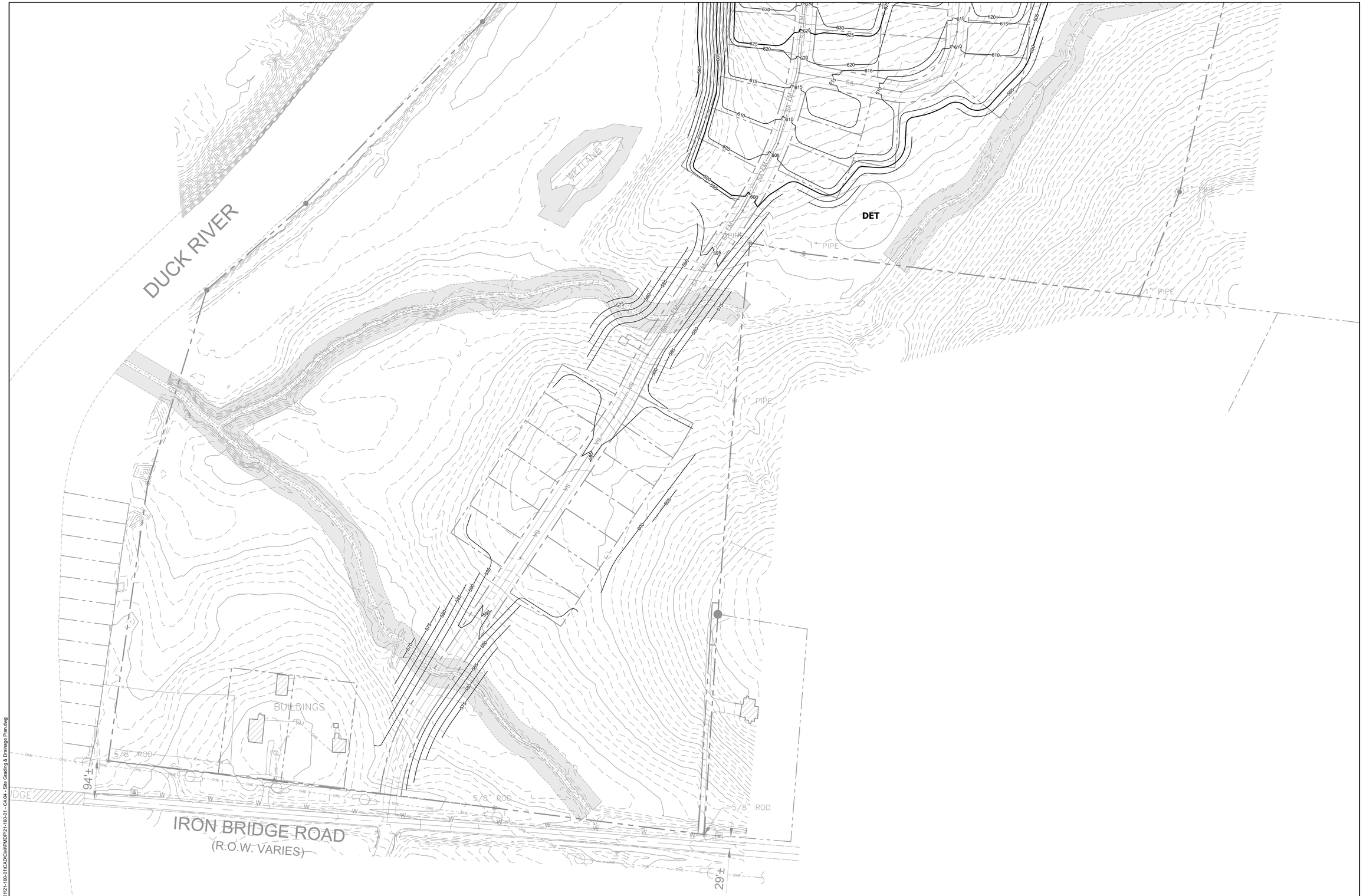
Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE GRADING & DRAINAGE PLAN

C4.03

PROJECT NO.: 21-160-01



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Landscape Architecture
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Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON IV
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10-16-23
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STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE GRADING & DRAINAGE PLAN

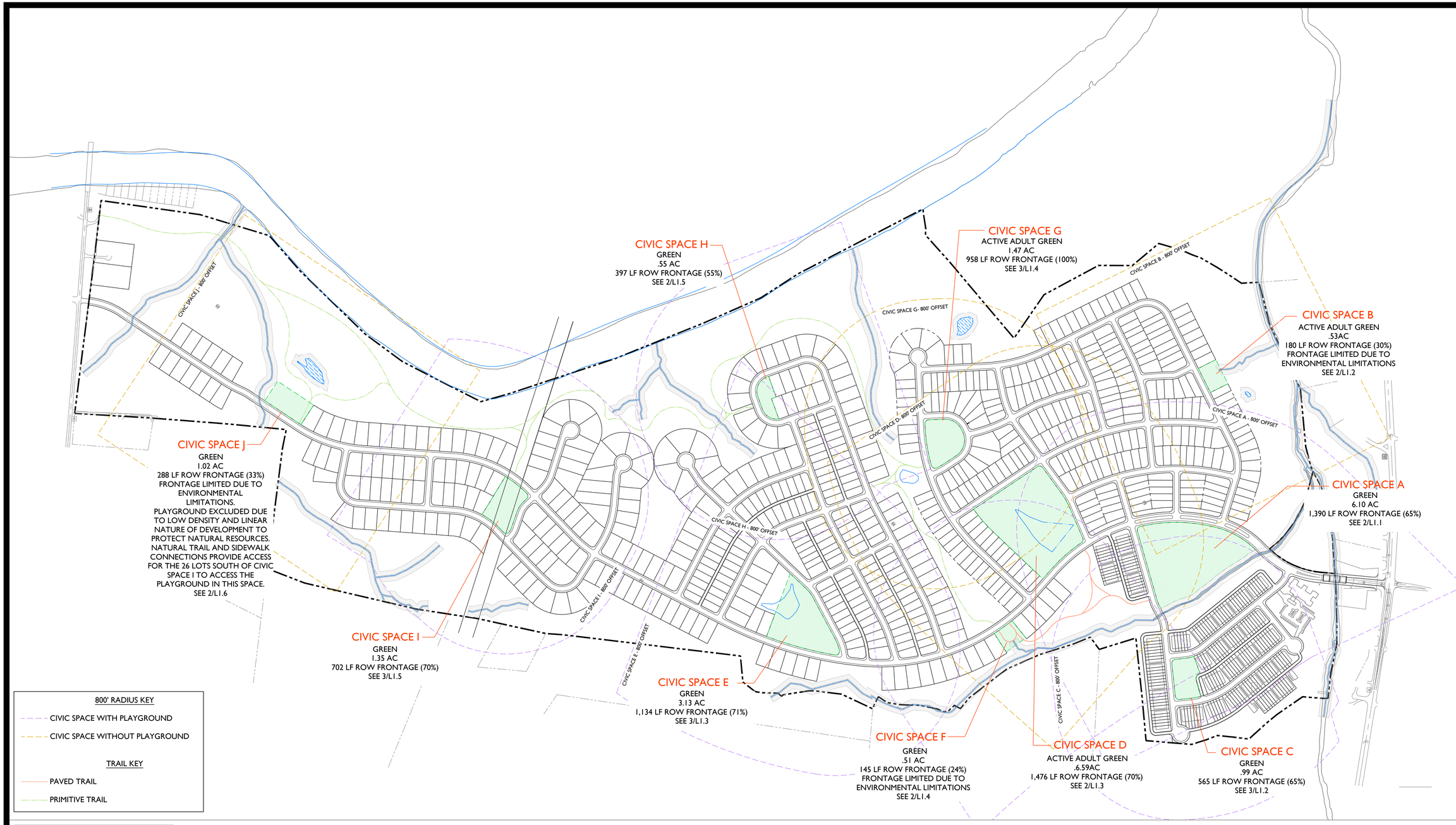
C4.04

PROJECT NO.: 21-160-01

N

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SCALE: 1"= 100'

Oct 18, 2023 - 6:03pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.04 - Site Grading & Drainage Plan.dwg



800' RADIUS KEY

- CIVIC SPACE WITH PLAYGROUND
- CIVIC SPACE WITHOUT PLAYGROUND

TRAIL KEY

- PAVED TRAIL
- PRIMITIVE TRAIL

OVERALL CIVIC SPACE PLAN

N

0 300 600 900

GRAPHIC SCALE 1"=300'-0"

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA

OPEN SPACE BREAKDOWN

CIVIC SPACE: 22.2 AC

ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC

ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC

CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

CIVIC SPACE BREAKDOWN

KEY	SIZE	PLAYGROUND
A	6.10 AC	YES
B	.53 AC	NO
C	.99 AC	YES
D	6.10 AC	NO
E	3.13 AC	YES
F	.51 AC	YES
G	1.47 AC	YES
H	.55 AC	YES
I	1.35 AC	YES
J	1.02 AC	NO

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
TENNESSEE
NO. 1162

Date: October 16, 2023

Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN

SHEET

L1.0



1 / LI.1 KEY MAP N.T.S

NEIGHBORHOOD CLUBHOUSE





PICKLE BALL COURTS



DOG PARK

WALKING PATHS





SWING BENCH

POOL





PICKLE BALL COURTS



2 / LI.1 CIVIC SPACE - A
CONCEPTUAL PLAN

0' 50' 100'

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE TENNESSEE REGISTERED LANDSCAPE ARCHITECT 10-16-23

Date: October 16, 2023
Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN
SHEET
LI.1



1 LI.2 KEY MAP N.T.S



2 LI.2 CIVIC SPACE - B

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



BENCHES



FORMAL LAWN



FORMAL PLANTING



WALKING PATH



3 LI.2 CIVIC SPACE - C

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'

PLAYGROUND





FORMAL PLANTING

PLAYGROUND



GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT TENNESSEE 10.16.23

Date: October 16, 2023

Revision Date

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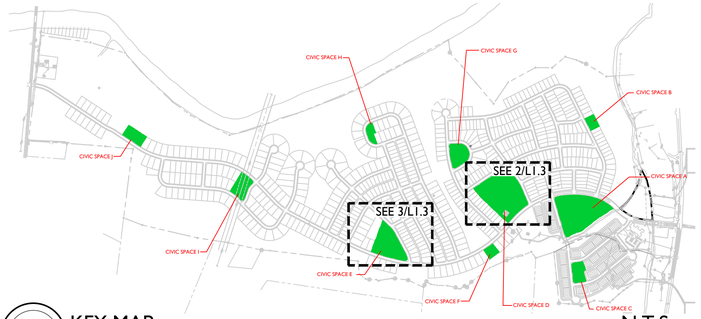
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OVERALL CIVIC SPACE PLAN

SHEET LI.2





1 / L1.3 KEY MAP N.T.S



2 / L1.3 CIVIC SPACE - D
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

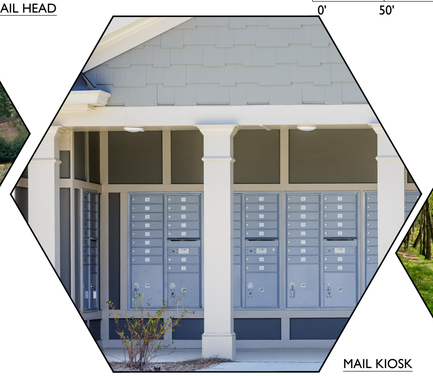
0' 50' 100'



POND



TRAIL HEAD



MAIL KIOSK

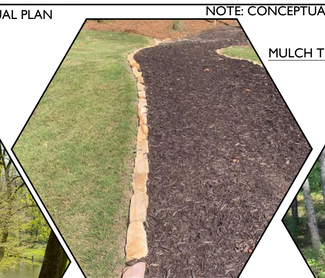
3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

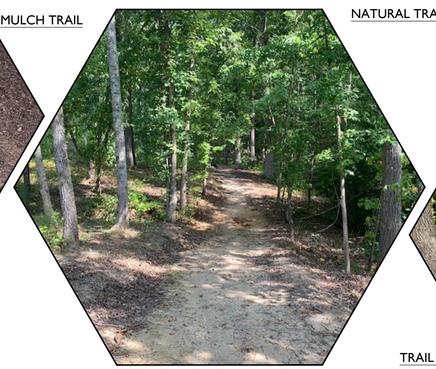
0' 30' 60'



NATURAL POND



MULCH TRAIL



NATURAL TRAIL



TRAIL SIGN

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — LA No. 667

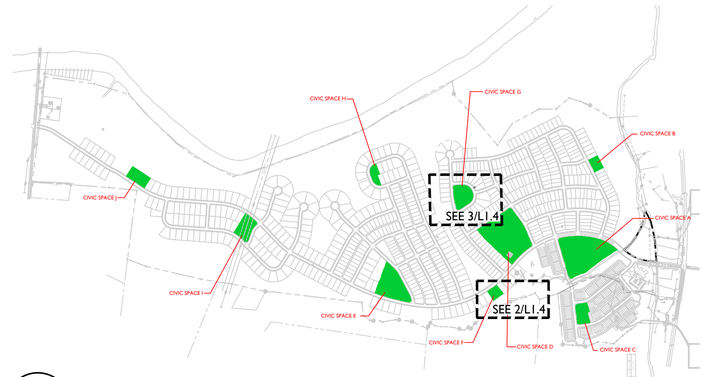
Date: October 16, 2023

Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN

SHEET
L1.3





1 / LI.4 KEY MAP N.T.S



2 / LI.4 CIVIC SPACE - F

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



FORMAL PARK



PLAYGROUND

3 / LI.4 CIVIC SPACE - G

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

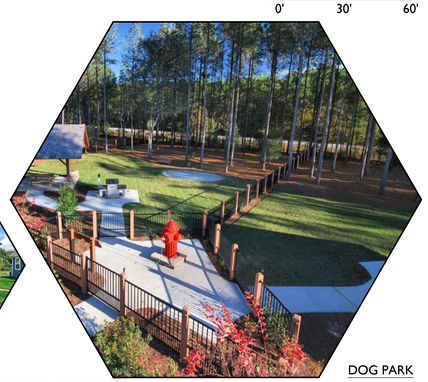
0' 30' 60'



FORMAL PARK



COMMUNITY GARDEN



DOG PARK

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — REGISTERED LANDSCAPE ARCHITECT — TENNESSEE — 10/16/23

Date: October 16, 2023

Revision Date

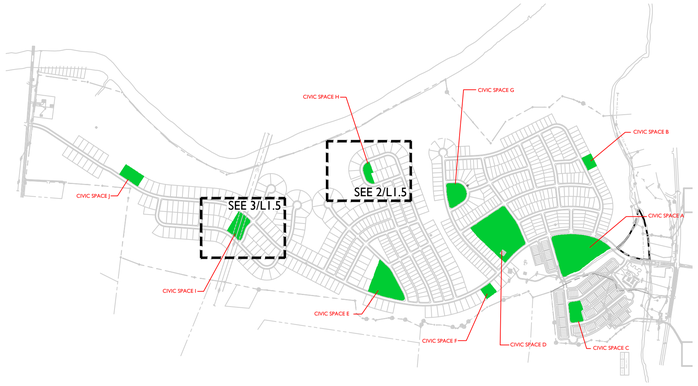
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OVERALL CIVIC SPACE PLAN

SHEET LI.4



1 LI.5 KEY MAP N.T.S



2 LI.5 CIVIC SPACE - H

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



PLAYGROUND



PLAYGROUND



3 LI.5 CIVIC SPACE - I

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



MAIL KIOSK



FORMAL PLANTING

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT TENNESSEE

Date: October 16, 2023

Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN

SHEET LI.5



2 L1.6 CIVIC SPACE - J

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 100' 200'



1 L1.6 KEY MAP N.T.S



KAYAK LAUNCH

NOTE: PRIMITIVE WALKING TRAILS AND KAYAK LAUNCH TO BE FIELD LOCATED.



OPEN FIELD



TRAIL HEAD



MULTI-PURPOSE FIELD

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

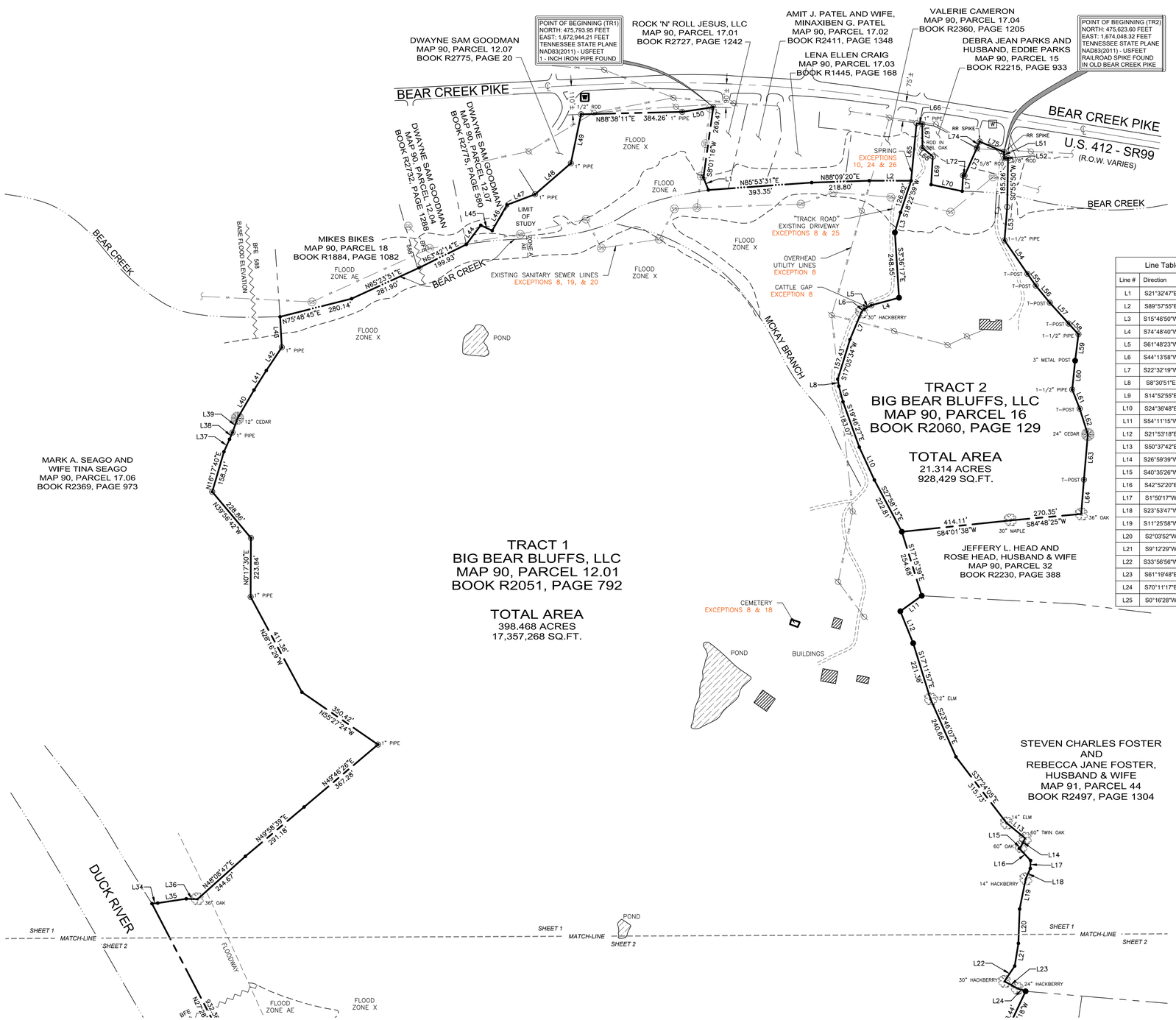
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 001623

Date: October 16, 2023

Revision	Date
△	
△	
△	

OVERALL CIVIC SPACE PLAN

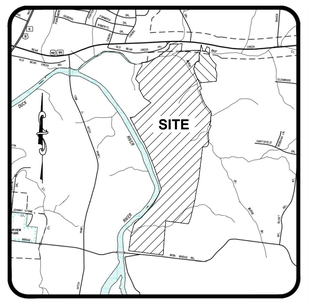
SHEET L1.6



Line Table		
Line #	Direction	Length
L1	S21°32'47"E	51.20'
L2	S89°57'55"E	158.94'
L3	S15°46'50"W	78.97'
L4	S74°48'40"W	109.09'
L5	S61°48'23"W	30.10'
L6	S44°13'58"W	15.73'
L7	S22°32'19"W	113.52'
L8	S8°30'51"E	26.77'
L9	S14°52'55"E	61.47'
L10	S24°36'48"E	137.17'
L11	S54°11'15"W	100.29'
L12	S21°53'18"E	130.86'
L13	S50°37'42"E	91.73'
L14	S26°59'39"W	35.62'
L15	S40°35'26"W	9.08'
L16	S42°52'20"E	62.79'
L17	S1°50'17"W	30.25'
L18	S23°53'47"W	42.59'
L19	S11°25'58"W	117.73'
L20	S2°03'52"W	130.34'
L21	S9°12'29"W	87.18'
L22	S33°56'56"W	69.94'
L23	S61°19'48"E	54.74'
L24	S70°11'17"E	34.53'
L25	S0°16'28"W	41.40'

Line Table		
Line #	Direction	Length
L26	S50°40'30"E	13.02'
L27	S39°18'12"W	34.16'
L28	S1°12'18"W	95.58'
L29	S7°58'27"W	43.94'
L30	S15°41'30"W	13.75'
L31	S38°17'00"W	100.34'
L32	S4°03'46"W	112.86'
L33	N78°43'22"W	130.34'
L34	N85°09'29"E	22.00'
L35	N81°22'35"E	109.60'
L36	S87°28'25"E	42.46'
L37	N24°10'55"E	52.03'
L38	N23°26'46"E	28.14'
L39	N19°40'08"E	57.72'
L40	N30°13'58"E	123.71'
L41	N32°10'27"E	87.69'
L42	N33°44'57"E	105.82'
L43	N3°11'17"W	116.30'
L44	N37°01'24"E	91.39'
L45	S64°57'03"E	47.99'
L46	N29°46'16"E	112.44'
L47	N69°17'32"E	114.26'
L48	N49°04'40"E	179.96'
L49	N11°45'20"E	190.04'
L50	N81°28'20"E	119.52'

Line Table		
Line #	Direction	Length
L51	S2°49'46"E	24.13'
L52	N86°58'06"E	13.97'
L53	S4°40'44"W	127.32'
L54	S34°29'27"E	153.97'
L55	S35°04'16"E	55.17'
L56	S39°22'56"E	84.02'
L57	S42°05'33"E	106.39'
L58	S42°31'20"E	55.23'
L59	S7°06'55"W	101.11'
L60	S5°45'07"W	110.19'
L61	S21°14'47"E	78.14'
L62	S17°34'01"E	102.59'
L63	S4°57'22"W	172.54'
L64	S4°32'31"W	130.65'
L65	N5°25'46"E	219.38'
L66	S80°44'46"E	22.14'
L67	S0°18'19"E	89.89'
L68	S49°53'58"E	51.40'
L69	S3°25'01"W	106.80'
L70	S78°01'13"E	120.71'
L71	N2°59'51"E	60.05'
L72	S78°10'57"E	5.80'
L73	N24°00'25"E	116.87'
L74	N24°07'16"E	25.12'
L75	S66°43'29"E	100.36'



VICINITY MAP
NOT TO SCALE

NO.	DATE	COMMENT

108 Beasley Drive
Franklin, TN
37064
615.794.2275

WILSON&ASSOCIATES, P.C.
Engineering/Surveying/Environmental

JOHN C. WILSON II
REGISTERED
LAND SURVEYOR
No. 2069
AGRICULTURE
COMMERCE
7/7/22
TENNESSEE

ALTA/NSPS LAND TITLE SURVEY

MAP 90, PARCELS 12.01 & 16
BEAR CREEK PIKE / IRON BRIDGE ROAD
MAURY COUNTY, TENNESSEE
FOR: KOLTER GROUP ACQUISITIONS, LLC

LEGEND

IRON PIN FOUND	BENCH MARK	ELECTRIC METER-BOX	EVERGREEN TREE	UNDERGROUND ELEC	UGE
IRON PIN SET	WATER METER	ELECTRIC MH	DECIDUOUS TREE	OVERHEAD ELEC	OHE
FENCE POST FOUND	WATER VALVE	LIGHT POLE	HANDICAP PARKING	GAS	4" G
FENCE POST SET	FIRE HYDRANT	UTILITY POLE	SIGN	COMMUNICATIONS	COM
CONC. MON. FOUND	SANITARY SEWER MH	GUY ANCHOR	TURN LANE MARKING	BOUNDARY	
CONC. MON. SET	SANITARY SEWER CO	COMMUNICATION BOX	MAIL BOX	CENTERLINE	
PK FOUND	AREA DRAIN	COMMUNICATION MH	CEMETERY	FENCE	X
PK SET	CURB INLET	GAS METER	SANITARY SEWER	WATER FEATURE	
UNMARKED POINT (BEND/SNAG)	STORM MH	GAS VALVE	WATER 4" W	TREE LINE	

CONTROL TABLE

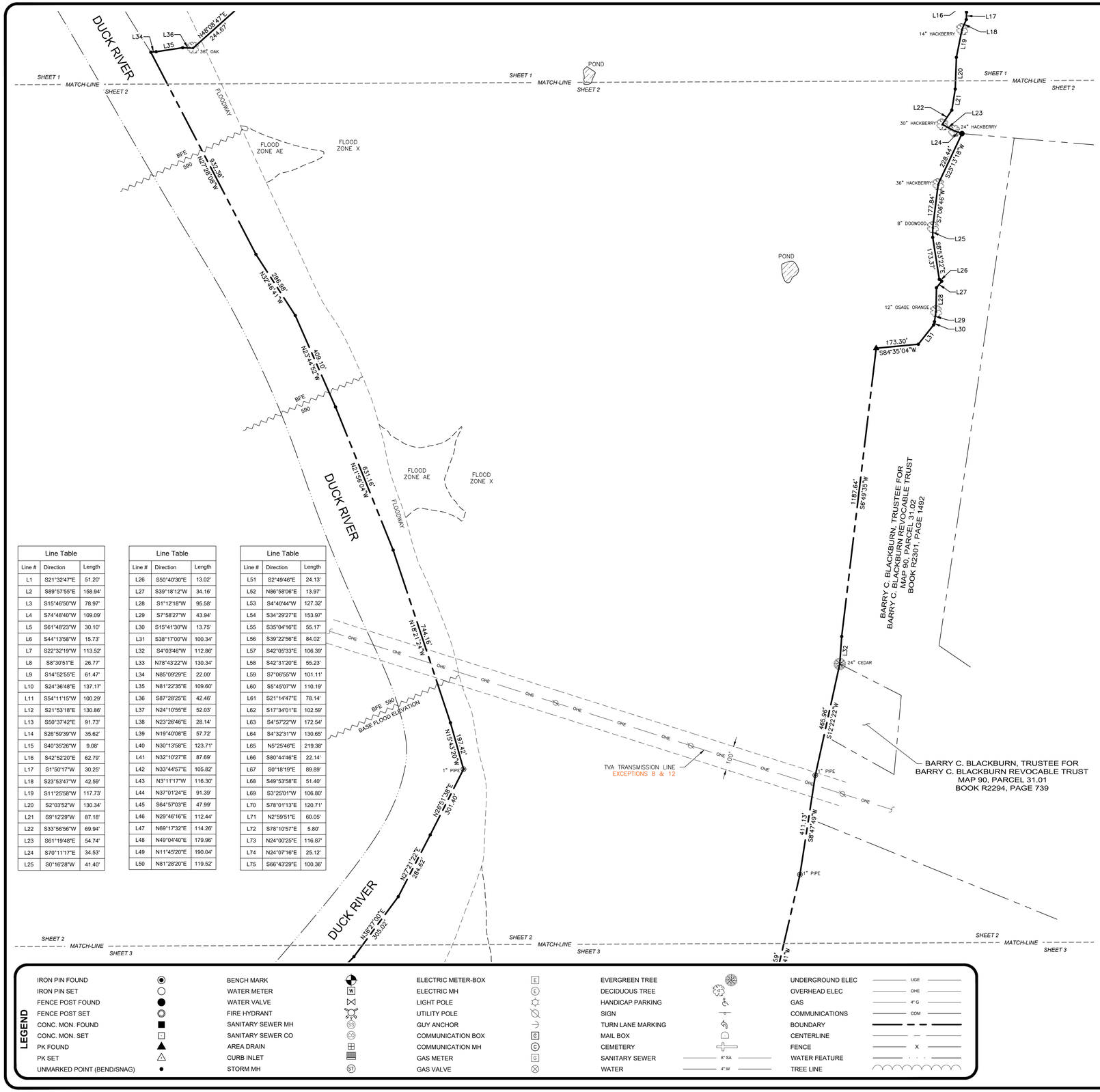
100	N 474,238.52'	E 1,672,762.90'	EL 675.03'	CAPPED ROD
101	N 472,572.21'	E 1,672,903.25'	EL 726.28'	CAPPED ROD
102	N 470,899.48'	E 1,673,280.18'	EL 728.47'	CAPPED ROD
103	N 468,089.58'	E 1,671,459.06'	EL 573.74'	CAPPED ROD

PROJECT CONTROL: TENNESSEE STATE PLANE COORDINATES. NAD83(2011), GEOID03 GRID 7 REVISED. NO DATUM ADJUSTMENT.

200 0 100 200 400
GRAPHIC SCALE: 1" = 100'

DRAWN BY:	JEC
APPVD. BY:	JCW II
DATE	1/7/2022
PROJ. No.	21-1801
SCALE:	1" = 200'

SHEET No.
1 OF 4



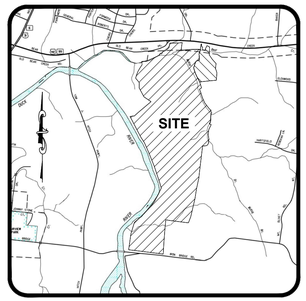
Line Table		
Line #	Direction	Length
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L4	S74°48'40"W	109.09'
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L6	S44°13'58"W	15.73'
L7	S22°32'19"W	113.52'
L8	S8°30'51"E	26.77'
L9	S14°52'55"E	61.47'
L10	S24°36'48"E	137.17'
L11	S54°11'15"W	100.29'
L12	S21°53'18"E	130.86'
L13	S50°37'42"E	91.73'
L14	S26°59'39"W	35.62'
L15	S40°35'26"W	9.08'
L16	S42°52'20"E	62.79'
L17	S1°50'17"W	30.25'
L18	S23°53'47"W	42.59'
L19	S11°25'58"W	117.73'
L20	S2°03'52"W	130.34'
L21	S9°12'29"W	87.18'
L22	S33°56'56"W	69.94'
L23	S61°19'48"E	54.74'
L24	S70°11'17"E	34.53'
L25	S0°16'28"W	41.40'

Line Table		
Line #	Direction	Length
L26	S50°40'30"E	13.02'
L27	S39°18'12"W	34.16'
L28	S1°12'18"W	95.58'
L29	S7°58'27"W	43.94'
L30	S15°41'30"W	13.75'
L31	S38°17'00"W	100.34'
L32	S4°03'46"W	112.86'
L33	N78°43'22"W	130.34'
L34	N85°09'29"E	22.00'
L35	N81°22'35"E	109.60'
L36	S87°28'25"E	42.46'
L37	N24°10'55"E	52.03'
L38	N23°26'46"E	28.14'
L39	N19°40'08"E	57.72'
L40	N30°13'58"E	123.71'
L41	N32°10'27"E	87.69'
L42	N33°44'57"E	105.82'
L43	N3°11'17"W	116.30'
L44	N37°01'24"E	91.39'
L45	S64°57'03"E	47.99'
L46	N29°46'16"E	112.44'
L47	N69°17'32"E	114.26'
L48	N49°04'40"E	179.96'
L49	N11°45'20"E	190.04'
L50	N81°28'20"E	119.52'

Line Table		
Line #	Direction	Length
L51	S2°49'46"E	24.13'
L52	N86°58'06"E	13.97'
L53	S4°40'44"W	127.32'
L54	S34°29'27"E	153.97'
L55	S35°04'16"E	55.17'
L56	S39°22'56"E	84.02'
L57	S42°05'33"E	106.39'
L58	S42°31'20"E	55.23'
L59	S7°06'55"W	101.11'
L60	S5°45'07"W	110.19'
L61	S21°14'47"E	78.14'
L62	S17°34'01"E	102.59'
L63	S4°57'22"W	172.54'
L64	S4°32'31"W	130.65'
L65	N5°25'46"E	219.38'
L66	S80°44'46"E	22.14'
L67	S0°18'19"E	89.89'
L68	S49°53'58"E	51.40'
L69	S3°25'01"W	106.80'
L70	S78°01'13"E	120.71'
L71	N2°59'51"E	60.05'
L72	S78°10'57"E	5.80'
L73	N24°00'25"E	116.87'
L74	N24°07'16"E	25.12'
L75	S66°43'29"E	100.36'

LEGEND

IRON PIN FOUND	BENCH MARK	ELECTRIC METER-BOX	EVERGREEN TREE	UNDERGROUND ELEC	UGE
IRON PIN SET	WATER METER	ELECTRIC MH	DECIDUOUS TREE	OVERHEAD ELEC	OHE
FENCE POST FOUND	WATER VALVE	LIGHT POLE	HANDICAP PARKING	GAS	4"G
FENCE POST SET	FIRE HYDRANT	UTILITY POLE	SIGN	COMMUNICATIONS	COM
CONC. MON. FOUND	SANITARY SEWER MH	GUY ANCHOR	TURN LANE MARKING	BOUNDARY	
CONC. MON. SET	SANITARY SEWER CO	COMMUNICATION BOX	MAIL BOX	CENTERLINE	
PK FOUND	AREA DRAIN	COMMUNICATION MH	CEMETERY	FENCE	X
PK SET	CURB INLET	GAS METER	SANITARY SEWER	WATER FEATURE	
UNMARKED POINT (BEND/SNAG)	STORM MH	GAS VALVE	WATER	TREE LINE	



VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

1. THE PURPOSE OF THIS SURVEY IS: ALTA/NSPS LAND TITLE (BOUNDARY)
2. THE ADDRESS OF THIS PROPERTY IS: 400 & 420 BEAR CREEK PIKE - COLUMBIA, TN 37401
3. SUBJECT PROPERTY IS PRESENTLY IDENTIFIED AS PARCELS 12.01 & 16, ON MAURY COUNTY TAX MAP 90. SAID PARCEL IS FURTHER IDENTIFIED AS ALL OF THE PROPERTY DESCRIBED IN DEED BOOK R2051, PAGE 792, AND BOOK R2060, PAGE 129, REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE.
4. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY.
5. EVERY DOCUMENT OF RECORD REVIEWED AND CONSIDERED AS A PART OF THIS SURVEY IS NOTED HEREON. ONLY THE DOCUMENTS NOTED HEREON WERE SUPPLIED TO THE SURVEYOR. OTHER DOCUMENTS OF RECORD MAY EXIST THAT WOULD AFFECT THIS PARCEL.
6. THE WORD "CERTIFY" IS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED. DECLARATION IS MADE TO THE SPECIFICALLY NAMED PARTIES AND IS NOT TRANSFERABLE TO ADDITIONAL PERSONS, INSTITUTIONS OR SUBSEQUENT OWNERS OF THE SUBJECT PROPERTY.
7. THIS SURVEY WAS CONDUCTED WITH THE BENEFIT OF A TITLE REPORT ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY, COMMITMENT NO. 14203-21, DATED NOVEMBER 12, 2021 AT 8:00AM AND IS SUBJECT TO ITS FINDINGS. THERE MAY BE OTHER IMPROVEMENTS OR ENCUMBRANCES THAT AFFECT THE PROPERTY SINCE THE ISSUANCE OF THE REPORT.
8. BEARINGS SHOWN HEREON ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83). ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88.
9. ALL CORNERS SHOWN ON THE FACE OF THE SURVEY ARE MARKED EITHER FOUND OR SET. ANY MISSING CORNERS ARE MARKED WITH AN IRON ROD AND CAP BEARING THIS SURVEYORS COMPANY NAME.
10. UTILITIES SHOWN HEREON WERE COMPILED FROM VISIBLE STRUCTURES AT THE SITE, INFORMATION FROM PLANS, AND PHYSICAL MARKINGS AND COMBINED TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. IN ADDITION, IN SOME JURISDICTIONS, 811 OR OTHER SIMILAR UTILITY LOCATE REQUESTS FROM SURVEYORS MAY BE IGNORED OR RESULT IN AN INCOMPLETE RESPONSE. THIS SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. VERIFICATION OF EXISTENCE, LOCATIONS, AND DEPTH SHOULD BE MADE BEFORE CONDUCTING ANY EXCAVATION IN THE VICINITY OF THE UTILITY.
11. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, PORTIONS OF THIS PROPERTY ARE LYING WITHIN ZONE "AE" AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NOS. 47119C0170E, 47119C0190E, 47119C0285E, 47119C0305E, WITH EFFECTIVE DATES OF APRIL 16, 2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE PROGRAM. BASE FLOOD ELEVATIONS FOR THIS PROPERTY ARE 590 ALONG THE DUCK RIVER AND 588 ALONG BEAR CREEK. ZONE "AE" IS AN AREA WHERE BASE FLOOD ELEVATIONS HAVE BEEN DETERMINED. ZONE "X" IS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
12. I HEREBY CERTIFY THAT THIS IS A CATEGORY IV SURVEY AND WAS CONDUCTED IN ACCORDANCE WITH RULE 0820-03.11 (GLOBAL POSITION SYSTEMS SURVEYS) ACCORDING TO THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE AS PROMULGATED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS. THIS SURVEY WAS CONDUCTED WITH DUAL-FREQUENCY RTK GPS EQUIPMENT BASED ON THE TDOT C.O.R.S NETWORK.
    a. POSITIONAL ACCURACY: 0.08'
    b. DATE OF SURVEY: 01/04/2022
    c. HORIZONTAL ZONE/DATUM: TN-4100/NAD83(2011) - TENNESSEE STATE PLANE COORDINATES.
    d. OCCUPATIONS FOR CONTROL POINTS ARE 3 MINUTES EACH, SIDE SHOTS ARE 3 SECONDS.
    e. VERTICAL DATUM: NAVD88 (GEOID03, GRID 7 REVISED)
    f. NO COMBINED GRID FACTORS WERE USED.
13. THERE WAS NO EVIDENCE OF RECENT EARTH MOVING AT THE TIME OF SURVEY.
14. THERE ARE NO KNOWN CHANGES TO THE STREET ROW AT THE TIME OF SURVEY.
15. THERE WAS NO EVIDENCE OF DELINEATED WETLANDS AT THE TIME OF SURVEY, HOWEVER, SHOWN ON THE SURVEY ARE CLASSIFIED FRESHWATER PONDS AND STREAMS. FURTHER DETAILS CAN BE FOUND ON WETLAND MAPPER WEBSITE. https://www.fws.gov/wetlands/data/mapper.html
16. EXCEPT AS NOTED, THERE WAS NO EVIDENCE OF ENCROACHMENTS AT THE TIME OF SURVEY.
17. THE LOCATIONS OF STRUCTURES ARE APPROXIMATE FROM SATELLITE IMAGERY.

CONTROL TABLE

100	N 474,238.52'	E 1,672,762.90'	EL 675.03'	CAPPED ROD
101	N 472,572.21'	E 1,672,903.25'	EL 726.28'	CAPPED ROD
102	N 470,899.48'	E 1,673,280.18'	EL 728.47'	CAPPED ROD
103	N 468,089.58'	E 1,671,459.06'	EL 573.74'	CAPPED ROD

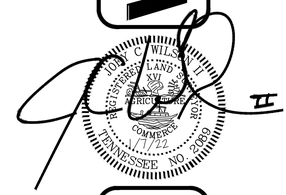
PROJECT CONTROL: TENNESSEE STATE PLANE COORDINATES. NAD83(2011), GEOID03 GRID 7 REVISED. NO DATUM ADJUSTMENT.

200 0 100 200 400
GRAPHIC SCALE: 1" = 200'

NO.	DATE	COMMENT

108 Beasley Drive
Franklin, TN
37064
615.794.2275

WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

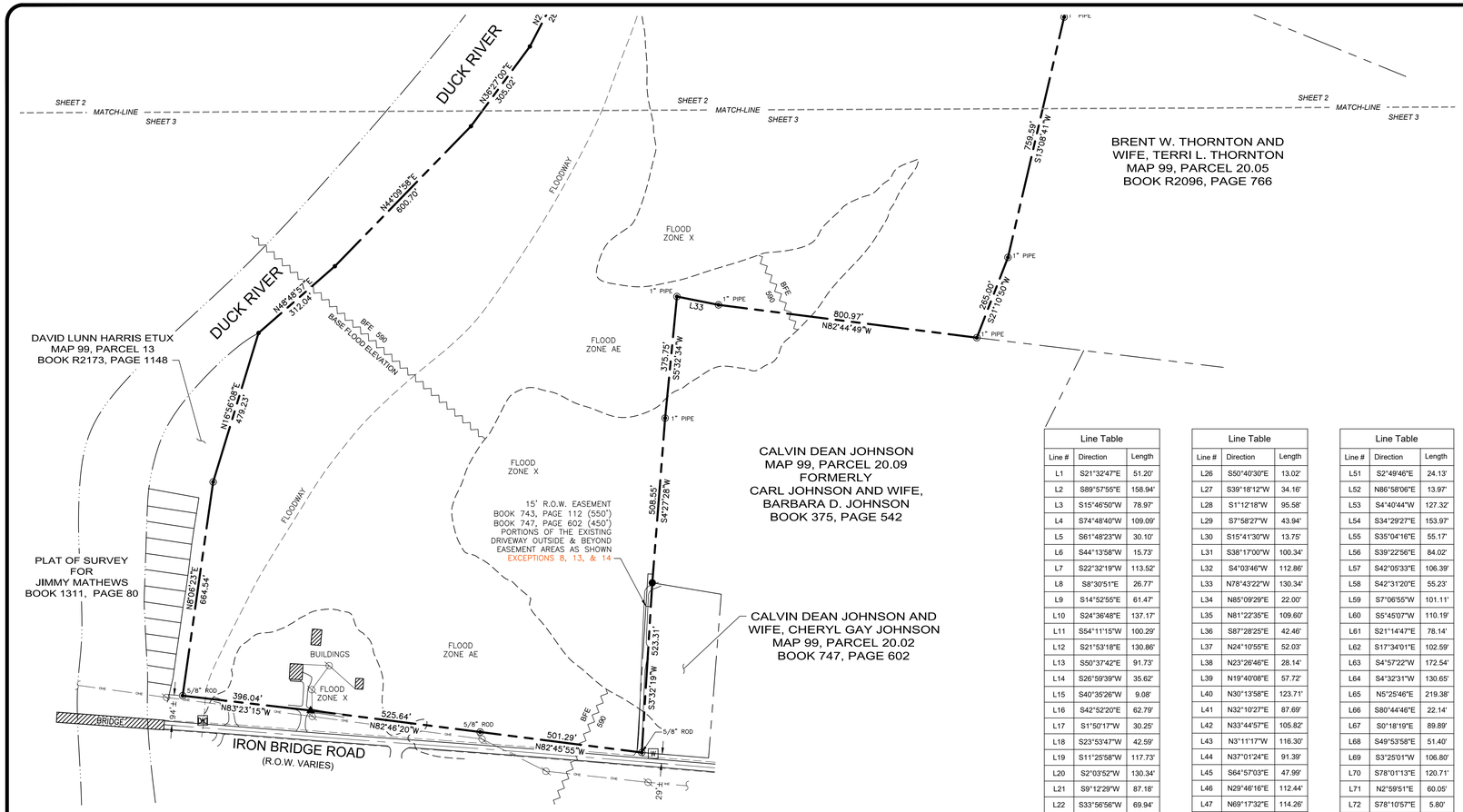


ALTA/NSPS LAND TITLE SURVEY

MAP 90, PARCELS 12.01 & 16
BEAR CREEK PIKE / IRON BRIDGE ROAD
MAURY COUNTY, TENNESSEE
FOR: KOLTER GROUP ACQUISITIONS, LLC

DRAWN BY:	JEC
APPVD. BY:	JCW II
DATE	1/7/2022
PROJ. No.	21-1801
SCALE:	1" = 200'

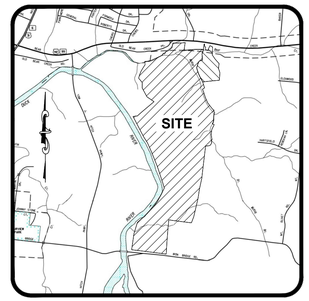
SHEET No.
2 OF 4



Line Table		
Line #	Direction	Length
L1	S21°32'47"E	51.20'
L2	S89°57'55"E	158.94'
L3	S15°46'50"W	78.97'
L4	S74°48'40"W	109.09'
L5	S61°48'23"W	30.10'
L6	S44°13'58"W	15.73'
L7	S22°32'19"W	113.52'
L8	S8°30'51"E	26.77'
L9	S14°52'55"E	61.47'
L10	S24°36'48"E	137.17'
L11	S54°11'15"W	100.29'
L12	S21°53'18"E	130.86'
L13	S50°37'42"E	91.73'
L14	S26°59'39"W	35.62'
L15	S40°35'26"W	9.08'
L16	S42°52'20"E	62.79'
L17	S1°50'17"W	30.25'
L18	S23°53'47"W	42.59'
L19	S11°25'58"W	117.73'
L20	S2°03'52"W	130.34'
L21	S9°12'29"W	87.18'
L22	S33°56'56"W	69.94'
L23	S61°19'48"E	54.74'
L24	S70°11'17"E	34.53'
L25	S0°16'28"W	41.40'

Line Table		
Line #	Direction	Length
L26	S50°40'30"E	13.02'
L27	S39°18'12"W	34.16'
L28	S1°12'18"W	95.58'
L29	S7°58'27"W	43.94'
L30	S15°41'30"W	13.75'
L31	S38°17'00"W	100.34'
L32	S4°03'46"W	112.86'
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L57	S42°05'33"E	106.39'
L58	S42°31'20"E	55.23'
L59	S7°06'55"W	101.11'
L60	S5°45'07"W	110.19'
L61	S21°14'47"E	78.14'
L62	S17°34'01"E	102.59'
L63	S4°57'22"W	172.54'
L64	S4°32'31"W	130.65'
L65	N5°25'46"E	219.38'
L66	S80°44'46"E	22.14'
L67	S0°18'19"E	89.89'
L68	S49°53'58"E	51.40'
L69	S3°25'01"W	106.80'
L70	S78°01'13"E	120.71'
L71	N2°59'51"E	60.05'
L72	S78°10'57"E	5.80'
L73	N24°00'25"E	116.87'
L74	N24°07'16"E	25.12'
L75	S66°43'29"E	100.36'



VICINITY MAP
NOT TO SCALE

CERTIFICATION OF SURVEY FOR ALTA/NSPS LAND TITLE SURVEYS

TO: (I) KOLTER GROUP ACQUISITIONS, LLC, AND (II) FIDELITY NATIONAL TITLE INSURANCE COMPANYOLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 8, 11(OBSERVED), 13, 14, 16, 17, 18, AND 19, OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON 01/04/22.

JOEY C. WILSON II, PE, RLS
TN PE NO. 106976 1/7/22
TN RLS NO. 2089

LEGAL DESCRIPTIONS BASED ON THIS SURVEY WILL BE PROVIDED ON SHEET NUMBER 4 AFTER TITLE COMMENTS AND QUESTIONS HAVE BEEN ADDRESSED.

NO.	DATE	COMMENT

108 Beasley Drive
Franklin, TN
37064
615.794.2275

WILSON&ASSOCIATES, P.C.
Engineering/Surveying/Environmental

JOEY C. WILSON II
REGISTERED LAND SURVEYOR
TENNESSEE
XVI
AGRICULTURE
COMMERCE
1/7/22
TENNESSEE NO. 2089

ALTA/NSPS LAND TITLE SURVEY

MAP 90, PARCELS 12.01 & 16
BEAR CREEK PIKE / IRON BRIDGE ROAD
MAURY COUNTY, TENNESSEE
FOR: KOLTER GROUP ACQUISITIONS, LLC

SCHEDULE B-II EXCEPTIONS:

1. RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS. NONE OBSERVED DURING SURVEY
2. ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR, OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS. NOT A SURVEY MATTER
3. TAXES OR SPECIAL ASSESSMENTS WHICH ARE NOT SHOWN AS EXISTING LIENS BY THE PUBLIC RECORDS. NOT A SURVEY MATTER
4. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCES AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND. NO ENCROACHMENTS OBSERVED DURING SURVEY EXCEPT AS NOTED
5. EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS. DRIVEWAY USE EXTENDS OUTSIDE AND BEYOND EASEMENT AREA AS SHOWN - SEE ALSO ITEMS 13 &14
6. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLICRECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I--REQUIREMENTS ARE MET. NOT A SURVEY MATTER
7. 2022 AND SUBSEQUENT YEARS MAURY COUNTY, TENNESSEE AND CITY OF COLUMBIA REAL PROPERTY TAXES AND/OR ASSESSMENTS WHICH CONSTITUTE A LIEN UPON SAID REAL PROPERTY UNTIL PAID. IF IMPROVEMENTS ARE COMPLETED AFTER JANUARY 1 OF ANY YEAR, THE LAW REQUIRES SUPPLEMENTAL ASSESSMENT FOR THE YEAR IN WHICH IMPROVEMENTS ARE COMPLETED AS DEFINED BY STATUTE. WE ASSUME NO LIABILITY FOR TAXES ASSESSED BY CORRECTION PURSUANT TO THE PROVISIONS OF SECTION 67-5-603, ET SEQ., TENN. CODE ANN. NOT A SURVEY MATTER
8. SUBJECT TO ANY AND ALL MATTERS APPEARING IN MAP OF RECORD IN PLAT BOOK P16, PAGES 53-54 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE, INCLUDING BUT NOT LIMITED TO RIGHTS OF OTHERS, IF ANY, IN AND TO THE "TRACK ROAD" ALONG THE NORTHERN PORTION OF THE EASTERN BOUNDARY; CEMETERY; TVA TRANSMISSION LINE; "JOHNSON RIGHT OF WAY"; LOCAL SERVICE POWER AND TELEPHONE LINES; DUCK RIVER; BEAR CREEK; OLD BEAR CREEK PIKE AND, SEWER LINE WITH MANHOLES ALONG THE NORTHERN BOUNDARY. (TRACT 1) SHOWN ON SURVEY
9. TITLE TO ANY PORTION OF SAID LAND LYING WITHIN THE BOUNDS OF ANY ROAD OR RIGHT OF WAY. (TRACT 1) RIGHT OF WAY MARGINS SHOWN ON SURVEY BASED ON FOUND MONUMENTS
10. TERMS AND CONDITIONS OF THAT CERTAIN BENEFICIAL EASEMENT IN FAVOR OF N.W. DANNELLEY AND WIFE, RUTH A. DANNELLEY FOR THE PURPOSE OF RIGHT IN AND TO A SPRING OF RECORD IN BOOK 319 AT PAGE 295 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). SPRING SHOWN ON SURVEY
11. EASEMENT IN FAVOR OF MAURY COUNTY, TENNESSEE FOR RIGHT OF WAY FOR ROAD PURPOSES (IRON BRIDGE ROAD) OF RECORD IN BOOK 387 AT PAGE 497 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). EXISTING IRON BRIDGE ROAD IS SHOWN ON SURVEY
12. EASEMENT IN FAVOR OF TVA FOR THE PURPOSE OF ELECTRIC TRANSMISSION LINES AS REFERENCED IN CURRENT VESTING DEED OF RECORD IN BOOK R2051 AT PAGE 792 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE. (TRACT 1) SHOWN ON SURVEY
13. EASEMENT IN FAVOR OF CALVIN DEAN JOHNSON FOR THE PURPOSE OF RIGHT OF WAY OF RECORD IN BOOK 747 AT PAGE 602 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). SHOWN ON SURVEY
14. EASEMENT IN FAVOR OF CARL JOHNSON ETUX BARBARA D. JOHNSON FOR THE PURPOSE OF RIGHT OF WAY OF RECORD IN BOOK 743 AT PAGE 112 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). SHOWN ON SURVEY
15. TITLE TO ANY PORTION OF SAID LAND LYING IN THE BED OR BANKS OF THE MCKAY BRANCH CREEK, THE RIGHTS OF UPPER AND LOWER RIPARIAN OWNERS TO THE FREE AND UNOBSTRUCTED FLOW OF THE WATER OF SAID MCKAY BRANCH CREEK, WITHOUT DIMINUTION OR POLLUTION, AND THE CONSEQUENCE OF ANY PAST OR FUTURE CHANGE IN THE LOCATION OF SAID MCKAY BRANCH CREEK. (TRACT 1) NOT A SURVEY MATTER
16. TITLE TO ANY PORTION OF SAID LAND LYING IN THE BED OR BANKS OF THE DUCK RIVER, THE RIGHTS OF UPPER AND LOWER RIPARIAN OWNERS TO THE FREE AND UNOBSTRUCTED FLOW OF THE WATER OF SAID DUCK RIVER, WITHOUT DIMINUTION OR POLLUTION, AND THE CONSEQUENCE OF ANY PAST OR FUTURE CHANGE IN THE LOCATION OF SAID DUCK RIVER. (TRACT 1) NOT A SURVEY MATTER
17. TITLE TO ANY PORTION OF SAID LAND LYING IN THE BED OR BANKS OF THE BEAR CREEK, THE RIGHTS OF UPPER AND LOWER RIPARIAN OWNERS TO THE FREE AND UNOBSTRUCTED FLOW OF THE WATER OF SAID BEAR CREEK, WITHOUT DIMINUTION OR POLLUTION, AND THE CONSEQUENCE OF ANY PAST OR FUTURE CHANGE IN THE LOCATION OF SAID BEAR CREEK. (TRACT 1) NOT A SURVEY MATTER
18. RIGHTS OF OTHERS IN AND TO THE CEMETERY LOCATED ON SUBJECT PROPERTY AND THE RIGHTS OF INGRESS AND EGRESS THERETO. (TRACT 1). CEMETERY SHOWN ON SURVEY
19. EASEMENT IN FAVOR OF CITY OF COLUMBIA, TN FOR THE PURPOSE OF RIGHT OF WAY FOR SEWER/UTILITY EASEMENT OF RECORD IN BOOK R1801 AT PAGE 828 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). EXISTING SEWER LINES SHOWN ON SURVEY
20. EASEMENT IN FAVOR OF CITY OF COLUMBIA, TN FOR THE PURPOSE OF RIGHT OF WAY FOR SEWER/UTILITY EASEMENT OF RECORD IN BOOK R1801 AT PAGE 831 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 1). EXISTING SEWER LINES SHOWN ON SURVEY
21. SUBJECT TO ALL MATTERS SHOWN ON UNRECORDED SURVEY OF S. K. ADKINS DATED JULY 14, 2008. (TRACT 1) DOCUMENT WAS NOT PROVIDED
22. SPECIAL PROPERTY TAX ASSESSMENT (I.E. ROLL-BACK TAX), IF APPLICABLE, PURSUANT TO T.C.A. SECTION 67-5-1008 (D) ("THE AGRICULTURAL, FOREST, AND OPEN SPACE LAND ACT OF 1976"), AS MOST RECENTLY AMENDED. GREENBELT APPLICATION OF RECORD IN BOOK G5 AT PAGE 218 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE. (TRACT 1). NOT A SURVEY MATTER
23. ANY INACCURACY IN THE AREA, SQUARE FOOTAGE, OR ACREAGE OF LAND DESCRIBED IN PROPERTY DESCRIPTION OR ATTACHED PLAT, IF ANY. THE COMPANY DOES NOT INSURE THE AREA, SQUARE FOOTAGE, OR ACREAGE OF THE LAND. (TRACT 1) AREAS NOTED ARE CORRECT
24. EASEMENT FOR THE PURPOSE OF INGRESS/EGRESS RIGHT OF WAY OVER THE LANDS OF THOMPSON AND RIGHTS TO OBTAIN WATER FROM SPRING NOTED IN DEED OF RECORD IN BOOK 537 AT PAGE 671 IN THE MAURY COUNTY REGISTER OF DEEDS OFFICE. (TRACT 2) SPRING SHOWN ON SURVEY
25. EASEMENTS IN FAVOR OF JAMES A. HARDISON AND WIFE, MARJORIE J. HARDISON FOR THE PURPOSE OF INGRESS/EGRESS OF RECORD IN BOOK 513 AT PAGE 220 AND BOOK 483 AT PAGE 527 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE. (TRACT 2)
26. EASEMENT IN FAVOR OF J. W. THOMPSON OR "ANYONE ELSE" FOR THE PURPOSE OF OBTAINING SPRING WATER OF RECORD IN BOOK 441 AT PAGE 504 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE. (TRACT 2) SPRING SHOWN ON SURVEY
27. TITLE TO THAT PORTION OF THE PROPERTY WITHIN THE BOUNDS OF OLD BEAR CREEK PIKE. (TRACT 2) RIGHT OF WAY MARGINS SHOWN ON SURVEY BASED ON FOUND MONUMENTS - RAILROAD SPIKES FOUND IN THE REMNANTS OF PAVEMENT - MAY BE SUBJECT TO RIGHT OF WAY - LEGAL QUESTION REGARDING ABANDONMENT - MINIMAL AREA IN QUESTION
28. TITLE TO ANY PORTION OF SAID LAND LYING IN THE BED OR BANKS OF THE BEAR CREEK, THE RIGHTS OF UPPER AND LOWER RIPARIAN OWNERS TO THE FREE AND UNOBSTRUCTED FLOW OF THE WATER OF SAID BEAR CREEK, WITHOUT DIMINUTION OR POLLUTION, AND THE CONSEQUENCE OF ANY PAST OR FUTURE CHANGE IN THE LOCATION OF SAID BEAR CREEK. (TRACT2) NOT A SURVEY MATTER
29. ANY INACCURACY IN THE AREA, SQUARE FOOTAGE, OR ACREAGE OF LAND DESCRIBED IN PROPERTY DESCRIPTION OR ATTACHED PLAT, IF ANY. THE COMPANY DOES NOT INSURE THE AREA, SQUARE FOOTAGE, OR ACREAGE OF THE LAND. (TRACT 2) AREAS NOTED ARE CORRECT
30. SPECIAL PROPERTY TAX ASSESSMENT (I.E. ROLL-BACK TAX), IF APPLICABLE, PURSUANT TO T.C.A. SECTION 67-5-1008 (D) ("THE AGRICULTURAL, FOREST, AND OPEN SPACE LAND ACT OF 1976"), AS MOST RECENTLY AMENDED. GREENBELT APPLICATION OF RECORD IN BOOK G5 AT PAGE 275 IN THE MAURY COUNTY, TENNESSEE REGISTER OF DEEDS OFFICE. (TRACT 2) NOT A SURVEY MATTER
31. TITLE TO ANY PORTION OF SAID LAND LYING WITHIN THE BOUNDS OF ANY ROAD OR RIGHT OF WAY. (TRACT 2) RIGHT OF WAY MARGINS SHOWN ON SURVEY BASED ON FOUND MONUMENTS

LEGEND

IRON PIN FOUND	BENCH MARK	ELECTRIC METER-BOX	EVERGREEN TREE	UNDERGROUND ELEC	UGE
IRON PIN SET	WATER METER	ELECTRIC MH	DECIDUOUS TREE	OVERHEAD ELEC	OHE
FENCE POST FOUND	WATER VALVE	LIGHT POLE	HANDICAP PARKING	GAS	4" G
FENCE POST SET	FIRE HYDRANT	UTILITY POLE	SIGN	COMMUNICATIONS	COM
CONC. MON. FOUND	SANITARY SEWER MH	GUY ANCHOR	TURN LANE MARKING	BOUNDARY	
CONC. MON. SET	SANITARY SEWER CO	COMMUNICATION BOX	MAIL BOX	CENTERLINE	
PK FOUND	AREA DRAIN	COMMUNICATION MH	CEMETERY	FENCE	X
PK SET	CURB INLET	GAS METER	SANITARY SEWER	8" SA	WATER FEATURE
UNMARKED POINT (BEND/SNAG)	STORM MH	GAS VALVE	WATER	4" W	TREE LINE

CONTROL TABLE

100	N 474,238.52'	E 1,672,762.90'	EL 675.03'	CAPPED ROD
101	N 472,572.21'	E 1,672,903.25'	EL 726.28'	CAPPED ROD
102	N 470,899.48'	E 1,673,280.18'	EL 726.47'	CAPPED ROD
103	N 468,089.58'	E 1,671,459.06'	EL 573.74'	CAPPED ROD

PROJECT CONTROL: TENNESSEE STATE PLANE COORDINATES. NAD83(2011), GEOID03 GRID 7 REVISED. NO DATUM ADJUSTMENT.

200 0 100 200 400
GRAPHIC SCALE: 1" = 200'

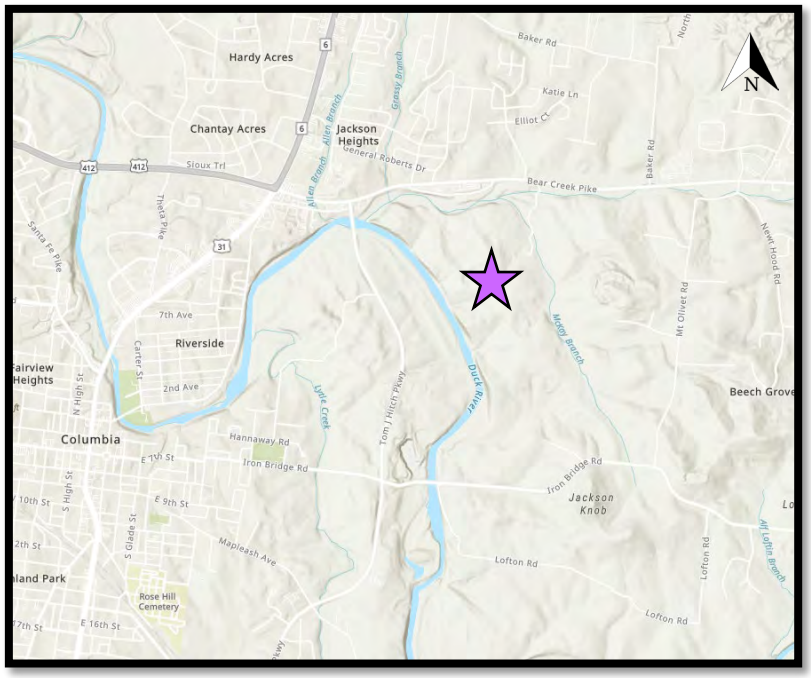
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APPVD. BY:	JCW II
DATE	1/7/2022
PROJ. No.	21-1801
SCALE:	1" = 200'

SHEET No.
3 OF 4

COLUMBIA BLUFFS

Traffic Impact Study

10/16/2023



Vicinity Map
(Not to Scale)

400 BEAR CREEK PIKE
COLUMBIA, TENNESSEE

Prepared For:
KOLTER GROUP ACQUISITIONS LLC

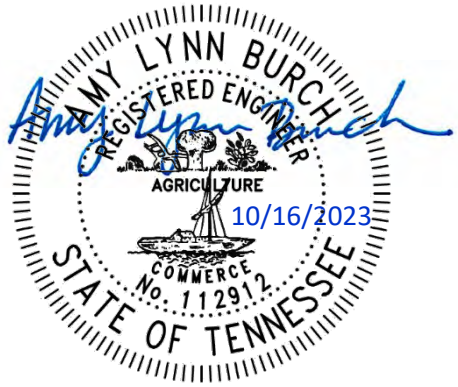
BURCH TRANSPORTATION

1114 17th Ave S, Suite 103 ● Nashville, TN 37212
(615) 258-8551 ● www.burchtransportation.com

COLUMBIA BLUFFS
TRAFFIC IMPACT STUDY

PREPARED FOR:

KOLTER GROUP ACQUISITIONS LLC



PREPARED BY:

BURCH TRANSPORTATION, LLC

BURCH TRANSPORTATION

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1. Executive Summary

A TIS for the site (previously named "Big Bear Bluff Master Plan") was submitted 3/21/2022 and revised 4/18/2022. The previous development plan included a total of 810 single-family lots, 300 townhomes, and 300 multifamily units.

The Columbia Bluffs development is proposed to be located between Bear Creek Pike and Iron Bridge Road, east of the Duck River in Columbia, TN. A total of 860 dwelling units (472 single-family lots, 188 townhome units, and 200 active adult units) and a 14,000 square-foot day care center are proposed for the 412-acre property. The property is currently undeveloped farmland that is proposed to be annexed as a planned unit development (PUD). Primary vehicular site access will be located on Bear Creek Pike aligned with Patterson Drive. Secondary vehicular site access will be located on Iron Bridge Road. A development of this size will be constructed over several phases. For the purposes of this traffic study, two development scenarios were analyzed. Per the developer, Kolter Group Acquisitions LLC, Phases 1-3 are expected to be completed in approximately eight years, which corresponds to a 2031 horizon year. The Full Buildout (Phases 1-6) is expected to be completed in approximately eleven years, which corresponds to a 2034 horizon year. The new roadway connection to Iron Bridge Road to the south is not planned to be constructed until after Phase 3.

The analyses presented in this report indicate that the proposed development will generate new vehicular traffic to the study area. Following Full Buildout of the Columbia Bluffs development, the project is expected to generate approximately 7,324 daily trips, 658 AM peak hour trips, and 768 PM peak hour trips. Phases 1-3 of the development will include approximately 50% of the total number of dwelling units and will include the day care center. Phases 1-3 are expected to generate approximately 4,149 daily trips, 399 AM peak hour trips, and 475 PM peak hour trips.

Based on the analyses presented in this study and review of the study area and proposed development information, the following is recommended in order to accommodate the proposed development and provide for efficient traffic operations and safety:

Recommendations Associated with Phases 1-3 Scenario

The initial phases of development will require off-site improvements and as well as improvements to accommodate the primary access onto Bear Creek Pike. The following improvements should be coordinated with the City and could be phased in during construction of Phases 1, 2, and 3 of the development.

#1 Nashville Highway (US 31) and Bear Creek Pike/US 43

Laneage and traffic signal improvements are expected to be completed by the City/TDOT at the intersection of Nashville Highway (US 31) and Bear Creek Pike/US 43. These anticipated improvements were assumed to include the addition of a westbound left turn lane and a southbound left turn lane through restriping and modifying the existing median on Nashville Highway. The provision of dual left turn lanes requires protected only left turn signal phasing for the southbound approach. Additional signal timing adjustments and coordination may be needed for the intersection following the initial phases of development for Columbia Bluffs. Additionally, lead/lag protected only left turn signal phasing is recommended for the eastbound and westbound approaches of Bear Creek Pike.

No other improvements are recommended for the intersection.

#2 Bear Creek Pike and Tom J Hitch Parkway

- Construct a northbound right turn lane on Tom J Hitch Parkway with approximately 100 feet of storage and 60 feet of taper. The northbound right turn lane could be constructed using the existing shoulder and should not extend beyond the start of the bridge over Duck River.
- Restripe the northbound approach to provide one left turn lane and one through lane, plus the recommended right turn lane.
- Modify the traffic signal design to provide a northbound right turn overlap during the westbound left turn phase.
- Optimize and coordinate the signal timing along Bear Creek Pike.

#3 Bear Creek Pike and Patterson Drive/Site Access 1

- Site Access 1 should be constructed and aligned with Patterson Drive at Bear Creek Pike.
- Site Access 1 should be designed to include width for one entering lane and two exiting lanes, which should be a northbound left turn lane and a northbound shared through/right turn lane.
- An eastbound right turn deceleration lane should be constructed for Bear Creek Drive at Site Access 1 to accommodate the project traffic. The eastbound right turn lane should be designed so that the widening and taper does not begin until east of the guardrail over Bear Creek and includes approximately 180 feet of storage and 160 feet of bay taper, or as approved by the City and TDOT.
- A westbound right turn deceleration lane is recommended for Bear Creek Pike at Patterson Drive. The westbound right turn lane should be designed to include approximately 160 feet of storage and 180 feet of bay taper or as approved by the City and TDOT.
- A westbound left turn deceleration lane is recommended for Bear Creek Pike at Site Access 1 to accommodate the project traffic. The westbound left turn lane should be designed to include approximately 225 feet of storage, 180 feet of bay taper, and 270 feet of approach taper assuming the widening is centered on the roadway.
- Install a traffic signal at the intersection of Bear Creek Pike and Patterson Drive/Site Access 1. Signal warrant analyses indicate a traffic signal will be warranted by the traffic volumes generated by the project site prior to completion of Phase 2 (or comparable number of dwelling units) or prior to completion of Phase 1 if Phase 1 includes completion of the day care center. The signal design should include protected/permissive left turn signal phasing for the northbound and westbound approaches and permissive left turn signal phasing for the southbound and eastbound approaches.
- Optimize and coordinate the signal timing along Bear Creek Pike.
- Widen the north leg of Patterson Drive to provide a southbound left turn lane. The widening of Patterson Drive and the construction of Site Access 1 should be designed and constructed such that the northbound and southbound through movements are aligned and the left turn movements can operate concurrently. The southbound left turn lane should include approximately 75 feet of storage.

#4 Bear Creek Pike and Mt Olivet Road/School Access

- Restripe the southbound approach to a shared left turn/through lane and a right turn only lane.
- Modify the traffic signal design for the northbound approach to provide protected/permissive left turn signal phasing.
- Modify the traffic signal design for the southbound approach to provide a right turn overlap during the eastbound left turn phase.

- Optimize and coordinate the signal timing along Bear Creek Pike.

#5 Tom J Hitch Parkway and Iron Bridge Road

The signalized intersection of Tom J Hitch Parkway and Iron Bridge Road is expected to continue to operate acceptably under the future projected conditions.

No improvements are expected to be needed or recommended for the intersection of Tom J Hitch Parkway and Iron Bridge Road.

#6 Iron Bridge Road and Mt Olivet Road

The critical turning movements are expected to continue to operate acceptably at the one-way stop-controlled intersection of Iron Bridge Road and Mt Olivet Road under the future projected conditions.

No improvements are expected to be needed or recommended for the intersection of Iron Bridge Road and Mt Olivet Road.

#7 James Campbell Boulevard and Tom J Hitch Parkway

Tom J Hitch Parkway terminates to the south at James Campbell Boulevard. The T-intersection currently has stop-control for the southbound approach of Tom J Hitch Parkway. The intersection experiences heavy eastbound left turns and the reciprocal southbound right turns during peak hours. The southbound left turn movement currently operates at LOS F during the AM and PM peak hours and is expected to deteriorate with higher levels of delay under the 2031 Background and 2034 Future Projected Conditions with Phases 1-3. According to the City's *Connect Columbia Transportation Plan* adopted in 2018, the intersection is identified to be signalized in the near term (10-year horizon). Preliminary signal warrant analyses indicate the intersection's traffic volumes will meet signal warrants in the near future. The following intersection improvements are recommended to be constructed prior the completion of Phase 3, or comparable number of dwelling units:

- Install a traffic signal at the intersection of James Campbell Boulevard and Tom J Hitch Parkway.
- The traffic signal design should include protected/permissive left turn signal phasing for the eastbound approach and a southbound right turn overlap.

Recommendations Associated with Full Buildout (Phases 1-6) Scenario

As outlined above, the initial phases of development for the Columbia Bluffs project will require fairly significant improvements at many of the study intersections in order to accommodate the project's traffic plus the background traffic growth expected even without the development project's construction. In addition to the recommended improvements associated with Phases 1-3 of the development, the following is recommended for the Full Buildout Scenario:

#8 Iron Bridge Road and Site Access 2

- Site Access 2 should be constructed and connected to Iron Bridge Road prior to beginning construction for Phase 4, or comparable number of dwelling units.
- Site Access 2 should be aligned with the Maury County Yanahli Park Access on Iron Bridge Road.
- At a minimum, Site Access 2 should be designed to include width for one entering lane and one exiting lane.

- Stop-control should be provided for the southbound approach of Site Access 2 at Iron Bridge Road.
- The Site Access 2 should be designed and constructed to allow for sufficient intersection sight distance, clear of any obstructions such as vegetation, landscaping, hardscaping, signs, and fencing within the departure sight triangles.
- An eastbound left turn deceleration lane is recommended for Iron Bridge Road at Site Access 2 to accommodate the project traffic. The eastbound left turn lane should be designed to include approximately 160 feet of storage, 180 feet of bay taper, and 270 feet of approach taper assuming the widening is centered on the roadway, or as approved by the City.

Additional Planned Improvements

According to the City's *Connect Columbia Transportation Plan*, significant roadway improvements have been identified for some of the intersections and roadways in the study area. However, it is important to note that the improvements are not considered to be committed projects until funding has been allocated.

- In the near term, Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway is planned to be widened from 3 lanes to 5 lanes and access management along the segment.
- In the midterm, Iron Bridge Road is planned to be reconstructed to improve the substandard roadway geometry between Fairview Drive and Tom J Hitch Parkway, which would include replacing the bridge/box culvert over Lytle Creek, which currently narrows the roadway to one lane at a sag vertical crest in the roadway.
- In the long-term, Bear Creek Pike is planned to be widened to four lanes between Tom J Hitch Parkway and east of Baker Road. It should be noted that the deceleration lanes recommended for Bear Creek Pike at Site Access 1/Patterson Drive as part of the initial phases of the Columbia Bluffs development will contribute towards this long-term improvement identified along Bear Creek Pike.

<u>#2 Bear Creek Pike and Tom J Hitch Parkway</u>

With the planned widening of Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway, the following improvements should be made:

- Reassign the northbound laneage for Tom J Hitch Parkway to provide one left turn lane, one shared left turn/through lane, and one right turn lane.
- Modify the traffic signal to provide split signal phasing for the northbound and southbound approaches.

Based on the analyses presented in this report, no further improvements are recommended in association with the proposed Columbia Bluffs development in Columbia, TN. The recommended and future laneage at the study intersections is presented in Figure 9. Conceptual layouts of the recommended improvements are presented in Figures 10A-10D.

The analyses presented in this TIS evaluated two future buildout scenarios in order to determine when specific roadway improvements will need to be made. The above recommendations are presented in terms of residential phases of development as currently anticipated by Kolter; however, it is recognized that the actual construction of dwelling units for a development this size often does not occur as initially planned. Therefore, based on the analyses, the recommended improvements above were associated with

unit count occupancy to identify trigger points for when each should be constructed by the developer or others. The Table in Appendix K presents the phasing for the recommended improvements by dwelling unit count.

2. Introduction

The Columbia Bluffs development is proposed to be located at 400 Bear Creek Pike in Columbia, TN. The property is proposed to be annexed into the City of Columbia as a Planned Unit Development (PUD). The property is approximately 412 acres and is currently described as undeveloped, rural farmland. The project site is bound on the north by Bear Creek Pike, on the south by Iron Bridge Road, on the west by Duck River, and on the east by rural farmland and residential land uses.

According to the concept plan prepared by Gamble Design Collaborative, the project's developer Kolter Group Acquisitions LLC proposes approximately 860 total dwelling units (472 single-family lots, 188 townhome units, and 200 active adult units) and a 14,000 square-foot day care center. The development will be internally connected by a street network. Primary vehicular access (Site Access 1) will be provided at the northern end of the property onto Bear Creek Pike at its existing intersection with Patterson Drive. Secondary vehicular access (Site Access 2) will be provided at the southern end of the property onto Iron Bridge Road at its existing intersection with Maury County's Yanahli Park Entrance.

The project will be constructed over several phases and approximately eleven (11) years. Table 1 below presents the anticipated phasing buildout for the Columbia Bluffs development. Phases 1-3 are expected to be completed by 2031, and Phases 4-6 are expected to be completed by 2034. The day care center is expected to be built in the beginning of Phase 4; conservatively, the day care center was included in Phases 1-3 as it will be complete before full buildout. This phasing plan is an estimate for the purpose of preparing a traffic study for the development plan. The phasing and unit count is subject to change based on the market demand and actual construction schedules.

Table 1: Development Program and Phasing Estimate

Phase	Estimated Completion	Density by Land Use & Phase (Dwelling Units)			
		Single Family	Townhome	Active Adult	Total Units
1	2028	78	31	33	142
2	2029	78	31	33	142
3	2031	79	31	33	143
4	2032	79	31	33	143
5	2033	79	31	34	144
6	2034	79	33	34	146
Total	**2034**	**472**	**188**	**200**	**860**

Note: Phasing is presented above for planning purposes and is subject to change.

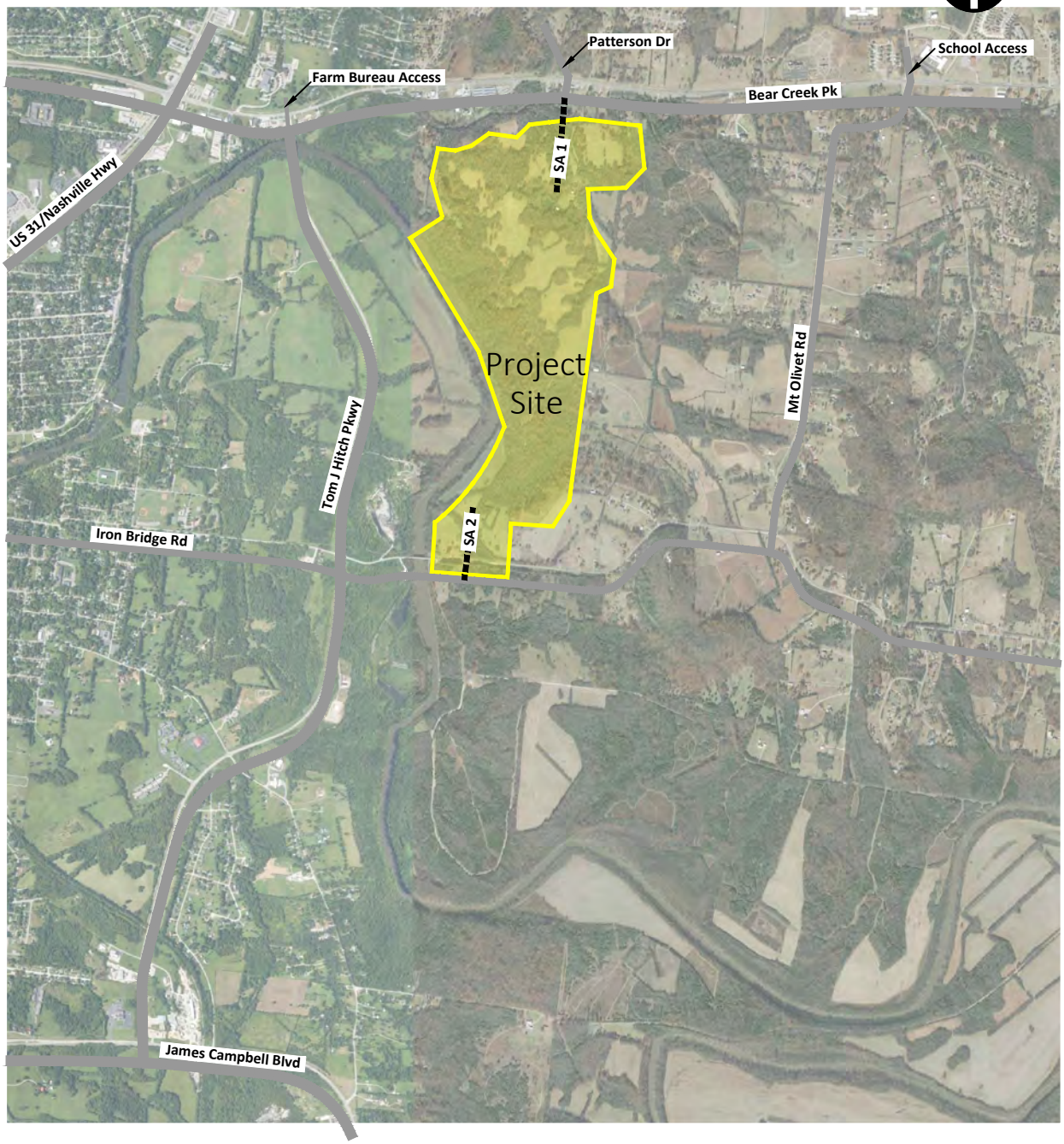
According to Kolter Group Acquisitions LLC, the construction and phasing will begin at the north end of the project site and work towards the south. The connection to Iron Bridge Road is not planned to be constructed until the beginning of Phase 4. Therefore, the following two (2) development scenarios were evaluated in this traffic impact study (TIS):

- 2031 Future Projected (Phases 1-3) plus the daycare without connection to Iron Bridge Road
- 2034 Future Projected (Full Buildout of Phases 1-6) with connection to Iron Bridge Road

The project site location is presented in Figure 1. The site plan concept is included in Appendix A for reference. However, it should be noted that the current site plan is a concept. The intention of this traffic impact study (TIS) is to identify the amount of traffic expected to be generated by the proposed development and evaluate its impact on the surrounding roadways and intersections. The TIS will also

identify appropriate improvements necessary to accommodate the project's vehicular traffic. At the outset of preparing this TIS, Burch Transportation coordinated the scope with the City of Columbia and its third-party traffic engineer. The executed MOU for the TIS is included in Appendix B.

Figure 1: Project Site Location



(Not to Scale)

3. Existing Conditions

The project site is served by Bear Creek Pike, Tom J Hitch Parkway, Nashville Highway (US 31S), Iron Bridge Road, Patterson Drive, and Mt Olivet Road. The following provides a description of the roadways and intersections within the study area and the existing traffic data.

3.1 Roadway Descriptions



Looking East on Bear Creek Pike
East of Cheairs Circle

Bear Creek Pike is categorized as a principal arterial according to the Tennessee Department of Transportation's (TDOT) Functional Classification System. The land uses along Bear Creek Pike near the project site are a mix of residential, light commercial, and institutional. Adjacent to the project site, Bear Creek Pike is a two-lane highway that generally travels in an east/west direction. West of the project site, Bear Creek Pike includes a 3-lane section with one lane in each direction and a center two-way left turn lane. Bear Creek Pike provides connection to Interstate 65 to the east and the Nashville Highway (US 31 S) to the west. Bear Creek Pike has 12-foot lanes and 10-foot paved shoulders with edgeline rumble strips. The posted speed limit on Bear Creek Pike in the vicinity of the project site is 45 mph.



Looking North on Tom J Hitch Parkway
North of Iron Bridge Road

Tom J Hitch Parkway is categorized as a major collector according to TDOT's Functional Classification System. Tom J Hitch Parkway provides connection to Bear Creek Parkway to the north and James Campbell Boulevard to the south. The land uses along Tom J Hitch Parkway are primarily residential and institutional uses. Tom J Hitch Parkway includes one 12-foot travel lane in each direction with 6-foot paved shoulders. The posted speed limit on Tom J Hitch Parkway is 50 mph. Tom J Hitch Parkway crosses over the Duck River approximately 250 feet south of Bear Creek Pike.

Nashville Highway (US 31S) is categorized as a principal arterial by TDOT. The land uses along Nashville Highway are a mix of commercial and industrial/manufacturing uses. Nashville Highway generally travels in a north/south direction, providing connection between the City of Columbia to the south and the City of Spring Hill to the north. Nashville Highway includes two travel lanes in each direction with a median. Turn lanes are generally provided at intersections. The posted speed limit on Nashville Highway is 45 mph in the study area.



Looking North on Nashville Highway North of Bear Creek Pike

Iron Bridge Road is categorized as a major collector by TDOT. The land uses along Iron Bridge Road are a mix of residential and agricultural uses. Iron Bridge Road generally travels in an east/west direction, providing connection between downtown Columbia to the west and Marshall County to the east. Iron Bridge Road crosses the Duck River just west of the project site. Iron Bridge Road includes one travel lane in each direction. The posted speed limit on Iron Bridge Road is 45 mph in the study area and adjacent to the project site.



Looking West on Iron Bridge Road West of Mt Olivet Road

Patterson Drive is not categorized by TDOT; and therefore, considered a local roadway. The land uses along Patterson Drive are residential. Patterson Drive generally travels in a north/south direction, connecting a neighborhood to Bear Creek Pike. Patterson Drive includes one travel lane in each direction and no shoulders. Patterson Drive has centerline pavement markings. The posted speed limit on Patterson Drive is 25 mph just north of Bear Creek Pike and then changes to 35 mph further north. There are no sidewalks along Patterson Drive.



Looking North on Patterson Drive North of Bear Creek Pike

Mt Olivet Road is not categorized by TDOT; and therefore, considered a local roadway. The land uses along Mt Olivet Road are primarily large-lot residential. Mt Olivet Road generally travels in a north/south direction, providing connection between Bear Creek Pike to the north and Iron Bridge Road to the south. Mt Olivet Road crosses over Bear Creek approximately 200 feet south of the Bear Creek Pike. Mt Olivet Road includes one travel lane in each direction and no shoulders. Mt Olivet Road has centerline and edgeline pavement markings. The posted speed limit on Mt Olivet Road is 45 mph.



Looking North on Mt Olivet Road North of Iron Bridge Road

3.2 Intersection Descriptions

The following seven (7) intersections were studied in this analysis:

- Nashville Highway and Bear Creek Pike (Signal)
- Bear Creek Pike and Tom J Hitch Parkway (Signal)
- Bear Creek Pike and Patterson Drive (One-Way Stop)
- Bear Creek Pike and Mt Olivet Road (Signal)
- Tom J Hitch Parkway and Iron Bridge Road (Signal)
- Iron Bridge Road and Mt Olivet Road (One-Way Stop)
- James Campbell Boulevard and Tom J Hitch Parkway (One-Way Stop)

The intersection of **Nashville Highway/US 43 and Bear Creek Pike** is signalized with four approaches. The northbound approach of Nashville Highway includes one left turn lane with approximately 200 feet of storage, two through lanes, and one channelized right turn lane with approximately 600 feet of storage and with yield control. The southbound approach of Nashville Highway includes one left turn lane with approximately 165 feet of storage, two through lanes, and one channelized right turn lane with approximately 540 feet of storage and with yield-control. The westbound approach of Bear Creek Pike includes one left turn lane with approximately 375 feet of storage, one through lane, and one shared through/right turn lane with right turn channelization and yield-control. The eastbound approach of US 43 includes two left turn lanes with approximately 250 feet of storage, one through lane, and one shared through/right turn lane with right turn channelization and free flow. Split signal phasing is provided for the eastbound and westbound approaches. Protected/permissive left turn signal phasing is provided for the northbound and southbound approaches. Pedestrian crosswalks and signals are not provided at the intersection. Sidewalk and curb ramps are not provided at the intersection. According to the City, a study and design is underway to improve operation and safety at the intersection; however, details of the improvements are not available. For the background and projected analyses, it was assumed that a second left turn lane would be constructed within the existing medians for the southbound and westbound approaches, a westbound right turn lane would be constructed, as well as signal modification to accommodate the additional laneage.

The intersection of **Bear Creek Pike and Tom J Hitch Parkway/Farm Bureau Access** is signalized with four approaches. The eastbound approach of Bear Creek Pike includes one left turn lane with approximately 130 feet of storage and one shared through/right turn lane. The westbound approach of Bear Creek Pike includes one left turn lane with approximately 150 feet of dedicated storage within the center two-way left turn lane, one through lane, and one right turn lane with approximately 90 feet of storage. The northbound approach of Tom J Hitch Parkway includes one left turn lane with approximately 95 feet of storage and one shared through/right turn lane. The southbound approach of the Farm Bureau Access includes one left turn lane with approximately 60 feet of storage, one through lane, and one right turn lane with approximately 60 feet of storage. Protected/permissive left turn signal phasing is provided for all approaches. Pedestrian crosswalks and signals are not provided at the intersection. Sidewalk and curb ramps are not provided at the intersection.

The intersection of **Bear Creek Pike and Patterson Drive** is unsignalized with three approaches. The eastbound approach of Bear Creek Pike includes one left turn deceleration lane with approximately 200 feet of storage and one through lane. The westbound approach of Bear Creek Pike includes one shared through/right turn lane. The southbound approach of Patterson Drive is stop-controlled and includes one shared lane for left turn and right turn movements. The primary access for the project site (Site Access 1) is planned to align with Patterson Drive and will form the fourth leg of the intersection. No pedestrian facilities are provided for the intersection.

The intersection of **Bear Creek Pike and Mt Olivet Road/School Access** is signalized with four approaches. The eastbound approach of Bear Creek Pike includes one left turn lane with approximately 250 feet of storage and one shared through/right turn lane. The westbound approach of Bear Creek Pike includes one left turn lane with approximately 180 feet of storage and one shared through/right turn lane. The northbound approach of Mt Olivet Road includes one left turn lane with approximately 65 feet of storage and one shared through/right turn lane. The north leg of the intersection is formed by the School Access, which provides access to Howell Elementary School and E A Cox Middle School. The southbound approach of the School Access includes one left turn lane and one shared through/right turn lane. Protected/permissive left turn signal phasing is provided for the eastbound and westbound approaches of Bear Creek Pike. Permissive signal phasing is provided for the northbound and southbound approaches. Pedestrian crosswalks and signals are not provided at the intersection.

The intersection of **Tom J Hitch Parkway and Iron Bridge Road** is a signalized intersection with four approaches. The northbound approach of Tom J Hitch Parkway includes one left turn lane with approximately 105 feet of storage, one through lane, and one right turn lane with approximately 145 feet of storage. The southbound approach of Tom J Hitch Parkway includes a left turn lane with approximately 205 feet of storage, one through lane, and one right turn lane with approximately 120 feet of storage. The eastbound approach of Iron Bridge Road includes one left turn lane with approximately 120 feet of storage and one shared through/right turn lane. The westbound approach of Iron Bridge Road includes one left turn lane with approximately 140 feet of storage and one shared through/right turn lane. Protected/permissive left turn signal phasing is provided for the northbound and southbound approaches of Tom J Hitch Parkway. Permissive signal phasing is provided for the eastbound and westbound approaches of Iron Bridge Road. Pedestrian crosswalks and signals are not provided at the intersection.

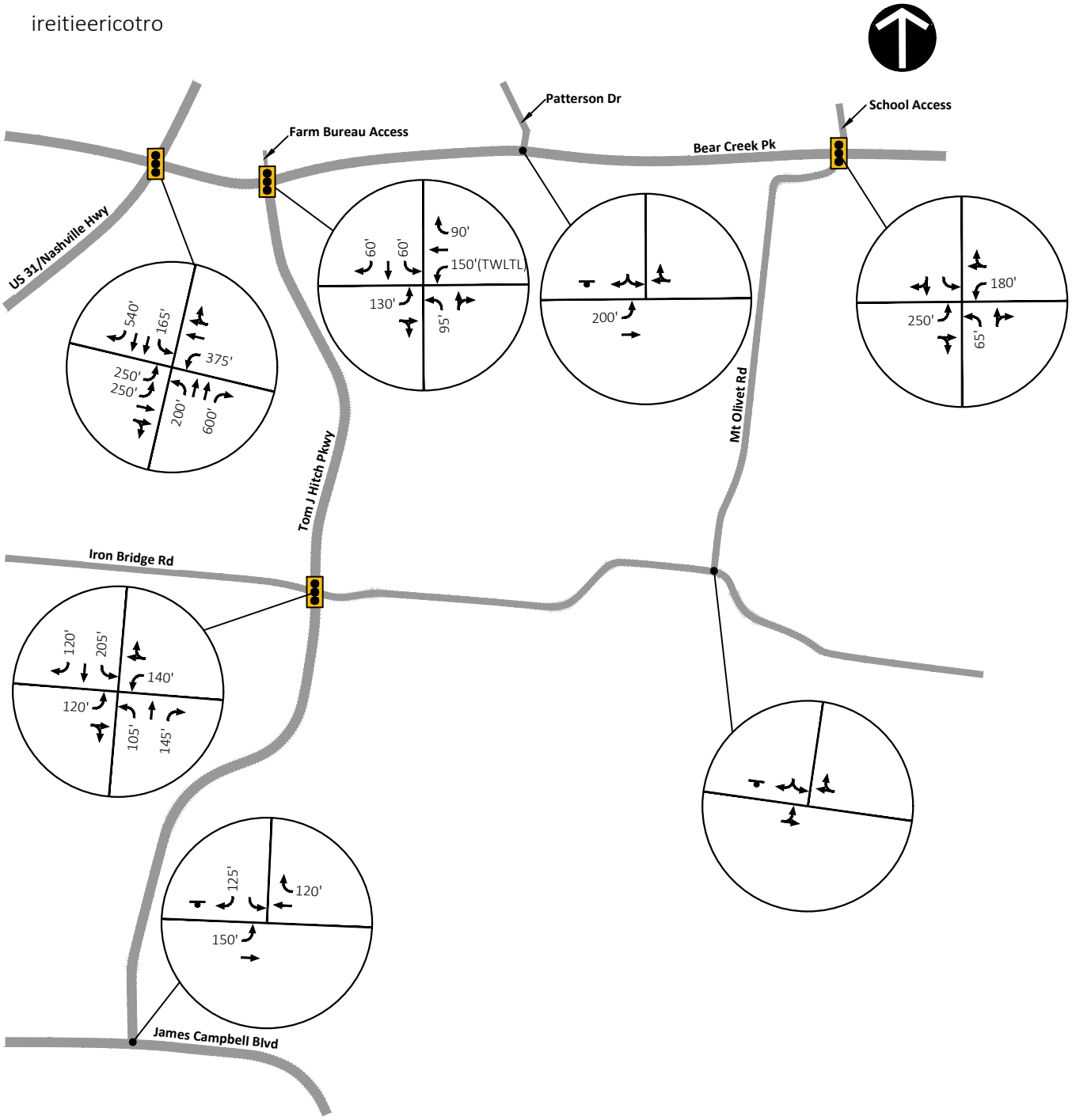
The intersection of **Iron Bridge Road and Mt Olivet Road** is unsignalized with three approaches. The eastbound approach of Iron Bridge Road includes one shared lane for left turn and through movements. The westbound approach of Iron Bridge Road includes one shared lane for through and right turn

movements. The southbound approach of Mt Olivet Road is stop-controlled and includes one shared lane for left turn and right turn movements. No pedestrian facilities are provided for the intersection.

The intersection of **James Campbell Boulevard and Tom J Hitch Parkway** is unsignalized with three approaches. The eastbound approach of James Campbell Boulevard includes one left turn deceleration lane with approximately 150 feet of storage and one through lane. The westbound approach of James Campbell Boulevard includes one through lane and one right turn deceleration lane with 120 feet of storage. The southbound approach of Tom J Hitch Parkway is stop-controlled and includes one left turn lane and one right turn lane with 125 feet of storage. No pedestrian facilities are provided for the intersection.

Figure 2 presents the intersection laneage and traffic control for the existing conditions.

ireitieericotro



Legend:

→ Existing Laneage

XXX' Storage Length (feet)

TWLTL Two-way Left-Turn Lane

Stcotro

ri

ottoSce

3.3 Existing Traffic Volumes

As previously mentioned, a TIS for the site (previously named "Big Bear Bluff Master Plan") was submitted on 4/18/2022. A comparison of the turning movement count data from the original 2022 TIS to the data from the 2023 Dollar General TIS (provided by the City of Columbia) showed comparable traffic data, with the exception of the new Farm Bureau bank driveway movements. Per prior coordination with the City, this TIS utilizes the existing traffic data from the original 2022 TIS, with the addition of the bank traffic volumes from the 2023 Dollar General TIS, as the 2023 existing traffic volumes.

Existing traffic data for the study area roadways were obtained from the Tennessee Department of Transportation (TDOT). The 2022 Annual Average Daily Traffic (AADT) for the study area roadways are presented in Figure 3. The data represents 2022 AADT (vehicles per day) at the count stations. A historical comparison of 2019, 2020, and 2021 data shows that the 2021 daily traffic volumes on the study area roadways had just about returned to pre-pandemic levels. The TDOT count station data is included in Appendix C.

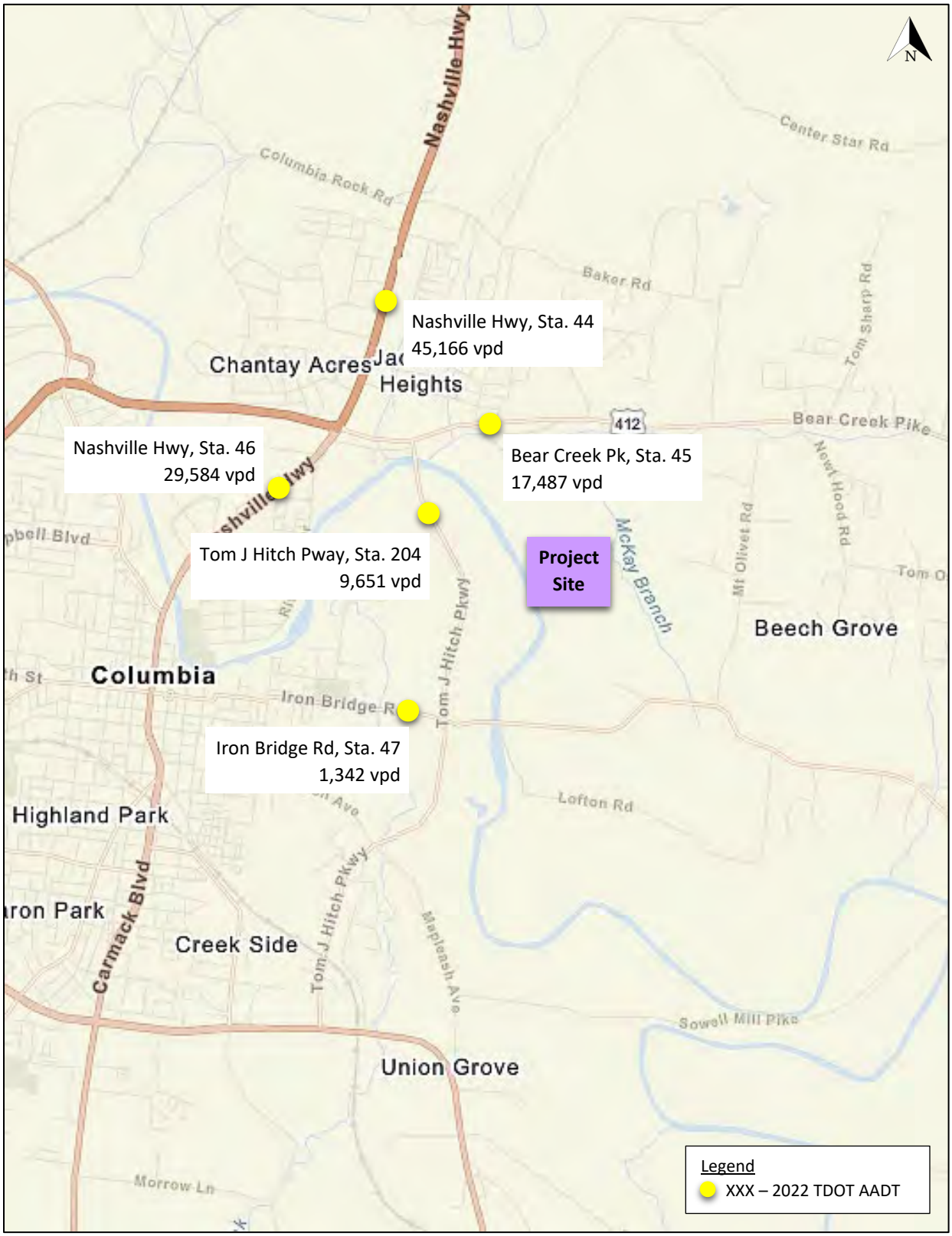
Turning movement count data conducted for the study intersections in May 2021 by Marr Traffic were obtained from a TIS prepared by Ragan-Smith for the same project site. Although the AADT comparison appears to show that traffic volumes in the study area have normalized, a peak hour comparison of the traffic data collected on Bear Creek Pike and Tom J Hitch Parkway in 2021 indicates that the AM peak hour traffic was approximately 7%-8% less than the 2019 data prior to the COVID-19 Pandemic. Therefore a 1.08 factor was applied to the 2021 turning movement counts for the AM peak hour. The same comparison for the PM peak hour traffic showed that the 2021 data was higher than the 2019 PM peak hour traffic. Therefore, no factor was applied to the PM peak hour turning movements at the study intersections. Due to the distance and intersecting driveways and intersections between the study intersections, the turning movement counts were not balanced between intersections.

Since the turning movement count data was collected in May 2021, the Farm Bureau Insurance office access was relocated. The new, relocated driveway forms the fourth leg of the intersection of Bear Creek Pike and Tom J Hitch Parkway. The intersection of Bear Creek Pike and Tom J Hitch Parkway/Farm Bureau Access was analyzed in the Dollar General Traffic Impact Study prepared by Fischbach Transportation Group in March 2023, and the turning movement counts for this study were collected in February 2023. The AM and PM peak hour traffic turning into and out of the relocated access provided in the Dollar General TIS is utilized in this TIS as current 2023 data and is carried through the roadway network.

In addition, the intersection of Tom J Hitch Parkway and Iron Bridge Road has been signalized since the turning movement count data was collected at the intersection in May 2021. Therefore, new turning movement counts were collected at the signalized intersection on Tuesday, August 22, 2023, while Maury County Schools were in session.

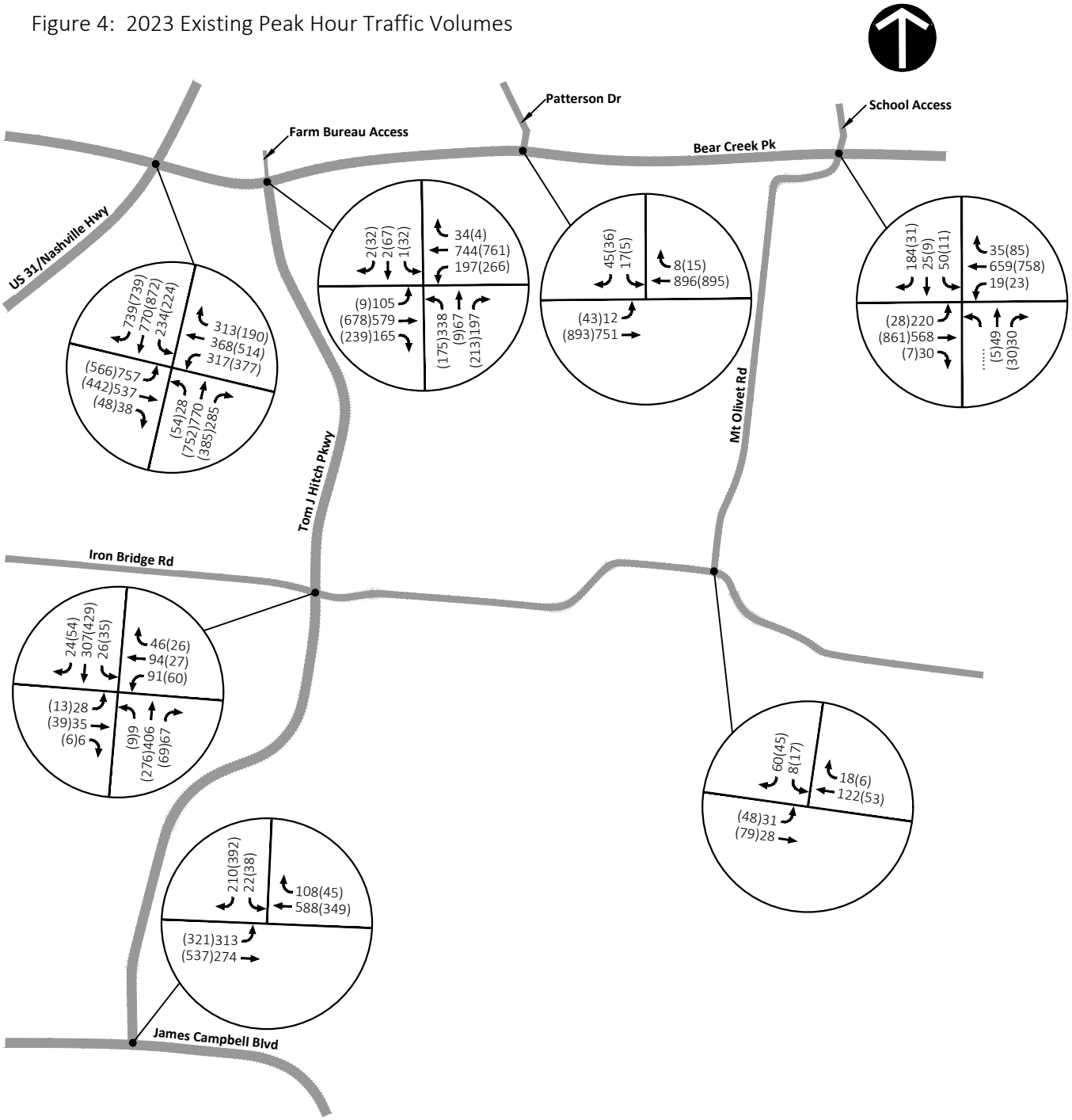
The 2023 Existing Conditions Peak Hour Traffic Volumes are presented in Figure 4. This represents the baseline conditions for the traffic analysis. The turning movement count data that was used to establish baseline conditions is included in Appendix D.

Figure 3: Daily Traffic Volumes



Source: TDOT traffic data, USGS.

Figure 4: 2023 Existing Peak Hour Traffic Volumes



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

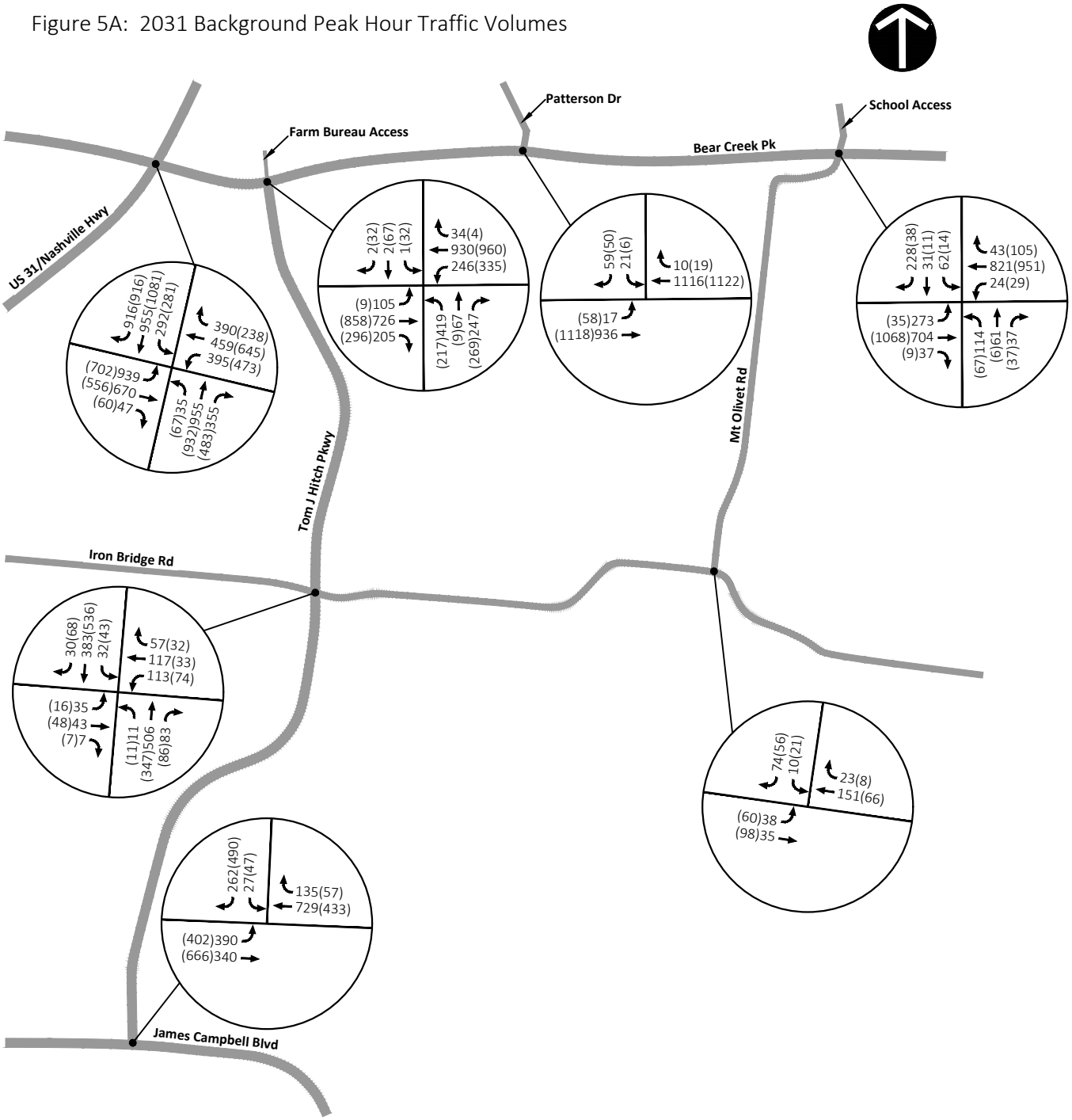
4. Background Conditions

As previously stated, it is assumed that the proposed Columbia Bluffs development located along Bear Creek Pike will be completed in several phases over approximately eleven years. For the purposes of this traffic study, two major phases were evaluated, which corresponds to horizon years 2031 and 2034. To account for additional traffic expected to be traveling on the study roadways in 2031 and 2034 even if the development is not completed, background traffic volumes were established. A growth rate was applied to the 2023 Existing Peak Hour Traffic Volumes. Since the baseline data represents the year 2023 conditions, an 8-year growth projection was applied for horizon year 2031 and an 11-year growth projection was applied for horizon year 2031. Based on an historical analysis and growth trends of the AADTs of the study area roadways, a 3% linear annual growth rate was applied to the 2023 Existing Conditions Peak Hour Traffic Volumes. The TDOT count station data and historical growth is included in Appendix C.

In addition to the general traffic growth in the study area, the site-specific traffic expected to be generated by one approved development was included in the background traffic volumes. The Dollar General project site is located on the north side of Bear Creek Pike west of W. Cheairs Circle. The background project data is included in Appendix E. The traffic calculation worksheets are included in Appendix G.

Figure 5A presents the 2031 Background Conditions Peak Hour Traffic Volumes, and Figure 5B presents the 2031 Background Conditions Peak Hour Traffic Volumes.

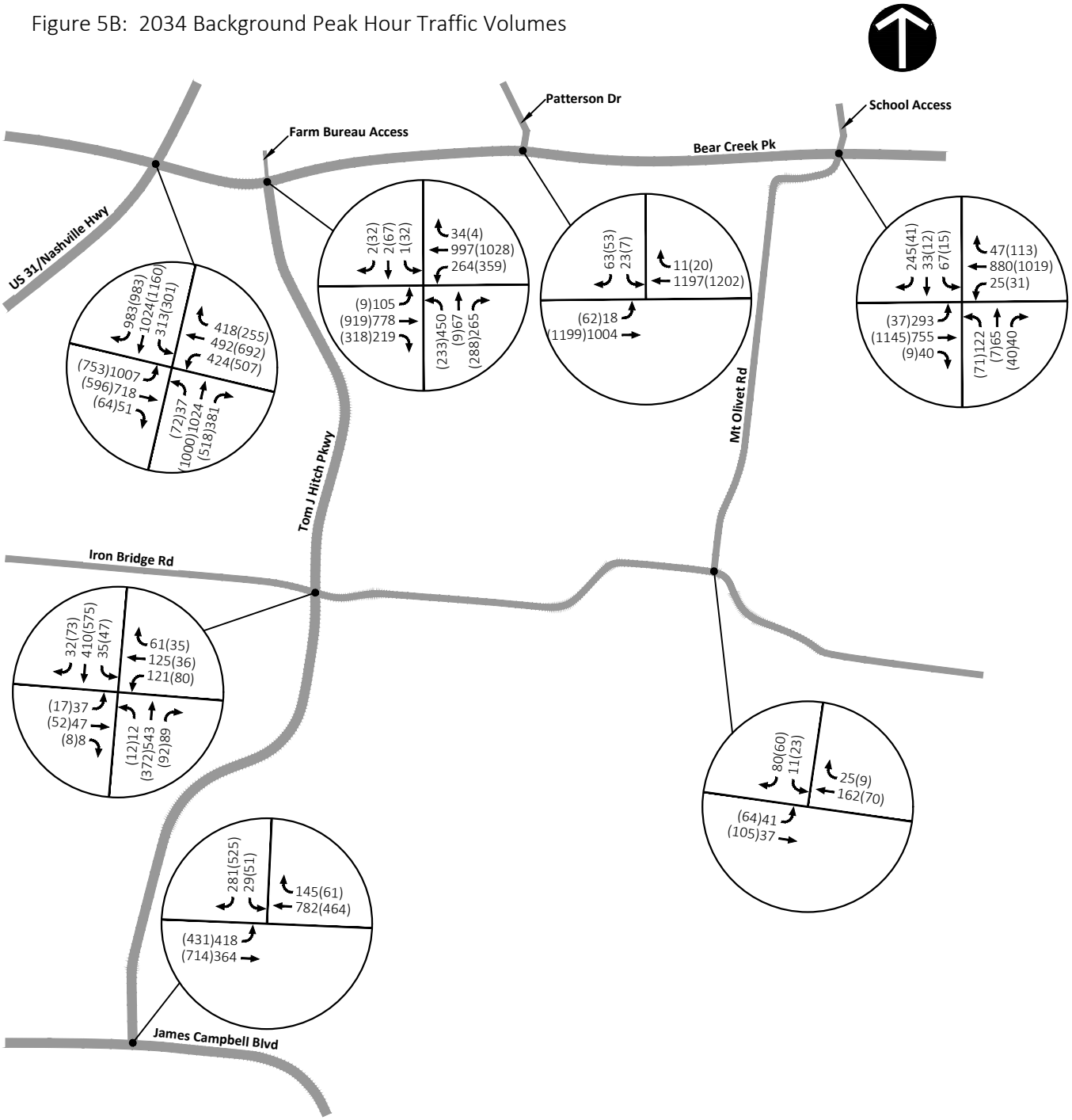
Figure 5A: 2031 Background Peak Hour Traffic Volumes



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

Figure 5B: 2034 Background Peak Hour Traffic Volumes



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

5. Projected Conditions

A trip generation process was used to estimate the amount of traffic that is expected to be generated by the proposed development. Trip generation rates for the land uses were taken from ITE's *Trip Generation Manual, 11th Edition*. No reductions were applied for alternate modes of transportation.

Table 2 below presents the new vehicular traffic expected to be generated by the proposed Columbia Bluffs project. As shown, the full buildout of the development is expected to generate approximately 7,324 vehicle trips per day, 658 vehicles per hour (vph) during the AM peak hour, and 768 vph during the PM peak hour. The initial phases of development, Phases 1-3, are expected to generate approximately 4,149 vehicle trips per day, 399 vph during the AM peak hour, and 475 vph during the PM peak hour. Trip generation calculations are included in Appendix F.

Table 2: Trip Generation

Land Use	Size	Average Daily Traffic	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Phases 1-3								
Single-Family Detached Housing LUC 210	236 du	2,223	163	41	122	223	140	83
Single-Family Attached Housing LUC 215	94 du	666	43	11	32	52	31	21
Single Family Senior Adult Housing LUC 251	100 du	593	39	13	26	44	27	17
Day Care Center LUC 565	14,000 sf	667	154	82	72	156	73	83
Total Phases 1-3	**--**	**4,149**	**399**	**147**	**252**	**475**	**271**	**204**
Full Buildout, Phases 1-6								
Single-Family Detached Housing LUC 210	472 du	4,207	306	77	229	427	269	158
Single-Family Attached Housing LUC 215	188 du	1,382	132	33	99	109	64	45
Single Family Senior Adult Housing LUC 251	200 du	1,068	66	22	44	76	46	30
Day Care Center LUC 565	14,000 sf	667	154	82	72	156	73	83
Total Full Buildout, Phases 1-6	**--**	**7,324**	**658**	**214**	**444**	**768**	**452**	**316**

Source: ITE *Trip Generation Manual, 11th Edition.*

A directional distribution was developed based on the existing traffic counts, street network, and schools as well as the access plan for the development. Table 3 presents the roadways, directions, and percent distribution that traffic is expected to be coming from when entering the site.

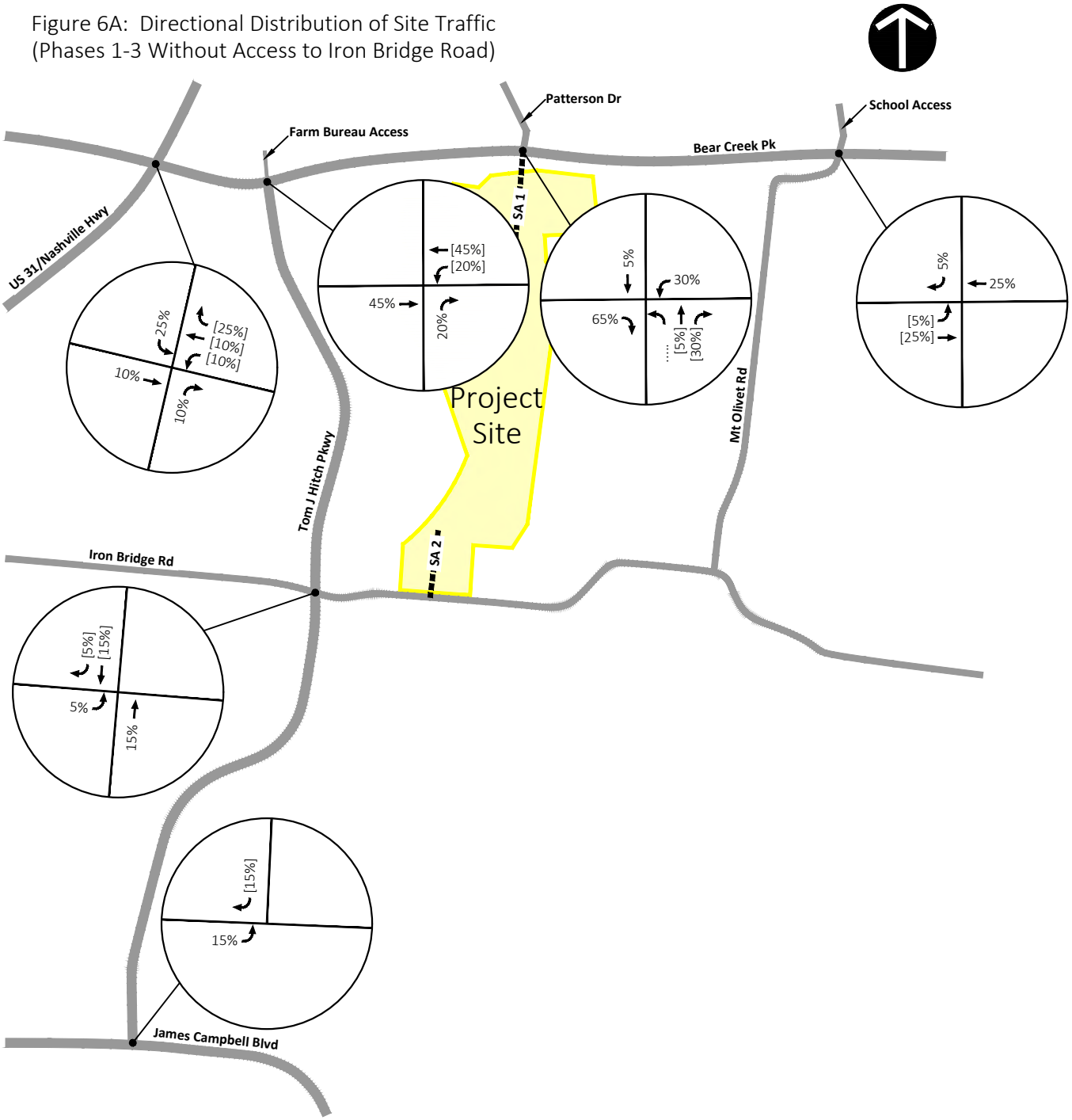
Table 3: Directional Distribution

Roadway	Entering Direction (From – To the Site)	Distribution %
Bear Creek Pike	East	25%
US 43	West	10%
Nashville Highway/US 31 S	North	25%
Nashville Highway/US 31 S	South	10%
James Campbell Boulevard	West	15%
Iron Bridge Road	West	5%
Patterson Drive	North	5%
School Access	Northeast	5%
Total	--	100%

The current site plan includes one full access point on Bear Creek Pike aligned with Patterson Drive and one full access point on Iron Bridge Road aligned with the Maury County Yanahli Park Access. As discussed, the secondary access on Iron Bridge Road is not planned to be constructed until Phase 4 has begun. Therefore, all of the traffic generated by the site will enter and exit at the primary access on Bear Creek Pike during the initial development of Phases 1-3. Based on the directional distribution and the site access plan, the directional distribution was developed for the turning movements at each of the study intersections and site access points. The Directional Distribution for the project site at the study intersections is presented in Figure 6A for the scenario of Phases 1-3 and in Figure 6B for the full buildout scenario.

Using these directional distributions, the traffic generated by the site was assigned to the street network. The traffic assignment for the Phases 1-3 scenario is presented in Figure 7A, and the traffic assignment for the full buildout scenario is presented in Figure 7B. The site traffic was added to the background traffic volumes to obtain the 2031 Future Projected Peak Hour Traffic Volumes, which are presented in Figure 8A and the 2034 Future Projected Peak Hour Traffic Volumes, which are presented in Figure 8B. These volumes represent the total peak hour traffic expected at the study intersections following completion of Phases 1-3 and Full Buildout of the proposed development plan, respectively. The traffic calculation worksheets showing the traffic assignment and volume calculations are included in Appendix G.

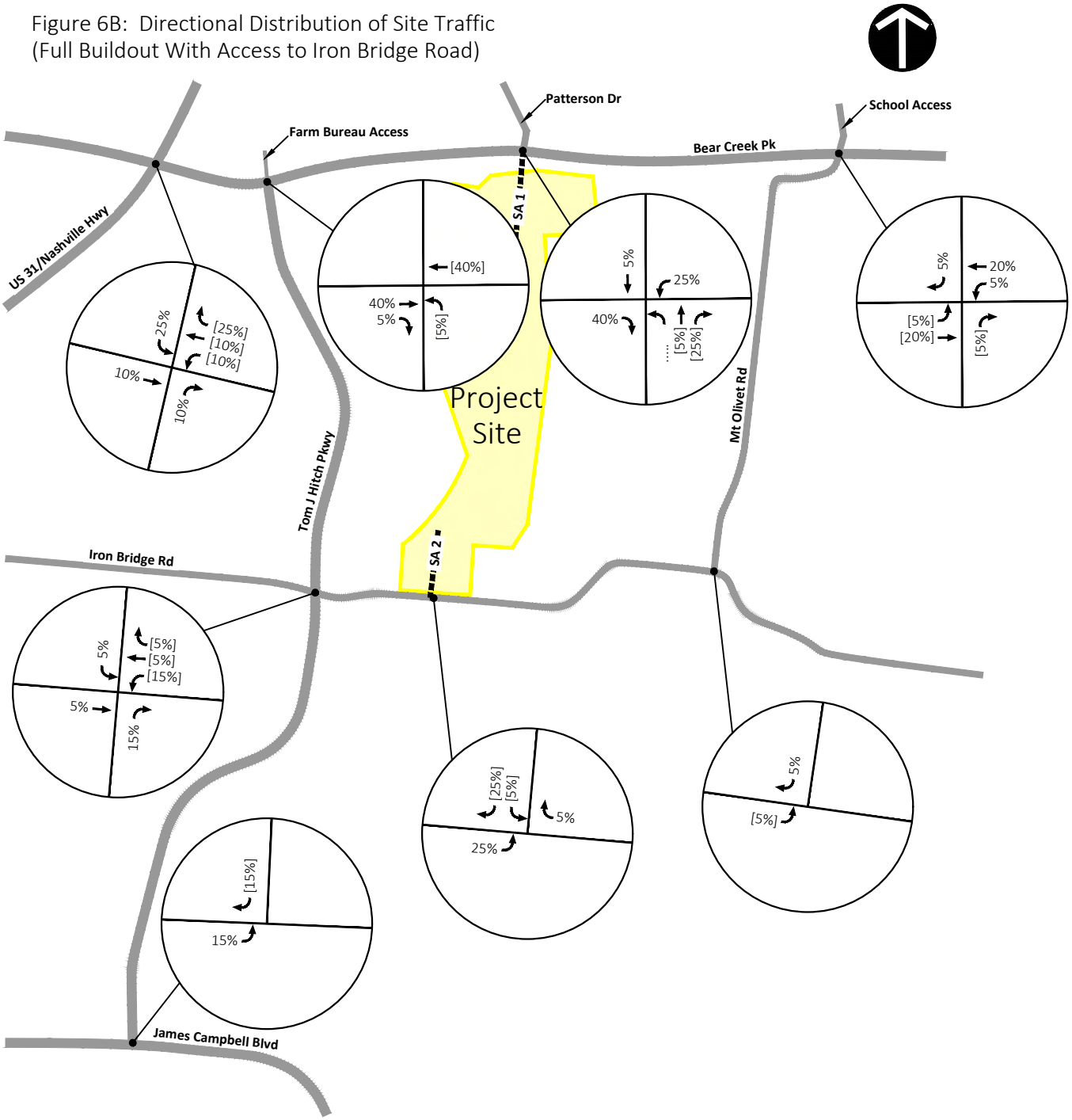
Figure 6A: Directional Distribution of Site Traffic
(Phases 1-3 Without Access to Iron Bridge Road)



Legend:
XX% - Enter
[XX%] - Exit

(Not to Scale)

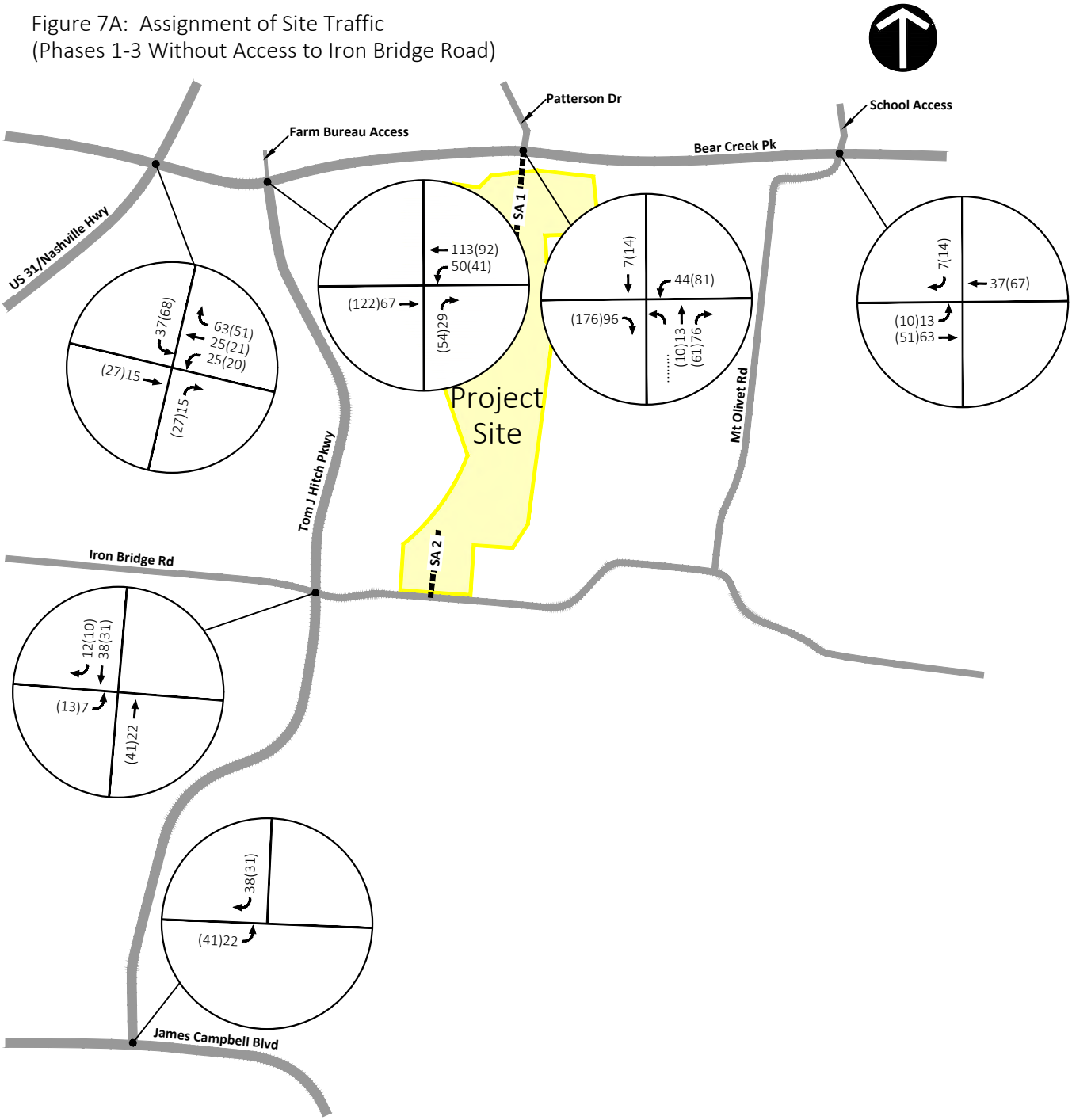
Figure 6B: Directional Distribution of Site Traffic
(Full Buildout With Access to Iron Bridge Road)



Legend:
XX% - Enter
[XX%] - Exit

(Not to Scale)

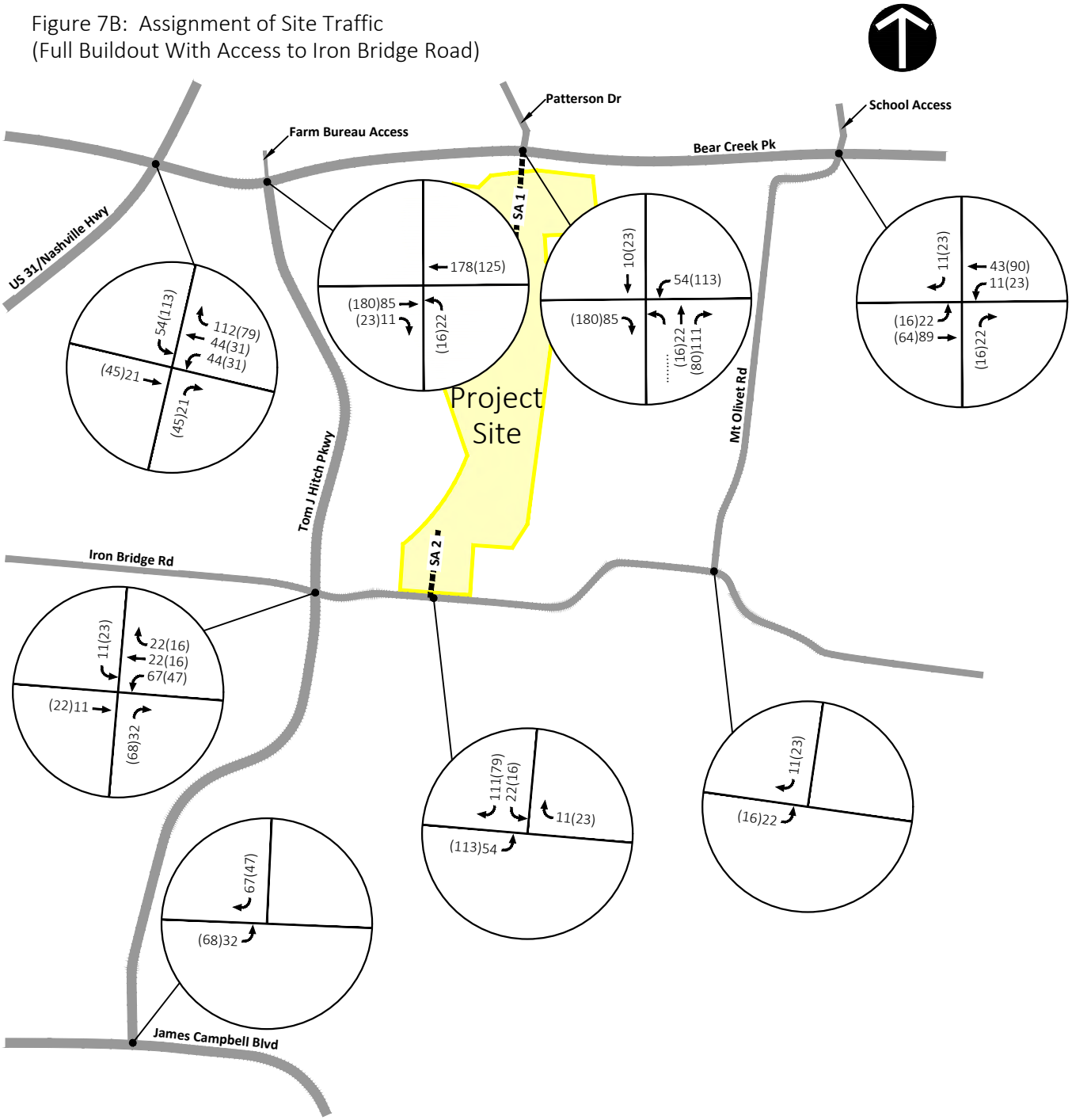
Figure 7A: Assignment of Site Traffic
(Phases 1-3 Without Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

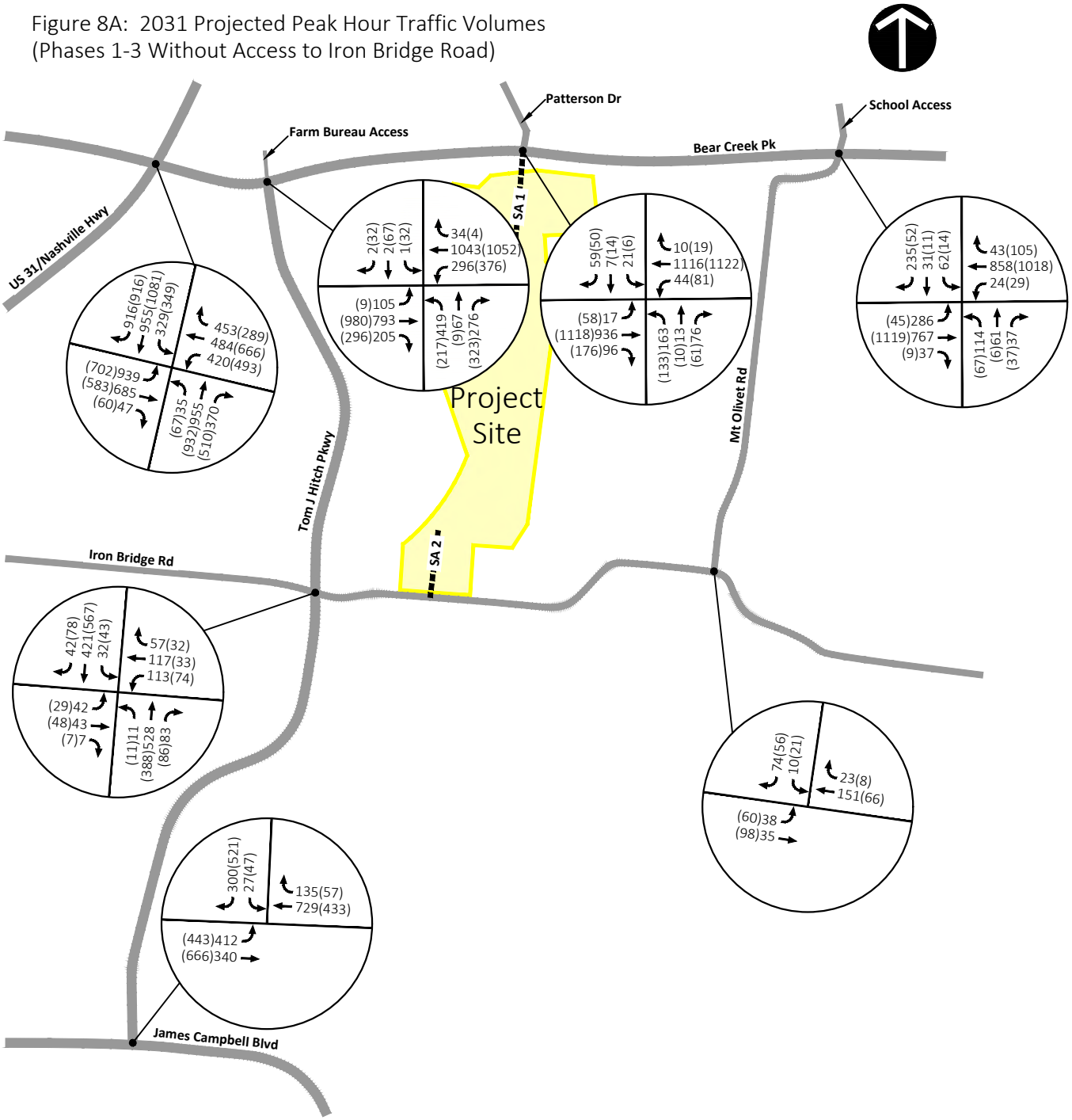
Figure 7B: Assignment of Site Traffic
(Full Buildout With Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

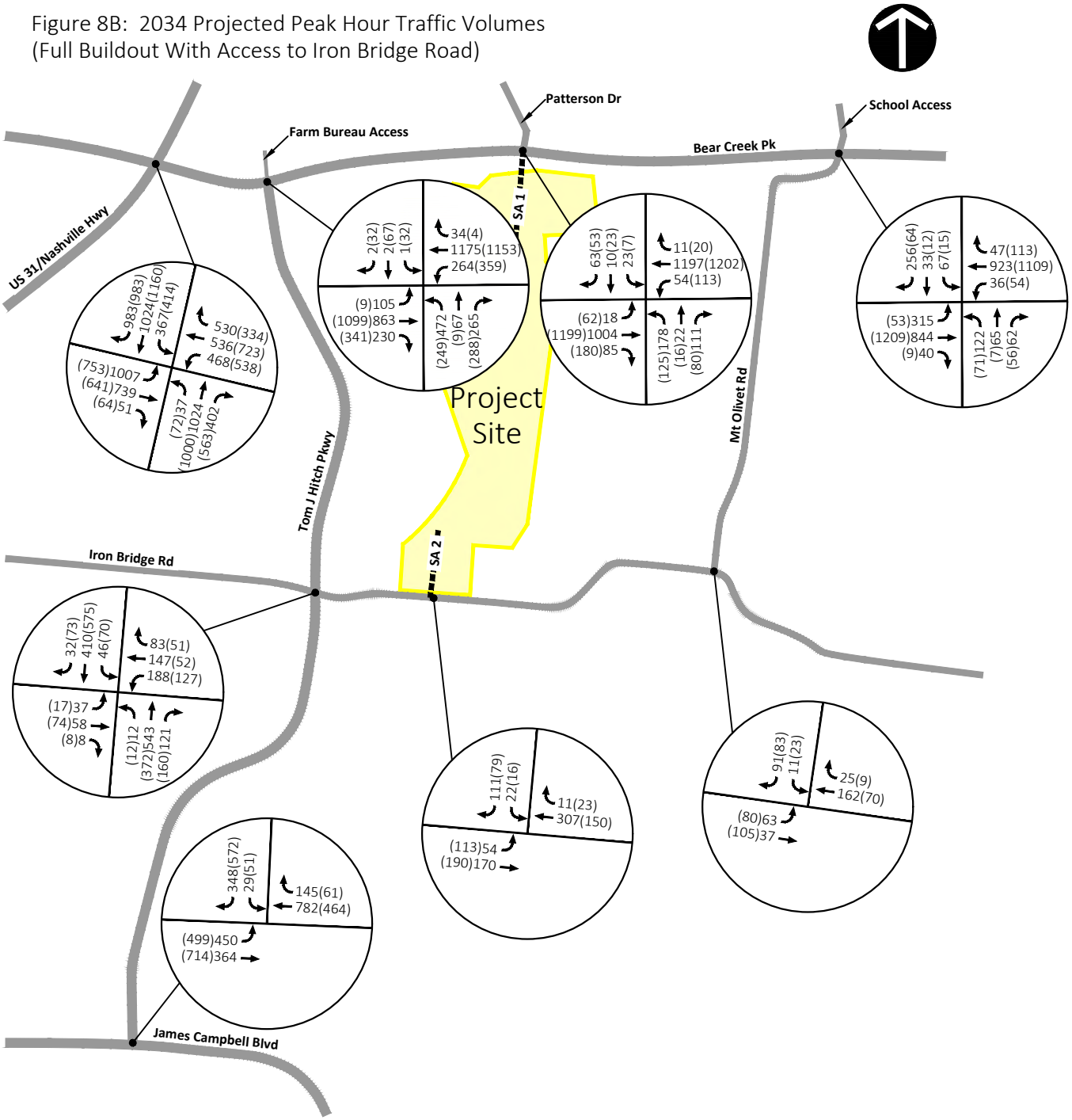
Figure 8A: 2031 Projected Peak Hour Traffic Volumes
(Phases 1-3 Without Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

Figure 8B: 2034 Projected Peak Hour Traffic Volumes
(Full Buildout With Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

6. Traffic Operational Analysis

To evaluate the study intersections under Existing, Background, and Future Projected conditions, capacity analyses were conducted for the study intersections using Synchro 11 software and HCM 6th Edition methodology. The signal timing data for the study intersections was obtained from the City of Columbia and utilized for the capacity analyses. As previously mentioned, the City of Columbia has a study and design underway to improve operation and safety at the intersection of Nashville Highway and Bear Creek Pike; however, details of the improvements are not available. For the background and projected analyses, it was assumed that a second left turn lane would be constructed within the existing medians for the southbound and westbound approaches, a westbound right turn lane would be constructed, as well as signal modification to accommodate the additional laneage.

The capacity analyses result in a control delay and corresponding level of service (LOS). The LOS and control delay are used to describe how well a turning movement and/or intersection operates. LOS A operates with the least amount of delay, and LOS F the worst. In urbanized areas, LOS D is generally considered acceptable. Table 4 presents the descriptions of LOS for unsignalized intersections, and Table 5 presents the descriptions of LOS for signalized intersections.

Table 4: Description of Unsignalized Intersection Level of Service (LOS)

LOS	Control Delay (seconds per vehicle)
A	0 – 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50
Source: *Highway Capacity Manual 6th Edition*	

Table 5: Description of Signalized Intersection Level of Service (LOS)

LOS v/c ≤ 1.0	Control Delay (seconds per vehicle)	Description
A	≤ 10	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is short.
B	> 10 – 20	Progression is highly favorable or the cycle length is short. More vehicles stop than LOS A.
C	> 20 – 35	Progression is favorable or cycle lengths are moderate. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
D	> 35 – 55	Volume-to-capacity is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
E	> 55 – 80	Volume-to-capacity is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
F	> 80	Volume-to-capacity is very high or exceeds 1.0, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.
Source: *Highway Capacity Manual, 6th Edition*		

6.1 Capacity Analysis

Table 6 below presents the results of the AM peak hour analysis, and Table 7 presents the results of the PM peak hour analysis. The tables present a comparison between the analysis scenarios. The overall intersection LOS is presented for signalized intersections, and the LOS for critical turning movements at unsignalized intersections is presented. The Synchro worksheets and complete LOS comparison tables showing all of the turning movements are included in Appendix H. As shown, improvements will be needed at many of the study intersections in order to accommodate the proposed residential development with daycare center. The intersection improvements that are included in the 2031 Projected Phases 1-3 With Improvements scenario and the 2034 Projected Full Buildout With Improvements scenario are outlined in the Conclusions and Recommendations section.

Table 6: Intersection Capacity Analysis – AM Peak Hour

Intersection	Control	Turning Movement	Level of Service (Delay in sec/veh)						
			2023 Existing	2031			2034		
				Background	Projected	Projected w/ Imps	Background	Projected	Projected w/ Imps
Nashville Hwy & US 43/Bear Creek Pk	Signal	Overall Intersection	E (70.5)	F (97.2)	F (104.0)	F (95.0)	F (120.8)	F (134.3)	F (132.2)
Bear Creek Pk & Tom J Hitch Pkwy/ Farm Bureau Access	Signal	Overall Intersection	D (46.7)	F (97.3)	F (135.3)	F (116.2)	F (124.4)	F (165.7)	F (155.9)
Bear Creek Pk & Patterson Dr/ Site Access 1	TWSC	EB Left Turn	B (10.3)	B (11.7)	B (11.7)	--	B (12.3)	B (12.3)	--
		WB Left Turn	--	--	B (11.4)	--	--	B (11.9)	--
		NB Left Turn	--	--	F (600+)	--	--	F (600+)	--
		NB Through/Right Turn	--	--	F (115.1)	--	--	F (444.3)	--
		SB Approach	E (40.9)	F (138.6)	F (600+)	--	F (255.3)	F (600+)	--
	Signal	Overall Intersection	--	--	--	C (32.3)	--	--	D (46.9)
Bear Creek Pk & Mt Olivet Rd/School Access	Signal	Overall Intersection	C (29.2)	E (74.2)	F (85.3)	D (50.6)	F (93.5)	F (112.1)	E (66.0)
Tom J Hitch Pkwy & Iron Bridge Rd	Signal	Overall Intersection	B (14.8)	B (17.2)	B (17.6)	--	B (18.5)	C (23.8)	--
Iron Bridge Rd & Mt Olivet Rd	TWSC	EB Left Turn	A (7.6)	A (7.7)	A (7.7)	--	A (7.7)	A (7.7)	--
		SB Approach	A (9.4)	A (9.7)	A (9.7)	--	A (9.9)	B (10.0)	--
James Campbell Blvd & Tom J Hitch Pkwy	TWSC	EB Left Turn	B (12.0)	C (16.5)	C (17.4)	--	C (19.9)	C (22.1)	--
		SB Left Turn	F (82.6)	F (414.0)	F (496.8)	--	F (600+)	F (600+)	--
		SB Right Turn	C (19.3)	E (35.7)	E (47.3)	--	F (51.5)	F (96.1)	--
	Signal	Overall Intersection	--	--	--	C (24.4)	--	--	C (31.6)
Iron Bridge Rd & Site Access 2	TWSC	EB Left Turn	--	--	--	--	--	A (8.1)	--
		SB Approach	--	--	--	--	--	B (12.4)	--

Note: HCM 6th Edition results reported above for all intersections, with one exception. HCM 2000 results reported for intersection of Nashville Highway and US 43/Bear Creek Pike.

Table 7: Intersection Capacity Analysis – PM Peak Hour

Intersection	Control	Turning Movement	Level of Service (Delay in sec/veh)						
			2023 Existing	2031			2034		
				Background	Projected	Projected w/ Imps	Background	Projected	Projected w/ Imps
Nashville Hwy & US 43/Bear Creek Pk	Signal	Overall Intersection	E (58.1)	E (69.4)	E (72.6)	E (64.1)	F (84.1)	F (90.7)	F (81.9)
Bear Creek Pk & Tom J Hitch Pkwy/ Farm Bureau Access	Signal	Overall Intersection	D (52.4)	F (123.6)	F (173.5)	F (112.6)	F (152.6)	F (198.0)	F (144.7)
Bear Creek Pk & Patterson Dr/ Site Access 1	TWSC	EB Left Turn	B (10.2)	B (11.7)	B (11.7)	--	B (12.3)	B (12.3)	--
		WB Left Turn	--	--	B (13.4)	--	--	C (15.1)	--
		NB Left Turn	--	--	F (600+)	--	--	F (600+)	--
		NB Through/Right Turn	--	--	F (192.1)	--	--	F (600+)	--
		SB Approach	C (24.5)	E (46.9)	F (600+)	--	F (68.4)	F (600+)	--
	Signal	Overall Intersection	--	--	--	C (27.5)	--	--	D (36.3)
Bear Creek Pk & Mt Olivet Rd/School Access	Signal	Overall Intersection	B (16.4)	C (29.9)	D (42.7)	D (37.5)	D (45.3)	E (77.0)	D (41.1)
Tom J Hitch Pkwy & Iron Bridge Rd	Signal	Overall Intersection	B (12.8)	B (14.6)	B (15.4)	--	B (15.5)	B (16.1)	--
Iron Bridge Rd & Mt Olivet Rd	TWSC	EB Left Turn	A (7.4)	A (7.5)	A (7.5)	--	A (7.5)	A (7.5)	--
		SB Approach	A (9.3)	A (9.6)	A (9.6)	--	A (9.7)	B (9.8)	--
James Campbell Blvd & Tom J Hitch Pkwy	TWSC	EB Left Turn	A (9.5)	B (10.8)	B (11.3)	--	B (11.5)	B (12.4)	--
		SB Left Turn	F (90.9)	F (437.1)	F (580.4)	--	F (600+)	F (600+)	--
		SB Right Turn	C (18.6)	E (38.2)	E (46.7)	--	F (57.5)	F (80.5)	--
	Signal	Overall Intersection	--	--	--	C (28.7)	--	--	D (35.5)
Iron Bridge Rd & Site Access 2	TWSC	EB Left Turn	--	--	--	--	--	A (7.8)	--
		SB Approach	--	--	--	--	--	B (10.8)	--

Note: HCM 6th Edition results reported above for all intersections, with one exception. HCM 2000 results reported for intersection of Nashville Highway and US 43/Bear Creek Pike.

According to the City's *Connect Columbia Comprehensive Plan*, which is currently being updated, improvements are planned for the intersection of Nashville Highway and Bear Creek Pike that also include capacity and access management improvements along Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway. Specific design, funding, and schedule of these improvements are unknown. However, it is reasonable to anticipate that the City and/or TDOT will complete these improvements in the next 8-11 years prior to full buildout of the Columbia Bluffs PUD since these improvements were recommended to be completed in the near term (within 10 years) when the Plan was adopted in 2018.

Additional analyses were conducted for the intersection of Bear Creek Pike and Tom J Hitch Parkway assuming that Bear Creek Pike will be widened from 3 to 5 lanes between Nashville Highway and Tom J Hitch Parkway, which is approximately 1,600 linear feet. For this analysis, the additional eastbound lane is assumed to become a right turn only lane and the northbound approach of Tom J Hitch Parkway was assumed to include one left turn lane, one shared left turn/through lane, and one right turn lane. The additional westbound lane on Bear Creek Parkway will allow dual left turn lanes from Tom J Hitch Parkway with split phasing is provided. Table 8 below presents the capacity analysis results for the intersection assuming these future improvements are provided by the City and/or TDOT. As shown, the intersection is expected to operate better than Background Conditions during the AM and PM peak hours under both buildout scenarios.

Table 8: Intersection Capacity Analysis – Bear Creek Pike and Tom J Hitch Parkway with Future Improvements by Others

Turning Movement	Level of Service (Delay in sec/veh)			
	2031		2034	
	AM	PM	AM	PM
Overall Intersection	E (58.3)	E (56.3)	E (79.3)	E (68.8)
Note: HCM 6th Edition results reported above.				

6.2 Signal Warrant Analysis

As previously discussed, the intersection of Bear Creek Pike and Patterson Drive is stop-controlled on the southbound approach of Patterson Drive, and the northbound approach of the proposed development Site Access 1 will be stop-controlled once constructed. The results of the capacity analyses indicate that the northbound and southbound stop-controlled approaches will operate with poor levels of service and long delays during both the AM and PM peak hours under the 2031 Future Projected Conditions. Therefore, the intersection was evaluated to determine whether a traffic signal will be warranted and appropriate to accommodate vehicular traffic at the intersection based on the proposed development's trip generation.

The *Manual on Uniform Traffic Control Devices* (MUTCD) includes nine (9) warrants that should be evaluated based on an engineering study of traffic conditions prior to the installation of a new traffic signal. While there are nine warrants, only one is required to be met in order to consider the need for traffic signal control at an intersection. However, satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. Each warrant sets forth the minimum criteria related to the operation and safety of an intersection that should be met in order to satisfy the warrant.

Warrants 10 software by Trafficware was utilized for the signal warrant analysis based on 2009 Federal Warrants. The traffic volume data, speed limits, and intersection geometry were utilized for the analysis. The signal warrant analysis was based on the 70% warrants since the posted speed limit on Bear Creek Pike is 45 mph. Patterson Drive includes one approach lane in the southbound direction. Bear Creek Pike currently includes one left turn lane and one through lane in the eastbound direction and one shared through/right turn lane in the westbound direction. However, based on the turn lane analysis presented in Section 6.4, additional deceleration turn lanes are recommended on Bear Creek Pike at the intersection. Specifically, an eastbound right turn lane, a westbound right turn lane, and a westbound left turn lane are recommended. Therefore, the analysis is based on two-lane major street approaches. The analysis is based on a two-lane minor street approach since the Site Access 1 approach will include one left turn lane and one shared through/right turn lane and the Site Access 1 approach volumes are roughly balanced between the two lanes. Based on the projected delay for the minor street approaches under two-way stop-control, none of the right turn volume was removed from the analysis since the right turn is shared with the through movement.

In order to obtain hourly 2031 Background Conditions traffic volumes at the intersection, some assumptions were made to account for ambient and approved development traffic in the study area. A 13-hour turning movement count was conducted on Tuesday, February 22, 2022. Similar to the peak hour traffic volumes previously presented, a 3% annual growth was assumed and applied to the hourly 2022 turning movement data, which is a 27% background growth (representing 3% annual for 9 years). Site

specific traffic generated by approved developments was not added to the hourly traffic for this signal warrant analysis.

Finally, the trip generation for the proposed residential development was assigned to the intersection based on the directional distributions presented in Figure 6A. The signal warrant analysis was conducted based on the 2031 Future Projected Conditions for Phases 1-3 without the connection to Iron Bridge Road. The hourly distribution for each land use was taken from ITE's *Trip Generation Manual, 11th Edition*. Table 9 below presents the results of the signal warrant analysis.

Table 9: Signal Warrant Analysis Results – 2031 Future Projected Phases 1-3 Conditions

Bear Creek Pike and Patterson Drive/Site Access 1 (2029 Future Projected Phases 1-3 Conditions)		
Warrant Description	**Warrant Met?**	**Notes**
Warrant 1: 8-Hour Vehicular Volume	Y	13 Hours Met
Warrant 2: 4-Hour Vehicular Volume	Y	13 Hours Met
Warrant 3: Peak Hour	Y	7 Hours Met
Warrant 4: Pedestrian Volume	N/A	--
Warrant 5: School Crossing	N/A	--
Warrant 6: Coordinated Signal System	N/A	--
Warrant 7: Crash Experience	N/A	--
Warrant 8: Roadway Network	Y	--
Warrant 9: Intersection near a Grade Crossing	N/A	--
Notes: 1. Based on 2029 Future Projected Phases 1-3 Conditions. 2. Based on 2 Lane Major Street and 2 Lane Minor Street. 3. Based on 70% Factor Warrants and ≥40 mph approach speed on the Major Street. 4. Crash data was not obtained from the City or evaluated for the warrant.		

Based on these data and analyses, a traffic signal will be warranted under 2031 Future Projected Phases 1-3 Conditions, which includes the traffic generated by the initial residential phases and the daycare for proposed development as well as annual traffic growth in the study area. It should be noted that the signal warrant analysis is based on the trip generation for Phases 1-3 of the Columbia Bluffs development; however, these results indicate that the traffic signal will likely be warranted prior to completion of Phase 2 and/or prior to completion of Phase 1 if the day care center is completed. Therefore, it is recommended to construct and install the traffic signal either prior to completion of Phase 2 (or comparable number of dwelling units) or prior to completion of Phase 1 if Phase 1 includes completion of the day care center. The Warrants 10 summary reports and hourly traffic calculation worksheets are presented in Appendix I.

6.3 Site Access Review

According to the current site plan and the project team, the proposed development will include two vehicular access points. Site Access 1, which will provide primary access to the development, is planned to be located on Bear Creek Pike and aligned with Patterson Drive. The intersection is expected to be signalized during Phase 2 of the development. Site Access 1 will be constructed at the beginning of the project. Site Access 2, which will provide secondary access to the development, is located at the south property boundary on Iron Bridge Road aligned with the Maury County Yanahli Park access. Site Access 2

is planned to be constructed when construction begins for Phase 4. Site Access 1 will include width for one entering lane and two exiting lanes. Site Access 2 will include a minimum width for one entering lane and one exiting lane.

6.4 Turn Lane Analysis

The Site Access 1 was evaluated for the need for left turn and right turn deceleration lanes on Bear Creek Pike based on methodology presented in *NCHRP Report 457, Evaluating Intersection Improvements: An Engineering Study Guide*. Based on the 2031 Future Projected peak hour traffic volumes previously presented, a westbound left turn deceleration lane will be warranted on Bear Creek Pike at Site Access 1. Additionally, an eastbound right turn deceleration lane will be warranted on Bear Creek Pike at Site Access 1. It should also be noted that a westbound right turn deceleration lane is also warranted on Bear Creek Pike at Patterson Drive based on the existing and background peak hour traffic volumes.

Therefore, it is recommended to construct a westbound left turn deceleration lane on Bear Creek Pike at Site Access 1. The left turn deceleration lane should include approximately 225 feet of storage, 180 feet of bay taper, and 270 feet of approach taper, assuming all of the widening is centered along Bear Creek Pike or as required by TDOT. It is also recommended to construct an eastbound right turn deceleration lane on Bear Creek Pike at Site Access 1 and a westbound right turn deceleration lane at Patterson Drive. The eastbound right turn deceleration lane should include approximately 180 feet of storage and 160 feet of bay taper so that the widening for the eastbound right turn lane begins immediately east of the existing guardrail over Bear Creek without requiring modification to the creek crossing structure, or as approved by TDOT. The westbound right turn deceleration lane should include approximately 160 feet of storage and 180 feet of bay taper.

Site Access 2 was evaluated for the need for left turn and right turn deceleration lanes on Iron Bridge Road based on the 2034 Future Projected traffic volumes, which includes full buildout of the development. The turn lane analysis determined that an eastbound left turn deceleration lane will be warranted by the development traffic following full buildout. A westbound right turn deceleration lane will not be warranted. Therefore, it is recommended to construct an eastbound left turn deceleration lane on Iron Bridge Road at Site Access 2. The left turn deceleration lane should include approximately 160 feet of storage, 180 feet of bay taper, and 270 feet of approach taper, assuming all of the widening is centered along Iron Bridge Road or as required by the City or County. Details of the turn lane analysis are included in Appendix J.

6.5 Intersection Sight Distance

According to the current concept plan, Site Access 1 will be located on Bear Creek Pike aligned with Patterson Drive, and Site Access 2 will be located on Iron Bridge Road aligned with the Yanahli Park Access. Both of the Site Access points were evaluated to make sure that sufficient intersection sight distance will be available for vehicles exiting the proposed residential development.

For a 45-mph speed as posted on Bear Creek Pike and Iron Bridge Road, the guidelines from the American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Geometric Design of Highways and Streets*, call for a minimum stopping sight distance of 360 feet. This is the distance required for a driver to detect an object in the roadway that requires a stop and be able to stop in time before reaching the object. AASHTO also identifies the minimum intersection sight distance, which is the distance

a driver can see approaching vehicles before the line of sight is blocked by an object or roadway curvature. Sufficient intersection sight distance allows for adequate time gap for a driver to turn across opposing traffic from a stopped condition without requiring on-coming traffic to significantly slow down. For a speed of 45 mph, the design value for a driver turning left from a stop onto a three-lane roadway as recommended is 530 feet and for a driver turning right from a stop is 430 feet. Therefore, it is desirable to provide a minimum of 530 feet looking to the east and 430 feet looking to the west from Site Access 1 on Bear Creek Pike. At Site Access 2, it is desirable to provide a minimum of 530 feet looking to the west and 430 feet looking to the east on Iron Bridge Road.

Based on site visits at the currently proposed site access locations, it was determined that the available intersection sight distance will be sufficient to accommodate left and right turns onto Bear Creek Pike and Iron Bridge Road.

7. Conclusions and Recommendations

The Columbia Bluffs development is proposed to be located between Bear Creek Pike and Iron Bridge Road, east of the Duck River in Columbia, TN. A total of 860 dwelling units (472 single-family lots, 188 townhome units, and 200 active adult units) and a 14,000 square-foot day care center are proposed for the 412-acre property. The property is currently undeveloped farmland that is proposed to be annexed as a planned unit development (PUD). Primary vehicular site access will be located on Bear Creek Pike aligned with Patterson Drive. Secondary vehicular site access will be located on Iron Bridge Road. A development of this size will be constructed over several phases. For the purposes of this traffic study, two development scenarios were analyzed. Per the developer, Kolter Group Acquisitions LLC, Phases 1-3 are expected to be completed in approximately eight years, which corresponds to a 2031 horizon year. The Full Buildout (Phases 1-6) is expected to be completed in approximately eleven years, which corresponds to a 2034 horizon year. The new roadway connection to Iron Bridge Road to the south is not planned to be constructed until after Phase 3.

The analyses presented in this report indicate that the proposed development will generate new vehicular traffic to the study area. Following Full Buildout of the Columbia Bluffs development, the project is expected to generate approximately 7,324 daily trips, 658 AM peak hour trips, and 768 PM peak hour trips. Phases 1-3 of the development will include approximately 50% of the total number of dwelling units and will include the day care center. Phases 1-3 are expected to generate approximately 4,149 daily trips, 399 AM peak hour trips, and 475 PM peak hour trips.

Based on the analyses presented in this study and review of the study area and proposed development information, the following is recommended in order to accommodate the proposed development and provide for efficient traffic operations and safety:

Recommendations Associated with Phases 1-3 Scenario

The initial phases of development will require off-site improvements and as well as improvements to accommodate the primary access onto Bear Creek Pike. The following improvements should be coordinated with the City and could be phased in during construction of Phases 1, 2, and 3 of the development.

<u>#1 Nashville Highway (US 31) and Bear Creek Pike/US 43</u>

Laneage and traffic signal improvements are expected to be completed by the City/TDOT at the intersection of Nashville Highway (US 31) and Bear Creek Pike/US 43. These anticipated improvements were assumed to include the addition of a westbound left turn lane and a southbound left turn lane through restriping and modifying the existing median on Nashville Highway. The provision of dual left turn lanes requires protected only left turn signal phasing for the southbound approach. Additional signal timing adjustments and coordination may be needed for the intersection following the initial phases of development for Columbia Bluffs. Additionally, lead/lag protected only left turn signal phasing is recommended for the eastbound and westbound approaches of Bear Creek Pike.

No other improvements are recommended for the intersection.

#2 Bear Creek Pike and Tom J Hitch Parkway

- Construct a northbound right turn lane on Tom J Hitch Parkway with approximately 100 feet of storage and 60 feet of taper. The northbound right turn lane could be constructed using the existing shoulder and should not extend beyond the start of the bridge over Duck River.
- Restripe the northbound approach to provide one left turn lane and one through lane, plus the recommended right turn lane.
- Modify the traffic signal design to provide a northbound right turn overlap during the westbound left turn phase.
- Optimize and coordinate the signal timing along Bear Creek Pike.

#3 Bear Creek Pike and Patterson Drive/Site Access 1

- Site Access 1 should be constructed and aligned with Patterson Drive at Bear Creek Pike.
- Site Access 1 should be designed to include width for one entering lane and two exiting lanes, which should be a northbound left turn lane and a northbound shared through/right turn lane.
- An eastbound right turn deceleration lane should be constructed for Bear Creek Drive at Site Access 1 to accommodate the project traffic. The eastbound right turn lane should be designed so that the widening and taper does not begin until east of the guardrail over Bear Creek and includes approximately 180 feet of storage and 160 feet of bay taper, or as approved by the City and TDOT.
- A westbound right turn deceleration lane is recommended for Bear Creek Pike at Patterson Drive. The westbound right turn lane should be designed to include approximately 160 feet of storage and 180 feet of bay taper or as approved by the City and TDOT.
- A westbound left turn deceleration lane is recommended for Bear Creek Pike at Site Access 1 to accommodate the project traffic. The westbound left turn lane should be designed to include approximately 225 feet of storage, 180 feet of bay taper, and 270 feet of approach taper assuming the widening is centered on the roadway.
- Install a traffic signal at the intersection of Bear Creek Pike and Patterson Drive/Site Access 1. Signal warrant analyses indicate a traffic signal will be warranted by the traffic volumes generated by the project site prior to completion of Phase 2 (or comparable number of dwelling units) or prior to completion of Phase 1 if Phase 1 includes completion of the day care center. The signal design should include protected/permissive left turn signal phasing for the northbound and westbound approaches and permissive left turn signal phasing for the southbound and eastbound approaches.
- Optimize and coordinate the signal timing along Bear Creek Pike.
- Widen the north leg of Patterson Drive to provide a southbound left turn lane. The widening of Patterson Drive and the construction of Site Access 1 should be designed and constructed such that the northbound and southbound through movements are aligned and the left turn movements can operate concurrently. The southbound left turn lane should include approximately 75 feet of storage.

#4 Bear Creek Pike and Mt Olivet Road/School Access

- Restripe the southbound approach to a shared left turn/through lane and a right turn only lane.
- Modify the traffic signal design for the northbound approach to provide protected/permissive left turn signal phasing.
- Modify the traffic signal design for the southbound approach to provide a right turn overlap during the eastbound left turn phase.
- Optimize and coordinate the signal timing along Bear Creek Pike.

#5 Tom J Hitch Parkway and Iron Bridge Road

The signalized intersection of Tom J Hitch Parkway and Iron Bridge Road is expected to continue to operate acceptably under the future projected conditions.

No improvements are expected to be needed or recommended for the intersection of Tom J Hitch Parkway and Iron Bridge Road.

#6 Iron Bridge Road and Mt Olivet Road

The critical turning movements are expected to continue to operate acceptably at the one-way stop-controlled intersection of Iron Bridge Road and Mt Olivet Road under the future projected conditions.

No improvements are expected to be needed or recommended for the intersection of Iron Bridge Road and Mt Olivet Road.

#7 James Campbell Boulevard and Tom J Hitch Parkway

Tom J Hitch Parkway terminates to the south at James Campbell Boulevard. The T-intersection currently has stop-control for the southbound approach of Tom J Hitch Parkway. The intersection experiences heavy eastbound left turns and the reciprocal southbound right turns during peak hours. The southbound left turn movement currently operates at LOS F during the AM and PM peak hours and is expected to deteriorate with higher levels of delay under the 2031 Background and 2034 Future Projected Conditions with Phases 1-3. According to the City's *Connect Columbia Transportation Plan* adopted in 2018, the intersection is identified to be signalized in the near term (10-year horizon). Preliminary signal warrant analyses indicate the intersection's traffic volumes will meet signal warrants in the near future. The following intersection improvements are recommended to be constructed prior the completion of Phase 3, or comparable number of dwelling units:

- Install a traffic signal at the intersection of James Campbell Boulevard and Tom J Hitch Parkway.
- The traffic signal design should include protected/permissive left turn signal phasing for the eastbound approach and a southbound right turn overlap.

Recommendations Associated with Full Buildout (Phases 1-6) Scenario

As outlined above, the initial phases of development for the Columbia Bluffs project will require fairly significant improvements at many of the study intersections in order to accommodate the project's traffic plus the background traffic growth expected even without the development project's construction. In addition to the recommended improvements associated with Phases 1-3 of the development, the following is recommended for the Full Buildout Scenario:

#8 Iron Bridge Road and Site Access 2

- Site Access 2 should be constructed and connected to Iron Bridge Road prior to beginning construction for Phase 4, or comparable number of dwelling units.
- Site Access 2 should be aligned with the Maury County Yanahli Park Access on Iron Bridge Road.
- At a minimum, Site Access 2 should be designed to include width for one entering lane and one exiting lane.
- Stop-control should be provided for the southbound approach of Site Access 2 at Iron Bridge Road.

- The Site Access 2 should be designed and constructed to allow for sufficient intersection sight distance, clear of any obstructions such as vegetation, landscaping, hardscaping, signs, and fencing within the departure sight triangles.
- An eastbound left turn deceleration lane is recommended for Iron Bridge Road at Site Access 2 to accommodate the project traffic. The eastbound left turn lane should be designed to include approximately 160 feet of storage, 180 feet of bay taper, and 270 feet of approach taper assuming the widening is centered on the roadway, or as approved by the City.

Additional Planned Improvements

According to the City's *Connect Columbia Transportation Plan*, significant roadway improvements have been identified for some of the intersections and roadways in the study area. However, it is important to note that the improvements are not considered to be committed projects until funding has been allocated.

- In the near term, Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway is planned to be widened from 3 lanes to 5 lanes and access management along the segment.
- In the midterm, Iron Bridge Road is planned to be reconstructed to improve the substandard roadway geometry between Fairview Drive and Tom J Hitch Parkway, which would include replacing the bridge/box culvert over Lytle Creek, which currently narrows the roadway to one lane at a sag vertical crest in the roadway.
- In the long-term, Bear Creek Pike is planned to be widened to four lanes between Tom J Hitch Parkway and east of Baker Road. It should be noted that the deceleration lanes recommended for Bear Creek Pike at Site Access 1/Patterson Drive as part of the initial phases of the Columbia Bluffs development will contribute towards this long-term improvement identified along Bear Creek Pike.

<u>#2 Bear Creek Pike and Tom J Hitch Parkway</u>

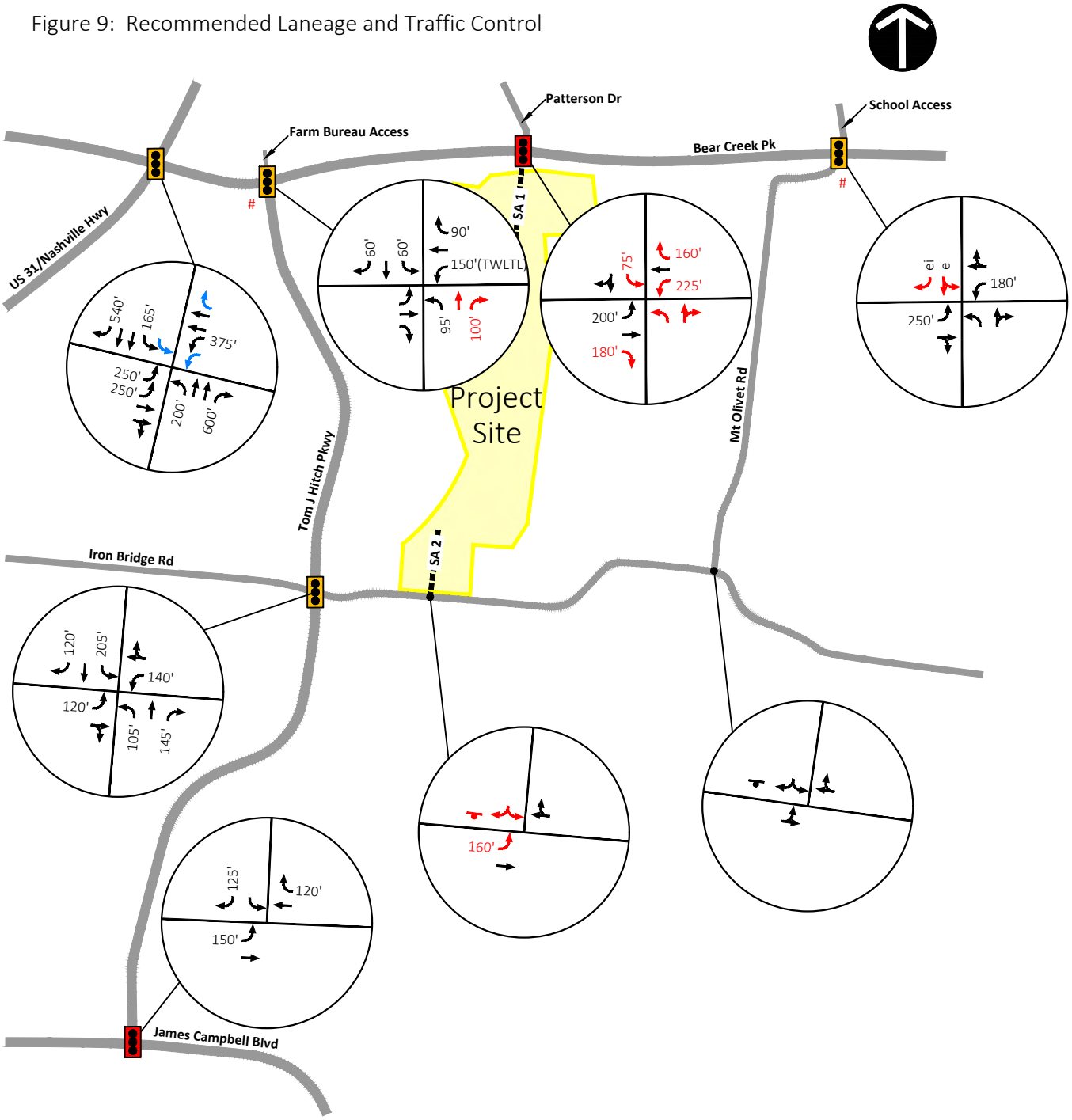
With the planned widening of Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway, the following improvements should be made:

- Reassign the northbound laneage for Tom J Hitch Parkway to provide one left turn lane, one shared left turn/through lane, and one right turn lane.
- Modify the traffic signal to provide split signal phasing for the northbound and southbound approaches.

Based on the analyses presented in this report, no further improvements are recommended in association with the proposed Columbia Bluffs development in Columbia, TN. The recommended and future laneage at the study intersections is presented in Figure 9. Conceptual layouts of the recommended improvements are presented in Figures 10A-10D.

The analyses presented in this TIS evaluated two future buildout scenarios in order to determine when specific roadway improvements will need to be made. The above recommendations are presented in terms of residential phases of development as currently anticipated by Kolter; however, it is recognized that the actual construction of dwelling units for a development this size often does not occur as initially planned. Therefore, based on the analyses, the recommended improvements above were associated with unit count occupancy to identify trigger points for when each should be constructed by the developer or others. The Table in Appendix K presents the phasing for the recommended improvements by dwelling unit count.

Figure 9: Recommended Laneage and Traffic Control



Legend:

- Existing Laneage
- Future Laneage (Planned By Others)
- Future Laneage (Recommended)
- XXX' Storage Length (feet)
- Si
- icSiPeter
- trericSiecoee
- #Sioiictioecoee

(Not to Scale)

Figure 10A: Conceptual Layout of Recommended Improvements at Bear Creek Pike and Tom J Hitch Parkway/Farm Bureau Access

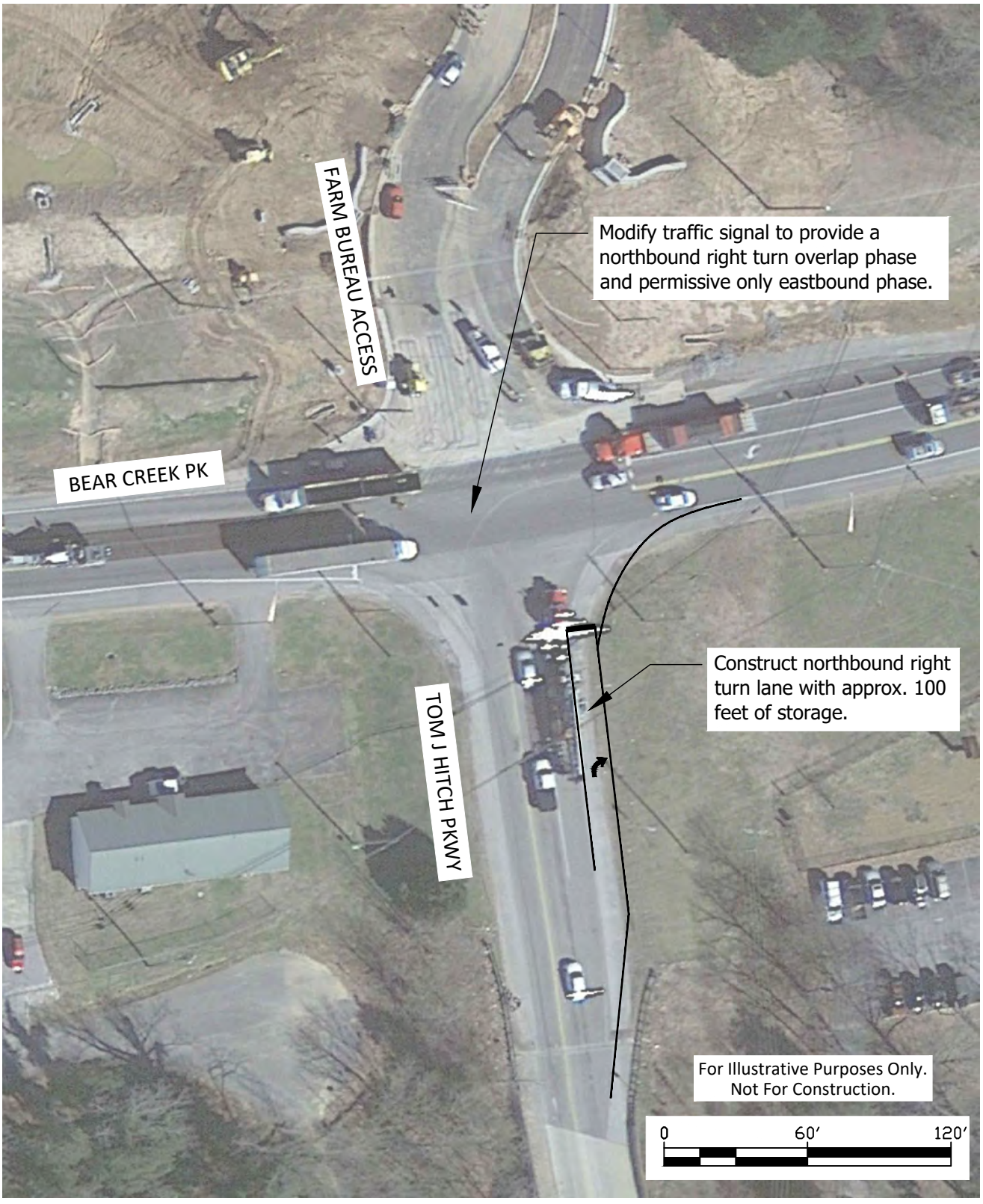


Figure 10B: Conceptual Layout of Recommended Improvements at Bear Creek Pike and Patterson Drive/Site Access 1

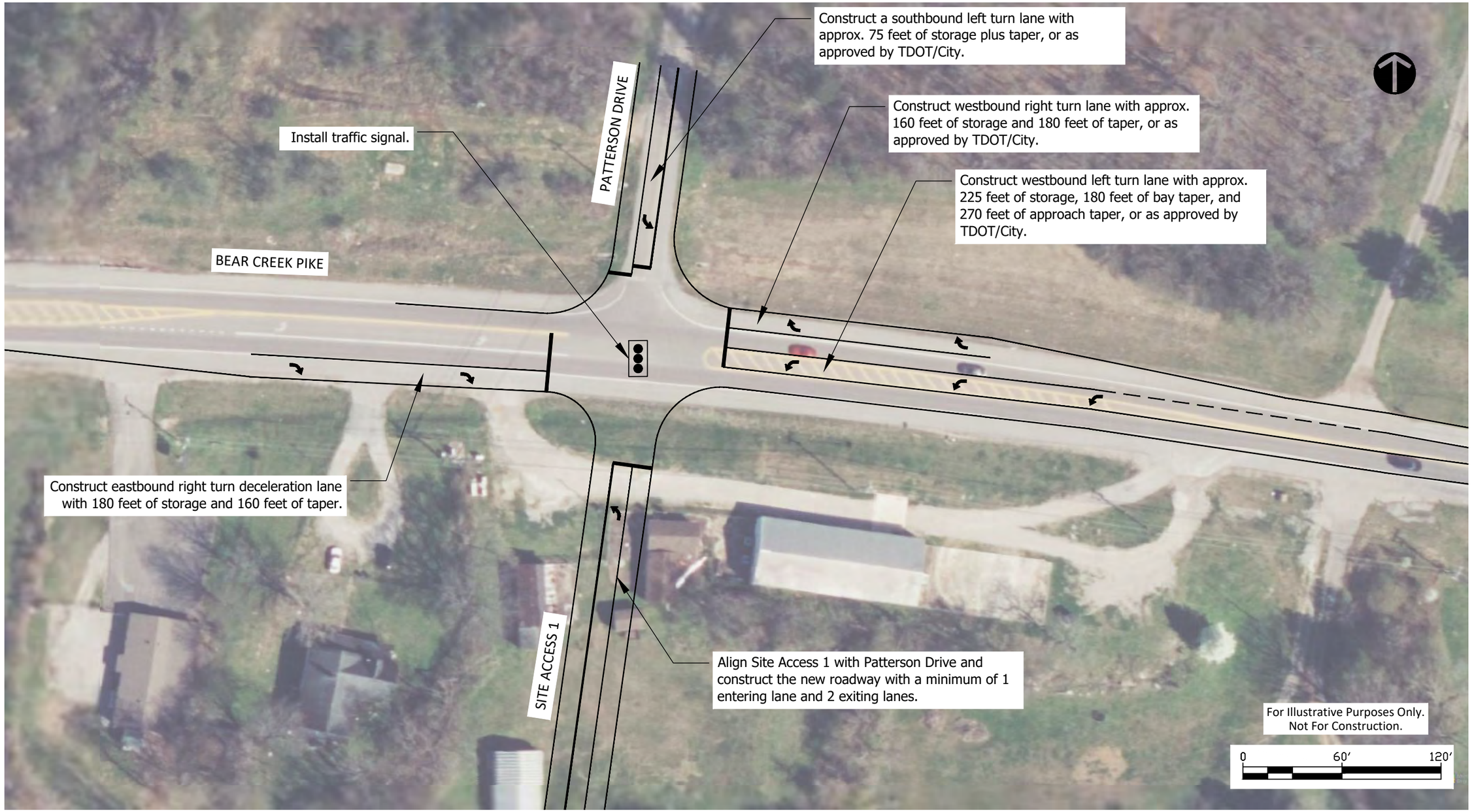


Figure 10C: Conceptual Layout of Recommended Improvements at Bear Creek Pike and Mt Olivet Road/School Access

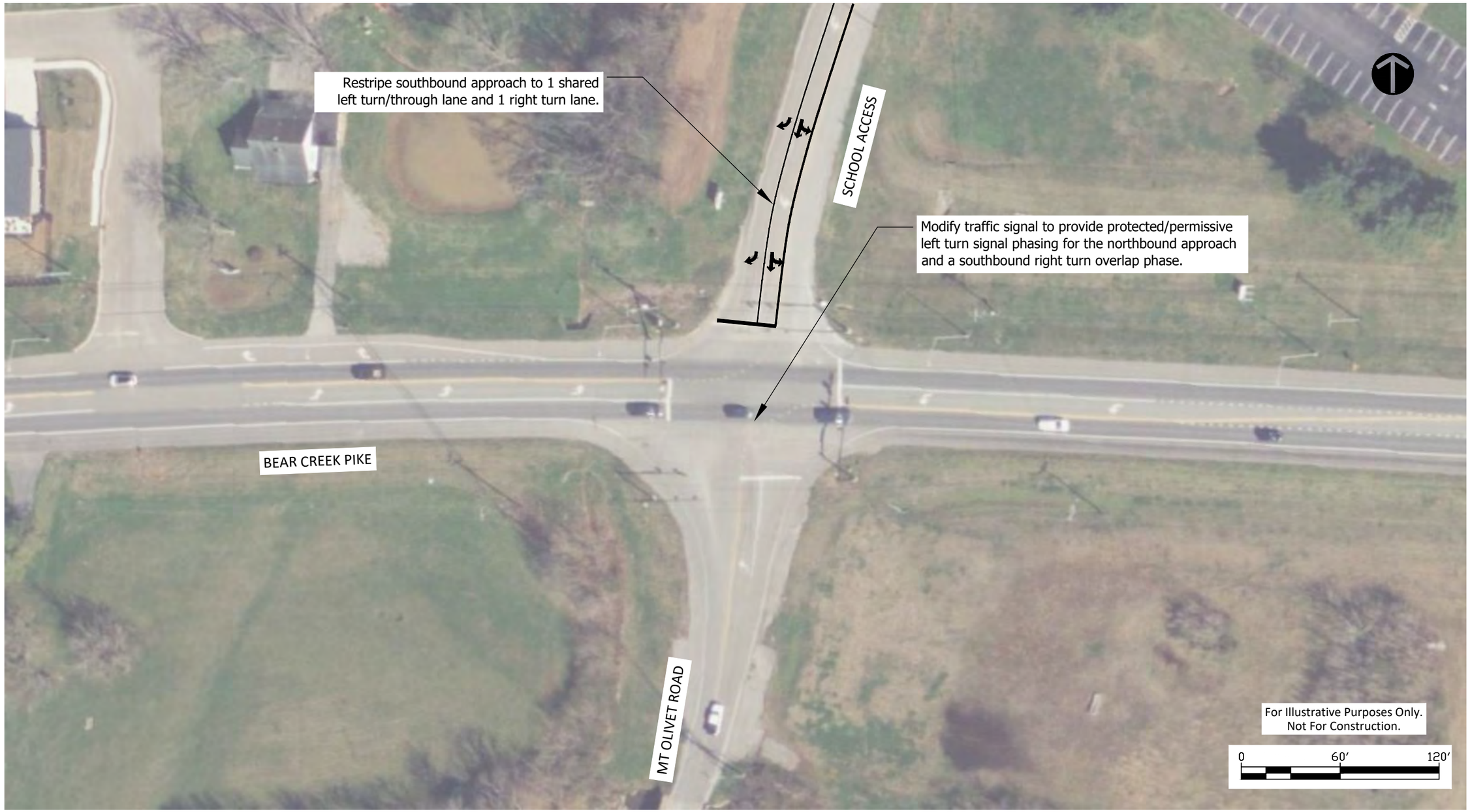


Figure 10D: Conceptual Layout of Recommended Improvements at Iron Bridge Road and Site Access 2



APPENDIX A
CURRENT SITE PLAN

DUCK RIVER

IRON BRIDGE RD

BEAR CREEK PKWY

CIVIC SPACE

CIVIC SPACE

CIVIC SPACE

CIVIC SPACE

CIVIC SPACE

50' ROW TYP. - LOCAL ROAD

50' ROW TYP. - LOCAL ROAD

50' ROW TYP. - LOCAL ROAD

PRIMARY AMENITY/ CIVIC SPACE

DAYCARE
+/- 2.3 ACRES

RESIDENTIAL INFORMATION

TOTAL LOTS: 865

- TOWNHOMES: 188
  MIN. LOT SIZE 20' X 120'
- ALLEY SINGLE FAMILY: 355
  MIN. LOT SIZE 40' X 120'
- FRONT LOADED SINGLE FAMILY: 312
  COURTYARD HOMES: 143
  MIN. LOT SIZE 70' X 155'
- LARGE LOT HOMES: 97
  MIN. LOT SIZE 80' X 145'
- EITHER: 72
  MIN. LOT SIZE 80' X 155'

N

0 300 600
GRAPHIC SCALE

COLUMBIA BLUFFS

PUD-R CONCEPT PLAN

August 22, 2023

GAMBLE DESIGN COLLABORATIVE

APPENDIX B
TIS SCOPE MOU

CITY OF COLUMBIA – DEVELOPMENT SERVICES

TRAFFIC IMPACT STUDY (TIS) MEMORANDUM OF UNDERSTANDING (MOU) & AGREEMENT

CONTACT INFO (Identify primary point of contact)			
DEVELOPER/OWNER	[X] PRIMARY CONTACT	CIVIL CONSULTANT	[ ] PRIMARY CONTACT
Contact Name: Joshua Gibbs		Contact Name: Jim Harrison	
Company: Kolter Land		Company: CSDG	
Address: 1704 Tellico Drive Thompsons Station, TN 37179		Address: 2305 Kline Avenue, Suite 300 Nashville, TN 37211	
Email: jgibbs@kolter.com		Email: jimh@csdgtn.com	
Phone: 615-582-3253		Phone: 615-248-9999	

DEVELOPERS TIS CONSULTANT CONTACT INFO: *complete if study was completed by Developer's consultant.*			
Contact Name: Amy Burch		Company: Burch Transportation, LLC	
Address: 1114 17th Avenue South, Ste. 103, Nashville, TN 37212			
Email: amyburch@burchtransportation.com		Phone: 615-258-8551	

INDICATE THE LEVEL OF TIS REVIEW TO BE PERFORMED BY 3RD PARTY CONSULTANT AND CORRESPONDING FEE (SUBJECT TO STAFF CONFIRMATION):

* Level of TIS determined by the number of Daily & Peak Hour Trips per estimated trip generation calculation.

[ ] Traffic Access Study ($2,900) [ ] Level I TIS ($3,900) [ ] Level II TIS ($4,800) [X] Level III TIS (Fee TBD)
$5,500 per call with City & Volkert on 8/15/2023

TRANSPORTATION IMPACT STUDY – MEMORANDUM OF UNDERSTANDING (MOU)

This MOU acknowledges that the transportation impact study for the following project will be prepared in accordance with the latest version of the City of Columbia Land Development Regulations.

PROJECT INFORMATION:

Name:	Columbia Bluffs (Formerly Big Bear Bluff)
Address:	400 Bear Creek Pike
Description:	Property located between Bear Creek Pike and Iron Bridge Road, east of Duck River
Existing Land Use (be specific):	Undeveloped, farmland
Proposed Land Use (be specific):	Primarily Residential with some commercial amenities/services
Reason for Request: (Planned Unit Development, Site Plan, Rezoning)	Planned Unit Development
Potential Development Yield (number of residential units; building square footage, projected number of employees, hours of operations):	+/- 500 Detached single-family units +/- 300 Attached single-family units Up to 800 Total residential dwelling units* Up to 30,000 Total square feet of commercial space* +/- 12,000 sf day care center +/- 18,000 sf retail strip center **Estimates based on current project planning.*

[X] Attach a site map and a trip generation table with a description of the proposed land uses, ITE rates, estimated daily, morning, and afternoon peak hour volumes (ins/outs/totals), proposed trip credits, etc.

[X] Attach a conceptual development plan showing all access points and adjacent streets.

Project Buildout Year: 2029 for Phases 1-3 2033 for Full Buildout	Ambient or CMP Growth Rate (% Per Year): 3%

STUDY INTERSECTIONS: *use additional pages as necessary	
1. Bear Creek Pike & Nashville Highway	9.
2. Bear Creek Pike & Tom J. Hitch Parkway	10.
3. Bear Creek Pike & Patterson Drive	11.
4. Bear Creek Pike & Mt. Olivet Road	12.
5. Tom J. Hitch Parkway & Iron Bridge Road	13.
6. Iron Bridge Road & Mt. Olivet Road	14.
7. E. James M. Campbell Pkwy & Tom J. Hitch Pkwy	15.
8.	16.

TRIP CREDITS (EXACT AMOUNT OF CREDIT SUBJECT TO APPROVAL BY CITY OF COLUMBIA):

	YES	(indicate ___% of total trips)	NO
Transit Usage	☐	%	☒
Existing Active Land Use	☐	%	☒
Previous Land Use	☐	%	☒
Internal Trip	☐	%	☒
Pass-By Trip	☐	%	☒

3RD PARTY TRAFFIC CONSULTANT CONTACT INFO:	☐ NEEL SCHAFFER	☒ VOLKERT
NEEL SCHAFFER - GREG JUDY		VOLKERT – DYAN DAMRON
201 E. Main Street, Suite 325 Murfreesboro, TN 37130		302 Innovation Drive, Suite 100 Franklin, TN 37067
greg.judy@neel-schaffer.com	615-217-0500	dyan.damron@volkert.com	615-656-1845

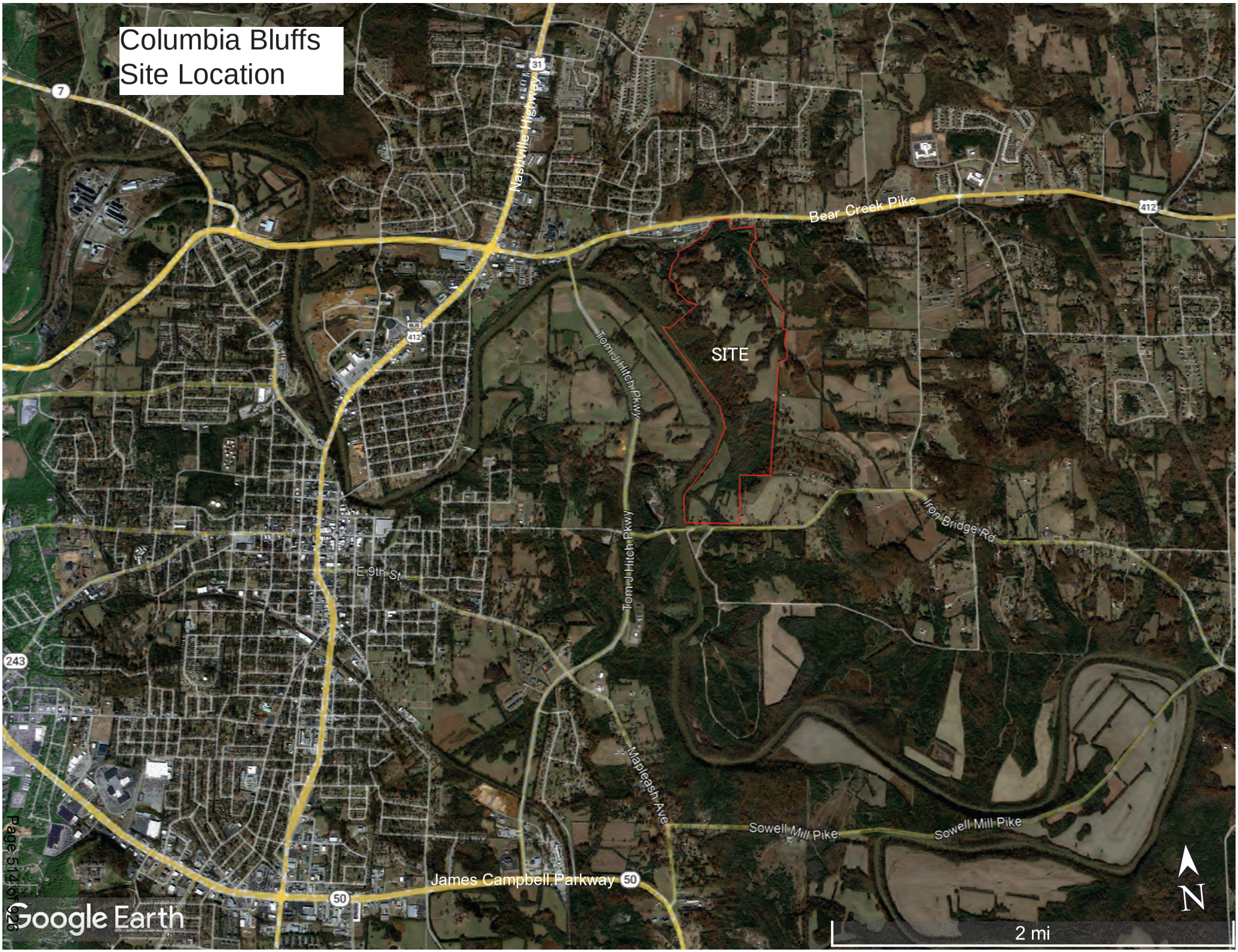
MEMORANDUM OF UNDERSTANDING SIGN OFF:

	Name	Signature	Date
APPLICANT:	Joshua Gibbs	Digitally signed by Joshua Gibbs Reason: I am approving this document Location: KolterLand Date: 2023.08.18 10:39:16 -05'00'	8.18.23

*As applicant, I agree to pay 100% of the review fee. *Paid to the City of Columbia.*
I understand that no work will commence until FULL payment is received and that it is NON-REFUNDABLE.

	Name	Signature	Date
3RD PARTY TRAFFIC CONSULTANT:	Dyan Damron, PE, PTP	Dyan C Damron	8/18/23
CITY ENGINEER:	GLENN HARPER		8/22/23
DIRECTOR OF DEVELOPMENT SERVICES:	Paul Kelther		8/22/23

Questions may be submitted and the completed form shall be emailed for review to: Glenn Harper, City Engineer gharper@columbiatn.com.


Columbia Bluffs
Site Location
SITE
Nashville Highway
Bear Creek Pike
Tom J Hitch Pkwy
Iron Bridge Rd
E 9th St
Mapleash Ave
Sowell Mill Pike
James Campbell Parkway
Google Earth
2 mi
N

Columbia Bluffs
Trip Generation Calculations

Base Trip Generation

Land Use	Size	Unit	Weekday ADT	AM Peak Hour			PM Peak Hour		
				Total	Enter	Exit	Total	Enter	Exit
Single-Family Detached Housing LUC 210	500	DU	4,436	322	81	241	451	284	167
Single-Family Attached Housing LUC 215	300	DU	2,236	150	38	112	176	104	72
Day Care Center LUC 565	12,000	SF	571	132	70	62	133	63	70
Strip Retail Plaza (<40 k) LUC 822	18,000	SF	989	42	25	17	118	59	59
Total Development	**--**	**--**	**8,232**	**646**	**214**	**432**	**878**	**510**	**368**

Source: *ITE Trip Generation Manual, 11th Edition*

APPENDIX C
TDOT COUNT DATA & HISTORICAL ANALYSIS

TDOT Count Station Data Historical Growth Analysis (AADT)

Station No.	Station 204	Annual	Station 45	Annual	Station 47	Annual	Station 44	Annual	Station 46	Annual		Annual
Street	Tom J Hitch Pkwy	%	Bear Creek Pk	%	Iron Bridge Rd	%	Nashville Hwy	%	Nashville Hwy	%		%
Location	South of Bear Creek Pike	Growth	East of Tom J Hitch Pkwy	Growth	West of Tom J Hitch Pkwy	Growth	North of Bear Creek Pike	Growth	South of Bear Creek Pike	Growth	Total	Growth
Year												
2022	9651	-1.0%	17487	3.1%	1342	4.1%	45166	11.8%	29584	12.4%	103230	9.0%
2021	9751	2.1%	16963	-0.2%	1289	-11.9%	40382	6.3%	26329	-5.1%	94714	1.1%
2020	9546	-8.3%	17002	1.0%	1463	-2.1%	37972	-12.4%	27741	1.0%	93724	-5.8%
2019	10410	36.7%	16834	2.3%	1495	-4.5%	43329	5.9%	27466	2.1%	99534	6.5%
2018	7613	-17.6%	16449	-7.5%	1565	4.3%	40922	-7.5%	26893	3.8%	93442	-5.3%
2017	9234	4.2%	17774	34.1%	1501	39.6%	44228	3.7%	25904	-0.8%	98641	7.3%
2016	8858	21.9%	13258	1.0%	1075	-1.5%	42666	13.6%	26101	12.1%	91958	11.7%
2015	7269	-3.0%	13127	-1.6%	1091	3.0%	37557	5.5%	23291	-5.2%	82335	0.3%
2014	7493	15.0%	13345	10.5%	1059	5.3%	35584	3.3%	24575	3.8%	82056	5.6%
2013	6516	-4.9%	12078	-7.8%	1006	-4.3%	34432	4.8%	23686	8.9%	77718	2.8%
2012	6851	-0.2%	13102	-2.4%	1051	3.0%	32860	-3.4%	21745	-1.3%	75609	-2.2%
2011	6863		13419		1020		34003		22040		77345	
With 2021 Data:												
10-year Annual Avg Growth		4.5%		3.5%		3.2%		3.5%		3.3%		3.3%
5-year Annual Avg Growth		2.4%		-0.3%		-2.0%		0.8%		2.8%		1.1%
3-year Annual Avg Growth		-2.4%		1.3%		-3.3%		1.9%		2.8%		1.4%
Pre-2021 Data:												
9-year Annual Avg Growth		4.9%		3.3%		4.8%		1.5%		2.7%		2.3%
5-year Annual Avg Growth		7.4%		6.2%		7.2%		0.7%		3.7%		2.9%
3-year Annual Avg Growth		3.6%		-1.4%		-0.8%		-4.7%		2.3%		-1.5%
Pre-pandemic Data:												
8-year Annual Avg Growth		6.5%		3.6%		5.6%		3.2%		2.9%		3.3%
5-year Annual Avg Growth		8.5%		5.7%		8.2%		4.2%		2.4%		4.1%
3-year Annual Avg Growth		7.8%		9.6%		13.1%		0.7%		1.7%		2.8%

APPENDIX D
TURNING MOVEMENT COUNTS

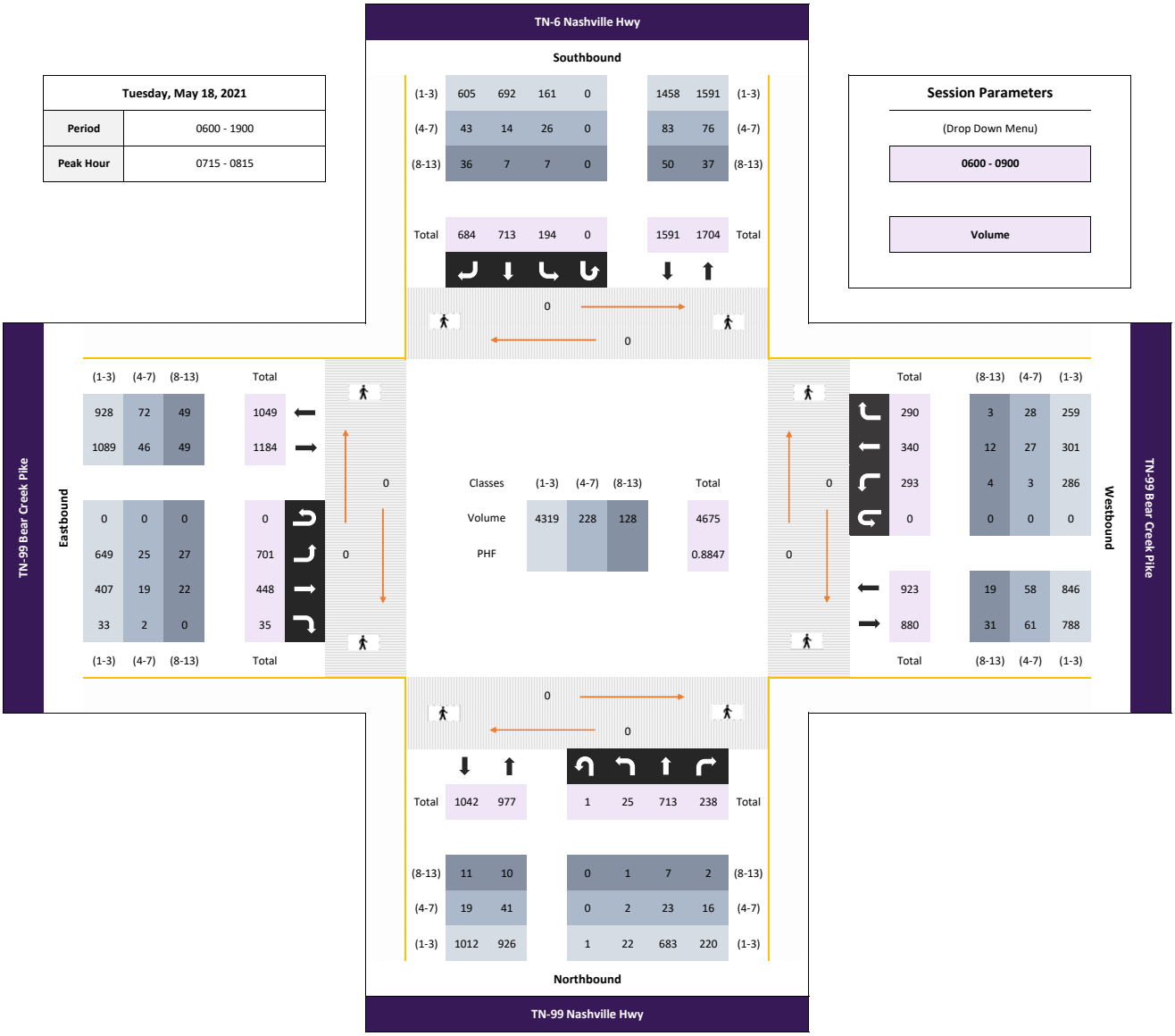
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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
0715 - 0730	9	152	60	0	221	49	137	170	0	356	176	127	9	0	312	81	78	75	0	234	1123
0730 - 0745	9	192	73	1	275	55	194	160	0	409	164	93	10	0	267	68	89	70	0	227	1178
0745 - 0800	5	229	61	0	295	43	229	180	0	452	174	132	11	0	317	72	102	83	0	257	1321
0800 - 0815	2	140	44	0	186	47	153	174	0	374	187	96	5	0	288	72	71	62	0	205	1053
Total	25	713	238	1	977	194	713	684	0	1591	701	448	35	0	1184	293	340	290	0	923	4675
Approach %	2.56	72.98	24.36	0.10	-	12.19	44.81	42.99	0.00	-	59.21	37.84	2.96	0.00	-	31.74	36.84	31.42	0.00	-	
PHF	0.69	0.78	0.82	0.25	**0.83**	0.88	0.78	0.95	0.00	**0.88**	0.94	0.85	0.80	0.00	**0.93**	0.90	0.83	0.87	0.00	**0.90**	**0.88**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
0715 - 0730	8	147	57	0	212	43	133	148	0	324	168	116	9	0	293	80	73	63	0	216	1045
0730 - 0745	7	185	68	1	261	49	185	141	0	375	152	92	9	0	253	67	81	60	0	208	1097
0745 - 0800	5	217	55	0	277	36	223	161	0	420	155	119	11	0	285	71	88	74	0	233	1215
0800 - 0815	2	134	40	0	176	33	151	155	0	339	174	80	4	0	258	68	59	62	0	189	962
Total	22	683	220	1	926	161	692	605	0	1458	649	407	33	0	1089	286	301	259	0	846	4319
Approach %	2.38	73.76	23.76	0.11	-	11.04	47.46	41.50	0.00	-	59.60	37.37	3.03	0.00	-	33.81	35.58	30.61	0.00	-	
PHF	0.69	0.79	0.81	0.25	**0.84**	0.82	0.78	0.94	0.00	**0.87**	0.93	0.86	0.75	0.00	**0.93**	0.89	0.86	0.88	0.00	**0.91**	**0.89**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
0715 - 0730	1	2	3	0	6	4	2	12	0	18	5	5	0	0	10	1	3	9	0	13	47
0730 - 0745	1	6	4	0	11	6	6	6	0	18	4	0	1	0	5	0	5	10	0	15	49
0745 - 0800	0	10	5	0	15	7	5	10	0	22	12	9	0	0	21	0	14	9	0	23	81
0800 - 0815	0	5	4	0	9	9	1	15	0	25	4	5	1	0	10	2	5	0	0	7	51
Total	2	23	16	0	41	26	14	43	0	83	25	19	2	0	46	3	27	28	0	58	228
Approach %	4.88	56.10	39.02	0.00	-	31.33	16.87	51.81	0.00	-	54.35	41.30	4.35	0.00	-	5.17	46.55	48.28	0.00	-	
PHF	0.50	0.58	0.80	0.00	**0.68**	0.72	0.58	0.72	0.00	**0.83**	0.52	0.53	0.50	0.00	**0.55**	0.38	0.48	0.70	0.00	**0.63**	**0.70**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
0715 - 0730	0	3	0	0	3	2	2	10	0	14	3	6	0	0	9	0	2	3	0	5	31
0730 - 0745	1	1	1	0	3	0	3	13	0	16	8	1	0	0	9	1	3	0	0	4	32
0745 - 0800	0	2	1	0	3	0	1	9	0	10	7	4	0	0	11	1	0	0	0	1	25
0800 - 0815	0	1	0	0	1	5	1	4	0	10	9	11	0	0	20	2	7	0	0	9	40
Total	1	7	2	0	10	7	7	36	0	50	27	22	0	0	49	4	12	3	0	19	128
Approach %	10.00	70.00	20.00	0.00	-	14.00	14.00	72.00	0.00	-	55.10	44.90	0.00	0.00	-	21.05	63.16	15.79	0.00	-	
PHF	0.25	0.58	0.50	0.00	**0.83**	0.35	0.58	0.69	0.00	**0.78**	0.75	0.50	0.00	0.00	**0.61**	0.50	0.43	0.25	0.00	**0.53**	**0.80**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	5a	5b			Total	5c	5d			Total	5e	5f			Total	5g	5h			Total	Total
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1630 - 1730

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
1630 - 1645	14	185	93	0	292	49	211	163	0	423	149	93	2	0	244	93	146	43	0	282	1241
1645 - 1700	13	143	98	0	254	53	223	182	0	458	118	85	14	0	217	103	117	44	0	264	1193
1700 - 1715	16	192	102	0	310	60	210	171	0	441	129	182	18	0	329	92	131	48	0	271	1351
1715 - 1730	11	232	89	0	332	60	228	223	0	511	170	78	14	0	262	78	105	49	0	232	1337
Total	54	752	382	0	1188	222	872	739	0	1833	566	438	48	0	1052	366	499	184	0	1049	5122
Approach %	4.55	63.30	32.15	0.00	-	12.11	47.57	40.32	0.00	-	53.80	41.63	4.56	0.00	-	34.89	47.57	17.54	0.00	-	
PHF	0.84	0.81	0.94	0.00	**0.89**	0.93	0.96	0.83	0.00	**0.90**	0.83	0.60	0.67	0.00	**0.80**	0.89	0.85	0.94	0.00	**0.93**	**0.95**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715 - 1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
1630 - 1645	14	179	91	0	284	46	202	151	0	399	144	88	2	0	234	93	136	40	0	269	1186
1645 - 1700	13	139	97	0	249	48	219	175	0	442	114	81	14	0	209	103	110	40	0	253	1153
1700 - 1715	16	190	100	0	306	59	199	163	0	421	126	157	17	0	300	89	126	44	0	259	1286
1715 - 1730	11	227	89	0	327	58	223	218	0	499	163	72	14	0	249	77	98	46	0	221	1296
Total	54	735	377	0	1166	211	843	707	0	1761	547	398	47	0	992	362	470	170	0	1002	4921
Approach %	4.63	63.04	32.33	0.00	-	11.98	47.87	40.15	0.00	-	55.14	40.12	4.74	0.00	-	36.13	46.91	16.97	0.00	-	
PHF	0.84	0.81	0.94	0.00	**0.89**	0.89	0.95	0.81	0.00	**0.88**	0.84	0.63	0.69	0.00	**0.83**	0.88	0.86	0.92	0.00	**0.93**	**0.95**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
1630 - 1645	0	5	2	0	7	3	9	3	0	15	1	2	0	0	3	0	5	3	0	8	33
1645 - 1700	0	2	1	0	3	2	2	6	0	10	4	2	0	0	6	0	4	3	0	7	26
1700 - 1715	0	1	2	0	3	1	9	4	0	14	0	11	1	0	12	2	5	3	0	10	39
1715 - 1730	0	4	0	0	4	1	5	3	0	9	4	4	0	0	8	1	6	2	0	9	30
Total	0	12	5	0	17	7	25	16	0	48	9	19	1	0	29	3	20	11	0	34	128
Approach %	0.00	70.59	29.41	0.00	-	14.58	52.08	33.33	0.00	-	31.03	65.52	3.45	0.00	-	8.82	58.82	32.35	0.00	-	
PHF	0.00	0.60	0.63	0.00	**0.61**	0.58	0.69	0.67	0.00	**0.80**	0.56	0.43	0.25	0.00	**0.60**	0.38	0.83	0.92	0.00	**0.85**	**0.82**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	5.1	5.2	5.3	5.4	Total	5.5	5.6	5.7	5.8	Total	5.9	5.10	5.11	5.12	Total	5.13	5.14	5.15	5.16	Total	Total
1630 - 1645	0	1	0	0	1	0	0	9	0	9	4	3	0	0	7	0	5	0	0	5	22
1645 - 1700	0	2	0	0	2	3	2	1	0	6	0	2	0	0	2	0	3	1	0	4	14
1700 - 1715	0	1	0	0	1	0	2	4	0	6	3	14	0	0	17	1	0	1	0	2	26
1715 - 1730	0	1	0	0	1	1	0	2	0	3	3	2	0	0	5	0	1	1	0	2	11
Total	0	5	0	0	5	4	4	16	0	24	10	21	0	0	31	1	9	3	0	13	73
Approach %	0.00	100.00	0.00	0.00	-	16.67	16.67	66.67	0.00	-	32.26	67.74	0.00	0.00	-	7.69	69.23	23.08	0.00	-	
PHF	0.00	0.63	0.00	0.00	**0.63**	0.33	0.50	0.44	0.00	**0.67**	0.63	0.38	0.00	0.00	**0.46**	0.25	0.45	0.75	0.00	**0.65**	**0.70**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	TN-99 Nashville Hwy					TN-6 Nashville Hwy					TN-99 Bear Creek Pike					TN-99 Bear Creek Pike					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	5a	5b			Total	5c	5d			Total	5e	5f			Total	5g	5h			Total	Total
1630 - 1645	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1700 - 1715	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1715 - 1730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume



All vehicles

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	Left 6.1		Right 6.2	U-Turn 6.3	App Total					App Total		Thru 6.4	Right 6.5	U-Turn 6.6	App Total	Left 6.7	Thru 6.8		U-Turn 6.9	App Total	Int Total
0715 - 0730	89	-	57	0	146	-	-	-	-	0	-	135	37	0	172	37	156	-	0	193	511
0730 - 0745	86	-	49	0	135	-	-	-	-	0	-	139	41	0	180	40	183	-	0	223	538
0745 - 0800	90	-	51	0	141	-	-	-	-	0	-	130	41	0	171	64	200	-	0	264	576
0800 - 0815	48	-	25	0	73	-	-	-	-	0	-	132	34	0	166	41	150	-	0	191	430
Total	313	0	182	0	495	0	0	0	0	0	0	536	153	0	689	182	689	0	0	871	2055
Approach %	63.23	0.00	36.77	0.00	-	0.00	0.00	0.00	0.00	-	0.00	77.79	22.21	0.00	-	20.90	79.10	0.00	0.00	-	
PHF	0.87	0.00	0.80	0.00	**0.85**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.96	0.93	0.00	**0.96**	0.71	0.86	0.00	0.00	**0.82**	**0.89**

Bikes

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	Left 6.1		Right 6.2	U-Turn 6.3	App Total					App Total		Thru 6.4	Right 6.5	U-Turn 6.6	App Total	Left 6.7	Thru 6.8		U-Turn 6.9	App Total	Int Total
0715 - 0730	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
0730 - 0745	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
0745 - 0800	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
0800 - 0815	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	Left 6.1		Right 6.2	U-Turn 6.3	App Total					App Total		Thru 6.4	Right 6.5	U-Turn 6.6	App Total	Left 6.7	Thru 6.8		U-Turn 6.9	App Total	Int Total
0715 - 0730	78	-	54	0	132	-	-	-	-	0	-	122	33	0	155	35	145	-	0	180	467
0730 - 0745	78	-	45	0	123	-	-	-	-	0	-	125	40	0	165	38	167	-	0	205	493
0745 - 0800	87	-	48	0	135	-	-	-	-	0	-	112	40	0	152	63	184	-	0	247	534
0800 - 0815	44	-	24	0	68	-	-	-	-	0	-	112	24	0	136	37	139	-	0	176	380
Total	287	0	171	0	458	0	0	0	0	0	0	471	137	0	608	173	635	0	0	808	1874
Approach %	62.66	0.00	37.34	0.00	-	0.00	0.00	0.00	0.00	-	0.00	77.47	22.53	0.00	-	21.41	78.59	0.00	0.00	-	
PHF	0.82	0.00	0.79	0.00	**0.85**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.94	0.86	0.00	**0.92**	0.69	0.86	0.00	0.00	**0.82**	**0.88**

Single Unit Trucks (4-7)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	Left 6.1		Right 6.2	U-Turn 6.3	App Total					App Total		Thru 6.4	Right 6.5	U-Turn 6.6	App Total	Left 6.7	Thru 6.8		U-Turn 6.9	App Total	Int Total
0715 - 0730	9	-	3	0	12	-	-	-	-	0	-	8	3	0	11	2	7	-	0	9	32
0730 - 0745	8	-	4	0	12	-	-	-	-	0	-	9	1	0	10	2	14	-	0	16	38
0745 - 0800	3	-	2	0	5	-	-	-	-	0	-	13	1	0	14	1	15	-	0	16	35
0800 - 0815	3	-	1	0	4	-	-	-	-	0	-	7	8	0	15	4	3	-	0	7	26
Total	23	0	10	0	33	0	0	0	0	0	0	37	13	0	50	9	39	0	0	48	131
Approach %	69.70	0.00	30.30	0.00	-	0.00	0.00	0.00	0.00	-	0.00	74.00	26.00	0.00	-	18.75	81.25	0.00	0.00	-	
PHF	0.64	0.00	0.63	0.00	**0.69**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.71	0.41	0.00	**0.83**	0.56	0.65	0.00	0.00	**0.75**	**0.86**

Combination Trucks (8-13)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	Left 6.1		Right 6.2	U-Turn 6.3	App Total					App Total		Thru 6.4	Right 6.5	U-Turn 6.6	App Total	Left 6.7	Thru 6.8		U-Turn 6.9	App Total	Int Total
0715 - 0730	2	-	0	0	2	-	-	-	-	0	-	5	1	0	6	0	4	-	0	4	12
0730 - 0745	0	-	0	0	0	-	-	-	-	0	-	5	0	0	5	0	2	-	0	2	7
0745 - 0800	0	-	1	0	1	-	-	-	-	0	-	5	0	0	5	0	1	-	0	1	7
0800 - 0815	1	-	0	0	1	-	-	-	-	0	-	13	2	0	15	0	8	-	0	8	24
Total	3	0	1	0	4	0	0	0	0	0	0	28	3	0	31	0	15	0	0	15	50
Approach %	75.00	0.00	25.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	90.32	9.68	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.38	0.00	0.25	0.00	**0.50**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.54	0.38	0.00	**0.52**	0.00	0.47	0.00	0.00	**0.47**	**0.52**

Pedestrians

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
Time	EB 6a	WB 6b			App Total					App Total	NB 6e	SB 6f			App Total	NB 6g	SB 6h			App Total	Int Total
0715 - 0730	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1615 - 1715

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume



All vehicles

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left		Right	U-Turn	App					App		Thru	Right	U-Turn	App	Left	Thru		U-Turn	App	Int
Time	6.1		6.2	6.3	Total					Total		6.4	6.5	6.6	Total	6.7	6.8		6.9	Total	Total
1615 - 1630	48	-	57	0	105	-	-	-	-	0	-	159	51	0	210	59	198	-	0	257	572
1630 - 1645	37	-	55	0	92	-	-	-	-	0	-	188	76	0	264	65	178	-	0	243	599
1645 - 1700	37	-	52	0	89	-	-	-	-	0	-	175	62	0	237	57	192	-	0	249	575
1700 - 1715	53	-	49	0	102	-	-	-	-	0	-	156	50	0	206	85	193	-	0	278	586
Total	175	0	213	0	388	0	0	0	0	0	0	678	239	0	917	266	761	0	0	1027	2332
Approach %	45.10	0.00	54.90	0.00	-	0.00	0.00	0.00	0.00	-	0.00	73.94	26.06	0.00	-	25.90	74.10	0.00	0.00	-	
PHF	0.83	0.00	0.93	0.00	**0.92**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.90	0.79	0.00	**0.87**	0.78	0.96	0.00	0.00	**0.92**	**0.97**

Bikes

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left		Right	U-Turn	App					App		Thru	Right	U-Turn	App	Left	Thru		U-Turn	App	Int
Time	6.1		6.2	6.3	Total					Total		6.4	6.5	6.6	Total	6.7	6.8		6.9	Total	Total
1615 - 1630	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
1630 - 1645	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
1645 - 1700	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
1700 - 1715	0	-	0	0	0	-	-	-	-	0	-	0	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left		Right	U-Turn	App					App		Thru	Right	U-Turn	App	Left	Thru		U-Turn	App	Int
Time	6.1		6.2	6.3	Total					Total		6.4	6.5	6.6	Total	6.7	6.8		6.9	Total	Total
1615 - 1630	45	-	53	0	98	-	-	-	-	0	-	144	48	0	192	57	189	-	0	246	536
1630 - 1645	33	-	53	0	86	-	-	-	-	0	-	181	72	0	253	62	166	-	0	228	567
1645 - 1700	36	-	49	0	85	-	-	-	-	0	-	165	59	0	224	55	186	-	0	241	550
1700 - 1715	51	-	47	0	98	-	-	-	-	0	-	141	50	0	191	77	183	-	0	260	549
Total	165	0	202	0	367	0	0	0	0	0	0	631	229	0	860	251	724	0	0	975	2202
Approach %	44.96	0.00	55.04	0.00	-	0.00	0.00	0.00	0.00	-	0.00	73.37	26.63	0.00	-	25.74	74.26	0.00	0.00	-	
PHF	0.81	0.00	0.95	0.00	**0.94**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.87	0.80	0.00	**0.85**	0.81	0.96	0.00	0.00	**0.94**	**0.97**

Single Unit Trucks (4-7)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left		Right	U-Turn	App					App		Thru	Right	U-Turn	App	Left	Thru		U-Turn	App	Int
Time	6.1		6.2	6.3	Total					Total		6.4	6.5	6.6	Total	6.7	6.8		6.9	Total	Total
1615 - 1630	3	-	1	0	4	-	-	-	-	0	-	4	2	0	6	1	2	-	0	3	13
1630 - 1645	4	-	1	0	5	-	-	-	-	0	-	5	3	0	8	2	8	-	0	10	23
1645 - 1700	1	-	2	0	3	-	-	-	-	0	-	5	3	0	8	1	2	-	0	3	14
1700 - 1715	1	-	1	0	2	-	-	-	-	0	-	10	0	0	10	7	10	-	0	17	29
Total	9	0	5	0	14	0	0	0	0	0	0	24	8	0	32	11	22	0	0	33	79
Approach %	64.29	0.00	35.71	0.00	-	0.00	0.00	0.00	0.00	-	0.00	75.00	25.00	0.00	-	33.33	66.67	0.00	0.00	-	
PHF	0.56	0.00	0.63	0.00	**0.70**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.60	0.67	0.00	**0.80**	0.39	0.55	0.00	0.00	**0.49**	**0.68**

Combination Trucks (8-13)

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left		Right	U-Turn	App					App		Thru	Right	U-Turn	App	Left	Thru		U-Turn	App	Int
Time	6.1		6.2	6.3	Total					Total		6.4	6.5	6.6	Total	6.7	6.8		6.9	Total	Total
1615 - 1630	0	-	3	0	3	-	-	-	-	0	-	11	1	0	12	1	7	-	0	8	23
1630 - 1645	0	-	1	0	1	-	-	-	-	0	-	2	1	0	3	1	4	-	0	5	9
1645 - 1700	0	-	1	0	1	-	-	-	-	0	-	5	0	0	5	1	4	-	0	5	11
1700 - 1715	1	-	1	0	2	-	-	-	-	0	-	5	0	0	5	1	0	-	0	1	8
Total	1	0	6	0	7	0	0	0	0	0	0	23	2	0	25	4	15	0	0	19	51
Approach %	14.29	0.00	85.71	0.00	-	0.00	0.00	0.00	0.00	-	0.00	92.00	8.00	0.00	-	21.05	78.95	0.00	0.00	-	
PHF	0.25	0.00	0.50	0.00	**0.58**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.52	0.50	0.00	**0.52**	1.00	0.54	0.00	0.00	**0.59**	**0.55**

Pedestrians

	Northbound										Eastbound					Westbound					
	Tom J Hitch Pkwy										TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	EB	WB			App					App	NB	SB			App	NB	SB			App	Int
Time	6a	6b			Total					Total	6e	6f			Total	6g	6h			Total	Total
1615 - 1630	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1630 - 1645	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1700 - 1715	0	0	-	-	0	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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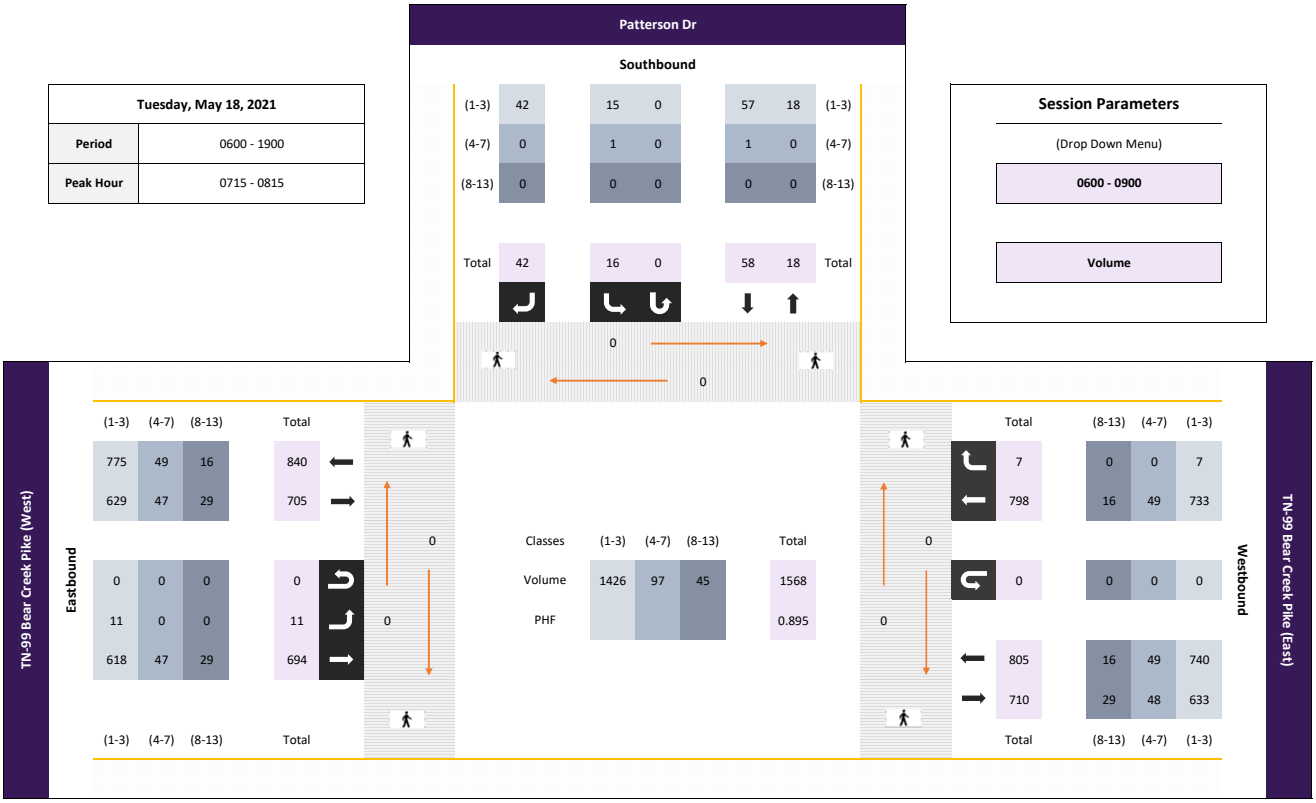
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume



All vehicles

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
0715 - 0730	-	-	-	-	0	5	-	8	0	13	1	187	-	0	188	-	182	1	0	183	384
0730 - 0745	-	-	-	-	0	6	-	17	0	23	5	176	-	0	181	-	230	4	0	234	438
0745 - 0800	-	-	-	-	0	2	-	11	0	13	3	171	-	0	174	-	206	2	0	208	395
0800 - 0815	-	-	-	-	0	3	-	6	0	9	2	160	-	0	162	-	180	0	0	180	351
Total	0	0	0	0	0	16	0	42	0	58	11	694	0	0	705	0	798	7	0	805	1568
Approach %	0.00	0.00	0.00	0.00	-	27.59	0.00	72.41	0.00	-	1.56	98.44	0.00	0.00	-	0.00	99.13	0.87	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.67	0.00	0.62	0.00	**0.63**	0.55	0.93	0.00	0.00	**0.94**	0.00	0.87	0.44	0.00	**0.86**	**0.89**

Bikes

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0800 - 0815	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
0715 - 0730	-	-	-	-	0	5	-	8	0	13	1	170	-	0	171	-	166	1	0	167	351
0730 - 0745	-	-	-	-	0	5	-	17	0	22	5	157	-	0	162	-	216	4	0	220	404
0745 - 0800	-	-	-	-	0	2	-	11	0	13	3	154	-	0	157	-	189	2	0	191	361
0800 - 0815	-	-	-	-	0	3	-	6	0	9	2	137	-	0	139	-	162	0	0	162	310
Total	0	0	0	0	0	15	0	42	0	57	11	618	0	0	629	0	733	7	0	740	1426
Approach %	0.00	0.00	0.00	0.00	-	26.32	0.00	73.68	0.00	-	1.75	98.25	0.00	0.00	-	0.00	99.05	0.95	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.75	0.00	0.62	0.00	**0.65**	0.55	0.91	0.00	0.00	**0.92**	0.00	0.85	0.44	0.00	**0.84**	**0.88**

Single Unit Trucks (4-7)

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	12	-	0	12	-	12	0	0	12	24
0730 - 0745	-	-	-	-	0	1	-	0	0	1	0	14	-	0	14	-	12	0	0	12	27
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	11	-	0	11	-	15	0	0	15	26
0800 - 0815	-	-	-	-	0	0	-	0	0	0	0	10	-	0	10	-	10	0	0	10	20
Total	0	0	0	0	0	1	0	0	0	1	0	47	0	0	47	0	49	0	0	49	97
Approach %	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	**0.25**	0.00	0.84	0.00	0.00	**0.84**	0.00	0.82	0.00	0.00	**0.82**	**0.90**

Combination Trucks (8-13)

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	5	-	0	5	-	4	0	0	4	9
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	5	-	0	5	-	2	0	0	2	7
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	6	-	0	6	-	2	0	0	2	8
0800 - 0815	-	-	-	-	0	0	-	0	0	0	0	13	-	0	13	-	8	0	0	8	21
Total	0	0	0	0	0	0	0	0	0	0	0	29	0	0	29	0	16	0	0	16	45
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.56	0.00	0.00	**0.56**	0.00	0.50	0.00	0.00	**0.50**	**0.54**

Pedestrians

	Southbound					Patterson Dr					Eastbound	TN-99 Bear Creek Pike (West)				Westbound	TN-99 Bear Creek Pike (East)				
Time					App Total	EB 2c	WB 2d			App Total	NB 2e	SB 2f			App Total	NB 2g	SB 2h			App Total	Int Total
0715 - 0730	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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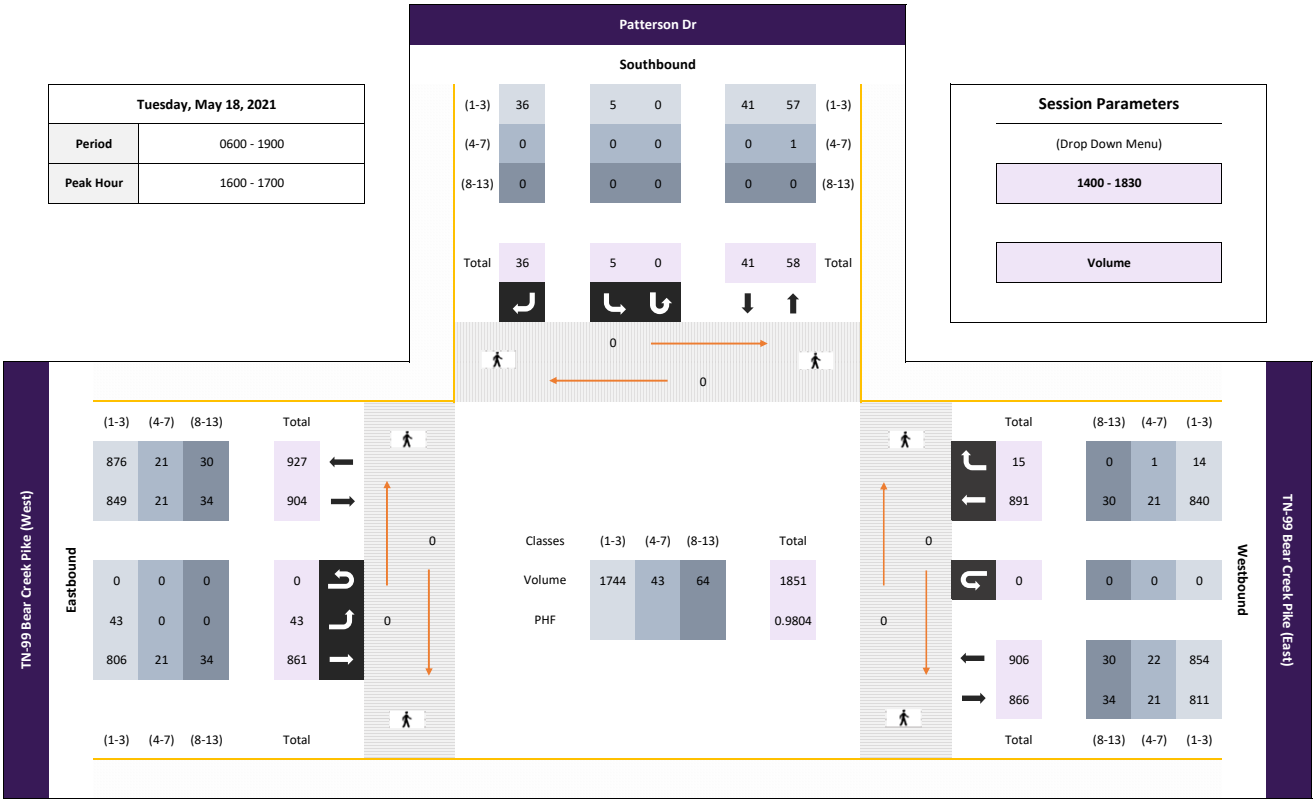
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1600 - 1700

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume



All vehicles

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
1600 - 1615	-	-	-	-	0	1	-	6	0	7	10	223	-	0	233	-	216	4	0	220	460
1615 - 1630	-	-	-	-	0	2	-	9	0	11	15	203	-	0	218	-	240	3	0	243	472
1630 - 1645	-	-	-	-	0	2	-	8	0	10	9	226	-	0	235	-	202	1	0	203	448
1645 - 1700	-	-	-	-	0	0	-	13	0	13	9	209	-	0	218	-	233	7	0	240	471
Total	0	0	0	0	0	5	0	36	0	41	43	861	0	0	904	0	891	15	0	906	1851
Approach %	0.00	0.00	0.00	0.00	-	12.20	0.00	87.80	0.00	-	4.76	95.24	0.00	0.00	-	0.00	98.34	1.66	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.63	0.00	0.69	0.00	**0.79**	0.72	0.95	0.00	0.00	**0.96**	0.00	0.93	0.54	0.00	**0.93**	**0.98**

Bikes

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1615 - 1630	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1630 - 1645	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1645 - 1700	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
1600 - 1615	-	-	-	-	0	1	-	6	0	7	10	207	-	0	217	-	198	4	0	202	426
1615 - 1630	-	-	-	-	0	2	-	9	0	11	15	186	-	0	201	-	231	3	0	234	446
1630 - 1645	-	-	-	-	0	2	-	8	0	10	9	214	-	0	223	-	192	1	0	193	426
1645 - 1700	-	-	-	-	0	0	-	13	0	13	9	199	-	0	208	-	219	6	0	225	446
Total	0	0	0	0	0	5	0	36	0	41	43	806	0	0	849	0	840	14	0	854	1744
Approach %	0.00	0.00	0.00	0.00	-	12.20	0.00	87.80	0.00	-	5.06	94.94	0.00	0.00	-	0.00	98.36	1.64	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.63	0.00	0.69	0.00	**0.79**	0.72	0.94	0.00	0.00	**0.95**	0.00	0.91	0.58	0.00	**0.91**	**0.98**

Single Unit Trucks (4-7)

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	6	-	0	6	-	6	0	0	6	12
1615 - 1630	-	-	-	-	0	0	-	0	0	0	0	2	-	0	2	-	4	0	0	4	6
1630 - 1645	-	-	-	-	0	0	-	0	0	0	0	8	-	0	8	-	4	0	0	4	12
1645 - 1700	-	-	-	-	0	0	-	0	0	0	0	5	-	0	5	-	7	1	0	8	13
Total	0	0	0	0	0	0	0	0	0	0	0	21	0	0	21	0	21	1	0	22	43
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	95.45	4.55	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.66	0.00	0.00	**0.66**	0.00	0.75	0.25	0.00	**0.69**	**0.83**

Combination Trucks (8-13)

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	Left 2.1		Right 2.2	U-Turn 2.3	App Total	Left 2.4	Thru 2.5		U-Turn 2.6	App Total		Thru 2.7	Right 2.8	U-Turn 2.9	App Total	Int Total
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	10	-	0	10	-	12	0	0	12	22
1615 - 1630	-	-	-	-	0	0	-	0	0	0	0	15	-	0	15	-	5	0	0	5	20
1630 - 1645	-	-	-	-	0	0	-	0	0	0	0	4	-	0	4	-	6	0	0	6	10
1645 - 1700	-	-	-	-	0	0	-	0	0	0	0	5	-	0	5	-	7	0	0	7	12
Total	0	0	0	0	0	0	0	0	0	0	0	34	0	0	34	0	30	0	0	30	64
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.57	0.00	0.00	**0.57**	0.00	0.63	0.00	0.00	**0.63**	**0.73**

Pedestrians

	Southbound					Patterson Dr					Eastbound			TN-99 Bear Creek Pike (West)		Westbound			TN-99 Bear Creek Pike (East)		
Time					App Total	EB 2c	WB 2d			App Total	NB 2e	SB 2f			App Total	NB 2g	SB 2h			App Total	Int Total
1600 - 1615	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1615 - 1630	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1630 - 1645	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
0715 - 0730	34	10	7	0	51	2	1	25	0	28	68	132	3	0	203	5	134	10	0	149	431
0730 - 0745	16	12	9	0	37	22	9	68	0	99	57	137	6	0	200	3	156	8	0	167	503
0745 - 0800	16	11	6	0	33	11	4	42	0	57	44	128	7	0	179	4	161	4	0	169	438
0800 - 0815	18	12	6	0	36	11	9	35	0	55	35	128	12	0	175	6	128	10	0	144	410
Total	84	45	28	0	157	46	23	170	0	239	204	525	28	0	757	18	579	32	0	629	1782
Approach %	53.50	28.66	17.83	0.00	-	19.25	9.62	71.13	0.00	-	26.95	69.35	3.70	0.00	-	2.86	92.05	5.09	0.00	-	
PHF	0.62	0.94	0.78	0.00	**0.77**	0.52	0.64	0.63	0.00	**0.60**	0.75	0.96	0.58	0.00	**0.93**	0.75	0.90	0.80	0.00	**0.93**	**0.89**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
0715 - 0730	34	10	7	0	51	2	1	23	0	26	63	120	3	0	186	4	122	10	0	136	399
0730 - 0745	16	11	9	0	36	22	9	66	0	97	53	118	6	0	177	3	141	8	0	152	462
0745 - 0800	16	11	6	0	33	11	4	37	0	52	43	112	7	0	162	4	150	4	0	158	405
0800 - 0815	18	12	6	0	36	11	9	35	0	55	34	107	12	0	153	6	111	10	0	127	371
Total	84	44	28	0	156	46	23	161	0	230	193	457	28	0	678	17	524	32	0	573	1637
Approach %	53.85	28.21	17.95	0.00	-	20.00	10.00	70.00	0.00	-	28.47	67.40	4.13	0.00	-	2.97	91.45	5.58	0.00	-	
PHF	0.62	0.92	0.78	0.00	**0.76**	0.52	0.64	0.61	0.00	**0.59**	0.77	0.95	0.58	0.00	**0.91**	0.71	0.87	0.80	0.00	**0.91**	**0.89**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	2	0	2	5	7	0	0	12	1	9	0	0	10	24
0730 - 0745	0	1	0	0	1	0	0	2	0	2	4	12	0	0	16	0	12	0	0	12	31
0745 - 0800	0	0	0	0	0	0	0	5	0	5	1	11	0	0	12	0	8	0	0	8	25
0800 - 0815	0	0	0	0	0	0	0	0	0	0	1	9	0	0	10	0	9	0	0	9	19
Total	0	1	0	0	1	0	0	9	0	9	11	39	0	0	50	1	38	0	0	39	99
Approach %	0.00	100.00	0.00	0.00	-	0.00	0.00	100.00	0.00	-	22.00	78.00	0.00	0.00	-	2.56	97.44	0.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.45	0.00	**0.45**	0.55	0.81	0.00	0.00	**0.78**	0.25	0.79	0.00	0.00	**0.81**	**0.80**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	0	0	3	8
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	3	0	0	3	10
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	3	0	0	3	8
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	12	0	0	12	0	8	0	0	8	20
Total	0	0	0	0	0	0	0	0	0	0	0	29	0	0	29	0	17	0	0	17	46
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.60	0.00	0.00	**0.60**	0.00	0.53	0.00	0.00	**0.53**	**0.58**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	7a	7b			Total	7c	7d			Total	7e	7f			Total	7g	7h			Total	Total
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0800 - 0815	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1615 - 1715

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
1615 - 1630	6	1	7	0	14	3	0	7	0	10	4	203	12	0	219	6	223	1	0	230	473
1630 - 1645	10	1	7	0	18	4	3	12	0	19	7	189	25	0	221	9	187	2	0	198	456
1645 - 1700	15	3	9	0	27	0	1	6	0	7	7	179	22	0	208	6	208	3	0	217	459
1700 - 1715	22	0	7	0	29	4	5	6	0	15	5	183	26	0	214	7	211	1	0	219	477
Total	53	5	30	0	88	11	9	31	0	51	23	754	85	0	862	28	829	7	0	864	1865
Approach %	60.23	5.68	34.09	0.00	-	21.57	17.65	60.78	0.00	-	2.67	87.47	9.86	0.00	-	3.24	95.95	0.81	0.00	-	
PHF	0.60	0.42	0.83	0.00	**0.76**	0.69	0.45	0.65	0.00	**0.67**	0.82	0.93	0.82	0.00	**0.98**	0.78	0.93	0.58	0.00	**0.94**	**0.98**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
1615 - 1630	6	1	7	0	14	3	0	7	0	10	4	180	12	0	196	6	214	1	0	221	441
1630 - 1645	10	1	7	0	18	4	3	12	0	19	7	180	25	0	212	9	176	2	0	187	436
1645 - 1700	15	3	9	0	27	0	1	6	0	7	7	170	22	0	199	6	195	3	0	204	437
1700 - 1715	22	0	7	0	29	4	5	6	0	15	5	172	25	0	202	7	199	1	0	207	453
Total	53	5	30	0	88	11	9	31	0	51	23	702	84	0	809	28	784	7	0	819	1767
Approach %	60.23	5.68	34.09	0.00	-	21.57	17.65	60.78	0.00	-	2.84	86.77	10.38	0.00	-	3.42	95.73	0.85	0.00	-	
PHF	0.60	0.42	0.83	0.00	**0.76**	0.69	0.45	0.65	0.00	**0.67**	0.82	0.98	0.84	0.00	**0.95**	0.78	0.92	0.58	0.00	**0.93**	**0.98**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	5	0	0	5	11
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	4	0	0	4	7
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	6	0	0	6	12
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5	0	11	0	0	11	16
Total	0	0	0	0	0	0	0	0	0	0	0	19	1	0	20	0	26	0	0	26	46
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	95.00	5.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.79	0.25	0.00	**0.83**	0.00	0.59	0.00	0.00	**0.59**	**0.72**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	7.1	7.2	7.3	7.4	Total	7.5	7.6	7.7	7.8	Total	7.9	7.10	7.11	7.12	Total	7.13	7.14	7.15	7.16	Total	Total
1615 - 1630	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	0	4	0	0	4	21
1630 - 1645	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	7	0	0	7	13
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	7	0	0	7	10
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	1	0	0	1	8
Total	0	0	0	0	0	0	0	0	0	0	0	33	0	0	33	0	19	0	0	19	52
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.49	0.00	0.00	**0.49**	0.00	0.68	0.00	0.00	**0.68**	**0.62**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Local Rd					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	7a	7b			Total	7c	7d			Total	7e	7f			Total	7g	7h			Total	Total
1615 - 1630	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1630 - 1645	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1700 - 1715	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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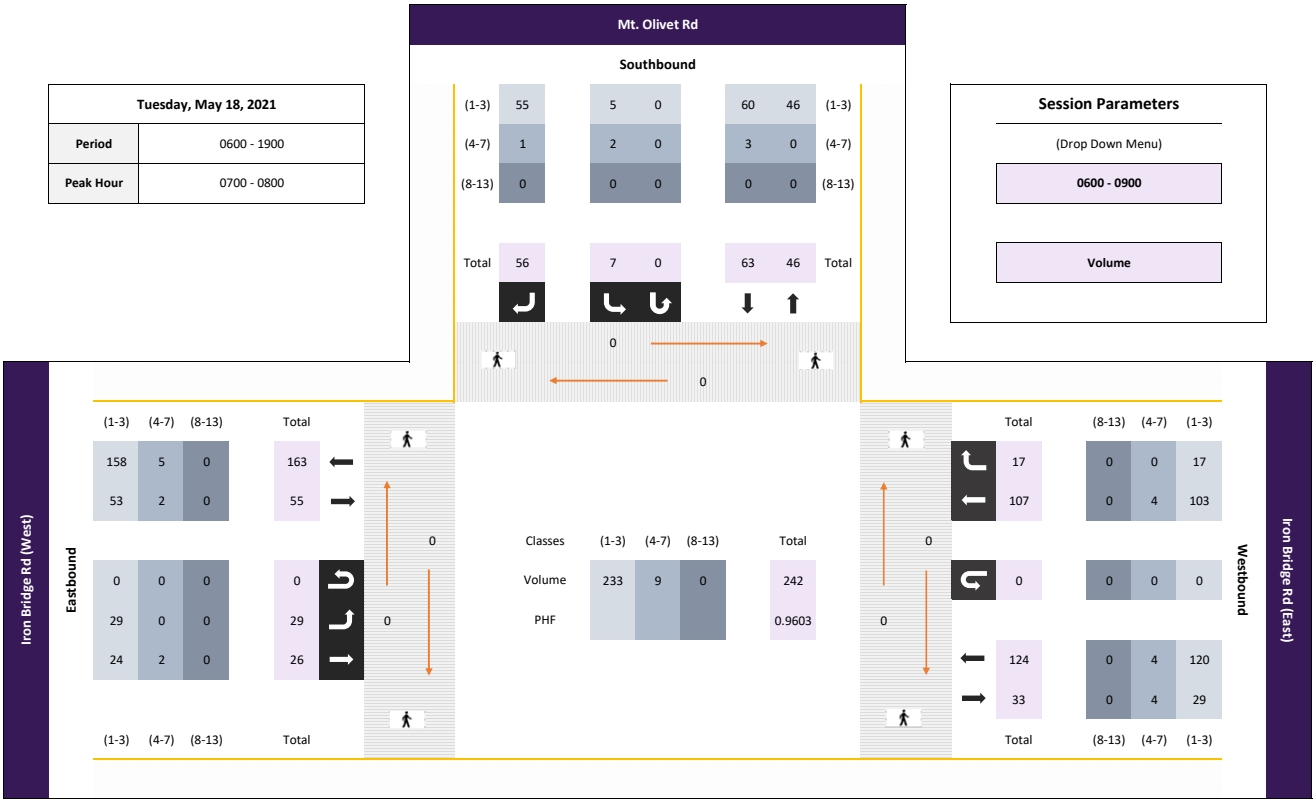
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0700 - 0800

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume



All vehicles

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	8.1		8.2	8.3	Total	8.4	8.5		8.6	Total		8.7	8.8	8.9	Total	Total
0700 - 0715	-	-	-	-	0	2	-	9	0	11	7	5	-	0	12	-	33	1	0	34	57
0715 - 0730	-	-	-	-	0	1	-	10	0	11	8	6	-	0	14	-	30	5	0	35	60
0730 - 0745	-	-	-	-	0	3	-	17	0	20	10	4	-	0	14	-	23	6	0	29	63
0745 - 0800	-	-	-	-	0	1	-	20	0	21	4	11	-	0	15	-	21	5	0	26	62
Total	0	0	0	0	0	7	0	56	0	63	29	26	0	0	55	0	107	17	0	124	242
Approach %	0.00	0.00	0.00	0.00	-	11.11	0.00	88.89	0.00	-	52.73	47.27	0.00	0.00	-	0.00	86.29	13.71	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.58	0.00	0.70	0.00	**0.75**	0.73	0.59	0.00	0.00	**0.92**	0.00	0.81	0.71	0.00	**0.89**	**0.96**

Bikes

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	8.1		8.2	8.3	Total	8.4	8.5		8.6	Total		8.7	8.8	8.9	Total	Total
0700 - 0715	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	8.1		8.2	8.3	Total	8.4	8.5		8.6	Total		8.7	8.8	8.9	Total	Total
0700 - 0715	-	-	-	-	0	1	-	9	0	10	7	4	-	0	11	-	32	1	0	33	54
0715 - 0730	-	-	-	-	0	0	-	10	0	10	8	5	-	0	13	-	28	5	0	33	56
0730 - 0745	-	-	-	-	0	3	-	17	0	20	10	4	-	0	14	-	22	6	0	28	62
0745 - 0800	-	-	-	-	0	1	-	19	0	20	4	11	-	0	15	-	21	5	0	26	61
Total	0	0	0	0	0	5	0	55	0	60	29	24	0	0	53	0	103	17	0	120	233
Approach %	0.00	0.00	0.00	0.00	-	8.33	0.00	91.67	0.00	-	54.72	45.28	0.00	0.00	-	0.00	85.83	14.17	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.42	0.00	0.72	0.00	**0.75**	0.73	0.55	0.00	0.00	**0.88**	0.00	0.80	0.71	0.00	**0.91**	**0.94**

Single Unit Trucks (4-7)

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	8.1		8.2	8.3	Total	8.4	8.5		8.6	Total		8.7	8.8	8.9	Total	Total
0700 - 0715	-	-	-	-	0	1	-	0	0	1	0	1	-	0	1	-	1	0	0	1	3
0715 - 0730	-	-	-	-	0	1	-	0	0	1	0	1	-	0	1	-	2	0	0	2	4
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	1	0	0	1	1
0745 - 0800	-	-	-	-	0	0	-	1	0	1	0	0	-	0	0	-	0	0	0	0	1
Total	0	0	0	0	0	2	0	1	0	3	0	2	0	0	2	0	4	0	0	4	9
Approach %	0.00	0.00	0.00	0.00	-	66.67	0.00	33.33	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.25	0.00	**0.75**	0.00	0.50	0.00	0.00	**0.50**	0.00	0.50	0.00	0.00	**0.50**	**0.56**

Combination Trucks (8-13)

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	8.1		8.2	8.3	Total	8.4	8.5		8.6	Total		8.7	8.8	8.9	Total	Total
0700 - 0715	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

						Southbound					Eastbound					Westbound					
						Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
					App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time					Total	8c	8d			Total	8e	8f			Total	8g	8h			Total	Total
0700 - 0715	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0715 - 0730	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

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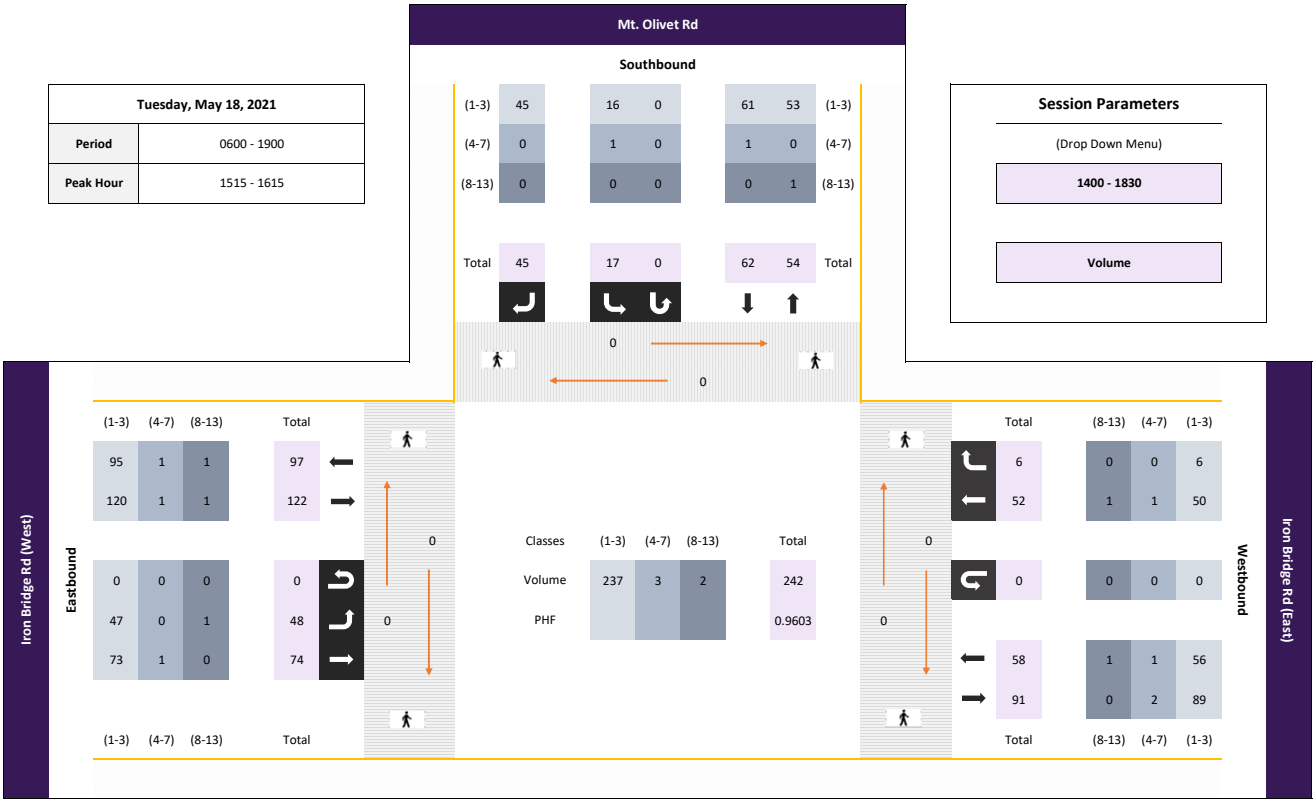
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1515 - 1615

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume



All vehicles

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	Left 8.1		Right 8.2	U-Turn 8.3	App Total	Left 8.4	Thru 8.5		U-Turn 8.6	App Total		Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total
1515 - 1530	-	-	-	-	0	4	-	12	0	16	14	16	-	0	30	-	13	3	0	16	62
1530 - 1545	-	-	-	-	0	7	-	17	0	24	11	13	-	0	24	-	14	1	0	15	63
1545 - 1600	-	-	-	-	0	1	-	10	0	11	10	22	-	0	32	-	13	1	0	14	57
1600 - 1615	-	-	-	-	0	5	-	6	0	11	13	23	-	0	36	-	12	1	0	13	60
Total	0	0	0	0	0	17	0	45	0	62	48	74	0	0	122	0	52	6	0	58	242
Approach %	0.00	0.00	0.00	0.00	-	27.42	0.00	72.58	0.00	-	39.34	60.66	0.00	0.00	-	0.00	89.66	10.34	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.61	0.00	0.66	0.00	**0.65**	0.86	0.80	0.00	0.00	**0.85**	0.00	0.93	0.50	0.00	**0.91**	**0.96**

Bikes

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	Left 8.1		Right 8.2	U-Turn 8.3	App Total	Left 8.4	Thru 8.5		U-Turn 8.6	App Total		Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total
1515 - 1530	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	Left 8.1		Right 8.2	U-Turn 8.3	App Total	Left 8.4	Thru 8.5		U-Turn 8.6	App Total		Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total
1515 - 1530	-	-	-	-	0	3	-	12	0	15	13	16	-	0	29	-	13	3	0	16	60
1530 - 1545	-	-	-	-	0	7	-	17	0	24	11	13	-	0	24	-	12	1	0	13	61
1545 - 1600	-	-	-	-	0	1	-	10	0	11	10	21	-	0	31	-	13	1	0	14	56
1600 - 1615	-	-	-	-	0	5	-	6	0	11	13	23	-	0	36	-	12	1	0	13	60
Total	0	0	0	0	0	16	0	45	0	61	47	73	0	0	120	0	50	6	0	56	237
Approach %	0.00	0.00	0.00	0.00	-	26.23	0.00	73.77	0.00	-	39.17	60.83	0.00	0.00	-	0.00	89.29	10.71	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.57	0.00	0.66	0.00	**0.64**	0.90	0.79	0.00	0.00	**0.83**	0.00	0.96	0.50	0.00	**0.88**	**0.97**

Single Unit Trucks (4-7)

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	Left 8.1		Right 8.2	U-Turn 8.3	App Total	Left 8.4	Thru 8.5		U-Turn 8.6	App Total		Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total
1515 - 1530	-	-	-	-	0	1	-	0	0	1	0	0	-	0	0	-	0	0	0	0	1
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	1	0	0	1	1
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	1	-	0	1	-	0	0	0	0	1
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	3
Approach %	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	**0.25**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.25	0.00	0.00	**0.25**	**0.75**

Combination Trucks (8-13)

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	Left 8.1		Right 8.2	U-Turn 8.3	App Total	Left 8.4	Thru 8.5		U-Turn 8.6	App Total		Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total
1515 - 1530	-	-	-	-	0	0	-	0	0	0	1	0	-	0	1	-	0	0	0	0	1
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	1	0	0	1	1
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1600 - 1615	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	2
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	**0.25**	0.00	0.25	0.00	0.00	**0.25**	**0.50**

Pedestrians

	Southbound					Eastbound					Westbound					
	Mt. Olivet Rd					Iron Bridge Rd (West)					Iron Bridge Rd (East)					
Time					App Total	EB 8c	WB 8d			App Total	NB 8e	SB 8f			App Total	NB 8g	SB 8h			App Total	Int Total
1515 - 1530	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1600 - 1615	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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Peak Hour Turning Movement Count

Columbia, TN

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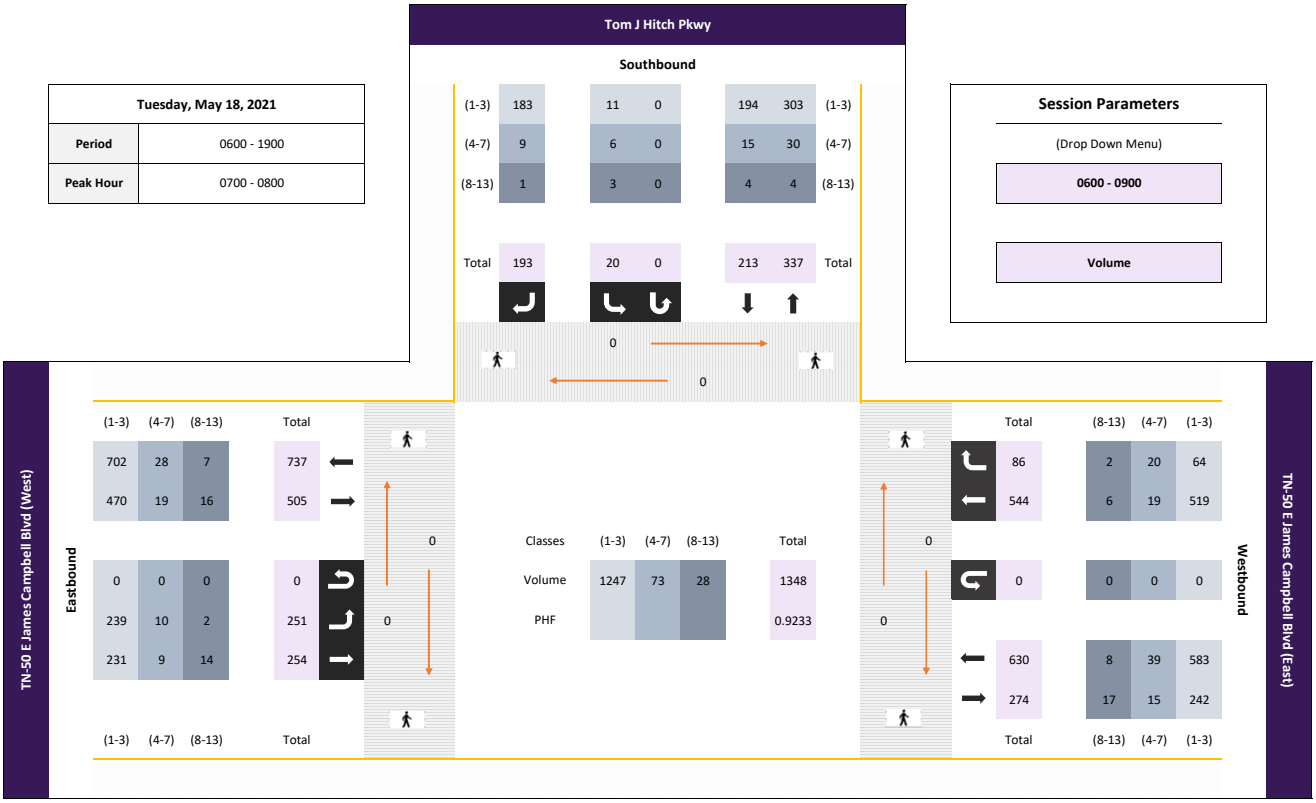
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0700 - 0800

Session Parameters

(Drop Down Menu)

0600 - 0900

Volume



All vehicles

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time					App Total	Left 4.1		Right 4.2	U-Turn 4.3	App Total	Left 4.4	Thru 4.5		U-Turn 4.6	App Total		Thru 4.7	Right 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	-	-	-	-	0	7	-	40	0	47	60	70	-	0	130	-	111	12	0	123	300
0715 - 0730	-	-	-	-	0	5	-	29	0	34	69	65	-	0	134	-	142	19	0	161	329
0730 - 0745	-	-	-	-	0	5	-	58	0	63	63	65	-	0	128	-	144	30	0	174	365
0745 - 0800	-	-	-	-	0	3	-	66	0	69	59	54	-	0	113	-	147	25	0	172	354
Total	0	0	0	0	0	20	0	193	0	213	251	254	0	0	505	0	544	86	0	630	1348
Approach %	0.00	0.00	0.00	0.00	-	9.39	0.00	90.61	0.00	-	49.70	50.30	0.00	0.00	-	0.00	86.35	13.65	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.71	0.00	0.73	0.00	**0.77**	0.91	0.91	0.00	0.00	**0.94**	0.00	0.93	0.72	0.00	**0.91**	**0.92**

Bikes

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time					App Total	Left 4.1		Right 4.2	U-Turn 4.3	App Total	Left 4.4	Thru 4.5		U-Turn 4.6	App Total		Thru 4.7	Right 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0715 - 0730	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0730 - 0745	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
0745 - 0800	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time					App Total	Left 4.1		Right 4.2	U-Turn 4.3	App Total	Left 4.4	Thru 4.5		U-Turn 4.6	App Total		Thru 4.7	Right 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	-	-	-	-	0	5	-	39	0	44	57	62	-	0	119	-	100	6	0	106	269
0715 - 0730	-	-	-	-	0	2	-	27	0	29	67	62	-	0	129	-	139	12	0	151	309
0730 - 0745	-	-	-	-	0	1	-	53	0	54	61	60	-	0	121	-	137	25	0	162	337
0745 - 0800	-	-	-	-	0	3	-	64	0	67	54	47	-	0	101	-	143	21	0	164	332
Total	0	0	0	0	0	11	0	183	0	194	239	231	0	0	470	0	519	64	0	583	1247
Approach %	0.00	0.00	0.00	0.00	-	5.67	0.00	94.33	0.00	-	50.85	49.15	0.00	0.00	-	0.00	89.02	10.98	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.55	0.00	0.71	0.00	**0.72**	0.89	0.93	0.00	0.00	**0.91**	0.00	0.91	0.64	0.00	**0.89**	**0.93**

Single Unit Trucks (4-7)

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time					App Total	Left 4.1		Right 4.2	U-Turn 4.3	App Total	Left 4.4	Thru 4.5		U-Turn 4.6	App Total		Thru 4.7	Right 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	-	-	-	-	0	1	-	1	0	2	3	3	-	0	6	-	10	5	0	15	23
0715 - 0730	-	-	-	-	0	2	-	2	0	4	2	1	-	0	3	-	2	6	0	8	15
0730 - 0745	-	-	-	-	0	3	-	4	0	7	2	1	-	0	3	-	4	5	0	9	19
0745 - 0800	-	-	-	-	0	0	-	2	0	2	3	4	-	0	7	-	3	4	0	7	16
Total	0	0	0	0	0	6	0	9	0	15	10	9	0	0	19	0	19	20	0	39	73
Approach %	0.00	0.00	0.00	0.00	-	40.00	0.00	60.00	0.00	-	52.63	47.37	0.00	0.00	-	0.00	48.72	51.28	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.56	0.00	**0.54**	0.83	0.56	0.00	0.00	**0.68**	0.00	0.48	0.83	0.00	**0.65**	**0.79**

Combination Trucks (8-13)

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time					App Total	Left 4.1		Right 4.2	U-Turn 4.3	App Total	Left 4.4	Thru 4.5		U-Turn 4.6	App Total		Thru 4.7	Right 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	-	-	-	-	0	1	-	0	0	1	0	5	-	0	5	-	1	1	0	2	8
0715 - 0730	-	-	-	-	0	1	-	0	0	1	0	2	-	0	2	-	1	1	0	2	5
0730 - 0745	-	-	-	-	0	1	-	1	0	2	0	4	-	0	4	-	3	0	0	3	9
0745 - 0800	-	-	-	-	0	0	-	0	0	0	2	3	-	0	5	-	1	0	0	1	6
Total	0	0	0	0	0	3	0	1	0	4	2	14	0	0	16	0	6	2	0	8	28
Approach %	0.00	0.00	0.00	0.00	-	75.00	0.00	25.00	0.00	-	12.50	87.50	0.00	0.00	-	0.00	75.00	25.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.75	0.00	0.25	0.00	**0.50**	0.25	0.70	0.00	0.00	**0.80**	0.00	0.50	0.50	0.00	**0.67**	**0.78**

Pedestrians

	Southbound					Tom J Hitch Pkwy					Eastbound					TN-50 E James Campbell Blvd (West)					Westbound					TN-50 E James Campbell Blvd (East)	
Time		WB 4b			App Total	EB 4c	WB 4d			App Total	NB 4e	SB 4f			App Total	NB 4g	SB 4h			App Total	Int Total
0700 - 0715	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0715 - 0730	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Columbia, TN

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Marr Traffic DATA COLLECTION

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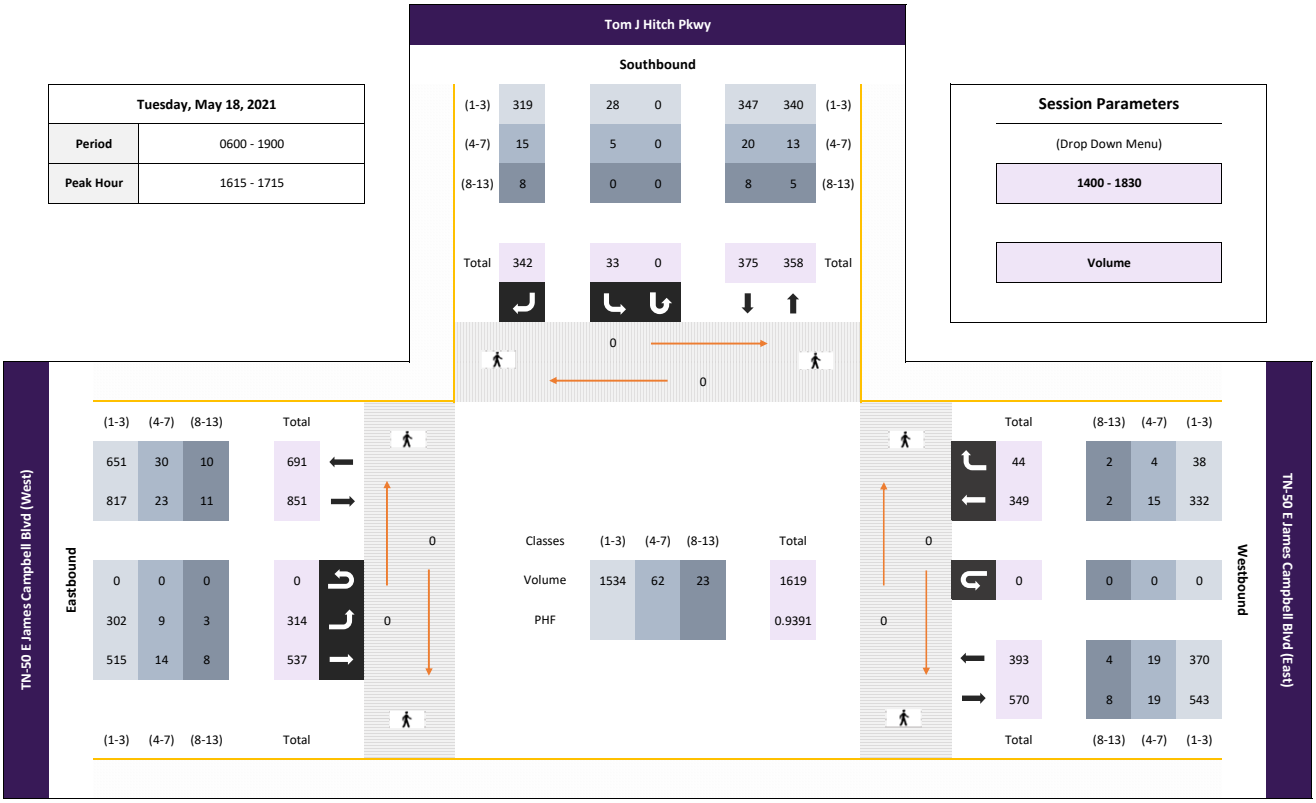
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1615 - 1715

Session Parameters

(Drop Down Menu)

1400 - 1830

Volume



All vehicles

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	4.1		4.2	4.3	Total	4.4	4.5		4.6	Total		4.7	4.8	4.9	Total	Total
1615 - 1630	-	-	-	-	0	5	-	81	0	86	74	145	-	0	219	-	78	11	0	89	394
1630 - 1645	-	-	-	-	0	12	-	81	0	93	82	132	-	0	214	-	84	8	0	92	399
1645 - 1700	-	-	-	-	0	8	-	84	0	92	73	121	-	0	194	-	95	14	0	109	395
1700 - 1715	-	-	-	-	0	8	-	96	0	104	85	139	-	0	224	-	92	11	0	103	431
Total	0	0	0	0	0	33	0	342	0	375	314	537	0	0	851	0	349	44	0	393	1619
Approach %	0.00	0.00	0.00	0.00	-	8.80	0.00	91.20	0.00	-	36.90	63.10	0.00	0.00	-	0.00	88.80	11.20	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.69	0.00	0.89	0.00	**0.90**	0.92	0.93	0.00	0.00	**0.95**	0.00	0.92	0.79	0.00	**0.90**	**0.94**

Bikes

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	4.1		4.2	4.3	Total	4.4	4.5		4.6	Total		4.7	4.8	4.9	Total	Total
1615 - 1630	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1630 - 1645	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1645 - 1700	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
1700 - 1715	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Passenger Vehicles (1-3)

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	4.1		4.2	4.3	Total	4.4	4.5		4.6	Total		4.7	4.8	4.9	Total	Total
1615 - 1630	-	-	-	-	0	3	-	77	0	80	71	135	-	0	206	-	77	10	0	87	373
1630 - 1645	-	-	-	-	0	9	-	76	0	85	78	128	-	0	206	-	78	6	0	84	375
1645 - 1700	-	-	-	-	0	8	-	78	0	86	69	117	-	0	186	-	91	12	0	103	375
1700 - 1715	-	-	-	-	0	8	-	88	0	96	84	135	-	0	219	-	86	10	0	96	411
Total	0	0	0	0	0	28	0	319	0	347	302	515	0	0	817	0	332	38	0	370	1534
Approach %	0.00	0.00	0.00	0.00	-	8.07	0.00	91.93	0.00	-	36.96	63.04	0.00	0.00	-	0.00	89.73	10.27	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.78	0.00	0.91	0.00	**0.90**	0.90	0.95	0.00	0.00	**0.93**	0.00	0.91	0.79	0.00	**0.90**	**0.93**

Single Unit Trucks (4-7)

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	4.1		4.2	4.3	Total	4.4	4.5		4.6	Total		4.7	4.8	4.9	Total	Total
1615 - 1630	-	-	-	-	0	2	-	3	0	5	2	6	-	0	8	-	1	1	0	2	15
1630 - 1645	-	-	-	-	0	3	-	2	0	5	3	2	-	0	5	-	5	1	0	6	16
1645 - 1700	-	-	-	-	0	0	-	5	0	5	3	3	-	0	6	-	3	2	0	5	16
1700 - 1715	-	-	-	-	0	0	-	5	0	5	1	3	-	0	4	-	6	0	0	6	15
Total	0	0	0	0	0	5	0	15	0	20	9	14	0	0	23	0	15	4	0	19	62
Approach %	0.00	0.00	0.00	0.00	-	25.00	0.00	75.00	0.00	-	39.13	60.87	0.00	0.00	-	0.00	78.95	21.05	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.42	0.00	0.75	0.00	**1.00**	0.75	0.58	0.00	0.00	**0.72**	0.00	0.63	0.50	0.00	**0.79**	**0.97**

Combination Trucks (8-13)

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
					App	Left		Right	U-Turn	App	Left	Thru		U-Turn	App		Thru	Right	U-Turn	App	Int
Time					Total	4.1		4.2	4.3	Total	4.4	4.5		4.6	Total		4.7	4.8	4.9	Total	Total
1615 - 1630	-	-	-	-	0	0	-	1	0	1	1	4	-	0	5	-	0	0	0	0	6
1630 - 1645	-	-	-	-	0	0	-	3	0	3	1	2	-	0	3	-	1	1	0	2	8
1645 - 1700	-	-	-	-	0	0	-	1	0	1	1	1	-	0	2	-	1	0	0	1	4
1700 - 1715	-	-	-	-	0	0	-	3	0	3	0	1	-	0	1	-	0	1	0	1	5
Total	0	0	0	0	0	0	0	8	0	8	3	8	0	0	11	0	2	2	0	4	23
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	-	27.27	72.73	0.00	0.00	-	0.00	50.00	50.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.67	0.00	**0.67**	0.75	0.50	0.00	0.00	**0.55**	0.00	0.50	0.50	0.00	**0.50**	**0.72**

Pedestrians

						Southbound					Eastbound					Westbound					
						Tom J Hitch Pkwy					TN-50 E James Campbell Blvd (West)					TN-50 E James Campbell Blvd (East)					
		WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time		4b			Total	4c	4d			Total	4e	4f			Total	4g	4h			Total	Total
1615 - 1630	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1630 - 1645	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1645 - 1700	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1700 - 1715	-	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, February 22, 2022	
Period	0600 - 1900
Peak Hour	0700 - 0800

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	0	0	0	0	0	1	0	13	0	14	1	186	0	0	187	0	168	0	0	168	369
0715 - 0730	0	0	0	0	0	7	0	8	0	15	4	221	1	0	226	0	189	1	0	190	431
0730 - 0745	0	0	0	0	0	1	0	14	0	15	1	185	0	0	186	0	241	0	0	241	442
0745 - 0800	0	0	0	0	0	3	0	15	0	18	3	177	0	0	180	0	239	1	0	240	438
Total	0	0	0	0	0	12	0	50	0	62	9	769	1	0	779	0	837	2	0	839	1680
Approach %	0.00	0.00	0.00	0.00	-	19.35	0.00	80.65	0.00	-	1.16	98.72	0.13	0.00	-	0.00	99.76	0.24	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.43	0.00	0.83	0.00	**0.86**	0.56	0.87	0.25	0.00	**0.86**	0.00	0.87	0.50	0.00	**0.87**	**0.95**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	0	0	0	0	0	1	0	13	0	14	1	168	0	0	169	0	148	0	0	148	331
0715 - 0730	0	0	0	0	0	6	0	8	0	14	4	203	1	0	208	0	179	1	0	180	402
0730 - 0745	0	0	0	0	0	1	0	14	0	15	1	169	0	0	170	0	220	0	0	220	405
0745 - 0800	0	0	0	0	0	3	0	15	0	18	3	164	0	0	167	0	222	1	0	223	408
Total	0	0	0	0	0	11	0	50	0	61	9	704	1	0	714	0	769	2	0	771	1546
Approach %	0.00	0.00	0.00	0.00	-	18.03	0.00	81.97	0.00	-	1.26	98.60	0.14	0.00	-	0.00	99.74	0.26	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.46	0.00	0.83	0.00	**0.85**	0.56	0.87	0.25	0.00	**0.86**	0.00	0.87	0.50	0.00	**0.86**	**0.95**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	13	0	0	13	0	14	0	0	14	27
0715 - 0730	0	0	0	0	0	1	0	0	0	1	0	16	0	0	16	0	8	0	0	8	25
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	11	0	0	11	0	14	0	0	14	25
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	11	0	0	11	18
Total	0	0	0	0	0	1	0	0	0	1	0	47	0	0	47	0	47	0	0	47	95
Approach %	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	**0.25**	0.00	0.73	0.00	0.00	**0.73**	0.00	0.84	0.00	0.00	**0.84**	**0.88**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	6	0	0	6	11
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	7	0	0	7	12
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	6	0	0	6	12
Total	0	0	0	0	0	0	0	0	0	0	0	18	0	0	18	0	21	0	0	21	39
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.75	0.00	0.00	**0.75**	0.00	0.75	0.00	0.00	**0.75**	**0.81**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	1a	1b			Total	1c	1d			Total	1e	1f			Total	1g	1h			Total	Total
0700 - 0715	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0715 - 0730	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0730 - 0745	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
0745 - 0800	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

Columbia, TN

www.marrtraffic.com

Site 1 of 1
Driveway
Patterson Dr
TN-99 Bear Creek Pike (West)
TN-99 Bear Creek Pike (East)

Date
Tuesday, February 22, 2022

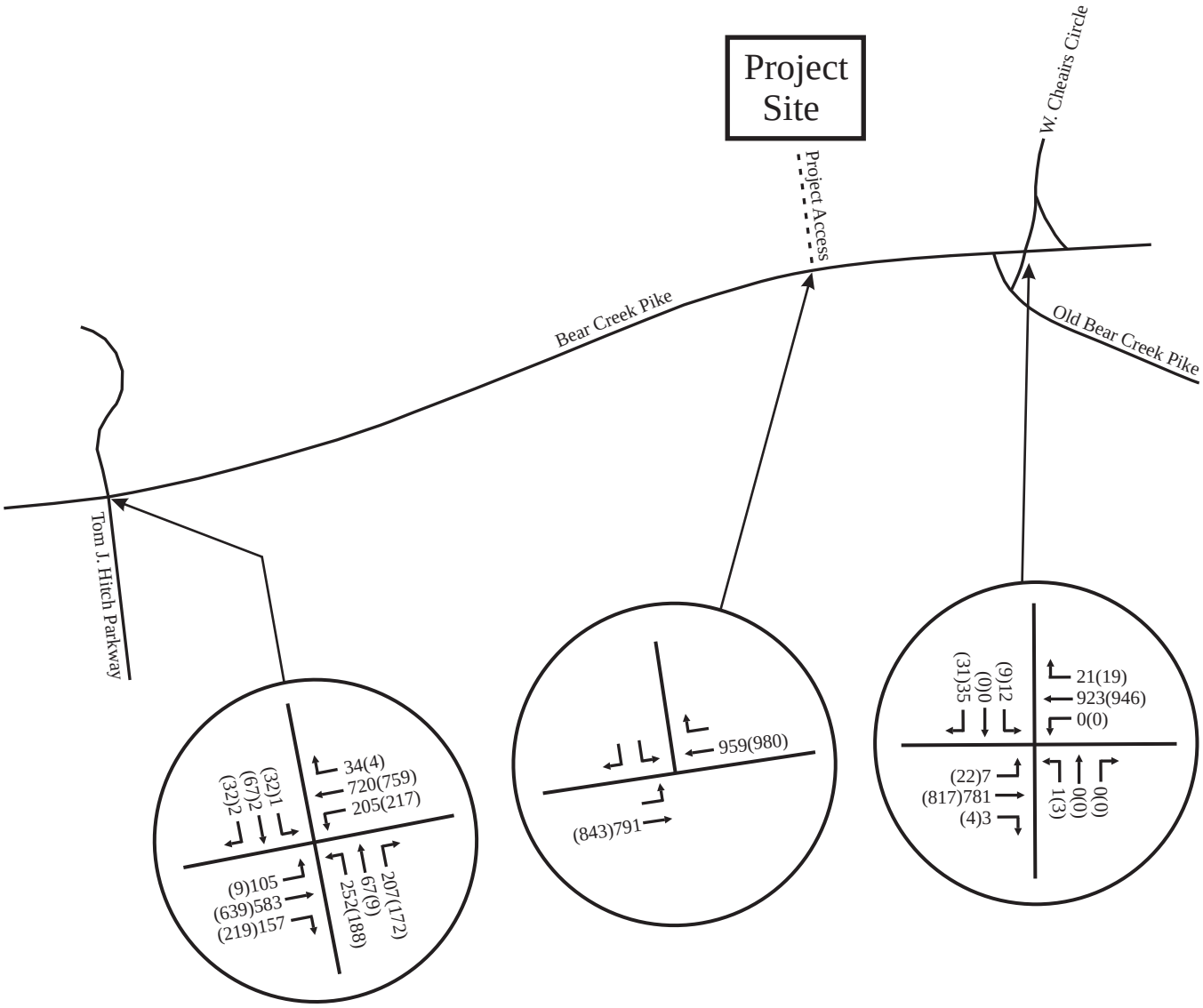
Weather
Cloudy
60°F

Lat/Long
35.636515°, -86.993469°

0600 - 1900 (Weekday 13h Session) (02-22-2022)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Patterson Dr					TN-99 Bear Creek Pike (West)					TN-99 Bear Creek Pike (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0600 - 0615	0	0	0	0	0	1	0	2	0	3	0	118	0	0	118	0	62	0	0	62	183
0615 - 0630	0	0	0	0	0	2	0	5	0	7	1	120	2	1	124	0	93	0	0	93	224
0630 - 0645	0	0	0	0	0	1	0	4	0	5	0	147	0	0	147	0	108	0	0	108	260
0645 - 0700	0	0	0	0	0	4	0	8	0	12	1	167	0	0	168	0	124	0	0	124	304
Hourly Total	0	0	0	0	**0**	8	0	19	0	**27**	2	552	2	1	**557**	0	387	0	0	**387**	**971**
0700 - 0715	0	0	0	0	0	1	0	13	0	14	1	186	0	0	187	0	168	0	0	168	369
0715 - 0730	0	0	0	0	0	7	0	8	0	15	4	221	1	0	226	0	189	1	0	190	431
0730 - 0745	0	0	0	0	0	1	0	14	0	15	1	185	0	0	186	0	241	0	0	241	442
0745 - 0800	0	0	0	0	0	3	0	15	0	18	3	177	0	0	180	0	239	1	0	240	438
Hourly Total	0	0	0	0	**0**	12	0	50	0	**62**	9	769	1	0	**779**	0	837	2	0	**839**	**1680**
0800 - 0815	0	0	0	0	0	2	0	3	0	5	6	150	0	0	156	0	186	1	0	187	348
0815 - 0830	0	0	0	0	0	1	0	8	0	9	3	135	0	0	138	0	163	1	0	164	311
0830 - 0845	0	0	0	0	0	1	0	6	0	7	4	125	0	0	129	0	150	2	0	152	288
0845 - 0900	0	0	0	0	0	1	0	3	0	4	5	88	0	0	93	0	129	0	0	129	226
Hourly Total	0	0	0	0	**0**	5	0	20	0	**25**	18	498	0	0	**516**	0	628	4	0	**632**	**1173**
0900 - 0915	0	0	0	0	0	4	0	12	0	16	4	95	0	0	99	0	117	0	0	117	232
0915 - 0930	0	0	0	0	0	0	0	7	0	7	5	111	0	0	116	0	95	3	0	98	221
0930 - 0945	0	0	0	0	0	0	0	5	0	5	3	109	0	0	112	0	127	0	0	127	244
0945 - 1000	0	0	0	0	0	0	0	9	0	9	6	113	1	0	120	0	127	2	0	129	258
Hourly Total	0	0	0	0	**0**	4	0	33	0	**37**	18	428	1	0	**447**	0	466	5	0	**471**	**955**
1000 - 1015	0	0	0	0	0	1	0	11	0	12	3	127	0	0	130	0	105	0	0	105	247
1015 - 1030	0	0	0	0	0	0	0	7	0	7	8	116	0	0	124	0	114	0	0	114	245
1030 - 1045	0	0	0	0	0	3	0	5	0	8	6	109	0	0	115	0	147	0	0	147	270
1045 - 1100	0	0	0	0	0	1	0	3	0	4	3	117	0	0	120	0	87	1	0	88	212
Hourly Total	0	0	0	0	**0**	5	0	26	0	**31**	20	469	0	0	**489**	0	453	1	0	**454**	**974**
1100 - 1115	0	0	0	0	0	3	0	4	0	7	8	117	0	0	125	0	110	1	0	111	243
1115 - 1130	1	0	0	0	1	0	0	4	0	4	10	128	0	0	138	0	114	1	0	115	258
1130 - 1145	0	0	0	0	0	0	0	2	0	2	2	113	0	0	115	0	108	0	0	108	225
1145 - 1200	0	0	0	0	0	2	0	10	0	12	7	106	0	0	113	0	96	0	0	96	221
Hourly Total	1	0	0	0	**1**	5	0	20	0	**25**	27	464	0	0	**491**	0	428	2	0	**430**	**947**
1200 - 1215	0	0	0	0	0	0	0	3	0	3	7	121	0	0	128	0	109	0	0	109	240
1215 - 1230	0	0	1	0	1	1	0	8	0	9	10	119	0	0	129	0	130	0	0	130	269
1230 - 1245	0	0	0	0	0	1	0	10	0	11	4	126	0	0	130	0	128	0	0	128	269
1245 - 1300	1	0	0	0	1	0	0	3	0	3	7	104	0	0	111	0	113	0	0	113	228
Hourly Total	1	0	1	0	**2**	2	0	24	0	**26**	28	470	0	0	**498**	0	480	0	0	**480**	**1006**
1300 - 1315	0	0	0	0	0	2	0	3	0	5	7	123	0	0	130	0	101	0	0	101	236
1315 - 1330	0	0	0	0	0	0	0	4	0	4	4	104	1	0	109	0	125	2	0	127	240
1330 - 1345	0	0	0	0	0	1	0	4	0	5	5	112	0	0	117	0	115	1	0	116	238
1345 - 1400	0	0	0	0	0	1	0	8	0	9	1	101	1	0	103	0	115	2	0	117	229
Hourly Total	0	0	0	0	**0**	4	0	19	0	**23**	17	440	2	0	**459**	0	456	5	0	**461**	**943**
1400 - 1415	0	0	0	0	0	0	0	4	0	4	4	134	0	0	138	0	114	0	0	114	256
1415 - 1430	0	0	0	0	0	0	0	4	0	4	7	156	0	0	163	0	122	0	0	122	289
1430 - 1445	0	0	0	0	0	1	0	15	0	16	3	150	0	0	153	0	174	4	0	178	347
1445 - 1500	0	0	0	0	0	0	0	7	0	7	3	149	1	0	153	0	154	1	0	155	315
Hourly Total	0	0	0	0	**0**	1	0	30	0	**31**	17	589	1	0	**607**	0	564	5	0	**569**	**1207**
1500 - 1515	0	0	0	0	0	4	0	8	0	12	6	152	0	0	158	0	168	1	0	169	339
1515 - 1530	0	0	0	0	0	1	0	6	0	7	11	154	1	0	166	0	189	0	0	189	362
1530 - 1545	1	0	0	0	1	0	0	6	0	6	12	190	1	0	203	0	194	4	0	198	408
1545 - 1600	0	0	0	0	0	0	0	8	0	8	9	174	0	0	183	0	171	1	0	172	363
Hourly Total	1	0	0	0	**1**	5	0	28	0	**33**	38	670	2	0	**710**	0	722	6	0	**728**	**1472**
1600 - 1615	1	0	0	0	1	1	0	14	0	15	7	152	0	0	159	0	171	3	0	174	349
1615 - 1630	0	0	0	0	0	1	0	6	0	7	10	173	0	0	183	0	206	3	0	209	399
1630 - 1645	0	0	0	0	0	0	0	6	0	6	9	153	0	0	162	0	202	2	0	204	372
1645 - 1700	0	0	1	0	1	1	0	4	0	5	8	174	0	0	182	0	207	5	0	212	400
Hourly Total	1	0	1	0	**2**	3	0	30	0	**33**	34	652	0	0	**686**	0	786	13	0	**799**	**1520**
1700 - 1715	0	0	0	0	0	1	0	4	0	5	15	158	0	0	173	0	197	2	0	199	377
1715 - 1730	0	0	0	0	0	0	0	6	0	6	14	161	0	0	175	0	138	2	0	140	321
1730 - 1745	0	0	0	0	0	0	0	5	0	5	11	132	0	0	143	0	176	1	0	177	325
1745 - 1800	0	0	0	0	0	2	0	1	0	3	5	105	0	0	110	0	124	2	0	126	239
Hourly Total	0	0	0	0	**0**	3	0	16	0	**19**	45	556	0	0	**601**	0	635	7	0	**642**	**1262**
1800 - 1815	0	0	0	0	0	0	0	3	0	3	10	87	0	0	97	0	152	0	0	152	252
1815 - 1830	0	0	0	0	0	1	0	5	0	6	9	76	0	0	85	0	103	2	0	105	196
1830 - 1845	0	0	0	0	0	1	0	5	0	6	7	67	0	0	74	0	83	3	0	86	166
1845 - 1900	0	0	0	0	0	0	0	5	0	5	5	56	0	0	61	0	61	0	0	61	127
Hourly Total	0	0	0	0	**0**	2	0	18	0	**20**	31	286	0	0	**317**	0	399	5	0	**404**	**741**
Grand Total	4	0	2	0	**6**	59	0	333	0	**392**	304	6843	9	1	**7157**	0	7241	55	0	**7296**	**14851**
Approach %	66.67	0.00	33.33	0.00	-	15.05	0.00	84.95	0.00	-	4.25	95.61	0.13	0.01	-	0.00	99.25	0.75	0.00	-	
Intersection %	0.03	0.00	0.01	0.00	0.04	0.40	0.00	2.24	0.00	2.64	2.05	46.08	0.06	0.01	48.19	0.00	48.76	0.37	0.00	49.13	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.43	0.00	0.83	0.00	**0.86**	0.56	0.87	0.25	0.00	**0.86**	0.00	0.87	0.50	0.00	**0.87**	**0.95**

Fischbach
Transportation Group, LLC
Traffic Engineering and Planning



N

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 4.
Existing Year 2023 Peak Hour Traffic Volumes

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, August 22, 2023	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	1	95	24	-	0	120	5	68	6	-	0	79	7	5	1	-	0	13	14	17	20	-	0	51	263
0730 - 0745	3	107	11	-	0	121	8	74	7	-	0	89	8	12	3	-	0	23	25	32	11	-	0	68	301
0745 - 0800	2	125	18	-	0	145	9	79	3	-	0	91	9	7	1	-	0	17	35	27	7	-	0	69	322
0800 - 0815	3	79	14	-	0	96	4	86	8	-	0	98	4	11	1	-	0	16	17	18	8	-	0	43	253
Total	9	406	67	0	0	482	26	307	24	0	0	357	28	35	6	0	0	69	91	94	46	0	0	231	1139
Approach %	1.87	84.23	13.90	0.00	0.00	-	7.28	85.99	6.72	0.00	0.00	-	40.58	50.72	8.70	0.00	0.00	-	39.39	40.69	19.91	0.00	0.00	-	
PHF	0.75	0.81	0.70	0.00	0.00	**0.83**	0.72	0.89	0.75	0.00	0.00	**0.91**	0.78	0.73	0.50	0.00	0.00	**0.75**	0.65	0.73	0.58	0.00	0.00	**0.84**	**0.88**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	1	88	22	-	0	111	5	65	6	-	0	76	7	5	0	-	0	12	14	17	19	-	0	50	249
0730 - 0745	3	99	11	-	0	113	8	69	6	-	0	83	8	11	3	-	0	22	25	32	11	-	0	68	286
0745 - 0800	2	116	18	-	0	136	8	75	3	-	0	86	9	7	1	-	0	17	34	27	7	-	0	68	307
0800 - 0815	3	67	14	-	0	84	4	79	7	-	0	90	4	10	1	-	0	15	17	17	6	-	0	40	229
Total	9	370	65	0	0	444	25	288	22	0	0	335	28	33	5	0	0	66	90	93	43	0	0	226	1071
Approach %	2.03	83.33	14.64	0.00	0.00	-	7.46	85.97	6.57	0.00	0.00	-	42.42	50.00	7.58	0.00	0.00	-	39.82	41.15	19.03	0.00	0.00	-	
PHF	0.75	0.80	0.74	0.00	0.00	**0.82**	0.78	0.91	0.79	0.00	0.00	**0.93**	0.78	0.75	0.42	0.00	0.00	**0.75**	0.66	0.73	0.57	0.00	0.00	**0.83**	**0.87**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	5	2	-	0	7	0	3	0	-	0	3	0	0	1	-	0	1	0	0	0	-	0	0	11
0730 - 0745	0	7	0	-	0	7	0	4	1	-	0	5	0	1	0	-	0	1	0	0	0	-	0	0	13
0745 - 0800	0	7	0	-	0	7	1	4	0	-	0	5	0	0	0	-	0	0	0	0	0	-	0	0	12
0800 - 0815	0	9	0	-	0	9	0	6	1	-	0	7	0	1	0	-	0	1	0	1	2	-	0	3	20
Total	0	28	2	0	0	30	1	17	2	0	0	20	0	2	1	0	0	3	0	1	2	0	0	3	56
Approach %	0.00	93.33	6.67	0.00	0.00	-	5.00	85.00	10.00	0.00	0.00	-	0.00	66.67	33.33	0.00	0.00	-	0.00	33.33	66.67	0.00	0.00	-	
PHF	0.00	0.78	0.25	0.00	0.00	**0.83**	0.25	0.71	0.50	0.00	0.00	**0.71**	0.00	0.50	0.25	0.00	0.00	**0.75**	0.00	0.25	0.25	0.00	0.00	**0.25**	**0.70**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	2	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	0	0	1	-	0	1	3
0730 - 0745	0	1	0	-	0	1	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	2
0745 - 0800	0	2	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	0	1	3
0800 - 0815	0	3	0	-	0	3	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	4
Total	0	8	0	0	0	8	0	2	0	0	0	2	0	0	0	0	0	0	1	0	1	0	0	2	12
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	50.00	0.00	50.00	0.00	0.00	-	
PHF	0.00	0.67	0.00	0.00	0.00	**0.67**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.25	0.00	0.00	**0.50**	**0.75**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Columbia, TN

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Marr Traffic DATA COLLECTION

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Tuesday, August 22, 2023	
Period	1600 - 1800
Peak Hour	1600 - 1700

* the Peak Hour Diagram does not include Bikes



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1600 - 1615	4	74	21	-	0	99	6	111	18	-	0	135	2	14	1	-	0	17	14	3	4	-	0	21	272
1615 - 1630	2	60	20	-	0	82	6	99	12	-	0	117	2	8	3	-	0	13	19	6	8	-	0	33	245
1630 - 1645	2	68	14	-	0	84	13	126	13	-	0	152	4	6	2	-	0	12	15	13	10	-	0	38	286
1645 - 1700	1	74	14	-	0	89	10	93	11	-	0	114	5	11	0	-	0	16	12	5	4	-	0	21	240
Total	9	276	69	0	0	354	35	429	54	0	0	518	13	39	6	0	0	58	60	27	26	0	0	113	1043
Approach %	2.54	77.97	19.49	0.00	0.00	-	6.76	82.82	10.42	0.00	0.00	-	22.41	67.24	10.34	0.00	0.00	-	53.10	23.89	23.01	0.00	0.00	-	
PHF	0.56	0.93	0.82	0.00	0.00	**0.89**	0.67	0.85	0.75	0.00	0.00	**0.85**	0.65	0.70	0.50	0.00	0.00	**0.85**	0.79	0.52	0.65	0.00	0.00	**0.74**	**0.91**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1600 - 1615	4	66	19	-	0	89	6	109	18	-	0	133	2	14	1	-	0	17	14	2	4	-	0	20	259
1615 - 1630	2	56	20	-	0	78	5	94	11	-	0	110	2	8	3	-	0	13	16	6	8	-	0	30	231
1630 - 1645	2	67	14	-	0	83	13	118	13	-	0	144	4	6	2	-	0	12	15	13	10	-	0	38	277
1645 - 1700	1	74	14	-	0	89	10	88	11	-	0	109	5	11	0	-	0	16	12	5	4	-	0	21	235
Total	9	263	67	0	0	339	34	409	53	0	0	496	13	39	6	0	0	58	57	26	26	0	0	109	1002
Approach %	2.65	77.58	19.76	0.00	0.00	-	6.85	82.46	10.69	0.00	0.00	-	22.41	67.24	10.34	0.00	0.00	-	52.29	23.85	23.85	0.00	0.00	-	
PHF	0.56	0.89	0.84	0.00	0.00	**0.95**	0.65	0.87	0.74	0.00	0.00	**0.86**	0.65	0.70	0.50	0.00	0.00	**0.85**	0.89	0.50	0.65	0.00	0.00	**0.72**	**0.90**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1600 - 1615	0	6	2	-	0	8	0	2	0	-	0	2	0	0	0	-	0	0	0	1	0	-	0	1	11
1615 - 1630	0	3	0	-	0	3	1	5	1	-	0	7	0	0	0	-	0	0	2	0	0	-	0	2	12
1630 - 1645	0	1	0	-	0	1	0	7	0	-	0	7	0	0	0	-	0	0	0	0	0	-	0	0	8
1645 - 1700	0	0	0	-	0	0	0	2	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	2
Total	0	10	2	0	0	12	1	16	1	0	0	18	0	0	0	0	0	0	2	1	0	0	0	3	33
Approach %	0.00	83.33	16.67	0.00	0.00	-	5.56	88.89	5.56	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	66.67	33.33	0.00	0.00	0.00	-	
PHF	0.00	0.42	0.25	0.00	0.00	**0.38**	0.25	0.57	0.25	0.00	0.00	**0.64**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.25	0.25	0.00	0.00	0.00	**0.38**	**0.69**

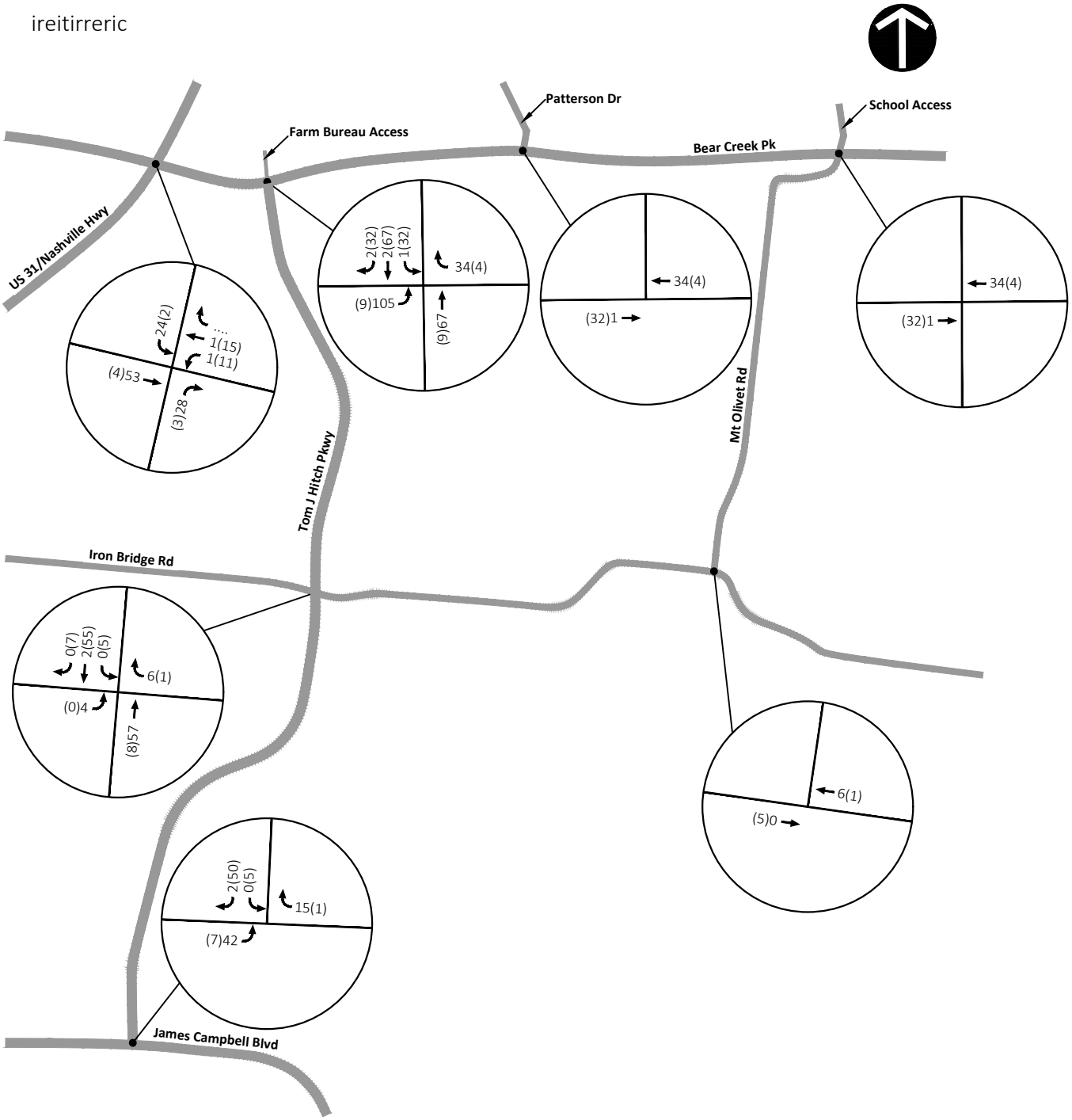
Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1600 - 1615	0	2	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2
1615 - 1630	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	0	1	2
1630 - 1645	0	0	0	-	0	0	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	1
1645 - 1700	0	0	0	-	0	0	0	3	0	-	0	3	0	0	0	-	0	0	0	0	0	-	0	0	3
Total	0	3	0	0	0	3	0	4	0	0	0	4	0	0	0	0	0	0	1	0	0	0	0	1	8
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.38	0.00	0.00	0.00	**0.38**	0.00	0.33	0.00	0.00	0.00	**0.33**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	0.00	**0.25**	**0.67**

Bikes

	Northbound						Southbound						Eastbound						Westbound						
	Tom J Hitch Pkwy (South)						Tom J Hitch Pkwy (North)						Iron Bridge Rd (West)						Iron Bridge Rd (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1600 - 1615	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1615 - 1630	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

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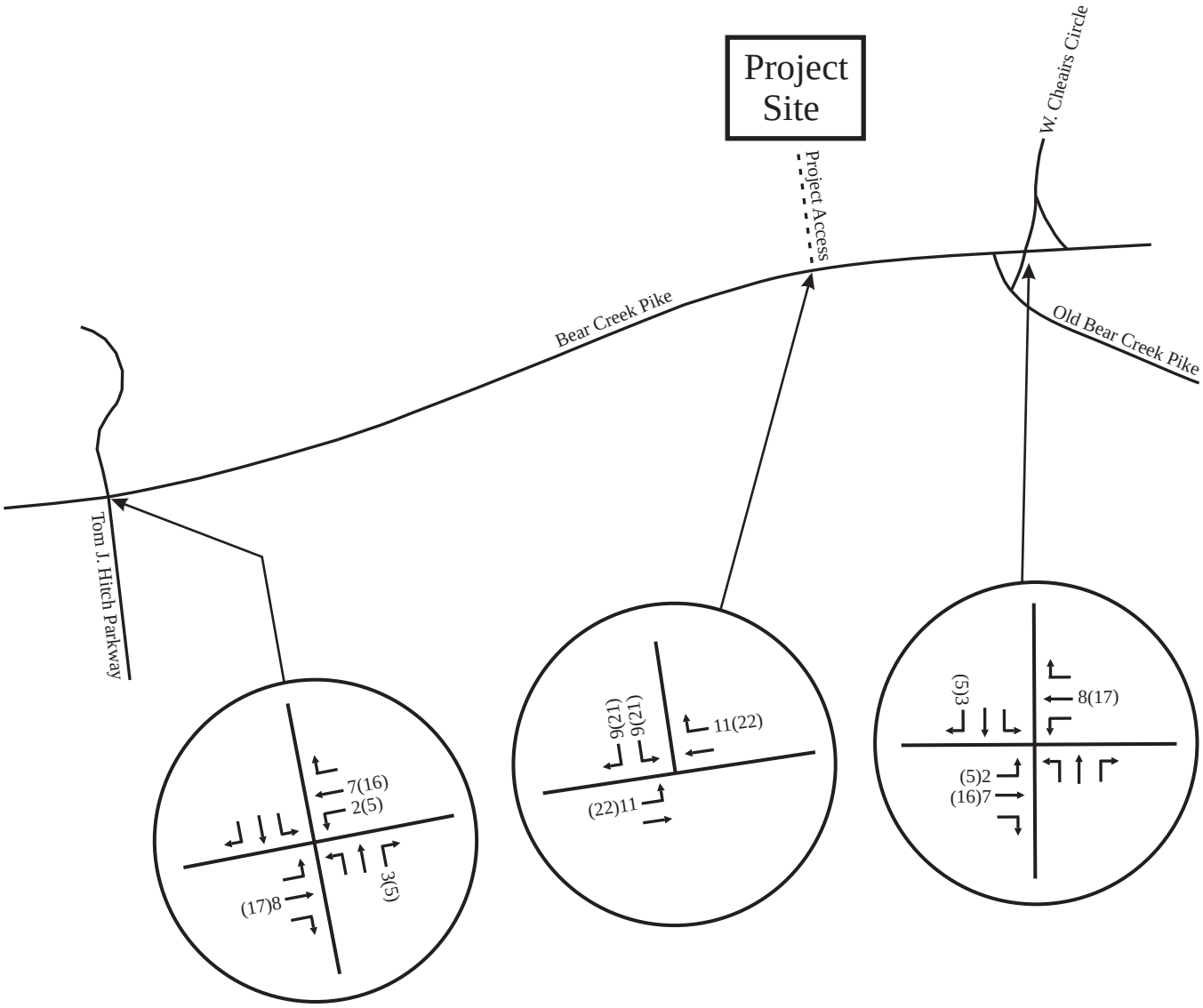


Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

APPENDIX E
BACKGROUND PROJECT DATA

F i s c h b a c h
Transportation Group, LLC
Traffic Engineering and Planning



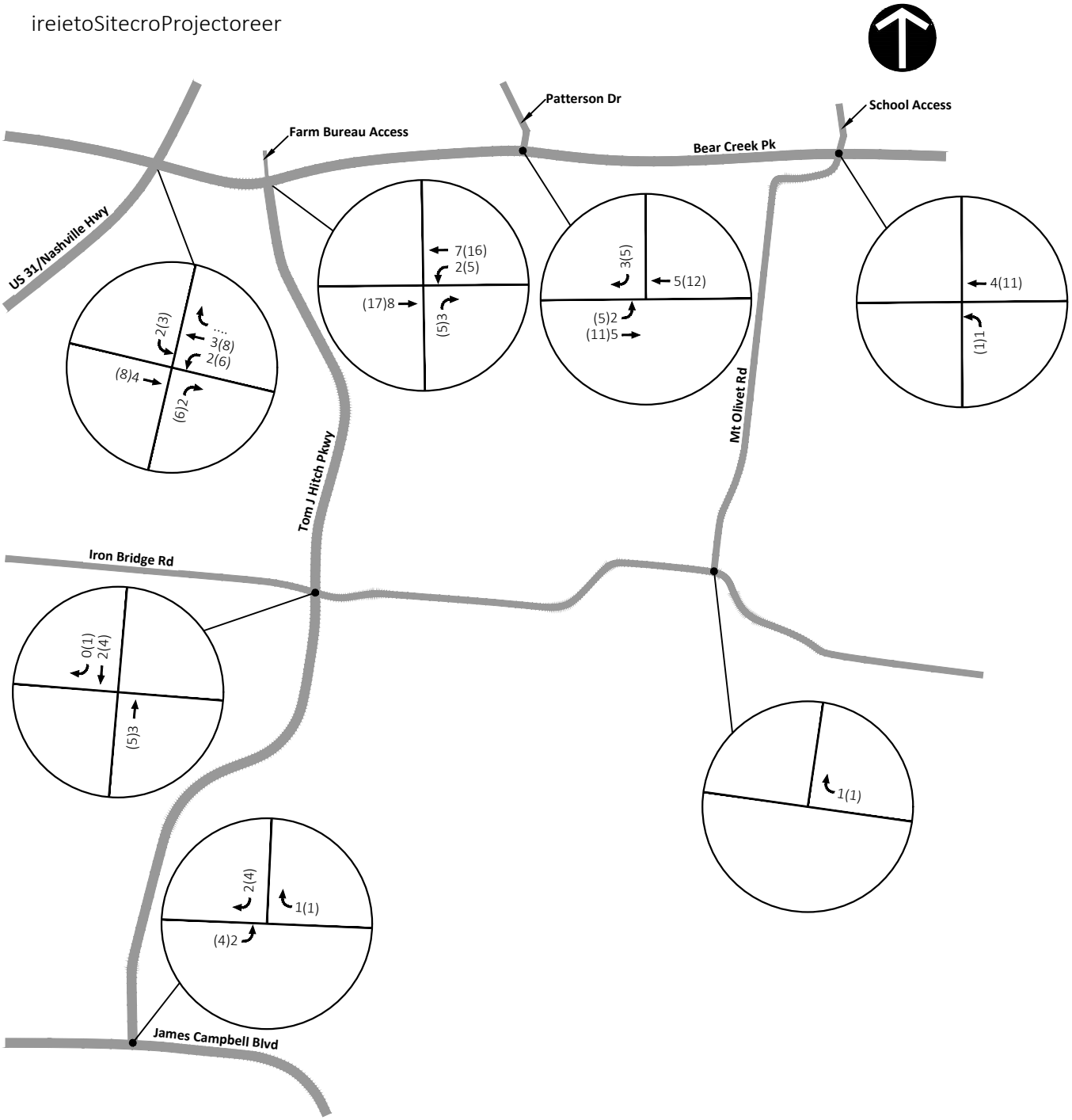
N

No Scale

XX - AM Peak Hour Volumes
(XX) - PM Peak Hour Volumes

Figure 7.
Peak Hour Traffic Volumes Generated by the Proposed Project

ireietoSitecroProjectoreer



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

APPENDIX F
TRIP GENERATION CALCULATIONS

Single-Family Detached Housing
(210)

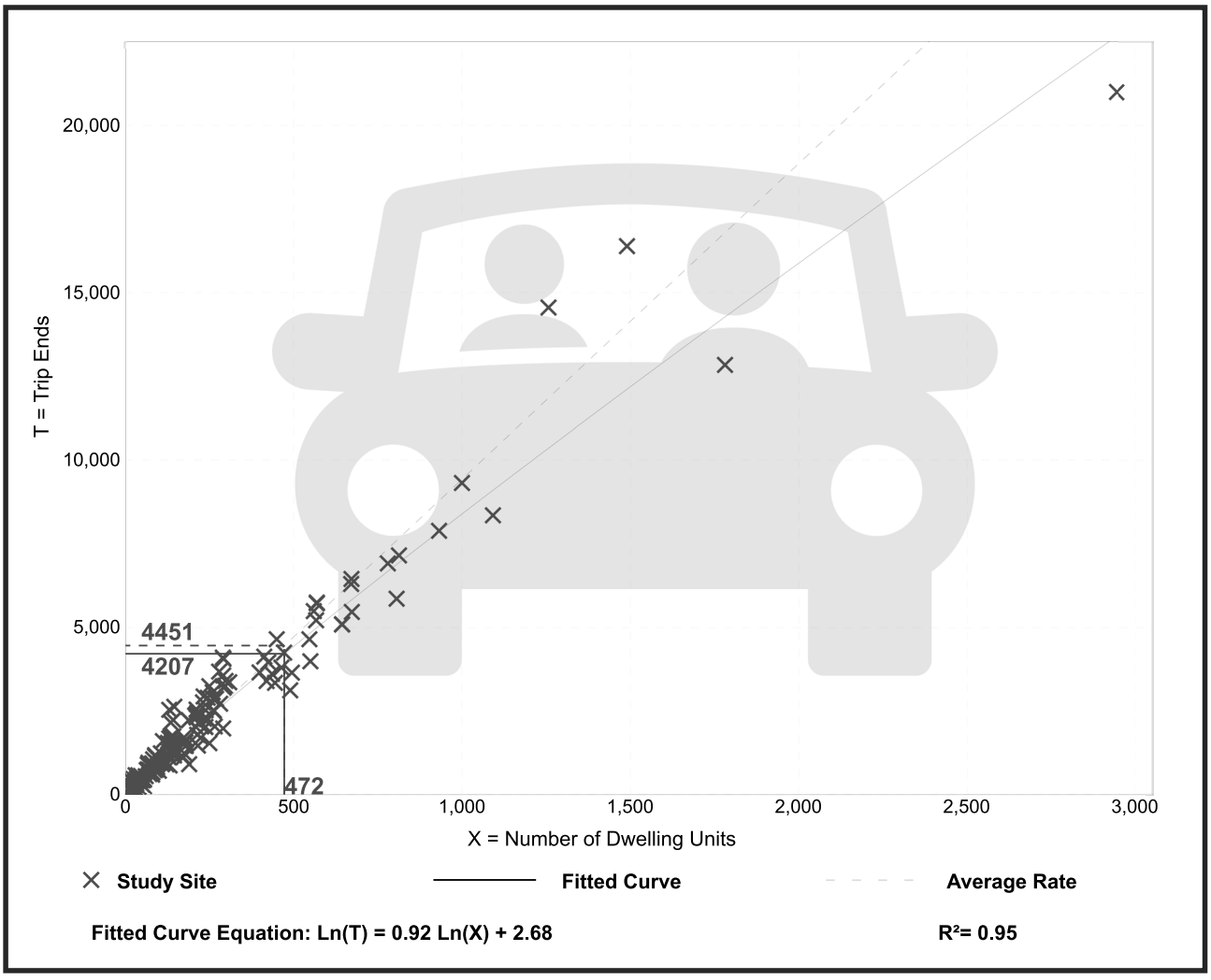
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



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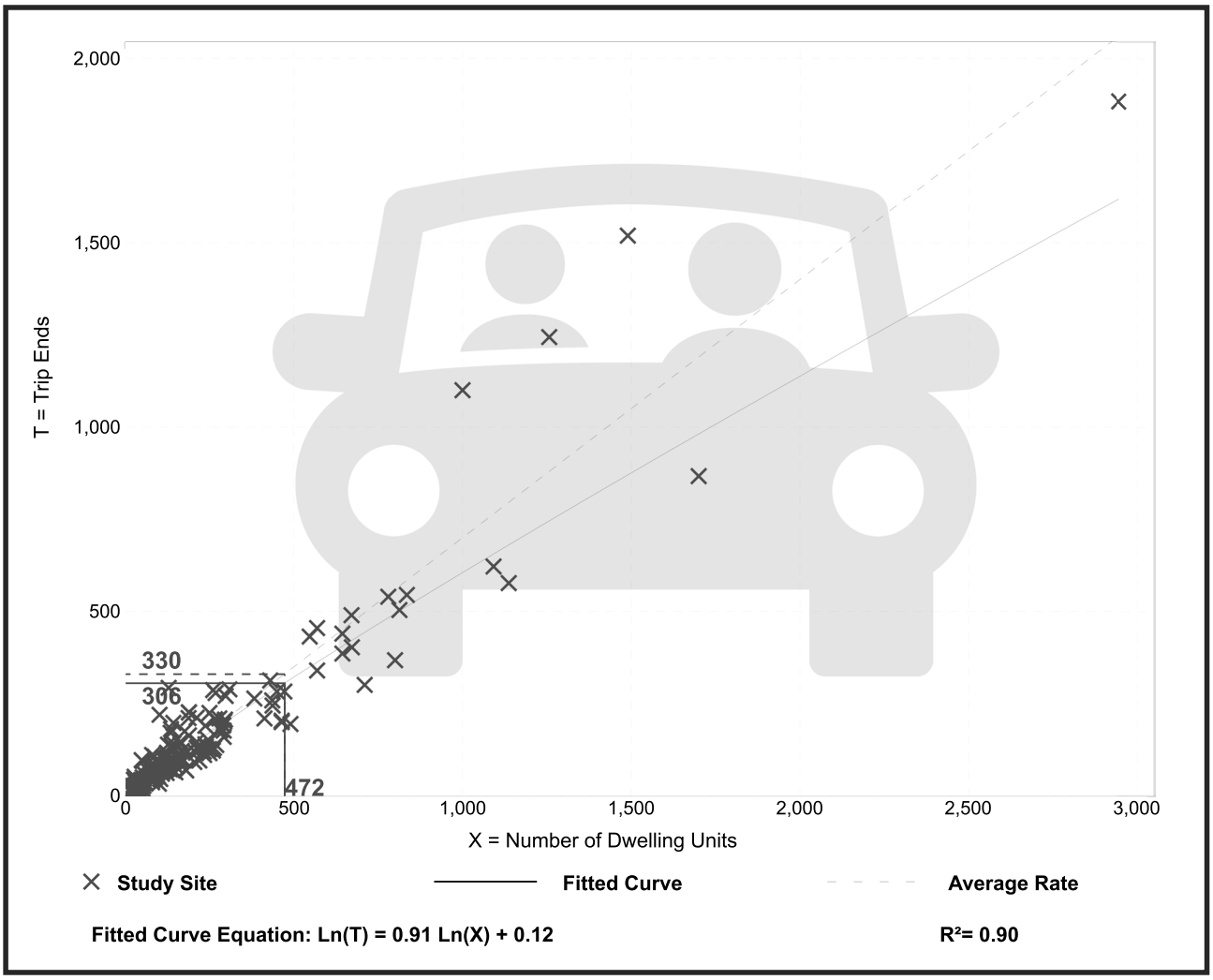
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



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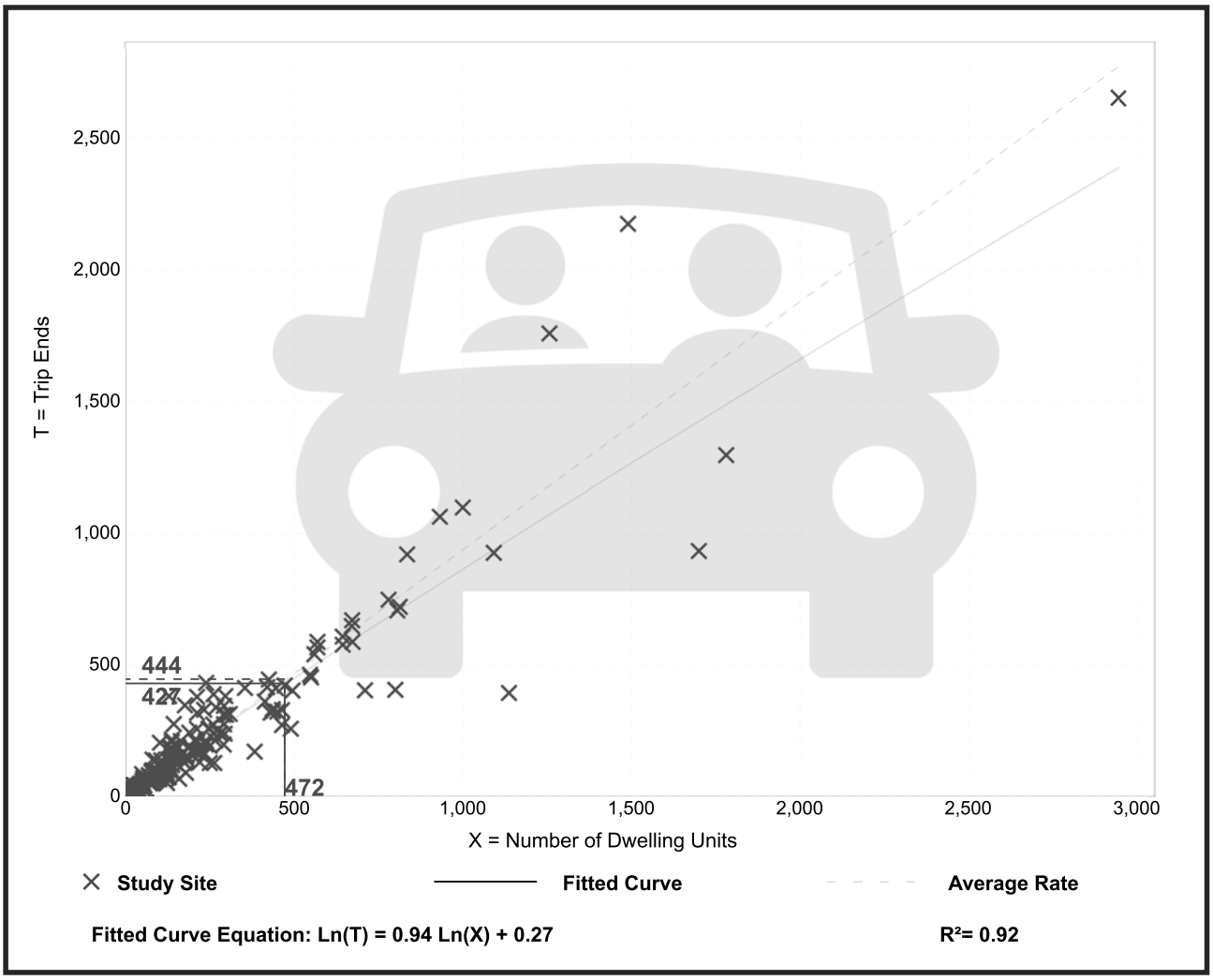
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



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Single-Family Attached Housing
(215)

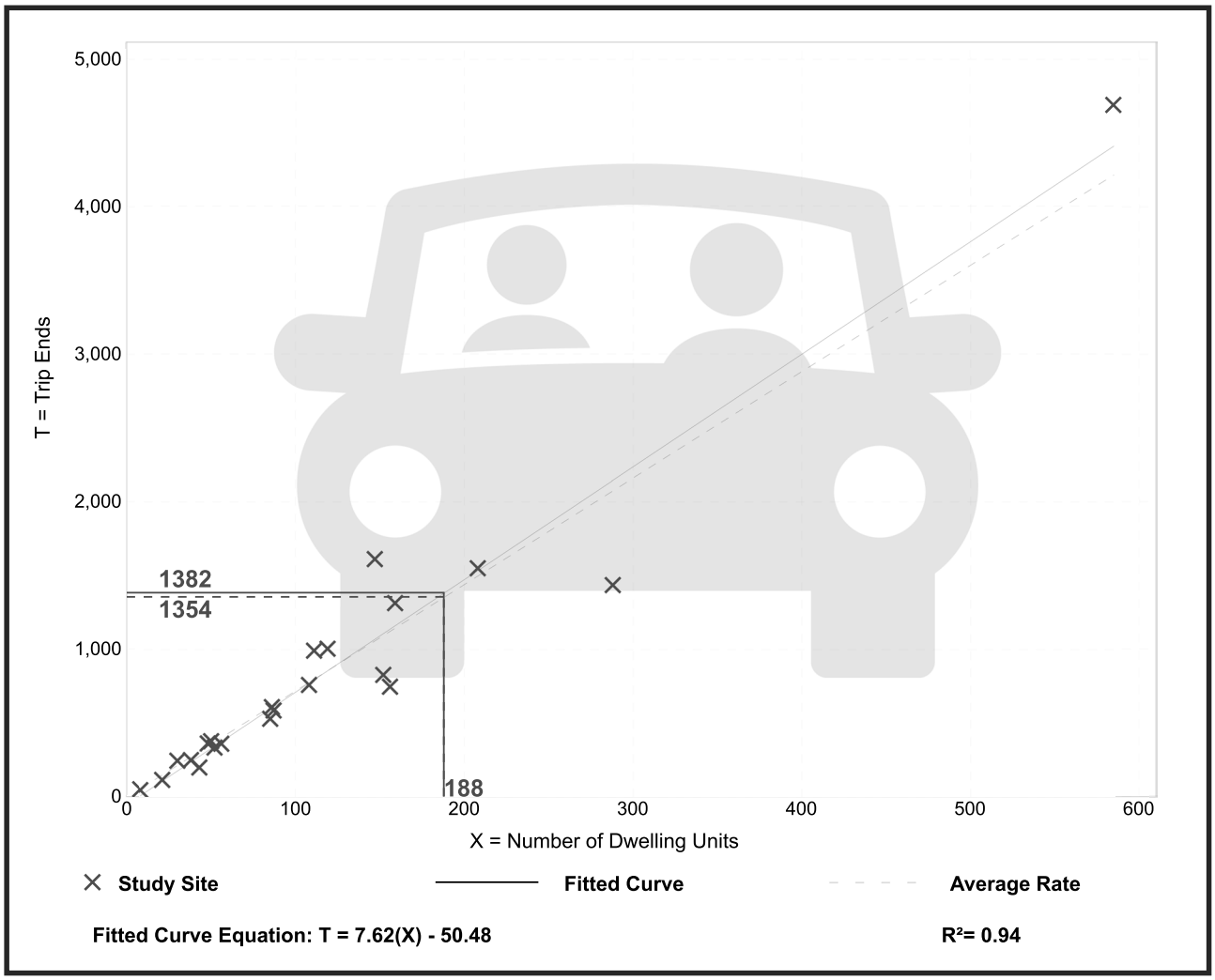
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 120
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

Data Plot and Equation



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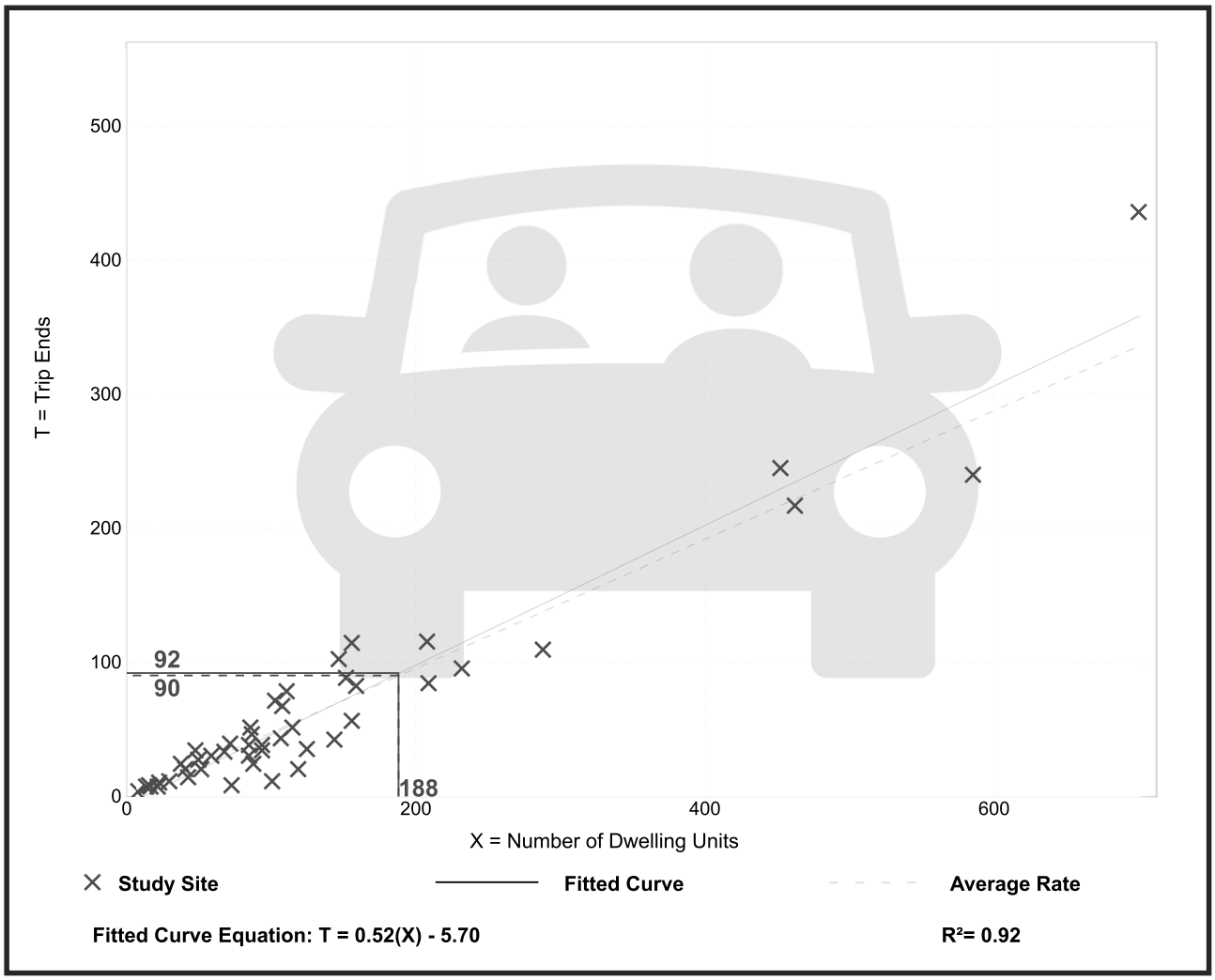
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



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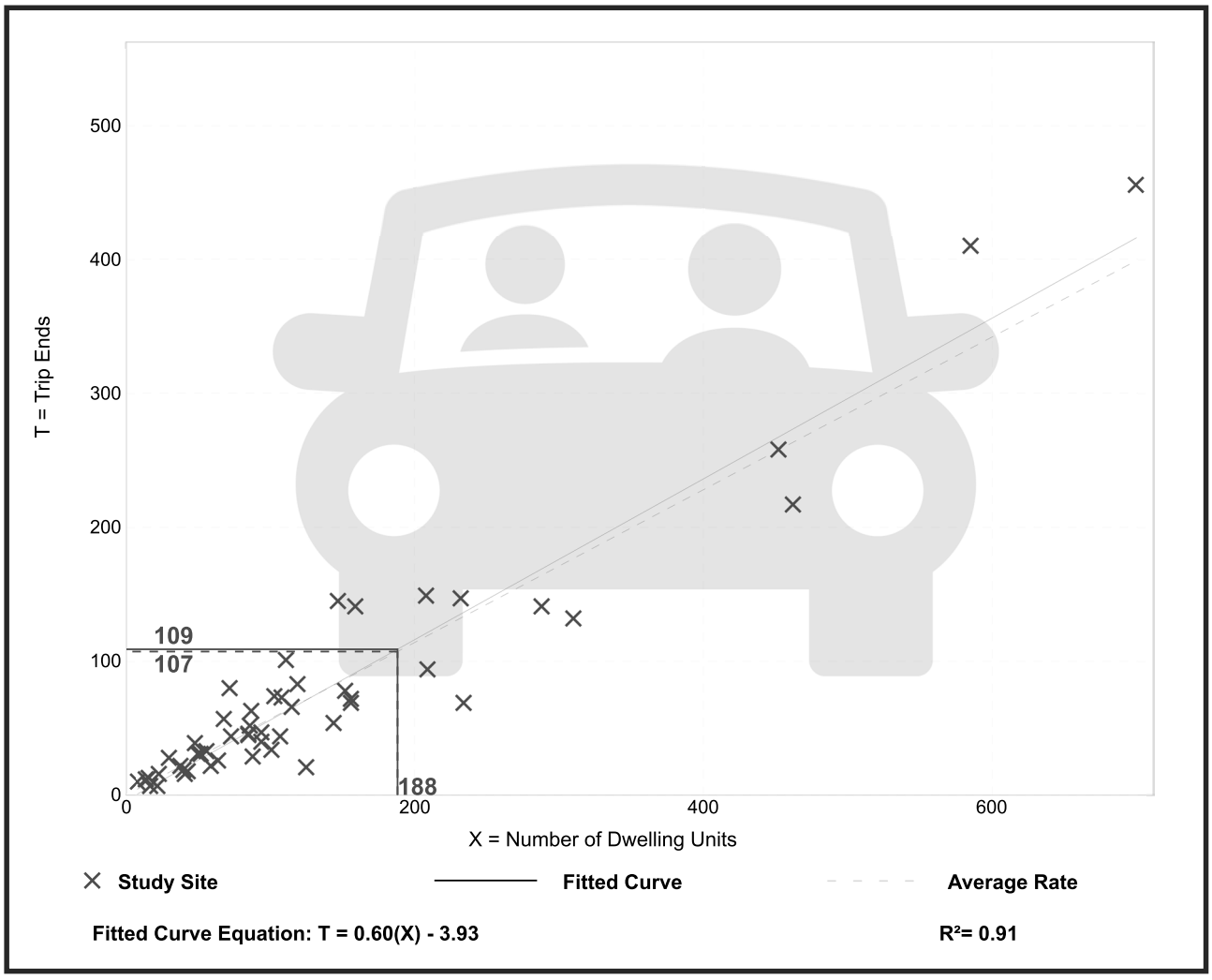
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



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Senior Adult Housing - Single-Family
(251)

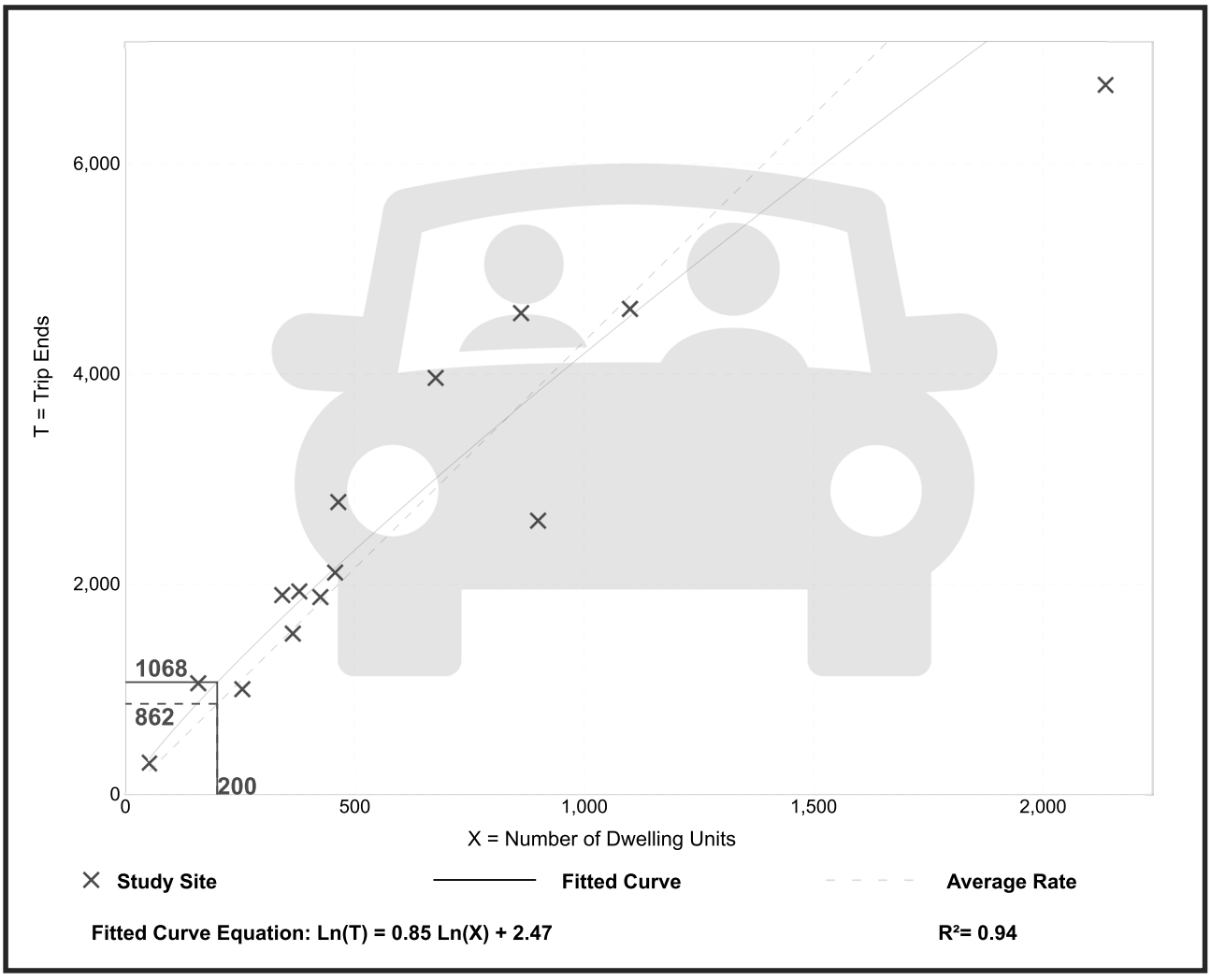
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Dwelling Units: 646
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.31	2.90 - 6.66	1.07

Data Plot and Equation



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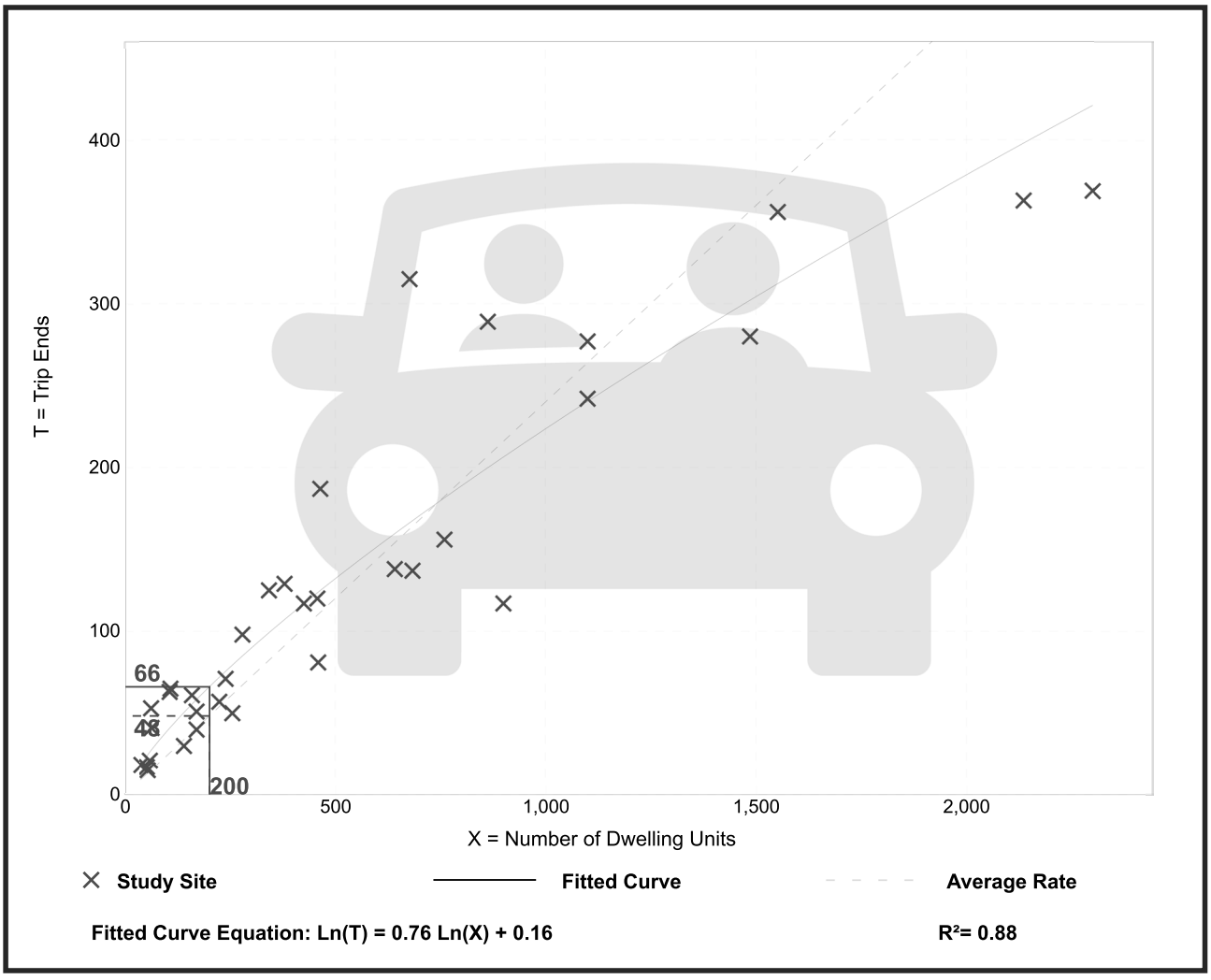
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 34
Avg. Num. of Dwelling Units: 557
Directional Distribution: 33% entering, 67% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.24	0.13 - 0.84	0.10

Data Plot and Equation



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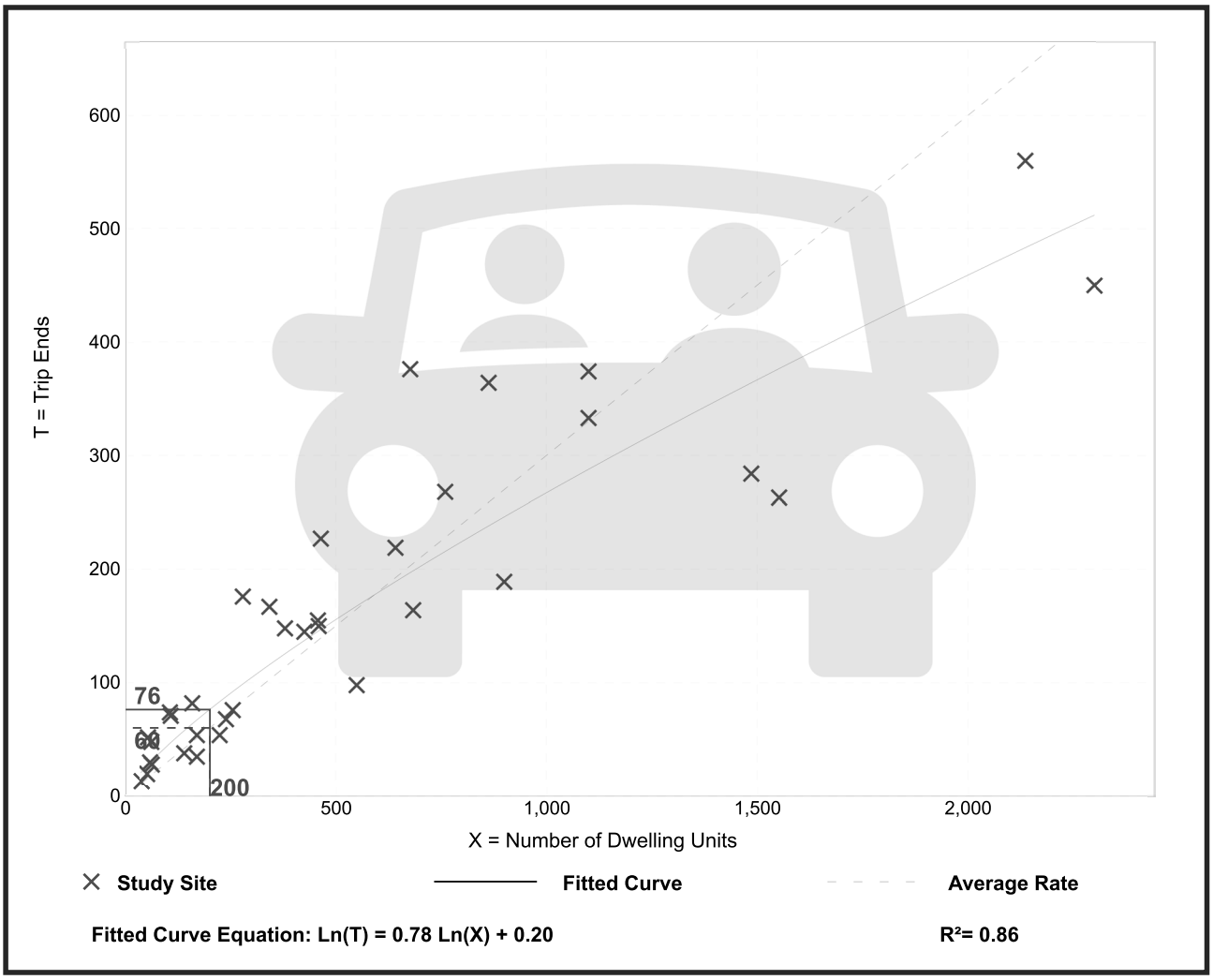
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 35
Avg. Num. of Dwelling Units: 556
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.17 - 0.95	0.12

Data Plot and Equation



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Single-Family Detached Housing
(210)

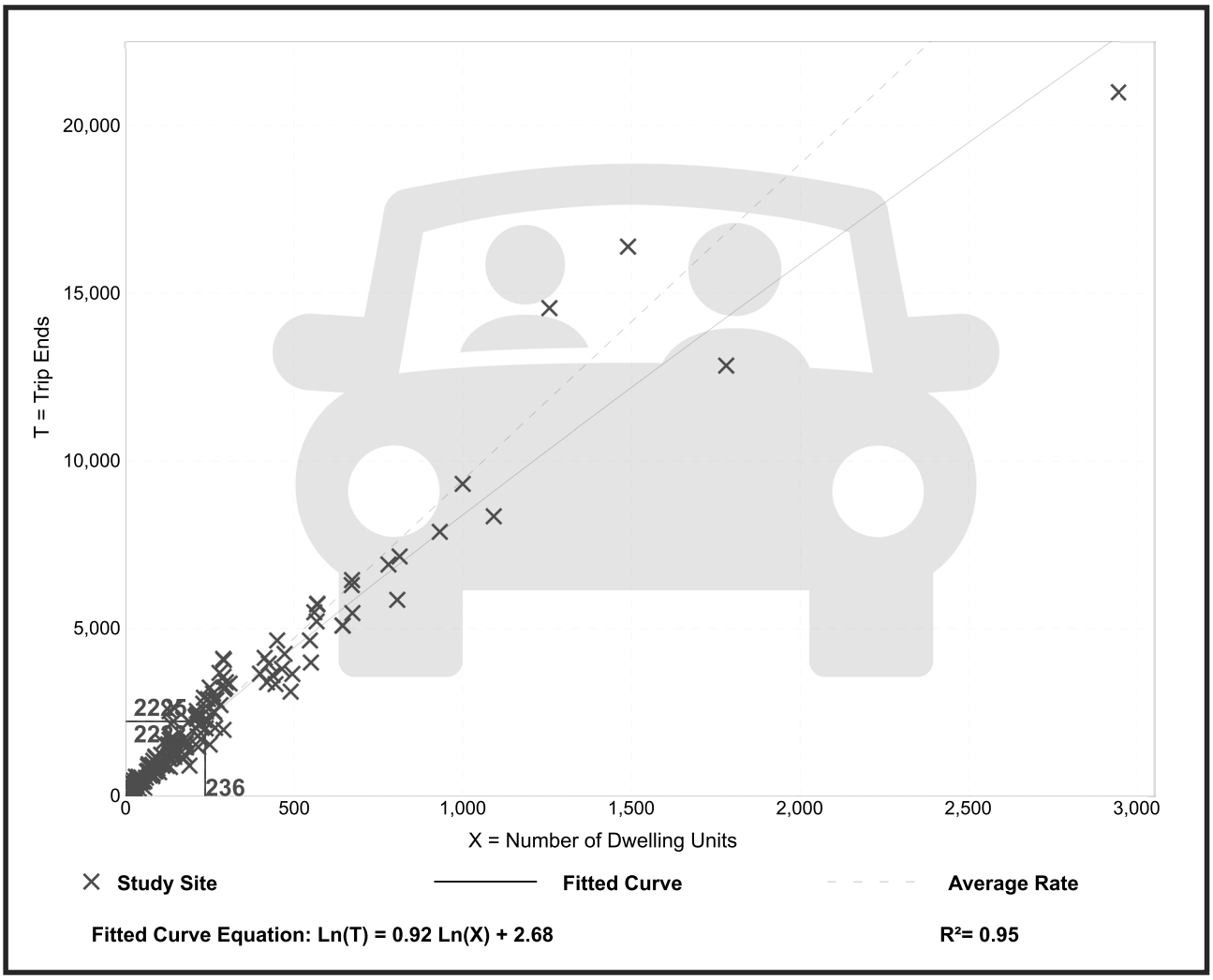
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



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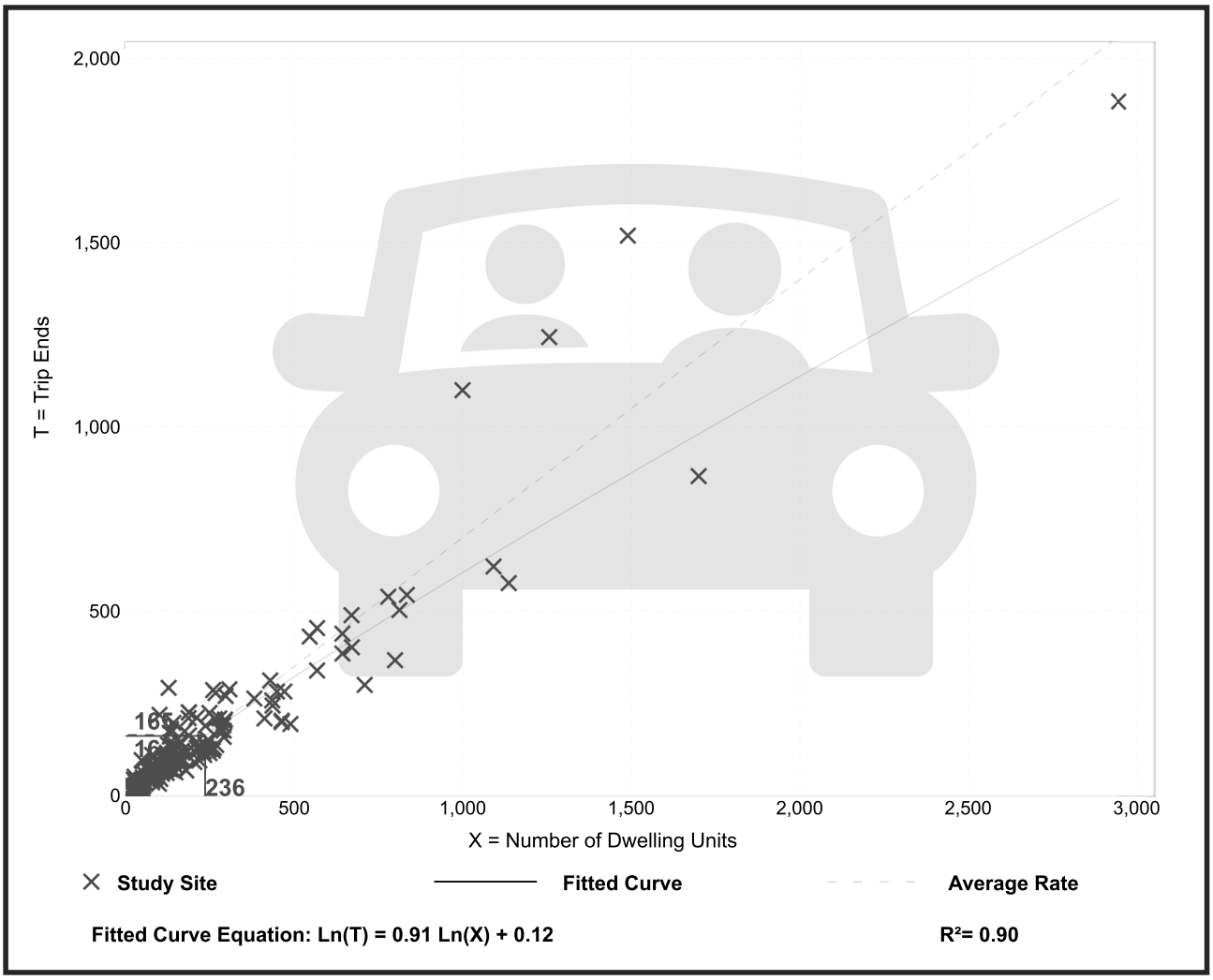
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



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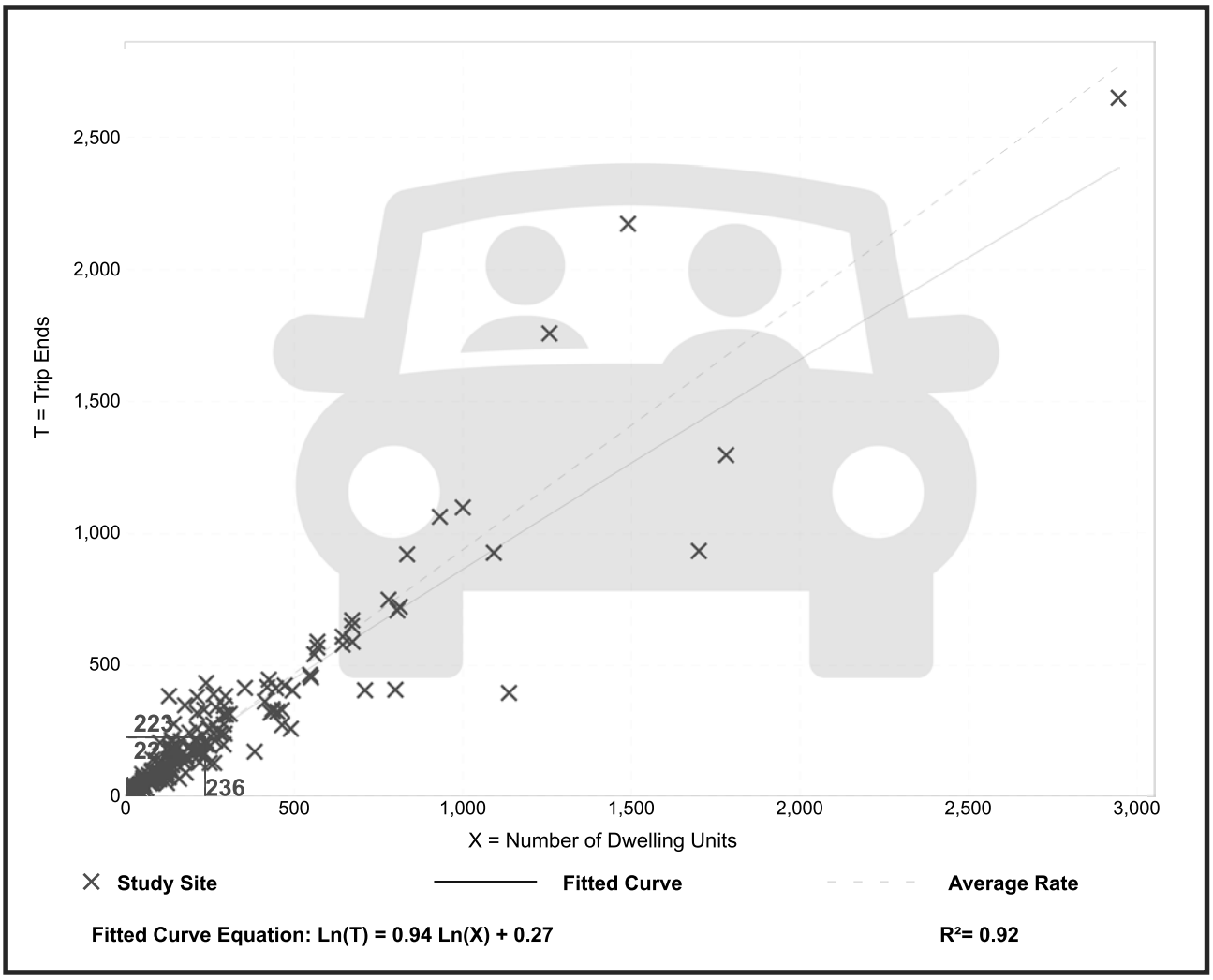
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



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Single-Family Attached Housing
(215)

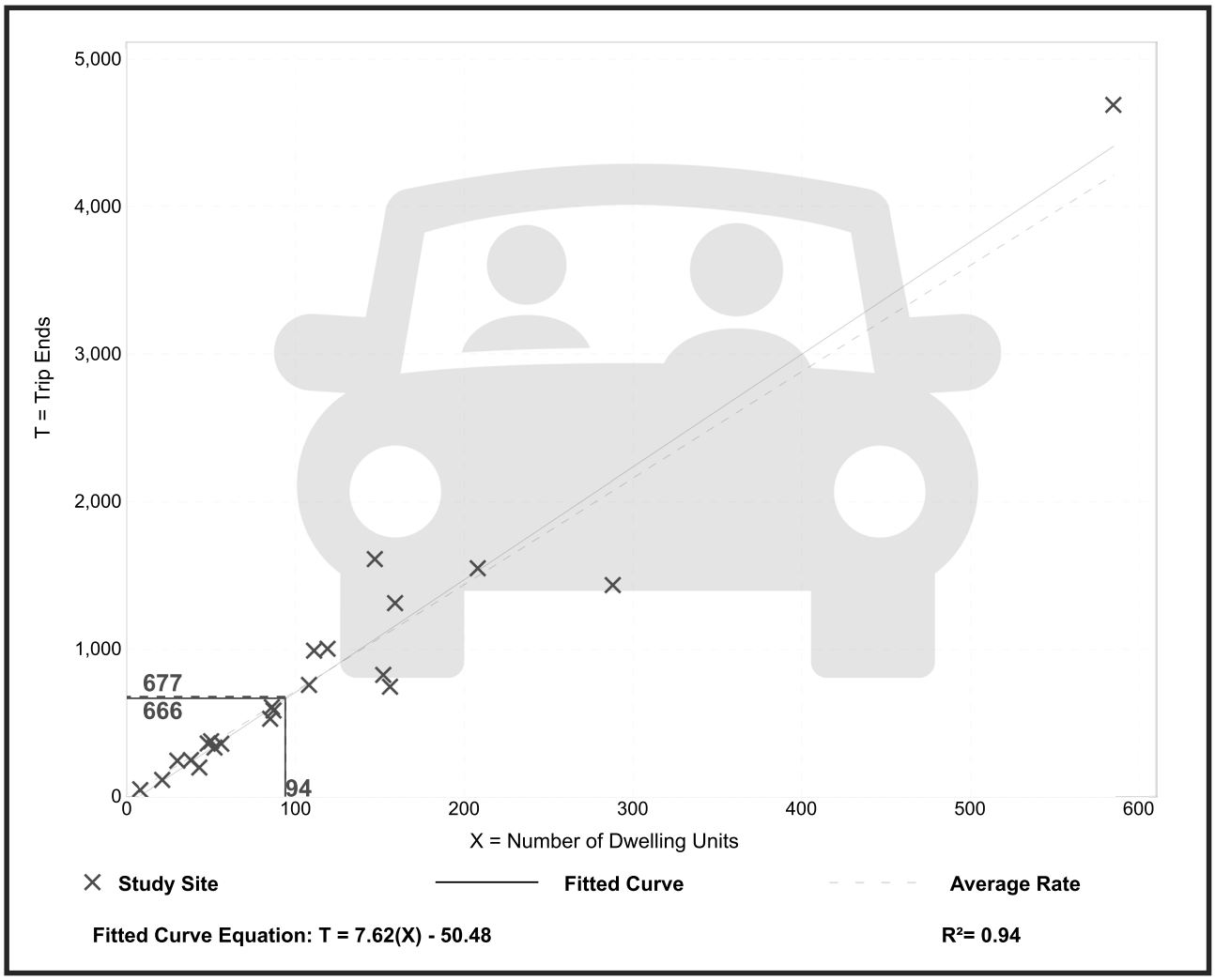
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 120
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.20	4.70 - 10.97	1.61

Data Plot and Equation



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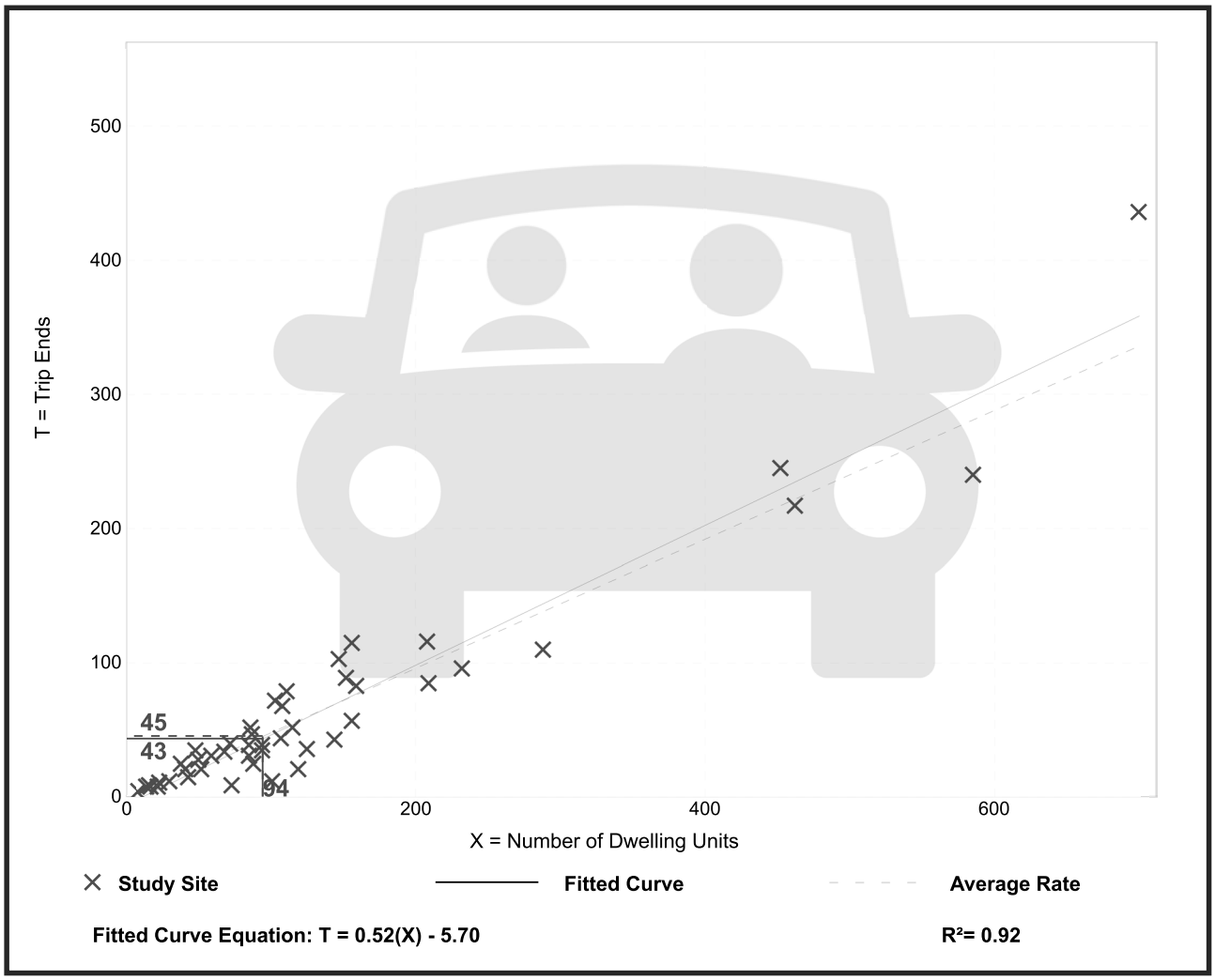
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

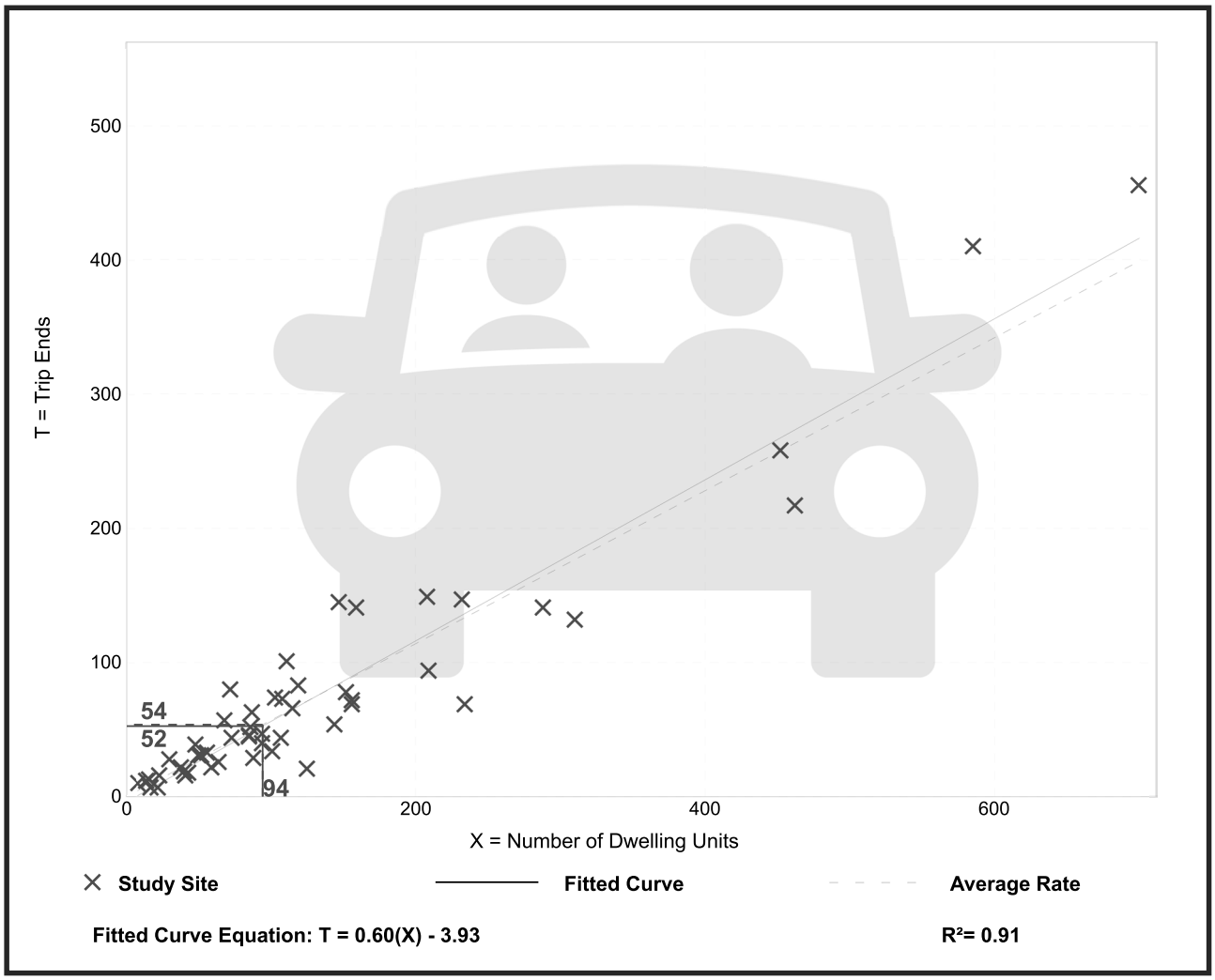
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

Day Care Center
(565)

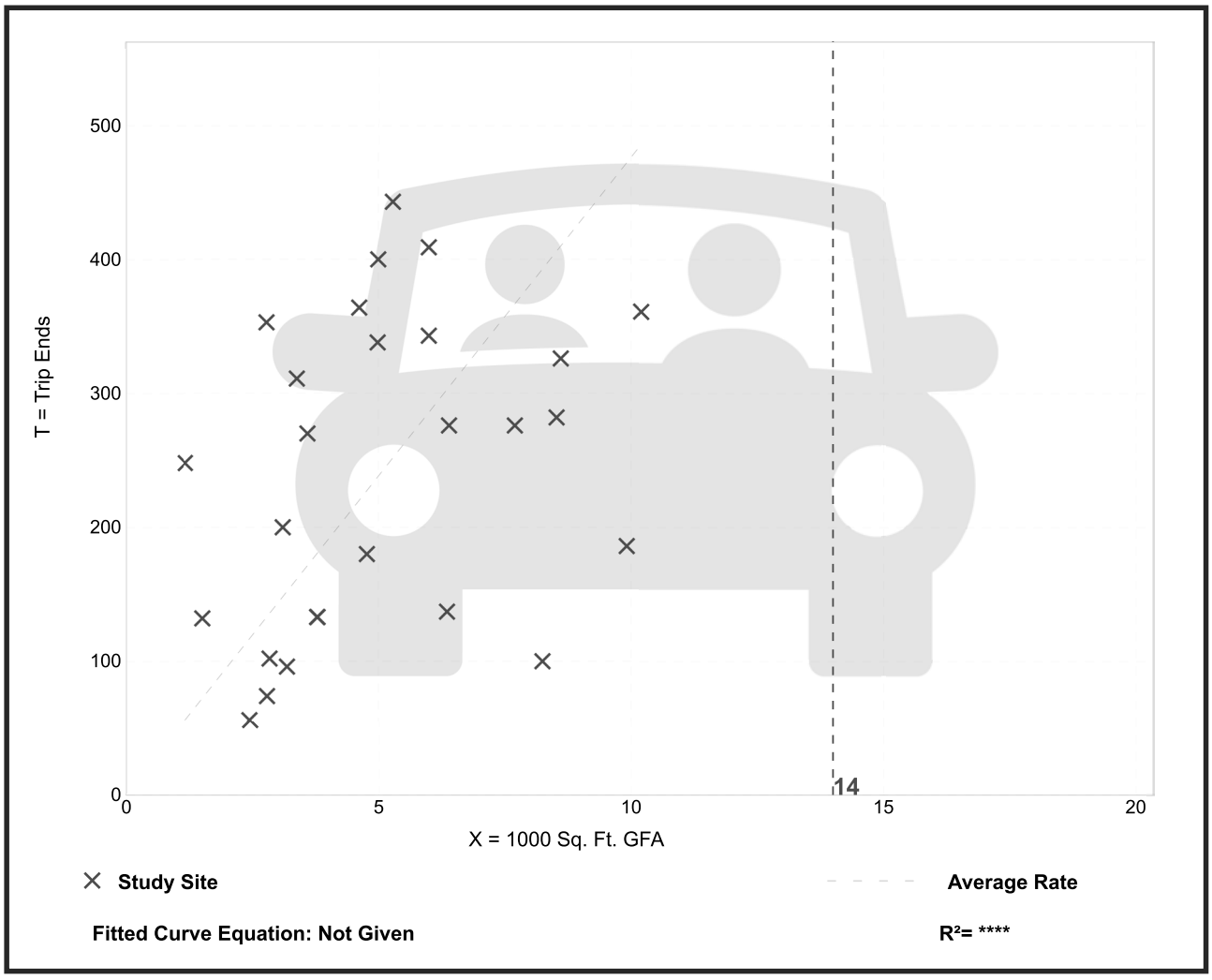
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 27
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
47.62	12.12 - 211.06	29.78

Data Plot and Equation



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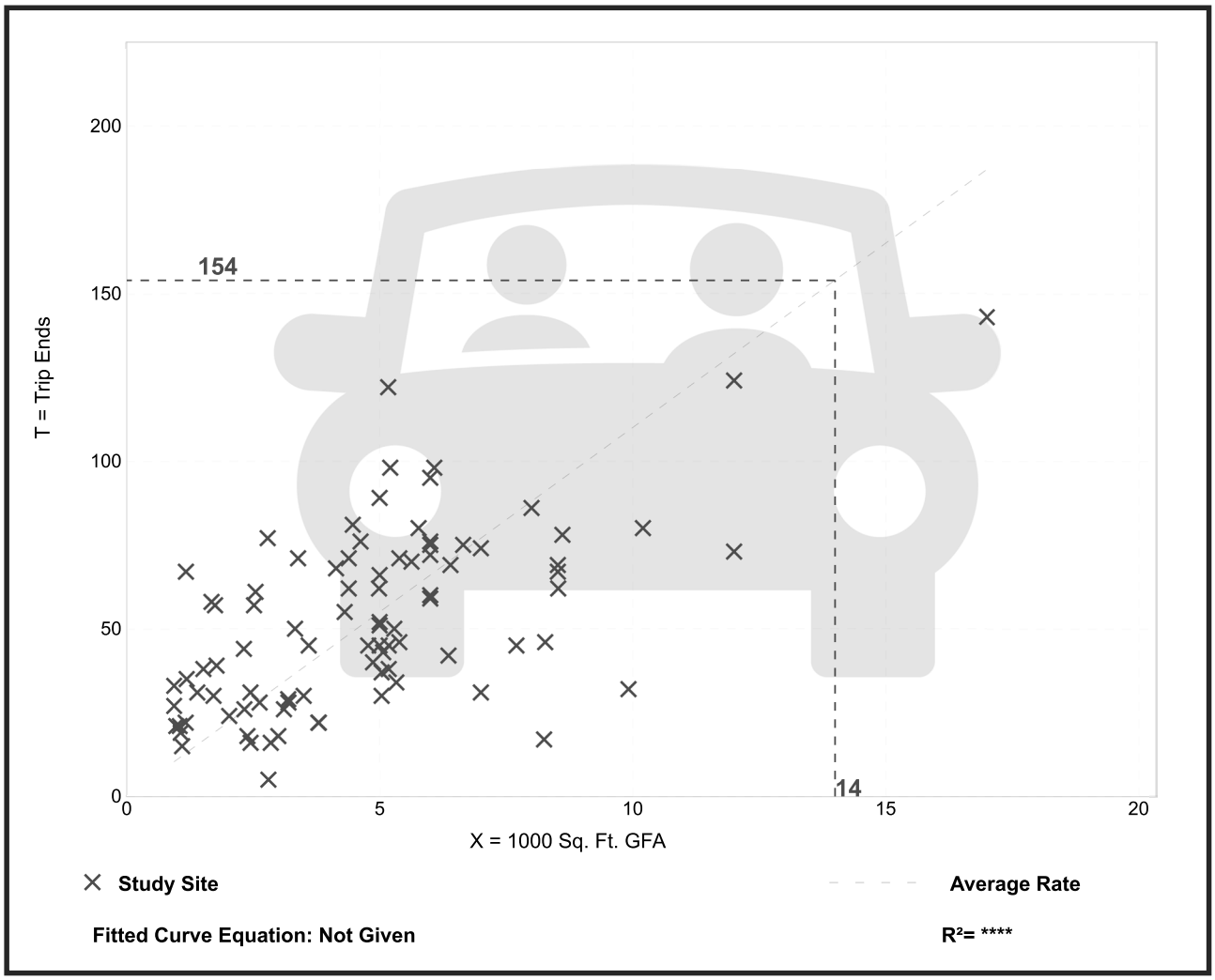
Day Care Center
(565)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 89
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.00	1.79 - 57.02	6.08

Data Plot and Equation



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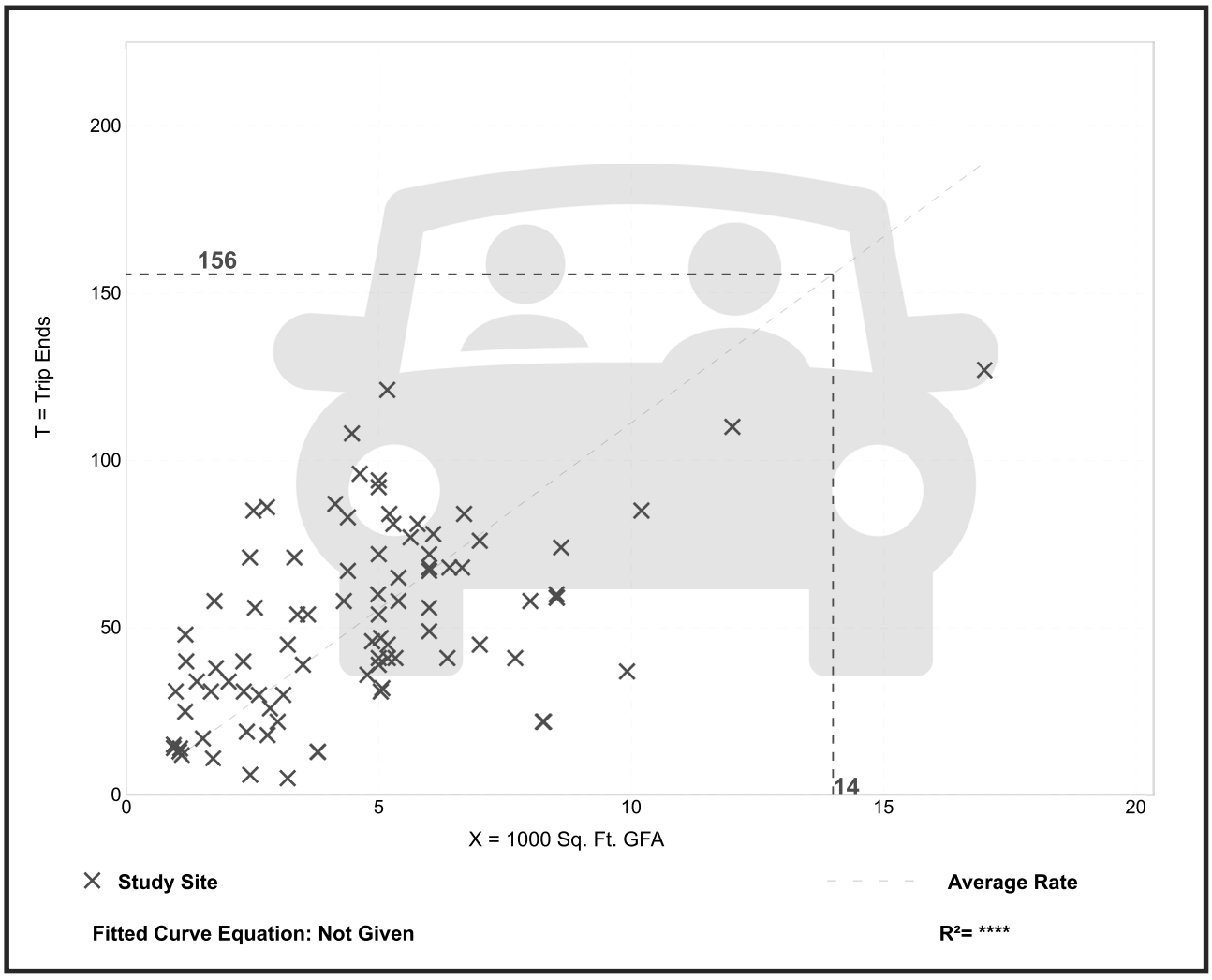
Day Care Center
(565)

Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 90
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.12	1.56 - 40.85	6.28

Data Plot and Equation



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Senior Adult Housing - Single-Family
(251)

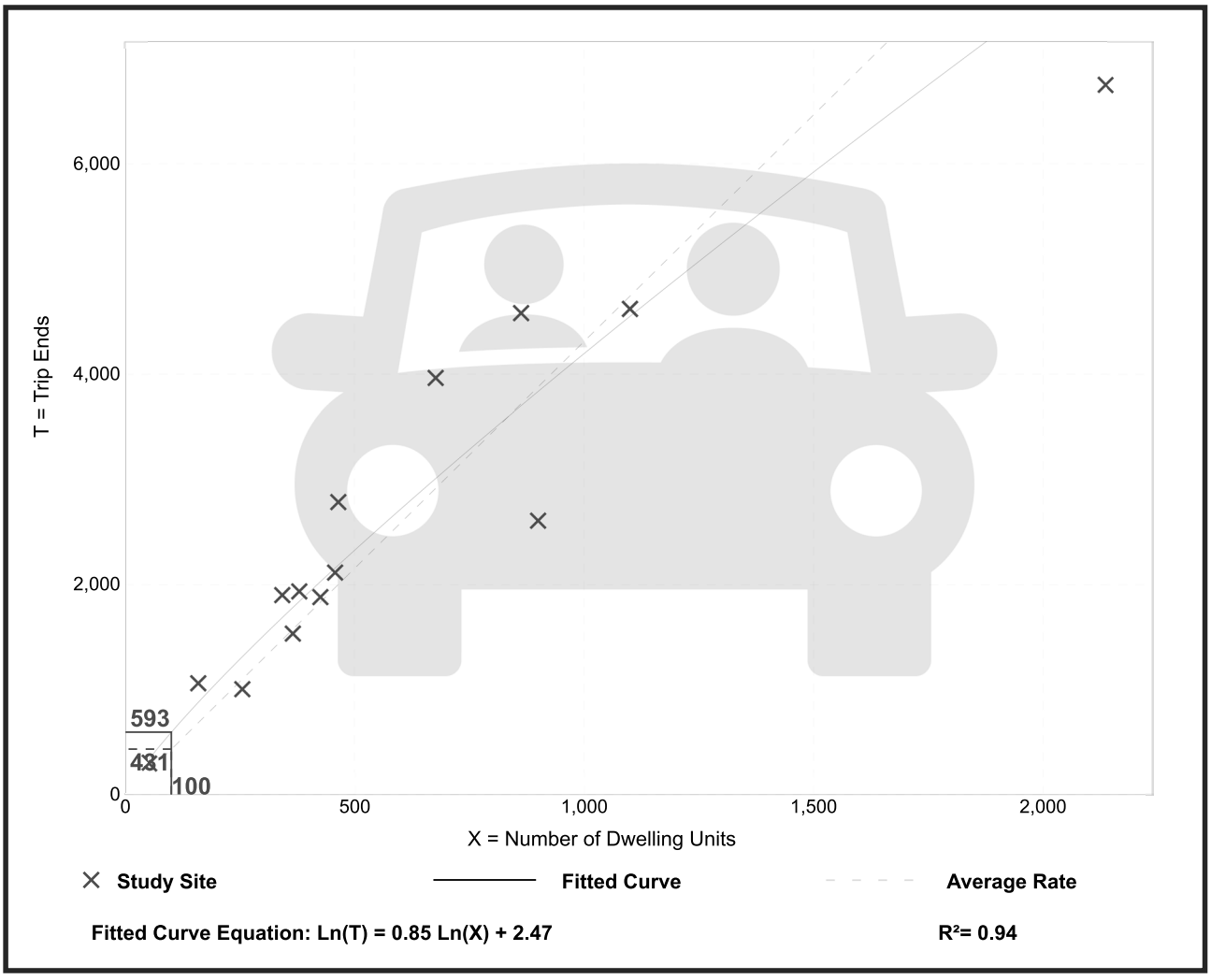
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 15
Avg. Num. of Dwelling Units: 646
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.31	2.90 - 6.66	1.07

Data Plot and Equation



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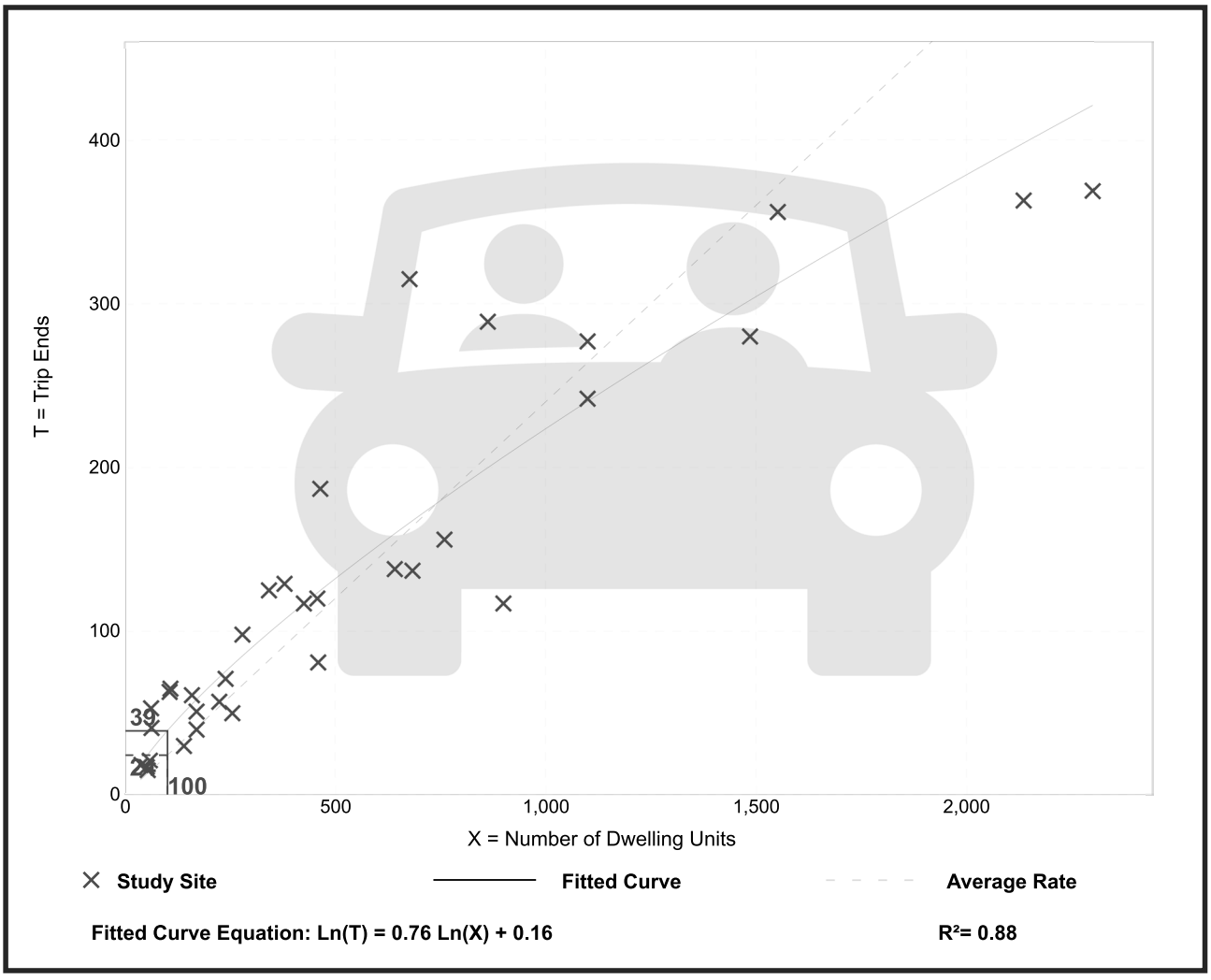
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 34
Avg. Num. of Dwelling Units: 557
Directional Distribution: 33% entering, 67% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.24	0.13 - 0.84	0.10

Data Plot and Equation



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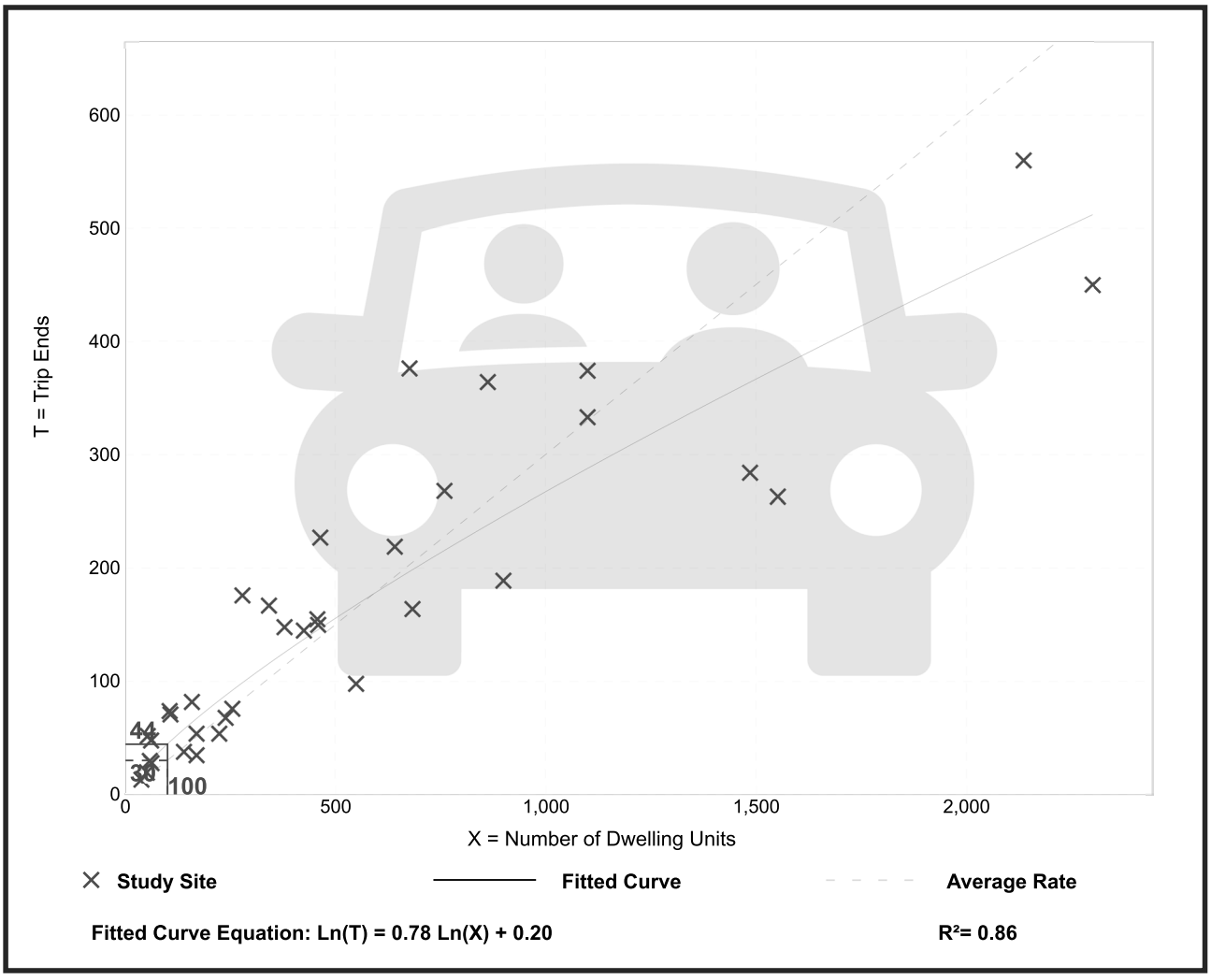
Senior Adult Housing - Single-Family
(251)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 35
Avg. Num. of Dwelling Units: 556
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.17 - 0.95	0.12

Data Plot and Equation



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APPENDIX G
TRAFFIC CALCULATION WORKSHEETS

Traffic Volume Calculations
#1 US 31 S at Bear Creek Pk/US 43

AM Peak Hour

Condition	Eastbound US 43			Westbound Bear Creek Pk			Northbound US 31 S			Southbound US 31 S		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	701	448	35	293	340	290	26	713	238	194	713	684
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	757	484	38	316	367	313	28	770	257	210	770	739
Farm Bureau Traffic		53		1	1				28	24		
2023 Existing Traffic Volumes	757	537	38	317	368	313	28	770	285	234	770	739
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	182	129	9	76	88	75	7	185	68	56	185	177
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	250	177	13	105	121	103	9	254	94	77	254	244
Approved Off-Site Developments:												
Dollar General Assignment		4		2	3	2			2	2		
2031 Background Traffic Volumes (Phases 1-3)	939	670	47	395	459	390	35	955	355	292	955	916
2034 Background Traffic Voumes (Full Buildout)	1007	718	51	424	492	418	37	1024	381	313	1024	983
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter		10%							10%	25%		
Exit				10%	10%	25%						
Traffic Assignment												
Enter 147	0	15	0	0	0	0	0	0	15	37	0	0
Exit 252	0	0	0	25	25	63	0	0	0	0	0	0
Total Assignment	0	15	0	25	25	63	0	0	15	37	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	939	685	47	420	484	453	35	955	370	329	955	916
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter		10%							10%	25%		
Exit				10%	10%	25%						
Traffic Assignment												
Enter 214	0	21	0	0	0	0	0	0	21	54	0	0
Exit 444	0	0	0	44	44	111	0	0	0	0	0	0
Total Assignment	0	21	0	44	44	112	0	0	21	54	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	1007	739	51	468	536	530	37	1024	402	367	1024	983

PM Peak Hour

Condition	Eastbound US 43			Westbound Bear Creek Pk			Northbound US 31 S			Southbound US 31 S		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	566	438	48	366	499	184	54	752	382	222	872	739
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	566	438	48	366	499	184	54	752	382	222	872	739
Farm Bureau Traffic		4		11	15	6			3	2		
2023 Existing Traffic Volumes	566	442	48	377	514	190	54	752	385	224	872	739
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	136	106	12	90	123	46	13	180	92	54	209	177
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	187	146	16	124	170	63	18	248	127	74	288	244
Approved Developments:												
Dollar General Assignment		8		6	8	2			6	3		
2031 Background Traffic Volumes (Phases 1-3)	702	556	60	473	645	238	67	932	483	281	1081	916
2034 Background Traffic Voumes (Full Buildout)	753	596	64	507	692	255	72	1000	518	301	1160	983
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	10%	0%	0%	0%	0%	0%	0%	10%	25%	0%	0%
Exit	0%	0%	0%	10%	10%	25%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 271	0	27	0	0	0	0	0	0	27	68	0	0
Exit 204	0	0	0	20	20	51	0	0	0	0	0	0
Total Assignment	0	27	0	20	21	51	0	0	27	68	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	702	583	60	493	666	289	67	932	510	349	1081	916
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	10%	0%	0%	0%	0%	0%	0%	10%	25%	0%	0%
Exit	0%	0%	0%	10%	10%	25%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 452	0	45	0	0	0	0	0	0	45	113	0	0
Exit 316	0	0	0	31	31	79	0	0	0	0	0	0
Total Assignment	0	45	0	31	31	79	0	0	45	113	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	753	641	64	538	723	334	72	1000	563	414	1160	983

**Adjusted for rounding errors.*

Traffic Volume Calculations
#2 Bear Creek Pk & Tom J Hitch Pkwy

AM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Tom J Hitch Pkway			Southbound Farm Bureau Access		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)		536	153	182	689		313		182			
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	0	579	165	197	744	0	338	0	197	0	0	0
Farm Bureau Traffic	105					34		67		1	2	2
2023 Existing Traffic Volumes	105	579	165	197	744	34	338	67	197	1	2	2
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0	0.24	0.24	0.24	0.24	0	0.24	0	0.24	0	0	0
Background Growth Volumes	0	139	40	47	179	0	81	0	47	0	0	0
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.00	0.33	0.33	0.33	0.33	0.00	0.33	0.00	0.33	0.00	0.00	0.00
Background Growth Volumes	0	191	54	65	246	0	112	0	65	0	0	0
Approved Developments:												
Dollar General Assignment		8		2	7				3			
2031 Background Traffic Volumes (Phases 1-3)	105	726	205	246	930	34	419	67	247	1	2	2
2034 Background Traffic Voumes (Full Buildout)	105	778	219	264	997	34	450	67	265	1	2	2
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter		45%							20%			
Exit				20%	45%							
Traffic Assignment												
Enter 147	0	66	0	0	0	0	0	0	29	0	0	0
Exit 252	0	0	0	50	113	0	0	0	0	0	0	0
Total Assignment	0	67	0	50	113	0	0	0	29	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	105	793	205	296	1043	34	419	67	276	1	2	2
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter		40%	5%									
Exit					40%		5%					
Traffic Assignment												
Enter 214	0	87	11	0	0	0	0	0	0	0	0	0
Exit 444	0	0	0	0	178	0	22	0	0	0	0	0
Total Assignment	0	85	11	0	178	0	22	0	0	0	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	105	863	230	264	1175	34	472	67	265	1	2	2

PM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Tom J Hitch Pkway			Southbound Farm Bureau Access		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)		678	239	266	761		175		213			
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	0	678	239	266	761	0	175	0	213	0	0	0
Farm Bureau Traffic	9					4		9		32	67	32
2023 Existing Traffic Volumes	9	678	239	266	761	4	175	9	213	32	67	32
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0	0.24	0.24	0.24	0.24	0	0.24	0	0.24	0	0	0
Background Growth Volumes	0	163	57	64	183	0	42	0	51	0	0	0
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.00	0.33	0.33	0.33	0.33	0.00	0.33	0.00	0.33	0.00	0.00	0.00
Background Growth Volumes	0	224	79	88	251	0	58	0	70	0	0	0
Approved Developments:												
Dollar General Assignment		17		5	16				5			
2031 Background Traffic Volumes (Phases 1-3)	9	858	296	335	960	4	217	9	269	32	67	32
2034 Background Traffic Voumes (Full Buildout)	9	919	318	359	1028	4	233	9	288	32	67	32
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	45%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%
Exit	0%	0%	0%	20%	45%	0%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 271	0	122	0	0	0	0	0	0	54	0	0	0
Exit 204	0	0	0	41	92	0	0	0	0	0	0	0
Total Assignment	0	122	0	41	92	0	0	0	54	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	9	980	296	376	1052	4	217	9	323	32	67	32
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	40%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	40%	0%	5%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 452	0	181	23	0	0	0	0	0	0	0	0	0
Exit 316	0	0	0	0	125	0	16	0	0	0	0	0
Total Assignment	0	180	23	0	125	0	16	0	0	0	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	9	1099	341	359	1153	4	249	9	288	32	67	32

**Adjusted for rounding errors.*

Traffic Volume Calculations
#3 Bear Creek Pk & Patterson Drive/Site Access 1

AM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Site Access 1			Southbound Patterson Dr		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	11	694			798	7				16		42
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	12	750	0	0	862	8	0	0	0	17	0	45
Farm Bureau Traffic		1			34							
2023 Existing Traffic Volumes	12	751	0	0	896	8	0	0	0	17	0	45
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	3	180	0	0	215	2	0	0	0	4	0	11
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	4	248	0	0	296	3	0	0	0	6	0	15
Approved Developments:												
Dollar General Assignment	2	5			5							3
2031 Background Traffic Volumes (Phases 1-3)	17	936	0	0	1116	10	0	0	0	21	0	59
2034 Background Traffic Voumes (Full Buildout)	18	1004	0	0	1197	11	0	0	0	23	0	63
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter			65%	30%							5%	
Exit							65%	5%	30%			
Traffic Assignment												
Enter 147	0	0	96	44	0	0	0	0	0	0	7	0
Exit 252	0	0	0	0	0	0	164	13	76	0	0	0
Total Assignment	0	0	96	44	0	0	163	13	76	0	7	0
2031 Total Projected Traffic Volumes (Phase 1-3)	17	936	96	44	1116	10	163	13	76	21	7	59
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter			40%	25%							5%	
Exit							40%	5%	25%			
Traffic Assignment												
Enter 214	0	0	87	54	0	0	0	0	0	0	11	0
Exit 444	0	0	0	0	0	0	178	22	111	0	0	0
Total Assignment	0	0	85	54	0	0	178	22	111	0	10	0
2034 Total Projected Traffic Volumes (Full Buildout)	18	1004	85	54	1197	11	178	22	111	23	10	63

PM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Site Access 1			Southbound Patterson Dr		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	43	861			891	15				5		36
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	43	861	0	0	891	15	0	0	0	5	0	36
Farm Bureau Traffic		32			4							
2023 Existing Traffic Volumes	43	893	0	0	895	15	0	0	0	5	0	36
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	10	214	0	0	215	4	0	0	0	1	0	9
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	14	295	0	0	295	5	0	0	0	2	0	12
Approved Developments:												
Dollar General Assignment	5	11			12							5
2031 Background Traffic Volumes (Phases 1-3)	58	1118	0	0	1122	19	0	0	0	6	0	50
2034 Background Traffic Voumes (Full Buildout)	62	1199	0	0	1202	20	0	0	0	7	0	53
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	0%	65%	30%	0%	0%	0%	0%	0%	0%	5%	0%
Exit	0%	0%	0%	0%	0%	0%	65%	5%	30%	0%	0%	0%
Traffic Assignment												
Enter 271	0	0	176	81	0	0	0	0	0	0	14	0
Exit 204	0	0	0	0	0	0	133	10	61	0	0	0
Total Assignment	0	0	176	81	0	0	133	10	61	0	14	0
2031 Total Projected Traffic Volumes (Phase 1-3)	58	1118	176	81	1122	19	133	10	61	6	14	50
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	0%	40%	25%	0%	0%	0%	0%	0%	0%	5%	0%
Exit	0%	0%	0%	0%	0%	0%	40%	5%	25%	0%	0%	0%
Traffic Assignment												
Enter 452	0	0	181	113	0	0	0	0	0	0	23	0
Exit 316	0	0	0	0	0	0	125	16	79	0	0	0
Total Assignment	0	0	180	113	0	0	125	16	80	0	23	0
2034 Total Projected Traffic Volumes (Full Buildout)	62	1199	180	113	1202	20	125	16	80	7	23	53

**Adjusted for rounding errors.*

Traffic Volume Calculations
#4 Bear Creek Pk & Mt Olivet Rd

AM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Mt Olivet Rd			Southbound Mt Olivet Rd		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	204	525	28	18	579	32	84	45	28	46	23	170
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	220	567	30	19	625	35	91	49	30	50	25	184
Farm Bureau Traffic		1			34							
2023 Existing Traffic Volumes	220	568	30	19	659	35	91	49	30	50	25	184
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	53	136	7	5	158	8	22	12	7	12	6	44
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	73	187	10	6	217	12	30	16	10	17	8	61
Approved Developments:												
Dollar General Assignment					4		1					
2031 Background Traffic Volumes (Phases 1-3)	273	704	37	24	821	43	114	61	37	62	31	228
2034 Background Traffic Voumes (Full Buildout)	293	755	40	25	880	47	122	65	40	67	33	245
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter					25%							5%
Exit	5%	25%										
Traffic Assignment												
Enter 147	0	0	0	0	37	0	0	0	0	0	0	7
Exit 252	13	63	0	0	0	0	0	0	0	0	0	0
Total Assignment	13	63	0	0	37	0	0	0	0	0	0	7
2031 Total Projected Traffic Volumes (Phase 1-3)	286	767	37	24	858	43	114	61	37	62	31	235
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter				5%	20%							5%
Exit	5%	20%							5%			
Traffic Assignment												
Enter 214	0	0	0	11	43	0	0	0	0	0	0	11
Exit 444	22	89	0	0	0	0	0	0	22	0	0	0
Total Assignment	22	89	0	11	43	0	0	0	22	0	0	11
2034 Total Projected Traffic Volumes (Full Buildout)	315	844	40	36	923	47	122	65	62	67	33	256

PM Peak Hour

Condition	Eastbound Bear Creek Pk			Westbound Bear Creek Pk			Northbound Mt Olivet Rd			Southbound Mt Olivet Rd		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	28	829	7	23	754	85	53	5	30	11	9	31
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	28	829	7	23	754	85	53	5	30	11	9	31
Farm Bureau Traffic		32			4							
2023 Existing Traffic Volumes	28	861	7	23	758	85	53	5	30	11	9	31
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	7	207	2	6	182	20	13	1	7	3	2	7
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	9	284	2	8	250	28	17	2	10	4	3	10
Approved Developments:												
Dollar General Assignment					11		1					
2031 Background Traffic Volumes (Phases 1-3)	35	1068	9	29	951	105	67	6	37	14	11	38
2034 Background Traffic Voumes (Full Buildout)	37	1145	9	31	1019	113	71	7	40	15	12	41
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	0%	5%
Exit	5%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 271	0	0	0	0	68	0	0	0	0	0	0	14
Exit 204	10	51	0	0	0	0	0	0	0	0	0	0
Total Assignment	10	51	0	0	67	0	0	0	0	0	0	14
2031 Total Projected Traffic Volumes (Phase 1-3)	45	1119	9	29	1018	105	67	6	37	14	11	52
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	0%	0%	5%	20%	0%	0%	0%	0%	0%	0%	5%
Exit	5%	20%	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%
Traffic Assignment												
Enter 452	0	0	0	23	90	0	0	0	0	0	0	23
Exit 316	16	63	0	0	0	0	0	0	16	0	0	0
Total Assignment	16	64	0	23	90	0	0	0	16	0	0	23
2034 Total Projected Traffic Volumes (Full Buildout)	53	1209	9	54	1109	113	71	7	56	15	12	64

**Adjusted for rounding errors.*

Traffic Volume Calculations
#5 Tom J Hitch Pkwy & Iron Bridge Rd

AM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound Tom J Hitch Pkwy			Southbound Tom J Hitch Pkwy		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Existing Traffic Volumes	28	35	6	91	94	46	9	406	67	26	307	24
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	7	8	1	22	23	11	2	97	16	6	74	6
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	9	12	2	30	31	15	3	134	22	9	101	8
Approved Developments:												
Dollar General Assignment								3			2	
2031 Background Traffic Volumes (Phases 1-3)	35	43	7	113	117	57	11	506	83	32	383	30
2034 Background Traffic Voumes (Full Buildout)	37	47	8	121	125	61	12	543	89	35	410	32
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	5%							15%				
Exit											15%	5%
Traffic Assignment												
Enter 147	7	0	0	0	0	0	0	22	0	0	0	0
Exit 252	0	0	0	0	0	0	0	0	0	0	38	13
Total Assignment	7	0	0	0	0	0	0	22	0	0	38	12
2031 Total Projected Traffic Volumes (Phase 1-3)	42	43	7	113	117	57	11	528	83	32	421	42
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter		5%							15%	5%		
Exit				15%	5%	5%						
Traffic Assignment												
Enter 214	0	11	0	0	0	0	0	0	32	11	0	0
Exit 444	0	0	0	67	22	22	0	0	0	0	0	0
Total Assignment	0	11	0	67	22	22	0	0	32	11	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	37	58	8	188	147	83	12	543	121	46	410	32

PM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound Tom J Hitch Pkwy			Southbound Tom J Hitch Pkwy		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Existing Traffic Volumes	13	39	6	60	27	26	9	276	69	35	429	54
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	3	9	1	14	6	6	2	66	17	8	103	13
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	4	13	2	20	9	9	3	91	23	12	142	18
Approved Developments:												
Dollar General Assignment								5			4	1
2031 Background Traffic Volumes (Phases 1-3)	16	48	7	74	33	32	11	347	86	43	536	68
2034 Background Traffic Voumes (Full Buildout)	17	52	8	80	36	35	12	372	92	47	575	73
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	5%	0%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	5%
Traffic Assignment												
Enter 271	14	0	0	0	0	0	0	41	0	0	0	0
Exit 204	0	0	0	0	0	0	0	0	0	0	31	10
Total Assignment	13	0	0	0	0	0	0	41	0	0	31	10
2031 Total Projected Traffic Volumes (Phase 1-3)	29	48	7	74	33	32	11	388	86	43	567	78
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	5%	0%	0%	0%	0%	0%	0%	15%	5%	0%	0%
Exit	0%	0%	0%	15%	5%	5%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 452	0	23	0	0	0	0	0	0	68	23	0	0
Exit 316	0	0	0	47	16	16	0	0	0	0	0	0
Total Assignment	0	22	0	47	16	16	0	0	68	23	0	0
2034 Total Projected Traffic Volumes (Full Buildout)	17	74	8	127	52	51	12	372	160	70	575	73

**Adjusted for rounding errors.*

Traffic Volume Calculations
#6 Iron Bridge Rd & Mt Olivet Rd

AM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound			Southbound Mt Olivet Rd		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	29	26			107	17				7		56
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	31	28	0	0	116	18	0	0	0	8	0	60
Farm Bureau Traffic					6							
2023 Existing Traffic Volumes	31	28	0	0	122	18	0	0	0	8	0	60
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	7	7	0	0	29	4	0	0	0	2	0	14
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	10	9	0	0	40	6	0	0	0	3	0	20
Approved Developments:												
Dollar General Assignment						1						
2031 Background Traffic Volumes (Phases 1-3)	38	35	0	0	151	23	0	0	0	10	0	74
2034 Background Traffic Voumes (Full Buildout)	41	37	0	0	162	25	0	0	0	11	0	80
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter												
Exit												
Traffic Assignment												
Enter 147	0	0	0	0	0	0	0	0	0	0	0	0
Exit 252	0	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	0	0	0	0	0	0	0	0	0	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	38	35	0	0	151	23	0	0	0	10	0	74
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter												5%
Exit	5%											
Traffic Assignment												
Enter 214	0	0	0	0	0	0	0	0	0	0	0	11
Exit 444	22	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	22	0	0	0	0	0	0	0	0	0	0	11
2034 Total Projected Traffic Volumes (Full Buildout)	63	37	0	0	162	25	0	0	0	11	0	91

PM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound 0			Southbound Mt Olivet Rd		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	48	74			52	6				17		45
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	48	74	0	0	52	6	0	0	0	17	0	45
Farm Bureau Traffic		5			1							
2023 Existing Traffic Volumes	48	79	0	0	53	6	0	0	0	17	0	45
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	12	19	0	0	13	1	0	0	0	4	0	11
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	16	26	0	0	17	2	0	0	0	6	0	15
Approved Developments:												
Dollar General Assignment						1						
2031 Background Traffic Volumes (Phases 1-3)	60	98	0	0	66	8	0	0	0	21	0	56
2034 Background Traffic Voumes (Full Buildout)	64	105	0	0	70	9	0	0	0	23	0	60
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 271	0	0	0	0	0	0	0	0	0	0	0	0
Exit 204	0	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	0	0	0	0	0	0	0	0	0	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	60	98	0	0	66	8	0	0	0	21	0	56
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%
Exit	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 452	0	0	0	0	0	0	0	0	0	0	0	23
Exit 316	16	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	16	0	0	0	0	0	0	0	0	0	0	23
2034 Total Projected Traffic Volumes (Full Buildout)	80	105	0	0	70	9	0	0	0	23	0	83

**Adjusted for rounding errors.*

Traffic Volume Calculations
#7 James Campbell Blvd & Tom J Hitch Pkwy

AM Peak Hour

Condition	Eastbound James Campbell Blvd			Westbound James Campbell Blvd			Northbound			Southbound Tom J Hitch Pkwy		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	251	254			544	86				20		193
Adjustment Factor	1.080	1.080	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08
2021 Existing Traffic Volumes (Adjusted)	271	274	0	0	588	93	0	0	0	22	0	208
Farm Bureau Traffic	42					15						2
2023 Existing Traffic Volumes	313	274	0	0	588	108	0	0	0	22	0	210
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	75	66	0	0	141	26	0	0	0	5	0	50
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	103	90	0	0	194	36	0	0	0	7	0	69
Approved Developments:												
Dollar General Assignment	2					1						2
2031 Background Traffic Volumes (Phases 1-3)	390	340	0	0	729	135	0	0	0	27	0	262
2034 Background Traffic Voumes (Full Buildout)	418	364	0	0	782	145	0	0	0	29	0	281
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	15%											
Exit												15%
Traffic Assignment												
Enter 147	22	0	0	0	0	0	0	0	0	0	0	0
Exit 252	0	0	0	0	0	0	0	0	0	0	0	38
Total Assignment	22	0	0	0	0	0	0	0	0	0	0	38
2031 Total Projected Traffic Volumes (Phase 1-3)	412	340	0	0	729	135	0	0	0	27	0	300
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	15%											
Exit												15%
Traffic Assignment												
Enter 214	32	0	0	0	0	0	0	0	0	0	0	0
Exit 444	0	0	0	0	0	0	0	0	0	0	0	67
Total Assignment	32	0	0	0	0	0	0	0	0	0	0	67
2034 Total Projected Traffic Volumes (Full Buildout)	450	364	0	0	782	145	0	0	0	29	0	348

PM Peak Hour

Condition	Eastbound James Campbell Blvd			Westbound James Campbell Blvd			Northbound 0			Southbound Tom J Hitch Pkwy		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2021 Existing Traffic Volumes (Unadjusted)	314	537			349	44				33		342
Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2021 Existing Traffic Volumes (Adjusted)	314	537	0	0	349	44	0	0	0	33	0	342
Farm Bureau Traffic	7					1				5		50
2023 Existing Traffic Volumes	321	537	0	0	349	45	0	0	0	38	0	392
2031 Background Growth (Phases 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	77	129	0	0	84	11	0	0	0	9	0	94
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	106	177	0	0	115	15	0	0	0	13	0	129
Approved Developments:												
Dollar General Assignment	4					1						4
2031 Background Traffic Volumes (Phases 1-3)	402	666	0	0	433	57	0	0	0	47	0	490
2034 Background Traffic Voumes (Full Buildout)	431	714	0	0	464	61	0	0	0	51	0	525
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%
Traffic Assignment												
Enter 271	41	0	0	0	0	0	0	0	0	0	0	0
Exit 204	0	0	0	0	0	0	0	0	0	0	0	31
Total Assignment	41	0	0	0	0	0	0	0	0	0	0	31
2031 Total Projected Traffic Volumes (Phase 1-3)	443	666	0	0	433	57	0	0	0	47	0	521
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%
Traffic Assignment												
Enter 452	68	0	0	0	0	0	0	0	0	0	0	0
Exit 316	0	0	0	0	0	0	0	0	0	0	0	47
Total Assignment	68	0	0	0	0	0	0	0	0	0	0	47
2034 Total Projected Traffic Volumes (Full Buildout)	499	714	0	0	464	61	0	0	0	51	0	572

**Adjusted for rounding errors.*

Traffic Volume Calculations
#8 Iron Bridge Rd & Site Access 2

AM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound			Southbound Site Access 2		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Existing Traffic Volumes		128			231							
2031 Background Growth (Phase 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	0	31	0	0	55	0	0	0	0	0	0	0
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	0	42	0	0	76	0	0	0	0	0	0	0
Approved Developments:												
Dollar General Assignment												
2031 Background Traffic Volumes (Phases 1-3)	0	159	0	0	286	0	0	0	0	0	0	0
2034 Background Traffic Voumes (Full Buildout)	0	170	0	0	307	0	0	0	0	0	0	0
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter												
Exit												
Traffic Assignment												
Enter 147	0	0	0	0	0	0	0	0	0	0	0	0
Exit 252	0	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	0	0	0	0	0	0	0	0	0	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	0	159	0	0	286	0	0	0	0	0	0	0
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	25%					5%						
Exit										5%		25%
Traffic Assignment												
Enter 214	54	0	0	0	0	11	0	0	0	0	0	0
Exit 444	0	0	0	0	0	0	0	0	0	22	0	111
Total Assignment	54	0	0	0	0	11	0	0	0	22	0	111
2034 Total Projected Traffic Volumes (Full Buildout)	54	170	0	0	307	11	0	0	0	22	0	111

PM Peak Hour

Condition	Eastbound Iron Bridge Rd			Westbound Iron Bridge Rd			Northbound 0			Southbound Site Access 2		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
2023 Existing Traffic Volumes		143			113							
2031 Background Growth (Phase 1-3)												
Growth Rate (3% Annual for 8 Years)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Background Growth Volumes	0	34	0	0	27	0	0	0	0	0	0	0
2034 Background Growth (Full Buildout)												
Growth Rate (3% Annual for 11 Years)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Background Growth Volumes	0	47	0	0	37	0	0	0	0	0	0	0
Approved Developments:												
Dollar General Assignment												
2031 Background Traffic Volumes (Phases 1-3)	0	177	0	0	140	0	0	0	0	0	0	0
2034 Background Traffic Voumes (Full Buildout)	0	190	0	0	150	0	0	0	0	0	0	0
New Site Traffic (Phase 1-3)												
Directional Distribution												
Enter	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Traffic Assignment												
Enter 271	0	0	0	0	0	0	0	0	0	0	0	0
Exit 204	0	0	0	0	0	0	0	0	0	0	0	0
Total Assignment	0	0	0	0	0	0	0	0	0	0	0	0
2031 Total Projected Traffic Volumes (Phase 1-3)	0	177	0	0	140	0	0	0	0	0	0	0
New Site Traffic (Full Buildout)												
Directional Distribution												
Enter	25%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%
Exit	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%	0%	25%
Traffic Assignment												
Enter 452	113	0	0	0	0	23	0	0	0	0	0	0
Exit 316	0	0	0	0	0	0	0	0	0	16	0	79
Total Assignment	113	0	0	0	0	23	0	0	0	16	0	79
2034 Total Projected Traffic Volumes (Full Buildout)	113	190	0	0	150	23	0	0	0	16	0	79

**Adjusted for rounding errors.*

APPENDIX H
CAPACITY ANALYSIS WORKSHEETS

AM PEAK HOUR									
Intersection	Control	Turning Movement	Level of Service (Delay in sec/veh)						
			2023 Existing	2031			2034		
				Background	Projected	Projected w/ Imps	Background	Projected	Projected w/ Imps
Nashville Hwy & US 43/Bear Creek Pk	Signal	EB Left Turn	F (88.2)	F (169.7)	F (173.2)	F (140.8)	F (210.2)	F (213.2)	F (195.5)
		EB Through/Right Turn	E (59.7)	E (72.3)	E (76.6)	E (55.9)	F (86.0)	F (94.8)	E (64.0)
		WB Left Turn	F (100.2)	E (60.9)	E (62.1)	E (57.5)	E (62.2)	E (65.3)	E (67.7)
		WB Through/Right Turn	F (92.3)	--	--	--	--	--	--
		WB Through	--	E (63.4)	E (64.9)	E (62.2)	E (65.3)	E (69.7)	E (63.7)
		WB Right Turn	--	F (99.1)	F (163.4)	F (237.0)	F (124.1)	F (272.9)	F (287.7)
		NB Left Turn	D (42.3)	D (43.9)	D (44.6)	C (33.1)	D (46.0)	D (46.3)	D (42.5)
		NB Through	E (69.7)	F (113.4)	F (121.2)	E (74.0)	F (149.8)	F (154.8)	F (147.3)
		NB Right Turn	D (46.5)	F (46.0)	D (47.0)	D (35.6)	D (47.1)	D (48.6)	D (44.8)
		SB Left Turn	F (116.5)	F (89.5)	F (98.8)	F (217.6)	F (95.2)	F (119.7)	F (191.8)
		SB Through	D (44.9)	D (51.7)	D (51.7)	D (44.9)	E (56.6)	E (55.9)	E (60.7)
		SB Right Turn	D (51.0)	F (129.2)	F (129.3)	F (100.0)	F (184.4)	F (182.8)	F (182.3)
		Overall Intersection	**E (70.5)**	**F (97.2)**	**F (104.0)**	**F (95.0)**	**F (120.8)**	**F (134.3)**	**F (132.2)**
Bear Creek Pk & Tom J Hitch Pkwy/ Farm Bureau Access	Signal	EB Left Turn	C (26.6)	D (45.8)	E (58.9)	F (92.1)	E (58.9)	E (58.9)	F (92.9)
		EB Through/Right Turn	D (48.5)	F (98.7)	F (128.6)	F (145.0)	F (129.4)	F (176.7)	F (179.4)
		WB Left Turn	E (69.1)	F (257.8)	F (379.3)	F (189.6)	F (301.7)	F (301.7)	F (235.1)
		WB Through	C (34.2)	E (55.2)	F (98.3)	F (75.9)	F (80.5)	F (156.1)	F (140.9)
		WB Right Turn	B (15.9)	B (14.9)	B (15.4)	B (12.9)	B (15.4)	B (15.4)	B (13.8)
		NB Left Turn	E (58.9)	F (120.1)	F (120.1)	F (168.4)	F (147.2)	F (167.8)	F (195.7)
		NB Through/Right Turn	E (56.1)	F (87.0)	F (109.4)	--	F (100.3)	F (100.3)	--
		NB Through	--	--	--	D (49.7)	--	--	D (48.0)
		NB Right Turn	--	--	--	D (44.0)	--	--	D (45.3)
		SB Left Turn	E (66.3)	E (71.9)	E (72.0)	E (68.0)	E (72.0)	E (72.0)	E (68.0)
		SB Through	E (66.7)	E (72.1)	E (72.1)	E (68.3)	E (72.1)	E (72.1)	E (68.3)
		SB Right Turn	E (66.7)	E (72.2)	E (72.2)	E (68.4)	E (72.2)	E (72.2)	E (68.4)
		Overall Intersection	**D (46.7)**	**F (97.3)**	**F (135.3)**	**F (116.2)**	**F (124.4)**	**F (165.7)**	**F (155.9)**
Bear Creek Pk & Patterson Dr/ Site Access 1	TWSC	EB Left Turn	B (10.3)	B (11.7)	B (11.7)	--	B (12.3)	B (12.3)	--
		WB Left Turn	--	--	B (11.4)	--	--	B (11.9)	--
		NB Left Turn	--	--	F (600+)	--	--	F (600+)	--
		NB Through/Right Turn	--	--	F (115.1)	--	--	F (444.3)	--
		SB Approach	E (40.9)	F (138.6)	F (600+)	--	F (255.3)	F (600+)	--
	Signal	EB Left Turn	--	--	--	E (58.7)	--	--	E (74.3)
		EB Through	--	--	--	C (34.4)	--	--	D (50.4)
		EB Right Turn	--	--	--	B (10.3)	--	--	B (10.5)
		WB Left Turn	--	--	--	C (25.1)	--	--	C (30.8)
		WB Through	--	--	--	C (25.7)	--	--	F (43.0)
		WB Right Turn	--	--	--	A (5.9)	--	--	A (6.0)
		NB Left Turn	--	--	--	D (52.1)	--	--	E (56.0)
		NB Through/Right Turn	--	--	--	D (51.3)	--	--	E (59.3)
		SB Left Turn	--	--	--	D (49.0)	--	--	D (48.9)
		SB Through/Right Turn	--	--	--	E (68.9)	--	--	E (71.9)
		Overall Intersection	**--**	**--**	**--**	**C (32.3)**	**--**	**--**	**D (46.9)**
Bear Creek Pk & Mt Olivet Rd/School Access	Signal	EB Left Turn	C (29.9)	F (112.8)	F (129.3)	F (87.6)	F (139.4)	F (173.0)	F (116.2)
		EB Through/Right Turn	B (18.5)	C (27.4)	C (33.7)	B (16.7)	C (32.7)	F (53.6)	B (19.1)
		WB Left Turn	B (14.4)	C (20.1)	C (22.3)	B (15.0)	C (22.0)	C (26.8)	B (17.5)
		WB Through/Right Turn	D (35.5)	F (121.7)	F (142.5)	F (62.3)	F (158.1)	F (182.9)	F (79.7)
		NB Left Turn	D (42.3)	E (67.7)	E (72.8)	F (99.7)	F (96.6)	F (118.4)	F (187.4)
		NB Through/Right Turn	C (28.6)	C (32.5)	C (32.5)	D (49.7)	C (32.7)	C (33.3)	E (60.2)
		SB Left Turn	C (31.4)	D (36.7)	D (36.7)	--	D (37.2)	D (38.6)	--
		SB Through/Right Turn	C (33.0)	D (41.8)	D (42.8)	--	D (44.6)	D (46.8)	--
		SB Through/Left Turn	--	--	--	E (66.0)	--	--	F (85.8)
		SB Right Turn	--	--	--	D (50.6)	--	--	E (58.3)
		Overall Intersection	**C (29.2)**	**E (74.2)**	**F (85.3)**	**D (50.6)**	**F (93.5)**	**F (112.1)**	**E (66.0)**
Tom J Hitch Pkwy & Iron Bridge Rd	Signal	EB Left Turn	C (24.5)	C (26.5)	C (26.8)	--	C (27.3)	C (29.8)	--
		EB Through/Right Turn	C (20.1)	C (20.4)	C (20.4)	--	C (20.7)	C (21.1)	--
		WB Left Turn	C (22.8)	C (24.0)	C (24.0)	--	C (24.7)	D (35.1)	--
		WB Through/Right Turn	C (23.3)	C (27.7)	C (27.7)	--	C (30.5)	D (52.1)	--
		NB Left Turn	A (7.8)	A (8.2)	A (8.4)	--	A (8.3)	A (8.4)	--
		NB Through	B (13.0)	B (16.1)	B (16.9)	--	B (17.7)	B (18.3)	--
		SB Left Turn	A (8.0)	A (9.0)	A (9.3)	--	A (9.5)	A (9.7)	--
		SB Through	B (10.3)	B (11.5)	B (12.3)	--	B (12.0)	B (11.9)	--
		Overall Intersection	**B (14.8)**	**B (17.2)**	**B (17.6)**	**--**	**B (18.5)**	**C (23.8)**	**--**
Iron Bridge Rd & Mt Olivet Rd	TWSC	EB Left Turn	A (7.6)	A (7.7)	A (7.7)	--	A (7.7)	A (7.7)	--
		SB Approach	A (9.4)	A (9.7)	A (9.7)	--	A (9.9)	B (10.0)	--
James Campbell Blvd & Tom J Hitch Pkwy	TWSC	EB Left Turn	B (12.0)	C (16.5)	C (17.4)	--	C (19.9)	C (22.1)	--
		SB Left Turn	F (82.6)	F (414.0)	F (496.8)	--	F (600+)	F (600+)	--
		SB Right Turn	C (19.3)	E (35.7)	E (47.3)	--	F (51.5)	F (96.1)	--
	Signal	EB Left Turn	--	--	--	D (36.4)	--	--	D (50.7)
		EB Through	--	--	--	A (3.3)	--	--	A (3.0)
		WB Through	--	--	--	C (24.4)	--	--	C (33.7)
		WB Right Turn	--	--	--	B (10.9)	--	--	B (12.8)
		SB Left Turn	--	--	--	C (34.4)	--	--	D (39.8)
		SB Right Turn	--	--	--	D (37.3)	--	--	D (39.2)
		Overall Intersection	**--**	**--**	**--**	**C (24.4)**	**--**	**--**	**C (31.6)**
Iron Bridge Rd & Site Access 2	TWSC	EB Left Turn	--	--	--	--	--	A (8.1)	--
		SB Approach	--	--	--	--	--	B (12.4)	--

Note: HCM 6th Edition results reported above for all intersections, with one exception. HCM 2000 results reported for intersection of Nashville Highway and US 43/Bear Creek Pike.

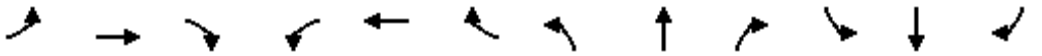
PM PEAK HOUR									
Intersection	Control	Turning Movement	Level of Service (Delay in sec/veh)						
			2023 Existing	2031			2034		
				Background	Projected	Projected w/ Imps	Background	Projected	Projected w/ Imps
Nashville Hwy & US 43/Bear Creek Pk	Signal	EB Left Turn	E (59.7)	E (68.2)	E (68.2)	F (93.3)	E (73.5)	E (73.5)	F (117.1)
		EB Through/Right Turn	E (55.4)	E (60.1)	E (61.8)	E (58.2)	E (61.9)	E (65.3)	E (68.6)
		WB Left Turn	F (98.5)	E (62.3)	E (63.0)	E (58.7)	E (64.6)	E (66.7)	F (80.5)
		WB Through/Right Turn	E (75.0)	--	--	--	--	--	--
		WB Through	--	E (77.2)	F (80.7)	F (95.5)	F (89.6)	F (101.1)	F (116.3)
		WB Right Turn	--	E (55.6)	E (58.3)	D (46.8)	E (57.0)	E (64.3)	E (61.6)
		NB Left Turn	D (40.7)	E (61.6)	E (62.7)	D (35.2)	E (74.5)	E (74.0)	D (53.3)
		NB Through	E (58.3)	E (74.5)	F (85.9)	D (51.4)	F (100.0)	F (116.6)	E (71.9)
		NB Right Turn	D (44.2)	D (47.7)	D (50.8)	D (35.2)	D (50.7)	E (56.7)	D (48.1)
		SB Left Turn	E (64.4)	F (83.9)	F (94.6)	F (99.8)	F (86.8)	F (129.7)	F (109.9)
		SB Through	D (43.7)	E (55.4)	E (55.7)	D (39.6)	E (65.3)	E (65.3)	D (47.1)
		SB Right Turn	D (44.9)	F (97.2)	F (98.5)	E (78.3)	F (143.7)	F (144.2)	F (108.1)
		Overall Intersection	**E (58.1)**	**E (69.4)**	**E (72.6)**	**E (64.1)**	**F (84.1)**	**F (90.7)**	**F (81.9)**
Bear Creek Pk & Tom J Hitch Pkwy/ Farm Bureau Access	Signal	EB Left Turn	B (16.2)	C (25.9)	D (36.6)	B (18.4)	C (32.2)	D (39.0)	C (25.2)
		EB Through/Right Turn	D (49.3)	F (151.9)	F (225.6)	F (161.0)	F (199.6)	F (295.0)	F (213.4)
		WB Left Turn	F (135.1)	F (390.1)	F (509.3)	F (202.7)	F (456.2)	F (456.2)	F (275.4)
		WB Through	F (18.4)	C (31.9)	E (51.6)	C (19.7)	D (42.6)	F (71.8)	C (28.4)
		WB Right Turn	A (9.6)	B (11.5)	B (13.0)	A (6.4)	B (12.2)	B (12.2)	A (6.8)
		NB Left Turn	D (53.3)	D (54.0)	D (52.1)	F (195.6)	D (54.2)	E (56.1)	F (219.9)
		NB Through/Right Turn	E (77.2)	F (90.1)	F (109.9)	--	F (93.7)	F (93.7)	--
		NB Through	--	--	--	E (62.2)	--	--	E (60.9)
		NB Right Turn	--	--	--	F (76.8)	--	--	E (74.3)
		SB Left Turn	E (60.3)	E (63.1)	E (61.7)	E (66.1)	E (63.6)	E (64.2)	E (65.7)
		SB Through	E (66.2)	E (67.9)	E (65.2)	F (118.5)	E (68.1)	E (70.0)	F (106.5)
		SB Right Turn	E (63.8)	E (65.9)	E (63.7)	E (74.3)	E (66.2)	E (67.9)	E (73.3)
		Overall Intersection	**D (52.4)**	**F (123.6)**	**F (173.5)**	**F (112.6)**	**F (152.6)**	**F (198.0)**	**F (144.7)**
Bear Creek Pk & Patterson Dr/ Site Access 1	TWSC	EB Left Turn	B (10.2)	B (11.7)	B (11.7)	--	B (12.3)	B (12.3)	--
		WB Left Turn	--	--	B (13.4)	--	--	C (15.1)	--
		NB Left Turn	--	--	F (600+)	--	--	F (600+)	--
		NB Through/Right Turn	--	--	F (192.1)	--	--	F (600+)	--
		SB Approach	C (24.5)	E (46.9)	F (600+)	--	F (68.4)	F (600+)	--
	Signal	EB Left Turn	--	--	--	C (32.5)	--	--	D (43.9)
		EB Through	--	--	--	C (29.3)	--	--	D (41.1)
		EB Right Turn	--	--	--	A (8.4)	--	--	A (8.5)
		WB Left Turn	--	--	--	C (28.2)	--	--	E (55.4)
		WB Through	--	--	--	B (12.5)	--	--	B (14.6)
		WB Right Turn	--	--	--	A (4.0)	--	--	A (4.0)
		NB Left Turn	--	--	--	F (89.5)	--	--	F (90.2)
		NB Through/Right Turn	--	--	--	F (88.2)	--	--	F (126.4)
		SB Left Turn	--	--	--	D (54.3)	--	--	D (54.7)
		SB Through/Right Turn	--	--	--	F (104.0)	--	--	F (127.4)
		Overall Intersection	**--**	**--**	**--**	**C (27.5)**	**--**	**--**	**D (36.3)**
Bear Creek Pk & Mt Olivet Rd/School Access	Signal	EB Left Turn	B (10.1)	B (17.4)	C (20.4)	C (27.4)	C (20.3)	C (20.5)	D (35.9)
		EB Through/Right Turn	B (15.7)	C (29.5)	D (40.2)	C (34.5)	F (46.2)	F (79.4)	D (37.1)
		WB Left Turn	B (10.2)	B (17.1)	C (20.4)	C (24.6)	C (20.4)	C (20.5)	C (34.0)
		WB Through/Right Turn	B (15.8)	C (30.3)	F (48.0)	D (39.8)	F (47.7)	F (87.3)	D (41.6)
		NB Left Turn	C (28.3)	D (35.9)	D (37.1)	D (43.4)	D (36.7)	D (37.6)	D (54.2)
		NB Through/Right Turn	C (26.6)	C (32.8)	C (33.1)	D (40.2)	C (33.3)	C (33.5)	D (51.2)
		SB Left Turn	C (26.8)	C (33.4)	C (33.8)	--	C (34.0)	C (34.5)	--
		SB Through/Right Turn	C (26.8)	C (33.0)	C (34.0)	--	C (33.5)	C (34.0)	--
		SB Through/Left Turn	--	--	--	D (48.3)			E (58.9)
		SB Right Turn	--	--	--	D (53.3)			F (86.0)
		Overall Intersection	**B (16.4)**	**C (29.9)**	**D (42.7)**	**D (37.5)**	**D (45.3)**	**E (77.0)**	**D (41.1)**
Tom J Hitch Pkwy & Iron Bridge Rd	Signal	EB Left Turn	B (18.6)	B (19.0)	B (19.2)	--	B (19.2)	C (20.4)	--
		EB Through/Right Turn	B (17.9)	B (18.1)	B (18.1)	--	B (18.2)	B (18.8)	--
		WB Left Turn	B (19.2)	B (19.8)	B (19.8)	--	C (20.1)	C (22.3)	--
		WB Through/Right Turn	B (18.1)	B (18.3)	B (18.3)	--	B (18.5)	B (19.4)	--
		NB Left Turn	A (8.6)	A (9.4)	A (9.6)	--	A (9.7)	A (10.0)	--
		NB Through	B (11.1)	B (12.6)	B (13.4)	--	B (13.2)	B (13.9)	--
		SB Left Turn	A (7.7)	A (8.1)	A (8.3)	--	A (8.3)	A (8.5)	--
		SB Through	B (12.2)	A (14.9)	B (16.0)	--	B (16.3)	B (16.1)	--
		Overall Intersection	**B (12.8)**	**B (14.6)**	**B (15.4)**	**--**	**B (15.5)**	**B (16.1)**	**--**
Iron Bridge Rd & Mt Olivet Rd	TWSC	EB Left Turn	A (7.4)	A (7.5)	A (7.5)	--	A (7.5)	A (7.5)	--
		SB Approach	A (9.3)	A (9.6)	A (9.6)	--	A (9.7)	A (9.8)	--
James Campbell Blvd & Tom J Hitch Pkwy	TWSC	EB Left Turn	A (9.5)	B (10.8)	B (11.3)	--	B (11.5)	B (12.4)	--
		SB Left Turn	F (90.9)	F (437.1)	F (580.4)	--	F (600+)	F (600+)	--
		SB Right Turn	C (18.6)	E (38.2)	E (46.7)	--	F (57.5)	F (80.5)	--
	Signal	EB Left Turn	--	--	--	B (13.6)	--	--	B (16.0)
		EB Through	--	--	--	A (7.3)	--	--	A (7.1)
		WB Through	--	--	--	C (20.7)	--	--	C (23.5)
		WB Right Turn	--	--	--	B (12.7)	--	--	B (13.2)
		SB Left Turn	--	--	--	C (23.6)	--	--	C (24.8)
		SB Right Turn	--	--	--	F (77.9)	--	--	F (101.0)
		Overall Intersection	**--**	**--**	**--**	**C (28.7)**	**--**	**--**	**D (35.5)**
Iron Bridge Rd & Site Access 2	TWSC	EB Left Turn	--	--	--	--	--	A (7.8)	--
		SB Approach	--	--	--	--	--	B (10.8)	--

Note: HCM 6th Edition results reported above for all intersections, with one exception. HCM 2000 results reported for intersection of Nashville Highway and US 43/Bear Creek Pike.

INTERSECTION CAPACITY ANALYSIS: INTERSECTION OF BEAR CREEK PIKE AND TOM J HITCH PARKWAY WITH FUTURE IMPROVEMENTS BY OTHERS

AM PEAK HOUR				
Turning Movement	**Level of Service (Delay in sec/veh)**			
	2031		**2034**	
	AM	**PM**	**AM**	**PM**
EB Left Turn	E (67.2)	C (20.2)	F (109.2)	C (25.2)
EB Through	D (53.4)	F (65.4)	E (57.7)	F (85.1)
EB Right Turn	A (9.8)	B (14.6)	A (8.5)	B (13.2)
WB Left Turn	E (79.1)	F (120.4)	F (108.1)	F (160.5)
WB Through	F (62.3)	C (21.0)	F (100.2)	C (28.4)
WB Right Turn	B (11.3)	A (6.7)	B (10.7)	A (6.8)
NB Left Turn	E (76.2)	F (96.9)	F (99.7)	F (116.8)
NB Right Turn	D (43.4)	E (67.9)	D (47.4)	E (69.8)
SB Left Turn	E (72.3)	E (71.7)	E (72.6)	E (72.0)
SB Through	E (73.9)	F (101.6)	E (74.2)	F (106.5)
SB Right Turn	E (75.2)	E (72.8)	E (75.6)	E (73.3)
Overall Intersection	**E (58.3)**	**E (56.3)**	**E (79.3)**	**E (68.8)**
Note: HCM 6th Edition results reported above.				

2023 EXISTING CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	757	537	38	317	368	313	28	770	285	234	770	739
Future Volume (vph)	757	537	38	317	368	313	28	770	285	234	770	739
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.93		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3504		1770	3295		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.23	1.00	1.00	0.08	1.00	1.00
Satd. Flow (perm)	3433	3504		1770	3295		420	3539	1583	148	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	860	610	43	360	418	356	32	875	324	266	875	840
RTOR Reduction (vph)	0	3	0	0	94	0	0	0	235	0	0	400
Lane Group Flow (vph)	860	650	0	360	680	0	32	875	89	266	875	440
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	42.0	42.0		35.0	35.0		49.2	45.2	45.2	70.2	61.2	61.2
Effective Green, g (s)	42.0	42.0		35.0	35.0		49.2	45.2	45.2	70.2	61.2	61.2
Actuated g/C Ratio	0.25	0.25		0.21	0.21		0.30	0.27	0.27	0.42	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	872	890		375	698		157	968	433	259	1311	586
v/s Ratio Prot	c0.25	0.19		0.20	c0.21		0.00	0.25		c0.12	0.25	
v/s Ratio Perm							0.06		0.06	c0.31		0.28
v/c Ratio	0.99	0.73		0.96	0.97		0.20	0.90	0.20	1.03	0.67	0.75
Uniform Delay, d1	61.3	56.4		64.4	64.7		42.1	57.9	46.2	53.4	43.5	45.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.9	3.3		35.8	27.7		0.2	11.8	0.3	63.1	1.4	5.7
Delay (s)	88.2	59.7		100.2	92.3		42.3	69.7	46.5	116.5	44.9	51.0
Level of Service	F	E		F	F		D	E	D	F	D	D
Approach Delay (s)		75.9			94.8			62.9			57.1	
Approach LOS		E			F			E			E	

Intersection Summary			
HCM 2000 Control Delay	70.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	165.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	579	165	197	744	34	338	67	197	1	2	2
Future Volume (veh/h)	105	579	165	197	744	34	338	67	197	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	651	185	221	836	37	380	73	221	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	702	199	243	1010	856	477	102	309	103	89	76
Arrive On Green	0.04	0.50	0.50	0.08	0.54	0.54	0.20	0.25	0.25	0.00	0.05	0.05
Sat Flow, veh/h	1781	1401	398	1781	1870	1585	1781	409	1238	1781	1870	1585
Grp Volume(v), veh/h	114	0	836	221	836	37	380	0	294	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1799	1781	1870	1585	1781	0	1647	1781	1870	1585
Q Serve(g_s), s	4.6	0.0	63.6	10.3	54.5	1.6	29.2	0.0	23.9	0.1	0.1	0.2
Cycle Q Clear(g_c), s	4.6	0.0	63.6	10.3	54.5	1.6	29.2	0.0	23.9	0.1	0.1	0.2
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.75	1.00		1.00
Lane Grp Cap(c), veh/h	236	0	901	243	1010	856	477	0	411	103	89	76
V/C Ratio(X)	0.48	0.00	0.93	0.91	0.83	0.04	0.80	0.00	0.71	0.01	0.02	0.03
Avail Cap(c_a), veh/h	321	0	1019	259	1060	898	477	0	411	402	375	318
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	0.0	34.1	37.9	28.1	15.9	50.4	0.0	50.3	66.3	66.6	66.6
Incr Delay (d2), s/veh	0.6	0.0	14.4	31.1	6.1	0.0	8.5	0.0	5.8	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	0.0	38.7	15.3	32.8	1.0	19.8	0.0	15.5	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	48.5	69.1	34.2	15.9	58.9	0.0	56.1	66.3	66.7	66.7
LnGrp LOS	C	A	D	E	C	B	E	A	E	E	E	E
Approach Vol, veh/h		950			1094			674			5	
Approach Delay, s/veh		45.9			40.6			57.7			66.6	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.7	80.3	35.0	12.6	13.0	86.1	5.4	42.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	12.3	65.6	31.2	2.2	6.6	56.5	2.1	25.9
Green Ext Time (p_c), s	0.0	7.9	0.0	0.0	0.1	9.9	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	46.7
HCM 6th LOS	D

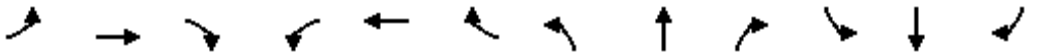
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	751	896	8	17	45
Future Vol, veh/h	12	751	896	8	17	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	834	996	9	19	50

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1005	0	-	0	1861	1001
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	860	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	689	-	-	-	80	295
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	414	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	689	-	-	-	78	295
Mov Cap-2 Maneuver	-	-	-	-	78	-
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	414	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	40.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	689	-	-	-	167
HCM Lane V/C Ratio	0.019	-	-	-	0.413
HCM Control Delay (s)	10.3	-	-	-	40.9
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	1.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	568	30	19	659	35	91	49	30	50	25	184
Future Volume (veh/h)	220	568	30	19	659	35	91	49	30	50	25	184
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	638	34	21	740	39	102	55	34	56	28	207
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	938	50	322	817	43	206	261	161	340	46	343
Arrive On Green	0.09	0.53	0.53	0.02	0.46	0.46	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1781	1760	94	1781	1761	93	1145	1081	669	1308	192	1422
Grp Volume(v), veh/h	247	0	672	21	0	779	102	0	89	56	0	235
Grp Sat Flow(s),veh/h/ln	1781	0	1853	1781	0	1854	1145	0	1750	1308	0	1614
Q Serve(g_s), s	6.4	0.0	24.9	0.6	0.0	36.4	8.1	0.0	3.8	3.3	0.0	12.1
Cycle Q Clear(g_c), s	6.4	0.0	24.9	0.6	0.0	36.4	20.2	0.0	3.8	7.1	0.0	12.1
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.38	1.00		0.88
Lane Grp Cap(c), veh/h	292	0	988	322	0	860	206	0	423	340	0	390
V/C Ratio(X)	0.85	0.00	0.68	0.07	0.00	0.91	0.50	0.00	0.21	0.16	0.00	0.60
Avail Cap(c_a), veh/h	386	0	988	539	0	971	278	0	533	422	0	492
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	16.0	14.4	0.0	23.2	40.5	0.0	28.4	31.2	0.0	31.5
Incr Delay (d2), s/veh	9.9	0.0	2.5	0.0	0.0	12.3	1.8	0.0	0.2	0.2	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	0.0	14.2	0.4	0.0	22.9	4.3	0.0	2.9	1.9	0.0	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	0.0	18.5	14.4	0.0	35.5	42.3	0.0	28.6	31.4	0.0	33.0
LnGrp LOS	C	A	B	B	A	D	D	A	C	C	A	C
Approach Vol, veh/h		919			800			191			291	
Approach Delay, s/veh		21.6			35.0			35.9			32.7	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.6	55.9		29.1	15.1	49.4		29.1				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.6	26.9		14.1	8.4	38.4		22.2				
Green Ext Time (p_c), s	0.0	6.3		1.1	0.2	5.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		29.2	
HCM 6th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	35	6	91	94	46	9	406	67	26	307	24
Future Volume (veh/h)	28	35	6	91	94	46	9	406	67	26	307	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	42	7	108	112	55	11	483	0	31	365	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	274	46	333	207	102	530	887		453	925	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.01	0.47	0.00	0.03	0.49	0.00
Sat Flow, veh/h	1218	1563	260	1356	1184	582	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	33	0	49	108	0	167	11	483	0	31	365	0
Grp Sat Flow(s),veh/h/ln	1218	0	1823	1356	0	1766	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.4	0.0	1.3	4.2	0.0	4.9	0.2	10.4	0.0	0.5	7.0	0.0
Cycle Q Clear(g_c), s	6.3	0.0	1.3	5.5	0.0	4.9	0.2	10.4	0.0	0.5	7.0	0.0
Prop In Lane	1.00		0.14	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	0	319	333	0	309	530	887		453	925	
V/C Ratio(X)	0.14	0.00	0.15	0.32	0.00	0.54	0.02	0.54		0.07	0.39	
Avail Cap(c_a), veh/h	236	0	320	334	0	310	661	887		549	925	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.3	0.0	19.9	22.2	0.0	21.4	7.8	10.6	0.0	8.0	9.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.6	0.0	1.9	0.0	2.4	0.0	0.1	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	0.9	2.2	0.0	3.4	0.1	6.4	0.0	0.2	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.5	0.0	20.1	22.8	0.0	23.3	7.8	13.0	0.0	8.0	10.3	0.0
LnGrp LOS	C	A	C	C	A	C	A	B		A	B	
Approach Vol, veh/h		82			275			494			396	
Approach Delay, s/veh		21.9			23.1			12.9			10.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	33.0		16.0	6.8	34.1		16.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	27.0		10.0	5.0	27.0		10.0				
Max Q Clear Time (g_c+I1), s	2.5	12.4		8.3	2.2	9.0		7.5				
Green Ext Time (p_c), s	0.0	1.6		0.0	0.0	1.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	28	122	18	8	60
Future Vol, veh/h	31	28	122	18	8	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	29	127	19	8	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	230	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	93	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1436	-	-	-	758	911
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	931	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1436	-	-	-	741	911
Mov Cap-2 Maneuver	-	-	-	-	741	-
Stage 1	-	-	-	-	870	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1436	-	-	-	887
HCM Lane V/C Ratio	0.022	-	-	-	0.08
HCM Control Delay (s)	7.6	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

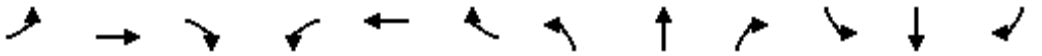
Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	313	274	588	108	22	210
Future Vol, veh/h	313	274	588	108	22	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	340	298	639	117	24	228

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	756	0	-	0	1617	639
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	978	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	855	-	-	-	114	476
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	364	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	855	-	-	-	69	476
Mov Cap-2 Maneuver	-	-	-	-	69	-
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	364	-

Approach	EB	WB	SB
HCM Control Delay, s	6.4	0	25.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	855	-	-	-	69	476
HCM Lane V/C Ratio	0.398	-	-	-	0.347	0.48
HCM Control Delay (s)	12	-	-	-	82.6	19.3
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	1.9	-	-	-	1.3	2.6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	566	442	48	377	514	190	54	752	385	224	872	739
Future Volume (vph)	566	442	48	377	514	190	54	752	385	224	872	739
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3487		1770	3396		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.20	1.00	1.00	0.11	1.00	1.00
Satd. Flow (perm)	3433	3487		1770	3396		367	3539	1583	199	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	596	465	51	397	541	200	57	792	405	236	918	778
RTOR Reduction (vph)	0	5	0	0	22	0	0	0	294	0	0	381
Lane Group Flow (vph)	596	511	0	397	719	0	57	792	111	236	918	397
Turn Type	Split	NA		Split	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)	35.5	35.5		35.3	35.3		46.0	42.1	42.1	65.4	56.5	56.5
Effective Green, g (s)	35.5	35.5		35.3	35.3		46.0	42.1	42.1	65.4	56.5	56.5
Actuated g/C Ratio	0.23	0.23		0.23	0.23		0.30	0.27	0.27	0.42	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0		5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0		1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	790	802		405	777		144	966	432	270	1296	580
v/s Ratio Prot	c0.17	0.15		c0.22	0.21		0.01	0.22		c0.10	0.26	
v/s Ratio Perm							0.11		0.07	c0.27		0.25
v/c Ratio	0.75	0.64		0.98	0.92		0.40	0.82	0.26	0.87	0.71	0.68
Uniform Delay, d1	55.3	53.5		59.1	58.2		40.1	52.5	43.8	39.7	41.8	41.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	1.9		39.4	16.9		0.7	5.8	0.4	24.7	1.9	3.6
Delay (s)	59.7	55.4		98.5	75.0		40.7	58.3	44.2	64.4	43.7	44.9
Level of Service	E	E		F	E		D	E	D	E	D	D
Approach Delay (s)		57.7			83.2			53.0			46.7	
Approach LOS		E			F			D			D	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	154.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	678	239	266	761	4	175	9	213	32	67	32
Future Volume (veh/h)	9	678	239	266	761	4	175	9	213	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	699	246	274	785	4	180	10	220	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	731	257	248	1189	1008	294	11	244	118	149	126
Arrive On Green	0.01	0.55	0.55	0.09	0.64	0.64	0.11	0.16	0.16	0.03	0.08	0.08
Sat Flow, veh/h	1781	1322	465	1781	1870	1585	1781	69	1526	1781	1870	1585
Grp Volume(v), veh/h	10	0	945	274	785	4	180	0	230	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1787	1781	1870	1585	1781	0	1596	1781	1870	1585
Q Serve(g_s), s	0.4	0.0	72.5	13.6	38.1	0.1	13.0	0.0	20.5	2.6	5.4	3.0
Cycle Q Clear(g_c), s	0.4	0.0	72.5	13.6	38.1	0.1	13.0	0.0	20.5	2.6	5.4	3.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.96	1.00		1.00
Lane Grp Cap(c), veh/h	327	0	988	248	1189	1008	294	0	255	118	149	126
V/C Ratio(X)	0.03	0.00	0.96	1.11	0.66	0.00	0.61	0.00	0.90	0.30	0.49	0.28
Avail Cap(c_a), veh/h	474	0	1027	248	1189	1008	471	0	380	377	380	322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.2	0.0	30.6	46.9	16.5	9.6	51.7	0.0	59.6	59.2	63.7	62.6
Incr Delay (d2), s/veh	0.0	0.0	18.6	88.2	1.8	0.0	1.5	0.0	17.6	1.0	2.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	43.5	22.2	22.1	0.1	9.7	0.0	14.3	2.2	4.8	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	0.0	49.3	135.1	18.4	9.6	53.3	0.0	77.2	60.3	66.2	63.8
LnGrp LOS	B	A	D	F	B	A	D	A	E	E	E	E
Approach Vol, veh/h		955			1063			410			143	
Approach Delay, s/veh		48.9			48.4			66.7			64.1	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	86.9	20.6	17.1	8.1	98.8	9.0	28.7
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	74.5	15.0	7.4	2.4	40.1	4.6	22.5
Green Ext Time (p_c), s	0.0	5.5	0.4	0.3	0.0	10.1	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	52.4
HCM 6th LOS	D

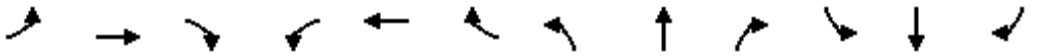
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	43	893	895	15	5	36
Future Vol, veh/h	43	893	895	15	5	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	911	913	15	5	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	928	0	-	0	1920	921
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	999	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	737	-	-	-	74	328
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	356	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	737	-	-	-	70	328
Mov Cap-2 Maneuver	-	-	-	-	70	-
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	356	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	24.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	737	-	-	-	226
HCM Lane V/C Ratio	0.06	-	-	-	0.185
HCM Control Delay (s)	10.2	-	-	-	24.5
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	861	7	23	758	85	53	5	30	11	9	31
Future Volume (veh/h)	28	861	7	23	758	85	53	5	30	11	9	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	879	7	23	773	87	54	5	31	11	9	32
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	1055	8	275	932	105	222	23	142	226	37	131
Arrive On Green	0.03	0.57	0.57	0.03	0.56	0.56	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1853	15	1781	1651	186	1366	225	1394	1372	360	1280
Grp Volume(v), veh/h	29	0	886	23	0	860	54	0	36	11	0	41
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1837	1366	0	1619	1372	0	1640
Q Serve(g_s), s	0.4	0.0	24.4	0.3	0.0	24.1	2.4	0.0	1.3	0.5	0.0	1.4
Cycle Q Clear(g_c), s	0.4	0.0	24.4	0.3	0.0	24.1	3.8	0.0	1.3	1.8	0.0	1.4
Prop In Lane	1.00		0.01	1.00		0.10	1.00		0.86	1.00		0.78
Lane Grp Cap(c), veh/h	287	0	1064	275	0	1037	222	0	165	226	0	167
V/C Ratio(X)	0.10	0.00	0.83	0.08	0.00	0.83	0.24	0.00	0.22	0.05	0.00	0.25
Avail Cap(c_a), veh/h	613	0	1455	610	0	1431	702	0	734	708	0	743
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	11.1	10.1	0.0	11.2	27.8	0.0	25.9	26.7	0.0	26.0
Incr Delay (d2), s/veh	0.1	0.0	4.6	0.0	0.0	4.6	0.6	0.0	0.7	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	11.7	0.1	0.0	11.6	1.4	0.0	0.9	0.3	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.1	0.0	15.7	10.2	0.0	15.8	28.3	0.0	26.6	26.8	0.0	26.8
LnGrp LOS	B	A	B	B	A	B	C	A	C	C	A	C
Approach Vol, veh/h		915			883			90			52	
Approach Delay, s/veh		15.5			15.6			27.6			26.8	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	41.8		12.9	8.5	41.5		12.9				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.3	26.4		3.8	2.4	26.1		5.8				
Green Ext Time (p_c), s	0.0	9.4		0.1	0.0	9.1		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		16.4	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	39	6	60	27	26	9	276	69	35	429	54
Future Volume (veh/h)	13	39	6	60	27	26	9	276	69	35	429	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	41	6	62	28	27	9	288	0	36	447	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	346	287	42	355	157	152	432	804		566	855	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.01	0.43	0.00	0.04	0.46	0.00
Sat Flow, veh/h	1349	1595	233	1359	875	844	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	14	0	47	62	0	55	9	288	0	36	447	0
Grp Sat Flow(s),veh/h/ln	1349	0	1828	1359	0	1719	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.5	0.0	1.1	2.1	0.0	1.4	0.1	5.3	0.0	0.6	8.7	0.0
Cycle Q Clear(g_c), s	1.8	0.0	1.1	3.2	0.0	1.4	0.1	5.3	0.0	0.6	8.7	0.0
Prop In Lane	1.00		0.13	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	346	0	329	355	0	309	432	804		566	855	
V/C Ratio(X)	0.04	0.00	0.14	0.17	0.00	0.18	0.02	0.36		0.06	0.52	
Avail Cap(c_a), veh/h	367	0	357	377	0	336	585	804		670	855	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.6	0.0	17.7	19.0	0.0	17.8	8.6	9.8	0.0	7.7	9.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	0.2	0.0	0.3	0.0	1.2	0.0	0.0	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	0.7	1.0	0.0	0.9	0.1	3.2	0.0	0.3	5.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	0.0	17.9	19.2	0.0	18.1	8.6	11.1	0.0	7.7	12.2	0.0
LnGrp LOS	B	A	B	B	A	B	A	B		A	B	
Approach Vol, veh/h		61			117			297			483	
Approach Delay, s/veh		18.0			18.7			11.0			11.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	28.0		15.2	6.6	29.4		15.2				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	22.0		10.0	5.0	22.0		10.0				
Max Q Clear Time (g_c+I1), s	2.8	7.3		3.8	2.1	10.7		5.2				
Green Ext Time (p_c), s	0.0	0.8		0.1	0.0	1.3		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	12.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	48	79	53	6	17	45
Future Vol, veh/h	48	79	53	6	17	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	82	55	6	18	47

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	61	0	-	0	240	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	182	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1542	-	-	-	748	1008
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	849	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1542	-	-	-	723	1008
Mov Cap-2 Maneuver	-	-	-	-	723	-
Stage 1	-	-	-	-	932	-
Stage 2	-	-	-	-	849	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1542	-	-	-	910
HCM Lane V/C Ratio	0.032	-	-	-	0.071
HCM Control Delay (s)	7.4	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	8.2

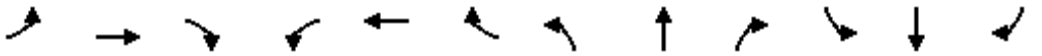
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	321	537	349	45	38	392
Future Vol, veh/h	321	537	349	45	38	392
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	341	571	371	48	40	417

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	419	0	-	0	1624	371
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	1253	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1140	-	-	-	113	675
Stage 1	-	-	-	-	698	-
Stage 2	-	-	-	-	269	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1140	-	-	-	79	675
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	269	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	25
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1140	-	-	-	79	675
HCM Lane V/C Ratio	0.3	-	-	-	0.512	0.618
HCM Control Delay (s)	9.5	-	-	-	90.9	18.6
HCM Lane LOS	A	-	-	-	F	C
HCM 95th %tile Q(veh)	1.3	-	-	-	2.2	4.3

2031 BACKGROUND CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	939	670	47	395	459	390	35	955	355	292	955	916
Future Volume (vph)	939	670	47	395	459	390	35	955	355	292	955	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3505		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3505		3433	3539	1583	198	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1067	761	53	449	522	443	40	1085	403	332	1085	1041
RTOR Reduction (vph)	0	3	0	0	0	130	0	0	289	0	0	380
Lane Group Flow (vph)	1067	811	0	449	522	313	40	1085	114	332	1085	661
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	42.0	42.0		34.6	34.6	34.6	50.5	46.5	46.5	18.4	60.9	60.9
Effective Green, g (s)	42.0	42.0		34.6	34.6	34.6	50.5	46.5	46.5	18.4	60.9	60.9
Actuated g/C Ratio	0.26	0.26		0.21	0.21	0.21	0.31	0.28	0.28	0.11	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	876	894		722	744	332	99	1000	447	383	1310	586
v/s Ratio Prot	c0.31	0.23		0.13	0.15		0.01	0.31		c0.10	0.31	
v/s Ratio Perm						c0.20	0.11		0.07			c0.42
v/c Ratio	1.22	0.91		0.62	0.70	0.94	0.40	1.08	0.25	0.87	0.83	1.13
Uniform Delay, d1	61.2	59.4		59.0	60.2	64.0	43.0	59.0	45.6	71.8	47.0	51.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	108.5	12.9		1.9	3.2	35.1	1.0	54.4	0.4	17.7	4.7	77.4
Delay (s)	169.7	72.3		60.9	63.4	99.1	43.9	113.4	46.0	89.5	51.7	129.2
Level of Service	F	E		E	E	F	D	F	D	F	D	F
Approach Delay (s)		127.6			73.8			93.8			89.6	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	97.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	164.5	Sum of lost time (s)	23.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	726	205	246	930	34	419	67	247	1	2	2
Future Volume (veh/h)	105	726	205	246	930	34	419	67	247	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	816	230	276	1045	37	471	73	278	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	740	209	199	1069	906	444	79	301	71	83	70
Arrive On Green	0.04	0.53	0.53	0.09	0.57	0.57	0.19	0.23	0.23	0.00	0.04	0.04
Sat Flow, veh/h	1781	1404	396	1781	1870	1585	1781	340	1297	1781	1870	1585
Grp Volume(v), veh/h	114	0	1046	276	1045	37	471	0	351	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1799	1781	1870	1585	1781	0	1637	1781	1870	1585
Q Serve(g_s), s	4.6	0.0	83.1	13.6	85.5	1.6	29.8	0.0	33.0	0.1	0.2	0.2
Cycle Q Clear(g_c), s	4.6	0.0	83.1	13.6	85.5	1.6	29.8	0.0	33.0	0.1	0.2	0.2
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	136	0	949	199	1069	906	444	0	380	71	83	70
V/C Ratio(X)	0.84	0.00	1.10	1.38	0.98	0.04	1.06	0.00	0.92	0.01	0.02	0.03
Avail Cap(c_a), veh/h	214	0	949	199	1069	906	444	0	380	349	349	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	0.0	37.3	56.9	32.8	14.8	60.2	0.0	59.1	71.8	72.0	72.0
Incr Delay (d2), s/veh	8.6	0.0	61.5	200.9	22.4	0.0	59.9	0.0	27.9	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.6	0.0	67.5	28.9	53.3	1.0	16.1	0.0	22.9	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.8	0.0	98.7	257.8	55.2	14.9	120.1	0.0	87.0	71.9	72.1	72.2
LnGrp LOS	D	A	F	F	E	B	F	A	F	E	E	E
Approach Vol, veh/h		1160			1358			822			5	
Approach Delay, s/veh		93.5			95.3			106.0			72.1	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	90.0	35.0	12.6	13.1	96.9	5.4	42.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	31.8	2.2	6.6	87.5	2.1	35.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	97.3
HCM 6th LOS	F

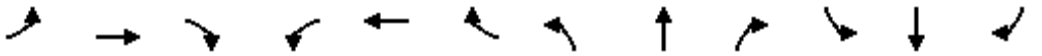
Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	936	1116	10	21	59
Future Vol, veh/h	17	936	1116	10	21	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	1040	1240	11	23	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1251	0	-	0	2324	1246
Stage 1	-	-	-	-	1246	-
Stage 2	-	-	-	-	1078	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	556	-	-	-	41	212
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	327	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	556	-	-	-	40	212
Mov Cap-2 Maneuver	-	-	-	-	40	-
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	327	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	138.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	556	-	-	-	100
HCM Lane V/C Ratio	0.034	-	-	-	0.889
HCM Control Delay (s)	11.7	-	-	-	138.6
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	5.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	704	37	24	821	43	114	61	37	62	31	228
Future Volume (veh/h)	273	704	37	24	821	43	114	61	37	62	31	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	307	791	42	27	922	48	128	69	42	70	35	256
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	955	51	223	785	41	170	282	172	333	50	368
Arrive On Green	0.12	0.54	0.54	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1760	93	1781	1762	92	1088	1089	663	1282	194	1420
Grp Volume(v), veh/h	307	0	833	27	0	970	128	0	111	70	0	291
Grp Sat Flow(s),veh/h/ln	1781	0	1854	1781	0	1854	1088	0	1751	1282	0	1615
Q Serve(g_s), s	13.5	0.0	41.1	0.9	0.0	49.0	10.6	0.0	5.5	5.0	0.0	17.9
Cycle Q Clear(g_c), s	13.5	0.0	41.1	0.9	0.0	49.0	28.5	0.0	5.5	10.5	0.0	17.9
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.38	1.00		0.88
Lane Grp Cap(c), veh/h	284	0	1006	223	0	826	170	0	454	333	0	418
V/C Ratio(X)	1.08	0.00	0.83	0.12	0.00	1.17	0.75	0.00	0.24	0.21	0.00	0.70
Avail Cap(c_a), veh/h	284	0	1006	396	0	826	170	0	454	333	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	20.9	20.0	0.0	30.5	50.7	0.0	32.2	36.4	0.0	36.8
Incr Delay (d2), s/veh	76.6	0.0	6.5	0.1	0.0	91.2	17.0	0.0	0.3	0.3	0.0	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	14.4	0.0	23.6	0.6	0.0	56.7	7.8	0.0	4.3	2.9	0.0	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	112.8	0.0	27.4	20.1	0.0	121.7	67.7	0.0	32.5	36.7	0.0	41.8
LnGrp LOS	F	A	C	C	A	F	E	A	C	D	A	D
Approach Vol, veh/h		1140			997			239			361	
Approach Delay, s/veh		50.4			119.0			51.4			40.8	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	65.7		35.0	20.0	55.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.9	43.1		19.9	15.5	51.0		30.5				
Green Ext Time (p_c), s	0.0	3.4		1.1	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		74.2	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	43	7	113	117	57	11	506	83	32	383	30
Future Volume (veh/h)	35	43	7	113	117	57	11	506	83	32	383	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	42	51	8	135	139	68	13	602	0	38	456	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	276	43	323	207	101	465	882		377	925	
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.02	0.47	0.00	0.04	0.49	0.00
Sat Flow, veh/h	1175	1578	248	1344	1186	580	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	42	0	59	135	0	207	13	602	0	38	456	0
Grp Sat Flow(s),veh/h/ln	1175	0	1826	1344	0	1766	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.0	0.0	1.6	5.5	0.0	6.3	0.2	14.4	0.0	0.6	9.3	0.0
Cycle Q Clear(g_c), s	8.3	0.0	1.6	7.0	0.0	6.3	0.2	14.4	0.0	0.6	9.3	0.0
Prop In Lane	1.00		0.14	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	0	319	323	0	308	465	882		377	925	
V/C Ratio(X)	0.21	0.00	0.19	0.42	0.00	0.67	0.03	0.68		0.10	0.49	
Avail Cap(c_a), veh/h	202	0	319	323	0	308	592	882		462	925	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.0	0.0	20.2	23.2	0.0	22.1	8.1	11.8	0.0	8.9	9.7	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.3	0.9	0.0	5.6	0.0	4.3	0.0	0.1	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.0	1.1	2.8	0.0	4.9	0.1	8.9	0.0	0.3	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	20.4	24.0	0.0	27.7	8.2	16.1	0.0	9.0	11.5	0.0
LnGrp LOS	C	A	C	C	A	C	A	B		A	B	
Approach Vol, veh/h		101			342			615			494	
Approach Delay, s/veh		22.9			26.2			15.9			11.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	33.0		16.0	6.9	34.3		16.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.3	27.0		10.0	5.0	27.0		10.0				
Max Q Clear Time (g_c+I1), s	2.6	16.4		10.3	2.2	11.3		9.0				
Green Ext Time (p_c), s	0.0	1.9		0.0	0.0	1.5		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	35	151	23	10	74
Future Vol, veh/h	38	35	151	23	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	36	157	24	10	77

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	181	0	-	0	285	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1394	-	-	-	705	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1394	-	-	-	685	875
Mov Cap-2 Maneuver	-	-	-	-	685	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1394	-	-	-	847
HCM Lane V/C Ratio	0.028	-	-	-	0.103
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	14.3

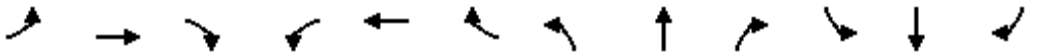
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	390	340	729	135	27	262
Future Vol, veh/h	390	340	729	135	27	262
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	424	370	792	147	29	285

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	939	0	-	0	2010	792
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	1218	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	730	-	-	-	65	389
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	280	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	730	-	-	-	~ 27	389
Mov Cap-2 Maneuver	-	-	-	-	~ 27	-
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	280	-

Approach	EB	WB	SB
HCM Control Delay, s	8.8	0	71
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	730	-	-	-	27	389
HCM Lane V/C Ratio	0.581	-	-	-	1.087	0.732
HCM Control Delay (s)	16.5	-	-	-	$ 414	35.7
HCM Lane LOS	C	-	-	-	F	E
HCM 95th %tile Q(veh)	3.8	-	-	-	3.5	5.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	702	556	60	473	645	238	67	932	483	281	1081	916
Future Volume (vph)	702	556	60	473	645	238	67	932	483	281	1081	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3488		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.08	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3488		3433	3539	1583	156	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	739	585	63	498	679	251	71	981	508	296	1138	964
RTOR Reduction (vph)	0	5	0	0	0	135	0	0	315	0	0	365
Lane Group Flow (vph)	739	643	0	498	679	116	71	981	193	296	1138	599
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	40.8	40.8		34.8	34.8	34.8	52.7	47.7	47.7	17.4	60.1	60.1
Effective Green, g (s)	40.8	40.8		34.8	34.8	34.8	52.7	47.7	47.7	17.4	60.1	60.1
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.32	0.29	0.29	0.11	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	855	869		729	752	336	99	1031	461	364	1299	581
v/s Ratio Prot	c0.22	0.18		0.15	c0.19		0.02	0.28		c0.09	0.32	
v/s Ratio Perm						0.07	0.21		0.12			c0.38
v/c Ratio	0.86	0.74		0.68	0.90	0.34	0.72	0.95	0.42	0.81	0.88	1.03
Uniform Delay, d1	58.8	56.6		59.4	62.8	54.8	43.1	56.9	46.8	71.6	48.3	51.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.4	3.6		2.9	14.4	0.8	18.5	17.6	0.8	12.3	7.1	45.4
Delay (s)	68.2	60.1		62.3	77.2	55.6	61.6	74.5	47.7	83.9	55.4	97.2
Level of Service	E	E		E	E	E	E	E	D	F	E	F
Approach Delay (s)		64.4			68.2			65.2			75.8	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	69.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	163.7	Sum of lost time (s)	23.0
Intersection Capacity Utilization	92.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	858	296	335	960	4	217	9	269	32	67	32
Future Volume (veh/h)	9	858	296	335	960	4	217	9	269	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	885	305	345	990	4	224	10	277	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	715	246	203	1149	974	343	11	297	109	173	146
Arrive On Green	0.01	0.54	0.54	0.09	0.61	0.61	0.13	0.19	0.19	0.03	0.09	0.09
Sat Flow, veh/h	1781	1330	458	1781	1870	1585	1781	56	1538	1781	1870	1585
Grp Volume(v), veh/h	10	0	1190	345	990	4	224	0	287	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1870	1585	1781	0	1594	1781	1870	1585
Q Serve(g_s), s	0.4	0.0	83.1	13.6	67.1	0.2	17.1	0.0	27.4	2.7	5.7	3.2
Cycle Q Clear(g_c), s	0.4	0.0	83.1	13.6	67.1	0.2	17.1	0.0	27.4	2.7	5.7	3.2
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	169	0	961	203	1149	974	343	0	308	109	173	146
V/C Ratio(X)	0.06	0.00	1.24	1.70	0.86	0.00	0.65	0.00	0.93	0.32	0.42	0.24
Avail Cap(c_a), veh/h	306	0	961	203	1149	974	461	0	355	350	356	301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	0.0	35.7	56.1	24.4	11.5	52.4	0.0	61.3	61.9	66.3	65.1
Incr Delay (d2), s/veh	0.1	0.0	116.2	333.9	7.4	0.0	1.6	0.0	28.7	1.2	1.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	91.6	41.0	38.7	0.1	12.2	0.0	19.2	2.3	5.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	0.0	151.9	390.1	31.9	11.5	54.0	0.0	90.1	63.1	67.9	65.9
LnGrp LOS	C	A	F	F	C	B	D	A	F	E	E	E
Approach Vol, veh/h		1200			1339			511			143	
Approach Delay, s/veh		150.8			124.1			74.3			66.2	
Approach LOS		F			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	90.0	24.7	19.9	8.1	101.9	9.1	35.5
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	19.1	7.7	2.4	69.1	4.7	29.4
Green Ext Time (p_c), s	0.0	0.0	0.4	0.3	0.0	8.3	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	123.6
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	58	1118	1122	19	6	50
Future Vol, veh/h	58	1118	1122	19	6	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	1141	1145	19	6	51

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1164	0	-	0	2414	1155
Stage 1	-	-	-	-	1155	-
Stage 2	-	-	-	-	1259	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	600	-	-	-	36	240
Stage 1	-	-	-	-	300	-
Stage 2	-	-	-	-	267	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	600	-	-	-	32	240
Mov Cap-2 Maneuver	-	-	-	-	32	-
Stage 1	-	-	-	-	271	-
Stage 2	-	-	-	-	267	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	46.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	600	-	-	-	141
HCM Lane V/C Ratio	0.099	-	-	-	0.405
HCM Control Delay (s)	11.7	-	-	-	46.9
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.3	-	-	-	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	1068	9	29	951	105	67	6	37	14	11	38
Future Volume (veh/h)	35	1068	9	29	951	105	67	6	37	14	11	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	36	1090	9	30	970	107	68	6	38	14	11	39
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	1148	9	187	1019	112	197	23	147	201	38	134
Arrive On Green	0.03	0.62	0.62	0.03	0.62	0.62	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1781	1852	15	1781	1655	183	1355	221	1398	1362	361	1279
Grp Volume(v), veh/h	36	0	1099	30	0	1077	68	0	44	14	0	50
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1838	1355	0	1619	1362	0	1640
Q Serve(g_s), s	0.6	0.0	42.2	0.5	0.0	42.3	3.8	0.0	1.9	0.7	0.0	2.2
Cycle Q Clear(g_c), s	0.6	0.0	42.2	0.5	0.0	42.3	6.0	0.0	1.9	2.7	0.0	2.2
Prop In Lane	1.00		0.01	1.00		0.10	1.00		0.86	1.00		0.78
Lane Grp Cap(c), veh/h	192	0	1158	187	0	1132	197	0	170	201	0	172
V/C Ratio(X)	0.19	0.00	0.95	0.16	0.00	0.95	0.35	0.00	0.26	0.07	0.00	0.29
Avail Cap(c_a), veh/h	440	0	1177	441	0	1158	551	0	594	558	0	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	0.0	13.6	16.9	0.0	13.9	34.9	0.0	32.0	33.2	0.0	32.1
Incr Delay (d2), s/veh	0.2	0.0	15.9	0.1	0.0	16.5	1.0	0.0	0.8	0.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	0.0	23.0	0.5	0.0	23.0	2.3	0.0	1.4	0.4	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	0.0	29.5	17.1	0.0	30.3	35.9	0.0	32.8	33.4	0.0	33.0
LnGrp LOS	B	A	C	B	A	C	D	A	C	C	A	C
Approach Vol, veh/h		1135			1107			112			64	
Approach Delay, s/veh		29.1			30.0			34.7			33.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	54.2		14.7	9.2	53.9		14.7				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.5	44.2		4.7	2.6	44.3		8.0				
Green Ext Time (p_c), s	0.0	3.7		0.2	0.0	3.6		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		29.9	
HCM 6th LOS		C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	48	7	74	33	32	11	347	86	43	536	68
Future Volume (veh/h)	16	48	7	74	33	32	11	347	86	43	536	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	50	7	77	34	33	11	361	0	45	558	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	296	41	351	161	156	354	792		512	851	
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.01	0.42	0.00	0.05	0.46	0.00
Sat Flow, veh/h	1334	1605	225	1346	872	846	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	17	0	57	77	0	67	11	361	0	45	558	0
Grp Sat Flow(s),veh/h/ln	1334	0	1830	1346	0	1718	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.6	0.0	1.4	2.7	0.0	1.7	0.2	7.2	0.0	0.7	12.0	0.0
Cycle Q Clear(g_c), s	2.3	0.0	1.4	4.0	0.0	1.7	0.2	7.2	0.0	0.7	12.0	0.0
Prop In Lane	1.00		0.12	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	0	337	351	0	316	354	792		512	851	
V/C Ratio(X)	0.05	0.00	0.17	0.22	0.00	0.21	0.03	0.46		0.09	0.66	
Avail Cap(c_a), veh/h	351	0	352	362	0	331	500	792		601	851	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	0.0	17.8	19.5	0.0	18.0	9.3	10.7	0.0	8.0	11.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.3	0.0	0.3	0.0	1.9	0.0	0.1	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	0.9	1.3	0.0	1.1	0.1	4.4	0.0	0.3	7.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	0.0	18.1	19.8	0.0	18.3	9.4	12.6	0.0	8.1	14.9	0.0
LnGrp LOS	B	A	B	B	A	B	A	B		A	B	
Approach Vol, veh/h		74			144			372			603	
Approach Delay, s/veh		18.3			19.1			12.5			14.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	28.0		15.6	6.7	29.7		15.6
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	22.0		10.0	5.0	22.0		10.0
Max Q Clear Time (g_c+I1), s	2.7	9.2		4.3	2.2	14.0		6.0
Green Ext Time (p_c), s	0.0	1.0		0.1	0.0	1.4		0.1

Intersection Summary	
HCM 6th Ctrl Delay	14.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	98	66	8	21	56
Future Vol, veh/h	60	98	66	8	21	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	102	69	8	22	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	77	0	-	0	301	73
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1522	-	-	-	691	989
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1522	-	-	-	661	989
Mov Cap-2 Maneuver	-	-	-	-	661	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1522	-	-	-	871
HCM Lane V/C Ratio	0.041	-	-	-	0.092
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	20.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	402	666	433	57	47	490
Future Vol, veh/h	402	666	433	57	47	490
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	428	709	461	61	50	521

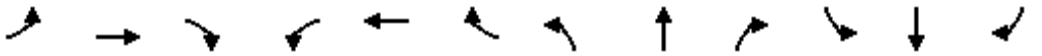
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	2026	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	1565	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1044	-	-	-	63	600
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	189	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1044	-	-	-	~ 37	600
Mov Cap-2 Maneuver	-	-	-	-	~ 37	-
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	189	-

Approach	EB	WB	SB
HCM Control Delay, s	4.1	0	73.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1044	-	-	-	37	600
HCM Lane V/C Ratio	0.41	-	-	-	1.351	0.869
HCM Control Delay (s)	10.8	-	-	-	$ 437.1	38.2
HCM Lane LOS	B	-	-	-	F	E
HCM 95th %tile Q(veh)	2	-	-	-	5.2	9.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

2031 FUTURE PROJECTED CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	939	685	47	420	484	453	35	955	370	329	955	916
Future Volume (vph)	939	685	47	420	484	453	35	955	370	329	955	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3505		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3505		3433	3539	1583	204	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1067	778	53	477	550	515	40	1085	420	374	1085	1041
RTOR Reduction (vph)	0	3	0	0	0	129	0	0	303	0	0	378
Lane Group Flow (vph)	1067	828	0	477	550	386	40	1085	117	374	1085	663
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	42.0	42.0		35.0	35.0	35.0	50.0	46.0	46.0	19.5	61.5	61.5
Effective Green, g (s)	42.0	42.0		35.0	35.0	35.0	50.0	46.0	46.0	19.5	61.5	61.5
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.30	0.28	0.28	0.12	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	871	889		726	748	334	99	983	439	404	1315	588
v/s Ratio Prot	c0.31	0.24		0.14	0.16		0.01	0.31		c0.11	0.31	
v/s Ratio Perm						c0.24	0.11		0.07			c0.42
v/c Ratio	1.23	0.93		0.66	0.74	1.15	0.40	1.10	0.27	0.93	0.83	1.13
Uniform Delay, d1	61.8	60.3		59.8	60.9	65.2	43.6	59.8	46.6	72.3	47.1	52.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	111.5	16.2		2.4	4.0	98.2	1.0	61.5	0.4	26.5	4.6	77.3
Delay (s)	173.2	76.6		62.1	64.9	163.4	44.6	121.2	47.0	98.8	51.7	129.3
Level of Service	F	E		E	E	F	D	F	D	F	D	F
Approach Delay (s)		130.9			97.0			99.1			91.0	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	104.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	165.5	Sum of lost time (s)	23.0
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Future Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	891	230	333	1172	37	471	73	310	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	756	195	199	1054	893	444	72	307	48	83	70
Arrive On Green	0.05	0.53	0.53	0.09	0.56	0.56	0.19	0.23	0.23	0.00	0.04	0.04
Sat Flow, veh/h	1781	1434	370	1781	1870	1585	1781	311	1321	1781	1870	1585
Grp Volume(v), veh/h	114	0	1121	333	1172	37	471	0	383	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1804	1781	1870	1585	1781	0	1633	1781	1870	1585
Q Serve(g_s), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	36.6	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	36.6	0.1	0.2	0.2
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.81	1.00		1.00
Lane Grp Cap(c), veh/h	135	0	951	199	1054	893	444	0	379	48	83	70
V/C Ratio(X)	0.84	0.00	1.18	1.67	1.11	0.04	1.06	0.00	1.01	0.02	0.02	0.03
Avail Cap(c_a), veh/h	199	0	951	199	1054	893	444	0	379	326	349	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	37.3	56.8	34.4	15.4	60.2	0.0	60.5	71.9	72.0	72.0
Incr Delay (d2), s/veh	12.9	0.0	91.4	322.5	63.9	0.0	59.9	0.0	48.9	0.1	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	80.9	39.9	74.9	1.1	16.1	0.0	27.4	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	0.0	128.6	379.3	98.3	15.4	120.1	0.0	109.4	72.0	72.1	72.2
LnGrp LOS	E	A	F	F	F	B	F	A	F	E	E	E
Approach Vol, veh/h		1235			1542			854			5	
Approach Delay, s/veh		122.2			157.0			115.3			72.1	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	90.0	35.0	12.6	14.3	95.7	5.4	42.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	31.8	2.2	7.9	90.8	2.1	38.6
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	135.3
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	638.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	936	96	44	1116	10	163	13	76	21	7	59
Future Vol, veh/h	17	936	96	44	1116	10	163	13	76	21	7	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	92	92	90	92	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	1040	104	48	1240	11	177	14	83	23	8	66

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1251	0	0	1144	0	0	2509	2477	1092	2521	2524	1246
Stage 1	-	-	-	-	-	-	1130	1130	-	1342	1342	-
Stage 2	-	-	-	-	-	-	1379	1347	-	1179	1182	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	556	-	-	611	-	-	~ 19	30	261	~ 19	28	212
Stage 1	-	-	-	-	-	-	248	279	-	188	221	-
Stage 2	-	-	-	-	-	-	179	220	-	232	263	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	556	-	-	611	-	-	~ 9	27	261	~ 7	25	212
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	27	-	~ 7	25	-
Stage 1	-	-	-	-	-	-	240	270	-	182	204	-
Stage 2	-	-	-	-	-	-	~ 110	203	-	145	254	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	$ 6001.7	$ 1691
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	9	115	556	-	-	611	-	-	24
HCM Lane V/C Ratio	19.686	0.841	0.034	-	-	0.078	-	-	4.021
HCM Control Delay (s)	$ 9215.9	115.1	11.7	-	-	11.4	-	-	$ 1691
HCM Lane LOS	F	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	23.8	5	0.1	-	-	0.3	-	-	12.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	286	767	37	24	858	43	114	61	37	62	31	235
Future Volume (veh/h)	286	767	37	24	858	43	114	61	37	62	31	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	321	862	42	27	964	48	128	69	42	70	35	264
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	960	47	177	787	39	163	282	172	333	49	369
Arrive On Green	0.12	0.54	0.54	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1769	86	1781	1767	88	1080	1089	663	1282	189	1425
Grp Volume(v), veh/h	321	0	904	27	0	1012	128	0	111	70	0	299
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1855	1080	0	1751	1282	0	1614
Q Serve(g_s), s	13.5	0.0	47.8	0.9	0.0	49.0	10.0	0.0	5.5	5.0	0.0	18.5
Cycle Q Clear(g_c), s	13.5	0.0	47.8	0.9	0.0	49.0	28.5	0.0	5.5	10.5	0.0	18.5
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.38	1.00		0.88
Lane Grp Cap(c), veh/h	284	0	1007	177	0	826	163	0	454	333	0	418
V/C Ratio(X)	1.13	0.00	0.90	0.15	0.00	1.23	0.78	0.00	0.24	0.21	0.00	0.72
Avail Cap(c_a), veh/h	284	0	1007	351	0	826	163	0	454	333	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	22.4	22.2	0.0	30.5	51.2	0.0	32.2	36.4	0.0	37.1
Incr Delay (d2), s/veh	93.1	0.0	11.3	0.1	0.0	112.0	21.6	0.0	0.3	0.3	0.0	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	16.3	0.0	28.2	0.6	0.0	64.4	8.0	0.0	4.3	2.9	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	129.3	0.0	33.7	22.3	0.0	142.5	72.8	0.0	32.5	36.7	0.0	42.8
LnGrp LOS	F	A	C	C	A	F	E	A	C	D	A	D
Approach Vol, veh/h		1225			1039			239			369	
Approach Delay, s/veh		58.8			139.4			54.1			41.6	
Approach LOS		E			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	65.7		35.0	20.0	55.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.9	49.8		20.5	15.5	51.0		30.5				
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		85.3	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	43	7	113	117	57	11	528	83	32	421	42
Future Volume (veh/h)	42	43	7	113	117	57	11	528	83	32	421	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	51	8	135	139	68	13	629	0	38	501	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	276	43	323	207	101	433	882		359	925	
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.02	0.47	0.00	0.04	0.49	0.00
Sat Flow, veh/h	1175	1578	248	1344	1186	580	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	50	0	59	135	0	207	13	629	0	38	501	0
Grp Sat Flow(s),veh/h/ln	1175	0	1826	1344	0	1766	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.4	0.0	1.6	5.5	0.0	6.3	0.2	15.3	0.0	0.6	10.6	0.0
Cycle Q Clear(g_c), s	8.7	0.0	1.6	7.0	0.0	6.3	0.2	15.3	0.0	0.6	10.6	0.0
Prop In Lane	1.00		0.14	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	0	319	323	0	308	433	882		359	925	
V/C Ratio(X)	0.25	0.00	0.19	0.42	0.00	0.67	0.03	0.71		0.11	0.54	
Avail Cap(c_a), veh/h	202	0	319	323	0	308	559	882		444	925	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.1	0.0	20.2	23.2	0.0	22.1	8.3	12.1	0.0	9.2	10.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.3	0.9	0.0	5.6	0.0	4.9	0.0	0.1	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.0	1.1	2.8	0.0	4.9	0.1	9.4	0.0	0.3	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	0.0	20.4	24.0	0.0	27.7	8.4	16.9	0.0	9.3	12.3	0.0
LnGrp LOS	C	A	C	C	A	C	A	B		A	B	
Approach Vol, veh/h		109			342			642			539	
Approach Delay, s/veh		23.3			26.2			16.8			12.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	33.0		16.0	6.9	34.3		16.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.3	27.0		10.0	5.0	27.0		10.0
Max Q Clear Time (g_c+I1), s	2.6	17.3		10.7	2.2	12.6		9.0
Green Ext Time (p_c), s	0.0	1.9		0.0	0.0	1.7		0.1

Intersection Summary	
HCM 6th Ctrl Delay	17.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	35	151	23	10	74
Future Vol, veh/h	38	35	151	23	10	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	36	157	24	10	77

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	181	0	-	0	285	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	116	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1394	-	-	-	705	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	909	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1394	-	-	-	685	875
Mov Cap-2 Maneuver	-	-	-	-	685	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	909	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1394	-	-	-	847
HCM Lane V/C Ratio	0.028	-	-	-	0.103
HCM Control Delay (s)	7.7	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	17.9

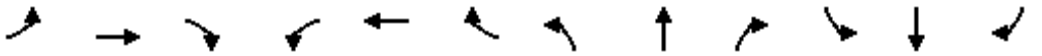
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	412	340	729	135	27	300
Future Vol, veh/h	412	340	729	135	27	300
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	448	370	792	147	29	326

Major/Minor	Major1			Major2		
					Minor2	
Conflicting Flow All	939	0	-	0	2058	792
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	1266	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	730	-	-	-	61	389
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	265	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	730	-	-	-	~ 24	389
Mov Cap-2 Maneuver	-	-	-	-	~ 24	-
Stage 1	-	-	-	-	172	-
Stage 2	-	-	-	-	265	-

Approach	EB	WB	SB
HCM Control Delay, s	9.6	0	84.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	730	-	-	-	24	389
HCM Lane V/C Ratio	0.613	-	-	-	1.223	0.838
HCM Control Delay (s)	17.4	-	-	-	$ 496.8	47.3
HCM Lane LOS	C	-	-	-	F	E
HCM 95th %tile Q(veh)	4.2	-	-	-	3.7	7.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	702	583	60	493	666	289	67	932	510	349	1081	916
Future Volume (vph)	702	583	60	493	666	289	67	932	510	349	1081	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3490		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3490		3433	3539	1583	163	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	739	614	63	519	701	304	71	981	537	367	1138	964
RTOR Reduction (vph)	0	5	0	0	0	135	0	0	315	0	0	365
Lane Group Flow (vph)	739	672	0	519	701	169	71	981	222	367	1138	599
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	40.8	40.8		35.0	35.0	35.0	50.7	45.7	45.7	19.3	60.0	60.0
Effective Green, g (s)	40.8	40.8		35.0	35.0	35.0	50.7	45.7	45.7	19.3	60.0	60.0
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.31	0.28	0.28	0.12	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	855	869		733	756	338	99	987	441	404	1296	579
v/s Ratio Prot	c0.22	0.19		0.15	c0.20		0.02	0.28		c0.11	0.32	
v/s Ratio Perm						0.11	0.20		0.14			c0.38
v/c Ratio	0.86	0.77		0.71	0.93	0.50	0.72	0.99	0.50	0.91	0.88	1.03
Uniform Delay, d1	58.9	57.2		59.7	63.2	56.7	44.2	58.9	49.5	71.4	48.5	51.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.4	4.6		3.4	17.5	1.6	18.5	27.0	1.2	23.2	7.2	46.6
Delay (s)	68.2	61.8		63.0	80.7	58.3	62.7	85.9	50.8	94.6	55.7	98.5
Level of Service	E	E		E	F	E	E	F	D	F	E	F
Approach Delay (s)		65.1			70.2			73.0			78.2	
Approach LOS		E			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	72.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	163.8	Sum of lost time (s)	23.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Future Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1010	305	388	1085	4	224	10	333	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	720	217	197	1116	945	370	10	334	90	221	188
Arrive On Green	0.01	0.52	0.52	0.09	0.60	0.60	0.12	0.22	0.22	0.02	0.12	0.12
Sat Flow, veh/h	1781	1379	416	1781	1870	1585	1781	46	1546	1781	1870	1585
Grp Volume(v), veh/h	10	0	1315	388	1085	4	224	0	343	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1795	1781	1870	1585	1781	0	1592	1781	1870	1585
Q Serve(g_s), s	0.4	0.0	83.1	13.6	88.7	0.2	17.1	0.0	34.3	2.7	5.7	3.2
Cycle Q Clear(g_c), s	0.4	0.0	83.1	13.6	88.7	0.2	17.1	0.0	34.3	2.7	5.7	3.2
Prop In Lane	1.00		0.23	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	85	0	938	197	1116	945	370	0	344	90	221	188
V/C Ratio(X)	0.12	0.00	1.40	1.96	0.97	0.00	0.61	0.00	1.00	0.39	0.33	0.19
Avail Cap(c_a), veh/h	218	0	938	197	1116	945	485	0	344	324	346	293
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.4	0.0	38.0	57.4	30.9	13.0	50.9	0.0	62.3	60.7	64.4	63.2
Incr Delay (d2), s/veh	0.2	0.0	187.6	452.0	20.7	0.0	1.2	0.0	47.5	1.0	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	123.4	44.9	54.1	0.1	12.1	0.0	25.0	2.3	5.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.6	0.0	225.6	509.3	51.6	13.0	52.1	0.0	109.9	61.7	65.2	63.7
LnGrp LOS	D	A	F	F	D	B	D	A	F	E	E	E
Approach Vol, veh/h		1325			1477			567			143	
Approach Delay, s/veh		224.2			171.7			87.1			64.0	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	90.0	24.7	24.4	8.2	101.8	9.1	40.0
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	19.1	7.7	2.4	90.7	4.7	36.3
Green Ext Time (p_c), s	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	173.5
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	35

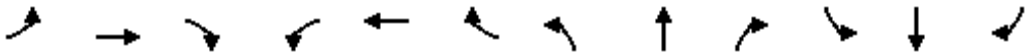
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	1118	176	81	1122	19	133	10	61	6	14	50
Future Vol, veh/h	58	1118	176	81	1122	19	133	10	61	6	14	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	92	92	98	98	92	92	92	98	92	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	1141	191	88	1145	19	145	11	66	6	15	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1164	0	0	1332	0	0	2719	2695	1237	2724	2781	1155
Stage 1	-	-	-	-	-	-	1355	1355	-	1331	1331	-
Stage 2	-	-	-	-	-	-	1364	1340	-	1393	1450	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	600	-	-	518	-	-	~ 14	22	215	13	19	240
Stage 1	-	-	-	-	-	-	184	218	-	190	224	-
Stage 2	-	-	-	-	-	-	182	221	-	175	196	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	600	-	-	518	-	-	-	16	215	~ 3	~ 14	240
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	16	-	~ 3	~ 14	-
Stage 1	-	-	-	-	-	-	166	197	-	171	186	-
Stage 2	-	-	-	-	-	-	~ 109	183	-	103	177	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.9		$ 1396.1
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	78	600	-	-	518	-	-	22
HCM Lane V/C Ratio	-	0.989	0.099	-	-	0.17	-	-	3.289
HCM Control Delay (s)	-	192.1	11.7	-	-	13.4	-	-	$ 1396.1
HCM Lane LOS	-	F	B	-	-	B	-	-	F
HCM 95th %tile Q(veh)	-	5.3	0.3	-	-	0.6	-	-	9.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1119	9	29	1018	105	67	6	37	14	11	52
Future Volume (veh/h)	45	1119	9	29	1018	105	67	6	37	14	11	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	1142	9	30	1039	107	68	6	38	14	11	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	1148	9	148	1017	105	193	25	158	210	32	153
Arrive On Green	0.04	0.62	0.62	0.03	0.61	0.61	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1781	1853	15	1781	1668	172	1338	221	1398	1362	280	1348
Grp Volume(v), veh/h	46	0	1151	30	0	1146	68	0	44	14	0	64
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1839	1338	0	1619	1362	0	1628
Q Serve(g_s), s	0.7	0.0	49.1	0.5	0.0	49.0	4.0	0.0	2.0	0.8	0.0	2.9
Cycle Q Clear(g_c), s	0.7	0.0	49.1	0.5	0.0	49.0	6.9	0.0	2.0	2.7	0.0	2.9
Prop In Lane	1.00		0.01	1.00		0.09	1.00		0.86	1.00		0.83
Lane Grp Cap(c), veh/h	161	0	1157	148	0	1122	193	0	184	210	0	185
V/C Ratio(X)	0.29	0.00	0.99	0.20	0.00	1.02	0.35	0.00	0.24	0.07	0.00	0.35
Avail Cap(c_a), veh/h	389	0	1157	393	0	1122	516	0	574	539	0	578
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	15.1	20.2	0.0	15.7	36.0	0.0	32.4	33.7	0.0	32.9
Incr Delay (d2), s/veh	0.4	0.0	25.1	0.2	0.0	32.3	1.1	0.0	0.7	0.1	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.8	0.0	29.1	0.5	0.0	32.2	2.4	0.0	1.4	0.5	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	40.2	20.4	0.0	48.0	37.1	0.0	33.1	33.8	0.0	34.0
LnGrp LOS	C	A	D	C	A	F	D	A	C	C	A	C
Approach Vol, veh/h		1197			1176			112			78	
Approach Delay, s/veh		39.5			47.3			35.6			33.9	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	55.8		15.6	9.7	55.0		15.6				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.5	51.1		4.9	2.7	51.0		8.9				
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		42.7	
HCM 6th LOS		D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	48	7	74	33	32	11	388	86	43	567	78
Future Volume (veh/h)	29	48	7	74	33	32	11	388	86	43	567	78
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	30	50	7	77	34	33	11	404	0	45	591	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	298	42	353	162	157	331	791		479	850	
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.01	0.42	0.00	0.05	0.45	0.00
Sat Flow, veh/h	1334	1605	225	1346	872	846	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	30	0	57	77	0	67	11	404	0	45	591	0
Grp Sat Flow(s),veh/h/ln	1334	0	1830	1346	0	1718	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.0	0.0	1.4	2.7	0.0	1.7	0.2	8.3	0.0	0.7	13.1	0.0
Cycle Q Clear(g_c), s	2.7	0.0	1.4	4.0	0.0	1.7	0.2	8.3	0.0	0.7	13.1	0.0
Prop In Lane	1.00		0.12	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	342	0	339	353	0	318	331	791		479	850	
V/C Ratio(X)	0.09	0.00	0.17	0.22	0.00	0.21	0.03	0.51		0.09	0.70	
Avail Cap(c_a), veh/h	351	0	352	362	0	330	477	791		568	850	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.1	0.0	17.8	19.5	0.0	18.0	9.6	11.1	0.0	8.2	11.3	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.3	0.0	0.3	0.0	2.4	0.0	0.1	4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	0.0	0.9	1.3	0.0	1.1	0.1	5.2	0.0	0.3	8.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	18.1	19.8	0.0	18.3	9.6	13.4	0.0	8.3	16.0	0.0
LnGrp LOS	B	A	B	B	A	B	A	B		A	B	
Approach Vol, veh/h		87			144			415			636	
Approach Delay, s/veh		18.5			19.1			13.3			15.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	28.0		15.6	6.7	29.7		15.6
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	22.0		10.0	5.0	22.0		10.0
Max Q Clear Time (g_c+I1), s	2.7	10.3		4.7	2.2	15.1		6.0
Green Ext Time (p_c), s	0.0	1.2		0.1	0.0	1.4		0.1

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	98	66	8	21	56
Future Vol, veh/h	60	98	66	8	21	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	102	69	8	22	58

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	77	0	-	0	301	73
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1522	-	-	-	691	989
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1522	-	-	-	661	989
Mov Cap-2 Maneuver	-	-	-	-	661	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	810	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1522	-	-	-	871
HCM Lane V/C Ratio	0.041	-	-	-	0.092
HCM Control Delay (s)	7.5	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	26.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	443	666	433	57	47	521
Future Vol, veh/h	443	666	433	57	47	521
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	471	709	461	61	50	554

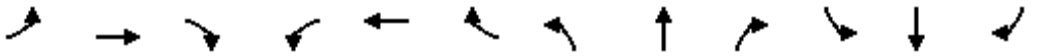
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	2112	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	1651	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1044	-	-	-	56	600
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	172	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1044	-	-	-	~ 31	600
Mov Cap-2 Maneuver	-	-	-	-	~ 31	-
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	172	-

Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	90.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1044	-	-	-	31	600
HCM Lane V/C Ratio	0.451	-	-	-	1.613	0.924
HCM Control Delay (s)	11.3	-	-	-	$ 580.4	46.7
HCM Lane LOS	B	-	-	-	F	E
HCM 95th %tile Q(veh)	2.4	-	-	-	5.7	11.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

2031 FUTURE PROJECTED CONDITIONS WITH INTERSECTION IMPROVEMENTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	939	685	47	420	484	453	35	955	370	329	955	916
Future Volume (vph)	939	685	47	420	484	453	35	955	370	329	955	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	6.0		4.5	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3505		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3505		3433	3539	1583	186	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1067	778	53	477	550	515	40	1085	420	374	1085	1041
RTOR Reduction (vph)	0	4	0	0	0	120	0	0	265	0	0	434
Lane Group Flow (vph)	1067	827	0	477	550	395	40	1085	155	374	1085	607
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	34.5	35.1		23.4	24.0	24.0	44.0	40.0	40.0	11.0	47.0	47.0
Effective Green, g (s)	34.5	35.1		23.4	24.0	24.0	44.0	40.0	40.0	11.0	47.0	47.0
Actuated g/C Ratio	0.26	0.27		0.18	0.18	0.18	0.34	0.31	0.31	0.08	0.36	0.36
Clearance Time (s)	4.5	6.0		4.5	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	904	939		613	648	290	110	1080	483	288	1269	567
v/s Ratio Prot	c0.31	0.24		0.14	0.16		0.01	0.31		c0.11	0.31	
v/s Ratio Perm						c0.25	0.11		0.10			c0.38
v/c Ratio	1.18	0.88		0.78	0.85	1.36	0.36	1.00	0.32	1.30	0.86	1.07
Uniform Delay, d1	48.2	46.0		51.3	51.7	53.5	32.4	45.5	35.0	60.0	38.8	42.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	92.6	10.0		6.2	10.5	183.5	0.7	28.5	0.5	157.6	6.0	58.0
Delay (s)	140.8	55.9		57.5	62.2	237.0	33.1	74.0	35.6	217.6	44.9	100.0
Level of Service	F	E		E	E	F	C	E	D	F	D	F
Approach Delay (s)		103.6			119.2			62.5			93.7	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	95.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	131.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Future Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	891	230	333	1172	37	471	73	310	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	731	189	269	1104	935	395	382	520	97	87	74
Arrive On Green	0.04	0.51	0.51	0.12	0.59	0.59	0.16	0.20	0.20	0.00	0.05	0.05
Sat Flow, veh/h	1781	1434	370	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	114	0	1121	333	1172	37	471	73	310	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1804	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.5	0.0	76.5	18.6	88.5	1.5	23.8	4.8	24.5	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.5	0.0	76.5	18.6	88.5	1.5	23.8	4.8	24.5	0.1	0.2	0.2
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	0	920	269	1104	935	395	382	520	97	87	74
V/C Ratio(X)	0.90	0.00	1.22	1.24	1.06	0.04	1.19	0.19	0.60	0.01	0.02	0.03
Avail Cap(c_a), veh/h	126	0	920	269	1104	935	395	382	520	154	87	74
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	36.8	54.6	30.7	12.9	59.5	49.5	42.1	68.0	68.2	68.2
Incr Delay (d2), s/veh	50.3	0.0	108.3	135.0	45.2	0.0	108.9	0.2	1.9	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	0.0	83.3	29.6	65.2	0.9	23.3	4.1	14.7	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.1	0.0	145.0	189.6	75.9	12.9	168.4	49.7	44.0	68.0	68.3	68.4
LnGrp LOS	F	A	F	F	F	B	F	D	D	E	E	E
Approach Vol, veh/h		1235			1542			854			5	
Approach Delay, s/veh		140.1			99.0			113.1			68.3	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	83.4	29.0	12.6	13.0	95.4	5.4	36.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	8.6	76.5	23.8	7.0	6.6	88.5	5.0	25.8
Max Q Clear Time (g_c+I1), s	20.6	78.5	25.8	2.2	7.5	90.5	2.1	26.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	116.2
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	936	96	44	1116	10	163	13	76	21	7	59
Future Volume (veh/h)	17	936	96	44	1116	10	163	13	76	21	7	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	1040	104	48	1240	11	177	14	83	23	8	66
Peak Hour Factor	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	1131	958	173	1287	1090	261	28	167	215	11	89
Arrive On Green	0.60	0.60	0.60	0.03	0.69	0.69	0.10	0.12	0.12	0.04	0.06	0.06
Sat Flow, veh/h	444	1870	1585	1781	1870	1585	1781	234	1387	1781	174	1437
Grp Volume(v), veh/h	19	1040	104	48	1240	11	177	0	97	23	0	74
Grp Sat Flow(s),veh/h/ln	444	1870	1585	1781	1870	1585	1781	0	1621	1781	0	1612
Q Serve(g_s), s	5.0	59.4	3.3	1.1	73.7	0.3	10.9	0.0	6.7	1.4	0.0	5.4
Cycle Q Clear(g_c), s	68.6	59.4	3.3	1.1	73.7	0.3	10.9	0.0	6.7	1.4	0.0	5.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.89
Lane Grp Cap(c), veh/h	93	1131	958	173	1287	1090	261	0	195	215	0	100
V/C Ratio(X)	0.20	0.92	0.11	0.28	0.96	0.01	0.68	0.00	0.50	0.11	0.00	0.74
Avail Cap(c_a), veh/h	93	1131	958	188	1287	1090	261	0	230	215	0	134
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.34	0.34	0.34	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.7	21.1	10.0	24.8	17.3	5.9	45.2	0.0	49.4	48.8	0.0	55.3
Incr Delay (d2), s/veh	4.9	13.3	0.2	0.3	8.4	0.0	6.9	0.0	2.0	0.2	0.0	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.2	34.0	1.9	1.3	31.5	0.1	9.1	0.0	5.1	1.2	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	34.4	10.3	25.1	25.7	5.9	52.1	0.0	51.3	49.0	0.0	68.9
LnGrp LOS	E	C	B	C	C	A	D	A	D	D	A	E
Approach Vol, veh/h		1163			1299			274			97	
Approach Delay, s/veh		32.7			25.5			51.9			64.2	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	20.4	10.0	78.6	18.0	13.4		88.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	17.0	5.0	69.0	12.0	10.0		80.0
Max Q Clear Time (g_c+I1), s	13.4	8.7	3.1	70.6	12.9	7.4		75.7
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	0.0		2.6

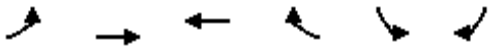
Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	286	767	37	24	858	43	114	61	37	62	31	235
Future Volume (veh/h)	286	767	37	24	858	43	114	61	37	62	31	235
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	321	862	42	27	964	48	128	69	42	70	35	264
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	1182	58	316	950	47	144	176	107	127	40	379
Arrive On Green	0.15	0.67	0.67	0.02	0.54	0.54	0.04	0.16	0.16	0.08	0.08	0.08
Sat Flow, veh/h	1781	1769	86	1781	1767	88	1781	1089	663	955	477	1585
Grp Volume(v), veh/h	321	0	904	27	0	1012	128	0	111	105	0	264
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1855	1781	0	1751	1432	0	1585
Q Serve(g_s), s	19.2	0.0	41.0	0.9	0.0	69.9	5.5	0.0	7.4	9.4	0.0	11.0
Cycle Q Clear(g_c), s	19.2	0.0	41.0	0.9	0.0	69.9	5.5	0.0	7.4	9.4	0.0	11.0
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.38	0.67		1.00
Lane Grp Cap(c), veh/h	331	0	1240	316	0	997	144	0	283	167	0	379
V/C Ratio(X)	0.97	0.00	0.73	0.09	0.00	1.01	0.89	0.00	0.39	0.63	0.00	0.70
Avail Cap(c_a), veh/h	331	0	1240	343	0	997	144	0	283	167	0	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.4	0.0	13.9	15.0	0.0	30.1	55.6	0.0	48.8	58.8	0.0	45.1
Incr Delay (d2), s/veh	41.2	0.0	2.7	0.0	0.0	32.3	44.1	0.0	0.9	7.2	0.0	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	19.3	0.0	21.3	0.6	0.0	46.7	5.9	0.0	6.0	6.8	0.0	13.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.6	0.0	16.7	15.0	0.0	62.3	99.7	0.0	49.7	66.0	0.0	50.6
LnGrp LOS	F	A	B	B	A	F	F	A	D	E	A	D
Approach Vol, veh/h		1225			1039			239			369	
Approach Delay, s/veh		35.2			61.1			76.5			55.0	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	9.6	92.9	10.0	17.5	26.6	75.9		27.5
Change Period (Y+Rc), s	6.5	6.0	4.5	6.5	6.5	6.0		6.5
Max Green Setting (Gmax), s	5.1	84.9	5.5	11.0	20.1	69.9		21.0
Max Q Clear Time (g_c+I1), s	2.9	43.0	7.5	13.0	21.2	71.9		9.4
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.0	0.0		0.3

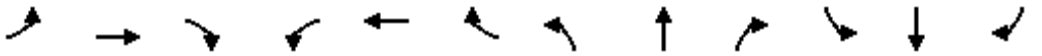
Intersection Summary	
HCM 6th Ctrl Delay	50.6
HCM 6th LOS	D



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	412	340	729	135	27	300
Future Volume (veh/h)	412	340	729	135	27	300
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	448	370	792	147	29	326
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	493	1426	961	815	156	414
Arrive On Green	0.17	0.76	0.51	0.51	0.09	0.09
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	448	370	792	147	29	326
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	11.2	4.7	28.6	4.0	1.2	7.0
Cycle Q Clear(g_c), s	11.2	4.7	28.6	4.0	1.2	7.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	493	1426	961	815	156	414
V/C Ratio(X)	0.91	0.26	0.82	0.18	0.19	0.79
Avail Cap(c_a), veh/h	562	1426	961	815	156	414
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.9	2.8	16.4	10.4	33.9	27.5
Incr Delay (d2), s/veh	17.4	0.4	8.0	0.5	0.6	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.2	1.7	17.8	2.3	0.9	19.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	36.4	3.3	24.4	10.9	34.4	37.3
LnGrp LOS	D	A	C	B	C	D
Approach Vol, veh/h		818	939		355	
Approach Delay, s/veh		21.4	22.3		37.0	
Approach LOS		C	C		D	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			67.0		13.0	19.9	47.1
Change Period (Y+Rc), s			6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s			61.0		7.0	17.0	38.0
Max Q Clear Time (g_c+I1), s			6.7		9.0	13.2	30.6
Green Ext Time (p_c), s			1.4		0.0	0.7	2.6

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	702	583	60	493	666	289	67	932	510	349	1081	916
Future Volume (vph)	702	583	60	493	666	289	67	932	510	349	1081	916
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3490		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3490		3433	3539	1583	201	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	739	614	63	519	701	304	71	981	537	367	1138	964
RTOR Reduction (vph)	0	6	0	0	0	140	0	0	304	0	0	353
Lane Group Flow (vph)	739	671	0	519	701	164	71	981	233	367	1138	611
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	25.0	26.3		21.7	23.0	23.0	41.0	37.0	37.0	13.0	46.0	46.0
Effective Green, g (s)	25.0	26.3		21.7	23.0	23.0	41.0	37.0	37.0	13.0	46.0	46.0
Actuated g/C Ratio	0.21	0.22		0.18	0.19	0.19	0.34	0.31	0.31	0.11	0.38	0.38
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	709	758		615	672	300	119	1082	484	368	1345	601
v/s Ratio Prot	c0.22	0.19		0.15	c0.20		0.02	0.28		c0.11	0.32	
v/s Ratio Perm						0.10	0.18		0.15			c0.39
v/c Ratio	1.04	0.88		0.84	1.04	0.55	0.60	0.91	0.48	1.00	0.85	1.02
Uniform Delay, d1	48.0	45.9		48.0	49.0	44.3	30.0	40.3	34.2	54.0	34.3	37.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	45.3	12.3		10.7	46.5	2.5	5.3	11.0	1.0	45.8	5.3	40.8
Delay (s)	93.3	58.2		58.7	95.5	46.8	35.2	51.4	35.2	99.8	39.6	78.3
Level of Service	F	E		E	F	D	D	D	D	F	D	E
Approach Delay (s)		76.5			73.2			45.2			63.6	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	64.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	121.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Future Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1010	305	388	1085	4	224	10	333	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	795	240	305	1327	1124	186	174	376	159	87	74
Arrive On Green	0.01	0.58	0.58	0.14	0.71	0.71	0.07	0.09	0.09	0.03	0.05	0.05
Sat Flow, veh/h	1781	1379	416	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	10	0	1315	388	1085	4	224	10	333	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1795	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.3	0.0	86.5	21.6	60.2	0.1	10.8	0.7	14.0	2.8	5.8	3.2
Cycle Q Clear(g_c), s	0.3	0.0	86.5	21.6	60.2	0.1	10.8	0.7	14.0	2.8	5.8	3.2
Prop In Lane	1.00		0.23	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	1035	305	1327	1124	186	174	376	159	87	74
V/C Ratio(X)	0.04	0.00	1.27	1.27	0.82	0.00	1.20	0.06	0.89	0.22	0.84	0.47
Avail Cap(c_a), veh/h	267	0	1035	305	1327	1124	186	174	376	184	87	74
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	31.8	56.2	15.1	6.4	65.1	62.0	55.3	65.8	70.9	69.7
Incr Delay (d2), s/veh	0.0	0.0	129.2	146.5	4.6	0.0	130.5	0.1	21.6	0.3	47.6	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.0	102.3	34.8	31.9	0.1	14.1	0.6	20.2	2.3	7.1	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	0.0	161.0	202.7	19.7	6.4	195.6	62.2	76.8	66.1	118.5	74.3
LnGrp LOS	B	A	F	F	B	A	F	E	E	E	F	E
Approach Vol, veh/h		1325			1477			567			143	
Approach Delay, s/veh		159.9			67.8			123.5			94.9	
Approach LOS		F			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	93.4	16.0	12.6	8.1	113.3	9.0	19.6
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	21.6	86.5	10.8	7.0	5.0	103.1	5.9	11.9
Max Q Clear Time (g_c+I1), s	23.6	88.5	12.8	7.8	2.3	62.2	4.8	16.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	18.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	112.6
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	1118	176	81	1122	19	133	10	61	6	14	50
Future Volume (veh/h)	58	1118	176	81	1122	19	133	10	61	6	14	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	1141	191	88	1145	19	145	11	66	6	15	51
Peak Hour Factor	0.98	0.98	0.92	0.92	0.98	0.98	0.92	0.92	0.92	0.98	0.92	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	1255	1063	198	1410	1195	170	16	96	154	20	68
Arrive On Green	0.67	0.67	0.67	0.04	0.75	0.75	0.05	0.07	0.07	0.04	0.05	0.05
Sat Flow, veh/h	482	1870	1585	1781	1870	1585	1781	231	1389	1781	373	1269
Grp Volume(v), veh/h	59	1141	191	88	1145	19	145	0	77	6	0	66
Grp Sat Flow(s),veh/h/ln	482	1870	1585	1781	1870	1585	1781	0	1620	1781	0	1642
Q Serve(g_s), s	11.5	66.9	5.9	1.9	50.5	0.4	7.0	0.0	6.0	0.4	0.0	5.2
Cycle Q Clear(g_c), s	51.2	66.9	5.9	1.9	50.5	0.4	7.0	0.0	6.0	0.4	0.0	5.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.86	1.00		0.77
Lane Grp Cap(c), veh/h	232	1255	1063	198	1410	1195	170	0	112	154	0	88
V/C Ratio(X)	0.25	0.91	0.18	0.44	0.81	0.02	0.85	0.00	0.69	0.04	0.00	0.75
Avail Cap(c_a), veh/h	232	1255	1063	201	1410	1195	170	0	112	154	0	88
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.44	0.44	0.44	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	18.1	8.0	27.5	10.2	4.0	57.9	0.0	59.1	53.8	0.0	60.6
Incr Delay (d2), s/veh	2.6	11.3	0.4	0.7	2.4	0.0	31.6	0.0	29.1	0.5	0.0	43.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	35.5	3.3	3.0	19.6	0.2	5.1	0.0	6.1	0.4	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	29.3	8.4	28.2	12.5	4.0	89.5	0.0	88.2	54.3	0.0	104.0
LnGrp LOS	C	C	A	C	B	A	F	A	F	D	A	F
Approach Vol, veh/h		1391			1252			222			72	
Approach Delay, s/veh		26.6			13.5			89.1			99.9	
Approach LOS		C			B			F			F	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	15.0	10.8	93.2	13.0	13.0		104.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	9.0	5.0	87.0	7.0	7.0		98.0
Max Q Clear Time (g_c+I1), s	2.4	8.0	3.9	68.9	9.0	7.2		52.5
Green Ext Time (p_c), s	0.0	0.0	0.0	7.5	0.0	0.0		7.5

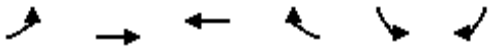
Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1119	9	29	1018	105	67	6	37	14	11	52
Future Volume (veh/h)	45	1119	9	29	1018	105	67	6	37	14	11	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	1142	9	30	1039	107	68	6	38	14	11	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	1194	9	152	1063	109	217	33	212	95	59	100
Arrive On Green	0.03	0.64	0.64	0.03	0.64	0.64	0.05	0.15	0.15	0.06	0.06	0.06
Sat Flow, veh/h	1781	1853	15	1781	1668	172	1781	221	1398	679	938	1585
Grp Volume(v), veh/h	46	0	1151	30	0	1146	68	0	44	25	0	53
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1839	1781	0	1619	1617	0	1585
Q Serve(g_s), s	0.9	0.0	61.4	0.6	0.0	64.5	3.7	0.0	2.6	0.0	0.0	3.5
Cycle Q Clear(g_c), s	0.9	0.0	61.4	0.6	0.0	64.5	3.7	0.0	2.6	1.4	0.0	3.5
Prop In Lane	1.00		0.01	1.00		0.09	1.00		0.86	0.56		1.00
Lane Grp Cap(c), veh/h	147	0	1204	152	0	1172	217	0	245	155	0	100
V/C Ratio(X)	0.31	0.00	0.96	0.20	0.00	0.98	0.31	0.00	0.18	0.16	0.00	0.53
Avail Cap(c_a), veh/h	170	0	1204	187	0	1180	222	0	254	159	0	105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	17.7	24.4	0.0	18.8	42.6	0.0	39.8	47.8	0.0	48.8
Incr Delay (d2), s/veh	0.4	0.0	16.8	0.2	0.0	21.0	0.8	0.0	0.3	0.5	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.3	0.0	33.8	0.8	0.0	36.3	3.0	0.0	1.9	1.2	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	0.0	34.5	24.6	0.0	39.8	43.4	0.0	40.2	48.3	0.0	53.3
LnGrp LOS	C	A	C	C	A	D	D	A	D	D	A	D
Approach Vol, veh/h		1197			1176			112			78	
Approach Delay, s/veh		34.2			39.4			42.1			51.7	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	75.3	9.5	13.3	10.2	74.6		22.8
Change Period (Y+Rc), s	6.5	6.0	4.5	6.5	6.5	6.0		6.5
Max Green Setting (Gmax), s	5.1	69.0	5.3	7.1	5.1	69.0		16.9
Max Q Clear Time (g_c+I1), s	2.6	63.4	5.7	5.5	2.9	66.5		4.6
Green Ext Time (p_c), s	0.0	4.4	0.0	0.0	0.0	2.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

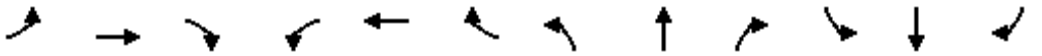


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	443	666	433	57	47	521
Future Volume (veh/h)	443	666	433	57	47	521
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	471	709	461	61	50	554
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	614	1247	695	589	238	520
Arrive On Green	0.19	0.67	0.37	0.37	0.13	0.13
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	471	709	461	61	50	554
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	8.6	12.2	12.3	1.5	1.5	8.0
Cycle Q Clear(g_c), s	8.6	12.2	12.3	1.5	1.5	8.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	614	1247	695	589	238	520
V/C Ratio(X)	0.77	0.57	0.66	0.10	0.21	1.06
Avail Cap(c_a), veh/h	771	1247	695	589	238	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	5.4	15.7	12.3	23.2	20.2
Incr Delay (d2), s/veh	3.7	1.9	4.9	0.4	0.4	57.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	5.2	8.9	0.9	1.0	31.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.6	7.3	20.7	12.7	23.6	77.9
LnGrp LOS	B	A	C	B	C	F
Approach Vol, veh/h		1180	522		604	
Approach Delay, s/veh		9.8	19.7		73.4	
Approach LOS		A	B		E	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			46.0		14.0	17.7	28.3
Change Period (Y+Rc), s			6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s			40.0		8.0	17.0	17.0
Max Q Clear Time (g_c+I1), s			14.2		10.0	10.6	14.3
Green Ext Time (p_c), s			3.1		0.0	1.1	0.6

Intersection Summary	
HCM 6th Ctrl Delay	28.7
HCM 6th LOS	C

2031 FUTURE PROJECTED CONDITIONS WITH INTERSECTION IMPROVEMENTS AND WIDENING



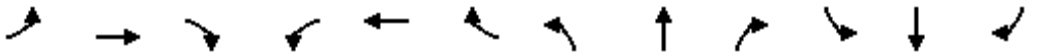
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Future Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	891	230	333	1172	37	523	0	310	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	936	1051	353	1139	966	580	0	508	16	16	14
Arrive On Green	0.05	0.50	0.50	0.16	0.61	0.61	0.16	0.00	0.16	0.01	0.01	0.01
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3563	0	1585	1781	1870	1585
Grp Volume(v), veh/h	114	891	230	333	1172	37	523	0	310	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	5.0	65.3	8.2	20.6	87.5	1.3	20.7	0.0	23.4	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.0	65.3	8.2	20.6	87.5	1.3	20.7	0.0	23.4	0.1	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	936	1051	353	1139	966	580	0	508	16	16	14
V/C Ratio(X)	0.84	0.95	0.22	0.94	1.03	0.04	0.90	0.00	0.61	0.06	0.12	0.14
Avail Cap(c_a), veh/h	144	939	1054	358	1139	966	580	0	508	87	91	77
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.8	34.3	9.5	46.8	28.1	11.2	59.0	0.0	41.2	70.6	70.6	70.6
Incr Delay (d2), s/veh	29.4	19.2	0.2	32.2	34.2	0.0	17.2	0.0	2.1	1.7	3.2	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	42.2	7.9	21.1	58.5	0.8	15.8	0.0	14.3	0.1	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.2	53.4	9.8	79.1	62.3	11.3	76.2	0.0	43.4	72.3	73.9	75.2
LnGrp LOS	E	D	A	E	F	B	E	A	D	E	E	E
Approach Vol, veh/h		1235			1542			833			5	
Approach Delay, s/veh		46.6			64.7			64.0			74.1	
Approach LOS		D			E			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.0	78.7		6.9	13.4	94.4		29.0				
Change Period (Y+Rc), s	6.4	6.9		5.6	6.4	6.9		5.6				
Max Green Setting (Gmax), s	23.0	72.1		7.0	7.6	87.5		23.4				
Max Q Clear Time (g_c+I1), s	22.6	67.3		2.2	7.0	89.5		25.4				
Green Ext Time (p_c), s	0.0	3.5		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		58.3
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Future Volume (veh/h)	9	980	296	376	1052	4	217	9	323	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1010	305	388	1085	4	231	0	333	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	1001	965	364	1312	1112	261	0	397	90	95	80
Arrive On Green	0.01	0.54	0.54	0.18	0.70	0.70	0.07	0.00	0.07	0.05	0.05	0.05
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3563	0	1585	1781	1870	1585
Grp Volume(v), veh/h	10	1010	305	388	1085	4	231	0	333	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	0.4	80.3	14.0	26.6	61.9	0.1	9.6	0.0	11.0	2.9	5.8	3.2
Cycle Q Clear(g_c), s	0.4	80.3	14.0	26.6	61.9	0.1	9.6	0.0	11.0	2.9	5.8	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	1001	965	364	1312	1112	261	0	397	90	95	80
V/C Ratio(X)	0.05	1.01	0.32	1.07	0.83	0.00	0.88	0.00	0.84	0.39	0.77	0.44
Avail Cap(c_a), veh/h	257	1001	965	364	1312	1112	261	0	397	90	95	80
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	34.8	14.2	54.5	15.9	6.7	68.9	0.0	53.3	68.9	70.3	69.1
Incr Delay (d2), s/veh	0.0	30.6	0.4	65.9	5.0	0.0	28.0	0.0	14.6	2.7	31.3	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	53.7	10.1	27.9	33.0	0.1	9.1	0.0	19.1	2.5	6.5	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	65.4	14.6	120.4	21.0	6.7	96.9	0.0	67.9	71.7	101.6	72.8
LnGrp LOS	C	F	B	F	C	A	F	A	E	E	F	E
Approach Vol, veh/h		1325			1477			564			143	
Approach Delay, s/veh		53.4			47.0			79.8			87.2	
Approach LOS		D			D			E			F	

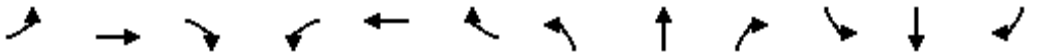
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.0	87.2		13.2	8.1	112.1		16.6				
Change Period (Y+Rc), s	6.4	6.9		5.6	6.4	6.9		5.6				
Max Green Setting (Gmax), s	26.6	80.3		7.6	5.0	101.9		11.0				
Max Q Clear Time (g_c+I1), s	28.6	82.3		7.8	2.4	63.9		13.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	17.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		56.3	
HCM 6th LOS		E	

Notes

User approved volume balancing among the lanes for turning movement.

2034 BACKGROUND CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1007	718	51	424	492	418	37	1024	381	313	1024	983
Future Volume (vph)	1007	718	51	424	492	418	37	1024	381	313	1024	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3504		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3504		3433	3539	1583	161	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1144	816	58	482	559	475	42	1164	433	356	1164	1117
RTOR Reduction (vph)	0	3	0	0	0	128	0	0	305	0	0	376
Lane Group Flow (vph)	1144	871	0	482	559	347	42	1164	128	356	1164	741
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	42.0	42.0		35.0	35.0	35.0	50.2	46.2	46.2	19.0	61.2	61.2
Effective Green, g (s)	42.0	42.0		35.0	35.0	35.0	50.2	46.2	46.2	19.0	61.2	61.2
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.30	0.28	0.28	0.12	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	872	890		727	749	335	87	989	442	394	1311	586
v/s Ratio Prot	c0.33	0.25		0.14	0.16		0.01	0.33		c0.10	0.33	
v/s Ratio Perm						c0.22	0.13		0.08			c0.47
v/c Ratio	1.31	0.98		0.66	0.75	1.04	0.48	1.18	0.29	0.90	0.89	1.26
Uniform Delay, d1	61.6	61.2		59.7	60.9	65.1	44.5	59.5	46.6	72.2	48.8	52.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	148.6	24.8		2.5	4.3	59.0	1.5	90.3	0.5	23.0	7.8	132.4
Delay (s)	210.2	86.0		62.2	65.3	124.1	46.0	149.8	47.1	95.2	56.6	184.4
Level of Service	F	F		E	E	F	D	F	D	F	E	F
Approach Delay (s)		156.4			82.7			120.0			115.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	120.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	165.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	778	219	264	997	34	450	67	265	1	2	2
Future Volume (veh/h)	105	778	219	264	997	34	450	67	265	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	874	246	297	1120	37	506	73	298	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	740	208	199	1054	893	444	75	305	55	83	70
Arrive On Green	0.05	0.53	0.53	0.09	0.56	0.56	0.19	0.23	0.23	0.00	0.04	0.04
Sat Flow, veh/h	1781	1404	395	1781	1870	1585	1781	322	1313	1781	1870	1585
Grp Volume(v), veh/h	114	0	1120	297	1120	37	506	0	371	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1799	1781	1870	1585	1781	0	1634	1781	1870	1585
Q Serve(g_s), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	35.5	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	35.5	0.1	0.2	0.2
Prop In Lane	1.00		0.22	1.00		1.00	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	135	0	949	199	1054	893	444	0	379	55	83	70
V/C Ratio(X)	0.84	0.00	1.18	1.49	1.06	0.04	1.14	0.00	0.98	0.02	0.02	0.03
Avail Cap(c_a), veh/h	199	0	949	199	1054	893	444	0	379	333	349	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	37.3	56.8	34.4	15.4	60.2	0.0	60.1	71.9	72.0	72.0
Incr Delay (d2), s/veh	12.9	0.0	92.2	245.0	46.1	0.0	87.0	0.0	40.2	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	81.0	33.1	66.2	1.1	21.1	0.0	25.6	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	0.0	129.4	301.7	80.5	15.4	147.2	0.0	100.3	72.0	72.1	72.2
LnGrp LOS	E	A	F	F	F	B	F	A	F	E	E	E
Approach Vol, veh/h		1234			1454			877			5	
Approach Delay, s/veh		122.9			124.0			127.4			72.1	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	90.0	35.0	12.6	14.3	95.7	5.4	42.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	31.8	2.2	7.9	90.8	2.1	37.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	124.4
HCM 6th LOS	F

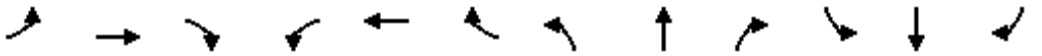
Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	1004	1197	11	23	63
Future Vol, veh/h	18	1004	1197	11	23	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	1116	1330	12	26	70

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1342	0	-	0	2492	1336
Stage 1	-	-	-	-	1336	-
Stage 2	-	-	-	-	1156	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	514	-	-	-	32	188
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	300	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	514	-	-	-	31	188
Mov Cap-2 Maneuver	-	-	-	-	31	-
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	300	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	255.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	514	-	-	-	80
HCM Lane V/C Ratio	0.039	-	-	-	1.194
HCM Control Delay (s)	12.3	-	-	-	255.3
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.1	-	-	-	7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	755	40	25	880	47	122	65	40	67	33	245
Future Volume (veh/h)	293	755	40	25	880	47	122	65	40	67	33	245
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	329	848	45	28	989	53	137	73	45	75	37	275
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	954	51	184	784	42	153	281	173	327	50	369
Arrive On Green	0.12	0.54	0.54	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1760	93	1781	1759	94	1067	1083	667	1274	191	1423
Grp Volume(v), veh/h	329	0	893	28	0	1042	137	0	118	75	0	312
Grp Sat Flow(s),veh/h/ln	1781	0	1854	1781	0	1853	1067	0	1750	1274	0	1614
Q Serve(g_s), s	13.5	0.0	46.8	0.9	0.0	49.0	9.0	0.0	5.9	5.5	0.0	19.5
Cycle Q Clear(g_c), s	13.5	0.0	46.8	0.9	0.0	49.0	28.5	0.0	5.9	11.4	0.0	19.5
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.38	1.00		0.88
Lane Grp Cap(c), veh/h	284	0	1005	184	0	826	153	0	453	327	0	418
V/C Ratio(X)	1.16	0.00	0.89	0.15	0.00	1.26	0.90	0.00	0.26	0.23	0.00	0.75
Avail Cap(c_a), veh/h	284	0	1005	357	0	826	153	0	453	327	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	22.3	21.8	0.0	30.5	52.1	0.0	32.4	36.9	0.0	37.4
Incr Delay (d2), s/veh	103.2	0.0	10.4	0.1	0.0	127.6	44.4	0.0	0.3	0.4	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	17.6	0.0	27.5	0.6	0.0	70.2	9.6	0.0	4.6	3.1	0.0	13.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	139.4	0.0	32.7	22.0	0.0	158.1	96.6	0.0	32.7	37.2	0.0	44.6
LnGrp LOS	F	A	C	C	A	F	F	A	C	D	A	D
Approach Vol, veh/h		1222			1070			255			387	
Approach Delay, s/veh		61.4			154.6			67.0			43.2	
Approach LOS		E			F			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.4	65.6		35.0	20.0	55.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.9	48.8		21.5	15.5	51.0		30.5				
Green Ext Time (p_c), s	0.0	0.1		1.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		93.5	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	47	8	121	125	61	12	543	89	35	410	32
Future Volume (veh/h)	37	47	8	121	125	61	12	543	89	35	410	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	56	10	144	149	73	14	646	0	42	488	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	269	48	316	206	101	444	879		350	926	
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.02	0.47	0.00	0.04	0.50	0.00
Sat Flow, veh/h	1159	1545	276	1335	1185	581	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	44	0	66	144	0	222	14	646	0	42	488	0
Grp Sat Flow(s),veh/h/ln	1159	0	1821	1335	0	1766	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	2.1	0.0	1.8	5.9	0.0	6.8	0.2	16.1	0.0	0.7	10.2	0.0
Cycle Q Clear(g_c), s	9.0	0.0	1.8	7.7	0.0	6.8	0.2	16.1	0.0	0.7	10.2	0.0
Prop In Lane	1.00		0.15	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	0	317	316	0	307	444	879		350	926	
V/C Ratio(X)	0.23	0.00	0.21	0.46	0.00	0.72	0.03	0.73		0.12	0.53	
Avail Cap(c_a), veh/h	189	0	317	316	0	307	568	879		430	926	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.6	0.0	20.3	23.6	0.0	22.4	8.3	12.3	0.0	9.4	9.9	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.3	1.0	0.0	8.1	0.0	5.4	0.0	0.2	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	1.2	3.1	0.0	5.6	0.1	9.9	0.0	0.3	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.3	0.0	20.7	24.7	0.0	30.5	8.3	17.7	0.0	9.5	12.0	0.0
LnGrp LOS	C	A	C	C	A	C	A	B		A	B	
Approach Vol, veh/h		110			366			660			530	
Approach Delay, s/veh		23.3			28.2			17.5			11.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	33.0		16.0	7.0	34.4		16.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	5.0	27.0		10.0	5.0	27.0		10.0				
Max Q Clear Time (g_c+I1), s	2.7	18.1		11.0	2.2	12.2		9.7				
Green Ext Time (p_c), s	0.0	1.9		0.0	0.0	1.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	37	162	25	11	80
Future Vol, veh/h	41	37	162	25	11	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	39	169	26	11	83

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	307	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	125	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1378	-	-	-	685	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	901	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1378	-	-	-	663	861
Mov Cap-2 Maneuver	-	-	-	-	663	-
Stage 1	-	-	-	-	822	-
Stage 2	-	-	-	-	901	-

Approach	EB	WB	SB
HCM Control Delay, s	4	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1378	-	-	-	831
HCM Lane V/C Ratio	0.031	-	-	-	0.114
HCM Control Delay (s)	7.7	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	22.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	418	364	782	145	29	281
Future Vol, veh/h	418	364	782	145	29	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	454	396	850	158	32	305

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1008	0	-	0	2154	850
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	1304	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	687	-	-	-	53	360
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	254	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	687	-	-	-	~ 18	360
Mov Cap-2 Maneuver	-	-	-	-	~ 18	-
Stage 1	-	-	-	-	142	-
Stage 2	-	-	-	-	254	-

Approach	EB	WB	SB
HCM Control Delay, s	10.6	0	122
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	687	-	-	-	18	360
HCM Lane V/C Ratio	0.661	-	-	-	1.751	0.848
HCM Control Delay (s)	19.9	-	-	-	$ 805.5	51.5
HCM Lane LOS	C	-	-	-	F	F
HCM 95th %tile Q(veh)	5	-	-	-	4.4	7.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

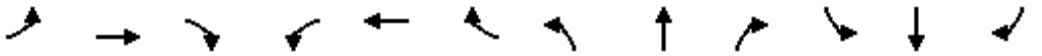
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	128	231	0	0	0
Future Vol, veh/h	0	128	231	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	139	251	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	251	0	-	0	390	251
Stage 1	-	-	-	-	251	-
Stage 2	-	-	-	-	139	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1314	-	-	-	614	788
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1314	-	-	-	614	788
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	888	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1314	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	753	596	64	507	692	255	72	1000	518	301	1160	983
Future Volume (vph)	753	596	64	507	692	255	72	1000	518	301	1160	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3488		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3488		3433	3539	1583	159	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	793	627	67	534	728	268	76	1053	545	317	1221	1035
RTOR Reduction (vph)	0	5	0	0	0	133	0	0	313	0	0	365
Lane Group Flow (vph)	793	689	0	534	728	135	76	1053	232	317	1221	670
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	41.8	41.8		35.0	35.0	35.0	51.9	46.9	46.9	18.1	60.0	60.0
Effective Green, g (s)	41.8	41.8		35.0	35.0	35.0	51.9	46.9	46.9	18.1	60.0	60.0
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.31	0.28	0.28	0.11	0.36	0.36
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	870	884		729	751	336	98	1007	450	377	1288	576
v/s Ratio Prot	c0.23	0.20		0.16	c0.21		0.02	0.30		c0.09	0.34	
v/s Ratio Perm						0.09	0.22		0.15			c0.42
v/c Ratio	0.91	0.78		0.73	0.97	0.40	0.78	1.05	0.51	0.84	0.95	1.16
Uniform Delay, d1	59.7	57.2		60.5	64.4	55.9	45.8	59.0	49.4	71.9	50.9	52.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.8	4.7		4.1	25.3	1.1	28.7	41.0	1.3	14.9	14.4	91.3
Delay (s)	73.5	61.9		64.6	89.6	57.0	74.5	100.0	50.7	86.8	65.3	143.7
Level of Service	E	E		E	F	E	E	F	D	F	E	F
Approach Delay (s)		68.1			75.2			82.8			99.5	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	84.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	164.8	Sum of lost time (s)	23.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	919	318	359	1028	4	233	9	288	32	67	32
Future Volume (veh/h)	9	919	318	359	1028	4	233	9	288	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	947	328	370	1060	4	240	10	297	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	704	244	200	1132	960	360	11	315	106	180	153
Arrive On Green	0.01	0.53	0.53	0.09	0.61	0.61	0.13	0.20	0.20	0.02	0.10	0.10
Sat Flow, veh/h	1781	1328	460	1781	1870	1585	1781	52	1541	1781	1870	1585
Grp Volume(v), veh/h	10	0	1275	370	1060	4	240	0	307	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1788	1781	1870	1585	1781	0	1593	1781	1870	1585
Q Serve(g_s), s	0.4	0.0	83.1	13.6	80.9	0.2	18.5	0.0	29.8	2.8	5.8	3.2
Cycle Q Clear(g_c), s	0.4	0.0	83.1	13.6	80.9	0.2	18.5	0.0	29.8	2.8	5.8	3.2
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	113	0	947	200	1132	960	360	0	326	106	180	153
V/C Ratio(X)	0.09	0.00	1.35	1.85	0.94	0.00	0.67	0.00	0.94	0.33	0.41	0.23
Avail Cap(c_a), veh/h	248	0	947	200	1132	960	461	0	349	344	351	297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	36.9	56.7	28.2	12.2	52.2	0.0	61.4	62.3	66.6	65.5
Incr Delay (d2), s/veh	0.1	0.0	162.7	399.5	14.4	0.0	1.9	0.0	32.3	1.3	1.5	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	112.4	46.2	48.0	0.1	13.0	0.0	20.9	2.3	5.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	199.6	456.2	42.6	12.2	54.2	0.0	93.7	63.6	68.1	66.2
LnGrp LOS	C	A	F	F	D	B	D	A	F	E	E	E
Approach Vol, veh/h		1285			1434			547			143	
Approach Delay, s/veh		198.3			149.3			76.4			66.6	
Approach LOS		F			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	90.0	26.1	20.7	8.2	101.8	9.1	37.7
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	20.5	7.8	2.4	82.9	4.8	31.8
Green Ext Time (p_c), s	0.0	0.0	0.4	0.3	0.0	0.1	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	152.6
HCM 6th LOS	F

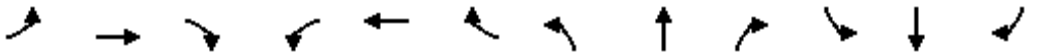
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	62	1199	1202	20	7	53
Future Vol, veh/h	62	1199	1202	20	7	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	205	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	63	1223	1227	20	7	54

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1247	0	-	0	2586	1237
Stage 1	-	-	-	-	1237	-
Stage 2	-	-	-	-	1349	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	558	-	-	-	28	215
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	242	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	558	-	-	-	25	215
Mov Cap-2 Maneuver	-	-	-	-	25	-
Stage 1	-	-	-	-	243	-
Stage 2	-	-	-	-	242	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	68.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	558	-	-	-	114
HCM Lane V/C Ratio	0.113	-	-	-	0.537
HCM Control Delay (s)	12.3	-	-	-	68.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.4	-	-	-	2.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	1145	9	31	1019	113	71	7	40	15	12	41
Future Volume (veh/h)	37	1145	9	31	1019	113	71	7	40	15	12	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	1168	9	32	1040	115	72	7	41	15	12	42
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	154	1148	9	147	1018	113	199	26	153	203	40	141
Arrive On Green	0.04	0.62	0.62	0.03	0.62	0.62	0.11	0.11	0.11	0.11	0.11	0.11
Sat Flow, veh/h	1781	1854	14	1781	1654	183	1350	236	1385	1357	365	1276
Grp Volume(v), veh/h	38	0	1177	32	0	1155	72	0	48	15	0	54
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1837	1350	0	1621	1357	0	1641
Q Serve(g_s), s	0.6	0.0	49.3	0.5	0.0	49.0	4.1	0.0	2.2	0.8	0.0	2.4
Cycle Q Clear(g_c), s	0.6	0.0	49.3	0.5	0.0	49.0	6.5	0.0	2.2	3.0	0.0	2.4
Prop In Lane	1.00		0.01	1.00		0.10	1.00		0.85	1.00		0.78
Lane Grp Cap(c), veh/h	154	0	1156	147	0	1131	199	0	179	203	0	181
V/C Ratio(X)	0.25	0.00	1.02	0.22	0.00	1.02	0.36	0.00	0.27	0.07	0.00	0.30
Avail Cap(c_a), veh/h	392	0	1156	392	0	1131	533	0	580	539	0	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	15.2	20.1	0.0	15.3	35.6	0.0	32.5	33.8	0.0	32.6
Incr Delay (d2), s/veh	0.3	0.0	31.0	0.3	0.0	32.3	1.1	0.0	0.8	0.2	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.7	0.0	31.8	0.6	0.0	31.9	2.5	0.0	1.6	0.5	0.0	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	46.2	20.4	0.0	47.7	36.7	0.0	33.3	34.0	0.0	33.5
LnGrp LOS	C	A	F	C	A	F	D	A	C	C	A	C
Approach Vol, veh/h		1215			1187			120			69	
Approach Delay, s/veh		45.3			46.9			35.3			33.6	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	55.3		15.3	9.3	55.0		15.3				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.5	51.3		5.0	2.6	51.0		8.5				
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		45.3	
HCM 6th LOS		D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	52	8	80	36	35	12	372	92	47	575	73
Future Volume (veh/h)	17	52	8	80	36	35	12	372	92	47	575	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	54	8	83	38	36	12	388	0	49	599	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	335	295	44	348	164	155	327	788		493	850	
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.02	0.42	0.00	0.05	0.45	0.00
Sat Flow, veh/h	1326	1592	236	1340	883	837	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	18	0	62	83	0	74	12	388	0	49	599	0
Grp Sat Flow(s),veh/h/ln	1326	0	1828	1340	0	1720	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.6	0.0	1.5	2.9	0.0	1.9	0.2	7.9	0.0	0.8	13.4	0.0
Cycle Q Clear(g_c), s	2.5	0.0	1.5	4.4	0.0	1.9	0.2	7.9	0.0	0.8	13.4	0.0
Prop In Lane	1.00		0.13	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	335	0	339	348	0	319	327	788		493	850	
V/C Ratio(X)	0.05	0.00	0.18	0.24	0.00	0.23	0.04	0.49		0.10	0.70	
Avail Cap(c_a), veh/h	343	0	350	356	0	329	470	788		577	850	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	0.0	17.9	19.8	0.0	18.1	9.7	11.0	0.0	8.2	11.4	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.3	0.0	0.4	0.0	2.2	0.0	0.1	4.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	1.0	1.4	0.0	1.2	0.1	4.9	0.0	0.4	8.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	18.2	20.1	0.0	18.5	9.7	13.2	0.0	8.3	16.3	0.0
LnGrp LOS	B	A	B	C	A	B	A	B		A	B	
Approach Vol, veh/h		80			157			400			648	
Approach Delay, s/veh		18.4			19.4			13.1			15.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	28.0		15.7	6.8	29.7		15.7
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	22.0		10.0	5.0	22.0		10.0
Max Q Clear Time (g_c+I1), s	2.8	9.9		4.5	2.2	15.4		6.4
Green Ext Time (p_c), s	0.0	1.1		0.1	0.0	1.4		0.2

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	105	70	9	23	60
Future Vol, veh/h	64	105	70	9	23	60
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	109	73	9	24	63

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	82	0	-	0	321	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	243	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1515	-	-	-	673	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1515	-	-	-	641	983
Mov Cap-2 Maneuver	-	-	-	-	641	-
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	797	-

Approach	EB	WB	SB
HCM Control Delay, s	2.8	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1515	-	-	-	856
HCM Lane V/C Ratio	0.044	-	-	-	0.101
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	32.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	431	714	464	61	51	525
Future Vol, veh/h	431	714	464	61	51	525
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	459	760	494	65	54	559

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	559	0	-	0	2172	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	1678	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1012	-	-	-	~ 51	575
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	166	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1012	-	-	-	~ 28	575
Mov Cap-2 Maneuver	-	-	-	-	~ 28	-
Stage 1	-	-	-	-	335	-
Stage 2	-	-	-	-	166	-

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	118
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1012	-	-	-	28	575
HCM Lane V/C Ratio	0.453	-	-	-	1.938	0.971
HCM Control Delay (s)	11.5	-	-	-	$ 740.3	57.5
HCM Lane LOS	B	-	-	-	F	F
HCM 95th %tile Q(veh)	2.4	-	-	-	6.4	13.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0

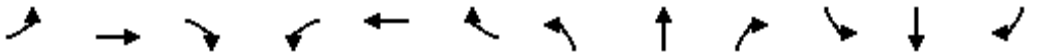
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	143	113	0	0	0
Future Vol, veh/h	0	143	113	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	155	123	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	123	0	-	0	278	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	155	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1464	-	-	-	712	928
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	873	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1464	-	-	-	712	928
Mov Cap-2 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	873	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1464	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

2034 FUTURE PROJECTED CONDITIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1007	739	51	468	536	530	37	1024	402	367	1024	983
Future Volume (vph)	1007	739	51	468	536	530	37	1024	402	367	1024	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3505		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3505		3433	3539	1583	162	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1144	840	58	532	609	602	42	1164	457	417	1164	1117
RTOR Reduction (vph)	0	3	0	0	0	128	0	0	305	0	0	372
Lane Group Flow (vph)	1144	895	0	532	609	474	42	1164	152	417	1164	745
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	42.0	42.0		35.0	35.0	35.0	50.0	46.0	46.0	20.0	62.0	62.0
Effective Green, g (s)	42.0	42.0		35.0	35.0	35.0	50.0	46.0	46.0	20.0	62.0	62.0
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.30	0.28	0.28	0.12	0.37	0.37
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	868	886		723	746	333	87	980	438	413	1321	591
v/s Ratio Prot	c0.33	0.26		0.15	0.17		0.01	0.33		c0.12	0.33	
v/s Ratio Perm						c0.30	0.13		0.10			c0.47
v/c Ratio	1.32	1.01		0.74	0.82	1.42	0.48	1.19	0.35	1.01	0.88	1.26
Uniform Delay, d1	62.0	62.0		61.2	62.4	65.5	44.8	60.0	48.0	73.0	48.6	52.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	151.2	32.8		4.2	7.2	207.4	1.5	94.8	0.7	46.7	7.4	130.8
Delay (s)	213.2	94.8		65.3	69.7	272.9	46.3	154.8	48.6	119.7	55.9	182.8
Level of Service	F	F		E	E	F	D	F	D	F	E	F
Approach Delay (s)		161.1			138.6			122.9			118.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	134.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.33		
Actuated Cycle Length (s)	166.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Future Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	970	258	297	1320	37	530	73	298	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	751	200	199	1054	893	444	75	305	55	83	70
Arrive On Green	0.05	0.53	0.53	0.09	0.56	0.56	0.19	0.23	0.23	0.00	0.04	0.04
Sat Flow, veh/h	1781	1424	379	1781	1870	1585	1781	322	1313	1781	1870	1585
Grp Volume(v), veh/h	114	0	1228	297	1320	37	530	0	371	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1802	1781	1870	1585	1781	0	1634	1781	1870	1585
Q Serve(g_s), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	35.5	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.9	0.0	83.1	13.6	88.8	1.6	29.8	0.0	35.5	0.1	0.2	0.2
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	135	0	950	199	1054	893	444	0	379	55	83	70
V/C Ratio(X)	0.84	0.00	1.29	1.49	1.25	0.04	1.19	0.00	0.98	0.02	0.02	0.03
Avail Cap(c_a), veh/h	199	0	950	199	1054	893	444	0	379	333	349	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	37.3	56.8	34.4	15.4	60.2	0.0	60.1	71.9	72.0	72.0
Incr Delay (d2), s/veh	12.9	0.0	139.4	245.0	121.7	0.0	107.7	0.0	40.2	0.0	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	102.4	33.1	103.5	1.1	24.9	0.0	25.6	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	0.0	176.7	301.7	156.1	15.4	167.8	0.0	100.3	72.0	72.1	72.2
LnGrp LOS	E	A	F	F	F	B	F	A	F	E	E	E
Approach Vol, veh/h		1342			1654			901			5	
Approach Delay, s/veh		166.7			179.1			140.0			72.1	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	90.0	35.0	12.6	14.3	95.7	5.4	42.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	31.8	2.2	7.9	90.8	2.1	37.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	165.7
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	1475.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	1004	85	54	1197	11	178	22	111	23	10	63
Future Vol, veh/h	18	1004	85	54	1197	11	178	22	111	23	10	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	92	92	90	92	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1116	92	59	1330	12	193	24	121	26	11	70

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1342	0	0	1208	0	0	2697	2662	1162	2729	2702	1336
Stage 1	-	-	-	-	-	-	1202	1202	-	1454	1454	-
Stage 2	-	-	-	-	-	-	1495	1460	-	1275	1248	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	514	-	-	578	-	-	~ 14	~ 23	237	~ 13	21	188
Stage 1	-	-	-	-	-	-	225	258	-	162	195	-
Stage 2	-	-	-	-	-	-	~ 153	194	-	205	245	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	514	-	-	578	-	-	~ 4	~ 20	237	-	18	188
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 4	~ 20	-	-	18	-
Stage 1	-	-	-	-	-	-	216	248	-	156	175	-
Stage 2	-	-	-	-	-	-	~ 81	174	-	87	235	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	$ 13413.4	
HCM LOS			F	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	4	85	514	-	-	578	-	-	-
HCM Lane V/C Ratio	48.37	1.701	0.039	-	-	0.102	-	-	-
HCM Control Delay (s)	$ 23103.8	$ 444.3	12.3	-	-	11.9	-	-	-
HCM Lane LOS	F	F	B	-	-	B	-	-	-
HCM 95th %tile Q(veh)	26.4	12	0.1	-	-	0.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	844	40	36	923	47	122	65	62	67	33	256
Future Volume (veh/h)	315	844	40	36	923	47	122	65	62	67	33	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	354	948	45	40	1037	53	137	73	70	75	37	288
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	950	45	124	786	40	142	227	218	304	48	370
Arrive On Green	0.12	0.54	0.54	0.03	0.45	0.45	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1781	1771	84	1781	1764	90	1055	877	841	1245	184	1429
Grp Volume(v), veh/h	354	0	993	40	0	1090	137	0	143	75	0	325
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1854	1055	0	1719	1245	0	1613
Q Serve(g_s), s	13.5	0.0	58.8	1.3	0.0	49.0	7.9	0.0	7.4	5.7	0.0	20.6
Cycle Q Clear(g_c), s	13.5	0.0	58.8	1.3	0.0	49.0	28.5	0.0	7.4	13.1	0.0	20.6
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.49	1.00		0.89
Lane Grp Cap(c), veh/h	284	0	995	124	0	826	142	0	445	304	0	418
V/C Ratio(X)	1.25	0.00	1.00	0.32	0.00	1.32	0.97	0.00	0.32	0.25	0.00	0.78
Avail Cap(c_a), veh/h	284	0	995	285	0	826	142	0	445	304	0	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	25.5	26.3	0.0	30.5	52.8	0.0	32.9	38.2	0.0	37.8
Incr Delay (d2), s/veh	136.8	0.0	28.1	0.6	0.0	152.4	65.6	0.0	0.4	0.4	0.0	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.6	0.0	38.4	0.9	0.0	79.5	10.5	0.0	5.6	3.2	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	173.0	0.0	53.6	26.8	0.0	182.9	118.4	0.0	33.3	38.6	0.0	46.8
LnGrp LOS	F	A	D	C	A	F	F	A	C	D	A	D
Approach Vol, veh/h		1347			1130			280			400	
Approach Delay, s/veh		85.0			177.3			75.0			45.3	
Approach LOS		F			F			E			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	65.0		35.0	20.0	55.0		35.0				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	3.3	60.8		22.6	15.5	51.0		30.5				
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		112.1	
HCM 6th LOS		F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	58	8	188	147	83	12	543	121	46	410	32
Future Volume (veh/h)	37	58	8	188	147	83	12	543	121	46	410	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	69	10	224	175	99	14	646	0	55	488	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	276	40	303	194	110	448	872		359	934	
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.02	0.47	0.00	0.05	0.50	0.00
Sat Flow, veh/h	1105	1597	231	1320	1122	635	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	44	0	79	224	0	274	14	646	0	55	488	0
Grp Sat Flow(s),veh/h/ln	1105	0	1829	1320	0	1756	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	1.1	0.0	2.2	7.8	0.0	8.9	0.2	16.3	0.0	0.9	10.2	0.0
Cycle Q Clear(g_c), s	10.0	0.0	2.2	10.0	0.0	8.9	0.2	16.3	0.0	0.9	10.2	0.0
Prop In Lane	1.00		0.13	1.00		0.36	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	0	316	303	0	303	448	872		359	934	
V/C Ratio(X)	0.30	0.00	0.25	0.74	0.00	0.90	0.03	0.74		0.15	0.52	
Avail Cap(c_a), veh/h	146	0	316	303	0	303	571	872		423	934	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.7	0.0	20.7	25.8	0.0	23.5	8.4	12.6	0.0	9.5	9.8	0.0
Incr Delay (d2), s/veh	1.1	0.0	0.4	9.3	0.0	28.6	0.0	5.6	0.0	0.2	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	0.0	1.5	6.4	0.0	9.4	0.1	10.2	0.0	0.4	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	0.0	21.1	35.1	0.0	52.1	8.4	18.3	0.0	9.7	11.9	0.0
LnGrp LOS	C	A	C	D	A	D	A	B		A	B	
Approach Vol, veh/h		123			498			660			543	
Approach Delay, s/veh		24.2			44.4			18.0			11.7	
Approach LOS		C			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.9	33.0		16.0	7.0	34.9		16.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	27.0		10.0	5.0	27.0		10.0
Max Q Clear Time (g_c+I1), s	2.9	18.3		12.0	2.2	12.2		12.0
Green Ext Time (p_c), s	0.0	1.8		0.0	0.0	1.6		0.0

Intersection Summary	
HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	63	37	162	25	11	91
Future Vol, veh/h	63	37	162	25	11	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	39	169	26	11	95

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	195	0	-	0	353	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	171	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1378	-	-	-	645	861
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	859	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1378	-	-	-	613	861
Mov Cap-2 Maneuver	-	-	-	-	613	-
Stage 1	-	-	-	-	807	-
Stage 2	-	-	-	-	859	-

Approach	EB	WB	SB
HCM Control Delay, s	4.9	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1378	-	-	-	825
HCM Lane V/C Ratio	0.048	-	-	-	0.129
HCM Control Delay (s)	7.7	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	35.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	450	364	782	145	29	348
Future Vol, veh/h	450	364	782	145	29	348
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	489	396	850	158	32	378

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1008	0	-	0	2224	850
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	1374	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	687	-	-	-	48	~ 360
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	235	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	687	-	-	-	~ 14	~ 360
Mov Cap-2 Maneuver	-	-	-	-	~ 14	-
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	235	-

Approach	EB	WB	SB
HCM Control Delay, s	12.2	0	175.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	687	-	-	-	14	360
HCM Lane V/C Ratio	0.712	-	-	-	2.252	1.051
HCM Control Delay (s)	22.1	-	-	-	$ 1126.7	96.1
HCM Lane LOS	C	-	-	-	F	F
HCM 95th %tile Q(veh)	6	-	-	-	4.7	13.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

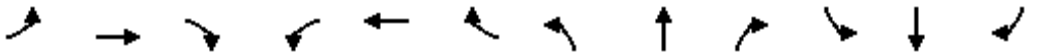
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	54	170	307	11	22	111
Future Vol, veh/h	54	170	307	11	22	111
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	185	334	12	24	121

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	346	0	-	0	643	340
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	303	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1213	-	-	-	438	702
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	749	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1213	-	-	-	414	702
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	682	-
Stage 2	-	-	-	-	749	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1213	-	-	-	630
HCM Lane V/C Ratio	0.048	-	-	-	0.229
HCM Control Delay (s)	8.1	0	-	-	12.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	753	641	64	538	723	334	72	1000	563	414	1160	983
Future Volume (vph)	753	641	64	538	723	334	72	1000	563	414	1160	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3491		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3491		3433	3539	1583	166	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	793	675	67	566	761	352	76	1053	593	436	1221	1035
RTOR Reduction (vph)	0	4	0	0	0	133	0	0	313	0	0	364
Lane Group Flow (vph)	793	738	0	566	761	219	76	1053	280	436	1221	671
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	1		2	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	41.8	41.8		35.0	35.0	35.0	50.0	45.0	45.0	20.0	60.0	60.0
Effective Green, g (s)	41.8	41.8		35.0	35.0	35.0	50.0	45.0	45.0	20.0	60.0	60.0
Actuated g/C Ratio	0.25	0.25		0.21	0.21	0.21	0.30	0.27	0.27	0.12	0.36	0.36
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	870	885		729	751	336	99	966	432	416	1288	576
v/s Ratio Prot	c0.23	0.21		0.16	c0.22		0.02	0.30		c0.13	0.34	
v/s Ratio Perm						0.14	0.21		0.18			c0.42
v/c Ratio	0.91	0.83		0.78	1.01	0.65	0.77	1.09	0.65	1.05	0.95	1.16
Uniform Delay, d1	59.7	58.2		61.2	64.9	59.3	47.2	59.9	52.9	72.4	50.9	52.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.8	7.1		5.5	36.2	5.0	26.8	56.7	3.7	57.3	14.4	91.8
Delay (s)	73.5	65.3		66.7	101.1	64.3	74.0	116.6	56.7	129.7	65.3	144.2
Level of Service	E	E		E	F	E	E	F	E	F	E	F
Approach Delay (s)		69.5			81.8			94.1			106.1	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	90.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	164.8	Sum of lost time (s)	23.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Future Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1133	352	370	1189	4	257	10	297	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	725	225	200	1132	960	364	11	315	106	162	137
Arrive On Green	0.01	0.53	0.53	0.09	0.61	0.61	0.14	0.20	0.20	0.02	0.09	0.09
Sat Flow, veh/h	1781	1369	425	1781	1870	1585	1781	52	1541	1781	1870	1585
Grp Volume(v), veh/h	10	0	1485	370	1189	4	257	0	307	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1794	1781	1870	1585	1781	0	1593	1781	1870	1585
Q Serve(g_s), s	0.4	0.0	83.1	13.6	94.9	0.2	20.0	0.0	29.8	2.8	5.8	3.2
Cycle Q Clear(g_c), s	0.4	0.0	83.1	13.6	94.9	0.2	20.0	0.0	29.8	2.8	5.8	3.2
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.97	1.00		1.00
Lane Grp Cap(c), veh/h	66	0	951	200	1132	960	364	0	326	106	162	137
V/C Ratio(X)	0.15	0.00	1.56	1.85	1.05	0.00	0.71	0.00	0.94	0.33	0.45	0.26
Avail Cap(c_a), veh/h	200	0	951	200	1132	960	448	0	349	344	351	297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	36.9	56.7	30.9	12.2	52.8	0.0	61.4	63.6	68.1	66.9
Incr Delay (d2), s/veh	0.4	0.0	258.1	399.5	40.9	0.0	3.3	0.0	32.3	0.7	2.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	156.8	46.2	66.6	0.1	14.0	0.0	20.9	2.3	5.2	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	0.0	295.0	456.2	71.8	12.2	56.1	0.0	93.7	64.2	70.0	67.9
LnGrp LOS	D	A	F	F	F	B	E	A	F	E	E	E
Approach Vol, veh/h		1495			1563			564			143	
Approach Delay, s/veh		293.3			162.7			76.6			68.1	
Approach LOS		F			F			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	90.0	27.6	19.2	8.2	101.8	9.1	37.7
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	13.6	83.1	29.8	29.4	13.6	83.1	24.8	34.4
Max Q Clear Time (g_c+I1), s	15.6	85.1	22.0	7.8	2.4	96.9	4.8	31.8
Green Ext Time (p_c), s	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	198.0
HCM 6th LOS	F

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1199	180	113	1202	20	125	16	80	7	23	53
Future Vol, veh/h	62	1199	180	113	1202	20	125	16	80	7	23	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	-	205	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	92	92	98	98	92	92	92	98	92	98
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	1223	196	123	1227	20	136	17	87	7	25	54

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1247	0	0	1419	0	0	2970	2940	1321	2982	3028	1237
Stage 1	-	-	-	-	-	-	1447	1447	-	1483	1483	-
Stage 2	-	-	-	-	-	-	1523	1493	-	1499	1545	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	558	-	-	480	-	-	~ 9	~ 15	191	9	~ 13	215
Stage 1	-	-	-	-	-	-	163	196	-	156	189	-
Stage 2	-	-	-	-	-	-	148	187	-	152	176	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	558	-	-	480	-	-	-	~ 10	191	-	~ 9	215
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 10	-	-	~ 9	-
Stage 1	-	-	-	-	-	-	145	174	-	138	141	-
Stage 2	-	-	-	-	-	-	~ 68	139	-	66	156	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1.4		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	48	558	-	-	480	-	-	-
HCM Lane V/C Ratio	-	2.174	0.113	-	-	0.256	-	-	-
HCM Control Delay (s)	-	$ 722.5	12.3	-	-	15.1	-	-	-
HCM Lane LOS	-	F	B	-	-	C	-	-	-
HCM 95th %tile Q(veh)	-	10.7	0.4	-	-	1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	1209	9	54	1109	113	71	7	56	15	12	64
Future Volume (veh/h)	53	1209	9	54	1109	113	71	7	56	15	12	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	1234	9	55	1132	115	72	7	57	15	12	65
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	1110	8	166	1001	102	196	22	180	208	32	172
Arrive On Green	0.04	0.60	0.60	0.04	0.60	0.60	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1781	1854	14	1781	1670	170	1322	176	1436	1338	253	1371
Grp Volume(v), veh/h	54	0	1243	55	0	1247	72	0	64	15	0	77
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1840	1322	0	1612	1338	0	1624
Q Serve(g_s), s	0.9	0.0	49.0	0.9	0.0	49.0	4.3	0.0	3.0	0.8	0.0	3.6
Cycle Q Clear(g_c), s	0.9	0.0	49.0	0.9	0.0	49.0	7.9	0.0	3.0	3.8	0.0	3.6
Prop In Lane	1.00		0.01	1.00		0.09	1.00		0.89	1.00		0.84
Lane Grp Cap(c), veh/h	165	0	1118	166	0	1102	196	0	202	208	0	204
V/C Ratio(X)	0.33	0.00	1.11	0.33	0.00	1.13	0.37	0.00	0.32	0.07	0.00	0.38
Avail Cap(c_a), veh/h	382	0	1118	382	0	1102	491	0	561	505	0	565
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.1	0.0	16.4	20.1	0.0	16.4	36.5	0.0	32.6	34.3	0.0	32.8
Incr Delay (d2), s/veh	0.4	0.0	63.0	0.4	0.0	70.9	1.1	0.0	0.9	0.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	0.0	47.2	1.0	0.0	50.3	2.6	0.0	2.1	0.5	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	0.0	79.4	20.5	0.0	87.3	37.6	0.0	33.5	34.5	0.0	34.0
LnGrp LOS	C	A	F	C	A	F	D	A	C	C	A	C
Approach Vol, veh/h		1297			1302			136			92	
Approach Delay, s/veh		77.0			84.5			35.7			34.1	
Approach LOS		E			F			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.1	55.0		16.8	10.0	55.0		16.8				
Change Period (Y+Rc), s	6.5	6.0		6.5	6.5	6.0		6.5				
Max Green Setting (Gmax), s	13.5	49.0		28.5	13.5	49.0		28.5				
Max Q Clear Time (g_c+I1), s	2.9	51.0		5.8	2.9	51.0		9.9				
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	0.0		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		77.0	
HCM 6th LOS		E	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	74	8	127	52	51	12	372	160	70	575	73
Future Volume (veh/h)	17	74	8	127	52	51	12	372	160	70	575	73
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	77	8	132	54	53	12	388	0	73	599	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	311	32	329	162	159	331	773		504	860	
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.02	0.41	0.00	0.06	0.46	0.00
Sat Flow, veh/h	1287	1666	173	1313	867	851	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	18	0	85	132	0	107	12	388	0	73	599	0
Grp Sat Flow(s),veh/h/ln	1287	0	1839	1313	0	1717	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.7	0.0	2.1	5.1	0.0	2.9	0.2	8.2	0.0	1.2	13.5	0.0
Cycle Q Clear(g_c), s	3.5	0.0	2.1	7.2	0.0	2.9	0.2	8.2	0.0	1.2	13.5	0.0
Prop In Lane	1.00		0.09	1.00		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	306	0	343	329	0	321	331	773		504	860	
V/C Ratio(X)	0.06	0.00	0.25	0.40	0.00	0.33	0.04	0.50		0.14	0.70	
Avail Cap(c_a), veh/h	307	0	345	330	0	323	471	773		561	860	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.3	0.0	18.5	21.5	0.0	18.8	9.9	11.6	0.0	8.3	11.4	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.4	0.8	0.0	0.6	0.0	2.3	0.0	0.1	4.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	1.4	2.5	0.0	1.8	0.1	5.2	0.0	0.6	8.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	0.0	18.8	22.3	0.0	19.4	10.0	13.9	0.0	8.5	16.1	0.0
LnGrp LOS	C	A	B	C	A	B	A	B		A	B	
Approach Vol, veh/h		103			239			400			672	
Approach Delay, s/veh		19.1			21.0			13.8			15.2	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	28.0		15.9	6.8	30.5		15.9
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.3	22.0		10.0	5.0	22.0		10.0
Max Q Clear Time (g_c+I1), s	3.2	10.2		5.5	2.2	15.5		9.2
Green Ext Time (p_c), s	0.0	1.1		0.1	0.0	1.4		0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	80	105	70	9	23	83
Future Vol, veh/h	80	105	70	9	23	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	109	73	9	24	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	82	0	-	0	353	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	275	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1515	-	-	-	645	983
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1515	-	-	-	608	983
Mov Cap-2 Maneuver	-	-	-	-	608	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1515	-	-	-	867
HCM Lane V/C Ratio	0.055	-	-	-	0.127
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Intersection	
Int Delay, s/veh	47.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	499	714	464	61	51	572
Future Vol, veh/h	499	714	464	61	51	572
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	531	760	494	65	54	609

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	559	0	-	0	2316	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	1822	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1012	-	-	-	~ 42	~ 575
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	141	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1012	-	-	-	~ 20	~ 575
Mov Cap-2 Maneuver	-	-	-	-	~ 20	-
Stage 1	-	-	-	-	291	-
Stage 2	-	-	-	-	141	-

Approach	EB	WB	SB
HCM Control Delay, s	5.1	0	170.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1012	-	-	-	20	575
HCM Lane V/C Ratio	0.525	-	-	-	2.713	1.058
HCM Control Delay (s)	12.4	-	-	-	$ 1177.2	80.5
HCM Lane LOS	B	-	-	-	F	F
HCM 95th %tile Q(veh)	3.1	-	-	-	7.1	17.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	3.3

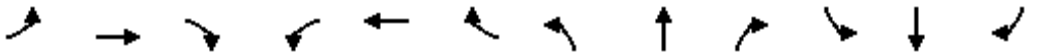
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	190	150	23	16	79
Future Vol, veh/h	113	190	150	23	16	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	123	207	163	25	17	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	188	0	-	0	629	176
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	453	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1386	-	-	-	446	867
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	401	867
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	770	-
Stage 2	-	-	-	-	640	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1386	-	-	-	725
HCM Lane V/C Ratio	0.089	-	-	-	0.142
HCM Control Delay (s)	7.8	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

2034 FUTURE PROJECTED CONDITIONS WITH INTERSECTION IMPROVEMENTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1007	739	51	468	536	530	37	1024	402	367	1024	983
Future Volume (vph)	1007	739	51	468	536	530	37	1024	402	367	1024	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3505		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3505		3433	3539	1583	177	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	1144	840	58	532	609	602	42	1164	457	417	1164	1117
RTOR Reduction (vph)	0	4	0	0	0	109	0	0	288	0	0	415
Lane Group Flow (vph)	1144	894	0	532	609	493	42	1164	169	417	1164	702
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	39.0	42.6		28.4	32.0	32.0	46.0	42.0	42.0	15.0	53.0	53.0
Effective Green, g (s)	39.0	42.6		28.4	32.0	32.0	46.0	42.0	42.0	15.0	53.0	53.0
Actuated g/C Ratio	0.26	0.28		0.19	0.21	0.21	0.30	0.28	0.28	0.10	0.35	0.35
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	886	988		645	749	335	96	984	440	341	1242	555
v/s Ratio Prot	c0.33	0.26		0.15	0.17		0.01	0.33		c0.12	0.33	
v/s Ratio Perm						c0.31	0.12		0.11			c0.44
v/c Ratio	1.29	0.91		0.82	0.81	1.47	0.44	1.18	0.38	1.22	0.94	1.27
Uniform Delay, d1	56.0	52.3		58.9	56.7	59.5	41.3	54.5	44.0	68.0	47.4	49.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	139.5	11.7		8.8	7.1	228.2	1.2	92.8	0.8	123.8	13.3	133.3
Delay (s)	195.5	64.0		67.7	63.7	287.7	42.5	147.3	44.8	191.8	60.7	182.3
Level of Service	F	E		E	E	F	D	F	D	F	E	F
Approach Delay (s)		137.7			142.3			116.5			131.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	132.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	151.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Future Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	970	258	297	1320	37	530	73	298	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	745	198	221	1079	914	419	406	499	98	87	74
Arrive On Green	0.04	0.52	0.52	0.10	0.58	0.58	0.17	0.22	0.22	0.00	0.05	0.05
Sat Flow, veh/h	1781	1424	379	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	114	0	1228	297	1320	37	530	73	298	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	0	1802	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.5	0.0	78.5	14.6	86.5	1.5	25.8	4.8	23.8	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.5	0.0	78.5	14.6	86.5	1.5	25.8	4.8	23.8	0.1	0.2	0.2
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	0	943	221	1079	914	419	406	499	98	87	74
V/C Ratio(X)	0.90	0.00	1.30	1.34	1.22	0.04	1.27	0.18	0.60	0.01	0.02	0.03
Avail Cap(c_a), veh/h	126	0	943	221	1079	914	419	406	499	155	87	74
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.7	0.0	35.8	54.2	31.8	13.8	58.5	47.8	43.4	68.0	68.2	68.2
Incr Delay (d2), s/veh	50.3	0.0	143.7	180.9	109.1	0.0	137.2	0.2	2.0	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.9	0.0	100.9	29.3	96.1	1.0	29.2	4.0	14.4	0.1	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.9	0.0	179.4	235.1	140.9	13.8	195.7	48.0	45.3	68.0	68.3	68.4
LnGrp LOS	F	A	F	F	F	B	F	D	D	E	E	E
Approach Vol, veh/h		1342			1654			901			5	
Approach Delay, s/veh		172.1			155.0			134.0			68.3	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.0	85.4	31.0	12.6	13.0	93.4	5.4	38.2
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	24.6	78.5	25.8	7.0	6.6	86.5	5.0	27.8
Max Q Clear Time (g_c+I1), s	16.6	80.5	27.8	2.2	7.5	88.5	2.1	25.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	155.9
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	1004	85	54	1197	11	178	22	111	23	10	63
Future Volume (veh/h)	18	1004	85	54	1197	11	178	22	111	23	10	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	1116	92	59	1330	12	193	24	121	26	11	70
Peak Hour Factor	0.90	0.90	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.90	0.92	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	1118	948	125	1279	1084	261	34	169	182	15	93
Arrive On Green	0.60	0.60	0.60	0.04	0.68	0.68	0.10	0.12	0.12	0.04	0.07	0.07
Sat Flow, veh/h	407	1870	1585	1781	1870	1585	1781	269	1357	1781	220	1399
Grp Volume(v), veh/h	20	1116	92	59	1330	12	193	0	145	26	0	81
Grp Sat Flow(s),veh/h/ln	407	1870	1585	1781	1870	1585	1781	0	1626	1781	0	1619
Q Serve(g_s), s	0.0	71.4	3.0	1.4	82.1	0.3	11.9	0.0	10.3	1.6	0.0	5.9
Cycle Q Clear(g_c), s	71.8	71.4	3.0	1.4	82.1	0.3	11.9	0.0	10.3	1.6	0.0	5.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.83	1.00		0.86
Lane Grp Cap(c), veh/h	60	1118	948	125	1279	1084	261	0	202	182	0	107
V/C Ratio(X)	0.33	1.00	0.10	0.47	1.04	0.01	0.74	0.00	0.72	0.14	0.00	0.76
Avail Cap(c_a), veh/h	60	1118	948	136	1279	1084	261	0	230	182	0	135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.22	0.22	0.22	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	60.0	24.0	10.3	30.2	19.0	6.0	45.2	0.0	50.5	48.5	0.0	55.1
Incr Delay (d2), s/veh	14.3	26.4	0.2	0.6	24.0	0.0	10.7	0.0	8.8	0.4	0.0	16.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	43.8	1.7	1.8	41.1	0.1	10.1	0.0	8.2	1.3	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	50.4	10.5	30.8	43.0	6.0	56.0	0.0	59.3	48.9	0.0	71.9
LnGrp LOS	E	D	B	C	F	A	E	A	E	D	A	E
Approach Vol, veh/h		1228			1401			338			107	
Approach Delay, s/veh		47.8			42.1			57.4			66.3	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	20.9	10.3	77.8	18.0	13.9		88.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	17.0	5.0	69.0	12.0	10.0		80.0
Max Q Clear Time (g_c+I1), s	13.8	12.3	3.4	73.8	13.9	7.9		84.1
Green Ext Time (p_c), s	0.0	0.2	0.0	0.0	0.0	0.0		0.0

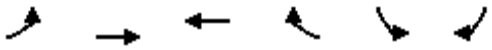
Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	844	40	36	923	47	122	65	62	67	33	256
Future Volume (veh/h)	315	844	40	36	923	47	122	65	62	67	33	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	354	948	45	40	1037	53	137	73	70	75	37	288
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	339	1221	58	285	976	50	121	137	132	115	37	395
Arrive On Green	0.16	0.69	0.69	0.03	0.55	0.55	0.04	0.16	0.16	0.09	0.09	0.09
Sat Flow, veh/h	1781	1771	84	1781	1764	90	1781	877	841	874	431	1585
Grp Volume(v), veh/h	354	0	993	40	0	1090	137	0	143	112	0	288
Grp Sat Flow(s),veh/h/ln	1781	0	1855	1781	0	1854	1781	0	1719	1305	0	1585
Q Serve(g_s), s	24.5	0.0	53.6	1.4	0.0	83.0	6.1	0.0	11.5	12.0	0.0	12.9
Cycle Q Clear(g_c), s	24.5	0.0	53.6	1.4	0.0	83.0	6.1	0.0	11.5	12.9	0.0	12.9
Prop In Lane	1.00		0.05	1.00		0.05	1.00		0.49	0.67		1.00
Lane Grp Cap(c), veh/h	339	0	1279	285	0	1026	121	0	269	152	0	395
V/C Ratio(X)	1.04	0.00	0.78	0.14	0.00	1.06	1.14	0.00	0.53	0.74	0.00	0.73
Avail Cap(c_a), veh/h	339	0	1279	299	0	1026	121	0	269	152	0	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.3	0.0	15.5	17.5	0.0	33.5	64.2	0.0	58.2	69.0	0.0	51.6
Incr Delay (d2), s/veh	60.9	0.0	3.6	0.1	0.0	46.2	123.2	0.0	2.0	16.9	0.0	6.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	25.2	0.0	27.8	1.0	0.0	61.0	10.1	0.0	8.9	8.7	0.0	16.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	116.2	0.0	19.1	17.5	0.0	79.7	187.4	0.0	60.2	85.8	0.0	58.3
LnGrp LOS	F	A	B	B	A	F	F	A	E	F	A	E
Approach Vol, veh/h		1347			1130			280			400	
Approach Delay, s/veh		44.6			77.5			122.4			66.0	
Approach LOS		D			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	10.6	109.4	10.6	19.4	31.0	89.0		30.0
Change Period (Y+Rc), s	6.5	6.0	4.5	6.5	6.5	6.0		6.5
Max Green Setting (Gmax), s	5.3	102.2	6.1	12.9	24.5	83.0		23.5
Max Q Clear Time (g_c+I1), s	13.4	55.6	8.1	14.9	26.5	85.0		13.5
Green Ext Time (p_c), s	0.0	15.4	0.0	0.0	0.0	0.0		0.3

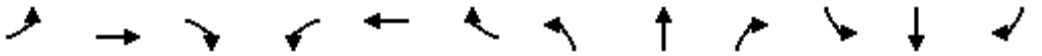
Intersection Summary	
HCM 6th Ctrl Delay	66.0
HCM 6th LOS	E



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	450	364	782	145	29	348
Future Volume (veh/h)	450	364	782	145	29	348
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	489	396	850	158	32	378
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	519	1476	943	799	139	469
Arrive On Green	0.22	0.79	0.50	0.50	0.08	0.08
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	489	396	850	158	32	378
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	17.5	5.1	37.2	4.9	1.5	7.0
Cycle Q Clear(g_c), s	17.5	5.1	37.2	4.9	1.5	7.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	519	1476	943	799	139	469
V/C Ratio(X)	0.94	0.27	0.90	0.20	0.23	0.81
Avail Cap(c_a), veh/h	527	1476	943	799	139	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	2.5	20.3	12.3	39.0	29.3
Incr Delay (d2), s/veh	25.2	0.4	13.4	0.6	0.8	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	19.1	1.9	24.1	3.0	1.2	24.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.7	3.0	33.7	12.8	39.8	39.2
LnGrp LOS	D	A	C	B	D	D
Approach Vol, veh/h		885	1008		410	
Approach Delay, s/veh		29.3	30.4		39.3	
Approach LOS		C	C		D	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			77.0		13.0	25.6	51.4
Change Period (Y+Rc), s			6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s			71.0		7.0	20.0	45.0
Max Q Clear Time (g_c+I1), s			7.1		9.0	19.5	39.2
Green Ext Time (p_c), s			1.5		0.0	0.1	2.4

Intersection Summary		
HCM 6th Ctrl Delay		31.6
HCM 6th LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	753	641	64	538	723	334	72	1000	563	414	1160	983
Future Volume (vph)	753	641	64	538	723	334	72	1000	563	414	1160	983
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3491		3433	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3491		3433	3539	1583	162	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	793	675	67	566	761	352	76	1053	593	436	1221	1035
RTOR Reduction (vph)	0	5	0	0	0	138	0	0	281	0	0	344
Lane Group Flow (vph)	793	737	0	566	761	214	76	1053	312	436	1221	691
Turn Type	Prot	NA		Prot	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases						2	8		8			4
Actuated Green, G (s)	32.0	35.2		26.8	30.0	30.0	51.0	46.0	46.0	19.0	60.0	60.0
Effective Green, g (s)	32.0	35.2		26.8	30.0	30.0	51.0	46.0	46.0	19.0	60.0	60.0
Actuated g/C Ratio	0.21	0.23		0.18	0.20	0.20	0.34	0.31	0.31	0.13	0.40	0.40
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	4.0	4.0		4.0	4.0	4.0	1.5	4.0	4.0	1.5	4.0	4.0
Lane Grp Cap (vph)	732	819		613	707	316	108	1085	485	434	1415	633
v/s Ratio Prot	c0.23	0.21		0.16	c0.22		0.02	0.30		c0.13	0.34	
v/s Ratio Perm						0.13	0.21		0.20			c0.44
v/c Ratio	1.08	0.90		0.92	1.08	0.68	0.70	0.97	0.64	1.00	0.86	1.09
Uniform Delay, d1	59.0	55.7		60.6	60.0	55.5	37.7	51.3	44.9	65.5	41.2	45.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	58.1	12.9		19.9	56.3	6.1	15.6	20.5	3.2	44.4	5.9	63.1
Delay (s)	117.1	68.6		80.5	116.3	61.6	53.3	71.9	48.1	109.9	47.1	108.1
Level of Service	F	E		F	F	E	D	E	D	F	D	F
Approach Delay (s)		93.7			92.8			62.9			80.7	
Approach LOS		F			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	81.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Future Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1133	352	370	1189	4	257	10	297	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	813	253	257	1309	1109	202	192	348	163	92	78
Arrive On Green	0.01	0.59	0.59	0.12	0.70	0.70	0.08	0.10	0.10	0.03	0.05	0.05
Sat Flow, veh/h	1781	1369	425	1781	1870	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	10	0	1485	370	1189	4	257	10	297	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	0	1794	1781	1870	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.3	0.0	89.1	17.6	78.5	0.1	11.8	0.7	15.4	2.8	5.8	3.2
Cycle Q Clear(g_c), s	0.3	0.0	89.1	17.6	78.5	0.1	11.8	0.7	15.4	2.8	5.8	3.2
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	0	1066	257	1309	1109	202	192	348	163	92	78
V/C Ratio(X)	0.07	0.00	1.39	1.44	0.91	0.00	1.27	0.05	0.85	0.21	0.79	0.45
Avail Cap(c_a), veh/h	190	0	1066	257	1309	1109	202	192	348	191	92	78
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	30.5	56.8	18.5	6.8	64.3	60.7	56.2	65.5	70.5	69.3
Incr Delay (d2), s/veh	0.1	0.0	182.9	218.6	9.9	0.0	155.6	0.1	18.1	0.2	35.9	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	0.0	132.3	37.9	42.2	0.1	17.2	0.6	18.0	2.3	6.7	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	0.0	213.4	275.4	28.4	6.8	219.9	60.9	74.3	65.7	106.5	73.3
LnGrp LOS	C	A	F	F	C	A	F	E	E	E	F	E
Approach Vol, veh/h		1495			1563			564			143	
Approach Delay, s/veh		212.1			86.8			140.4			88.4	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	96.0	17.0	13.0	8.1	111.9	9.0	21.0
Change Period (Y+Rc), s	6.4	6.9	5.2	5.6	6.4	6.9	5.2	5.6
Max Green Setting (Gmax), s	17.6	89.1	11.8	7.4	5.0	101.7	6.2	13.0
Max Q Clear Time (g_c+I1), s	19.6	91.1	13.8	7.8	2.3	80.5	4.8	17.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	14.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	144.7
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	1199	180	113	1202	20	125	16	80	7	23	53
Future Volume (veh/h)	62	1199	180	113	1202	20	125	16	80	7	23	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	1223	196	123	1227	20	136	17	87	7	25	54
Peak Hour Factor	0.98	0.98	0.92	0.92	0.98	0.98	0.92	0.92	0.92	0.98	0.92	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	182	1252	1061	144	1410	1195	160	18	94	131	28	61
Arrive On Green	0.67	0.67	0.67	0.04	0.75	0.75	0.05	0.07	0.07	0.04	0.05	0.05
Sat Flow, veh/h	446	1870	1585	1781	1870	1585	1781	266	1360	1781	527	1138
Grp Volume(v), veh/h	63	1223	196	123	1227	20	136	0	104	7	0	79
Grp Sat Flow(s),veh/h/ln	446	1870	1585	1781	1870	1585	1781	0	1626	1781	0	1665
Q Serve(g_s), s	15.3	81.2	6.1	3.3	61.0	0.4	7.0	0.0	8.3	0.5	0.0	6.1
Cycle Q Clear(g_c), s	65.3	81.2	6.1	3.3	61.0	0.4	7.0	0.0	8.3	0.5	0.0	6.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		0.68
Lane Grp Cap(c), veh/h	182	1252	1061	144	1410	1195	160	0	113	131	0	90
V/C Ratio(X)	0.35	0.98	0.18	0.85	0.87	0.02	0.85	0.00	0.92	0.05	0.00	0.88
Avail Cap(c_a), veh/h	182	1252	1061	144	1410	1195	160	0	113	131	0	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.39	0.39	0.39	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.8	20.5	8.1	38.1	11.4	4.0	57.6	0.0	60.2	53.9	0.0	61.1
Incr Delay (d2), s/veh	5.1	20.5	0.4	17.3	3.2	0.0	32.6	0.0	66.2	0.8	0.0	66.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.3	44.9	3.4	5.1	23.0	0.2	4.5	0.0	9.3	0.4	0.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.9	41.1	8.5	55.4	14.6	4.0	90.2	0.0	126.4	54.7	0.0	127.4
LnGrp LOS	D	D	A	E	B	A	F	A	F	D	A	F
Approach Vol, veh/h		1482			1370			240			86	
Approach Delay, s/veh		36.9			18.1			105.9			121.5	
Approach LOS		D			B			F			F	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	15.0	11.0	93.0	13.0	13.0		104.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	5.0	9.0	5.0	87.0	7.0	7.0		98.0
Max Q Clear Time (g_c+I1), s	2.5	10.3	5.3	83.2	9.0	8.1		63.0
Green Ext Time (p_c), s	0.0	0.0	0.0	2.7	0.0	0.0		8.6

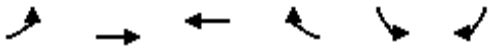
Intersection Summary	
HCM 6th Ctrl Delay	36.3
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	1209	9	54	1109	113	71	7	56	15	12	64
Future Volume (veh/h)	53	1209	9	54	1109	113	71	7	56	15	12	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	54	1234	9	55	1132	115	72	7	57	15	12	65
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	1274	9	144	1148	117	184	23	189	81	52	88
Arrive On Green	0.03	0.69	0.69	0.03	0.69	0.69	0.04	0.13	0.13	0.06	0.06	0.06
Sat Flow, veh/h	1781	1854	14	1781	1670	170	1781	176	1436	671	932	1585
Grp Volume(v), veh/h	54	0	1243	55	0	1247	72	0	64	27	0	65
Grp Sat Flow(s),veh/h/ln	1781	0	1868	1781	0	1840	1781	0	1612	1603	0	1585
Q Serve(g_s), s	1.1	0.0	80.1	1.1	0.0	84.6	4.8	0.0	4.6	0.3	0.0	5.2
Cycle Q Clear(g_c), s	1.1	0.0	80.1	1.1	0.0	84.6	4.8	0.0	4.6	1.8	0.0	5.2
Prop In Lane	1.00		0.01	1.00		0.09	1.00		0.89	0.56		1.00
Lane Grp Cap(c), veh/h	128	0	1283	144	0	1264	184	0	213	133	0	88
V/C Ratio(X)	0.42	0.00	0.97	0.38	0.00	0.99	0.39	0.00	0.30	0.20	0.00	0.74
Avail Cap(c_a), veh/h	142	0	1287	158	0	1267	184	0	214	134	0	90
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	18.8	33.4	0.0	19.5	52.8	0.0	50.5	58.2	0.0	59.8
Incr Delay (d2), s/veh	0.8	0.0	18.2	0.6	0.0	22.1	1.3	0.0	0.8	0.7	0.0	26.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	42.6	2.1	0.0	45.3	4.0	0.0	3.5	1.6	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.9	0.0	37.1	34.0	0.0	41.6	54.2	0.0	51.2	58.9	0.0	86.0
LnGrp LOS	D	A	D	C	A	D	D	A	D	E	A	F
Approach Vol, veh/h		1297			1302			136			92	
Approach Delay, s/veh		37.0			41.3			52.8			78.1	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	10.8	94.3	9.8	13.7	10.8	94.4		23.5
Change Period (Y+Rc), s	6.5	6.0	4.5	6.5	6.5	6.0		6.5
Max Green Setting (Gmax), s	5.3	88.6	5.3	7.3	5.3	88.6		17.1
Max Q Clear Time (g_c+I1), s	3.1	82.1	6.8	7.2	3.1	86.6		6.6
Green Ext Time (p_c), s	0.0	5.4	0.0	0.0	0.0	1.7		0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

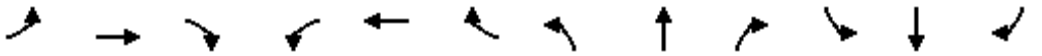


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	499	714	464	61	51	572
Future Volume (veh/h)	499	714	464	61	51	572
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	531	760	494	65	54	609
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	628	1278	675	572	208	537
Arrive On Green	0.22	0.68	0.36	0.36	0.12	0.12
Sat Flow, veh/h	1781	1870	1870	1585	1781	1585
Grp Volume(v), veh/h	531	760	494	65	54	609
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1585	1781	1585
Q Serve(g_s), s	9.8	13.0	13.8	1.6	1.7	7.0
Cycle Q Clear(g_c), s	9.8	13.0	13.8	1.6	1.7	7.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	628	1278	675	572	208	537
V/C Ratio(X)	0.85	0.59	0.73	0.11	0.26	1.13
Avail Cap(c_a), veh/h	855	1278	675	572	208	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	5.1	16.6	12.8	24.1	19.8
Incr Delay (d2), s/veh	5.9	2.0	6.9	0.4	0.7	81.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.6	5.3	10.1	1.0	1.2	37.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.0	7.1	23.5	13.2	24.8	101.0
LnGrp LOS	B	A	C	B	C	F
Approach Vol, veh/h		1291	559		663	
Approach Delay, s/veh		10.8	22.3		94.8	
Approach LOS		B	C		F	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			47.0		13.0	19.3	27.7
Change Period (Y+Rc), s			6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s			41.0		7.0	21.0	14.0
Max Q Clear Time (g_c+I1), s			15.0		9.0	11.8	15.8
Green Ext Time (p_c), s			3.5		0.0	1.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.5
HCM 6th LOS	D

2034 FUTURE PROJECTED CONDITIONS WITH INTERSECTION IMPROVEMENTS AND WIDENING



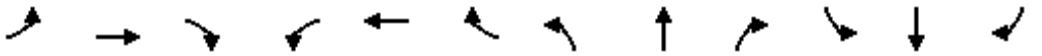
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Future Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	970	258	297	1320	37	582	0	298	1	2	2
Peak Hour Factor	0.92	0.89	0.89	0.89	0.89	0.92	0.89	0.92	0.89	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	988	1094	292	1160	983	578	0	465	16	16	14
Arrive On Green	0.04	0.53	0.53	0.13	0.62	0.62	0.16	0.00	0.16	0.01	0.01	0.01
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3563	0	1585	1781	1870	1585
Grp Volume(v), veh/h	114	970	258	297	1320	37	582	0	298	1	2	2
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	5.2	73.3	8.7	18.9	89.5	1.3	23.4	0.0	23.4	0.1	0.2	0.2
Cycle Q Clear(g_c), s	5.2	73.3	8.7	18.9	89.5	1.3	23.4	0.0	23.4	0.1	0.2	0.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	119	988	1094	292	1160	983	578	0	465	16	16	14
V/C Ratio(X)	0.96	0.98	0.24	1.02	1.14	0.04	1.01	0.00	0.64	0.06	0.12	0.14
Avail Cap(c_a), veh/h	119	988	1094	292	1160	983	578	0	465	86	91	77
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	33.4	8.3	51.2	27.4	10.6	60.4	0.0	44.4	70.9	70.9	71.0
Incr Delay (d2), s/veh	68.5	24.3	0.2	56.8	72.8	0.0	39.2	0.0	3.0	1.7	3.2	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.5	47.7	8.4	21.6	79.9	0.8	19.5	0.0	14.4	0.1	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	109.2	57.7	8.5	108.1	100.2	10.7	99.7	0.0	47.4	72.6	74.2	75.6
LnGrp LOS	F	E	A	F	F	B	F	A	D	E	E	E
Approach Vol, veh/h		1342			1654			880			5	
Approach Delay, s/veh		52.6			99.6			82.0			74.4	
Approach LOS		D			F			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	25.3	83.1		6.9	12.0	96.4		29.0				
Change Period (Y+Rc), s	6.4	6.9		5.6	6.4	6.9		5.6				
Max Green Setting (Gmax), s	18.9	76.2		7.0	5.6	89.5		23.4				
Max Q Clear Time (g_c+I1), s	20.9	75.3		2.2	7.2	91.5		25.4				
Green Ext Time (p_c), s	0.0	0.7		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		79.3
HCM 6th LOS		E

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Future Volume (veh/h)	9	1099	341	359	1153	4	249	9	288	32	67	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	10	1133	352	370	1189	4	264	0	297	35	73	35
Peak Hour Factor	0.92	0.97	0.97	0.97	0.97	0.92	0.97	0.92	0.97	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	151	1049	1009	316	1309	1109	271	0	359	88	92	78
Arrive On Green	0.01	0.56	0.56	0.15	0.70	0.70	0.08	0.00	0.08	0.05	0.05	0.05
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	3563	0	1585	1781	1870	1585
Grp Volume(v), veh/h	10	1133	352	370	1189	4	264	0	297	35	73	35
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	0	1585	1781	1870	1585
Q Serve(g_s), s	0.4	84.1	15.6	22.6	78.5	0.1	11.1	0.0	11.4	2.9	5.8	3.2
Cycle Q Clear(g_c), s	0.4	84.1	15.6	22.6	78.5	0.1	11.1	0.0	11.4	2.9	5.8	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	151	1049	1009	316	1309	1109	271	0	359	88	92	78
V/C Ratio(X)	0.07	1.08	0.35	1.17	0.91	0.00	0.98	0.00	0.83	0.40	0.79	0.45
Avail Cap(c_a), veh/h	190	1049	1009	316	1309	1109	271	0	359	88	92	78
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	32.9	12.7	55.7	18.5	6.8	69.2	0.0	55.2	69.1	70.5	69.3
Incr Delay (d2), s/veh	0.1	52.2	0.4	104.8	9.9	0.0	47.6	0.0	14.6	2.9	35.9	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	66.2	11.1	30.2	42.2	0.1	11.0	0.0	17.5	2.5	6.7	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.2	85.1	13.2	160.5	28.4	6.8	116.8	0.0	69.8	72.0	106.5	73.3
LnGrp LOS	C	F	B	F	C	A	F	A	E	E	F	E
Approach Vol, veh/h		1495			1563			561			143	
Approach Delay, s/veh		67.8			59.6			91.9			89.9	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.0	91.0		13.0	8.1	111.9		17.0				
Change Period (Y+Rc), s	6.4	6.9		5.6	6.4	6.9		5.6				
Max Green Setting (Gmax), s	22.6	84.1		7.4	5.0	101.7		11.4				
Max Q Clear Time (g_c+I1), s	24.6	86.1		7.8	2.4	80.5		13.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	14.2		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		68.8	
HCM 6th LOS		E	

Notes

User approved volume balancing among the lanes for turning movement.

APPENDIX I
SIGNAL WARRANT ANALYSIS

Warrants Summary Report

1: Bear Creek & Patterson

Intersection Informatior

	Major Street	Minor Street
Street Name	Bear Creek Pk	Patterson Dr
Direction	EB/WB	NB/SB
Number of Lane:	2	2
Approch Speed	45	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	Yes	
Condition A or B Met	Yes	13 Hours met (8 required)
Condition A and B M	No	4 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	13 Hours met (4 required)
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	7 Hours met (1 required)
Warrant 8, Roadway Network		
	Yes	

Warrant 1: Eight-hour Vehicular Volume

1: Bear Creek & Patterson

Intersection Informatior

Major Street Name:	Bear Creek Pk
Major Street Direction:	EB/WB
Minor Street Direction:	NB/SB

WARRANT 1 MET? Yes

Details:

Condition A Met?	Yes	13 Hours met (8 required)
Condition B Met?	No	4 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		70% Standard Met? Cond. A OR Cond. B		56% Standard Met? Cond. A AND Cond. B	
					Condition A 70% Column	Condition B 70% Column	Condition A 56% Column	Condition B 56% Column
06:00 to 07:00	**1,238**		**98**		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				
07:00 to 08:00	**2,158**		**209**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	Yes				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	Yes				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				
08:00 to 09:00	**1,552**		**170**		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	Yes				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	Yes				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				
09:00 to 10:00	**1,230**		**103**		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

10:00 to 11:00	1,263		87		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

11:00 to 12:00	1,251		85		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

12:00 to 13:00	1,328		89		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

13:00 to 14:00	1,258		94		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

14:00 to 15:00	1,598		103		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

15:00 to 16:00	1,969		108		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

16:00 to 17:00	2,071		146		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	Yes				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	Yes				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

17:00 to 18:00	1,774		166		Yes*	Yes*	Yes*	Yes*
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	Yes				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	Yes				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

18:00 to 19:00	1,044		108		No	Yes*	No	Yes
Condition A	Volume >= 70% column (420)?	Yes	Volume >= 70% column (630)?	No				
	Volume >= 56% column (336)?	Yes	Volume >= 56% column (504)?	No				
Condition B	**Volume >= 70% column (630)?**	Yes	**Volume >= 70% column (70)?**	Yes				
	Volume >= 56% column (504)?	Yes	**Volume >= 56% column (56)?**	Yes				

Warrant 2: Four-hour Vehicular Volume

1: Bear Creek & Patterson

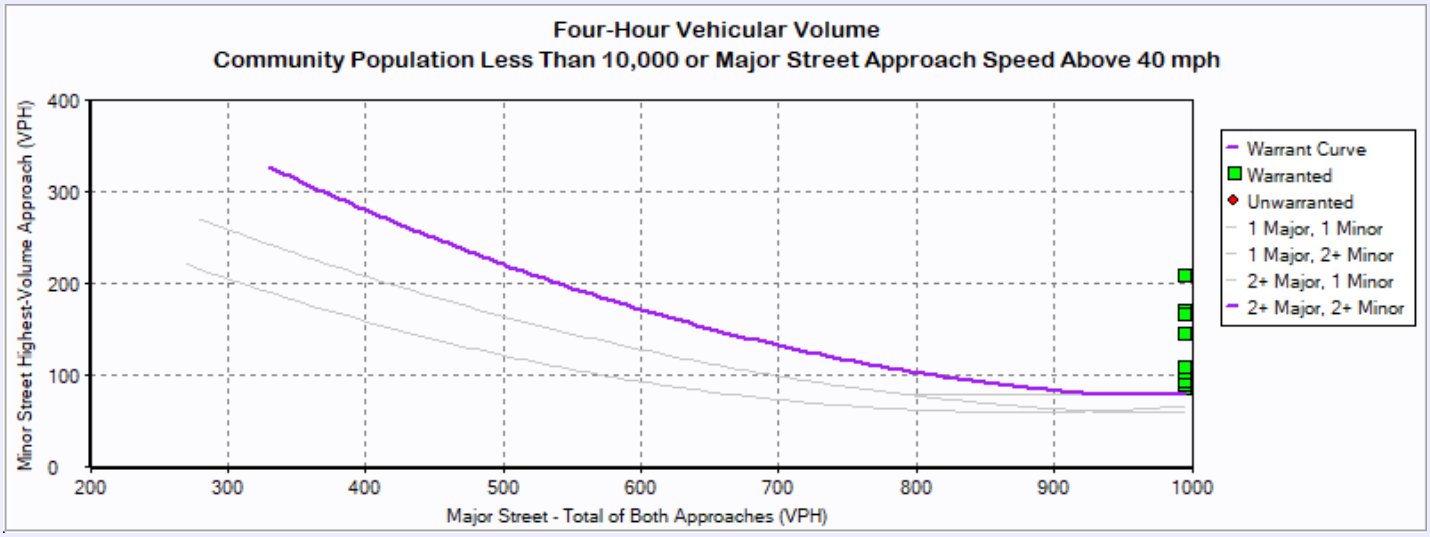
Intersection Informatior

	Major Street	Minor Street
Street Name	Bear Creek Pk	Patterson Dr
Direction	EB/WB	NB/SB
Number of Lane:	2	2
Approch Speed	45	25

Warrant 2 Met? **Yes**

Details:

Notes	13 Hours met (4 required)
Low populatior	No



Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0.00	0.00
01:00:00 - 02:00:00	0.00	0.00
02:00:00 - 03:00:00	0.00	0.00
03:00:00 - 04:00:00	0.00	0.00
04:00:00 - 05:00:00	0.00	0.00
05:00:00 - 06:00:00	0.00	0.00
06:00:00 - 07:00:00	1,238.00	98.00
07:00:00 - 08:00:00	2,158.00	209.00
08:00:00 - 09:00:00	1,552.00	170.00
09:00:00 - 10:00:00	1,230.00	103.00
10:00:00 - 11:00:00	1,263.00	87.00
11:00:00 - 12:00:00	1,251.00	85.00
12:00:00 - 13:00:00	1,328.00	89.00
13:00:00 - 14:00:00	1,258.00	94.00
14:00:00 - 15:00:00	1,598.00	103.00
15:00:00 - 16:00:00	1,969.00	108.00
16:00:00 - 17:00:00	2,071.00	146.00
17:00:00 - 18:00:00	1,774.00	166.00
18:00:00 - 19:00:00	1,044.00	108.00
19:00:00 - 20:00:00	0.00	0.00
20:00:00 - 21:00:00	0.00	0.00
21:00:00 - 22:00:00	0.00	0.00
22:00:00 - 23:00:00	0.00	0.00
23:00:00 - 00:00:00	0.00	0.00

Warranted Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
06:00:00 - 07:00:00	1,238.00	98.00
07:00:00 - 08:00:00	2,158.00	209.00
08:00:00 - 09:00:00	1,552.00	170.00
09:00:00 - 10:00:00	1,230.00	103.00
10:00:00 - 11:00:00	1,263.00	87.00
11:00:00 - 12:00:00	1,251.00	85.00
12:00:00 - 13:00:00	1,328.00	89.00
13:00:00 - 14:00:00	1,258.00	94.00
14:00:00 - 15:00:00	1,598.00	103.00
15:00:00 - 16:00:00	1,969.00	108.00
16:00:00 - 17:00:00	2,071.00	146.00
17:00:00 - 18:00:00	1,774.00	166.00
18:00:00 - 19:00:00	1,044.00	108.00

Warrant 3: Peak Hour

1: Bear Creek & Patterson

Intersection Informatior

	Major Street	Minor Street
Street Name	Bear Creek Pk	Patterson Dr
Direction	EB/WB	NB/SB
Number of Lane:	2	2
Approch Speed	45	25

Warrant 3 Met? **Yes**

Details

Low Population? No

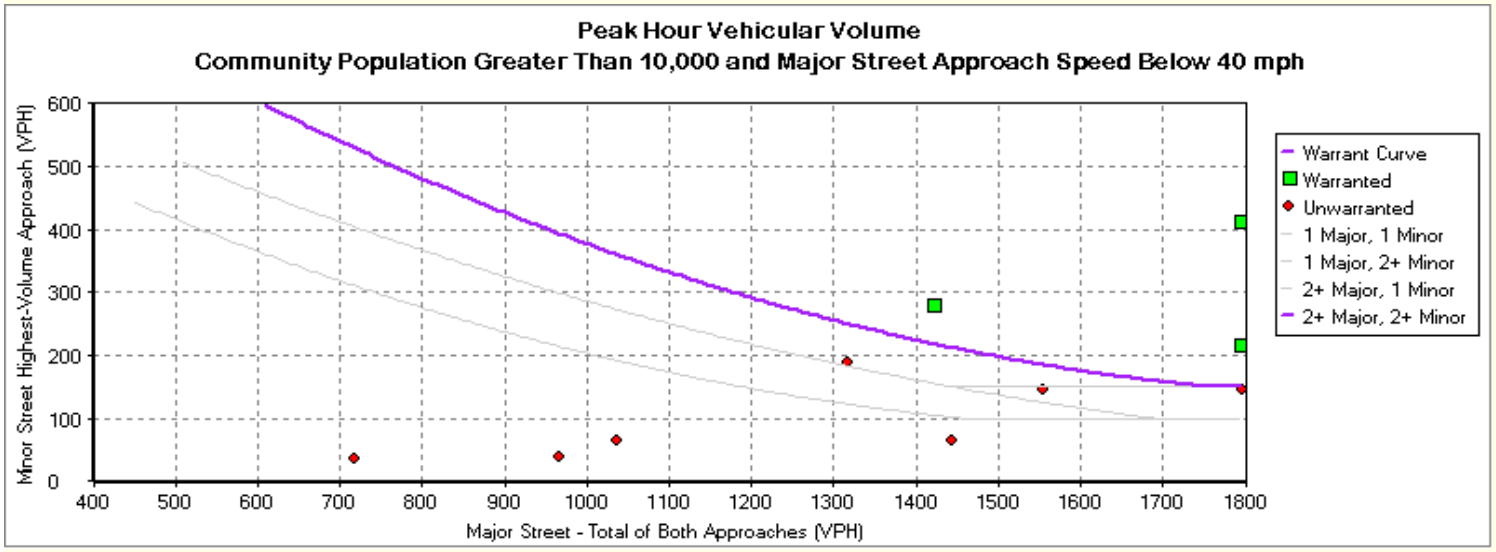
Condition A Met' No

Notes 0 Hours met (1 required)

Condition B Met' Yes

Notes 7 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Not Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
6:00	1,238	98
7:00	2,158	209
8:00	1,552	170
9:00	1,230	103
10:00	1,263	87
11:00	1,251	85
12:00	1,328	89
13:00	1,258	94
14:00	1,598	103
15:00	1,969	108
16:00	2,071	146
17:00	1,774	166
18:00	1,044	108

Intersection: **Bear Creek Pk & Patterson Dr**
Control: One-way Stop
Day: Tuesday
Date: 2/22/2022
Count by: Marr Traffic

Street			Bear Creek Pike				Bear Creek Pike								Patterson Drive				Intersection	
Direction			Eastbound				Westbound				Northbound				Southbound				15-Min	Rolling
TOD	15-Min Increment		L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total	Hour Total
AM	6:00	6:15	0	118	0	118	0	62	0	62				0	1	0	2	3	183	970
	6:15	6:30	1	120	2	123	0	93	0	93				0	2	0	5	7	223	1156
	6:30	6:45	0	147	0	147	0	108	0	108				0	1	0	4	5	260	1364
	6:45	7:00	1	167	0	168	0	124	0	124				0	4	0	8	12	304	1546
	7:00	7:15	1	186	0	187	0	168	0	168				0	1	0	13	14	369	1680
	7:15	7:30	4	221	1	226	0	189	1	190				0	7	0	8	15	431	1659
	7:30	7:45	1	185	0	186	0	241	0	241				0	1	0	14	15	442	1539
	7:45	8:00	3	177	0	180	0	239	1	240				0	3	0	15	18	438	1385
	8:00	8:15	6	150	0	156	0	186	1	187				0	2	0	3	5	348	1173
	8:15	8:30	3	135	0	138	0	163	1	164				0	1	0	8	9	311	1057
	8:30	8:45	4	125	0	129	0	150	2	152				0	1	0	6	7	288	967
	8:45	9:00	5	88	0	93	0	129	0	129				0	1	0	3	4	226	923
	9:00	9:15	4	95	0	99	0	117	0	117				0	4	0	12	16	232	955
	9:15	9:30	5	111	0	116	0	95	3	98				0	0	0	7	7	221	970
	9:30	9:45	3	109	0	112	0	127	0	127				0	0	0	5	5	244	994
	9:45	10:00	6	113	1	120	0	127	2	129				0	0	0	9	9	258	1020
	10:00	10:15	3	127	0	130	0	105	0	105				0	1	0	11	12	247	974
	10:15	10:30	8	116	0	124	0	114	0	114				0	0	0	7	7	245	970
	10:30	10:45	6	109	0	115	0	147	0	147				0	3	0	5	8	270	982
	10:45	11:00	3	117	0	120	0	87	1	88				0	1	0	3	4	212	937
Midday	11:00	11:15	8	117	0	125	0	110	1	111				0	3	0	4	7	243	946
	11:15	11:30	10	128	0	138	0	114	1	115				0	0	0	4	4	257	943
	11:30	11:45	2	113	0	115	0	108	0	108				0	0	0	2	2	225	954
	11:45	12:00	7	106	0	113	0	96	0	96				0	2	0	10	12	221	998
	12:00	12:15	7	121	0	128	0	109	0	109				0	0	0	3	3	240	1004
	12:15	12:30	10	119	0	129	0	130	0	130				0	1	0	8	9	268	1000
	12:30	12:45	4	126	0	130	0	128	0	128				0	1	0	10	11	269	972
	12:45	13:00	7	104	0	111	0	113	0	113				0	0	0	3	3	227	941
	13:00	13:15	7	123	0	130	0	101	0	101				0	2	0	3	5	236	943
	13:15	13:30	4	104	1	109	0	125	2	127				0	0	0	4	4	240	963
	13:30	13:45	5	112	0	117	0	115	1	116				0	1	0	4	5	238	1012
	13:45	14:00	1	101	1	103	0	115	2	117				0	1	0	8	9	229	1121
	14:00	14:15	4	134	0	138	0	114	0	114				0	0	0	4	4	256	1207
	14:15	14:30	7	156	0	163	0	122	0	122				0	0	0	4	4	289	1290
	14:30	14:45	3	150	0	153	0	174	4	178				0	1	0	15	16	347	1363
	14:45	15:00	3	149	1	153	0	154	1	155				0	0	0	7	7	315	1423
PM	15:00	15:15	6	152	0	158	0	168	1	169				0	4	0	8	12	339	1471
	15:15	15:30	11	154	1	166	0	189	0	189				0	1	0	6	7	362	1480
	15:30	15:45	12	190	1	203	0	194	4	198				0	0	0	6	6	407	1517
	15:45	16:00	9	174	0	183	0	171	1	172				0	0	0	8	8	363	1482
	16:00	16:15	7	152	0	159	0	171	3	174				0	1	0	14	15	348	1518
	16:15	16:30	10	173	0	183	0	206	3	209				0	1	0	6	7	399	1547
	16:30	16:45	9	153	0	162	0	202	2	204				0	0	0	6	6	372	1469
	16:45	17:00	8	174	0	182	0	207	5	212				0	1	0	4	5	399	1422
	17:00	17:15	15	158	0	173	0	197	2	199				0	1	0	4	5	377	1262
	17:15	17:30	14	161	0	175	0	138	2	140				0	0	0	6	6	321	1137
	17:30	17:45	11	132	0	143	0	176	1	177				0	0	0	5	5	325	1012
	17:45	18:00	5	105	0	110	0	124	2	126				0	2	0	1	3	239	853
	18:00	18:15	10	87	0	97	0	152	0	152				0	0	0	3	3	252	741
	18:15	18:30	9	76	0	85	0	103	2	105				0	1	0	5	6	196	489
	18:30	18:45	7	67	0	74	0	83	3	86				0	1	0	5	6	166	293
	18:45	19:00	5	56	0	61	0	61	0	61				0	0	0	5	5	127	127
AM	7:00	8:00	9	769	1	779	0	837	2	839	0	0	0	0	12	0	50	62		1680
PM	16:15	17:15	42	658	0	700	0	812	12	824	0	0	0	0	3	0	20	23		1547

Intersection: **Bear Creek Pk & Patterson Dr**
Control: One-way Stop
Day: Tuesday
Date: 2/22/2022
Count by: Marr Traffic

2022 Existing (Unadjusted)

Street				Bear Creek Pike				Bear Creek Pike								Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly	Rolling
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total	Hour Total
AM	6:00	-	7:00	2	552	2	556	0	387	0	387	0	0	0	0	8	0	19	27	970	970
	7:00	-	8:00	9	769	1	779	0	837	2	839	0	0	0	0	12	0	50	62	1680	1680
	8:00	-	9:00	18	498	0	516	0	628	4	632	0	0	0	0	5	0	20	25	1173	1173
	9:00	-	10:00	18	428	1	447	0	466	5	471	0	0	0	0	4	0	33	37	955	955
	10:00	-	11:00	20	469	0	489	0	453	1	454	0	0	0	0	5	0	26	31	974	974
Midday	11:00	-	12:00	27	464	0	491	0	428	2	430	0	0	0	0	5	0	20	25	946	946
	12:00	-	13:00	28	470	0	498	0	480	0	480	0	0	0	0	2	0	24	26	1004	1004
	13:00	-	14:00	17	440	2	459	0	456	5	461	0	0	0	0	4	0	19	23	943	943
	14:00	-	15:00	17	589	1	607	0	564	5	569	0	0	0	0	1	0	30	31	1207	1207
PM	15:00	-	16:00	38	670	2	710	0	722	6	728	0	0	0	0	5	0	28	33	1471	1471
	16:00	-	17:00	34	652	0	686	0	786	13	799	0	0	0	0	3	0	30	33	1518	1518
	17:00	-	18:00	45	556	0	601	0	635	7	642	0	0	0	0	3	0	16	19	1262	1262
	18:00	-	19:00	31	286	0	317	0	399	5	404	0	0	0	0	2	0	18	20	741	741

Intersection: **Bear Creek Pike & Patterson Drive**
Control: One-way Stop
Day:
Date:
Count by:

2031 Background Growth 27% (9 years at 3%)

Street				Bear Creek Pike				Bear Creek Pike								Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly	Rolling
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total	Hour Total
AM	6:00	-	7:00	3	701	3	707	0	491	0	491	0	0	0	0	10	0	24	34	1232	1232
	7:00	-	8:00	11	977	1	989	0	1063	3	1066	0	0	0	0	15	0	64	79	2134	2134
	8:00	-	9:00	23	632	0	655	0	798	5	803	0	0	0	0	6	0	25	31	1489	1489
	9:00	-	10:00	23	544	1	568	0	592	6	598	0	0	0	0	5	0	42	47	1213	1213
	10:00	-	11:00	25	596	0	621	0	575	1	576	0	0	0	0	6	0	33	39	1236	1236
Midday	11:00	-	12:00	34	589	0	623	0	544	3	547	0	0	0	0	6	0	25	31	1201	1201
	12:00	-	13:00	36	597	0	633	0	610	0	610	0	0	0	0	3	0	30	33	1276	1276
	13:00	-	14:00	22	559	3	584	0	579	6	585	0	0	0	0	5	0	24	29	1198	1198
	14:00	-	15:00	22	748	1	771	0	716	6	722	0	0	0	0	1	0	38	39	1532	1532
PM	15:00	-	16:00	48	851	3	902	0	917	8	925	0	0	0	0	6	0	36	42	1869	1869
	16:00	-	17:00	43	828	0	871	0	998	17	1015	0	0	0	0	4	0	38	42	1928	1928
	17:00	-	18:00	57	706	0	763	0	806	9	815	0	0	0	0	4	0	20	24	1602	1602
	18:00	-	19:00	39	363	0	402	0	507	6	513	0	0	0	0	3	0	23	26	941	941

LUC 210 **Columbia Bluffs - Phases 1-3**

Residential Single-family Detached **236 Dwelling Units**

Daily Traffic **2223**

Time			Hourly Distributi	Enter %	Exit %	Hourly Traffic	Enter	Exit
6:00	-	7:00		1.6%	5.8%	82	17	65
7:00	-	8:00		3.1%	10.0%	145	34	111
8:00	-	9:00		3.8%	8.5%	137	42	95
9:00	-	10:00		3.3%	5.8%	101	37	64
10:00	-	11:00		4.2%	5.6%	109	47	62
11:00	-	12:00		5.4%	5.1%	117	60	57
12:00	-	13:00		5.7%	5.7%	127	64	63
13:00	-	14:00		6.1%	6.0%	135	68	67
14:00	-	15:00		7.1%	6.1%	147	79	68
15:00	-	16:00		8.7%	6.2%	166	97	69
16:00	-	17:00		10.5%	7.4%	199	117	82
17:00	-	18:00		10.0%	7.3%	192	111	81
18:00	-	19:00		8.5%	5.9%	160	95	65

Total Trip Gen

Street				Bear Creek Pike				Bear Creek Pike				Site Access 1				Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly Total	Hour Total
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
	Enter %					65%		30%									5%				
	Exit %											65%	5%	30%							
AM	6:00	-	7:00	0	0	11	11	5	0	0	5	42	3	20	65	0	1	0	1	82	82
	7:00	-	8:00	0	0	22	22	10	0	0	10	72	6	33	111	0	2	0	2	**145**	145
	8:00	-	9:00	0	0	27	27	13	0	0	13	62	5	29	96	0	2	0	2	138	138
	9:00	-	10:00	0	0	24	24	11	0	0	11	42	3	19	64	0	2	0	2	101	101
	10:00	-	11:00	0	0	31	31	14	0	0	14	40	3	19	62	0	2	0	2	109	109
Midday	11:00	-	12:00	0	0	39	39	18	0	0	18	37	3	17	57	0	3	0	3	117	117
	12:00	-	13:00	0	0	42	42	19	0	0	19	41	3	19	63	0	3	0	3	127	127
	13:00	-	14:00	0	0	44	44	20	0	0	20	44	3	20	67	0	3	0	3	134	134
	14:00	-	15:00	0	0	51	51	24	0	0	24	44	3	20	67	0	4	0	4	146	146
PM	15:00	-	16:00	0	0	63	63	29	0	0	29	45	3	21	69	0	5	0	5	166	166
	16:00	-	17:00	0	0	76	76	35	0	0	35	53	4	25	82	0	6	0	6	199	199
	17:00	-	18:00	0	0	72	72	33	0	0	33	53	4	24	81	0	6	0	6	**192**	192
	18:00	-	19:00	0	0	62	62	29	0	0	29	42	3	20	65	0	5	0	5	161	161

LUC 215 **Columbia Bluffs - Phases 1-3**

Residential Single-family Attached (Townhomes) **94 Dwelling Units**

Daily Traffic **666**

Time			Hourly Distributi	Enter %	Exit %	Hourly Traffic	Enter	Exit
6:00	-	7:00		1.1%	5.8%	23	4	19
7:00	-	8:00		2.7%	13.2%	53	9	44
8:00	-	9:00		3.8%	9.3%	44	13	31
9:00	-	10:00		3.7%	6.9%	35	12	23
10:00	-	11:00		4.0%	4.3%	27	13	14
11:00	-	12:00		4.8%	5.7%	35	16	19
12:00	-	13:00		5.4%	5.1%	35	18	17
13:00	-	14:00		4.5%	4.8%	31	15	16
14:00	-	15:00		5.5%	6.0%	38	18	20
15:00	-	16:00		8.2%	4.8%	43	27	16
16:00	-	17:00		9.8%	5.1%	50	33	17
17:00	-	18:00		12.1%	6.8%	63	40	23
18:00	-	19:00		9.8%	6.6%	55	33	22

Total Trip Gen

Street				Bear Creek Pike				Bear Creek Pike				Site Access 1				Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly Total	Hour Total
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
	Enter %					65%		30%									5%				
	Exit %											65%	5%	30%							
AM	6:00	-	7:00	0	0	3	3	1	0	0	1	12	1	6	19	0	0	0	0	23	23
	7:00	-	8:00	0	0	6	6	3	0	0	3	29	2	13	44	0	0	0	0	**53**	53
	8:00	-	9:00	0	0	8	8	4	0	0	4	20	2	9	31	0	1	0	1	44	44
	9:00	-	10:00	0	0	8	8	4	0	0	4	15	1	7	23	0	1	0	1	36	36
	10:00	-	11:00	0	0	8	8	4	0	0	4	9	1	4	14	0	1	0	1	27	27
Midday	11:00	-	12:00	0	0	10	10	5	0	0	5	12	1	6	19	0	1	0	1	35	35
	12:00	-	13:00	0	0	12	12	5	0	0	5	11	1	5	17	0	1	0	1	35	35
	13:00	-	14:00	0	0	10	10	5	0	0	5	10	1	5	16	0	1	0	1	32	32
	14:00	-	15:00	0	0	12	12	5	0	0	5	13	1	6	20	0	1	0	1	38	38
PM	15:00	-	16:00	0	0	18	18	8	0	0	8	10	1	5	16	0	1	0	1	43	43
	16:00	-	17:00	0	0	21	21	10	0	0	10	11	1	5	17	0	2	0	2	50	50
	17:00	-	18:00	0	0	26	26	12	0	0	12	15	1	7	23	0	2	0	2	**63**	63
	18:00	-	19:00	0	0	21	21	10	0	0	10	14	1	7	22	0	2	0	2	55	55

LUC 251 **Columbia Bluffs - Phases 1-3**

Senior Adult Housing - Single Family **200 Dwelling Units**

Daily Traffic **593**

Time			Hourly Distributi	Enter %	Exit %	Hourly Traffic	Enter	Exit
6:00	-	7:00		1.0%	3.7%	14	3	11
7:00	-	8:00		2.8%	8.0%	32	8	24
8:00	-	9:00		3.9%	8.8%	38	12	26
9:00	-	10:00		5.2%	8.4%	41	16	25
10:00	-	11:00		6.1%	8.1%	42	18	24
11:00	-	12:00		7.1%	7.9%	45	21	24
12:00	-	13:00		7.8%	7.9%	46	23	23
13:00	-	14:00		7.3%	7.3%	44	22	22
14:00	-	15:00		7.8%	7.0%	44	23	21
15:00	-	16:00		9.0%	6.8%	47	27	20
16:00	-	17:00		9.4%	6.2%	47	28	19
17:00	-	18:00		9.4%	6.1%	46	28	18
18:00	-	19:00		7.2%	5.3%	37	21	16

Total Trip Gen

Street				Bear Creek Pike				Bear Creek Pike				Site Access 1				Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly Total	Hour Total
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
	Enter %					65%		30%									5%				
	Exit %											65%	5%	30%							
AM	6:00	-	7:00	0	0	2	2	1	0	0	1	7	1	3	11	0	0	0	0	14	14
	7:00	-	8:00	0	0	5	5	2	0	0	2	16	1	7	24	0	0	0	0	**31**	31
	8:00	-	9:00	0	0	8	8	4	0	0	4	17	1	8	26	0	1	0	1	39	39
	9:00	-	10:00	0	0	10	10	5	0	0	5	16	1	8	25	0	1	0	1	41	41
	10:00	-	11:00	0	0	12	12	5	0	0	5	16	1	7	24	0	1	0	1	42	42
Midday	11:00	-	12:00	0	0	14	14	6	0	0	6	16	1	7	24	0	1	0	1	45	45
	12:00	-	13:00	0	0	15	15	7	0	0	7	15	1	7	23	0	1	0	1	46	46
	13:00	-	14:00	0	0	14	14	7	0	0	7	14	1	7	22	0	1	0	1	44	44
	14:00	-	15:00	0	0	15	15	7	0	0	7	14	1	6	21	0	1	0	1	44	44
PM	15:00	-	16:00	0	0	18	18	8	0	0	8	13	1	6	20	0	1	0	1	47	47
	16:00	-	17:00	0	0	18	18	8	0	0	8	12	1	6	19	0	1	0	1	46	46
	17:00	-	18:00	0	0	18	18	8	0	0	8	12	1	5	18	0	1	0	1	**45**	45
	18:00	-	19:00	0	0	14	14	6	0	0	6	10	1	5	16	0	1	0	1	37	37

LUC 565 **Columbia Bluffs - Phases 1-3**

Day Care Center **14,000 s.f.**

Daily Traffic **667**

Time			Hourly Distributi	Enter %	Exit %	Hourly Traffic	Enter	Exit
6:00	-	7:00		6.2%	4.3%	35	21	14
7:00	-	8:00		19.5%	16.3%	119	65	54
8:00	-	9:00		13.2%	12.8%	87	44	43
9:00	-	10:00		5.4%	4.6%	33	18	15
10:00	-	11:00		2.6%	2.9%	19	9	10
11:00	-	12:00		2.6%	2.6%	18	9	9
12:00	-	13:00		2.1%	2.6%	16	7	9
13:00	-	14:00		3.0%	3.2%	21	10	11
14:00	-	15:00		4.1%	4.5%	29	14	15
15:00	-	16:00		7.5%	6.9%	48	25	23
16:00	-	17:00		13.6%	14.0%	92	45	47
17:00	-	18:00		16.7%	18.7%	118	56	62
18:00	-	19:00		2.4%	6.3%	29	8	21

Total Trip Gen

Street				Bear Creek Pike				Bear Creek Pike				Site Access 1				Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly Total	Hour Total
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total		
	Enter %					65%		30%									5%				
	Exit %											65%	5%	30%							
AM	6:00	-	7:00	0	0	14	14	6	0	0	6	9	1	4	14	0	1	0	1	35	35
	7:00	-	8:00	0	0	42	42	20	0	0	20	35	3	16	54	0	3	0	3	**119**	119
	8:00	-	9:00	0	0	29	29	13	0	0	13	28	2	13	43	0	2	0	2	87	87
	9:00	-	10:00	0	0	12	12	5	0	0	5	10	1	5	16	0	1	0	1	34	34
	10:00	-	11:00	0	0	6	6	3	0	0	3	7	1	3	11	0	0	0	0	20	20
Midday	11:00	-	12:00	0	0	6	6	3	0	0	3	6	0	3	9	0	0	0	0	18	18
	12:00	-	13:00	0	0	5	5	2	0	0	2	6	0	3	9	0	0	0	0	16	16
	13:00	-	14:00	0	0	7	7	3	0	0	3	7	1	3	11	0	1	0	1	22	22
	14:00	-	15:00	0	0	9	9	4	0	0	4	10	1	5	16	0	1	0	1	30	30
PM	15:00	-	16:00	0	0	16	16	8	0	0	8	15	1	7	23	0	1	0	1	48	48
	16:00	-	17:00	0	0	29	29	14	0	0	14	31	2	14	47	0	2	0	2	92	92
	17:00	-	18:00	0	0	36	36	17	0	0	17	40	3	19	62	0	3	0	3	**118**	118
	18:00	-	19:00	0	0	5	5	2	0	0	2	14	1	6	21	0	0	0	0	28	28

Intersection: **Bear Creek Pike & Patterson Drive/Site Access 1**
Control: Two-way Stop
Day:
Date:
Count by:

2031 Future Projected Conditions (Phases 1-3)

Street				Bear Creek Pike				Bear Creek Pike				Site Access 1				Patterson Drive				Intersection	
Direction				Eastbound				Westbound				Northbound				Southbound				Hourly	Rolling
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	Total	Total	Hour Total
AM	6:00	-	7:00	3	701	33	737	13	491	0	504	70	6	33	109	10	2	24	36	1386	1386
	7:00	-	8:00	11	977	76	1064	35	1063	3	1101	152	12	69	233	15	5	64	84	**2482**	2482
	8:00	-	9:00	23	632	72	727	34	798	5	837	127	10	59	196	6	6	25	37	1797	1797
	9:00	-	10:00	23	544	55	622	25	592	6	623	83	6	39	128	5	5	42	52	1425	1425
	10:00	-	11:00	25	596	57	678	26	575	1	602	72	6	33	111	6	4	33	43	1434	1434
Midday	11:00	-	12:00	34	589	69	692	32	544	3	579	71	5	33	109	6	5	25	36	1416	1416
	12:00	-	13:00	36	597	74	707	33	610	0	643	73	5	34	112	3	5	30	38	1500	1500
	13:00	-	14:00	22	559	78	659	35	579	6	620	75	6	35	116	5	6	24	35	1430	1430
	14:00	-	15:00	22	748	88	858	40	716	6	762	81	6	37	124	1	7	38	46	1790	1790
PM	15:00	-	16:00	48	851	118	1017	53	917	8	978	83	6	39	128	6	8	36	50	2173	2173
	16:00	-	17:00	43	828	144	1015	67	998	17	1082	107	8	50	165	4	11	38	53	2315	2315
	17:00	-	18:00	57	706	152	915	70	806	9	885	120	9	55	184	4	12	20	36	**2020**	2020
	18:00	-	19:00	39	363	102	504	47	507	6	560	80	6	38	124	3	8	23	34	1222	1222

APPENDIX J
TURN LANE ANALYSIS

Left Turn Deceleration Lane Analysis

Source: NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide

Bear Creek Pike & Patterson Drive/Site Access 1
2031 Future Projected Peak Hour Traffic Volumes (Phases 1-3)
Westbound Bear Creek Pike

AM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

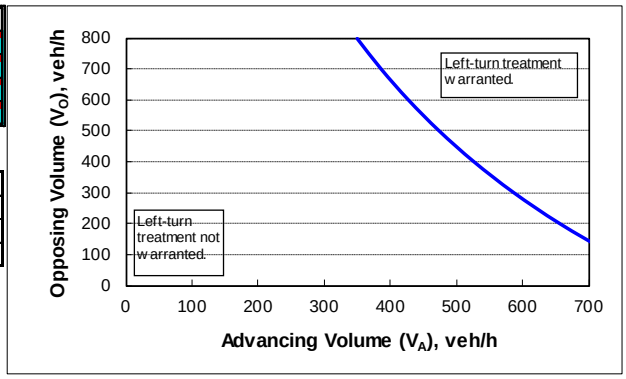
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	4%
Advancing volume (V_A), veh/h:	1170
Opposing volume (V_O), veh/h:	1049

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	276
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

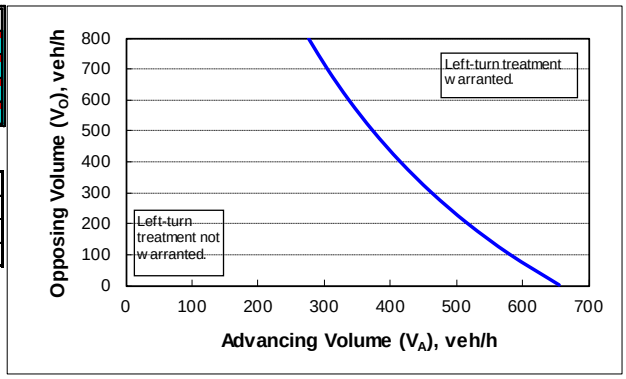
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	7%
Advancing volume (V_A), veh/h:	1222
Opposing volume (V_O), veh/h:	1352

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	163
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left Turn Deceleration Lane Analysis

Source: NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide

Iron Bridge Road & Site Access 2
2034 Future Projected Peak Hour Traffic Volumes (Full Buildout)
Eastbound Iron Bridge Road

AM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

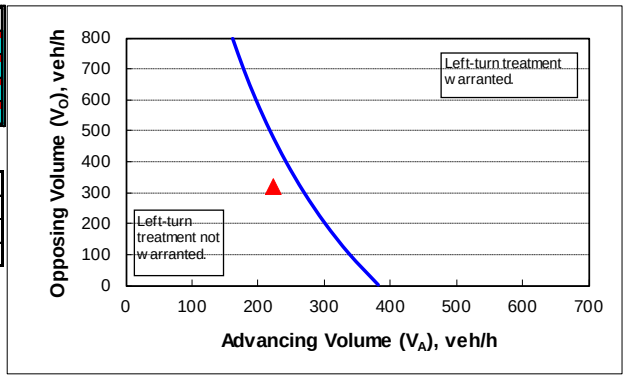
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	24%
Advancing volume (V_A), veh/h:	224
Opposing volume (V_O), veh/h:	318

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	264
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

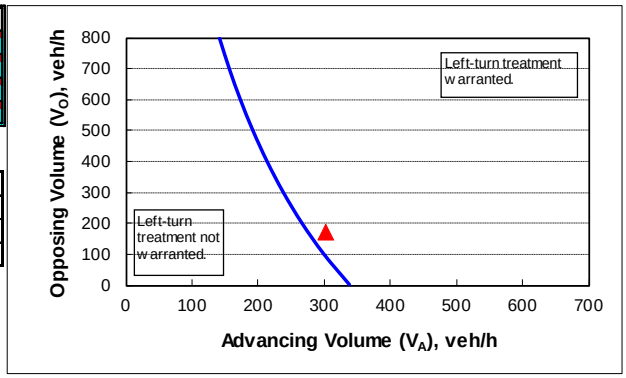
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	37%
Advancing volume (V_A), veh/h:	303
Opposing volume (V_O), veh/h:	173

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	274
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Right Turn Deceleration Lane Analysis

Source: NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide

Bear Creek Pike & Patterson Drive/Site Access 1
2031 Future Projected Peak Hour Traffic Volumes (Phases 1-3)
Eastbound Bear Creek Pike

AM Peak Hour

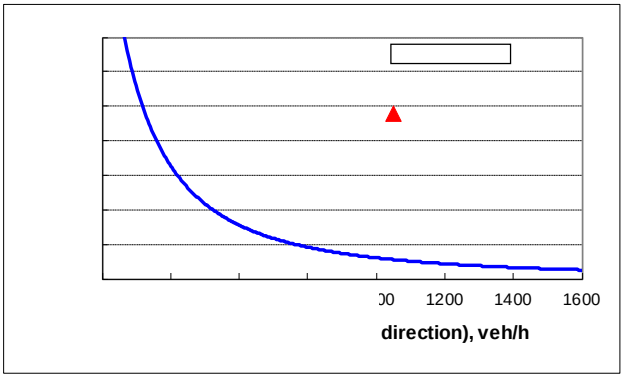
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	1049
Right-turn volume, veh/h:	96

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	11
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Add right-turn bay.	



PM Peak Hour

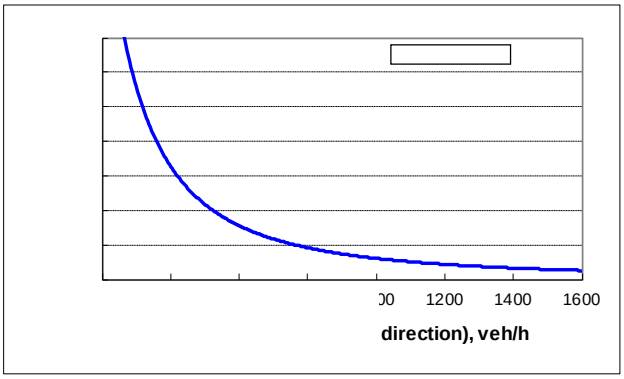
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	1352
Right-turn volume, veh/h:	176

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	7
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Add right-turn bay.	



Right Turn Deceleration Lane Analysis

Source: NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide

Bear Creek Pike & Patterson Drive/Site Access 1
2031 Future Projected Peak Hour Traffic Volumes (Phases 1-3)
Westbound Bear Creek Pike

AM Peak Hour

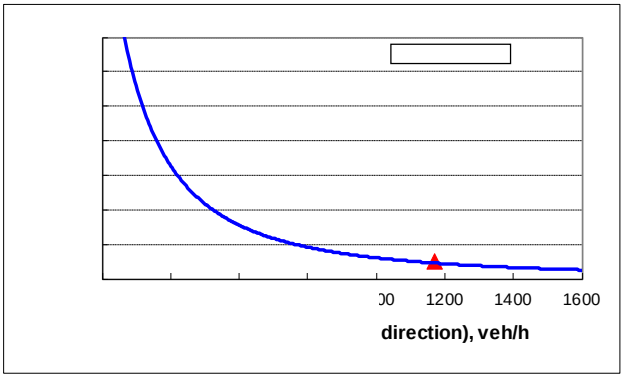
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	1170
Right-turn volume, veh/h:	10

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	9
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Add right-turn bay.	



PM Peak Hour

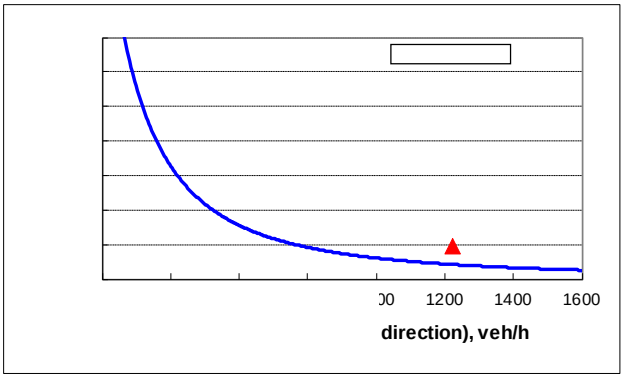
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	1222
Right-turn volume, veh/h:	19

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	8
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Add right-turn bay.	



Right Turn Deceleration Lane Analysis

Source: NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide

Iron Bridge Road & Site Access 2
2034 Future Projected Peak Hour Traffic Volumes (Full Buildout)
Westbound Iron Bridge Road

AM Peak Hour

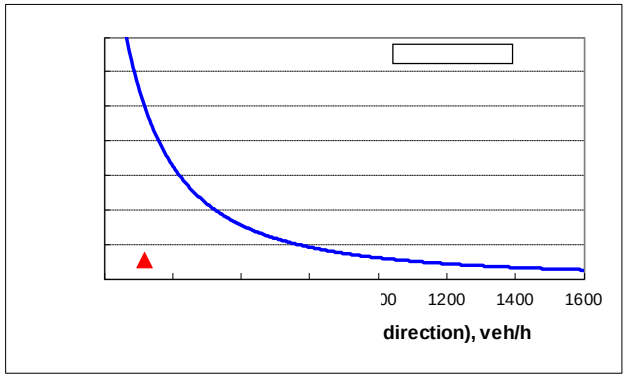
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	318
Right-turn volume, veh/h:	11

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	99
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



PM Peak Hour

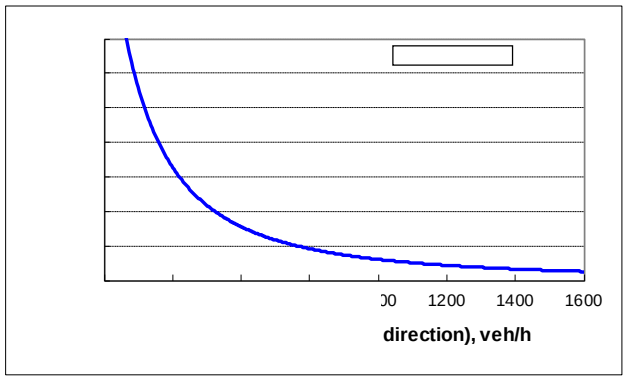
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	45
Major-road volume (one direction), veh/h:	173
Right-turn volume, veh/h:	23

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	302
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.	



APPENDIX K
RECOMMENDED IMPROVEMENT PHASING BY DWELLING UNIT COUNT

COLUMBIA BLUFFS MASTER PLAN
RECOMMENDED IMPROVEMENT PHASING BY DWELLING UNIT COUNT

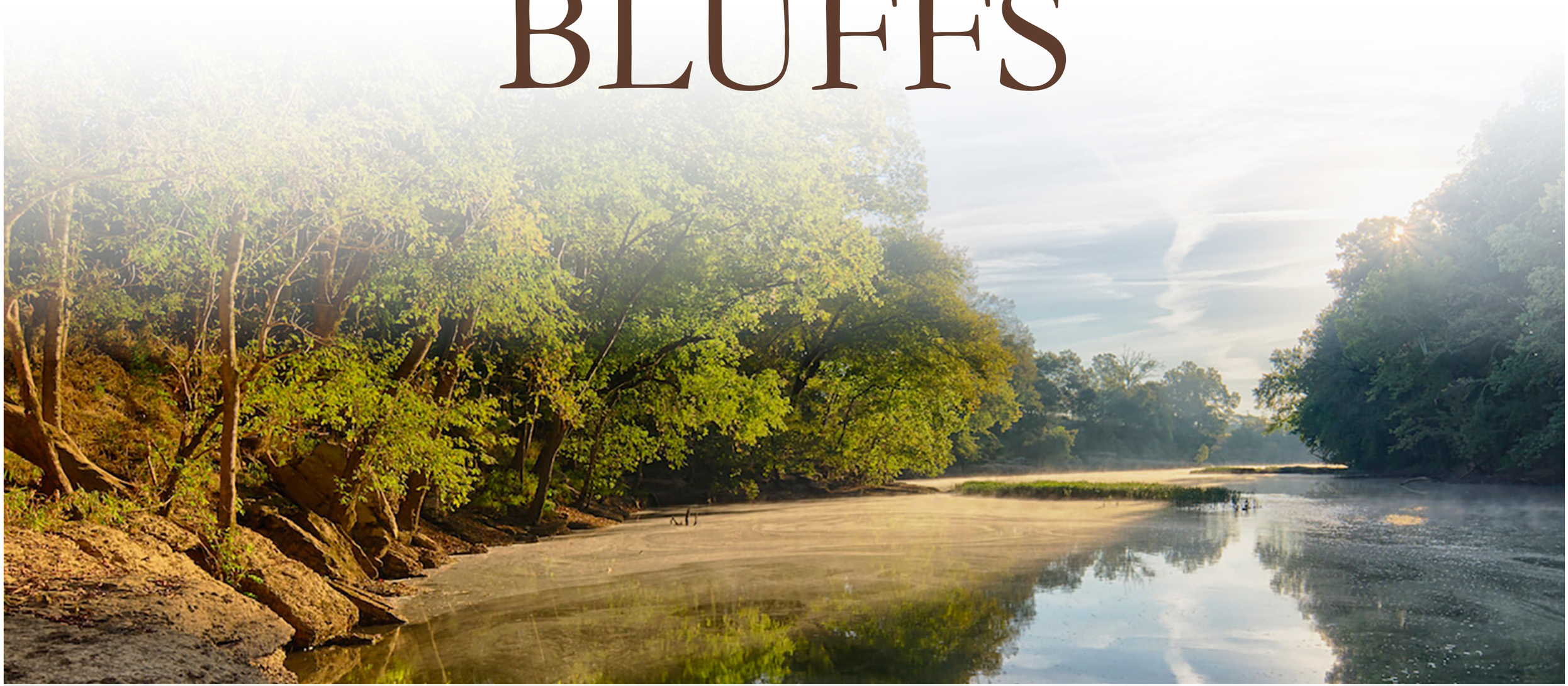
PHASE	LOCATION	LAND USE	DENSITY	CUMULATIVE DENSITY
1	North	Single-family Housing (Attached or Detatched)	143 DU	143 DU
2	North	Single-family Housing (Attached or Detatched)	143 DU	286 DU
3	North	Single-family Housing (Attached or Detatched)	143 DU	429 DU
3B	North	Day Care Center	14,000 SF	429 DU + 14,000 SF
4	South	Single-family Housing (Attached or Detatched)	143 DU	572 DU + 14,000 SF
5	South	Single-family Housing (Attached or Detatched)	143 DU	715 DU + 14,000 SF
6	South	Single-family Housing (Attached or Detatched)	145 DU	860 DU + 14,000 SF

	INTERSECTION & IMPROVEMENTS	DWELLING UNIT OCCUPANCY COUNT	NOTES
#1	**Nashville Highway (US 31) and Bear Creek Pike/US 43**		
-	Laneage improvements by the City and/or TDOT are planned for the intersection.	NA	By Others
-	Modify the signal design and timing to provide lead/lag left turn phasing for the eastbound and westbound approaches.	NA	By Others
#2	**Bear Creek Pike and Tom J Hitch Parkway**		
-	Construct the northbound right turn lane with approximately 100 feet of storage and 60 feet of taper. Restripe northbound approach to 1 left, 1 through, 1 right turn lane.	429 DU	
-	Modify signal design and phasing to provide northbound right turn overlap.	429 DU	
-	Reassign the northbound through to a shared left turn/through lane.	850 DU	Can be completed with Bear Creek Pk widening by Others.
-	Modify the signal design and phasing to provide split phaseing for the northbound and southbound approaches.	850 DU	Can be completed with Bear Creek Pk widening by Others.
#3	**Bear Creek Pike and Patterson Drive/Site Access 1**		
-	Construct Site Access 1 with 1 entering lane and 2 exiting lanes.	1 DU	
-	Construct eastbound right turn deceleration lane.	143 DU	
-	Construct westbound left turn deceleration lane.	143 DU	
-	Construct westbound right turn deceleration lane.	429 DU	
-	Install at traffic signal.	286 DU	
-	Widen Patterson Drive to provide a separate left turn lane.	429 DU + 14,000 SF Day Care	
#4	**Bear Creek Pike and Mt Olivet Road/School Access**		
-	Restripe southbound approach to provide a shared left turn/through lane and a right turn only lane.	429 DU	
-	Modify traffic signal design to provide protected/permissive left turn signal phasing and southbound right turn overlap phasing.	429 DU	
#5	**Tom J Hitch Parkway and Iron Bridge Road**		
-	No Improvements Recommended.	NA	
#6	**Iron Bridge Road and Mt Olivet Road**		
-	No Improvements Recommended.	NA	
#7	**James Campbell Boulevard and Tom J Hitch Parkway**		
-	Install at traffic signal with protected/permissive left turn signal phasing for the eastbound approach and a southbound right turn overlap.	429 DU	
#8	**Iron Bridge Road and Site Access 2**		
-	Construct Site Access 2 aligned with Yanahli Park Access.	430 DU	
-	Construct eastbound left turn deceleration lane on Iron Bridge Road.	715 DU	

COLUMBIA

City of Columbia, Tennessee

BLUFFS



Architectural Review Team Submittal



COLUMBIA BLUFFS ARCHITECTURE

DEVELOPER
JIM HARVEY
KOLTER LAND
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL 33637

ENGINEER
JIM HARRISON
CIVIL SITE DESIGN GROUP
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211

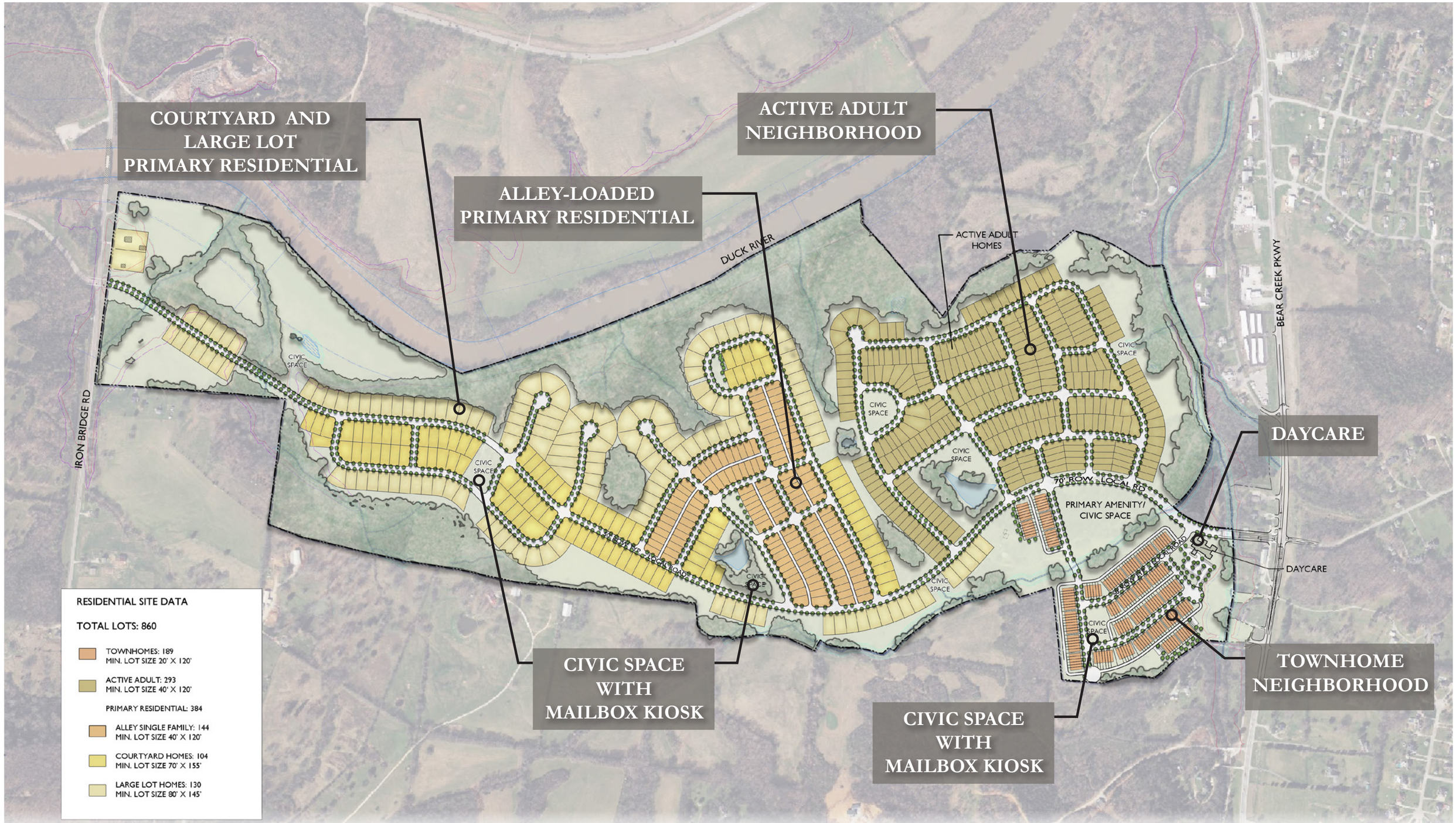
LANDSCAPE ARCHITECT
GREG GAMBLE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069

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8. COURTYARD AND LARGE LOT HOMES
11. ALLEY-LOADED PRIMARY RESIDENTIAL
13. TOWNHOMES
15. DAYCARE
11. MAIN AMENITY ARCHITECTURE
12. CIVIC SPACE ARCHITECTURE

SUBMITTED: 10/16/2023

DEVELOPMENT TEAM



MASTER DEVELOPEMNT PLAN

	Single Family & Townhomes	Active Adult Single Family
Building Height and Massing	• Primarily a mix of 1-story and 2-story, with a maximum of 3-story • Attached garages encouraged	
Building Separation	• Single Family: 10' minimum • Townhomes: 15' minimum	• Single Family: 10' minimum
Street Facades	• Maximize frontage and orientation onto residential streets • Porches should orient to residential streets • Entries visible from residential streets	• Maximize frontage and orientation onto residential streets • Porches should orient to residential streets • Entries visible from residential streets
Building Entries	• Porches minimum 6' deep and 6' wide	
Roof Forms	• Roofs may vary in style, but should be designed to create unity to the full community • All roof forms to be reviewed and approved by the master developer	• Roofs may vary in style, but should be designed to create unity to the full community • All roof forms to be reviewed and approved by the master developer
Roof Detail	• All roofs should create eaves for shadow and rain protection • Where used, gutters should be expressed as positive elements adding desirable detail	• All roofs should create eaves for shadow and rain protection • Where used, gutters should be expressed as positive elements adding desirable detail
Parking	• Garage-parked • Garages minimum depth of 22' • Garage doors with windows required	• Garage-parked • Garages minimum depth of 22' • Garage doors should have windows

ARCHITECTURAL GUIDELINE NOTE:

The architectural guidelines and conceptual elevations are intended to convey the architectural quality and design intent. Final elevations and color schemes will be brought back to be approved by the ADRT at final PUD-R Development Plan.

COMPLIANCE NOTE:

The architectural guidelines as shown in this pattern book represent compliance with the standards set by the Zoning Ordinance except in areas requesting a modification of standards which are requeted to be approved through the PUD-R Preliminary Development Plan process.

Architectural Building Materials

In keeping with the upscale project image, the materials used for structures at Columbia Bluffs should be appropriate for the individual building design concepts and shall be consistent with the project theme. Materials shall be selected and used with consideration to building scale, color scheme, mass, and the surrounding environment.

Roofing Materials

Permitted:
- Dimensional Asphalt Shingles
- Laminated Shingles
- Copper Finishes
- Standing Seam Metal Roofs

Not Permitted:
- Rolled Asphalt
- Asbestos Cement Shingles
- Brightly Colored Metal Roofing

Exterior Siding Materials

Permitted:
- Brick
- Stone
- Natural Wood Accents
- Stucco
- Hardie Plank/Panels
- Cementitious Fiber Siding/Cladding

Not Permitted:
- All Plastics (including vinyl)
- Plywood
- Exposed Concrete Block

Awnings

Permitted:
High Quality Heavy Canvas
Illuminated Awnings
Metal Awnings

Colors

Permitted:
- Muted
- Natural
- Earth Tones

Conditional Permitted:
- Bright
- Primary Colors (per review and approval of the Master Developer)

Building Requirements:
- Maximum Height (Stories) 3 stories

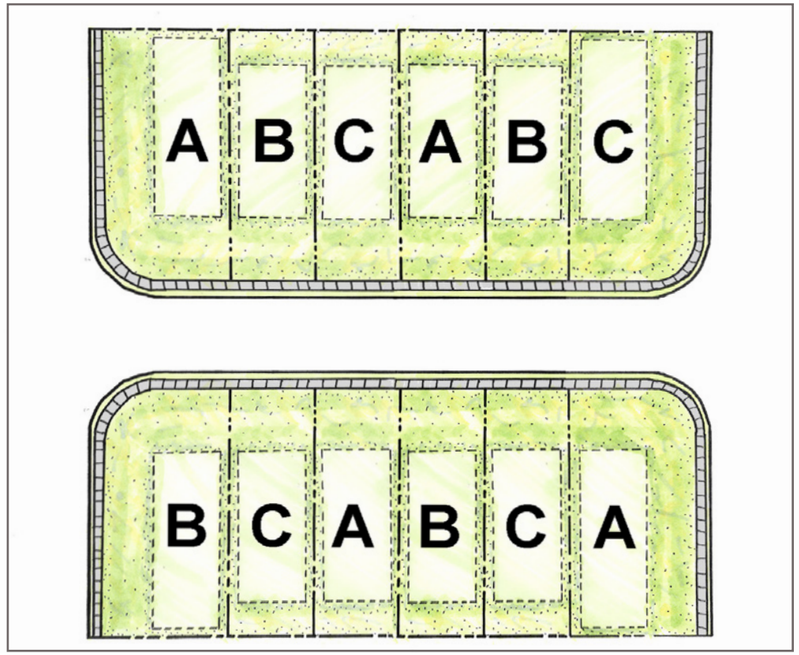








IMAGE OF HOMES REPRESENT AN EXAMPLE OF FACADE VARIETY ALONG SAME STREET. FINAL SELECTION OF MATERIALS AND STYLES TO BE APPROVED AT FMDP.



In order to avoid monotony of architectural design, no approval shall be issued for the construction of a dwelling if it is substantially like any proposed neighboring building for which on approval has already been issued or is being concurrently considered.

- A building shall be considered neighboring if it fronts on the same street as the building under construction or an intersecting street; no building elevation may be repeated across from, adjacent to, or diagonal to a similar building elevation. There shall be a minimum of a 2-lot gap between each similar building elevation (see diagram to above in which A, B, and C represent different elevation styles).
- Vary garage door locations to the front facade of the house when possible. Avoid continuous runs of garages in the same unbroken plain.
- Vary roof orientation, ridge lines, and eave heights between each lot when possible.
- Building facade colors and design elements should vary between each lot with a variation of massing and architectural details on each block.
- Landscaping should vary in composition from building to building when possible.

Final determination of the appropriate elevation pattern and variety is subject to review by the Architectural Design Review Team.

FACADE VARIETY













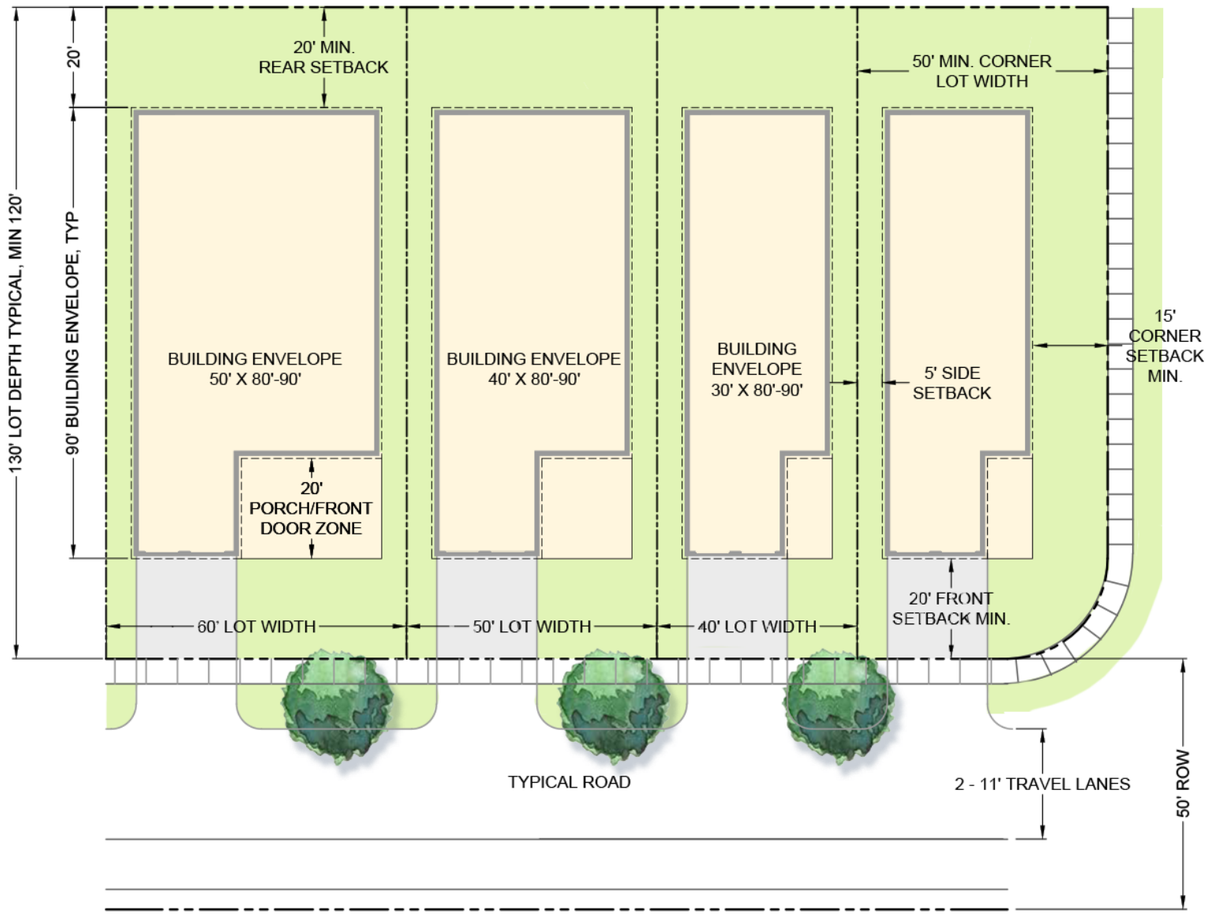






ACTIVE ADULT SINGLE FAMILY

COLOR RENDERING PRESENTS AN
ILLUSTRATIVE DEPICTION OF ARCHITECTURE
AND LANDSCAPE MATERIAL





LOT RANGE: 40'-60'
208 HOMES

BUILDING SETBACKS:

FRONT:	20'
REAR:	20'
SIDE:	5'
CORNER:	15'

ALL LOTS TO HAVE FRONT LOADED GARAGES
- MINIMUM 20' OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

SITE SETBACKS ARE DUE TO ALL INCLUSIVE MAINTENANCE APPLICATION GOVERNED BY THE PROPOSED HOA, TO BE DEED RESTRICTED.

ACTIVE ADULT SINGLE FAMILY





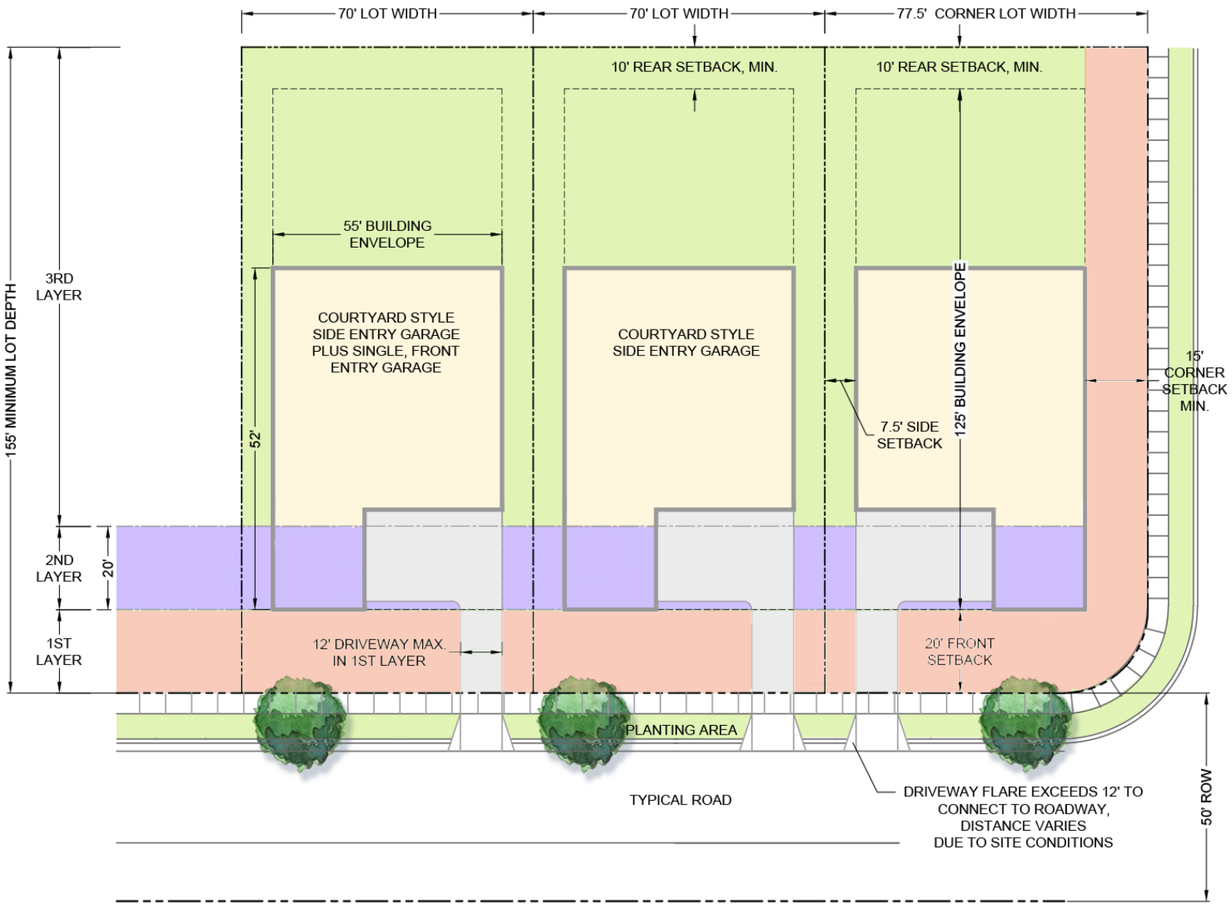







COLOR RENDERING PRESENTS AN
ILLUSTRATIVE DEPICTION OF ARCHITECTURE
AND LANDSCAPE MATERIAL

COURTYARD HOMES







LOT: 70' MINIMUM

104

BUILDING SETBACKS:

FRONT:	20'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

ALL LOTS TO HAVE SIDE LOADED GARAGES WITH THE OPTION OF A SINGLE, FRONT-LOADED GARAGE IN THE 3RD LAYER.

- MINIMUM 20' LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

COURTYARD HOMES











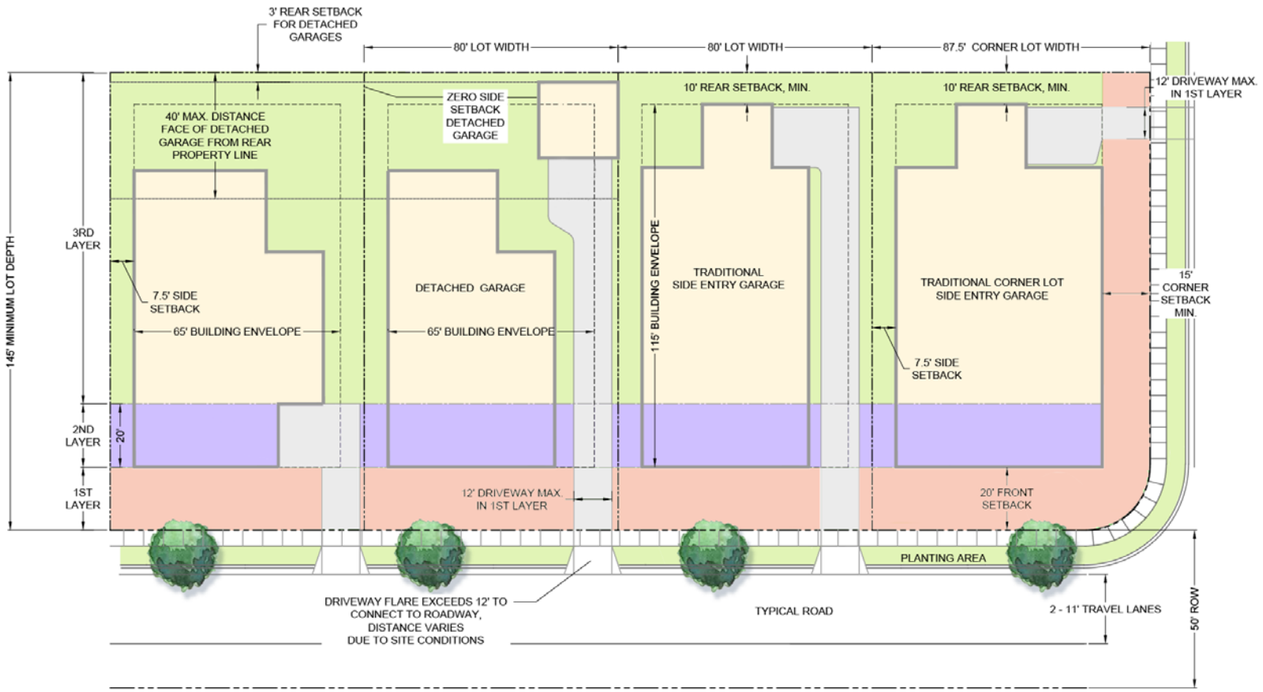







LARGE LOT HOMES

COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 80' MINIMUM
130 HOMES

BUILDING SETBACKS:

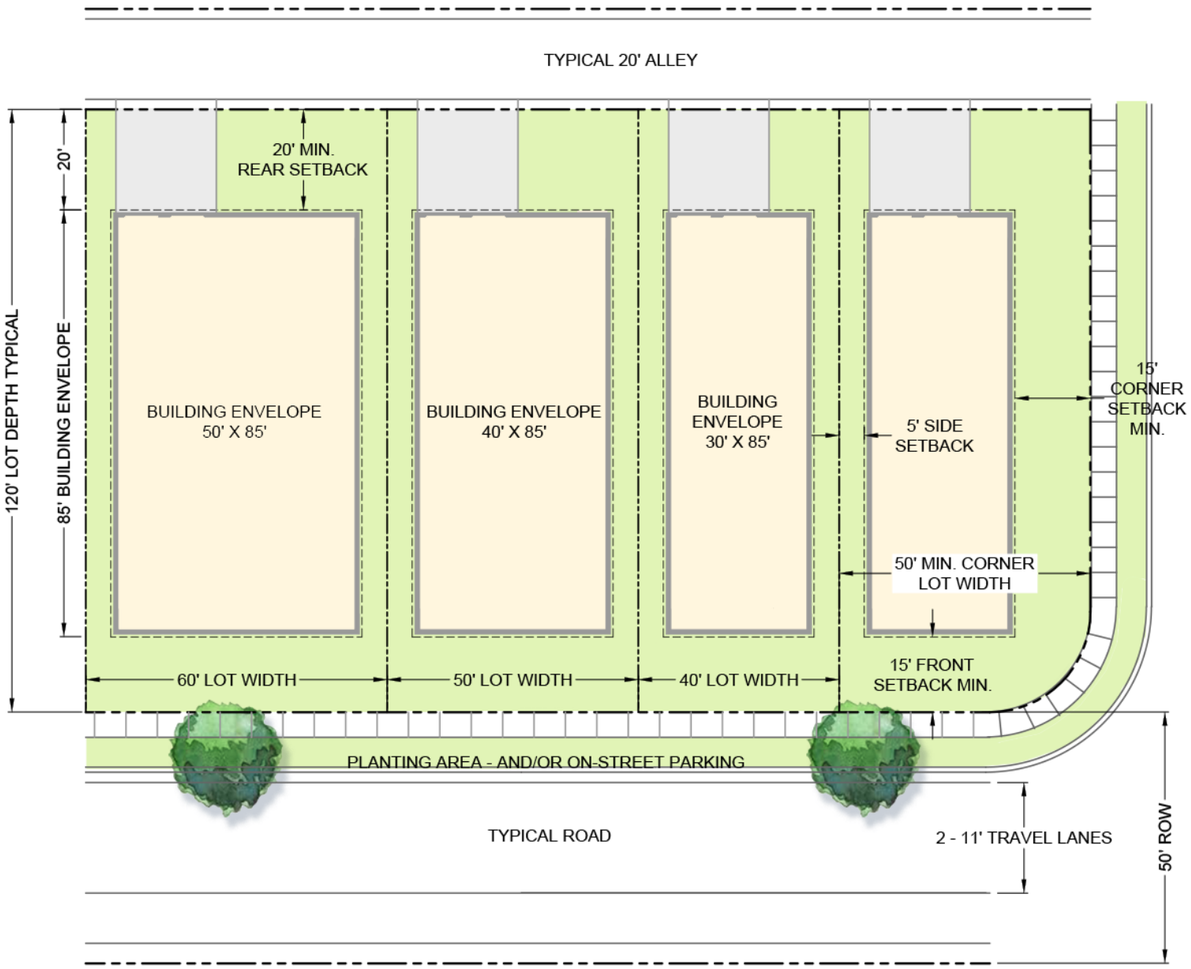
FRONT:	20'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

LOTS WILL HAVE A MIX OF GARAGE LOCATIONS, ATTACHED AND DETACHED
- MINIMUM 20' OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

LARGE LOT HOMES

SINGLE-FAMILY ALLEY LOADED

COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOT RANGE: 40’-60’
144 HOMES

BUILDING SETBACKS:
- FRONT: 15’
- REAR: 20’
- SIDE: 5’
- CORNER: 15’

ALL LOTS TO HAVE REAR LOADED GARAGES
- MINIMUM 20’ LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22’ DEPTH FOR ALL GARAGES

SINGLE-FAMILY ALLEY LOADED









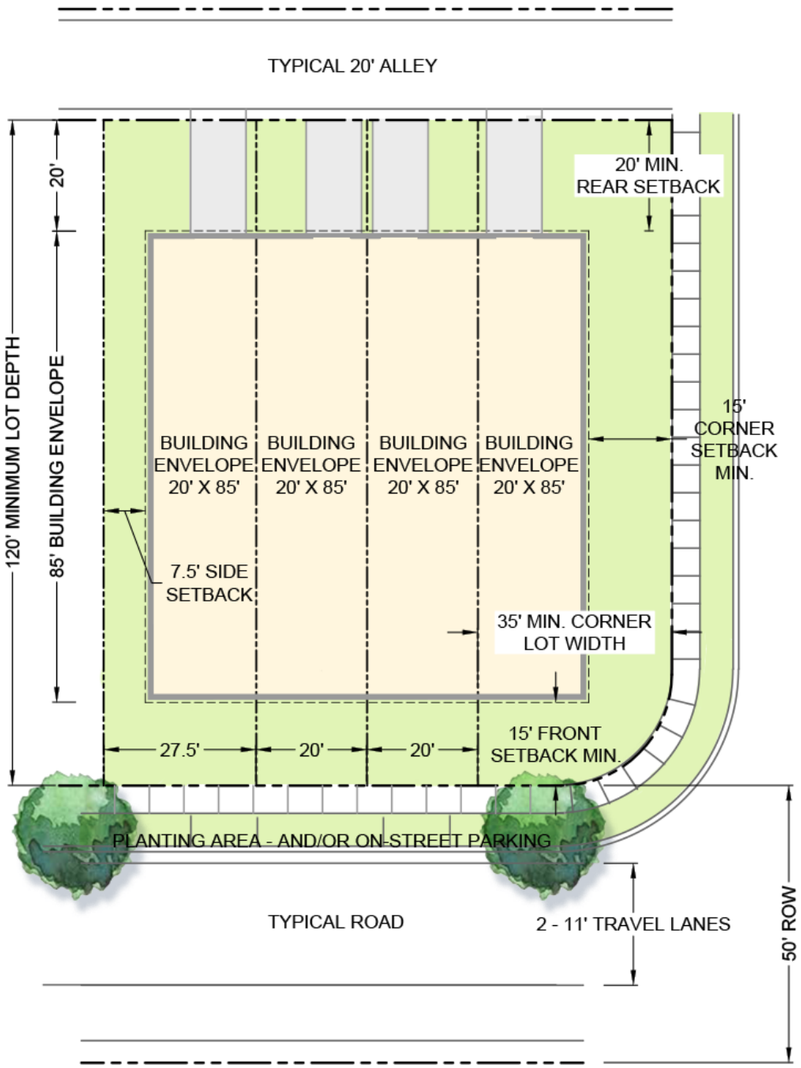


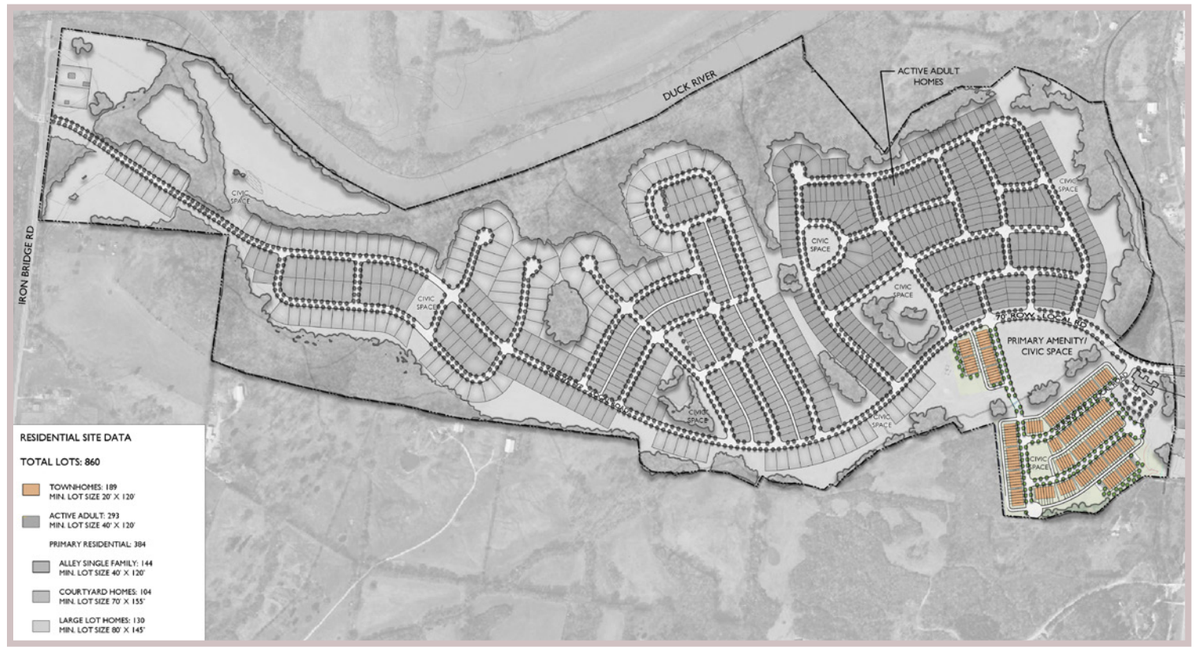






COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 20' MINIMUM
189 HOMES

BUILDING SETBACKS:

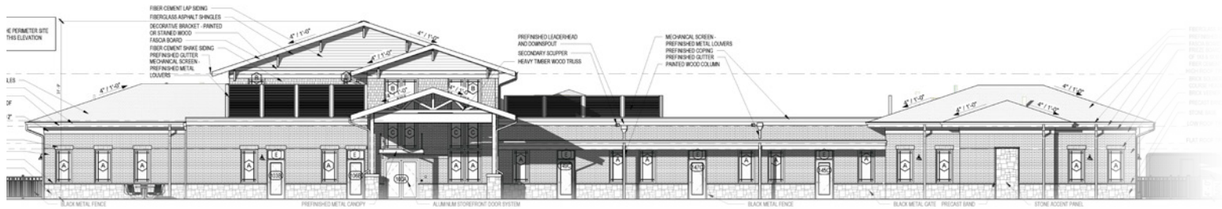
FRONT:	15'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

ALL LOTS TO HAVE REAR LOADED GARAGES
- MINIMUM 20' LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

TOWNHOME BUILDINGS WILL CONSIST OF 4, 6, 7, AND 8 UNIT BUILDINGS.

TOWNHOMES

DAYCARE ELEVATIONS



WEST ELEVATION



EAST ELEVATION

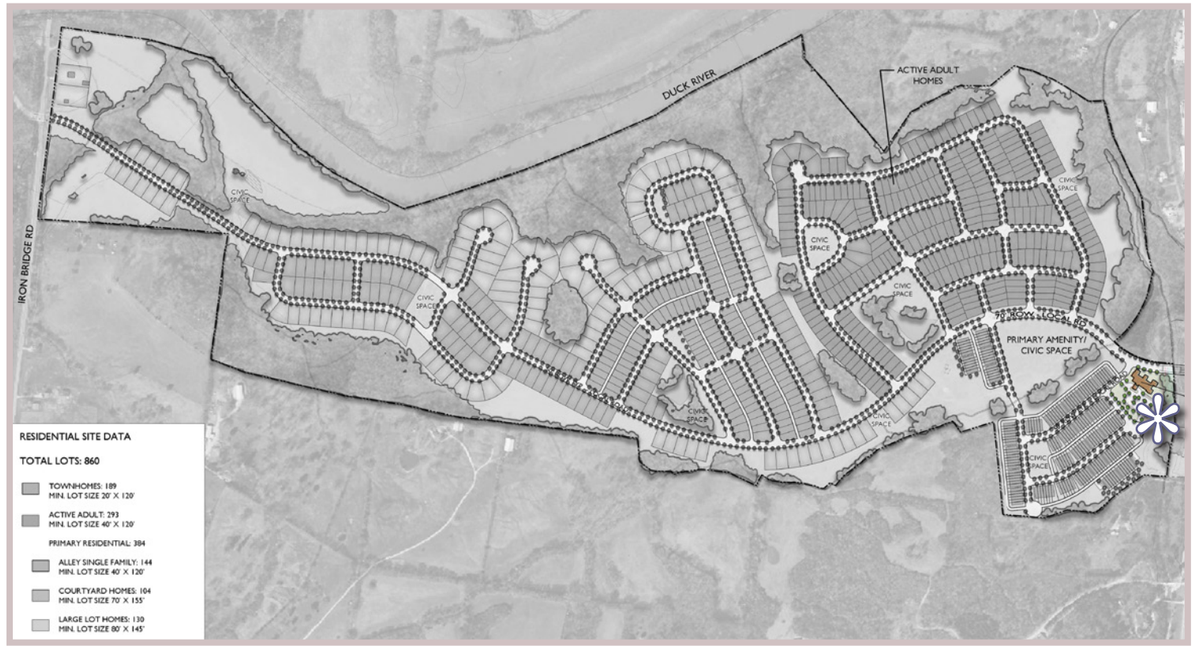


SOUTH ELEVATION



NORTH ELEVATION

ELEVATIONS ARE CONCEPTUAL.
FINAL APPROVALS TO BE DETERMINED WITH FMDP.



DAYCARE

CHILD DAYCARE TO BE APPROXIMATELY 12,000-14,000 SQFT., AND WILL SERVE AS A BENEFIT NOT ONLY TO THE LOCAL NEIGHBORHOOD BUT TO THE COMMUNITY AS WELL.

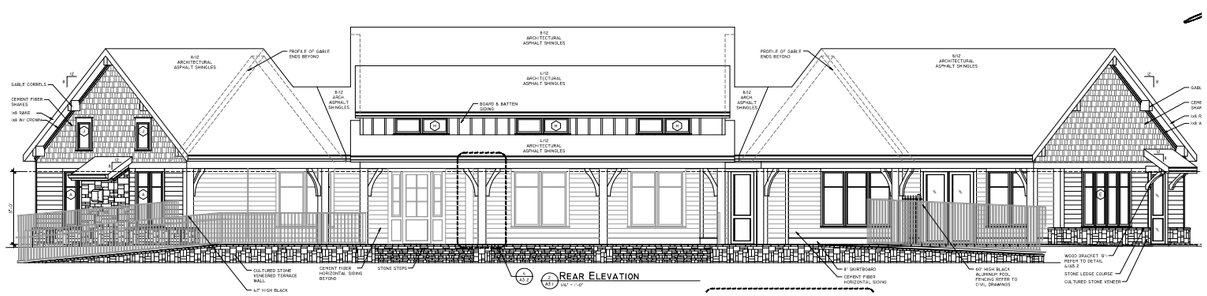
AMENITY PHOTOGRAPHS

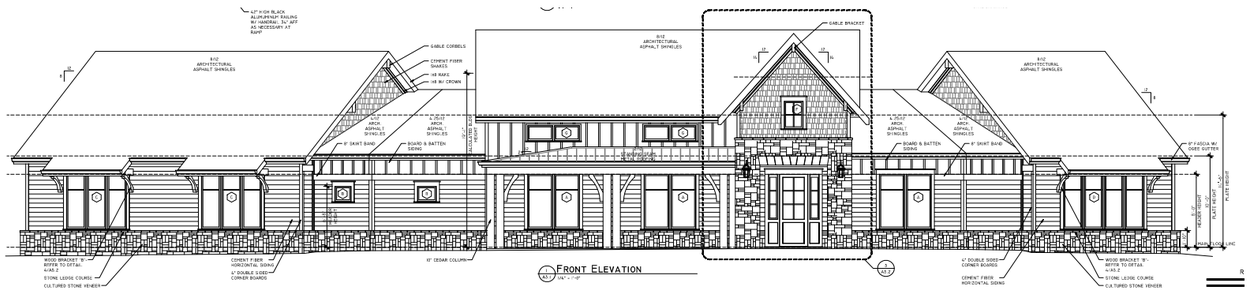




POOL AND CLUBHOUSE FROM SIMILAR KOLTER PROJECT

AMENITY ELEVATIONS





IMAGES AND ELEVATIONS ARE CONCEPTUAL.
FINAL APPROVALS TO BE DETERMINED WITH FMDP.









5 CIVIC SPACES ARE PLANNED FOR THIS SITE.

THREE OF THESE SITES WILL HAVE COVERED MAILBOX KIOSKS. COVERED SEATING WILL BE PROVIDED IN MOST PARKS.

IMAGES ARE TO PROVIDE EXAMPLES OF TYPES OF COVERED SEATING AND MAILBOX KIOSKS, BUT COULD BE SUBJECT TO REVISIONS AT FMDP APPROVALS.

CIVIC SPACE ARCHITECTURE

CPWS
Columbia Power & Water Systems

201 Pickens Lane
P.O. Box 379
Columbia, TN 38402

P 931.388.4833
F 931.388.5287
www.cpws.com

October 13, 2023

Kolter Land
Joshua Gibbs
1704 Tellico Dr,
Thompsons Station, TN 37179

Re: 420 Bear Creek Pike , Columbia Bluffs

Dear Sir:

Columbia Power System has an existing power line near your proposed development.

We are willing to serve this new development subject to all Columbia Power System policies and procedures in effect at actual time service is rendered provided an approved final plat and complete electrical load information is furnished as soon as possible prior to start of actual construction.

Yours truly,

COLUMBIA POWER & WATER SYSTEMS

Ryan Massey, P. E.
Manager of Power Operations

kw

This Instrument Was Prepared by:
J. Bryan Echols
Thompson Burton PLLC
6100 Tower Circle, Suite 200
Franklin, Tennessee 37067

DISTRICT DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR ***ACTIVE ADULT NEIGHBORHOOD*** AT COLUMBIA BLUFFS

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DISTRICT DECLARATION OF COVENANTS,
CONDITIONS, AND RESTRICTIONS FOR
THE ACTIVE ADULT NEIGHBORHOOD DISTRICT AT NEXUS

This DISTRICT DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS (this "Declaration") is made effective as of _____, 2023, by _____, _____ ("District Declarant").

W I T N E S S E T H:

WHEREAS, District Declarant is the owner of the real property located in the Columbia , Maury County, Tennessee, described in Exhibit A attached hereto and incorporated herein by reference (the "Property"). The Property, and additional real property now or hereafter subjected to this Declaration, is intended to be developed pursuant to a master plan as a multi-use community including residential properties including multi-family and single-family products encompassing all or portions of the Property (the "District"), to be known as **"CBAA"** _____, and is a part of the Development known as Columbia Bluffs, with various open spaces, common facilities, and Common Area for the benefit of said community; and

WHEREAS, District Declarant desires to provide a flexible and ordered procedure for the overall development of the Property and the District and to establish a method for the administration, maintenance, preservation, use and enjoyment of such portions of the District as are now or may hereafter be submitted to this Declaration; and

WHEREAS, District Declarant intends by this Declaration to impose upon the District mutually beneficial restrictions under a general plan of improvements for the benefit of all owners and/or occupants of property within the Property and all persons or entities having any interest in the Property, by the recording of this Declaration; and

WHEREAS, District Declarant intends that the Property will be developed in phases and that individual phases may be subjected to one or more declarations of restrictive covenants; and

WHEREAS, District Declarant desires that the Property be held, sold and conveyed subject to the provisions of this Declaration.

NOW, THEREFORE, District Declarant hereby declares that all of the Property and any additional property as may by Supplemental Declaration be added to the Property and subjected to this Declaration shall be held, sold, and conveyed subject to the following easements, restrictions, covenants and conditions. Such easements, restrictions, covenants and conditions are for the purpose of protecting the value and desirability of the Property, and shall run with the real property submitted to this Declaration. They shall be binding on all parties having any right, title, or interest in the Property, or any part thereof, their heirs, successors, successors in title, and assigns, and shall inure to the benefit of each owner thereof.

ARTICLE I
DEFINITIONS

Section 1. Age-Qualified Occupant: Any individual (i) 50 years of age or older who owns and occupies the improvements on a Lot and was the original purchaser of the Lot from the

District Declarant; or (ii) 55 years of age or older who occupies the improvements on a Lot. The terms "occupy," occupies,"or "occupancy" shall mean staying overnight in the improvements on a Lot for at least ninety (90) days in any consecutive twelve (12) month period.

Section 2. "Amenity Center" means any clubhouses or centers within the Development, in each case to be a portion of the Common Area, designed to provide, among other things, meeting space, recreational facilities, swimming pools, playgrounds or other amenities to serve the residents within the Development, and may also include offices for the Association manager, Declarant or other persons.

Section 3. "Assessments" shall mean assessments for Common Expenses provided for herein or by any amendment hereto, which shall be used for the purposes of promoting the recreation, health, safety, welfare, common benefit, and enjoyment of the Owners and occupants of all or any portion of the District and of maintaining the District, all as may be specifically authorized from time to time by the Board of Directors and as more specifically authorized below. The term "Assessments" shall include, without limitation, General Assessments, Special Assessments, Common Maintenance Parcel Assessments, and Special Use Assessments, and any other assessments now or hereafter established under this Declaration.

Section 4. Articles of Organization" shall mean the Articles of Organization of the District Association, to be recorded in the Office of the Judge of Probate for Maury County, Tennessee, as may be amended from time to time.

Section 5. "Board of Directors" or "Board" shall be the body responsible for managing the affairs of the District Association. Actions required of or permitted by the Board herein may be taken or fulfilled by a committee or other designee as may be established or appointed by the Board in accordance with the Bylaws of the District Association.

Section 6. "Common Area" shall mean those portions of the Property and any improvements thereto, and components thereof and easements appurtenant thereto, now or hereafter owned by the District Association or designated on any development plan or plat for future use for the common use and enjoyment of the Owners, including, but not limited to, any common open space as set forth on a final development plan, the Common Area shown on any recorded plat of the Property and any and all pedestrian bridges, roadways, alley ways, parking areas, lakes, waterways, landscaping and irrigation systems, fences, structures, sidewalks, community signage, walls, monuments, illumination of Common Area, common utilities, storm water system, wells, fountains, amenity center and other improvements located on such Common Area, but excluding any Master Common Area and such areas that are intended to be or now or hereafter designated as a common area serving only a particular portion of the District or to be conveyed to a Sub-District Association. District Declarant shall hereafter convey the Common Area or portions thereof to the District Association, or Sub-District Association, as applicable, and the District Association or Sub-District Association shall accept such conveyance.

Section 7. "Common Elements" shall include all Common Maintenance Areas and all facilities, utilities and other improvements found or located in Common Maintenance Areas, but excluding any Common Maintenance Areas that are within the authority or responsibility of the Master Association.

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Section 8. "Common Expenses" shall mean and include the actual and estimated expenses of operating the District Association and maintaining the Common Elements, including any reasonable reserves therefor, all as may be found to be necessary and appropriate by the Board pursuant to this Declaration and the Articles of Organization of the District Association, and including without limitation any District Assessment imposed by the Master Association.

Section 9. "Common Maintenance Area" shall mean the Common Area and any portion of the Property for which the District Association has assumed or has been designated as the responsible party for maintenance obligations or otherwise designated by this Declaration or any Supplemental Declaration or a Sub-District Declaration as a Common Maintenance Parcel.

Section 10. "Common Maintenance Parcel Assessments" are Assessments to which Common Maintenance Parcels are subjected, in addition to any General Assessments.

Section 11. "Common Maintenance Parcel" shall mean any Lot designated by this Declaration or any Supplemental Declaration as a Common Maintenance Parcel, but excluding any Common Maintenance Parcels that are within the authority or responsibility of the Master Association or within the authority or responsibility of a Sub-District Association.

Section 12. "Community-Wide Standard" shall mean the standard of conduct, maintenance, or other activity generally prevailing in the Development as established in the reasonable discretion of the Master Declarant, District Declarant or the applicable Board of Directors.

Section 13. "District Association" shall mean _____ District Owners Association, a Tennessee nonprofit corporation, its successors and assigns.

Section 14. "District Declarant" means _____, a _____ limited liability company, its successors and assigns.

Section 15. "Declarant Control Period" means the period ending on the earlier to occur of: (i) the date that the District Declarant voluntarily relinquishes control of the Association; and (ii) when homes have been completed on eighty (80%) of the lots within the District and such lots have been conveyed to third party residential owners.

Section 16. "Development" means the mixed use community to be developed on real property that includes, among other areas, the District, to be known as Town Columbia , and shall be deemed to include the real property described in the Master Declaration, as may be modified, amended, expanded or contracted from time to time.

Section 17. "District" shall have the meaning given in the premises of this Declaration.

Section 18. "District Assessment" means the Assessment to be paid by the District to the Master Association as set forth in the Master Declaration or Supplemental Declaration.

Section 19. "District Representative" means the Person selected by the Board of Directors to be the representative of the District in meetings or otherwise with the Master Association.

Section 20. "District Design Guidelines" shall mean the aesthetic and functional plan for the District, to be implemented through the regulation of land use, landscaping, architecture and such other matters as may be included in the District Design Guidelines. The District Design Guidelines is originally adopted by the District Declarant and may be amended by the District Declarant or District Design Review Committee, with the consent of District Declarant and Master Declarant during the applicable Declarant Control Period, from time to time. The District Design Guidelines does not need to be recorded to be effective but shall be available from the District Design Review Committee.

Section 21. "Final Plat" means, collectively, all plats of a portion of the Property from time to time recorded in the real estate records of the Office of the Judge of Probate for Maury County, Tennessee, as such may be amended from time to time as the Property is developed. The term "Final Plat" may include a plat established by a condominium regime.

Section 22. "Improvements" shall mean buildings, outbuildings, underground installations, grading, slope and drainage alterations, roads, driveways, parking areas, fences, screening walls and barriers, retaining walls, stairs, decks, windbreaks, landscaping, plantings, planted trees and shrubs, poles, signs, lighting, loading areas, and all other man-made changes to the natural configuration and vegetation of the Property, whether above or below the land surface.

Section 23. "Lot" or "Lots" shall mean a separate parcel of the Property now or hereafter set forth as a Lot on any Final Plat, including without limitation open space, conservation areas, or Common Area within a District, or separate parcels conveyed by other property description if no Final Plat has been recorded, and shall be deemed to refer to any and all Improvements located thereon or comprising such Lot.

Section 24. "Master Association" shall mean and refer to the Columbia Bluffs Master Association, Inc., a Tennessee nonprofit corporation, its successors and assigns**, IF REQUIRED**.

Section 25. "Master Declarant" shall mean the Declarant of the Master Declaration, its successors and assigns.

Section 26. "Master Declaration shall mean that certain Master Declaration of Covenants, Conditions, and restrictions for Columbia Bluffs, of record at Book _____, page _ _____, Maury County Register's Office, as may be supplemented, amended, or revised from time to time.

Section 27. "Master Design Guidelines" shall mean the aesthetic and functional plan for the Development, to be implemented through the regulation of land use, landscaping, architecture and such other matters as may be included in the Master Design Guidelines. The Master Design Guidelines is originally adopted by the Master Declarant and may be amended from time to time by the Master Declarant or Master Design Review Committee, with the consent of Master Declarant during the Declarant Control Period applicable to the Master Declaration. The Master Design Guidelines does not need to be recorded to be effective but shall be available from the Master Design Review Committee.

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Section 28. "Mortgage" shall include a deed of trust or mortgage encumbering any Unit.

Section 29. "Mortgagee" shall include a beneficiary under or holder of a note secured by a Mortgage who has provided actual, written notice to the Master Association of such interest.

Section 30. "Mortgagor" shall include the trustor or grantor of a Mortgage.

Section 31. "Operating Budget" shall have the meaning given in Article IX, Section 2 of this Declaration.

Section 32. "Owner" shall mean and refer to one or more Persons or entities, including District Declarant or Master Declarant, who holds or hold the record title to any Lot, but excluding in all cases any party holding an interest merely as security for the performance of an obligation.

Section 33. "Person" shall mean a natural person, a corporation, a partnership, a limited liability company, a trust, a trustee, or any other legal entity.

Section 34. "Property" shall mean and refer to the real property described in Exhibit A attached hereto, and any additional real property submitted to this Declaration from time to time pursuant to a Supplemental Declaration and added to the District.

Section 35. "Resident" or "Qualified Resident" shall mean any of the following persons occupying a Lot: (i) any Age-Qualified Occupant; (ii) any person 19 years of age or older occupying a Lot with an Age-Qualified Occupant; and (iii) any person 19 years of age or older who occupied a Lot with an Age-Qualified Occupant and who continues, without interruption, to occupy the same Lot after termination of the Age-Qualified Occupant's occupancy thereof.

Section 36. "Special Assessment" shall have the meaning given in Article IX, Section 5 of this Declaration.

Section 37. "Special Use Assessment" shall mean the Assessment applied to a Special Use Parcel by Supplemental Declaration, which may be in lieu of all other Assessments; subject to the provisions of Article IX.

Section 38. "Special Use Parcel" shall mean a Lot of unconventional size, shape, location or use that calls for special design and assessment considerations as designated by Master Declarant or District Declarant. Typically, a Special Use Parcel will be used for commercial purposes, civic purposes, an age-restricted neighborhood, multi-family residential, or community or recreational facilities.

Section 39. "Streetscape, Pedestrian, Utility and Street Maintenance Easement" shall include all streetscape, pedestrian, utility and street easements located adjacent to street rights-of-way and medians in public rights of way.

Section 40. "Sub-District Association" shall mean an owners association established to maintain or regulate only a portion of the District pursuant to a Sub-District Declaration, such

as a condominium association, if any, with the prior consent of Master Declarant and District Declarant.

Section 41. "Sub-District" shall mean a portion of the District that has been subjected to particular restrictions, covenants or regulations by Supplemental Declaration or a Sub-District Declaration, , if any, and may be maintained or regulated by a Sub-District Association.

Section 42. "Sub-District Declaration" shall mean a declaration of restrictive covenants and other matters applicable only to a Sub-District.

Section 43. "Supplemental Declaration" shall mean an amendment to this Declaration, including the addition of additional property, Lots or Master Common Area subjected to this Declaration. Such Supplemental Declaration may, but is not required to, impose, expressly or by reference, additional restrictions and obligations to the provisions of this Declaration, or to exempt such property from certain provisions and restrictions of this Declaration. The term "Declaration" as used herein shall include this Declaration, together with any and all Supplemental Declaration, together with any amendments, restatements or other additions or removals thereto.

Section 44. "Telecommunication Services" shall mean residential and commercial services involving the provision of voice, internet, entertainment, television or other related services.

Section 45. Defined Terms. Capitalized terms used herein and not otherwise defined shall have the meaning given in the Master Declaration.

ARTICLE II
DISTRICT AND SUB-DISTRICT ASSOCIATIONS

Section 1. Establishment. This Declaration is a District Declaration as referred to in the Master Declaration, and is established by District Declarant with the consent of Master Declarant.

Section 2. District Sub-District Associations. District Declarant or other Persons may from time to time, with the consent of Master Declarant and District Declarant, establish Sub-Districts within the District to be governed by a Sub-District Association by filing a Sub-District Declaration, Supplemental Declaration, or other means of record. Each area within a Sub-District may consist of one or more Lots within the District, one or more parcels described by property description (each of which will be deemed a Lot), one or more uses, or otherwise as determined by the applicable declarant, District Declarant, or Master Declarant, in their sole discretion, but subject in each case to the consent of Master Declarant and District Declarant. Upon establishment of a Sub-District, and at any time and from time to time, the applicable declarant may but shall not be required to impose additional restrictive covenants that are applicable to such Sub-District or to exempt all or a portion of the Sub-District from one or more provisions of this Declaration, with the consent of the Master Declarant and District Declarant. The applicable declarant may establish, or cause the Sub-District to establish, one or more Sub-District Associations for the management and preservation of such Sub-District, each with the power to establish and collect Assessments for, among other things, the payments of

Assessments to the Master Association or District Association s as may be in the Master Declaration, this Declaration, or in this Declaration.

Section 3. Sub-District Declaration. A Sub-District shall be entitled to establish one or more Sub-District Declarations applicable to a Sub-District and a Sub-District Association for the administration thereof, but such Sub-District Declarations and all Sub-District Associations shall in each case be subject to the prior review and approval of District Declarant and Master Declarant in their respective sole discretion, and shall be deemed subordinate to the Master Declaration and this Declaration.

Section 4. Sub-District Representatives. Unless otherwise established by the declarant in a Sub-District Declaration, it shall be the responsibility of Owners within a Sub-District to establish equitable, fair and representative procedures for the selection of any representative to the District Association as may be established, in each case to be approved by District Declarant. If applicable, no voting or representative rights shall be available to a Sub-District until such time as a Sub-District Representative has been duly selected. Each Sub-District will be governed, controlled and subject to the powers and authority vested in the Master Association and the District Association, whether or not the District has elected a District Representative.

ARTICLE III
PROPERTY RIGHTS AND EASEMENTS

Section 1. Common Area. Every Owner shall have a right and easement of enjoyment in and to the Common Area that is appurtenant to the title to such Owner's Lot, subject to any restrictions or limitations contained in the Master Declaration, this Declaration or in any Deed or amendment thereto conveying the Common Area to the District Association or subjecting the Common Area to this Declaration. Any Owner may delegate his or her right of enjoyment to their family, tenants, customers, and invitees, as applicable, subject to reasonable regulation by the Board and in accordance with procedures the Board may adopt from time to time.

Section 2. Exceptions to Rights. The Owner's right granted in Section 1 above shall be subject to the following:

(a) The right of the Master Association or District Association to dedicate or transfer all or any part of the Common Area to any public body, agency, authority, or utility for such purposes as are consistent with the purposes of the Master Association set forth in the Master Declaration or the District Association set forth in this Declaration.

(b) The limitation of Owner rights only to those areas of the Common Area for which such Owner shall pay a portion of the Common Expenses related thereto.

(c) Each Owner's responsibility to pay for Common Expenses, fees, Fines and other charges hereunder assessed by the Board or the District Association against an Owner's Lot.

(d) The right of Master Declarant, District Declarant or other declarant under a Sub-District Declaration to limit, restrict, or regulate the use of the Common Area in their sole discretion.

Section 3. Owner Easements. Subject to the limitations of Section 2 above, every Owner, its successors and assigns, shall have the following perpetual easements with respect to the Property; provided, that for purposes of this Section 3, Common Area shall be deemed to include Common Area that is now or hereafter created within a District, without regard to whether the District Association has ownership of such areas or responsibilities for maintenance or otherwise with respect such areas:

(a) A non-exclusive easement of ingress and egress to its Lot over, across and through the Common Area and Streetscape, Pedestrian and Utility Maintenance Easements.

(b) A perpetual easement in common with the Owners of all other Lots to use all pipes, wires, cables, public utility lines and other Common Elements serving its Lot.

(c) A nonexclusive, perpetual and reciprocal access easement for ingress and egress in common with the Owners of all other Lots for access over any drive aisles or alleys located, constructed and available on or within any Lot, but expressly excluding private driveways constructed solely for internal use only within a Lot, and any areas excluded from use by a Supplemental Declaration, this Declaration, or a Sub-District Declaration.

(d) A perpetual and non-exclusive easement in, over and through all Common Area and to use the entranceways, pedestrian systems and other common improvements within the Property subject to the right of the Board to:

(i) promulgate rules and regulations for the use and enjoyment thereof; and,

(ii) suspend the enjoyment and voting rights of any Owner for any period during which any Assessment for Common Expenses or Fine or other charge or fee hereunder remains unpaid, or for any period during which any infraction of its published rules and regulations continues, it being understood that any suspension for either non-payment of any assessment or a breach of the rules and regulations of the District Association shall not constitute a waiver or discharge of the Owner's obligation to pay the assessment..

Section 4. District Declarant and District Association Easements. The District Declarant and the District Association, their successors and assigns, and their contractors and agents shall have the following perpetual easements with respect to the Property:

(a) A perpetual and non-exclusive easement for the maintenance of any Common Elements and Streetscape, Pedestrian, and Utility Maintenance Easements, which may presently, or hereinafter encroach upon a Lot.

(b) A perpetual and non-exclusive right of access to each Lot: (1) to inspect same for the purpose of verifying conformance with this Declaration and any rules and

regulations of the District Association, (2) to remedy any violations set forth in this Declaration or in any rules and regulations of the District Association, and (3) to perform any operations required in connection with the maintenance, repairs or replacements of or to the Common Area, or any equipment, facilities or fixtures affecting or serving other lot(s) or the Common Elements; provided that requests for entry are made in advance and that any such entry is at a time reasonably convenient to the Owner. In the case of an emergency, such right of entry shall be immediate, whether Owner is present at the time or not.

(c) A perpetual and non-exclusive easement in, over, upon, across and through the Common Area for surface water runoff and drainage caused by natural forces and elements, grading, and/or the improvements located upon the Property. No individual Owner shall directly or indirectly interfere with or alter the drainage and runoff patterns and systems within the Property without written approval of the Master Association.

(d) A perpetual and non-exclusive easement in, upon, over, across and through the Common Area for the purpose of installation, maintenance, repair, service and replacement of all sewer, water, power and telephone pipes, lines, mains, conduits, waters, poles, transformers, meters, and any and all other equipment or machinery necessary or incidental to the proper functioning of any utility company or other entity that requires same for the purpose of furnishing one or more of the foregoing services as determined and authorized by the Master Association.

(e) A perpetual and non-exclusive easement of unobstructed ingress and egress in, upon, over, across and through the Common Area to the District Association, the Master Association, and their respective officers, agents and employees and all police, fire, and ambulance personnel in the proper performance of their respective duties (including but not limited to emergency or other necessary repairs to a lot upon which the Owner has failed to perform) and for repair and maintenance of the Common Elements. Except in the event of emergencies, the rights accompanying the easements provided for in this subsection shall be exercised only during reasonable daylight hours and then, whenever practical, only after advance notice to the Owner(s) directly affected thereby.

(f) The District Declarant reserves the right and easement, which shall be a covenant running with the land, for and to the benefit of District Declarant and District Association for the installation and use of entrance Improvements to be located on the entrances to the District. The estimated and actual cost of operating and maintaining any improvement thereon will be the responsibility of the District Association. Excluding the Master Declarant or District Declarant, and any of their respective affiliates, the publication or display of any signage or other matter by any Person, whether or not such Person is a Member of the District Association, upon any Improvement on the entry feature easement will be subject to contract with the District Association for the reasonable compensation for services and operating expenses in connection therewith.

Section 5. Easement Related to Infrastructure and Other Improvements. Notwithstanding the foregoing or anything else contained herein to the contrary, District

Declarant and/or the District Association shall have and hereby retain the right, but not the obligation, to create, install, construct, modify, repair, replace and maintain certain forms of infrastructure for the District that may consist of curbs, streets, service drives, sidewalks, and other hardscape, landscaping, street trees, street lights, irrigation systems, brick pads, benches, bridges, street furniture, walking paths, parks, trash receptacles, drainage facilities, signage, utilities, and any apparatuses related thereto, as well as other improvements not necessarily enumerated above. Said improvements may be installed along the roads or within any Lot or in the Common Area of the District if deemed necessary or desirable by the District Declarant and/or the District Association, in their sole and absolute discretion, for the overall functionality or aesthetics of the District. Continued maintenance, repair and replacement of any of the aforementioned infrastructure or improvements, if and once installed, shall be the responsibility of the Lot Owner if located within said Owner's Lot, or the responsibility of the applicable District Association if located within the Common Area of the District or the responsibility of the Master Association if located within the Master Common Area. Any costs and expense associated with this right may be reallocated and assessed by the District Association as a Common Expense. Notwithstanding the foregoing, when exercising said right, neither District Declarant nor the District Association shall do anything which may reduce the number of parking spaces within the Lot. In addition, neither District Declarant nor the District Association shall have the right to modify an existing building located on a Lot without the consent of the Lot Owner. An easement is hereby granted to the District Declarant, the District Association and to any construction or management company selected by the District Declarant or the District Association to enter in or cross over the Common Area or to enter or cross over any Lot to create, install, construct, modify, repair, replace and maintain any of the aforementioned forms of infrastructure or improvements located within any portion of the District.

Section 6. Easements for Utilities and Related Purposes. The District Association is authorized and empowered to grant (and shall from time to time grant) such licenses, easements and/or rights of way for sewer lines, water lines, electrical cables, telephone cables, television and other communication cables, internal and external wiring and antennae, gas lines, drainage, slopes, storm drains, regulatory signage, street lights, underground conduits and/or such other purposes related to the provision of public utilities and other common services to the District as may be considered necessary, appropriate or desirable by the Board for the orderly maintenance, preservation and enjoyment of the Common Area or for the preservation of the health, safety, convenience and/or welfare of the Owners of the lots and District Declarant. A ten (10) foot nonexclusive underground utility easement for the District Association is reserved along all the frontage (but behind right of way), both sides, and rear of all Lots, and on both sides of the sidelines of all comer Lots. Additional easements are reserved on the recorded plat(s), as amended from time to time. Within these easements, no construction of any kind shall be placed or permitted to remain which will in any way damage or interfere with the installation or maintenance of utilities.

Section 7. Streetscape, Pedestrian, Utility, and Street Maintenance Easements. Streetscape, Pedestrian, Utility, and Street Maintenance Easements shall include all streetscape, pedestrian, utility, and street maintenance easements located adjacent to street rights-of-way, and required pavers and medians in public rights-of-way.

Section 8. Easements of Encroachment. There shall be reciprocal appurtenant easements of encroachment as between each Lot and such portion or portions of the

Improvements adjacent thereto or as between adjacent Lots due to unintentional placement or settling or shifting of Improvements constructed, reconstructed or altered thereon.

Section 9. General Easement. The District Declarant, so long as it shall retain record title to any Lot or other tract within the District or the Common Area, and the District Association, reserve the right and easement to the use of the Common Area and any Lot (regardless of ownership) or any portion thereof, as may be needed for repair, maintenance or construction on such Lot or any other Lot or the Common Area.

Section 10. Revision of Common Area. Notwithstanding any other provision of this Declaration, District Declarant shall have the right by recording a Final Plat or otherwise to revise any Common Area, in whole or in part, including without limitation the conversion to other types or uses of property, the increase or decrease in size, or the granting of easements or construction of improvements in such Common Area.

ARTICLE IV
MEMBERSHIP AND VOTING RIGHTS

Section 1. Membership in the District Association. Every Person who is the record owner of a joint or undivided fee interest in any Lot shall be deemed to be a member of the Association (each such person or entity, a "Member"). Membership shall be appurtenant to and may not be separated from such fee interest ownership, and any transfer of a Lot shall operate automatically to transfer to the new record owner thereof the membership in the Association appurtenant thereto. The foregoing is not intended to include persons who hold an interest merely as security for the performance of an obligation, and the giving of a security interest shall not terminate that Member's membership.

Section 2. Assignment by Declarant. Notwithstanding the foregoing, District Declarant may at any time assign, pledge, hypothecate or alienate its membership and/or District Declarant's rights as District Declarant herein, but any transfer by District Declarant of title to a Lot shall automatically transfer the membership in the Association appurtenant thereto, free and clear from any such assignment, pledge, hypothecation or alienation.

Section 3. Voting Rights. Voting and other rights of the Members shall be as set forth in the By-Laws of the Association.

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ARTICLE V
MAINTENANCE

Section 1. District Association's Responsibility. The District Association shall maintain and keep in good repair the Common Maintenance Area. Subject to the provisions of any Supplemental Declaration or Sub-District Declaration, such maintenance may include, without limitation, maintaining, repairing, and replacing, subject to any insurance then in effect, all trees, landscaping and other flora, structures, irrigation system, storm water control and any other Improvements situated upon the Common Area or the Common Maintenance Area, and the maintenance of non-public streets, parking areas, or driveways, street or entrance lighting, signage, including without limitation directional signage.

Section 2. Common Maintenance Parcels. The District Association shall maintain those portions of Common Maintenance Parcels as this Declaration or any Supplemental Declaration establishes as a District Association responsibility, and may charge to the Owners of such Common Maintenance Parcel a Common Maintenance Parcel Assessment, as appropriate.

(a) Unless otherwise established by Supplemental Declaration, the District Association shall provide for the maintenance, care, repair, and replacement of the following portions of the Common Maintenance Parcels, to be funded by Common Maintenance Parcel Assessments: the exterior landscaping (except such landscaping installed by, or on behalf of, the Lot Owner and such landscaping enclosed by a fence, if any), walkways, and porches located upon or about each Common Maintenance Parcel. The District Association also shall maintain the exterior of each Common Maintenance Parcel as follows: painting, maintenance, and repair of exterior building surfaces as the Board shall deem necessary and proper, including roofs, gutters, downspouts, exterior building surfaces, trees, shrubs, grass, walks, replacement of trim, caulking and other repairs to roof covers (to include the repair and replacement of all components of the roof of each Common Maintenance Parcel), and other miscellaneous repairs. Such exterior maintenance shall not include glass surfaces (weather windows or sliding glass doors), HVAC equipment, storm doors, front or rear entry doors, garage doors, fences, screens, or patio covers. The balance of the improvements located on the respective Common Maintenance Parcels shall be maintained by the Owner of the particular Lot involved. For the sole purpose of performing the exterior maintenance upon each Lot required by this Article V, the duly authorized employees or agents of the District Association shall have the right, after reasonable notice to the Owner, to enter upon any Lot and into any Lot at reasonable hours of any day.

(b) Notwithstanding any foregoing provision to the contrary, the duly authorized agents or employees of the District Association shall have the right to enter in or upon any Lot or into any structure or located on a Lot, without notice to the Owner thereof, when, in the judgment of the District Association, acting through its Board of Directors, such entrance is necessary to prevent damage to such Lot or surrounding Lots or Common Area by fire, criminal act, natural disaster, or other similar emergency.

(c) Notwithstanding the obligations of the District Association with respect to maintenance of certain portions of the exterior of certain Lots, the District Association shall have no obligation to repair interior or structural portions of any Lot or personal

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property that is lost or damaged as a result of construction defects, damage or maintenance issues of exterior portions of any Lot, including without limitation damage resulting from water leaks, foundational issues, or settling or structural matters. Each Owner shall bear full responsibility for obtaining and maintaining such insurance as may be desired for protection against such losses.

(d) Notwithstanding the foregoing, if the need for exterior maintenance and repair of Common Maintenance Parcels by the District Association as required by this section is caused by the willful or grossly negligent conduct or act an Owner, his/her family, guest, invitees, or other Persons using or occupying his/her Lot with his/her express or implied permission, the cost of such repair or maintenance may be assessed against such Owner as a Special Assessment of this Declaration upon a finding by the Board, which shall be due and payable thirty (30) days from the date of notice thereof, such Assessment to be collected and enforced as provided in this Declaration. Such Special Assessment shall not require the approval of any of the Members; provided, however, that any Owner against which any such Assessment is levied shall be entitled to notice, a hearing at a time and place set by the Board in its sole discretion, and an opportunity to do the corrective work required (provided that the work is performed by a competent contractor mutually agreeable to both parties and in a manner and quality agreed to by the Board), prior to a Special Assessment being levied against such Owner in accordance with the provisions of this subsection.

Section 3. Owner's Responsibility. Except as provided in the foregoing Section 1. Section 2. or otherwise set forth in a District Declaration, the Owner of each Lot shall have the sole responsibility for maintenance of all exterior and interior portions of the Lot, all Improvements located thereon, the land, flora, irrigation, and landscaping within the boundaries of the Lot; and other improvements not maintained by the District Association. Each Owner shall maintain its Lot in a manner consistent with the Community Wide Standard, the applicable covenants set forth in this Declaration, and such rules and regulations as may be established by the Board from time to time.

ARTICLE VI
INSURANCE AND CASUALTY LOSSES

Section 1. Insurance. The Board of Directors for the District Association, or its duly authorized agent, shall have the authority to and shall obtain insurance for all insurable improvements on the Common Area against loss or damage by fire or other hazards, including extended coverage, vandalism, and malicious mischief. This insurance shall be in an amount sufficient to cover the full replacement costs of any repair or reconstruction in the event of damage or destruction from any such hazard.

(a) The Board shall also obtain a public liability policy covering the Common Area and District Association for all damage or injury caused by the negligence of the District Association or any of its employees or agents. The public liability policy shall have at least a One Million Dollar ($1,000,000.00) single person limit as respects bodily injury and property damage, a One Million Dollar ($1,000,000.00) limit per occurrence, and a Five Hundred Thousand Dollar ($500,000.00) minimum property damage limit. The policy or policies may contain a reasonable deductible, and the

amount thereof shall be added to the face amount of the policy in determining whether the insurance at least equals the full replacement cost.

(b) In addition to the other insurance required by this Section, the Board shall obtain, as a Common Expense, worker's compensation insurance, if and to the extent necessary, and a fidelity bond or bonds on directors, officers, employees, and other persons handling or responsible for the District Association's funds. The amount of fidelity coverage shall be determined in the directors' best business judgment, but may not be less than three months' Assessments, plus reserves on hand. Bonds shall contain a waiver of all defenses based upon the exclusion of persons serving without compensation and may not be canceled or substantially modified without at least thirty (30) days' prior written notice to the District Association. The Board shall also obtain, as a Common Expense, a reasonably available amount of Directors and Officers Errors and Omissions insurance.

(c) Premiums for all insurance required by this Article VI, shall be Common Expenses of the District Association and shall be included in the General Assessment.

Section 2. Insurance; Common Maintenance Parcels.

(a) The District Association shall, as a Common Expense applicable only to Lots that are Common Maintenance Parcels, obtain and continue in effect adequate blanket all-risk casualty insurance, if reasonably available, and if not reasonably available, fire and extended coverage, in such form as the Board deems appropriate for one hundred (100%) percent of the replacement cost of the Lots that are Common Maintenance Parcels, excluding the replacement of any finishes, fixtures, cabinets, appliances, flooring, or other improvements installed or supplied by the Owners, or their tenants, or personal property of the Owners, or their tenants, guests, and invitees located within such Lots.

(b) Neither the District Declarant nor the District Association has constructed the Lots on the Common Maintenance Parcels, and neither District Declarant nor the District Association shall be liable for any claims or causes of action of any kind whatsoever in law or in equity arising from or in any way relating to the construction of improvements upon the Common Maintenance Parcels that was performed by parties other than District Declarant, its agents, employees, subsidiaries or other affiliated entities.

(c) Premiums for all insurance required by this Article VI, Section 2, shall be Common Expenses of the Association applicable only to Common Maintenance Parcels and shall be included in the Common Maintenance Parcel Assessment. The policy or policies may contain a reasonable deductible, and the amount thereof shall be added to the face amount of the policy in determining whether the insurance at least equals the full replacement cost.

Section 3. Disbursement of Proceeds. Proceeds of insurance policies with respect to Common Area shall be disbursed as follows:

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(a) If the damage or destruction for which the proceeds are paid is to be repaired or reconstructed, the proceeds, or such portion thereof as may be required for such purpose, shall be disbursed in payment of such repairs or reconstruction as hereinafter provided. Any proceeds remaining after defraying such costs of repairs or reconstruction to the Common Area or, in the event no repair or construction is made shall be retained by and for the benefit of the District Association and placed in a capital improvements account.

(b) If it is determined that the damage or destruction to the Common Area for which the proceeds are paid shall not be repaired or reconstructed, such proceeds shall be disbursed in the manner as provided for excess proceeds in Section 2(a) above.

Section 4. Repair and Reconstruction. If the damage or destruction to the Common Area for which the insurance proceeds are paid is to be repaired or reconstructed, and such proceeds are not sufficient to defray the cost thereof, the Board of Directors may use reserve or capital improvements account funds, or may levy a Special Assessment against all Lots. Additional Assessments may be made in like manner at any time during or following the completion of any repair or reconstruction.

Section 5. Annual Review of Policies. At least annually, the Board shall review all insurance policies that are required by this Article VI to be maintained by the District Association in order to ascertain whether the coverage contained in the policies is sufficient. If the Board deems such coverage to be insufficient, the Board may expand the coverage to the extent it reasonably deems necessary.

ARTICLE VII
NO PARTITION

Whenever all or any part of the Common Area shall be taken (or conveyed in lieu of and under threat of condemnation by the Board) by any authority having the power of condemnation or eminent domain, the award made for such taking shall be payable to the District Association as Trustee for all Owners to be disbursed as follows: If the taking involves a portion of the Common Area on which Improvements have been constructed, then, unless within sixty (60) days after such taking the District Declarant or the District Association shall otherwise agree, the District Association shall restore or replace such Improvements so taken on the remaining land included in the Common Area to the extent lands are available therefor, in accordance with plans approved by the Board and the District Design Review Committee. If such Improvements are to be repaired or restored, the above provisions in Article V hereof regarding the disbursement of funds in respect to casualty damage or destruction shall apply. If the taking does not involve any Improvements on the Common Area, or if there is a decision made not to repair or restore, or if there are net funds remaining after any such restoration or replacement is completed, then such award or net funds shall be disbursed to the District Association and used for such purposes as the Board shall determine.

ARTICLE VIII
RIGHTS AND OBLIGATIONS OF THE DISTRICT ASSOCIATION

In addition to the powers delegated to the District Association by its Articles of Organization or the laws of the State of Tennessee, the District Association shall be empowered to perform each of the following duties related to the Property and Common Area:

Section 1. Operation and Maintenance of Common Maintenance Area. To operate, maintain and otherwise manage or provide for the operation, maintenance and management of the Common Maintenance Area, together with all easements for operation and maintenance purposes and for the benefit of the District Association or the Owners over and within the Common Area; to keep all Improvements, if any, of whatever purpose from time to time located on the Common Area in good order, condition, and repair.

Section 2. Title. Any other provision of this Declaration or the Bylaws notwithstanding, the District Association always shall maintain lien free title to the Common Area, excepting only a lien for current year taxes, provided, however, that the District Association may mortgage or convey the Common Area with an affirmative vote of at least sixty-seven percent (67%) of the Directors; and provided, further, that the District Association may accept a conveyance of the Common Area subject to a lien or other encumbrance.

Section 3. Seasonal or Other Decorations. To install and maintain seasonal and other decorations, lighting, street banners, and other items designed to enhance the appearance or attractiveness of the District or the enjoyment or experience of those living, shopping or otherwise participating in the District, in the sole discretion of the District Declarant or Board of Directors, the cost of which shall be a Common Expense. Common Maintenance Parcels are not allowed to attach anything or drill holes into the outside walls of the building.

Section 4. Water and Other Utilities. To acquire, provide, and/or pay for, water, sewerage, garbage disposal, electrical, telephone, gas, and other necessary utility services for the Common Area.

Section 5. Taxes and Assessments. To pay all real and personal property taxes and assessments separately levied upon or assessed against the District Association and/or the property owned by the District Association. Such taxes and assessments may be contested or compromised by the District Association; provided, however, that they are paid or a bond in an amount at least equal to such taxes and assessments is posted prior to the sale or other disposition of any property to satisfy the payment of such taxes or assessments.

Section 6. Insurance. To obtain from reputable insurance companies qualified to do business in the State of Tennessee the insurance set forth in this Declaration, and to maintain in force at all times such insurance as is required by this Declaration.

Section 7. Personal Property and Real Property for Common Use. The District Association, through action of its Board of Directors, may acquire, hold, and dispose of tangible and intangible personal property and real property. The Board, acting on behalf of the District Association, shall accept any real or personal property, leasehold, or other property interests within Maury County conveyed to it by the District Declarant as permitted herein.

Section 8. Rules and Regulations. The District Association, through its Board of Directors or otherwise, may make and enforce reasonable rules and regulations governing the use of the Property, which rules and regulations shall be consistent with the rights and duties established by this Declaration. Sanctions for violations of the rules and regulations may include reasonable monetary Fines (as hereinafter defined) and suspension of the right to use the Common Area. The Board shall, in addition, have the power to seek relief in any court for violations or to abate nuisances. In addition, the District Association, through the Board or

otherwise, may, by contract or other agreement, enforce city or county ordinances or permit the City of Columbia or Maury County to enforce ordinances on the Property for the benefit of the District Association and the Owners.

Section 9. Traffic Control. The Board may make rules and regulations concerning driving and parking within the Property, subject to applicable governmental requirements and restrictions. Without limiting the foregoing, to the extent permitted by local governmental authority, the District Association may construct traffic calming devices and post speed limits or other traffic signs and take other measures deemed necessary to discourage excessive speed and to promote a safe environment. The District Association may enforce such rules and regulations with penalties, Fines or towing, and shall have all remedies set forth in this Declaration.

Section 10. Implied Rights. The District Association may exercise any other right or privilege given to it expressly by this Declaration or the Bylaws, any law, statute or ordinance, and every other right or privilege reasonably to be implied from the existence of any right or privilege given to it herein or reasonably necessary to effectuate any such right or privilege.

ARTICLE IX
ASSESSMENTS

Section 1. Creation of Assessments. There shall be created annual Assessments as may be from time to time specifically authorized by the Board of Directors as follows (collectively, the "Annual Assessments"):

(a) The Board may levy general assessments for expenses determined by the Board to benefit the District Association and/or the District as a whole, including without limitation, expenses incurred by the District Association in fulfilling its maintenance obligations set forth in this Declaration or otherwise expressly or implicitly authorized by this Declaration, reserves as deemed appropriate by the Board, and the District Assessment ("General Assessments").

(b) The Board may levy a Common Maintenance Parcel Assessment against Common Maintenance Parcels for expenses determined by the Board to benefit only such Common Maintenance Parcels, including without limitation, expenses incurred by the District Association in fulfilling its maintenance or service obligations with respect to such Common Maintenance Parcels. Common Maintenance Parcels may be established with different levels of services and maintenance obligations for the District Association, and the Common Maintenance Parcel Assessment applicable to Common Maintenance Parcels may reflect such differences.

(c) The Board may levy a Special Use Assessment to the extent established by a Supplemental Declaration for any Special Use Parcel. In the event a Special Use Assessment is established, the General Assessments shall not apply to such Special Use Parcels. If no Special Use Assessment is established in a Supplemental Declaration by oversight or error, then the Declarant or the Board may at any time thereafter establish a Special Use Assessment in the Declarant's or the Board's discretion, to be applied to such Special Use Assessment from after the date of such establishment. The Special Use Assessment may include maintenance or landscaping responsibilities for areas within the District but not located within the Special Use Parcel.

Section 2. Operating Budget. It shall be the duty of the Board to prepare a budget covering the estimated costs of operating the District Association during the coming year, including without limitation Common Expenses and Common Maintenance expenses (the "Operating Budget").

Section 3. Capital Budget and Contribution. The Board of Directors shall annually prepare a capital budget that shall take into account the number and nature of replaceable assets, the expected life of each asset, and the expected repair or replacement cost (the "Capital Budget"). The Board shall set the required capital contribution, if any, in an amount sufficient to permit meeting the projected capital needs of the District Association, as shown on the Capital Budget, with respect both to amount and timing by Assessments over the period of the Budget. The capital contribution required shall be fixed by the Board and included within the Operating Budget and Assessment. The Capital Budget shall also provide for the establishment of separate reserve accounts to hold the proceeds of the Assessments imposed for capital expenditures.

Section 4. Allocation of General Assessments. Unless otherwise set forth in any Supplemental Declaration or District Declaration, General Assessments shall be allocated against all Lots (other than Special Use Parcels) within the District equally. Assessments for Special Use Parcels may include the responsibility for specific areas or maintenance or landscaping within the Development that shall not be considered in setting the General Assessments.

The Board shall set Assessments based on the Operating Budget and the Capital Budget. The Board shall cause a copy of the Operating Budget, the Capital Budget, and the amount of each General Assessment to be communicated to the Members of the District Association at least ten (10) days prior to the year for which Assessments shall be made. The Operating Budget, together with the Capital Budget and the Annual Assessments (collectively, the "Budget"), shall be adopted by the Board at a duly called meeting of the Board. Notwithstanding the foregoing, however, in the event a Budget is not established for any reason for any year, then and until such time as a Budget shall have been determined as provided herein, the Budget in effect for the then current year shall continue for the succeeding year. No failure to provide the Operating Budget or Assessments as required hereunder shall relieve any Lot Owner from payment of such Assessments once established.

Section 5. Special Assessments. In addition to the Annual Assessments authorized above, the Board may levy, during any calendar year, special assessments, applicable only to that year, to be used solely to defray, in whole or in part, the cost of any construction, reconstruction, or unexpected repair or replacement of a capital improvement, including the necessary fixtures and personal property related thereto ("Special Assessments"). The Board may levy a Special Assessment against all Lots for such expenses determined by the Board to benefit the District Association and/or the District as a whole, and may levy a Special Assessment against particular Lots for such expenses as may be determined by the Board to benefit less than the Master Association or District as a whole.

Section 6. Assessment Obligation. Assessments against each Lot shall commence on recording of a Supplemental Declaration, District Declaration or Sub-District Declaration applicable to such Lot, provided, however, that the applicable Supplemental Declaration or District Declaration or Sub-District Declaration may, with the approval of Master Declarant and District Declarant, suspend or delay the payment of Assessments as set forth therein. Each Owner, by acceptance of his or her Deed, is deemed to covenant and agree to pay all

Assessments levied by the District Association, whether or not such obligation is so expressed in such Deed. Each Owner shall be deemed a direct beneficiary of the Common Expenses of the Master Association, which are made for the benefit of the entire Development, and apportionment of the District Assessment shall be payable be each Lot Owner. Notwithstanding any other provision of this Declaration, no Assessments shall be levied against Lots or other Property owned by the District Declarant, its successors or assigns.

(a) All Assessments, together with interest at the highest rate allowable under the laws of Tennessee from time to time relating to usury (or if no such rate is established, sixteen percent (16%) per annum) ("Interest"), costs, and reasonable attorneys' fees, shall be a charge on the land and shall be a continuing lien upon the Lots within the District against which each Assessment is made. Each Assessment, together with Interest, costs, and reasonable attorneys' fees, shall also be the personal obligation of the Person who was the Owner of such Lot at the time the Assessment arose, and his or her grantee shall be jointly and severally liable for such portion thereof as may be due and payable at the time of conveyance, except no first Mortgagee who obtains title to a Lot pursuant to the remedies provided in the Mortgage shall be liable for unpaid Assessments which accrued prior to such acquisition of title in excess of six (6) months accrued Assessments.

(b) Assessments shall be paid in such manner and on such dates as may be fixed by the Board. The manner of payment fixed by the Board may include, without limitation, acceleration of the Assessment levied on a particular Lot on account of delinquent payment of such Assessment or monthly installment thereof. Unless the Board otherwise provides, Annual Assessments shall be paid in quarterly installments. Without limiting the foregoing, the Board may also levy a late charge on Assessments not timely paid, in the discretion of the Board.

Section 7. Lien for Assessments. To secure the payment of any Assessment and/or fine imposed by the District Association pursuant to this Declaration (each such fine, a "Fine"), a lien is expressly retained in favor of the District Association on each and every Lot or Special Use Parcel in the District Association. Such lien shall be prior and superior to all other liens, except all taxes, bonds, assessments, first mortgage liens, liens in favor of the Master Association, and other levies which by law would be superior thereto.

Section 8. Start-up Assessment. Each Lot Owner who takes title to a Lot shall pay to the District Association at closing a start-up assessment fee in an amount established by the Board from time to time (the "Start-up Assessment"). This one time Start-up Assessment shall be in addition to and not a prepayment of the regular Assessments provided for above. The District Declarant may, by Supplemental Declaration, Sub-District Declaration, contract, or otherwise, exempt certain properties from the Start-Up Assessment, limit the payment of the Start-Up Assessment to certain transactions, or otherwise alter the general obligations set forth hereunder.

Section 9. Transfer Assessment. The Board may establish an Assessment to be paid by the purchaser of any Lot within the Property on transfer or conveyance of such Lot from time to time (the "Transfer Assessment"). The amount of such Transfer Assessment shall be established by the Board from time to time. The Transfer Assessment shall not be due on any closing of a Lot in which the Start-Up Assessment is paid. District Declarant may, by

Supplemental Declaration, Sub-District Declaration, contract, or otherwise, exempt certain properties from the Transfer Assessment, limit the payment of the Transfer Assessment to certain transactions, or otherwise alter the general obligations set forth hereunder.

Section 10. Administrative Fee. In addition to the Start-Up Assessment and Transfer Assessment, the Board may establish an administrative fee that the purchaser of any Lot within the Property shall be obligated to pay. The purpose of the Administrative Fee is to pay for the administrative expenses of the District Association or its agent resulting from the change in Lot ownership.

Section 11. Use of Assessments and Fees. The Start-Up Assessment and Transfer Assessment collections may be used as the Board of the District Association shall deem appropriate, which use may include, without limitation, operating costs of the District Association, the payment for capital improvements of the District Association, the establishment of reserves, or the establishment of a fund, account or nonprofit corporation formed for the purpose of enhancing, directly or indirectly, the District and the Owner, including the support of charitable, educational, social or beneficial organizations, causes, events or scholarships.

Section 12. Certificate of Payment. The Board shall, upon request and for a reasonable charge, furnish to any Person a certificate, signed by an officer of the District Association, setting forth whether or not all Assessments, whether General or Special, or other applicable fees or Interest, on a specified Lot or Special Use Parcel have been paid. Such certificate shall be conclusive evidence of payment of any Assessment therein stated to have been paid.

Section 13. Legal Fees for Enforcement. Any legal fees incurred in relation to the resolution of a violation enforcement action will automatically be considered an Assessment therefore will carry the same collection powers of a regular assessment.

ARTICLE X
CONSTRUCTION AND ARCHITECTURAL STANDARDS

Section 1. Construction Standards. Owners shall construct all Improvements on Lots in accordance with plans and specifications approved by the City of Columbia , Tennessee (the "City"). Further, no Person shall construct any Improvements upon a Lot, or after completion of such Improvements, make any modifications, additions or alterations to such Improvements, without the prior written approval of the Master Design Review Committee and District Design Committee (as defined below). In no event shall the District Design Review Committee approve any plans violating the use restrictions set forth in Article XI below, and no purported approval shall constitute a waiver of such restrictions.

Section 2. Design Review Committee. The District Declarant or Board, as applicable, shall designate a site and architectural review board (the "District Design Review Committee") consisting of up to five (5) persons, one of which may be an architect selected by District Declarant (a "Qualified Architect"), to exercise the Board's authority under this Article. The District Design Review Committee shall promulgate detailed standards and procedures in implementing the requirements of this Article, in addition to the Design Guidelines. So long as District Declarant owns any land within the District or subject to this Declaration or remains the District Declarant, the District Declarant may select the membership of the District Design

Review Committee. Thereafter, the Board shall select the membership of the District Design Review Committee. The District Design Review Committee shall also have the authority to hire such contractors or employees in support of its review and administration obligations as it may reasonably determine to be necessary or appropriate, the costs of which shall be paid by the applicants or included in Common Expenses. This Article shall be effective, and may not be amended without the prior written consent of District Declarant, so long as District Declarant owns any land subject to this Declaration or subject to annexation by this Declaration.

Section 3. Construction Subject to Review.

(a) Review of Plans. Prior to construction of any exterior improvement, the District Design Review Committee must review and approve construction plans and specifications for all Improvements on any Lot within the Property. No construction on any Lot shall begin and no Improvements on any Lot shall be modified except in accordance with an approved plan. Once a plan is approved, any modification to that plan, or any modification to the finished Improvement, must also be reviewed and approved.

(b) Common Area. Construction of any Improvement upon the Common Area (other than initial construction by the Declarant), or modification of any existing structure, as well as any material alteration of the landscaping or topography of any Common Area, must be approved in advance by the Design Review Committee.

(c) Scope. The Design Guidelines shall set standards for all aspects or improvement on any Lot visible from the outside, including without limitation the size and shape of any building, its roof, windows, doors, porches and other components, placement on the Lot, fences, drainage, paving and landscaping and all finish materials. The Design Guidelines may also regulate the type, placement and number of Improvements that may be constructed on a Lot and the uses to which those Lots may be put. Review shall include materials and color selection and selection and placement of any ornamentation or functional accessories, including but not limited to the following:

(i) Materials and color selection for the main building and any outbuilding (including roof, doors, windows and trim);

(ii) Driveways, walks, patios and other ground surface materials;

(iii) Parking areas and drive through lanes;

(iv) Outdoor eating areas;

(v) Lighting;

(vi) Signage of any type;

(vii) Antennas, satellite dishes or receivers, solar panels or other devices that are visible from outside the Lot;

(viii) Fountains, swimming pools, or other water features;

(ix) Privacy walls or other fences and gates;

(x) Awnings, flower boxes, shelves, statues, or other outdoor ornamentations, and window coverings visible through the window;

(xi) Construction trailers or other trailers, temporary structures, tents, shacks, and sheds;

(xii) Grills or fire pits; and

(xiii) Permanent or semi-permanent play equipment, whether or not secured, such as tree houses, trampolines, basketball hoops, skateboard ramps and swing sets.

The listing of a category does not imply that such construction is permitted.

(d) Exception. Interior construction and modifications not affecting the external structure or appearance of any building and not visible from the exterior are not subject to review. However, construction drawings are required as part of the review process to assist in interpreting the design.

(e) Trees. Owners may be required to plant street trees on their Lot or within Common Area or public rights-of-way adjacent to their Lot, in accordance with the direction of the District Design Review Committee, to maintain trees and to replace trees that die or that become damaged or diseased, or the District Association may elect to take such actions for the benefit of Owners, the cost of which will be part of the Common Expenses. The cutting, removal or intentional damage of new or existing trees (including neglect, excessive pruning or failure to use due care with equipment or when removing other trees permitted to be removed) shall be prohibited and subject to enforcement under this Declaration. The District Design Review Committee may require the relocation and replanting of trees that must be removed for construction. If particularly significant trees are found within a Lot, the District Design Review Committee shall determine whether the placement of the building should be altered to accommodate the trees, or whether the trees may be removed. If trees or other growth block sidewalks or other areas, the Owner may be required to prune, trim or remove such growth. The Master Association may also take action to keep sidewalks and other areas clear, including pruning, trimming and removal of limbs on trees within a Lot, and may enter any Lot for such purpose.

(f) Drainage. All plans shall comply with and Owners shall be solely responsible for applicable drainage, water conservation, erosion control and stormwater detention requirements. No alteration of existing grade or any planting, fences or other improvements that alter the flow of water shall be permitted without the express consent of the District Design Review Committee, which approval shall be for the exclusive benefit of the Declarant or District Association, as applicable, and shall not remove or alter the responsibility of any Owner or builder for compliance with such requirements. Notwithstanding any other provision of this Declaration, neither District Declarant nor the District Association shall have the responsibility to ensure that drainage or grading of Lots is properly accomplished. Each Owner shall be solely responsible to ensure that grading and drainage are in compliance with all applicable

laws, codes, regulations and other requirements, including without limitation any easements for drainage, whether or not shown on any recorded plat and must provide a as-built drawing of finished grading and drainage to ensure these items are in compliance. The Homeowner will be charged in the event they do not provide the approved as-builts to the Committee, and any costs to the developer to fix any grading or drainage that were not caused by the developer.

(g)

(h) Modifications. Modifications after completion of construction, or additions or changes to the approved plans during construction, must be reviewed and approved. However, review is not required to paint with originally approved materials and colors, or to replace the roof or other components with duplicates of the original material. Significant new landscaping, grading and any removal of trees or plants must be approved in advance.

Section 4. Review Procedure.

(a) Application. The plans to be submitted for approval shall include (i) the construction plans and specifications, including all materials and colors, (ii) elevations of all proposed improvements (iii) proposed clearing, grading and landscaping, and (iv) all other items required by the District Design Review Committee. Plans and specifications for review shall be submitted in the form required by the District Design Review Committee.

(b) Uniform Procedures. The District Design Review Committee may establish forms and procedures for the review of applications, including review costs and fees, if any, to be paid by the applicant, which may include costs for the Qualified Architect. The District Design Review Committee may provide lists of approved materials and may allow for staff review and approval of routine or minor matters.

(c) Basis for Decision. Applications shall be approved or denied based upon overall quality of design, including purely aesthetic considerations at the discretion of the District Design Review Committee. If the District Design Review Committee rejects an application due to overall design quality or aesthetic considerations, despite compliance with the Design Guidelines, the District Design Review Committee may make suggestions for improving the design.

(d) Variances. The District Design Review Committee may grant approvals notwithstanding normal guidelines based on existing topographical or landscape conditions, existing trees, or architectural merit. Any such variance must be in writing. Approval of a variance does not constitute a precedent for other applications, and such requests may be arbitrarily denied. Notwithstanding the foregoing, the District Design Review Committee shall not have the right to waive any guidelines imposed by the Master Design Review Committee, the Master Declaration, or other requirement established by Master Declarant or the Master Association without their prior written consent.

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(e) Notification; Construction; Inspection. The District Design Review Committee shall make best efforts to notify the applicant of its decision within the time allowances set out in its design approval process guidelines. However, a delay in reviewing an application shall not be deemed consent to construction. If approval is given, construction of the Improvements may begin. All construction must comply with the submitted plans. The District Design Review Committee or its agent may inspect the property during construction but has no obligation to make any such inspection. Any inspection made by the District Design Review Committee is made for the benefit of the District Design Review Committee or District Declarant, and is not made for the benefit of or to be relied upon by any third party or Owner.

(f) Completion. When the primary building and landscaping are completed in substantial compliance with the approved plans and specifications, the District Design Review Committee may on request issue a Certificate of Substantial Conformance. The Certificate shall describe any areas of deficiency that need to be corrected. All Fines and other enforcement shall be waived so long as the deficiencies are corrected within sixty (60) days. Upon correction of all deficiencies, the District Design Review Committee shall issue a Certificate of Completion and Release in recordable form. If no Certificate of Substantial Conformance is requested, the District Design Review Committee shall not be estopped from later determining that a deficiency needs correction, and reserves all rights of Fines and enforcement.

(g) Governmental Compliance. Owners are responsible for making sure that construction conforms to governmental regulations and all local building codes. If the District Design Review Committee notes noncompliance, the Owner will be required to make the necessary changes. However, the District Design Review Committee is not responsible for compliance with governmental requirements.

Section 5. Approval of Architects, Builders. District Declarant shall have the right to approve any and all architects or builders in all or any portion of the District, in its sole discretion. District Declarant's approval of an architect, builder or other design professional shall not constitute any representation or endorsement of such professional's character, experience or professional capabilities.

Section 6. Enforcement.

(a) Fines. The District Design Review Committee may require the Builder or Owner to post a deposit from which the District Design Review Committee may deduct Fines for failure to comply with the approved plans and specifications, tree regulations and rules for builder conduct. The collection of a Fine shall not in any way diminish the available remedies at law or equity.

(b) Suit Permitted. If any construction is begun that has not been approved or that deviates from approved plans and specifications, the District Design Review Committee, District Declarant or the District Association may require the Owner to resolve the dispute through binding arbitration or may bring suit seeking damages, specific performance, declaratory decree and/or injunction, or any other remedy at law or in equity. The Board shall be empowered to bring suits on behalf of the District Association. If suit is brought and the court finds that the construction was not

approved or that the construction deviated from the approved plans or specifications, then the party bringing suit shall also be awarded reasonable attorney's fees, even if the relief requested is not granted.

(c) Trees and Hedges. Improper cutting, removal, lack of care or intentional damage to existing trees and hedges may be subject to the imposition of Fines plus a requirement that the tree be replaced with an approved species of comparable caliper, or, if approved by the District Design Review Committee, a combination of trees totaling the caliper of the removed tree, or that hedges be replaced with an approved hedge plant. Fines shall be set by the District Design Review Committee.

(d) Drainage. After reasonable notice (except in an emergency), District Declarant or the District Association shall have the right but not the obligation to enter onto a Lot and correct improper grading or other modification to the Lot which causes drainage problems. Such corrections shall be made at the cost and expense of the Owner of the Lot, who shall promptly reimburse District Declarant or the District Association, as applicable. The Lot shall be subject to a lien for the cost if not paid. District Declarant or the District Association, as applicable, shall not be required to repair or replace landscaping or other improvements after such action.

(e) No Waiver. Failure to enforce any provision of this Declaration shall not be deemed a waiver of the right to do so at any time thereafter.

Section 7. Liability. District Declarant and District Design Review Committee and its inspectors are concerned primarily with aesthetic considerations, and are not responsible for compliance with governmental requirements or design or construction defects or use of materials affecting the safety or structural integrity of the building. Approval by the District Design Review Committee of an application shall not constitute a basis for any liability of the Qualified Architect, District Declarant, members of the District Design Review Committee, the Directors of the Board or the District Association for failure of the plans to conform to any applicable building codes or inadequacy or deficiency in the plans resulting in defects in the improvements, or for the performance or quality of work of any builder or architect approved by it, or for non-compatible or unstable soil conditions or soil erosion, or any other condition of the property.

ARTICLE XI
USE RESTRICTIONS

Section 1. Use Restrictions. In addition to all other covenants contained herein, the use of the Property is subject to the following; provided, however, that if any Supplemental Declaration or Sub-District Declaration expressly permits uses or matters that would otherwise be prohibited, with the express consent of District Declarant, then such Supplemental Declaration or Sub-District Declaration shall control over this Declaration for purposes of this Article XI:

(a) Maintenance of Exterior and Interior. Except as provided in this District Declaration or any Supplemental Declaration, each Owner shall be responsible for the maintenance of, and shall maintain, the exterior and interior of its Lot and any Improvements in a clean, sanitary, and attractive condition, and shall (1) keep its Lot free from rubbish, litter, and noxious weeds; (2) maintain, cultivate, and keep in good

condition and repair shrubs, trees, grass, lawns, plantings, and other landscaping located, or from time to time placed, within the bounds of its Lot; and (3) replace dead plants, shrubs, trees, grass, or landscaping of the same or similar type. If any irrigation system is in place on any Lot, the Master Association may require that the Owner maintain such irrigation system and keep such system in use to the extent required to keep a maintain healthy landscaping.

(b) Association to Landscape Common Area. Except as otherwise provided herein, the District Association shall have the right and the obligation at any time to plant, replace, maintain, and cultivate shrubs, trees, grass, plantings, and other landscaping upon the Common Maintenance Area located on the Property. No Owner shall remove, alter, or injure in any way any shrubs, trees, grass, plants or other landscaping placed upon or about a Lot by District Declarant or the District Association, without first obtaining the written consent of the Board.

(c) Signs and Billboards; Exterior Lights. No sign or billboard of any kind shall be displayed to the public view on any portion of the Common Area, except for (1) directional or informational signs, established by District Declarant or the District Association, (2) signs used by District Declarant, or by its successors or assigns, to advertise the Property, provided such signs are located on the Common Area, and (3) signs permitted under any Supplemental Declaration or Sub-District Declaration, provided that the Board may establish or require a common signage system for such purposes and such system shall prevail over the general provisions of this subsection.

(d) Quiet Enjoyment. No noxious, offensive or illegal activity shall be carried on, in or upon any Lot or any part of the Property, nor shall anything be done thereon that may be or may become an annoyance or nuisance to the neighborhood, that shall interfere in any way with any Owner's quiet enjoyment of its respective Lot, or that shall increase the rate of insurance in any way.

(e) Temporary Structures. No structure of a temporary character or other out-building shall be used on any Lot or the Common Area at any time as a residence or otherwise, either temporarily or permanently. Notwithstanding the foregoing, District Declarant or its agents shall have the right to conduct any business necessary for the sale of Lots, including showing model Lots and maintaining a sales and/or construction office on the Common Area or in any Lot owned by Declarant. In furtherance thereof Declarant shall have an easement over all of the Common Area for ingress, egress and parking for itself, its agents, employees, and prospective buyers of Lots for so long as District Declarant or any subsidiary or affiliated company owns any interest in the Property, and District Declarant may block or restrict access over and across roadways so long as access to a particular Lot owned by a Person other than District Declarant is not prohibited.

(f) Animals. No animals, reptiles, rodents, livestock, birds, or poultry of any kind shall be raised, bred or kept in or on any Lots, other than bona fide service animals or household pets. No household pets shall be kept outside the dwelling or housing unit, and any outside activity shall be under the active control I.E. leashed, of the Owner or one acting on the Owner's behalf. Without limiting the foregoing, animals who repeatedly bark, are aggressive, or other create a negative impact on other Owners

or other persons may be subject to further restrictions and, in the discretion of the Board, removed from the Development. No animal may be kept in a manner that, in the sole determination of the Board, is unhealthy or cruel for such animal, including without limitation keeping animals tied up or tethered for extended periods of time. In making any determination of cruelty or unhealthy conditions, the Board shall have the right but not the obligation to consult governmental or private animal control or shelter organizations. The Board may permit variances to the restrictions set forth in this subsection in the Board's sole discretion. The Board may establish further rules and regulations for control of animals and household pets, and may impose Fines for violations of the foregoing or additional rules and regulations in addition to requiring removal of animals from the Development.

(g) Vehicles. No truck, trailer, camper, boat, van or similar equipment or disabled vehicle shall be permitted to remain upon or within the Common Area or public streets unless on a space designated for such use by the District Association. No such equipment may be stored or permitted to remain upon a Lot or any portion of the Common Area or public streets for more than forty-eight (48) hours unless stored in an enclosed garage.

(h) Exterior Structures. No fences, ornamental screens, awnings, screen doors, sunshades except as approved by or under general rules adopted by the District Design Review Committee.

(i) Garbage Collection. All rubbish, trash, and garbage shall be removed from the Property regularly and shall not be allowed to accumulate thereon. All refuse containers, clothes lines, woodpiles, storage areas, machinery, or equipment shall be kept in such a manner as not to be visible from neighboring property or contiguous streets. No incinerators shall be kept or maintained on any Lot. Refuse containers shall not be placed outside for trash pickup prior to 6:00 p.m. on the day prior to such pickup, and shall be returned to non-visible areas no later than the end of the day on which pickup is made. No debris, trash, ashes, lawn clippings, leaves, leaf bags or other refuse may be thrown or dumped on any of the Lots or Common Area. Debris and trash during the construction of an Owner's Improvements shall be collected by each Owner (or his or her representative) in containers approved by the District Design Review Committee and periodically removed so that no unsightly condition occurs on the Lot or adjoining Lots.

(j) Taxes and Utilities. Each Owner shall pay any real and personal property taxes or charges assessed against their respective Lot and Improvements and the utility charges for said Improvements.

(k) Infections, Plant Diseases or Insects. No Owner shall permit anything or condition to exist upon any portion of such Owner's Lot that shall induce, breed, or harbor infections, plant diseases, vermin or noxious insects.

(l) Reasonable Inspection and Entry. The Board shall have the right of inspection and entry onto Lots in order to perform the duties and obligations of the Board under this Declaration and under the Bylaws. In addition, District Declarant, the District Association, and their designees shall have the right to enter upon a Lot for the

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purpose of cutting grass, hedges and shrubbery and providing maintenance agreed upon with the Owner thereof.

(m) Trade or Business. No gainful profession, occupation, trade or other nonresidential use shall be conducted in any Lot designated for residential purposes or upon the District Common Area or any portion thereof without the prior approval of the Board. Special Use Parcels or areas in which a mix of business and residential purposes are appropriate shall be governed by the provisions of any Supplemental Declaration or Sub-District Declaration covering such portions of the Development. The Board may disapprove such a trade or business in the event that it determines that the trade or business would have a negative impact on the Property, including, without limitation, creating problems related to traffic, parking or security. In determining whether to approve a trade or business conducted in a residential Lot, the Board shall be provided with detailed information on (i) the type of trade or business and (ii) the activities related thereto that could potentially affect the Property. In the event that the Board approves a certain trade or business (the "Approved Use"), then so long as the activities related to that Approved Use do not materially change from the activities described to and approved by the Board, the Board (whether or not the composition of the Board changes) shall not have the right to disapprove the Approved Use after the date of the original approval, subject to subparagraph (s) below. Notwithstanding the foregoing, an Owner or occupant residing in a unit within the Development may conduct business activities within the unit so long as: (a) the existence or operation of the business activity is not apparent or detectable by sight, sound, signage or smell from outside the Unit; (b) the business activity conforms to all applicable zoning, law, statute or ordinance requirements; (c) the business activity does not involve persons coming onto the Development who do not reside in the Development or door-to-door solicitation of residents of the Development; and (d) the business activity is consistent with the residential character of the Property and does not constitute a nuisance, or a hazardous or offensive use, or threaten the security or safety of other residents of the Development, as may be determined in the sole discretion of the Board. The terms "business" and "trade", as used in this provision, shall be construed to have their ordinary, generally accepted meanings, and shall include, without limitation, any occupation, work or activity undertaken on an ongoing basis which involves the provision of goods or services to persons other than the provider's family and for which the provider receives a fee, compensation, or other form of consideration, regardless of whether: (i) such activity is engaged in full or part-time; (ii) such activity is intended to or does generate a profit; or (iii) a license is required therefor.

(n) Compliance with Law. The District Association and each Owner shall comply promptly with all laws, statutes, ordinances, rules and regulations of federal, state or municipal governments or authorities applicable to use, occupancy, construction and maintenance of any Improvements upon the Lots, including without limitation any zoning or other approvals or restrictions.

(o) Damage from Plants. No Owner shall permit any plant, tree, shrubbery or other similar item to exist upon any portion of such Owner's Lot that shall damage or create a nuisance on another Lot or that has not been approved by the District Design Review Committee. The Board shall determine conclusively, in its sole and absolute

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discretion, whether, for the purpose of this paragraph, a particular plant, tree, shrubbery, or other similar item is a nuisance and therefore to be removed from the Property.

(p) Wells. No private wells may be drilled or maintained on any Lot without the prior written consent of the District Design Review Committee.

(q) Laundry. Without the express permission of the District Design Review Committee, no Owner, guest, or tenant, shall hang laundry from any area within or outside the Improvements on a Lot if such laundry is within the public view, or hang laundry in full public view to dry, such as on balcony or terrace railings.

(r) Firearms and Other Weapons. Discharge of firearms and other weapons is prohibited; provided, the Board shall have no obligation to take action to prevent or stop such discharge; provided, further, however, that nothing in this provision shall be deemed to prevent the Declarant or Board, or the Declarant or Board of any Sub-Association, with the consent of Declarant or Board, from establishing or permitting facilities, Lots, or other areas where such activities may be permitted, whether on a private or retail basis. For this purpose, firearms and weapons shall be deemed to include any instrument that may or is designed to propel or discharge bullets, arrows, or other objects by use of explosive force, compressed air, elastic contraction or other means, including without limitation handguns, rifles, shotguns, pellet guns, BB guns, cross-bows, and long or compound bows. This definition shall be broadly construed, and the Declarant and Board of Directors shall have discretion to determine whether a particular object or instrument is a firearm or weapon in its sole discretion.

(s) Restriction on Rentals. No Living Unit shall be rented to a non-Owner except with the prior written consent of the Association.

(i) If an Owner shall desire to rent its Living Unit to a third-party, the Owner shall be required to submit to the Association all of the following, in form and content satisfactory to the Association:

(1) An application for rental providing, among other things, the identity of the Living Unit, the name of the proposed tenant and occupants, the proposed term of the rental, and contact information for the Owner while not occupying the Living Unit.

(2) A copy of a qualifying lease. For purposes of this section, a qualifying lease is one that is for a term not less than twelve (12) months and that expressly advises tenant that the Living Unit is subject to the Declaration and that the tenant is responsible for compliance with the Declaration and all other rules and regulations adopted by the Association from time to time.

(3) A copy of a background check on the prospective tenant and all occupants of the Living Unit provided with the written consent of the prospective tenant and that indicates no prior criminal

convictions or any sex offender status or other matter reasonably objected to by the Association.

(4) Any fee charged by the Association for review of the application and other material.

(5) Upon approval, a copy of the executed tenant lease.

(ii) A failure to procure approval prior to leasing a Living Unit shall constitute a violation of the Declaration and, among other things, the Association shall be entitled to injunctive relief against such Owner and the tenant, the Owner acknowledging that legal remedies may not be adequate. The Owner shall be subject to all expenses of the Association resulting from any such violation, including without limitation reasonable attorney fees and other costs of enforcement.

(iii) The Board shall have the power to waive the foregoing restrictions and to reduce the minimum lease term for good cause shown, in the sole discretion of the Board.

(iv) Notwithstanding the foregoing, no Owner shall lease, license for occupancy, or otherwise permit a non-Owner to remain in a Living Unit for a period of less than thirty (30) days if consideration is given for such stay or if such occupancy is advertised by any medium, including without limitation short term rentals.

Section 2. Age Restriction. The District is intended to provide housing primarily for persons 55 years of age or older, subject to the rights reserved to District Declarant as may otherwise be provided herein. The District shall be operated as an age restricted community in compliance with all applicable state and federal laws. No person under 19 years of age shall stay overnight in the improvements on any Lot for more than ninety (90) days in any consecutive twelve (12) month period unless approved by the Board for special consideration. Each Lot, if occupied, shall be occupied by at least one (1) individual 55 years of age or older; provided, however, that once a Lot is occupied by an Age-Qualified Occupant, other Qualified Residents of that Lot may continue to occupy the Lot, regardless of the termination of the Age-Qualified Occupant's occupancy. Notwithstanding the above, at all times, at least eighty percent (80%) of the Lots within the District shall be occupied by at least one (1) individual 55 years of age or older. The Board shall establish policies and procedures from time to time as necessary to monitor and maintain its status as an age restricted community under state or federal law. The Association shall provide, or contract for the provision of those facilities and services designed to meet the physical and social needs of older persons as may be required under such laws. The provisions of this Section may be enforced by the Association by an action in law or in equity, including, without limitation, an injunction requiring specific performance hereunder.

Section 3. Additional Restrictions. The Board of Directors shall be entitled to invoke additional rules and regulations from time to time for the operation, use and maintenance of the Property located within its jurisdiction, including the Lots and the Common Area, provided such rules and regulations are not inconsistent with this Declaration.

ARTICLE XII
GENERAL PROVISIONS

Section 1. Term. The covenants and restrictions of this Declaration shall run with and bind the Property, and shall inure to the benefit of and shall be enforceable by the District Association or the Owner of any of the Property subject to this Declaration, their respective legal representatives, heirs, successors and assigns, for a term of thirty (30) years from the date this Declaration is recorded. After the initial thirty (30) year term has expired, the term of this Declaration shall be automatically extended for successive periods of ten (10) years, unless an instrument in writing, signed by sixty-seven percent (67%) of the then Owners, has been recorded within the year preceding the beginning of each successive ten-year period, agreeing to change said covenants and restrictions, in whole or in part, or to terminate the same.

Section 2. Amendment. This Declaration may be amended by a sixty-seven percent (67%) affirmative vote of the Owners present, in person or by proxy, at any duly called meeting, and the written approval of the Master Declarant and District Declarant during the respective Declarant Control Period. During the Declarant Control Period, District Declarant may unilaterally amend this Declaration for any purpose. Any amendment shall not become effective until recorded in the Office of the Register's Office for Maury County, Tennessee. No amendment may remove, revoke, or modify any right or privilege of District Declarant without the written consent of District Declarant or the assignee of such right or privilege. After the Declarant Control Period, the Declarant may unilaterally amend this Declaration so long as such amendment is designed to comply with any law, regulation or provision of the Federal Home Loan Mortgage Corporation or Federal National Mortgage Association.

Section 3. Indemnification. The District Association shall indemnify its officers and directors against any and all expenses and liabilities, including attorney fees, reasonably incurred by or imposed upon any officer or director in connection with any action, suit, or other controversy or proceeding (including settlement of any suit or proceeding, if approved by the then Board of Directors) to which he or she may be a party, or may become involved, by reason of being or having been an officer or director of the District Association. The officers and directors shall not be liable for any mistake of judgment, negligent or otherwise, except for their own individual willful misfeasance, malfeasance, misconduct or bad faith. The officers and directors shall have no personal liability with respect to any contract or other commitment made by them, in good faith, on behalf of the District Association (except to the extent that such officers or directors may also be Members of the District Association), and the District Association shall indemnify and forever hold each such officer and director free and harmless against any and all liability to others on account of any such contract or commitment. Any right to indemnification provided for herein shall not be exclusive of any other rights to which any officer or director, or former officer or director, may be entitled. The District Association shall, as a common expense, maintain adequate general liability and officers' and directors' liability insurance to fund this obligation, if such insurance is reasonably available.

Section 4. Delegation of Use. Any Owner may delegate, in accordance with the Articles of Organization of the District Association and this Declaration, his or her right of enjoyment to the Common Area and facilities to customers, the members of his or her family, tenants and social invitees, subject to such rules and regulations as the Board of Directors may adopt.

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Section 5. Construction and Sale by District Declarant. Notwithstanding any provisions contained in this Declaration to the contrary, so long as construction and initial sale of Lots or Improvements shall continue, it shall be expressly permissible for District Declarant to construct, maintain and carry on upon portions of the Property, other than Lots owned by persons other than District Declarant, such facilities and activities as, in the sole opinion of District Declarant, may be reasonably required, convenient, or incidental to the construction or sale of such Lots, including, but not limited to, business offices, signs, utilities, model units, and sales offices, and District Declarant and its invitees shall have an easement for access to such facilities. District Declarant may further delegate all or some of the privileges set forth in this Section 8 to any Person in the sole discretion of District Declarant. This Section may not be amended without the express written consent of District Declarant.

Section 6. Severability. Invalidation of any one of these covenants or restrictions by judgment or court order shall in no way affect any other provisions, which shall remain in full force and effect. Each covenant and restrictions shall be enforced to the fullest extent permitted by law.

Section 7. Enforcement. The District Association, or any Owner, shall have the right to enforce, by any proceeding at law or in equity, all restrictions, conditions, covenants, reservations, liens and charges now or hereafter imposed by the provisions of this Declaration. Failure by the District Association or by any Owner to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter. Without limiting the foregoing, the District Association shall have the authority to enforce the restrictions, conditions, covenants and rules and regulations now or hereafter adopted pursuant to this Declaration by the imposition of Fines on Owners, which shall be established by the Board of Directors in its discretion, and enforced and collected as a Special Assessment pursuant to the Declaration. The Board of Directors may establish notice, hearing and other procedures from time to time in conjunction with the use and levying of Fines.

Section 8. Use of the Words "_____". No Person shall use the words "_____ _____" or "_____ at Columbia Bluffs" or any derivative thereof in any printed or promotional material without the prior written consent of District Declarant and Master Declarant.

Section 9. Disclosures. Each Owner acknowledges the following:

(a) The Property is located adjacent to thoroughfares that may be affected by traffic and noise from time to time and may be improved and/or widened in the future.

(b) The views from an Owner's Lot may change over time due to, among other circumstances, additional development and the removal or addition of landscaping.

(c) No representations are made regarding the zoning of adjacent property, or that the category to which adjacent property is zoned may not change in the future.

(d) No representations are made regarding the schools that currently or may in the future serve the Development or any Lot.

(e) Since in every neighborhood, there are conditions that different people may find objectionable, it is acknowledged that there may be conditions outside of the Property that an Owner may find objectionable and that it shall be the sole responsibility of the Owners to become acquainted with neighborhood conditions that could affect a Lot.

(f) All Owners acknowledge and understand that District Declarant and builders or developers will be constructing/renovating portions of the District and engaging in other construction activities related to the construction of Common Area and improvement of Lots. Such construction activities may, from time to time, produce certain conditions within the District, including, without limitation: noise or sound that is objectionable because of its volume, duration, frequency or shrillness; smoke; noxious, toxic, or corrosive fumes or gases; obnoxious odors; dust, dirt or flying ash; unusual fire or explosion hazards; temporary interruption of utilities; and/or other conditions that may threaten the security or safety of persons within the District. Notwithstanding the foregoing, all Owners agree that such conditions within the District resulting from renovation and construction activities shall not be deemed a nuisance and shall not cause District Declarant and its agents to be deemed in violation of any provision of this Declaration.

ARTICLE XIII
DECLARANT'S RIGHTS

Section 1. Withdrawal or Addition of Property. District Declarant reserves the right to amend this Declaration, for the purpose of removing any portion of the Property or to add additional property to be subject to this Declaration by Supplemental Declaration. Such amendment shall not require the consent of any Person other than the Owner(s) of the property to be withdrawn, if not the District Declarant. If the property is Common Area, the District Association shall consent to such withdrawal. The inclusion of real property in the term "District" shall not be deemed to obligate Declarant to acquire such real property or to include such property within the Property or the Development except in the sole discretion of Declarant.

Section 2. Marketing and Sales Activities. District Declarant and Persons authorized by District Declarant may construct and maintain upon portions of the District and the Common Area such facilities and activities as, in District Declarant's sole opinion, may be reasonably required, convenient, or incidental to the construction or sale of Lots, including, but not limited to, business offices, signs, model units, and sales offices. District Declarant and authorized Persons shall have easements for access to and use of such facilities at no charge.

Section 3. Right to Approve Changes in District Design Standards. No amendment to or modification of any restrictions and rules or architectural guidelines shall be effective without prior notice to and the written approval of District Declarant so long as District Declarant owns property subject to this Declaration or which may become subject to this Declaration in accordance with this Article.

Section 4. Provision of Telecommunication Services. District Declarant shall have the right to enter into an agreement with one or more authorized providers of Telecommunication Services pursuant to which such providers may have the exclusive right to provide

Telecommunication Services to all or a particular portion or portions of the District, subject to approval by Master Declarant.

Section 5. Right to Use of Amenity Center. District Declarant shall have the right to use any amenity center within the Development without cost at any time and to permit other parties, including without limitation builders or industry groups, the same privilege of usage at no cost.

Section 6. Right to Transfer or Assign District Declarant Rights. Any or all of District Declarant's special rights and obligations set forth in this Declaration may be transferred in whole or in part to other Persons. No such transfer or assignment shall be effective unless it is in a written instrument executed by District Declarant and recorded in the Office of the Judge of Probate. The foregoing sentence shall not preclude District Declarant from permitting other Persons to exercise any right reserved to District Declarant in this Declaration as an agent, employee or contractor of District Declarant where District Declarant does not intend to transfer such right in its entirety, and in such case it shall not be necessary to record any written assignment unless necessary to evidence District Declarant's consent to such exercise. In the event District Declarant ceases to act as District Declarant and abandons its role as District Declarant after the end of the Declarant Control Period, then the District Association shall have and may exercise all rights of District Declarant without the necessity of a written assignment by District Declarant.

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IN WITNESS WHEREOF, the undersigned Declarant has executed this Declaration effective as of the date first set forth above.

DECLARANT:

_____

By:_____

Print Name:_____

Title:_____

STATE OF TENNESSEE

COUNTY OF _____

Before me, the undersigned, a Notary Public in and for the State and County aforesaid, personally appeared _____ with whom I am personally acquainted, (or proved to me on the basis of satisfactory evidence), and who, upon oath, acknowledged that (s)he executed the within instrument for the purposes therein contained, and who further acknowledged that (s)he is the _____ of _____, a _____, and that (s)he as such _____executed the foregoing instrument for the purpose therein contained, being authorized so to do, to execute this instrument on behalf of _____, by signing the name of _____ , as _____.

Witness my hand, at office, this _____day of _____, 20___.

Notary Public_____

My commission expires:_____

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EXHIBIT A
PROPERTY DESCRIPTION

TO BE INSERTED UPON FORMATION OF ASSOCIATION

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EXHIBIT B
CHARTER OF DISTRICT ASSOCIATION

TO BE INSERTED UPON FORMATION OF ASSOCIATION

EXHIBIT C
BY-LAWS OF DISTRICT ASSOCIATION

TO BE INSERTED UPON FORMATION OF ASSOCIATION

This Instrument Was Prepared by:
J. Bryan Echols
Thompson Burton PLLC
6100 Tower Circle, Suite 200
Franklin, Tennessee 37067

DISTRICT DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR ***PRIMARY NEIGHBORHOOD*** AT COLUMBIA BLUFFS

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DISTRICT DECLARATION OF COVENANTS,
CONDITIONS, AND RESTRICTIONS FOR
THE PRIMARY NEIGHBORHOOD DISTRICT AT COLUMBIA BLUFFS

This DISTRICT DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS (this "Declaration") is made effective as of _____, 2023, by _____, _____ ("District Declarant").

W I T N E S E T H:

WHEREAS, District Declarant is the owner of the real property located in the Columbia, Maury County, Tennessee, described in Exhibit A attached hereto and incorporated herein by reference (the "Property"). The Property, and additional real property now or hereafter subjected to this Declaration, is intended to be developed pursuant to a master plan as a multi-use community including residential properties including multi-family and single-family products encompassing all or portions of the Property (the "District"), to be known as "**CBPR HOA" _____**, and is a part of the Development known as Columbia Bluffs, with various open spaces, common facilities, and Common Area for the benefit of said community; and

WHEREAS, District Declarant desires to provide a flexible and ordered procedure for the overall development of the Property and the District and to establish a method for the administration, maintenance, preservation, use and enjoyment of such portions of the District as are now or may hereafter be submitted to this Declaration; and

WHEREAS, District Declarant intends by this Declaration to impose upon the District mutually beneficial restrictions under a general plan of improvements for the benefit of all owners and/or occupants of property within the Property and all persons or entities having any interest in the Property, by the recording of this Declaration; and

WHEREAS, District Declarant intends that the Property will be developed in phases and that individual phases may be subjected to one or more declarations of restrictive covenants; and

WHEREAS, District Declarant desires that the Property be held, sold and conveyed subject to the provisions of this Declaration.

NOW, THEREFORE, District Declarant hereby declares that all of the Property and any additional property as may by Supplemental Declaration be added to the Property and subjected to this Declaration shall be held, sold, and conveyed subject to the following easements, restrictions, covenants and conditions. Such easements, restrictions, covenants and conditions are for the purpose of protecting the value and desirability of the Property, and shall run with the real property submitted to this Declaration. They shall be binding on all parties having any right, title, or interest in the Property, or any part thereof, their heirs, successors, successors in title, and assigns, and shall inure to the benefit of each owner thereof.

ARTICLE I
DEFINITIONS

Section 1. "Amenity Center" means any clubhouses or centers within the Development, in each case to be a portion of the Common Area, designed to provide, among

other things, meeting space, recreational facilities, swimming pools, playgrounds or other amenities to serve the residents within the Development, and may also include offices for the Association manager, Declarant or other persons.

Section 2. "Assessments" shall mean assessments for Common Expenses provided for herein or by any amendment hereto, which shall be used for the purposes of promoting the recreation, health, safety, welfare, common benefit, and enjoyment of the Owners and occupants of all or any portion of the District and of maintaining the District, all as may be specifically authorized from time to time by the Board of Directors and as more specifically authorized below. The term "Assessments" shall include, without limitation, General Assessments, Special Assessments, Common Maintenance Parcel Assessments, and Special Use Assessments, and any other assessments now or hereafter established under this Declaration.

Section 3. Articles of Organization" shall mean the Articles of Organization of the District Association, to be recorded in the Office of the Judge of Probate for Maury County, Tennessee, as may be amended from time to time.

Section 4. "Board of Directors" or "Board" shall be the body responsible for managing the affairs of the District Association. Actions required of or permitted by the Board herein may be taken or fulfilled by a committee or other designee as may be established or appointed by the Board in accordance with the Bylaws of the District Association.

Section 5. "Common Area" shall mean those portions of the Property and any improvements thereto, and components thereof and easements appurtenant thereto, now or hereafter owned by the District Association or designated on any development plan or plat for future use for the common use and enjoyment of the Owners, including, but not limited to, any common open space as set forth on a final development plan, the Common Area shown on any recorded plat of the Property and any and all pedestrian bridges, roadways, alley ways, parking areas, lakes, waterways, landscaping and irrigation systems, fences, structures, sidewalks, community signage, walls, monuments, illumination of Common Area, common utilities, storm water system, wells, fountains, amenity center and other improvements located on such Common Area, but excluding any Master Common Area and such areas that are intended to be or now or hereafter designated as a common area serving only a particular portion of the District or to be conveyed to a Sub-District Association. District Declarant shall hereafter convey the Common Area or portions thereof to the District Association, or Sub-District Association, as applicable, and the District Association or Sub-District Association shall accept such conveyance.

Section 6. "Common Elements" shall include all Common Maintenance Areas and all facilities, utilities and other improvements found or located in Common Maintenance Areas, but excluding any Common Maintenance Areas that are within the authority or responsibility of the Master Association.

Section 7. "Common Expenses" shall mean and include the actual and estimated expenses of operating the District Association and maintaining the Common Elements, including any reasonable reserves therefor, all as may be found to be necessary and appropriate by the Board pursuant to this Declaration and the Articles of Organization of the District Association, and including without limitation any District Assessment imposed by the Master Association.

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Section 8. "Common Maintenance Area" shall mean the Common Area and any portion of the Property for which the District Association has assumed or has been designated as the responsible party for maintenance obligations or otherwise designated by this Declaration or any Supplemental Declaration or a Sub-District Declaration as a Common Maintenance Parcel.

Section 9. "Common Maintenance Parcel Assessments" are Assessments to which Common Maintenance Parcels are subjected, in addition to any General Assessments.

Section 10. "Common Maintenance Parcel" shall mean any Lot designated by this Declaration or any Supplemental Declaration as a Common Maintenance Parcel, but excluding any Common Maintenance Parcels that are within the authority or responsibility of the Master Association or within the authority or responsibility of a Sub-District Association.

Section 11. "Community-Wide Standard" shall mean the standard of conduct, maintenance, or other activity generally prevailing in the Development as established in the reasonable discretion of the Master Declarant, District Declarant or the applicable Board of Directors.

Section 12. "District Association" shall mean **Columbia Bluffs Primary Residential** Owners Association, a Tennessee nonprofit corporation, its successors and assigns.

Section 13. "District Declarant" means _____, a _____ limited liability company, its successors and assigns.

Section 14. "Declarant Control Period" means the period ending on the earlier to occur of: (i) the date that the District Declarant voluntarily relinquishes control of the Association; and (ii) when homes have been completed on eighty (80%) of the lots within the District and such lots have been conveyed to third party residential owners.

Section 15. "Development" means the Residential to be developed on real property that includes, among other areas, the District, to be known as Town Columbia, and shall be deemed to include the real property described in the Master Declaration, as may be modified, amended, expanded or contracted from time to time.

Section 16. "District" shall have the meaning given in the premises of this Declaration.

Section 17. "District Assessment" means the Assessment to be paid by the District to the Master Association as set forth in the Master Declaration or Supplemental Declaration.

Section 18. "District Representative" means the Person selected by the Board of Directors to be the representative of the District in meetings or otherwise with the Master Association.

Section 19. "District Design Code" shall mean the aesthetic and functional plan for the District, to be implemented through the regulation of land use, landscaping, architecture and such other matters as may be included in the District Design Code. The District Design Code is originally adopted by the District Declarant and may be amended by the District Declarant or District Design Review Committee, with the consent of District Declarant and Master Declarant

during the applicable Declarant Control Period, from time to time. The District Design Code does not need to be recorded to be effective but shall be available from the District Design Review Committee.

Section 20. "Final Plat" means, collectively, all plats of a portion of the Property from time to time recorded in the real estate records of the Office of the Judge of Probate for Maury County, Tennessee, as such may be amended from time to time as the Property is developed. The term "Final Plat" may include a plat established by a condominium regime.

Section 21. "Improvements" shall mean buildings, outbuildings, underground installations, grading, slope and drainage alterations, roads, driveways, parking areas, fences, screening walls and barriers, retaining walls, stairs, decks, windbreaks, landscaping, plantings, planted trees and shrubs, poles, signs, lighting, loading areas, and all other man-made changes to the natural configuration and vegetation of the Property, whether above or below the land surface.

Section 22. "Lot" or "Lots" shall mean a separate parcel of the Property now or hereafter set forth as a Lot on any Final Plat, including without limitation open space, conservation areas, or Common Area within a District, or separate parcels conveyed by other property description if no Final Plat has been recorded, and shall be deemed to refer to any and all Improvements located thereon or comprising such Lot.

Section 23. "Master Association" shall mean and refer to the Columbia Bluffs Master Association, Inc., a Tennessee nonprofit corporation, its successors and assigns, **IF REQUIRED**.

Section 24. "Master Declarant" shall mean the Declarant of the Master Declaration, its successors and assigns.

Section 25. "Master Declaration shall mean that certain Master Declaration of Covenants, Conditions, and restrictions for Columbia Bluffs, of record at Book _____, page _____, Maury County Register's Office, as may be supplemented, amended, or revised from time to time.

Section 26. "Master Design Code" shall mean the aesthetic and functional plan for the Development, to be implemented through the regulation of land use, landscaping, architecture and such other matters as may be included in the Master Design Code. The Master Design Code is originally adopted by the Master Declarant and may be amended from time to time by the Master Declarant or Master Design Review Committee, with the consent of Master Declarant during the Declarant Control Period applicable to the Master Declaration. The Master Design Code does not need to be recorded to be effective but shall be available from the Master Design Review Committee.

Section 27. "Mortgage" shall include a deed of trust or mortgage encumbering any Unit.

Section 28. "Mortgagee" shall include a beneficiary under or holder of a note secured by a Mortgage who has provided actual, written notice to the Master Association of such interest.

Section 29. "Mortgagor" shall include the trustor or grantor of a Mortgage.

Section 30. "Operating Budget" shall have the meaning given in Article IX, Section 2 of this Declaration.

Section 31. "Owner" shall mean and refer to one or more Persons or entities, including District Declarant or Master Declarant, who holds or hold the record title to any Lot, but excluding in all cases any party holding an interest merely as security for the performance of an obligation.

Section 32. "Person" shall mean a natural person, a corporation, a partnership, a limited liability company, a trust, a trustee, or any other legal entity.

Section 33. "Property" shall mean and refer to the real property described in Exhibit A attached hereto, and any additional real property submitted to this Declaration from time to time pursuant to a Supplemental Declaration and added to the District.

Section 34. "Special Assessment" shall have the meaning given in Article IX, Section 5 of this Declaration.

Section 35. "Special Use Assessment" shall mean the Assessment applied to a Special Use Parcel by Supplemental Declaration, which may be in lieu of all other Assessments; subject to the provisions of Article IX.

Section 36. "Special Use Parcel" shall mean a Lot of unconventional size, shape, location or use that calls for special design and assessment considerations as designated by Master Declarant or District Declarant. Typically, a Special Use Parcel will be used for commercial purposes, civic purposes, an age-restricted neighborhood, multi-family residential, or community or recreational facilities.

Section 37. "Streetscape, Pedestrian, Utility and Street Maintenance Easement" shall include all streetscape, pedestrian, utility and street easements located adjacent to street rights-of-way and medians in public rights of way.

Section 38. "Sub-District Association" shall mean an owners association established to maintain or regulate only a portion of the District pursuant to a Sub-District Declaration, such as a condominium association, if any, with the prior consent of Master Declarant and District Declarant.

Section 39. "Sub-District" shall mean a portion of the District that has been subjected to particular restrictions, covenants or regulations by Supplemental Declaration or a Sub-District Declaration, , if any, and may be maintained or regulated by a Sub-District Association.

Section 40. "Sub-District Declaration" shall mean a declaration of restrictive covenants and other matters applicable only to a Sub-District.

Section 41. "Supplemental Declaration" shall mean an amendment to this Declaration, including the addition of additional property, Lots or Master Common Area subjected to this Declaration. Such Supplemental Declaration may, but is not required to, impose, expressly or by reference, additional restrictions and obligations to the provisions of this Declaration, or to

exempt such property from certain provisions and restrictions of this Declaration. The term "Declaration" as used herein shall include this Declaration, together with any and all Supplemental Declaration, together with any amendments, restatements or other additions or removals thereto.

Section 42. "Telecommunication Services" shall mean residential and commercial services involving the provision of voice, internet, entertainment, television or other related services.

Section 43. Defined Terms. Capitalized terms used herein and not otherwise defined shall have the meaning given in the Master Declaration.

ARTICLE II
DISTRICT AND SUB-DISTRICT ASSOCIATIONS

Section 1. Establishment. This Declaration is a District Declaration as referred to in the Master Declaration, and is established by District Declarant with the consent of Master Declarant.

Section 2. District Sub-District Associations. District Declarant or other Persons may from time to time, with the consent of Master Declarant and District Declarant, establish Sub-Districts within the District to be governed by a Sub-District Association by filing a Sub-District Declaration, Supplemental Declaration, or other means of record. Each area within a Sub-District may consist of one or more Lots within the District, one or more parcels described by property description (each of which will be deemed a Lot), one or more uses, or otherwise as determined by the applicable declarant, District Declarant, or Master Declarant, in their sole discretion, but subject in each case to the consent of Master Declarant and District Declarant. Upon establishment of a Sub-District, and at any time and from time to time, the applicable declarant may but shall not be required to impose additional restrictive covenants that are applicable to such Sub-District or to exempt all or a portion of the Sub-District from one or more provisions of this Declaration, with the consent of the Master Declarant and District Declarant. The applicable declarant may establish, or cause the Sub-District to establish, one or more Sub-District Associations for the management and preservation of such Sub-District, each with the power to establish and collect Assessments for, among other things, the payments of Assessments to the Master Association or District Association s as may be in the Master Declaration, this Declaration, or in this Declaration.

Section 3. Sub-District Declaration. A Sub-District shall be entitled to establish one or more Sub-District Declarations applicable to a Sub-District and a Sub-District Association for the administration thereof, but such Sub-District Declarations and all Sub-District Associations shall in each case be subject to the prior review and approval of District Declarant and Master Declarant in their respective sole discretion, and shall be deemed subordinate to the Master Declaration and this Declaration.

Section 4. Sub-District Representatives. Unless otherwise established by the declarant in a Sub-District Declaration, it shall be the responsibility of Owners within a Sub-District to establish equitable, fair and representative procedures for the selection of any representative to the District Association as may be established, in each case to be approved by District Declarant. If applicable, no voting or representative rights shall be available to a Sub-

District until such time as a Sub-District Representative has been duly selected. Each Sub-District will be governed, controlled and subject to the powers and authority vested in the Master Association and the District Association, whether or not the District has elected a District Representative.

ARTICLE III
PROPERTY RIGHTS AND EASEMENTS

Section 1. Common Area. Every Owner shall have a right and easement of enjoyment in and to the Common Area that is appurtenant to the title to such Owner's Lot, subject to any restrictions or limitations contained in the Master Declaration, this Declaration or in any Deed or amendment thereto conveying the Common Area to the District Association or subjecting the Common Area to this Declaration. Any Owner may delegate his or her right of enjoyment to their family, tenants, customers, and invitees, as applicable, subject to reasonable regulation by the Board and in accordance with procedures the Board may adopt from time to time.

Section 2. Exceptions to Rights. The Owner's right granted in Section 1 above shall be subject to the following:

(a) The right of the Master Association or District Association to dedicate or transfer all or any part of the Common Area to any public body, agency, authority, or utility for such purposes as are consistent with the purposes of the Master Association set forth in the Master Declaration or the District Association set forth in this Declaration.

(b) The limitation of Owner rights only to those areas of the Common Area for which such Owner shall pay a portion of the Common Expenses related thereto.

(c) Each Owner's responsibility to pay for Common Expenses, fees, Fines and other charges hereunder assessed by the Board or the District Association against an Owner's Lot.

(d) The right of Master Declarant, District Declarant or other declarant under a Sub-District Declaration to limit, restrict, or regulate the use of the Common Area in their sole discretion.

Section 3. Owner Easements. Subject to the limitations of Section 2 above, every Owner, its successors and assigns, shall have the following perpetual easements with respect to the Property; provided, that for purposes of this Section 3, Common Area shall be deemed to include Common Area that is now or hereafter created within a District, without regard to whether the District Association has ownership of such areas or responsibilities for maintenance or otherwise with respect such areas:

(a) A non-exclusive easement of ingress and egress to its Lot over, across and through the Common Area and Streetscape, Pedestrian and Utility Maintenance Easements.

(b) A perpetual easement in common with the Owners of all other Lots to use all pipes, wires, cables, public utility lines and other Common Elements serving its Lot.

(c) A nonexclusive, perpetual and reciprocal access easement for ingress and egress in common with the Owners of all other Lots for access over any drive aisles or alleys located, constructed and available on or within any Lot, but expressly excluding private driveways constructed solely for internal use only within a Lot, and any areas excluded from use by a Supplemental Declaration, this Declaration, or a Sub-District Declaration.

(d) A perpetual and non-exclusive easement in, over and through all Common Area and to use the entranceways, pedestrian systems and other common improvements within the Property subject to the right of the Board to:

(i) promulgate rules and regulations for the use and enjoyment thereof; and,

(ii) suspend the enjoyment and voting rights of any Owner for any period during which any Assessment for Common Expenses or Fine or other charge or fee hereunder remains unpaid, or for any period during which any infraction of its published rules and regulations continues, it being understood that any suspension for either non-payment of any assessment or a breach of the rules and regulations of the District Association shall not constitute a waiver or discharge of the Owner's obligation to pay the assessment..

Section 4. District Declarant and District Association Easements. The District Declarant and the District_Association, their successors and assigns, and their contractors and agents shall have the following perpetual easements with respect to the Property:

(a) A perpetual and non-exclusive easement for the maintenance of any Common Elements and Streetscape, Pedestrian, and Utility Maintenance Easements, which may presently, or hereinafter encroach upon a Lot.

(b) A perpetual and non-exclusive right of access to each Lot: (1) to inspect same for the purpose of verifying conformance with this Declaration and any rules and regulations of the District Association, (2) to remedy any violations set forth in this Declaration or in any rules and regulations of the District Association, and (3) to perform any operations required in connection with the maintenance, repairs or replacements of or to the Common Area, or any equipment, facilities or fixtures affecting or serving other lot(s) or the Common Elements; provided that requests for entry are made in advance and that any such entry is at a time reasonably convenient to the Owner. In the case of an emergency, such right of entry shall be immediate, whether Owner is present at the time or not.

(c) A perpetual and non-exclusive easement in, over, upon, across and through the Common Area for surface water runoff and drainage caused by natural forces and elements, grading, and/or the improvements located upon the Property. No individual Owner shall directly or indirectly interfere with or alter the drainage and runoff patterns and systems within the Property without written approval of the Master Association.

(d) A perpetual and non-exclusive easement in, upon, over, across and through the Common Area for the purpose of installation, maintenance, repair, service and replacement of all sewer, water, power and telephone pipes, lines, mains, conduits, waters, poles, transformers, meters, and any and all other equipment or machinery necessary or incidental to the proper functioning of any utility company or other entity that requires same for the purpose of

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furnishing one or more of the foregoing services as determined and authorized by the Master Association.

(e) A perpetual and non-exclusive easement of unobstructed ingress and egress in, upon, over, across and through the Common Area to the District Association, the Master Association, and their respective officers, agents and employees and all police, fire, and ambulance personnel in the proper performance of their respective duties (including but not limited to emergency or other necessary repairs to a lot upon which the Owner has failed to perform) and for repair and maintenance of the Common Elements. Except in the event of emergencies, the rights accompanying the easements provided for in this subsection shall be exercised only during reasonable daylight hours and then, whenever practical, only after advance notice to the Owner(s) directly affected thereby.

(f) The District Declarant reserves the right and easement, which shall be a covenant running with the land, for and to the benefit of District Declarant and District Association for the installation and use of entrance Improvements to be located on the entrances to the District. The estimated and actual cost of operating and maintaining any improvement thereon will be the responsibility of the District Association. Excluding the Master Declarant or District Declarant, and any of their respective affiliates, the publication or display of any signage or other matter by any Person, whether or not such Person is a Member of the District Association, upon any Improvement on the entry feature easement will be subject to contract with the District Association for the reasonable compensation for services and operating expenses in connection therewith.

Section 5. Easement Related to Infrastructure and Other Improvements. Notwithstanding the foregoing or anything else contained herein to the contrary, District Declarant and/or the District Association shall have and hereby retain the right, but not the obligation, to create, install, construct, modify, repair, replace and maintain certain forms of infrastructure for the District that may consist of curbs, streets, service drives, sidewalks, and other hardscape, landscaping, street trees, street lights, irrigation systems, brick pads, benches, bridges, street furniture, walking paths, parks, trash receptacles, drainage facilities, signage, utilities, and any apparatuses related thereto, as well as other improvements not necessarily enumerated above. Said improvements may be installed along the roads or within any Lot or in the Common Area of the District if deemed necessary or desirable by the District Declarant and/or the District Association, in their sole and absolute discretion, for the overall functionality or aesthetics of the District. Continued maintenance, repair and replacement of any of the aforementioned infrastructure or improvements, if and once installed, shall be the responsibility of the Lot Owner if located within said Owner's Lot, or the responsibility of the applicable District Association if located within the Common Area of the District or the responsibility of the Master Association if located within the Master Common Area. Any costs and expense associated with this right may be reallocated and assessed by the District Association as a Common Expense. Notwithstanding the foregoing, when exercising said right, neither District Declarant nor the District Association shall do anything which may reduce the number of parking spaces within the Lot. In addition, neither District Declarant nor the District Association shall have the right to modify an existing building located on a Lot without the consent of the Lot Owner. An easement is hereby granted to the District Declarant, the District Association and to any construction or management company selected by the District Declarant or the District Association to enter in or cross over the Common Area or to enter or cross over any Lot to

create, install, construct, modify, repair, replace and maintain any of the aforementioned forms of infrastructure or improvements located within any portion of the District.

Section 6. Easements for Utilities and Related Purposes. The District Association is authorized and empowered to grant (and shall from time to time grant) such licenses, easements and/or rights of way for sewer lines, water lines, electrical cables, telephone cables, television and other communication cables, internal and external wiring and antennae, gas lines, drainage, slopes, storm drains, regulatory signage, street lights, underground conduits and/or such other purposes related to the provision of public utilities and other common services to the District as may be considered necessary, appropriate or desirable by the Board for the orderly maintenance, preservation and enjoyment of the Common Area or for the preservation of the health, safety, convenience and/or welfare of the Owners of the lots and District Declarant. A ten (10) foot nonexclusive underground utility easement for the District Association is reserved along all the frontage (but behind right of way), both sides, and rear of all Lots, and on both sides of the sidelines of all comer Lots. Additional easements are reserved on the recorded plat(s), as amended from time to time. Within these easements, no construction of any kind shall be placed or permitted to remain which will in any way damage or interfere with the installation or maintenance of utilities.

Section 7. Streetscape, Pedestrian, Utility, and Street Maintenance Easements. Streetscape, Pedestrian, Utility, and Street Maintenance Easements shall include all streetscape, pedestrian, utility, and street maintenance easements located adjacent to street rights-of-way, and required pavers and medians in public rights-of-way.

Section 8. Easements of Encroachment. There shall be reciprocal appurtenant easements of encroachment as between each Lot and such portion or portions of the Improvements adjacent thereto or as between adjacent Lots due to unintentional placement or settling or shifting of Improvements constructed, reconstructed or altered thereon.

Section 9. General Easement. The District Declarant, so long as it shall retain record title to any Lot or other tract within the District or the Common Area, and the District Association, reserve the right and easement to the use of the Common Area and any Lot (regardless of ownership) or any portion thereof, as may be needed for repair, maintenance or construction on such Lot or any other Lot or the Common Area.

Section 10. Revision of Common Area. Notwithstanding any other provision of this Declaration, District Declarant shall have the right by recording a Final Plat or otherwise to revise any Common Area, in whole or in part, including without limitation the conversion to other types or uses of property, the increase or decrease in size, or the granting of easements or construction of improvements in such Common Area.

ARTICLE IV
MEMBERSHIP AND VOTING RIGHTS

Section 1. Membership in the District Association. Every Person who is the record owner of a joint or undivided fee interest in any Lot shall be deemed to be a member of the Association (each such person or entity, a "Member"). Membership shall be appurtenant to and may not be separated from such fee interest ownership, and any transfer of a Lot shall operate automatically to transfer to the new record owner thereof the membership in the Association

appurtenant thereto. The foregoing is not intended to include persons who hold an interest merely as security for the performance of an obligation, and the giving of a security interest shall not terminate that Member's membership.

Section 2. Assignment by Declarant. Notwithstanding the foregoing, District Declarant may at any time assign, pledge, hypothecate or alienate its membership and/or District Declarant's rights as District Declarant herein, but any transfer by District Declarant of title to a Lot shall automatically transfer the membership in the Association appurtenant thereto, free and clear from any such assignment, pledge, hypothecation or alienation.

Section 3. Voting Rights. Voting and other rights of the Members shall be as set forth in the By-Laws of the Association.

ARTICLE V
MAINTENANCE

Section 1. District Association's Responsibility. The District Association shall maintain and keep in good repair the Common Maintenance Area. Subject to the provisions of any Supplemental Declaration or Sub-District Declaration, such maintenance may include, without limitation, maintaining, repairing, and replacing, subject to any insurance then in effect, all trees, landscaping and other flora, structures, irrigation system, storm water control and any other Improvements situated upon the Common Area or the Common Maintenance Area, and the maintenance of non-public streets, parking areas, or driveways, street or entrance lighting, signage, including without limitation directional signage.

Section 2. Common Maintenance Parcels. The District Association shall maintain those portions of Common Maintenance Parcels as this Declaration or any Supplemental Declaration establishes as a District Association responsibility, and may charge to the Owners of such Common Maintenance Parcel a Common Maintenance Parcel Assessment, as appropriate.

(a) Unless otherwise established by Supplemental Declaration, the District Association shall provide for the maintenance, care, repair, and replacement of the following portions of the Common Maintenance Parcels, to be funded by Common Maintenance Parcel Assessments: the exterior landscaping (except such landscaping installed by, or on behalf of, the Lot Owner and such landscaping enclosed by a fence, if any), walkways, and porches located upon or about each Common Maintenance Parcel. The District Association also shall maintain the exterior of each Common Maintenance Parcel as follows: painting, maintenance, and repair of exterior building surfaces as the Board shall deem necessary and proper, including roofs, gutters, downspouts, exterior building surfaces, trees, shrubs, grass, walks, replacement of trim, caulking and other repairs to roof covers (to include the repair and replacement of all components of the roof of each Common Maintenance Parcel), and other miscellaneous repairs. Such exterior maintenance shall not include glass surfaces (weather windows or sliding glass doors), HVAC equipment, storm doors, front or rear entry doors, garage doors, fences, screens, or patio covers. The balance of the improvements located on the respective Common Maintenance Parcels shall be maintained by the Owner of the particular Lot involved. For the sole purpose of performing the exterior maintenance upon each Lot required by this Article V, the duly authorized employees or agents of the District Association shall have the right, after reasonable notice to the Owner, to enter upon any Lot and into any Lot at reasonable hours of any day.

(b) Notwithstanding any foregoing provision to the contrary, the duly authorized agents or employees of the District Association shall have the right to enter in or upon any Lot or into any structure or located on a Lot, without notice to the Owner thereof, when, in the judgment of the District Association, acting through its Board of Directors, such entrance is necessary to prevent damage to such Lot or surrounding Lots or Common Area by fire, criminal act, natural disaster, or other similar emergency.

(c) Notwithstanding the obligations of the District Association with respect to maintenance of certain portions of the exterior of certain Lots, the District Association shall have no obligation to repair interior or structural portions of any Lot or personal property that is lost or damaged as a result of construction defects, damage or maintenance issues of exterior portions of any Lot, including without limitation damage resulting from water leaks, foundational issues, or settling or structural matters. Each Owner shall bear full responsibility for obtaining and maintaining such insurance as may be desired for protection against such losses.

(d) Notwithstanding the foregoing, if the need for exterior maintenance and repair of Common Maintenance Parcels by the District Association as required by this section is caused by the willful or grossly negligent conduct or act an Owner, his/her family, guest, invitees, or other Persons using or occupying his/her Lot with his/her express or implied permission, the cost of such repair or maintenance may be assessed against such Owner as a Special Assessment of this Declaration upon a finding by the Board, which shall be due and payable thirty (30) days from the date of notice thereof, such Assessment to be collected and enforced as provided in this Declaration. Such Special Assessment shall not require the approval of any of the Members; provided, however, that any Owner against which any such Assessment is levied shall be entitled to notice, a hearing at a time and place set by the Board in its sole discretion, and an opportunity to do the corrective work required (provided that the work is performed by a competent contractor mutually agreeable to both parties and in a manner and quality agreed to by the Board), prior to a Special Assessment being levied against such Owner in accordance with the provisions of this subsection.

Section 3. Owner's Responsibility. Except as provided in the foregoing Section 1. Section 2. or otherwise set forth in a District Declaration, the Owner of each Lot shall have the sole responsibility for maintenance of all exterior and interior portions of the Lot, all Improvements located thereon, the land, flora and landscaping within the boundaries of the Lot; and other improvements not maintained by the District Association. Each Owner shall maintain its Lot in a manner consistent with the Community Wide Standard, the applicable covenants set forth in this Declaration, and such rules and regulations as may be established by the Board from time to time.

ARTICLE VI
INSURANCE AND CASUALTY LOSSES

Section 1. Insurance. The Board of Directors for the District Association, or its duly authorized agent, shall have the authority to and shall obtain insurance for all insurable improvements on the Common Area against loss or damage by fire or other hazards, including extended coverage, vandalism, and malicious mischief. This insurance shall be in an amount sufficient to cover the full replacement costs of any repair or reconstruction in the event of damage or destruction from any such hazard.

(a) The Board shall also obtain a public liability policy covering the Common Area and District Association for all damage or injury caused by the negligence of the District Association or any of its employees or agents. The public liability policy shall have at least a One Million Dollar ($1,000,000.00) single person limit as respects bodily injury and property damage, a One Million Dollar ($1,000,000.00) limit per occurrence, and a Five Hundred Thousand Dollar ($500,000.00) minimum property damage limit. The policy or policies may contain a reasonable deductible, and the amount thereof shall be added to the face amount of the policy in determining whether the insurance at least equals the full replacement cost.

(b) In addition to the other insurance required by this Section, the Board shall obtain, as a Common Expense, worker's compensation insurance, if and to the extent necessary, and a fidelity bond or bonds on directors, officers, employees, and other persons handling or responsible for the District Association's funds. The amount of fidelity coverage shall be determined in the directors' best business judgment, but may not be less than three months' Assessments, plus reserves on hand. Bonds shall contain a waiver of all defenses based upon the exclusion of persons serving without compensation and may not be canceled or substantially modified without at least thirty (30) days' prior written notice to the District Association. The Board shall also obtain, as a Common Expense, a reasonably available amount of Directors and Officers Errors and Omissions insurance.

(c) Premiums for all insurance required by this Article VI, shall be Common Expenses of the District Association and shall be included in the General Assessment.

Section 2. Insurance; Common Maintenance Parcels.

(a) The District Association shall, as a Common Expense applicable only to Lots that are Common Maintenance Parcels, obtain and continue in effect adequate blanket all-risk casualty insurance, if reasonably available, and if not reasonably available, fire and extended coverage, in such form as the Board deems appropriate for one hundred (100%) percent of the replacement cost of the Lots that are Common Maintenance Parcels, excluding the replacement of any finishes, fixtures, cabinets, appliances, flooring, or other improvements installed or supplied by the Owners, or their tenants, or personal property of the Owners, or their tenants, guests, and invitees located within such Lots.

(b) Neither the District Declarant nor the District Association has constructed the Lots on the Common Maintenance Parcels, and neither District Declarant nor the District Association shall be liable for any claims or causes of action of any kind whatsoever in law or in equity arising from or in any way relating to the construction of improvements upon the Common Maintenance Parcels that was performed by parties other than District Declarant, its agents, employees, subsidiaries or other affiliated entities.

(c) Premiums for all insurance required by this Article VI, Section 2, shall be Common Expenses of the Association applicable only to Common Maintenance Parcels and shall be included in the Common Maintenance Parcel Assessment. The policy or policies may contain a reasonable deductible, and the amount thereof shall be added to the face amount of the policy in determining whether the insurance at least equals the full replacement cost.

Section 3. Disbursement of Proceeds. Proceeds of insurance policies with respect to Common Area shall be disbursed as follows:

(a) If the damage or destruction for which the proceeds are paid is to be repaired or reconstructed, the proceeds, or such portion thereof as may be required for such purpose, shall be disbursed in payment of such repairs or reconstruction as hereinafter provided. Any proceeds remaining after defraying such costs of repairs or reconstruction to the Common Area or, in the event no repair or construction is made shall be retained by and for the benefit of the District Association and placed in a capital improvements account.

(b) If it is determined that the damage or destruction to the Common Area for which the proceeds are paid shall not be repaired or reconstructed, such proceeds shall be disbursed in the manner as provided for excess proceeds in Section 2(a) above.

Section 4. Repair and Reconstruction. If the damage or destruction to the Common Area for which the insurance proceeds are paid is to be repaired or reconstructed, and such proceeds are not sufficient to defray the cost thereof, the Board of Directors may use reserve or capital improvements account funds, or may levy a Special Assessment against all Lots. Additional Assessments may be made in like manner at any time during or following the completion of any repair or reconstruction.

Section 5. Annual Review of Policies. At least annually, the Board shall review all insurance policies that are required by this Article VI to be maintained by the District Association in order to ascertain whether the coverage contained in the policies is sufficient. If the Board deems such coverage to be insufficient, the Board may expand the coverage to the extent it reasonably deems necessary.

ARTICLE VII
NO PARTITION

Whenever all or any part of the Common Area shall be taken (or conveyed in lieu of and under threat of condemnation by the Board) by any authority having the power of condemnation or eminent domain, the award made for such taking shall be payable to the District Association as Trustee for all Owners to be disbursed as follows: If the taking involves a portion of the Common Area on which Improvements have been constructed, then, unless within sixty (60) days after such taking the District Declarant or the District Association shall otherwise agree, the District Association shall restore or replace such Improvements so taken on the remaining land included in the Common Area to the extent lands are available therefor, in accordance with plans approved by the Board and the District Design Review Committee. If such Improvements are to be repaired or restored, the above provisions in Article V hereof regarding the disbursement of funds in respect to casualty damage or destruction shall apply. If the taking does not involve any Improvements on the Common Area, or if there is a decision made not to repair or restore, or if there are net funds remaining after any such restoration or replacement is completed, then such award or net funds shall be disbursed to the District Association and used for such purposes as the Board shall determine.

ARTICLE VIII
RIGHTS AND OBLIGATIONS OF THE DISTRICT ASSOCIATION

In addition to the powers delegated to the District Association by its Articles of Organization or the laws of the State of Tennessee, the District Association shall be empowered to perform each of the following duties related to the Property and Common Area:

Section 1. Operation and Maintenance of Common Maintenance Area. To operate, maintain and otherwise manage or provide for the operation, maintenance and management of the Common Maintenance Area, together with all easements for operation and maintenance purposes and for the benefit of the District Association or the Owners over and within the Common Area; to keep all Improvements, if any, of whatever purpose from time to time located on the Common Area in good order, condition, and repair.

Section 2. Title. Any other provision of this Declaration or the Bylaws notwithstanding, the District Association always shall maintain lien free title to the Common Area, excepting only a lien for current year taxes, provided, however, that the District Association may mortgage or convey the Common Area with an affirmative vote of at least sixty-seven percent (67%) of the Directors; and provided, further, that the District Association may accept a conveyance of the Common Area subject to a lien or other encumbrance.

Section 3. Seasonal or Other Decorations. To install and maintain seasonal and other decorations, lighting, street banners, and other items designed to enhance the appearance or attractiveness of the District or the enjoyment or experience of those living, shopping or otherwise participating in the District, in the sole discretion of the District Declarant or Board of Directors, the cost of which shall be a Common Expense.

Section 4. Water and Other Utilities. To acquire, provide, and/or pay for, water, sewerage, garbage disposal, electrical, telephone, gas, and other necessary utility services for the Common Area.

Section 5. Taxes and Assessments. To pay all real and personal property taxes and assessments separately levied upon or assessed against the District Association and/or the property owned by the District Association. Such taxes and assessments may be contested or compromised by the District Association; provided, however, that they are paid or a bond in an amount at least equal to such taxes and assessments is posted prior to the sale or other disposition of any property to satisfy the payment of such taxes or assessments.

Section 6. Insurance. To obtain from reputable insurance companies qualified to do business in the State of Tennessee the insurance set forth in this Declaration, and to maintain in force at all times such insurance as is required by this Declaration.

Section 7. Personal Property and Real Property for Common Use. The District Association, through action of its Board of Directors, may acquire, hold, and dispose of tangible and intangible personal property and real property. The Board, acting on behalf of the District Association, shall accept any real or personal property, leasehold, or other property interests within Maury County conveyed to it by the District Declarant as permitted herein.

Section 8. Rules and Regulations. The District Association, through its Board of Directors or otherwise, may make and enforce reasonable rules and regulations governing the use of the Property, which rules and regulations shall be consistent with the rights and duties established by this Declaration. Sanctions for violations of the rules and regulations may include reasonable monetary Fines (as hereinafter defined) and suspension of the right to use the Common Area. The Board shall, in addition, have the power to seek relief in any court for violations or to abate nuisances. In addition, the District Association, through the Board or otherwise, may, by contract or other agreement, enforce city or county ordinances or permit the

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City of Columbia or Maury County to enforce ordinances on the Property for the benefit of the District Association and the Owners.

Section 9. Traffic Control. The Board may make rules and regulations concerning driving and parking within the Property, subject to applicable governmental requirements and restrictions. Without limiting the foregoing, to the extent permitted by local governmental authority, the District Association may construct traffic calming devices and post speed limits or other traffic signs and take other measures deemed necessary to discourage excessive speed and to promote a safe environment. The District Association may enforce such rules and regulations with penalties, Fines, or towing, and shall have all remedies set forth in this Declaration.

Section 10. Implied Rights. The District Association may exercise any other right or privilege given to it expressly by this Declaration or the Bylaws, any law, statute, or ordinance, and every other right or privilege reasonably to be implied from the existence of any right or privilege given to it herein or reasonably necessary to effectuate any such right or privilege.

ARTICLE IX
ASSESSMENTS

Section 1. Creation of Assessments. There shall be created annual Assessments as may be from time to time specifically authorized by the Board of Directors as follows (collectively, the "Annual Assessments"):

(a) The Board may levy general assessments for expenses determined by the Board to benefit the District Association and/or the district as a whole, including without limitation, expenses incurred by the District Association in fulfilling its maintenance obligations set forth in this Declaration or otherwise expressly or implicitly authorized by this Declaration, reserves as deemed appropriate by the Board, and the District Assessment ("General Assessments").

(b) The Board may levy a Common Maintenance Parcel Assessment against Common Maintenance Parcels for expenses determined by the Board to benefit only such Common Maintenance Parcels, including without limitation, expenses incurred by the District Association in fulfilling its maintenance or service obligations with respect to such Common Maintenance Parcels. Common Maintenance Parcels may be established with different levels of services and maintenance obligations for the District Association, and the Common Maintenance Parcel Assessment applicable to Common Maintenance Parcels may reflect such differences.

(c) The Board may levy a Special Use Assessment to the extent established by a Supplemental Declaration for any Special Use Parcel. In the event a Special Use Assessment is established, the General Assessments shall not apply to such Special Use Parcels. If no Special Use Assessment is established in a Supplemental Declaration by oversight or error, then the Declarant or the Board may at any time thereafter establish a Special Use Assessment in the Declarant's or the Board's discretion, to be applied to such Special Use Assessment from after the date of such establishment. The Special Use Assessment may include maintenance or landscaping responsibilities for areas within the District but not located within the Special Use Parcel.

Section 2. Operating Budget. It shall be the duty of the Board to prepare a budget covering the estimated costs of operating the District Association during the coming year,

including without limitation Common Expenses and Common Maintenance expenses (the "Operating Budget").

Section 3. Capital Budget and Contribution. The Board of Directors shall annually prepare a capital budget that shall take into account the number and nature of replaceable assets, the expected life of each asset, and the expected repair or replacement cost (the "Capital Budget"). The Board shall set the required capital contribution, if any, in an amount sufficient to permit meeting the projected capital needs of the District Association, as shown on the Capital Budget, with respect both to amount and timing by Assessments over the period of the Budget. The capital contribution required shall be fixed by the Board and included within the Operating Budget and Assessment. The Capital Budget shall also provide for the establishment of separate reserve accounts to hold the proceeds of the Assessments imposed for capital expenditures.

Section 4. Allocation of General Assessments. Unless otherwise set forth in any Supplemental Declaration or District Declaration, General Assessments shall be allocated against all Lots (other than Special Use Parcels) within the District equally. Assessments for Special Use Parcels may include the responsibility for specific areas or maintenance or landscaping within the Development that shall not be considered in setting the General Assessments.

The Board shall set Assessments based on the Operating Budget and the Capital Budget. The Board shall cause a copy of the Operating Budget, the Capital Budget, and the amount of each General Assessment to be communicated to the Members of the District Association at least ten (10) days prior to the year for which Assessments shall be made. The Operating Budget, together with the Capital Budget and the Annual Assessments (collectively, the "Budget"), shall be adopted by the Board at a duly called meeting of the Board. Notwithstanding the foregoing, however, in the event a Budget is not established for any reason for any year, then and until such time as a Budget shall have been determined as provided herein, the Budget in effect for the then current year shall continue for the succeeding year. No failure to provide the Operating Budget or Assessments as required hereunder shall relieve any Lot Owner from payment of such Assessments once established.

Section 5. Special Assessments. In addition to the Annual Assessments authorized above, the Board may levy, during any calendar year, special assessments, applicable only to that year, to be used solely to defray, in whole or in part, the cost of any construction, reconstruction, or unexpected repair or replacement of a capital improvement, including the necessary fixtures and personal property related thereto ("Special Assessments"). The Board may levy a Special Assessment against all Lots for such expenses determined by the Board to benefit the District Association and/or the District as a whole, and may levy a Special Assessment against particular Lots for such expenses as may be determined by the Board to benefit less than the Master Association or District as a whole.

Section 6. Assessment Obligation. Assessments against each Lot shall commence on recording of a Supplemental Declaration, District Declaration or Sub-District Declaration applicable to such Lot, provided, however, that the applicable Supplemental Declaration or District Declaration or Sub-District Declaration may, with the approval of Master Declarant and District Declarant, suspend or delay the payment of Assessments as set forth therein. Each Owner, by acceptance of his or her Deed, is deemed to covenant and agree to pay all Assessments levied by the District Association, whether or not such obligation is so expressed in such Deed. Each Owner shall be deemed a direct beneficiary of the Common Expenses of the

Master Association, which are made for the benefit of the entire Development, and apportionment of the District Assessment shall be payable be each Lot Owner. Notwithstanding any other provision of this Declaration, no Assessments shall be levied against Lots or other Property owned by the District Declarant, its successors or assigns.

(a) All Assessments, together with interest at the highest rate allowable under the laws of Tennessee from time to time relating to usury (or if no such rate is established, sixteen percent (16%) per annum) ("Interest"), costs, and reasonable attorneys' fees, shall be a charge on the land and shall be a continuing lien upon the Lots within the District against which each Assessment is made. Each Assessment, together with Interest, costs, and reasonable attorneys' fees, shall also be the personal obligation of the Person who was the Owner of such Lot at the time the Assessment arose, and his or her grantee shall be jointly and severally liable for such portion thereof as may be due and payable at the time of conveyance, except no first Mortgagee who obtains title to a Lot pursuant to the remedies provided in the Mortgage shall be liable for unpaid Assessments which accrued prior to such acquisition of title in excess of six (6) months accrued Assessments.

(b) Assessments shall be paid in such manner and on such dates as may be fixed by the Board. The manner of payment fixed by the Board may include, without limitation, acceleration of the Assessment levied on a particular Lot on account of delinquent payment of such Assessment or monthly installment thereof. Unless the Board otherwise provides, Annual Assessments shall be paid in quarterly installments. Without limiting the foregoing, the Board may also levy a late charge on Assessments not timely paid, in the discretion of the Board.

Section 7. Lien for Assessments. To secure the payment of any Assessment and/or fine imposed by the District Association pursuant to this Declaration (each such fine, a "Fine"), a lien is expressly retained in favor of the District Association on each and every Lot or Special Use Parcel in the District Association. Such lien shall be prior and superior to all other liens, except all taxes, bonds, assessments, first mortgage liens, liens in favor of the Master Association, and other levies which by law would be superior thereto.

Section 8. Start-up Assessment. Each Lot Owner who takes title to a Lot shall pay to the District Association at closing a start-up assessment fee in an amount established by the Board from time to time (the "Start-up Assessment"). This one time Start-up Assessment shall be in addition to and not a prepayment of the regular Assessments provided for above. The District Declarant may, by Supplemental Declaration, Sub-District Declaration, contract, or otherwise, exempt certain properties from the Start-Up Assessment, limit the payment of the Start-Up Assessment to certain transactions, or otherwise alter the general obligations set forth hereunder.

Section 9. Transfer Assessment. The Board may establish an Assessment to be paid by the purchaser of any Lot within the Property on transfer or conveyance of such Lot from time to time (the "Transfer Assessment"). The amount of such Transfer Assessment shall be established by the Board from time to time. The Transfer Assessment shall not be due on any closing of a Lot in which the Start-Up Assessment is paid. District Declarant may, by Supplemental Declaration, Sub-District Declaration, contract, or otherwise, exempt certain properties from the Transfer Assessment, limit the payment of the Transfer Assessment to certain transactions, or otherwise alter the general obligations set forth hereunder.

Section 10. Administrative Fee. In addition to the Start-Up Assessment and Transfer Assessment, the Board may establish an administrative fee that the purchaser of any Lot within the Property shall be obligated to pay. The purpose of the Administrative Fee is to pay for the administrative expenses of the District Association or its agent resulting from the change in Lot ownership.

Section 11. Use of Assessments and Fees. The Start-Up Assessment and Transfer Assessment collections may be used as the Board of the District Association shall deem appropriate, which use may include, without limitation, operating costs of the District Association, the payment for capital improvements of the District Association, the establishment of reserves, or the establishment of a fund, account or nonprofit corporation formed for the purpose of enhancing, directly or indirectly, the District and the Owner, including the support of charitable, educational, social or beneficial organizations, causes, events or scholarships.

Section 12. Certificate of Payment. The Board shall, upon request and for a reasonable charge, furnish to any Person a certificate, signed by an officer of the District Association, setting forth whether or not all Assessments, whether General or Special, or other applicable fees or Interest, on a specified Lot or Special Use Parcel have been paid. Such certificate shall be conclusive evidence of payment of any Assessment therein stated to have been paid.

ARTICLE X
CONSTRUCTION AND ARCHITECTURAL STANDARDS

Section 1. Construction Standards. Owners shall construct all Improvements on Lots in accordance with plans and specifications approved by the City of Columbia, Tennessee (the "City"). Further, no Person shall construct any Improvements upon a Lot, or after completion of such Improvements, make any modifications, additions or alterations to such Improvements, without the prior written approval of the Master Design Review Committee and District Design Committee (as defined below). In no event shall the District Design Review Committee approve any plans violating the use restrictions set forth in Article XI below, and no purported approval shall constitute a waiver of such restrictions.

Section 2. Design Review Committee. The District Declarant or Board, as applicable, shall designate a site and architectural review board (the "District Design Review Committee") consisting of up to five (5) persons, one of which may be an architect selected by District Declarant (a "Qualified Architect"), to exercise the Board's authority under this Article. The District Design Review Committee shall promulgate detailed standards and procedures in implementing the requirements of this Article, in addition to the Design Code. So long as District Declarant owns any land within the District or subject to this Declaration or remains the District Declarant, the District Declarant may select the membership of the District Design Review Committee. Thereafter, the Board shall select the membership of the District Design Review Committee. The District Design Review Committee shall also have the authority to hire such contractors or employees in support of its review and administration obligations as it may reasonably determine to be necessary or appropriate, the costs of which shall be paid by the applicants or included in Common Expenses. This Article shall be effective, and may not be amended without the prior written consent of District Declarant, so long as District Declarant owns any land subject to this Declaration or subject to annexation by this Declaration.

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Section 3. Construction Subject to Review.

(a) Review of Plans. Prior to construction, the District Design Review Committee must review and approve construction plans and specifications for all Improvements on any Lot within the Property. No construction on any Lot shall begin and no Improvements on any Lot shall be modified except in accordance with an approved plan. Once a plan is approved, any modification to that plan, or any modification to the finished Improvement, must also be reviewed and approved.

(b) Common Area. Construction of any Improvement upon the Common Area (other than initial construction by the Declarant), or modification of any existing structure, as well as any material alteration of the landscaping or topography of any Common Area, must be approved in advance by the Design Review Committee.

(c) Scope. The Design Code shall set standards for all aspects or improvement on any Lot visible from the outside, including without limitation the size and shape of any building, its roof, windows, doors, porches and other components, placement on the Lot, fences, drainage, paving and landscaping and all finish materials. The Design Code may also regulate the type, placement and number of Improvements that may be constructed on a Lot and the uses to which those Lots may be put. Review shall include materials and color selection and selection and placement of any ornamentation or functional accessories, including but not limited to the following:

(i) Materials and color selection for the main building and any outbuilding (including roof, doors, windows and trim);

(ii) Driveways, walks, patios and other ground surface materials;

(iii) Parking areas and drive through lanes;

(iv) Outdoor eating areas;

(v) Lighting;

(vi) Signage of any type;

(vii) Antennas, satellite dishes or receivers, solar panels or other devices that are visible from outside the Lot;

(viii) Fountains, swimming pools, or other water features;

(ix) Privacy walls or other fences and gates;

(x) Awnings, flower boxes, shelves, statues, or other outdoor ornamentations, and window coverings visible through the window;

(xi) Construction trailers or other trailers, temporary structures, tents, shacks, and sheds;

(xii) Grills or fire pits; and

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(xiii) Permanent or semi-permanent play equipment, whether or not secured, such as tree houses, trampolines, basketball hoops, skateboard ramps and swing sets.

The listing of a category does not imply that such construction is permitted.

(d) Exception. Interior construction and modifications not affecting the external structure or appearance of any building and not visible from the exterior are not subject to review. However, construction drawings are required as part of the review process to assist in interpreting the design.

(e) Trees. Owners may be required to plant street trees on their Lot or within Common Area or public rights-of-way adjacent to their Lot, in accordance with the direction of the District Design Review Committee, to maintain trees and to replace trees that die or that become damaged or diseased, or the District Association may elect to take such actions for the benefit of Owners, the cost of which will be part of the Common Expenses. The cutting, removal or intentional damage of new or existing trees (including neglect, excessive pruning or failure to use due care with equipment or when removing other trees permitted to be removed) shall be prohibited and subject to enforcement under this Declaration. The District Design Review Committee may require the relocation and replanting of trees that must be removed for construction. If particularly significant trees are found within a Lot, the District Design Review Committee shall determine whether the placement of the building should be altered to accommodate the trees, or whether the trees may be removed. If trees or other growth block sidewalks or other areas, the Owner may be required to prune, trim or remove such growth. The Master Association may also take action to keep sidewalks and other areas clear, including pruning, trimming and removal of limbs on trees within a Lot, and may enter any Lot for such purpose.

(f) Drainage. All plans shall comply with and Owners shall be solely responsible for applicable drainage, water conservation, erosion control and stormwater detention requirements. No alteration of existing grade or any planting, fences or other improvements that alter the flow of water shall be permitted without the express consent of the District Design Review Committee, which approval shall be for the exclusive benefit of the Declarant or District Association, as applicable, and shall not remove or alter the responsibility of any Owner or builder for compliance with such requirements. Notwithstanding any other provision of this Declaration, neither District Declarant nor the District Association shall have the responsibility to ensure that drainage or grading of Lots is properly accomplished. Each Owner shall be solely responsible to ensure that grading and drainage are in compliance with all applicable laws, codes, regulations and other requirements, including without limitation any easements for drainage, whether or not shown on any recorded plat and must provide a as-built drawing of finished grading and drainage to ensure these items are in compliance. The Homeowner will be charged in the event they do not provide the approved as-builts to the Committee, and there are costs to the developer to fix any grading or drainage that were not caused by the developer.

(g) Modifications. Modifications after completion of construction, or additions or changes to the approved plans during construction, must be reviewed and approved. However, review is not required to paint with originally approved materials and colors, or to replace the roof or other components with duplicates of the original material. Significant new landscaping, grading and any removal of trees or plants must be approved in advance.

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Section 4. Review Procedure.

(a) Application. The plans to be submitted for approval shall include (i) the construction plans and specifications, including all materials and colors, (ii) elevations of all proposed improvements (iii) proposed clearing, grading and landscaping, and (iv) all other items required by the District Design Review Committee. Plans and specifications for review shall be submitted in the form required by the District Design Review Committee.

(b) Uniform Procedures. The District Design Review Committee may establish forms and procedures for the review of applications, including review costs and fees, if any, to be paid by the applicant, which may include costs for the Qualified Architect. The District Design Review Committee may provide lists of approved materials and may allow for staff review and approval of routine or minor matters.

(c) Basis for Decision. Applications shall be approved or denied based upon overall quality of design, including purely aesthetic considerations at the discretion of the District Design Review Committee. If the District Design Review Committee rejects an application due to overall design quality or aesthetic considerations, despite compliance with the Design Code, the District Design Review Committee may make suggestions for improving the design.

(d) Variances. The District Design Review Committee may grant approvals notwithstanding normal guidelines based on existing topographical or landscape conditions, existing trees, or architectural merit. Any such variance must be in writing. Approval of a variance does not constitute a precedent for other applications, and such requests may be arbitrarily denied. Notwithstanding the foregoing, the District Design Review Committee shall not have the right to waive any guidelines imposed by the Master Design Review Committee, the Master Declaration, or other requirement established by Master Declarant or the Master Association without their prior written consent.

(e) Notification; Construction; Inspection. The District Design Review Committee shall make best efforts to notify the applicant of its decision within the time allowances set out in its design approval process guidelines. However, a delay in reviewing an application shall not be deemed consent to construction. If approval is given, construction of the Improvements may begin. All construction must comply with the submitted plans. The District Design Review Committee or its agent may inspect the property during construction but has no obligation to make any such inspection. Any inspection made by the District Design Review Committee is made for the benefit of the District Design Review Committee or District Declarant, and is not made for the benefit of or to be relied upon by any third party or Owner.

(f) Completion. When the primary building and landscaping are completed in substantial compliance with the approved plans and specifications, the District Design Review Committee may on request issue a Certificate of Substantial Conformance. The Certificate shall describe any areas of deficiency that need to be corrected. All Fines and other enforcement shall be waived so long as the deficiencies are corrected within sixty (60) days. Upon correction of all deficiencies, the District Design Review Committee shall issue a Certificate of Completion and Release in recordable form. If no Certificate of Substantial Conformance is requested, the District Design Review Committee shall not be estopped from later determining that a deficiency needs correction, and reserves all rights of Fines and enforcement.

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(g) Governmental Compliance. Owners are responsible for making sure that construction conforms to governmental regulations and all local building codes. If the District Design Review Committee notes noncompliance, the Owner will be required to make the necessary changes. However, the District Design Review Committee is not responsible for compliance with governmental requirements.

Section 5. Approval of Architects, Builders. District Declarant shall have the right to approve any and all architects or builders in all or any portion of the District, in its sole discretion. District Declarant's approval of an architect, builder or other design professional shall not constitute any representation or endorsement of such professional's character, experience or professional capabilities.

Section 6. Enforcement.

(a) Fines. The District Design Review Committee may require the Builder or Owner to post a deposit from which the District Design Review Committee may deduct Fines for failure to comply with the approved plans and specifications, tree regulations and rules for builder conduct. The collection of a Fine shall not in any way diminish the available remedies at law or equity.

(b) Suit Permitted. If any construction is begun that has not been approved or that deviates from approved plans and specifications, the District Design Review Committee, District Declarant or the District Association may require the Owner to resolve the dispute through binding arbitration or may bring suit seeking damages, specific performance, declaratory decree and/or injunction, or any other remedy at law or in equity. The Board shall be empowered to bring suits on behalf of the District Association. If suit is brought and the court finds that the construction was not approved or that the construction deviated from the approved plans or specifications, then the party bringing suit shall also be awarded reasonable attorney's fees, even if the relief requested is not granted.

(c) Trees and Hedges. Improper cutting, removal, lack of care or intentional damage to existing trees and hedges may be subject to the imposition of Fines plus a requirement that the tree be replaced with an approved species of comparable caliper, or, if approved by the District Design Review Committee, a combination of trees totaling the caliper of the removed tree, or that hedges be replaced with an approved hedge plant. Fines shall be set by the District Design Review Committee.

(d) Drainage. After reasonable notice (except in an emergency), District Declarant or the District Association shall have the right but not the obligation to enter onto a Lot and correct improper grading or other modification to the Lot which causes drainage problems. Such corrections shall be made at the cost and expense of the Owner of the Lot, who shall promptly reimburse District Declarant or the District Association, as applicable. The Lot shall be subject to a lien for the cost if not paid. District Declarant or the District Association, as applicable, shall not be required to repair or replace landscaping or other improvements after such action.

(e) No Waiver. Failure to enforce any provision of this Declaration shall not be deemed a waiver of the right to do so at any time thereafter.

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Section 7. Liability. District Declarant and District Design Review Committee and its inspectors are concerned primarily with aesthetic considerations, and are not responsible for compliance with governmental requirements or design or construction defects or use of materials affecting the safety or structural integrity of the building. Approval by the District Design Review Committee of an application shall not constitute a basis for any liability of the Qualified Architect, District Declarant, members of the District Design Review Committee, the Directors of the Board or the District Association for failure of the plans to conform to any applicable building codes or inadequacy or deficiency in the plans resulting in defects in the improvements, or for the performance or quality of work of any builder or architect approved by it, or for non-compatible or unstable soil conditions or soil erosion, or any other condition of the property.

ARTICLE XI
USE RESTRICTIONS

Section 1. Use Restrictions. In addition to all other covenants contained herein, the use of the Property is subject to the following; provided, however, that if any Supplemental Declaration or Sub-District Declaration expressly permits uses or matters that would otherwise be prohibited, with the express consent of District Declarant, then such Supplemental Declaration or Sub-District Declaration shall control over this Declaration for purposes of this Article XI:

(a) Maintenance of Exterior and Interior. Except as provided in this District Declaration or any Supplemental Declaration, each Owner shall be responsible for the maintenance of, and shall maintain, the exterior and interior of its Lot and any Improvements in a clean, sanitary, and attractive condition, and shall (1) keep its Lot free from rubbish, litter, and noxious weeds; (2) maintain, cultivate, and keep in good condition and repair shrubs, trees, grass, lawns, plantings, and other landscaping located, or from time to time placed, within the bounds of its Lot; and (3) replace dead plants, shrubs, trees, grass, or landscaping of the same or similar type. If any irrigation system is in place on any Lot, the Master Association may require that the Owner maintain such irrigation system and keep such system in use to the extent required to keep a maintain healthy landscaping.

(b) Association to Landscape Common Area. Except as otherwise provided herein, the District Association shall have the right and the obligation at any time to plant, replace, maintain, and cultivate shrubs, trees, grass, plantings, and other landscaping upon the Common Maintenance Area located on the Property. No Owner shall remove, alter, or injure in any way any shrubs, trees, grass, plants or other landscaping placed upon or about a Lot by District Declarant or the District Association, without first obtaining the written consent of the Board.

(c) Signs and Billboards; Exterior Lights. No sign or billboard of any kind shall be displayed to the public view on any portion of the Common Area, except for (1) directional or informational signs, established by District Declarant or the District Association, (2) signs used by District Declarant, or by its successors or assigns, to advertise the Property, provided such signs are located on the Common Area, and (3) signs permitted under any Supplemental Declaration or Sub-District Declaration, provided that the Board may establish or require a common signage system for such purposes and such system shall prevail over the general provisions of this subsection.

(d) Quiet Enjoyment. No noxious, offensive or illegal activity shall be carried on, in or upon any Lot or any part of the Property, nor shall anything be done thereon that may be or may become an annoyance or nuisance to the neighborhood, that shall interfere in any way with any Owner's quiet enjoyment of its respective Lot, or that shall increase the rate of insurance in any way.

(e) Temporary Structures. No structure of a temporary character or other out-building shall be used on any Lot or the Common Area at any time as a residence or otherwise, either temporarily or permanently. Notwithstanding the foregoing, District Declarant or its agents shall have the right to conduct any business necessary for the sale of Lots, including showing model Lots and maintaining a sales and/or construction office on the Common Area or in any Lot owned by Declarant. In furtherance thereof Declarant shall have an easement over all of the Common Area for ingress, egress and parking for itself, its agents, employees, and prospective buyers of Lots for so long as District Declarant or any subsidiary or affiliated company owns any interest in the Property, and District Declarant may block or restrict access over and across roadways so long as access to a particular Lot owned by a Person other than District Declarant is not prohibited.

(f) Animals. No animals, reptiles, rodents, livestock, birds, or poultry of any kind shall be raised, bred or kept in or on any Lots, other than bona fide service animals or household pets. No household pets shall be kept outside the dwelling or housing unit, and any outside activity shall be under the active control of the Owner or one acting on the Owner's behalf. Without limiting the foregoing, animals who repeatedly bark, are aggressive, or other create a negative impact on other Owners or other persons may be subject to further restrictions and, in the discretion of the Board, removed from the Development. No animal may be kept in a manner that, in the sole determination of the Board, is unhealthy or cruel for such animal, including without limitation keeping animals tied up or tethered for extended periods of time. In making any determination of cruelty or unhealthy conditions, the Board shall have the right but not the obligation to consult governmental or private animal control or shelter organizations. The Board may permit variances to the restrictions set forth in this subsection in the Board's sole discretion. The Board may establish further rules and regulations for control of animals and household pets, and may impose Fines for violations of the foregoing or additional rules and regulations in addition to requiring removal of animals from the Development.

(g) Vehicles. No truck, trailer, camper, boat, van or similar equipment or disabled vehicle shall be permitted to remain upon or within the Common Area or public streets unless on a space designated for such use by the District Association. No such equipment may be stored or permitted to remain upon a Lot or any portion of the Common Area or public streets for more than forty-eight (48) hours unless stored in an enclosed garage.

(h) Exterior Structures. No fences, ornamental screens, awnings, screen doors, sunshades except as approved by or under general rules adopted by the District Design Review Committee.

(i) Garbage Collection. All rubbish, trash, and garbage shall be removed from the Property regularly and shall not be allowed to accumulate thereon. All refuse containers, clothes lines, woodpiles, storage areas, machinery, or equipment shall be kept in such a manner as not to be visible from neighboring property or contiguous streets. No incinerators shall be kept or maintained on any Lot. Refuse containers shall not be placed outside for trash pickup prior to

6:00 p.m. on the day prior to such pickup, and shall be returned to non-visible areas no later than the end of the day on which pickup is made. No debris, trash, ashes, lawn clippings, leaves, leaf bags or other refuse may be thrown or dumped on any of the Lots or Common Area. Debris and trash during the construction of an Owner's Improvements shall be collected by each Owner (or his or her representative) in containers approved by the District Design Review Committee and periodically removed so that no unsightly condition occurs on the Lot or adjoining Lots.

(j) Taxes and Utilities. Each Owner shall pay any real and personal property taxes or charges assessed against their respective Lot and Improvements and the utility charges for said Improvements.

(k) Infections, Plant Diseases or Insects. No Owner shall permit anything or condition to exist upon any portion of such Owner's Lot that shall induce, breed, or harbor infections, plant diseases, vermin or noxious insects.

(l) Reasonable Inspection and Entry. The Board shall have the right of inspection and entry onto Lots in order to perform the duties and obligations of the Board under this Declaration and under the Bylaws. In addition, District Declarant, the District Association, and their designees shall have the right to enter upon a Lot for the purpose of cutting grass, hedges and shrubbery and providing maintenance agreed upon with the Owner thereof.

(m) Trade or Business. No gainful profession, occupation, trade or other nonresidential use shall be conducted in any Lot designated for residential purposes or upon the District Common Area or any portion thereof without the prior approval of the Board. Special Use Parcels or areas in which a mix of business and residential purposes are appropriate shall be governed by the provisions of any Supplemental Declaration or Sub-District Declaration covering such portions of the Development. The Board may disapprove such a trade or business in the event that it determines that the trade or business would have a negative impact on the Property, including, without limitation, creating problems related to traffic, parking or security. In determining whether to approve a trade or business conducted in a residential Lot, the Board shall be provided with detailed information on (i) the type of trade or business and (ii) the activities related thereto that could potentially affect the Property. In the event that the Board approves a certain trade or business (the "Approved Use"), then so long as the activities related to that Approved Use do not materially change from the activities described to and approved by the Board, the Board (whether or not the composition of the Board changes) shall not have the right to disapprove the Approved Use after the date of the original approval, subject to subparagraph (s) below. Notwithstanding the foregoing, an Owner or occupant residing in a unit within the Development may conduct business activities within the unit so long as: (a) the existence or operation of the business activity is not apparent or detectable by sight, sound, signage or smell from outside the Unit; (b) the business activity conforms to all applicable zoning, law, statute or ordinance requirements; (c) the business activity does not involve persons coming onto the Development who do not reside in the Development or door-to-door solicitation of residents of the Development; and (d) the business activity is consistent with the residential character of the Property and does not constitute a nuisance, or a hazardous or offensive use, or threaten the security or safety of other residents of the Development, as may be determined in the sole discretion of the Board. The terms "business" and "trade", as used in this provision, shall be construed to have their ordinary, generally accepted meanings, and shall include, without limitation, any occupation, work or activity undertaken on an ongoing basis which involves the provision of goods or services to persons other than the provider's family and for which the

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provider receives a fee, compensation, or other form of consideration, regardless of whether: (i) such activity is engaged in full or part-time; (ii) such activity is intended to or does generate a profit; or (iii) a license is required therefor.

(n) Compliance with Law. The District Association and each Owner shall comply promptly with all laws, statutes, ordinances, rules and regulations of federal, state or municipal governments or authorities applicable to use, occupancy, construction and maintenance of any Improvements upon the Lots, including without limitation any zoning or other approvals or restrictions.

(o) Damage from Plants. No Owner shall permit any plant, tree, shrubbery or other similar item to exist upon any portion of such Owner's Lot that shall damage or create a nuisance on another Lot or that has not been approved by the District Design Review Committee. The Board shall determine conclusively, in its sole and absolute discretion, whether, for the purpose of this paragraph, a particular plant, tree, shrubbery, or other similar item is a nuisance and therefore to be removed from the Property.

(p) Wells. No private wells may be drilled or maintained on any Lot without the prior written consent of the District Design Review Committee.

(q) Laundry. Without the express permission of the District Design Review Committee, no Owner, guest, or tenant, shall hang laundry from any area within or outside the Improvements on a Lot if such laundry is within the public view, or hang laundry in full public view to dry, such as on balcony or terrace railings.

(r) Firearms and Other Weapons. Discharge of firearms and other weapons is prohibited; provided, the Board shall have no obligation to take action to prevent or stop such discharge; provided, further, however, that nothing in this provision shall be deemed to prevent the Declarant or Board, or the Declarant or Board of any Sub-Association, with the consent of Declarant or Board, from establishing or permitting facilities, Lots, or other areas where such activities may be permitted, whether on a private or retail basis. For this purpose, firearms and weapons shall be deemed to include any instrument that may or is designed to propel or discharge bullets, arrows, or other objects by use of explosive force, compressed air, elastic contraction or other means, including without limitation handguns, rifles, shotguns, pellet guns, BB guns, cross-bows, and long or compound bows. This definition shall be broadly construed, and the Declarant and Board of Directors shall have discretion to determine whether a particular object or instrument is a firearm or weapon in its sole discretion.

(s) Restriction on Rentals. No Living Unit shall be rented to a non-Owner except with the prior written consent of the Association.

(i) If an Owner shall desire to rent its Living Unit to a third-party, the Owner shall be required to submit to the Association all of the following, in form and content satisfactory to the Association:

(1) An application for rental providing, among other things, the identity of the Living Unit, the name of the proposed tenant and occupants, the proposed term of the rental, and contact information for the Owner while not occupying the Living Unit.

(2) A copy of a qualifying lease. For purposes of this section, a qualifying lease is one that is for a term not less than twelve (12) months and that expressly advises tenant that the Living Unit is subject to the Declaration and that the tenant is responsible for compliance with the Declaration and all other rules and regulations adopted by the Association from time to time.

(3) A copy of a background check on the prospective tenant and all occupants of the Living Unit provided with the written consent of the prospective tenant and that indicates no prior criminal convictions or any sex offender status or other matter reasonably objected to by the Association.

(4) Any fee charged by the Association for review of the application and other material.

(5) Upon approval, a copy of the executed tenant lease.

(ii) A failure to procure approval prior to leasing a Living Unit shall constitute a violation of the Declaration and, among other things, the Association shall be entitled to injunctive relief against such Owner and the tenant, the Owner acknowledging that legal remedies may not be adequate. The Owner shall be subject to all expenses of the Association resulting from any such violation, including without limitation reasonable attorney fees and other costs of enforcement.

(iii) The Board shall have the power to waive the foregoing restrictions and to reduce the minimum lease term for good cause shown, in the sole discretion of the Board.

(iv) Notwithstanding the foregoing, no Owner shall lease, license for occupancy, or otherwise permit a non-Owner to remain in a Living Unit for a period of less than thirty (30) days if consideration is given for such stay or if such occupancy is advertised by any medium, including without limitation short term rentals.

Section 2. Additional Restrictions. The Board of Directors shall be entitled to invoke additional rules and regulations from time to time for the operation, use and maintenance of the Property located within its jurisdiction, including the Lots and the Common Area, provided such rules and regulations are not inconsistent with this Declaration.

ARTICLE XII
GENERAL PROVISIONS

Section 1. Term. The covenants and restrictions of this Declaration shall run with and bind the Property, and shall inure to the benefit of and shall be enforceable by the District Association or the Owner of any of the Property subject to this Declaration, their respective legal representatives, heirs, successors and assigns, for a term of thirty (30) years from the date this Declaration is recorded. After the initial thirty (30) year term has expired, the term of this Declaration shall be automatically extended for successive periods of ten (10) years, unless an instrument in writing, signed by sixty-seven percent (67%) of the then Owners, has been

recorded within the year preceding the beginning of each successive ten-year period, agreeing to change said covenants and restrictions, in whole or in part, or to terminate the same.

Section 2. Amendment. This Declaration may be amended by a sixty-seven percent (67%) affirmative vote of the Owners present, in person or by proxy, at any duly called meeting, and the written approval of the Master Declarant and District Declarant during the respective Declarant Control Period. During the Declarant Control Period, District Declarant may unilaterally amend this Declaration for any purpose. Any amendment shall not become effective until recorded in the Office of the Register's Office for Maury County, Tennessee. No amendment may remove, revoke, or modify any right or privilege of District Declarant without the written consent of District Declarant or the assignee of such right or privilege. After the Declarant Control Period, the Declarant may unilaterally amend this Declaration so long as such amendment is designed to comply with any law, regulation or provision of the Federal Home Loan Mortgage Corporation or Federal National Mortgage Association.

Section 3. Indemnification. The District Association shall indemnify its officers and directors against any and all expenses and liabilities, including attorney fees, reasonably incurred by or imposed upon any officer or director in connection with any action, suit, or other controversy or proceeding (including settlement of any suit or proceeding, if approved by the then Board of Directors) to which he or she may be a party, or may become involved, by reason of being or having been an officer or director of the District Association. The officers and directors shall not be liable for any mistake of judgment, negligent or otherwise, except for their own individual willful misfeasance, malfeasance, misconduct or bad faith. The officers and directors shall have no personal liability with respect to any contract or other commitment made by them, in good faith, on behalf of the District Association (except to the extent that such officers or directors may also be Members of the District Association), and the District Association shall indemnify and forever hold each such officer and director free and harmless against any and all liability to others on account of any such contract or commitment. Any right to indemnification provided for herein shall not be exclusive of any other rights to which any officer or director, or former officer or director, may be entitled. The District Association shall, as a common expense, maintain adequate general liability and officers' and directors' liability insurance to fund this obligation, if such insurance is reasonably available.

Section 4. Delegation of Use. Any Owner may delegate, in accordance with the Articles of Organization of the District Association and this Declaration, his or her right of enjoyment to the Common Area and facilities to customers, the members of his or her family, tenants and social invitees, subject to such rules and regulations as the Board of Directors may adopt.

Section 5. Construction and Sale by District Declarant. Notwithstanding any provisions contained in this Declaration to the contrary, so long as construction and initial sale of Lots or Improvements shall continue, it shall be expressly permissible for District Declarant to construct, maintain and carry on upon portions of the Property, other than Lots owned by persons other than District Declarant, such facilities and activities as, in the sole opinion of District Declarant, may be reasonably required, convenient, or incidental to the construction or sale of such Lots, including, but not limited to, business offices, signs, utilities, model units, and sales offices, and District Declarant and its invitees shall have an easement for access to such facilities. District Declarant may further delegate all or some of the privileges set forth in this

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Section 8 to any Person in the sole discretion of District Declarant. This Section may not be amended without the express written consent of District Declarant.

Section 6. Severability. Invalidation of any one of these covenants or restrictions by judgment or court order shall in no way affect any other provisions, which shall remain in full force and effect. Each covenant and restrictions shall be enforced to the fullest extent permitted by law.

Section 7. Enforcement. The District Association, or any Owner, shall have the right to enforce, by any proceeding at law or in equity, all restrictions, conditions, covenants, reservations, liens and charges now or hereafter imposed by the provisions of this Declaration. Failure by the District Association or by any Owner to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter. Without limiting the foregoing, the District Association shall have the authority to enforce the restrictions, conditions, covenants and rules and regulations now or hereafter adopted pursuant to this Declaration by the imposition of Fines on Owners, which shall be established by the Board of Directors in its discretion, and enforced and collected as a Special Assessment pursuant to the Declaration. The Board of Directors may establish notice, hearing and other procedures from time to time in conjunction with the use and levying of Fines.

Section 8. Use of the Words "_____". No Person shall use the words "_____" or "_____ at Columbia Bluffs" or any derivative thereof in any printed or promotional material without the prior written consent of District Declarant and Master Declarant.

Section 9. Disclosures. Each Owner acknowledges the following:

(a) The Property is located adjacent to thoroughfares that may be affected by traffic and noise from time to time and may be improved and/or widened in the future.

(b) The views from an Owner's Lot may change over time due to, among other circumstances, additional development and the removal or addition of landscaping.

(c) No representations are made regarding the zoning of adjacent property, or that the category to which adjacent property is zoned may not change in the future.

(d) No representations are made regarding the schools that currently or may in the future serve the Development or any Lot.

(e) Since in every neighborhood, there are conditions that different people may find objectionable, it is acknowledged that there may be conditions outside of the Property that an Owner may find objectionable and that it shall be the sole responsibility of the Owners to become acquainted with neighborhood conditions that could affect a Lot.

(f) All Owners acknowledge and understand that District Declarant and builders or developers will be constructing/renovating portions of the District and engaging in other construction activities related to the construction of Common Area and improvement of Lots. Such construction activities may, from time to time, produce certain conditions within the District, including, without limitation: noise or sound that is objectionable because of its volume,

duration, frequency or shrillness; smoke; noxious, toxic, or corrosive fumes or gases; obnoxious odors; dust, dirt or flying ash; unusual fire or explosion hazards; temporary interruption of utilities; and/or other conditions that may threaten the security or safety of persons within the District. Notwithstanding the foregoing, all Owners agree that such conditions within the District resulting from renovation and construction activities shall not be deemed a nuisance and shall not cause District Declarant and its agents to be deemed in violation of any provision of this Declaration.

ARTICLE XIII
DECLARANT'S RIGHTS

Section 1. Withdrawal or Addition of Property. District Declarant reserves the right to amend this Declaration, for the purpose of removing any portion of the Property or to add additional property to be subject to this Declaration by Supplemental Declaration. Such amendment shall not require the consent of any Person other than the Owner(s) of the property to be withdrawn, if not the District Declarant. If the property is Common Area, the District Association shall consent to such withdrawal. The inclusion of real property in the term "District" shall not be deemed to obligate Declarant to acquire such real property or to include such property within the Property or the Development except in the sole discretion of Declarant.

Section 2. Marketing and Sales Activities. District Declarant and Persons authorized by District Declarant may construct and maintain upon portions of the District and the Common Area such facilities and activities as, in District Declarant's sole opinion, may be reasonably required, convenient, or incidental to the construction or sale of Lots, including, but not limited to, business offices, signs, model units, and sales offices. District Declarant and authorized Persons shall have easements for access to and use of such facilities at no charge.

Section 3. Right to Approve Changes in District Design Standards. No amendment to or modification of any restrictions and rules or architectural guidelines shall be effective without prior notice to and the written approval of District Declarant so long as District Declarant owns property subject to this Declaration or which may become subject to this Declaration in accordance with this Article.

Section 4. Provision of Telecommunication Services. District Declarant shall have the right to enter into an agreement with one or more authorized providers of Telecommunication Services pursuant to which such providers may have the exclusive right to provide Telecommunication Services to all or a particular portion or portions of the District, subject to approval by Master Declarant.

Section 5. Right to Use of Amenity Center. District Declarant shall have the right to use any amenity center within the Development without cost at any time and to permit other parties, including without limitation builders or industry groups, the same privilege of usage at no cost.

Section 6. Right to Transfer or Assign District Declarant Rights. Any or all of District Declarant's special rights and obligations set forth in this Declaration may be transferred in whole or in part to other Persons. No such transfer or assignment shall be effective unless it is in a written instrument executed by District Declarant and recorded in the Office of the Judge of Probate. The foregoing sentence shall not preclude District Declarant from permitting other

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Persons to exercise any right reserved to District Declarant in this Declaration as an agent, employee or contractor of District Declarant where District Declarant does not intend to transfer such right in its entirety, and in such case it shall not be necessary to record any written assignment unless necessary to evidence District Declarant's consent to such exercise. In the event District Declarant ceases to act as District Declarant and abandons its role as District Declarant after the end of the Declarant Control Period, then the District Association shall have and may exercise all rights of District Declarant without the necessity of a written assignment by District Declarant.

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IN WITNESS WHEREOF, the undersigned Declarant has executed this Declaration effective as of the date first set forth above.

DECLARANT:

_____

By:_____

Print Name:_____

Title:_____

STATE OF TENNESSEE

COUNTY OF _____

Before me, the undersigned, a Notary Public in and for the State and County aforesaid, personally appeared _____ with whom I am personally acquainted, (or proved to me on the basis of satisfactory evidence), and who, upon oath, acknowledged that (s)he executed the within instrument for the purposes therein contained, and who further acknowledged that (s)he is the _____ of _____, a _____, and that (s)he as such _____executed the foregoing instrument for the purpose therein contained, being authorized so to do, to execute this instrument on behalf of _____, by signing the name of _____ , as _____.

Witness my hand, at office, this _____day of _____, 20___.

Notary Public_____

My commission expires:_____

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EXHIBIT A
PROPERTY DESCRIPTION

TO BE INSERTED UPON FORMATION OF ASSOCIATION

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EXHIBIT B
CHARTER OF DISTRICT ASSOCIATION

TO BE INSERTED UPON FORMATION OF ASSOCIATION

EXHIBIT C
BY-LAWS OF DISTRICT ASSOCIATION

TO BE INSERTED UPON FORMATION OF ASSOCIATION



1 / LI.1 KEY MAP N.T.S

NEIGHBORHOOD CLUBHOUSE





PICKLE BALL COURTS



WALKING PATHS



DOG PARK



POOL



PICKLE BALL COURTS



SWING BENCH



2 / LI.1 CIVIC SPACE - A
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 50' 100'

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE TENNESSEE REGISTERED LANDSCAPE ARCHITECT 10-16-23

Date: October 16, 2023

Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN

SHEET LI.1



1 LI.2 KEY MAP N.T.S



2 LI.2 CIVIC SPACE - B

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



BENCHES



FORMAL LAWN



FORMAL PLANTING



WALKING PATH



3 LI.2 CIVIC SPACE - C

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'

PLAYGROUND





FORMAL PLANTING

PLAYGROUND



GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT TENNESSEE 10.16.23

Date: October 16, 2023

Revision Date

△

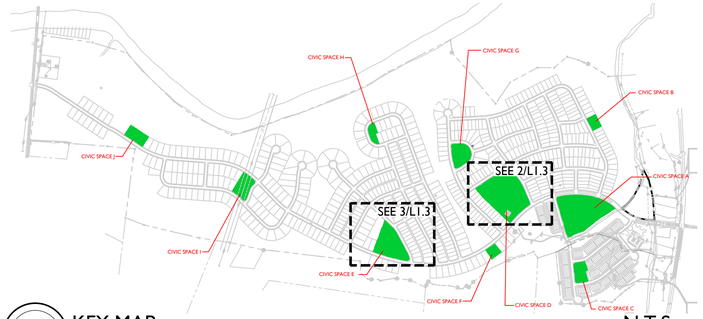
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OVERALL CIVIC SPACE PLAN

SHEET LI.2





1 / L1.3 KEY MAP N.T.S



2 / L1.3 CIVIC SPACE - D
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

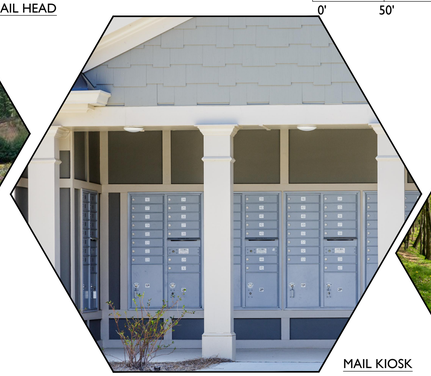
0' 50' 100'



POND



TRAIL HEAD



MAIL KIOSK

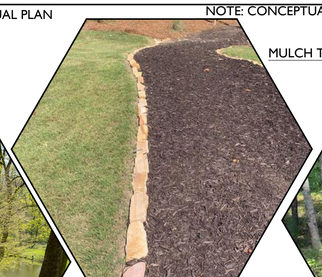
3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

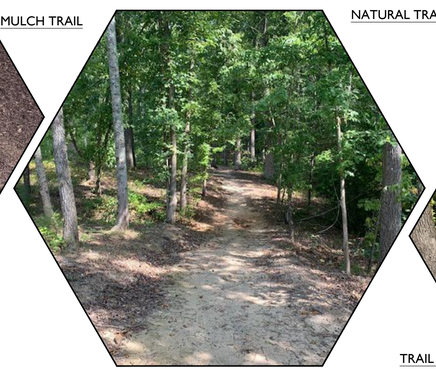
0' 30' 60'



NATURAL POND



MULCH TRAIL



NATURAL TRAIL



TRAIL SIGN

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

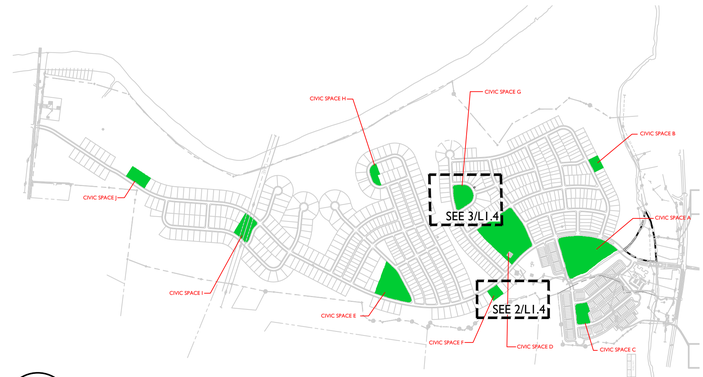
COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE TENNESSEE REGISTERED LANDSCAPE ARCHITECT NO. 1622

Date: October 16, 2023
Revision Date
△
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OVERALL CIVIC SPACE PLAN
SHEET
L1.3





1 / LI.4 KEY MAP N.T.S



2 / LI.4 CIVIC SPACE - F

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



FORMAL PARK



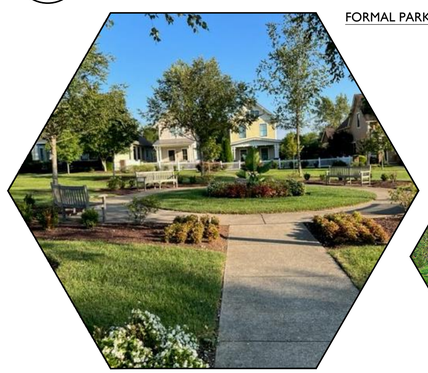
PLAYGROUND

3 / LI.4 CIVIC SPACE - G

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



FORMAL PARK



COMMUNITY GARDEN



DOG PARK

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — REGISTERED LANDSCAPE ARCHITECT — TENNESSEE — 10/16/23

Date: October 16, 2023

Revision Date

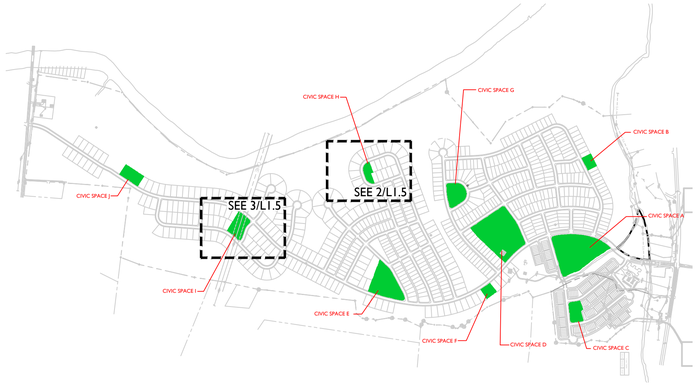
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OVERALL CIVIC SPACE PLAN

SHEET LI.4



1 LI.5 KEY MAP N.T.S



2 LI.5 CIVIC SPACE - H

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



PLAYGROUND



PLAYGROUND



3 LI.5 CIVIC SPACE - I

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



MAIL KIOSK



FORMAL PLANTING

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — REGISTERED LANDSCAPE ARCHITECT — TENNESSEE

Date: October 16, 2023

Revision Date
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OVERALL CIVIC SPACE PLAN

SHEET LI.5



2 / L1.6 CIVIC SPACE - J

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 100' 200'



KAYAK LAUNCH

NOTE: PRIMITIVE WALKING TRAILS AND KAYAK LAUNCH TO BE FIELD LOCATED.



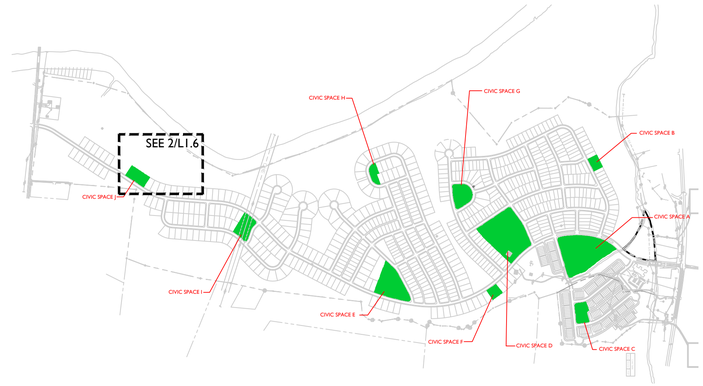
OPEN FIELD



TRAIL HEAD



MULTI-PURPOSE FIELD



1 / L1.6 KEY MAP N.T.S

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
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GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

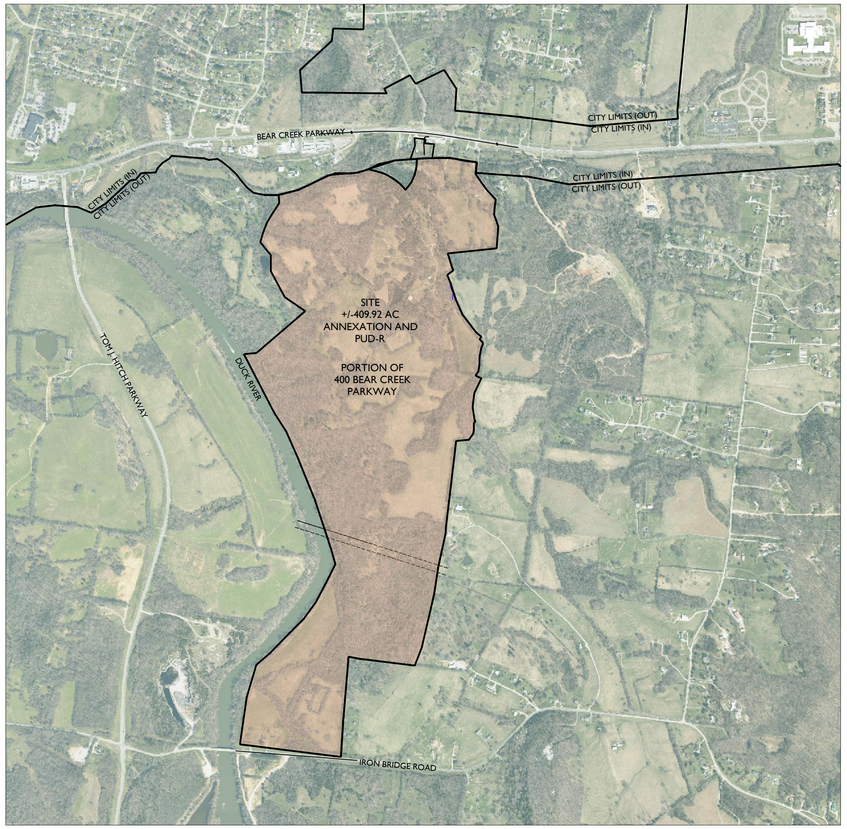
Revision	Date
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OVERALL CIVIC SPACE PLAN

SHEET L1.6

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 BEAR CREEK PARKWAY
COLUMBIA, TENNESSEE



LOCATION MAP

0 500 1000 2000
GRAPHIC SCALE 1"=1,000'-0"

OWNER:
HK BIG BEAR BLUFFS, LLC
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY

DEVELOPER:
KOLTER LAND
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY OR JOSHUA GIBBS
615.582.3253
jgibbs@kolter.com

APPLICANT/ LAND PLANNER:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
CSDG
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211
JIM HARRISON
615-248-9999
jimh@csdgtn.com

COMMITMENT TO ENVIRONMENTAL STEWARDSHIP

1. Strategy for Resource Protection utilizing a PUD Planning and Design Approach

a. Establish a Limits of Disturbance along the Duck River and its tributaries based upon slopes, natural drainage ways, floodplain areas, and mature tree canopy.

b. Design new development around open space areas to highlight them as community amenities with pedestrian systems that will connect the entire conservation design open space throughout the community.

c. Pedestrian circulation and trails are highly encouraged along the river, along stream corridors, and through scenic areas.

d. The quantity of Open Space preservation should greatly exceed any established base zone district.

e. New home lots should generally be smaller, clustered areas away from the protected banks of the Duck River.

f. Document on-site natural resources through a State approved Hydrologist and concurrence reports with local, state, and federal agencies.

g. Remove debris removal along creek banks to prevent impact to Bear Creek (shoes, clothing, random bottles, containers, fencing, wood)

h. Use Best Management Practices for Stormwater Pollution Prevention Plans during construction.

i. Use only one crossing point (< less than approx. 50' - 60' feet that spans the creek with no structures within Bear Creek (similar to several crossings visible from US (Highway 412).

2. Strategy for Protection through Construction

Implementation of the Plan requires protective measures. PUD phasing and areas of disturbance should be documented and considered through the PUD process. Protection practices shall include:

A. Storm water erosion control applications I.E.

i. Stormwater Detention Areas,

ii. natural riparian buffers

iii. silt fencing

iv. sediment ponds

v. Check dams

vi. Ongoing stormwater monitoring of Environmental Controls of water runoff areas and tributaries

B. Compliance with CGP, ARAP and NPDES permitting to address the protections that provide additional oversight to the project.

Throughout the duration of the project, these types of practices within the action areas will ensure environmental compliance with local, state and federal requirements.

3. Strategy for Protection when construction is completed.

Once development is completed permanent storm water detention areas and water out fall locations will be cleaned and stabilized in accordance with the local, state, and federal guidelines.

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C4.03	GRADING & DRAINAGE PLAN
C4.04	GRADING & DRAINAGE PLAN
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L1.2	CIVIC SPACE ENLARGEMENT
L1.3	CIVIC SPACE ENLARGEMENT
L1.4	CIVIC SPACE ENLARGEMENT
L1.5	CIVIC SPACE ENLARGEMENT
L1.6	CIVIC SPACE ENLARGEMENT

GREGORY C. GAMBLE
TENNESSEE REGISTERED
LANDSCAPE ARCHITECT

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PRE-APP: August 30, 2023
INITIAL SUBMITTAL: October 16, 2023



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

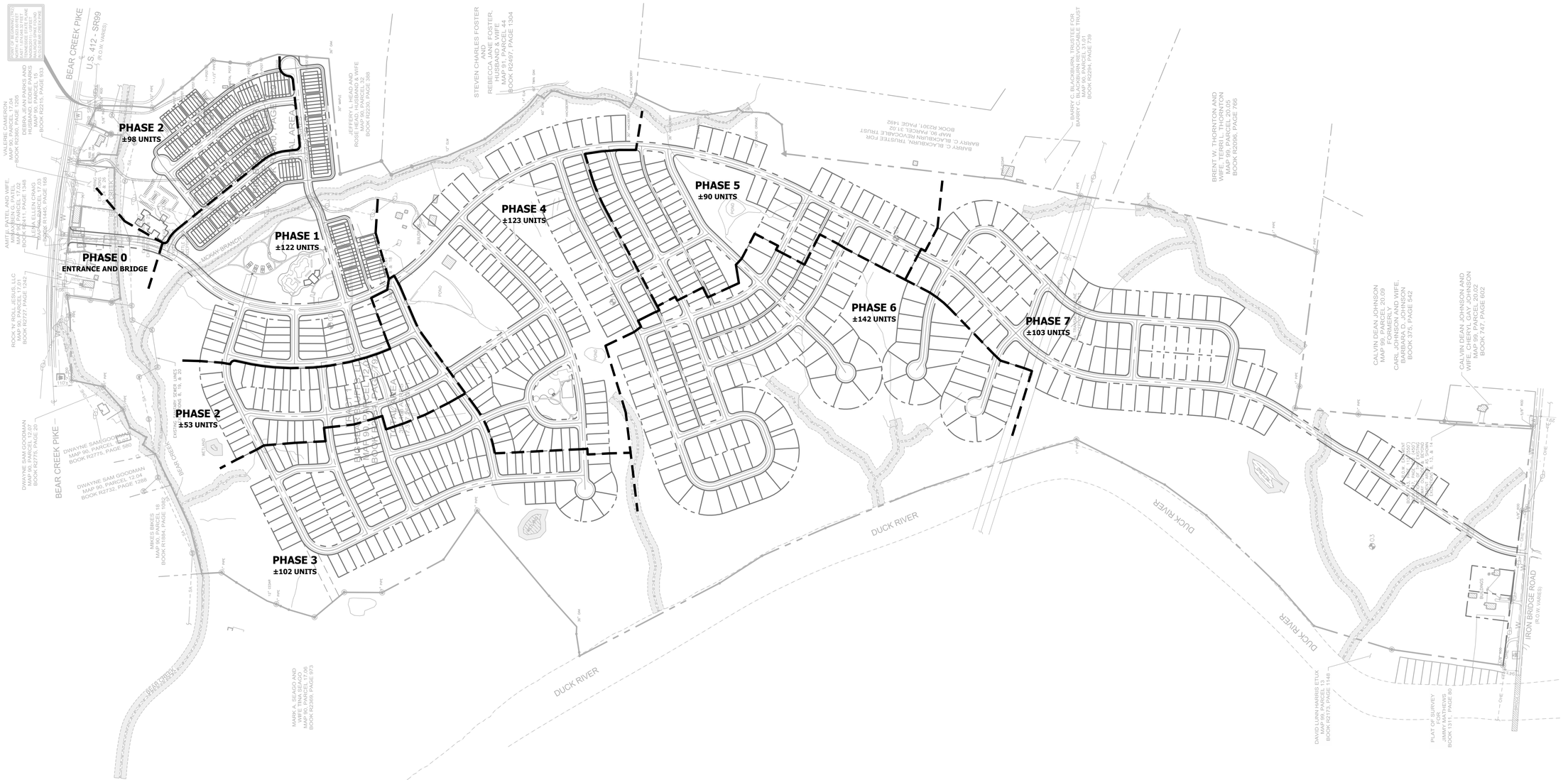
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CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 16, 2023 - 3:02pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C0.01 - Existing Conditions Plan.dwg



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SEAL



COLUMBIA BLUFFS
PMDP
Bear Creek Pike
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1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

PHASING PLAN

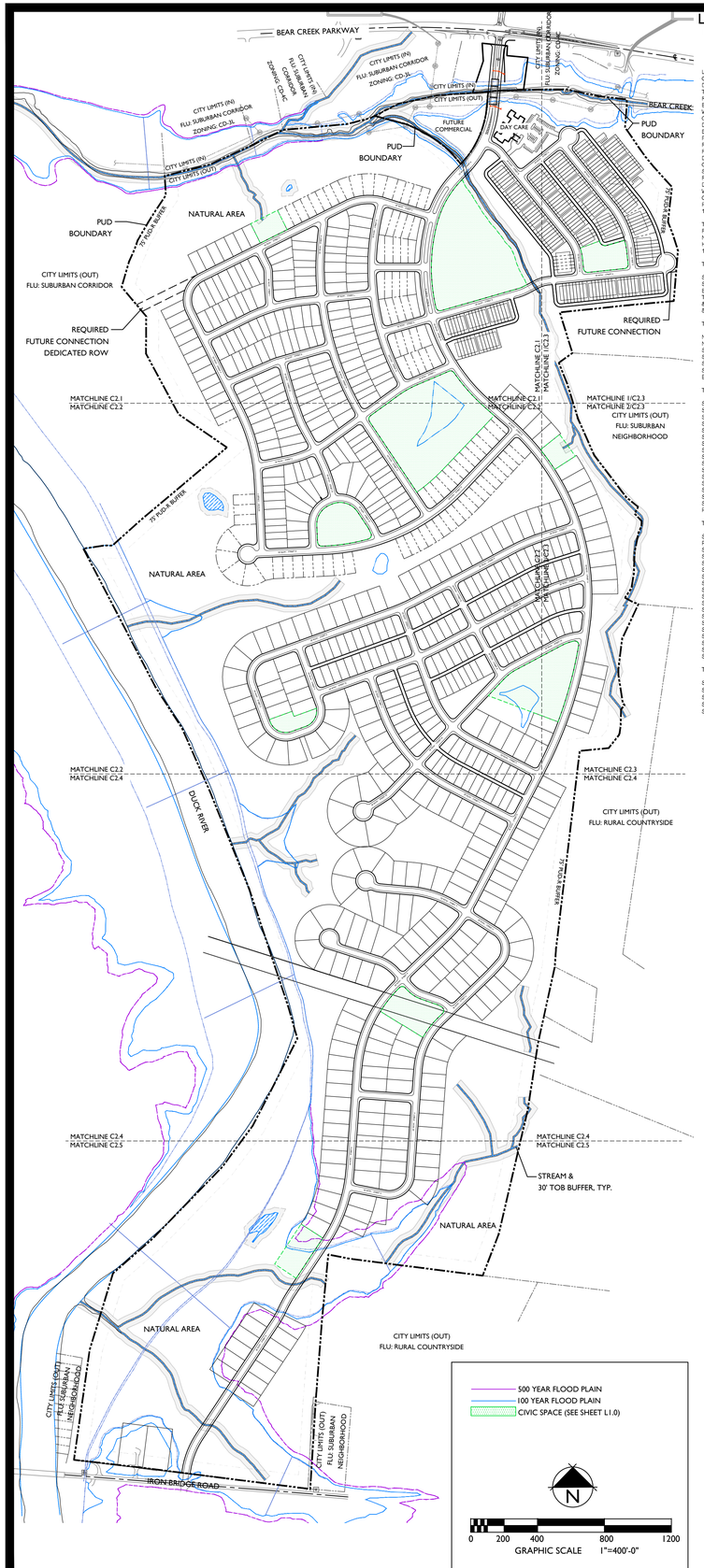
C1.00

PROJECT NO.: 21-160-01

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0 300 600
SCALE: 1"= 300'

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LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN); AMIT J. PATEL AND WIFE, MINAXBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN; HK BIG BEAR BLUFFS, LLC (R BOOK R2678, PAGE 961, ROMCTN; ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1334, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R0396, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 543, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK R2411, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2115, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,872,344.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 05°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 89°39'27" E, FOR A DISTANCE OF 118.80 FEET TO A POINT;
S 89°57'56" E, FOR A DISTANCE OF 168.93 FEET TO A POINT;
S 81°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'43" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;
S 83°35'45" E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°56'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2" PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.87 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 64.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2" PIPE FOUND;
S 7°06'58" W, FOR A DISTANCE OF 101.11 FEET TO A 3" METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2" PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24" CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36" OAK;
S 84°46'29" W, FOR A DISTANCE OF 270.35 FEET TO 20" MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6" ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'5" W, FOR A DISTANCE OF 100.29 FEET TO 6" ROTTED HACKBERRY FENCE POST;
S 21°03'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12" ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14" ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60" TWIN OAK;
S 28°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60" OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14" HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.75 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.94 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°58'56" W, FOR A DISTANCE OF 69.04 FEET TO A 30" HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24" HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12" CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 225.44 FEET TO A 36" HACKBERRY;
S 7°09'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8" DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24" HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6" FENCE POST;
S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'16" W, FOR A DISTANCE OF 95.58 FEET TO A 12" OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6" ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6" TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14" ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°40'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.89 FEET TO A 26" CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'46" W, FOR A DISTANCE OF 411.13 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1" PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1" PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 600.97 FEET TO 1" PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°33'34" W, FOR A DISTANCE OF 375.75 FEET TO 1" PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 5°35'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8" IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8" IRON PIN FOUND;
N 82°46'22" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8" IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 864.54 FEET TO 1/2" IRON PIN FOUND;
N 1°16'09" E, FOR A DISTANCE OF 478.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.82 FEET TO A POINT;
N 26°51'08" E, FOR A DISTANCE OF 301.40 FEET TO 1" PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°27'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 031.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 286.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°29'25" E, FOR A DISTANCE OF 42.46 FEET TO 26" OAK;
N 46°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 46°56'39" E, FOR A DISTANCE OF 291.18 FEET TO 10" HACKBERRY AND 8" CEDAR;
N 49°46'28" E, FOR A DISTANCE OF 367.28 FEET TO 1" PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1" PIPE FOUND;
N 71°17'50" E, FOR A DISTANCE OF 220.64 FEET TO AN IRON PIN FOUND;
N 39°36'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 27°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1" PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12" CEDAR;
N 30°13'56" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.89 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1" PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 85°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

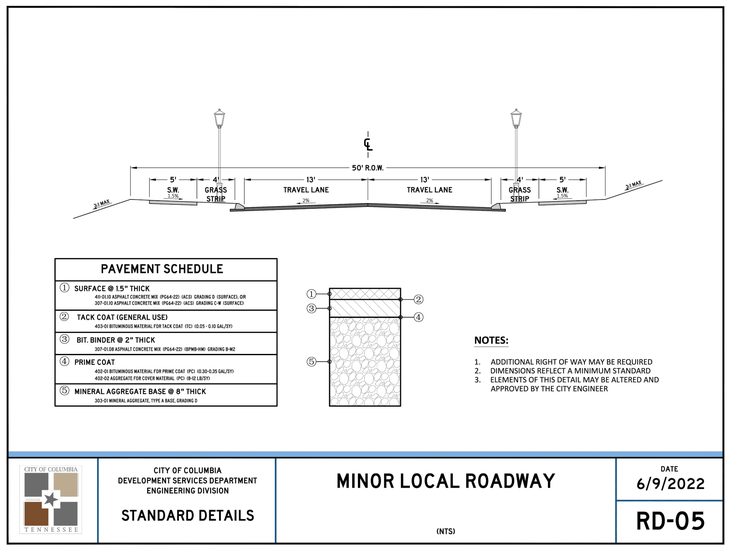
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

N 84°40'48" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 83°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:
S 7°51'27" E, FOR A DISTANCE OF 201.29 FEET TO A POINT;
S 85°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;
S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 51°12'54" E, FOR A DISTANCE OF 88.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°48'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.50 FEET, CHORD BEARING N 24°33'52" E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 84.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2837, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.



PAVEMENT SCHEDULE	
①	SURFACE @ 1.5" THICK 411-01.01 ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING D (SURFACE), OR 307-01.10 ASPHALT CONCRETE MIX (PG64-22) (ACS) GRADING C-W (SURFACE)
②	TACK COAT (GENERAL USE) 402-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) -(0.05 - 0.10 GAL/SY)
③	BIT. BINDER @ 2" THICK 307-01.08 ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2
④	PRIME COAT 402-01 BITUMINOUS MATERIAL FOR PRIME COAT (PC) -(0.30-0.35 GAL/SY) 402-02 AGGREGATE FOR COVER MATERIAL (PC) -(8-12 LB/SY)
⑤	MINERAL AGGREGATE BASE @ 8" THICK 303-01 MINERAL AGGREGATE, TYPE A BASE, GRADING D

NOTES:

1. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED
2. DIMENSIONS REFLECT A MINIMUM STANDARD
3. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION **STANDARD DETAILS**	**MINOR LOCAL ROADWAY** (NTS)	DATE 6/9/2022 **RD-05**

REQUESTED STREET SECTION

PROJECT DESCRIPTION AND SITE DATA:

REQUEST TO ANNEX AND REZONE THE COLUMBIA BLUFFS PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN.

THE PUD-R PLAN PROPOSES AN ENVIRONMENTALLY SENSITIVE MASTER PLAN FOR A DIVERSE RESIDENTIAL DEVELOPMENT. APPROXIMATELY ONE-THIRD OF THE PROPOSED DEVELOPMENT IS RESERVED FOR ACTIVE ADULT/AGE RESTRICTED SINGLE-FAMILY HOMES. ADDITIONALLY, TOWN HOMES AND A VARIETY OF DETACHED SINGLE-FAMILY HOMES ARE PROPOSED.

IN ADDITION TO THE RESIDENTIAL COMPONENT, THE PUD-R PLANS PROPOSES A DAY CARE FACILITY AND A VARIETY OF NEIGHBORHOOD AMENITIES.

TOTAL SITE AREA: 409.92 ACRES
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

TOTAL DWELLING UNITS: 860 HOMES
OVERALL SITE DENSITY: 2.1 DUA

RESIDENTIAL BREAKDOWN		NON RESIDENTIAL
ACTIVE ADULT HOMES:	293	DAYCARE 12,000 - 14,000 SF
TOWNHOMES:	189	
ALLEY SINGLE-FAMILY:	144	
COURTYARD HOMES:	104	
LARGE LOT HOMES:	130	

EXISTING TREE CANOPY COVERAGE: 262.2 ACS; 64% OF TOTAL SITE
REQUIRED TREE CANOPY RETENTION: 36%; REQUIRED WITH FMDP

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA
OPEN SPACE BREAKDOWN
CIVIC SPACE: 22.2 AC
ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC
ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC
CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

PARKING: SEE LOT DIAGRAMS (C2.6) FOR PROPOSED RESIDENTIAL PARKING;
AND SHEETS L1.0-L1.6 FOR CIVIC SPACE PARKING
RESIDENTIAL: 2 PARKING SPACES PER UNIT
DAYCARE: 1 PER STAFF + 0.5 PER CHILD
CIVIC SPACE: 1 PER 5,000 SF

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-409.92 ACRES AND REZONE TO PUD-R
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed Columbia Bluffs subdivision is 2 miles from the downtown core. Density and lot size transitions from higher density/intensity at the north, along the Bear Creek Parkway corridor to the south, where a more rural character is appropriate adjacent to Iron Bridge Rd and the Yanahli Park. The properties along Bear Creek Parkway have been identified as "area of change." With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Connectivity, directly through street, sidewalks, bikeways, greenways, and trails, and indirectly, through a mixture of housing and business types, should be encouraged throughout Columbia..
Response: In addition to roadway and sidewalk connections, Columbia Bluffs proposes nature trails through out the property. The development will also provide a roadway connection between Bear Creek Parkway and Iron Bridge Road. A variety of housing types are proposed, including an age restricted Active Adult neighborhood.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity.
Response: Columbia Bluffs proposes a variety of housing styles
Near-term Priorities: HOUSING MIX/TYPES: Promote mastered planned housing opportunities for a "full-life cycle" community to accommodate retirees and young professionals. Review Zoning standards to permit smaller lot and home sizes to encourage such developments.

MODIFICATIONS FROM STANDARD PUD-R ZONING REQUEST:

RESIDENTIAL LOT DIAGRAMS: SEE SHEET C2.6
1. ACTIVE ADULT AND PRIMARY ALLEY LOADED HOMES SIDE-SETBACK REDUCED TO 5'.
2. OTHER PRIMARY RESIDENTIAL SIDE-SETBACK REDUCED TO 7.5'.
3. ACTIVE ADULT, COURTYARD, AND LARGE LOT GARAGE LOCATED IN 2ND LAYER
4. ACTIVE ADULT, COURTYARD, AND LARGE LOT ALLOWED DOUBLE CAR GARAGE DOORS, WITH A MAXIMUM WIDTH OF 16'
5. ACTIVE ADULT DRIVEWAYS TO BE 18' IN FIRST LAYER.
6. COURTYARD AND LARGE LOT DRIVEWAY TO BE 12' IN FIRST LAYER.

THOROUGHFARE STANDARDS:
1. UTILIZATION OF 50' ROW INSTEAD OF 70' ROW.

CIVIC SPACE:
1. ACTIVE ADULT NEIGHBORHOOD TO BE EXCLUDED FROM REQUIRED PLAYGROUND CRITERIA.

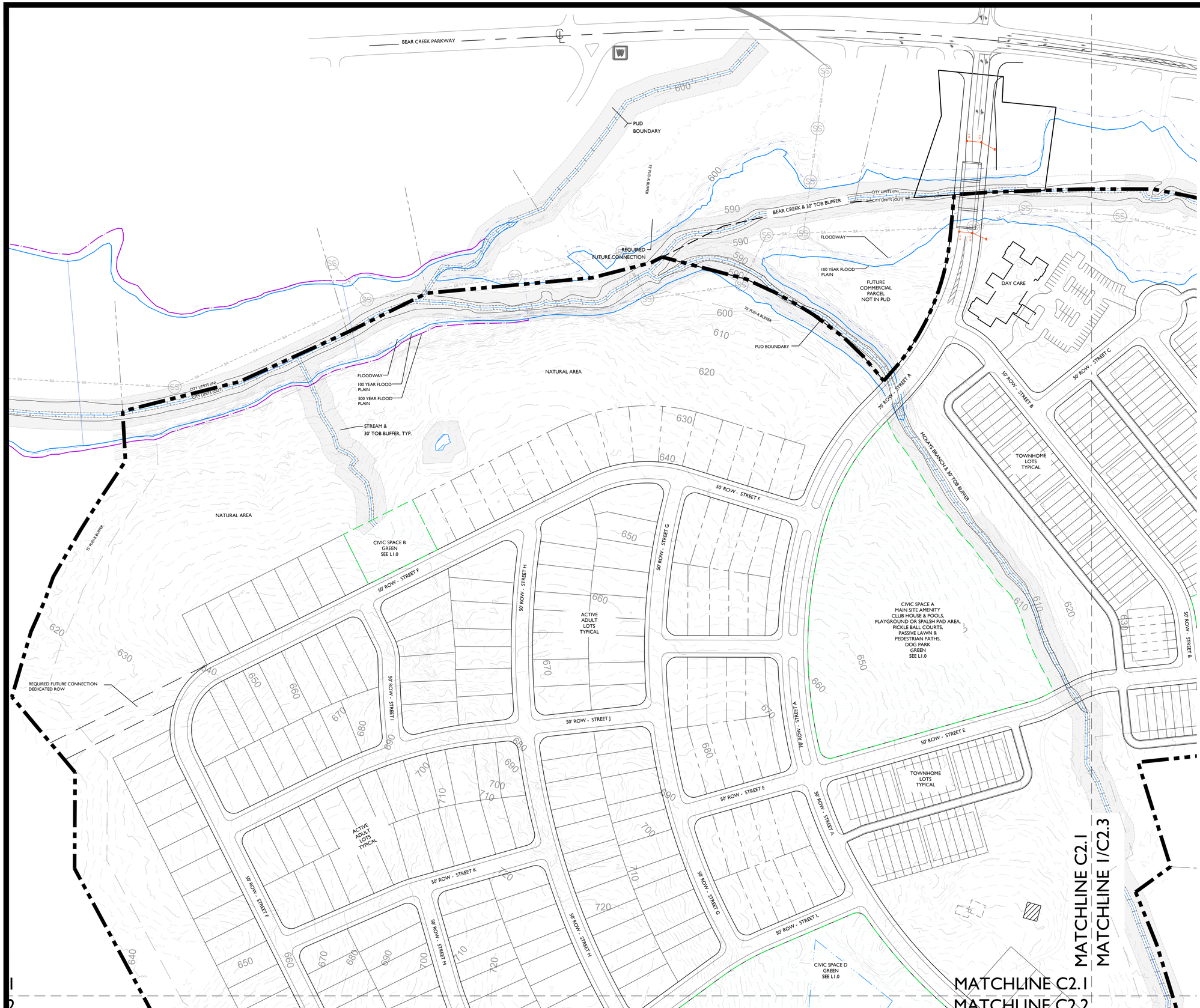
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — REGISTERED LANDSCAPE ARCHITECT — TENNESSEE — 1229

Date: October 16, 2023
Revision Date
△
△
△

OVERALL PUD-R PMDP
SHEET
C2.0



OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
TENNESSEE
10/16/23
LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
△
△
△

ENLARGED PUD-R PMDP

SHEET C2.1

MATCHLINE C2.1
MATCHLINE C2.2

MATCHLINE C2.1
MATCHLINE C2.2

ACTIVE ADULT LOTS TYPICAL

CIVIC SPACE D
MAIL KIOSK
SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN
SEE L1.0

50' ROW - STREET A

50' ROW - STREET L

50' ROW - STREET F

50' ROW - STREET M

50' ROW - STREET N

50' ROW - STREET H

50' ROW - STREET O

CIVIC SPACE G
ACTIVE ADULT AMENITY
COVERED SEATING, PASSIVE LAWN &
PEDESTRIAN PATHS,
DOG PARK,
COMMUNITY GARDEN,
GREEN
SEE L1.0

NATURAL AREA

ACTIVE ADULT LOTS TYPICAL

75' M.D.R BUFFER

75' M.D.R BUFFER

NATURAL AREA

FLOODWAY
100 YEAR FLOOD PLAIN

STREAM &
30' TOB BUFFER, TYP.

DUCK RIVER

COURTYARD LOTS TYPICAL

50' ROW - STREET P

50' ROW - STREET R

50' ROW - STREET Q

50' ROW - STREET S

LARGE LOTS TYPICAL

ALLEY HOMES TYPICAL

50' ROW - STREET T

50' ROW - STREET W

PEDESTRIAN WALKWAY & PARK

CIVIC SPACE E
MAIL KIOSK, PASSIVE LAWN & PEDESTRIAN PATHS, PLAYGROUND
GREEN
SEE L1.0

CIVIC SPACE H
PASSIVE LAWN & PEDESTRIAN PATHS, PLAYGROUND
GREEN
SEE L1.0

NATURAL AREA

COURTYARD LOTS TYPICAL

NATURAL AREA

LARGE LOTS TYPICAL

MATCHLINE C2.2
MATCHLINE C2.4

MATCHLINE C2.2
MATCHLINE C2.3

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT

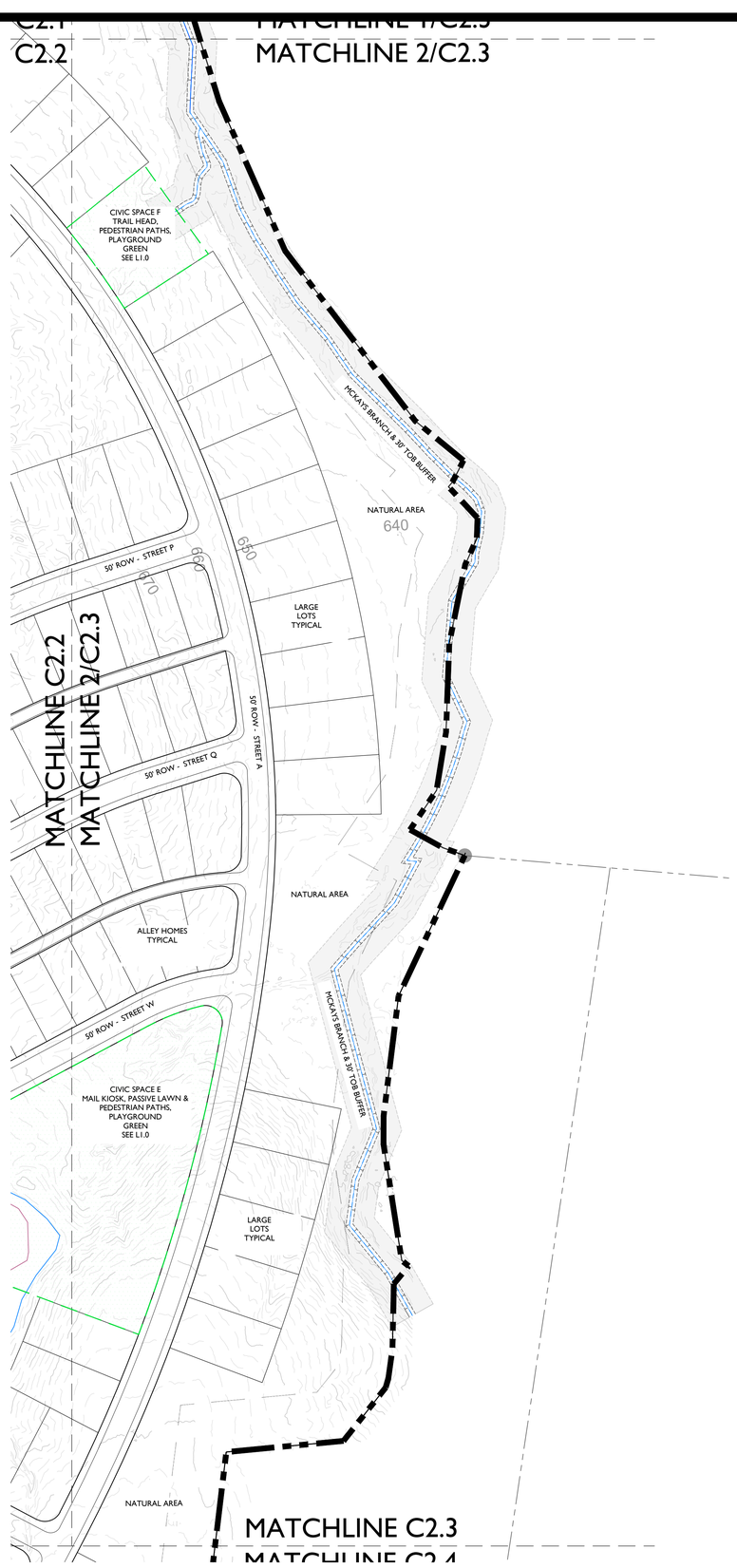
Date: October 16, 2023

Revision Date
△
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ENLARGED PUD-R PMDP

SHEET
C2.2





GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 1615

Date: October 16, 2023

Revision Date
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△
△

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP

SHEET C2.3

MATCHLINE C2.3
MATCHLINE C2.4

MATCHLINE C2.4
MATCHLINE C2.5

NATURAL AREA
75' RCA BUFFER
FLOODWAY
100 YEAR FLOOD PLAIN
DUCK RIVER
LARGE LOTS TYPICAL
50' ROW - STREET W
50' ROW - STREET T
50' ROW - STREET A
COURTYARD LOTS TYPICAL
50' ROW - STREET V
50' ROW - STREET U
OHE
100' TVA LINE AND EASEMENT
CIVIC SPACE I
MAIL KIOSK, SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, PLAYGROUND GREEN
SEE L1.0
STREAM & 30' TOB BUFFER, TYP.
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE REGISTERED LANDSCAPE ARCHITECT
LA0016233

Date: October 16, 2023

Revision Date
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△
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ENLARGED PUD-R PMDP

SHEET
C2.4

MATCHLINE C2.4
MATCHLINE C2.5

NATURAL AREA
DUCK RIVER
50' ROW - STREET A
50' ROW - STREET U
COURTYARD LOTS TYPICAL
LARGE LOTS TYPICAL
STREAM & 30' TOB BUFFER, TYP.
CIVIC SPACE J TRAIL HEAD, SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN SEE L1.0
500 YEAR FLOOD PLAIN
FLOODWAY
100 YEAR FLOOD PLAIN
75' PUD-R BUFFER
100 YEAR FLOOD PLAIN
500 YEAR FLOOD PLAIN
OHE

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED LANDSCAPE ARCHITECT
TENNESSEE
10/16/23

Date: October 16, 2023

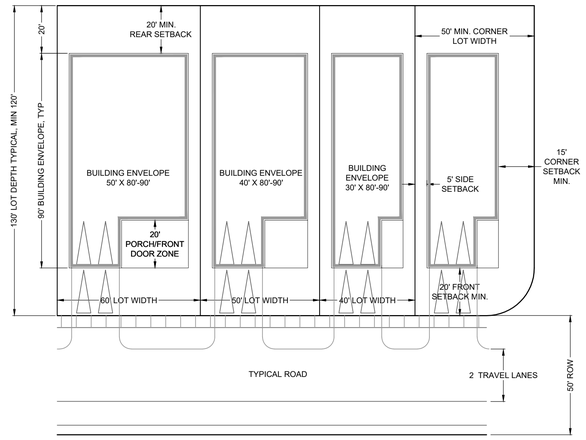
Revision Date
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ENLARGED PUD-R PMDP

SHEET
C2.5

ACTIVE ADULT/ AGE RESTRICTED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

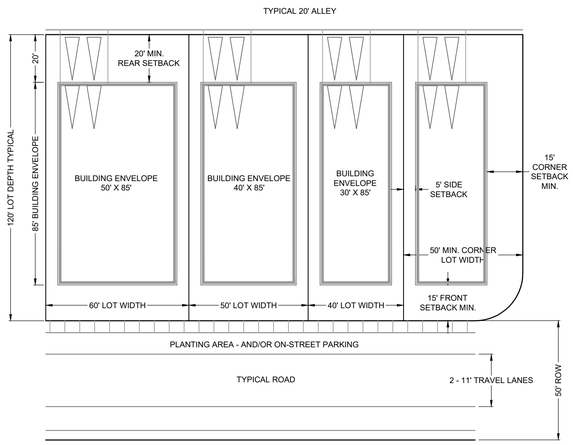
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



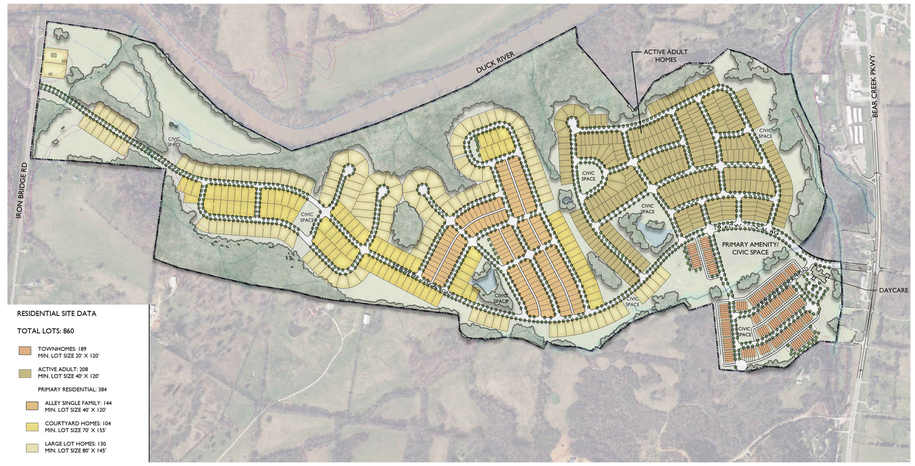
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL - ALLEY LOADED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



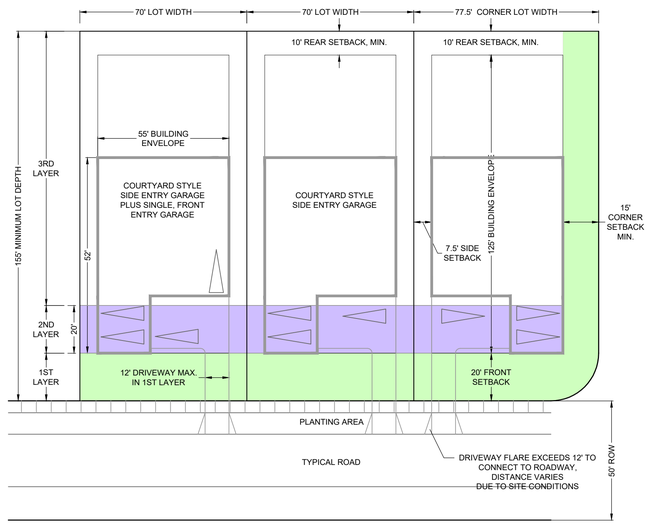
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

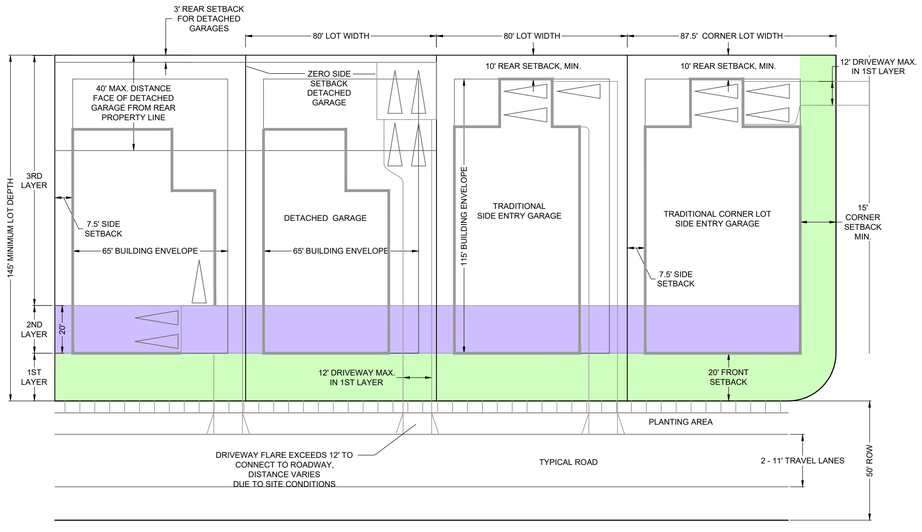
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

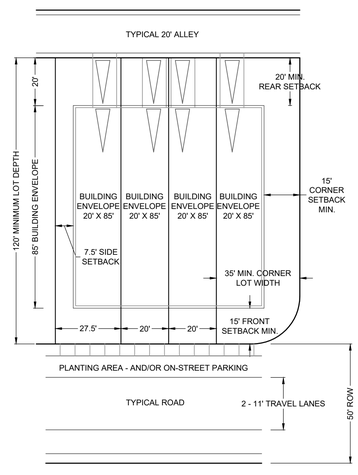
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



5 C2.6 LARGE LOT HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL ALLEY LOADED TOWN HOMES
TYPICAL INTERIOR LOT DIMENSIONS 20' MIN. X 120'
UNITS PER BUILDING: 4, 6, 7, OR 8

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 15' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



6 C2.6 TOWN HOME LOT DIAGRAM N.T.S

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

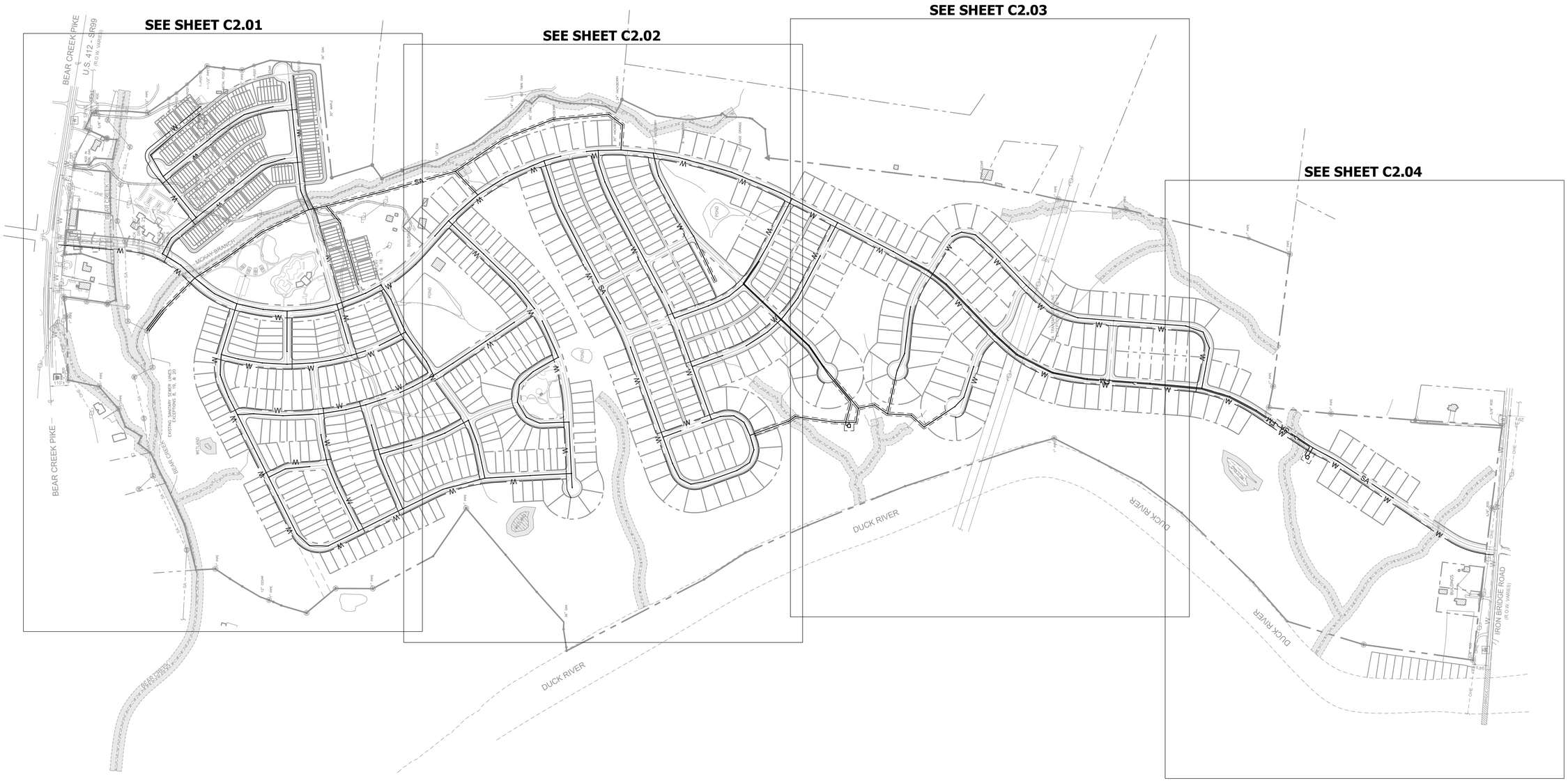
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
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LOT DIAGRAMS

SHEET C2.6



N

0 300 600
SCALE: 1"= 300'

CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
ENGINEER
AGRICULTURE
COMMERCE
No. 021998
STATE OF TENNESSEE
10-16-23

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

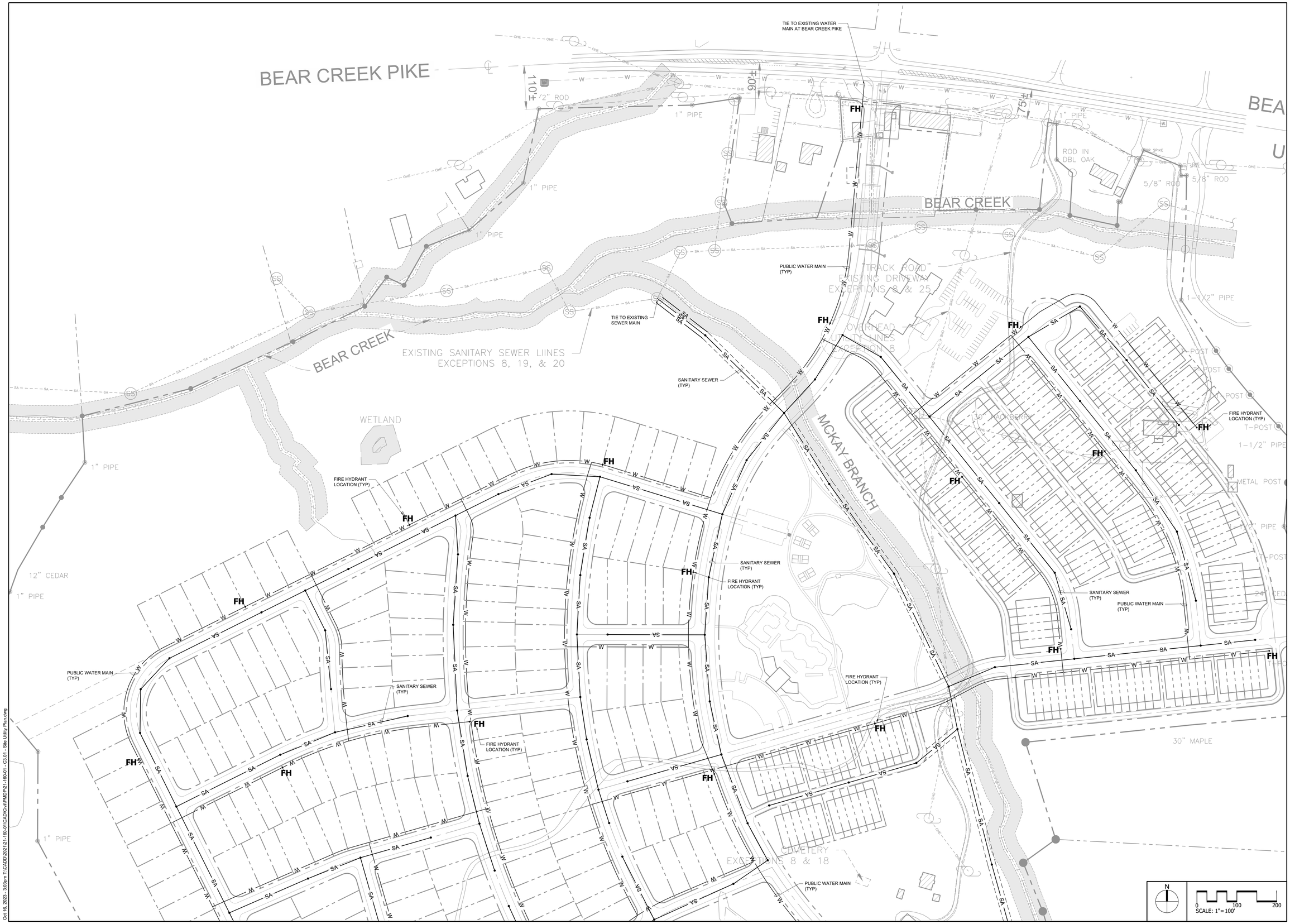
DRAWN BY: TWG
CHECKED BY: TWG

OVERALL UTILITY PLAN

C3.00

PROJECT NO.: 21-160-01

Oct 16, 2023 - 3:03pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.00 - Overall Utility Plan.dwg



Oct 16, 2023 - 3:03pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.01 - Site Utility Plan.dwg

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Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.01
PROJECT NO.: 21-160-01



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Landscape Architecture
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Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL

JAMES T. HARRISON IV
REGISTERED
ENGINEER
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.02
PROJECT NO.: 21-160-01

Oct 16, 2023 - 3:03pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.02 - Site Utility Plan.dwg



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JAMES T. HARRISON IV
REGISTERED
ENGINEER
AGRICULTURAL
COMMERCIAL
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

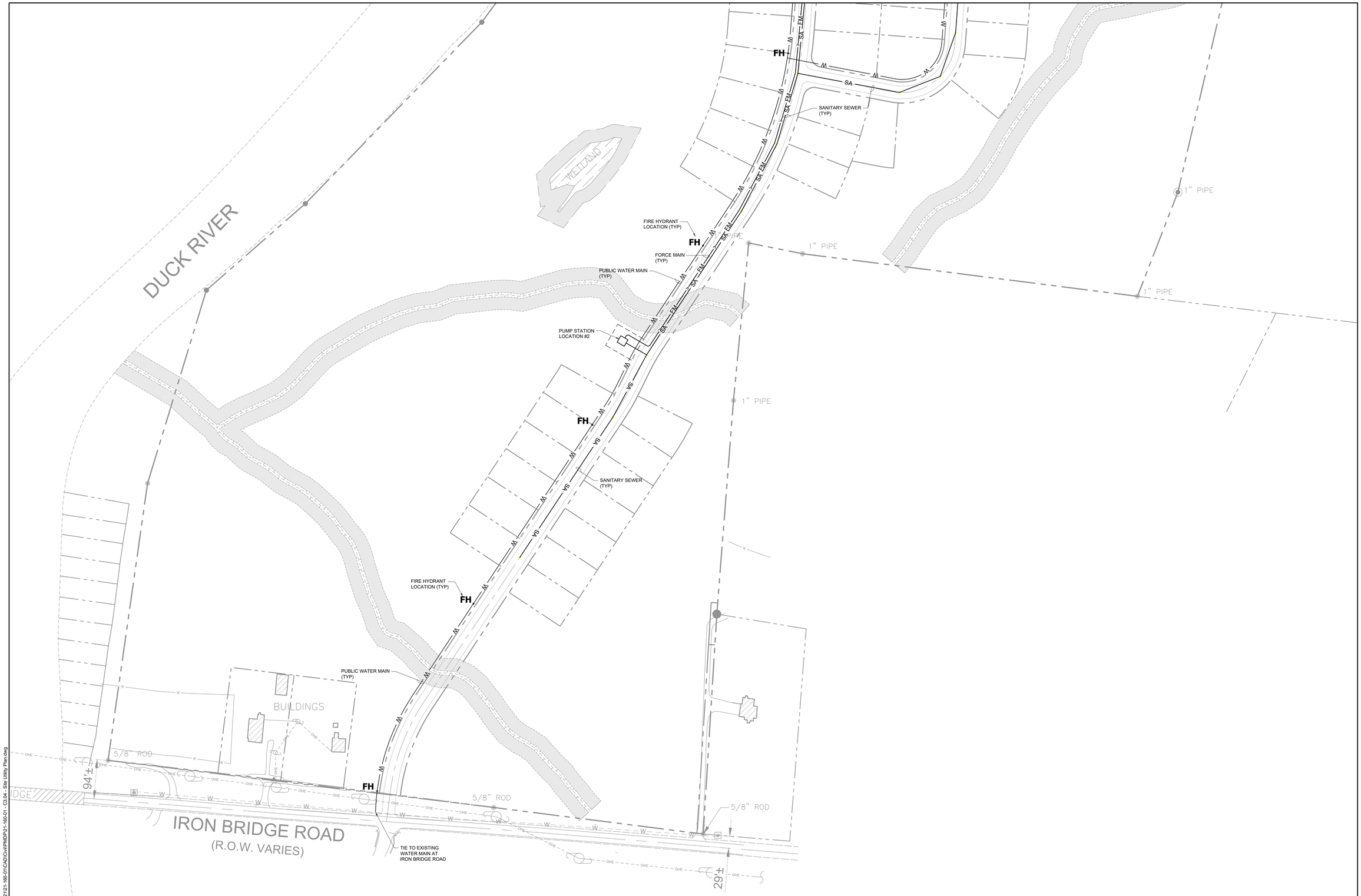
DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.03
PROJECT NO.: 21-160-01

N
0 100 200
SCALE: 1"= 100'

Oct 16, 2023 - 3:04pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.03 - Site Utility Plan.dwg



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Planning | Engineering
Landscape Architecture
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Nashville, TN 37211
615.248.9999
csdgtn.com

SEAL



COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

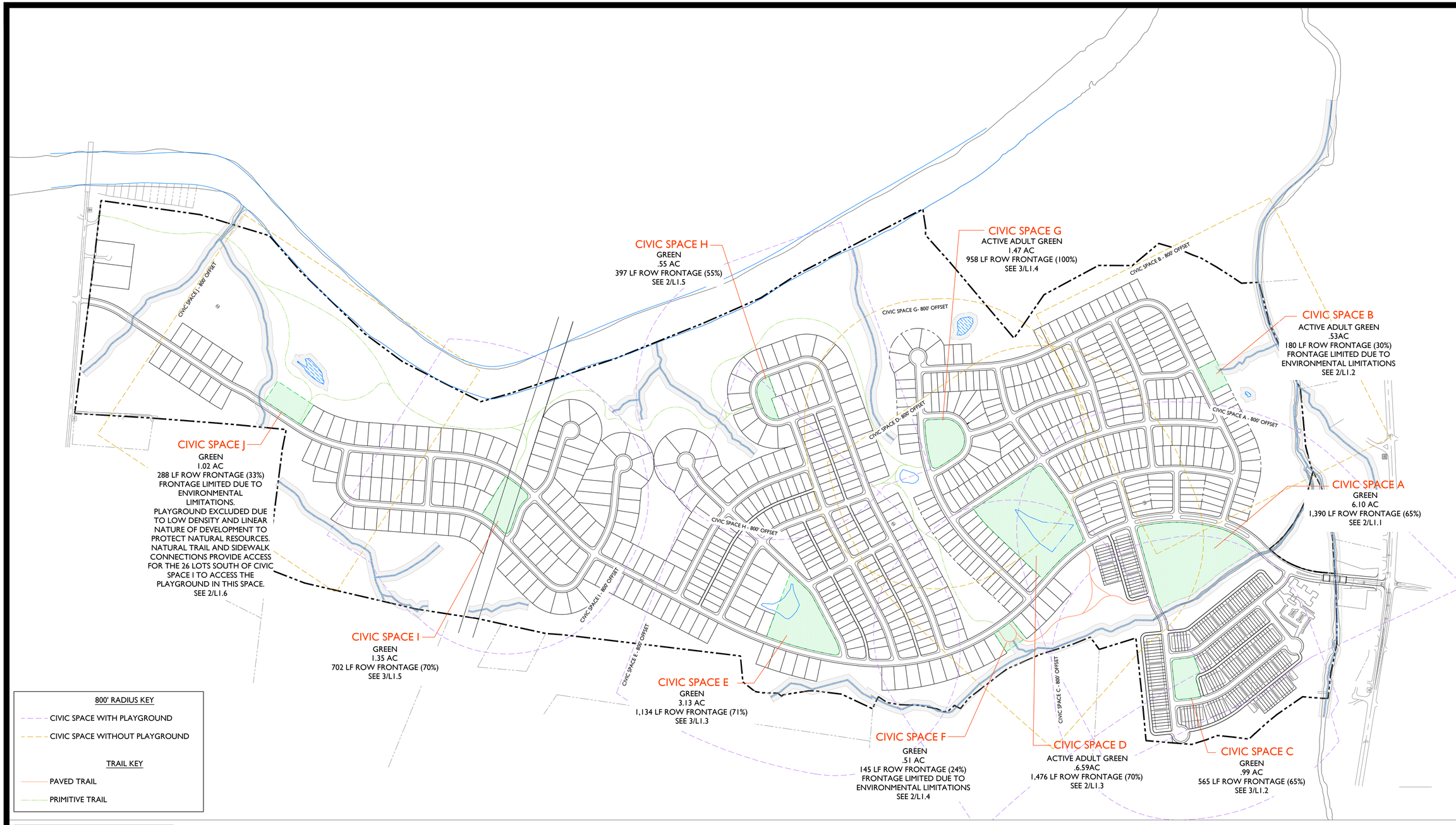
SITE UTILITY PLAN

N

0 100 200
SCALE: 1"= 100'

C3.04
PROJECT NO.: 21-160-01

Oct 16, 2023 - 3:04pm T:\CADD\202\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.04 - Site Utility Plan.dwg



800' RADIUS KEY

- CIVIC SPACE WITH PLAYGROUND
- CIVIC SPACE WITHOUT PLAYGROUND

TRAIL KEY

- PAVED TRAIL
- PRIMITIVE TRAIL

OVERALL CIVIC SPACE PLAN

N

0 300 600 900

GRAPHIC SCALE 1"=300'-0"

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA

OPEN SPACE BREAKDOWN

CIVIC SPACE: 22.2 AC

ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC

ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC

CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

CIVIC SPACE BREAKDOWN

KEY	SIZE	PLAYGROUND
A	6.10 AC	YES
B	.53 AC	NO
C	.99 AC	YES
D	6.10 AC	NO
E	3.13 AC	YES
F	.51 AC	YES
G	1.47 AC	YES
H	.55 AC	YES
I	1.35 AC	YES
J	1.02 AC	NO

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
TENNESSEE
NO. 1162

Date: October 16, 2023

Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN

SHEET

L1.0

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

16 October 2023

Kolter Land
14025 Riveredge Drive, Suite 175
Tampa, Florida 33637
Attn: James P. Harvey

RE: "Columbia Bluffs" Tax Parcels: 090 012.01,090 012.01 001 and 090 016.00 001

Mr. Harvey,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Major or minor improvements to existing infrastructure may or may not be necessary to satisfactorily convey the additional sanitary sewer flow from the above-referenced proposed development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. Grinder Pump systems are not allowed by the City of Columbia. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

CPWS

October 13, 2023
Mr. Joshua Gibbs
Kolter Land
14025 Riveredge Drive, Suite 175
Tampa, FL 33637
Sent via email: jgibbs@kolter.com
RE: Water Availability Letter
Big Bear Bluffs Single Family – 129 Units
400 Bear Creek Pike
Tax Map 90, Parcel 12.01
Columbia, Maury County, TN

Dear Mr. Gibbs:

Columbia Power and Water Systems ("the Utility"/CPWS) is a municipal corporation authorized to provide water services in accordance with State law. CPWS has adopted rules, regulations, and standard operation procedures, prescribing the conditions under which CPWS will furnish water service. In addition, certain State laws delegate authority to the Tennessee Department of Environment and Conservation, various Planning Commissions and other authorities in Cities and Counties. These Cities and Counties have also adopted rules and regulations. Subject to the payment of all charges and fees imposed by CPWS and the approval of any and all required governmental agencies, water service will be made available on a first-come, first-served basis, subject to availability of all CPWS furnished equipment and materials appropriate for the development and provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

As submitted by the applicant, the proposed development includes up to 860 single-family residential units in townhome and detached configurations, an approximately 4,600 square-foot amenity building with pool, a daycare, and irrigation for common areas. CPWS has evaluated the projected water demands for the proposed development and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi for all proposed lots (as submitted by the applicant in concept plan dated 9/29/2023) while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Water availability for the proposed 860 units is contingent upon the schedule of development as provided by the applicant. Any acceleration of the schedule (start, finish, or increased unit count per phase) will require re-evaluation of water availability. Acceptance of an accelerated schedule is not guaranteed. The schedule as provided by the applicant is as follows:

Project Phase	Approximate Units	Sitework Started	Vertical Construction Completion	Notes
Phase 1	129	Q1 2026	Q2 2028	
Phase 2	142	Q2 2028	Q4 2029	Includes amenity building
Phase 3	109	Q3 2029	Q1 2031	Includes daycare
Phase 4	135	Q4 2030	Q2 2032	
Phase 5	112	Q1 2032	Q2 2033	
Phase 6	122	Q2 2033	Q1 2034	
Phase 7	94	Q1 2030	Q2 2033	

- This Water Availability Letter represents water availability for the entire development, but a new water service application and fee is required for subsequent phases. Water service is not guaranteed until the relevant impact fees are paid for each meter to be installed.
- A new 12-inch water main will be required to be installed by the Applicant from Bear Creek Pike, south through the spine road of the proposed development to Iron Bridge Road. From there a 16-inch main will be installed west to Tom J Hitch Parkway. From the intersection of Tom J Hitch Parkway and Iron Bridge Road, a new 16-inch water main will be installed north to the existing 12-inch CPWS water main located just south of the Duck River bridge on Tom J Hitch, as well as south to the existing 12-main near 1451 Tom J Hitch Parkway. The attached figure provides a visual representation of these requirements.
- A permanent, exclusive 20-foot water main easement will be provided by the developer for the new 16-inch and 12-inch water mains. Within the development, the easement may overlap the right-of-way of the spine road.
- Lane additions or other required improvements at Bear Creek Pike or other roadways may necessitate additional construction to relocate any impacted existing water mains.
- All off-site improvements must be constructed, tested per CPWS standards and deeded over to CPWS prior to connection of any domestic water meter used for full-time residence.
- The remainder of the water mains in the development shall be a minimum of 8-inch diameter with looped connections throughout the development. Final design to accommodate fire protection loads may necessitate an increase in some water main sizes in the development.

All of the above requirements are to be constructed and paid for by the Applicant and deeded over to CPWS once complete up to and including the meter. No construction of water infrastructure shall be initiated until final construction plans have been approved by TDEC and a water service agreement with CPWS is fully executed.

Once you have received this Water Availability Letter, next steps in the process to obtain water service from CPWS are as follows:

- Present the attached fireflow analysis figure for coordination and approval of development from the Columbia Fire Marshall.
- Prior to expiration of this water letter, remit to CPWS the new water service fees for Phase 1 of the development as follows:

New Water Service Fee: $1,500 + $370 per SFU (129 SFUs)	$49,230.00

- Provide site base CAD files in DWG format, including roads, lot lines, existing and proposed contours, and other existing and proposed utilities, for use in development of water construction drawings. *This should include survey for the corridor of any required offsite improvements.*
- CPWS will then develop water construction drawings and submit them to TDEC for approval. Upon approval by TDEC and payment of Phase 1 meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid. Meter and impact fees for Phase 1 are as follows:

Meter Fee: $540 per 3/4" meter (129 meters)	$69,660.00
Impact Fee: $4,500 per 3/4" meter (129 meters)	$580,500.00
Total Meter and Impact Fees Due =	**$650,160.00**

- After the pre-construction meeting, CPWS will then issue a formal notice to proceed. No construction of CPWS infrastructure may take place prior to the pre-construction meeting.
- Applicant is then required to construct all public water infrastructure per CPWS standard specifications and provide CPWS personnel unregulated access to the site to inspect the construction of the water infrastructure.

If you have any questions, please feel free to contact me at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) calendar days from the date of this letter.

Sincerely,



Eric King, P.E.
Inflo Design Group, LLC
on behalf of Columbia Power and Water Systems

cc: Jonathan Hardin, CPWS
File 22-092

Property and Master Plan Description

Identifying paths for new development, suburban neighborhood development, through *Connect Columbia*

- **Fostered as part of a practice of managed growth that relies on balancing growth, economic development and community development**
  Columbia Bluffs seeks to be a master planned community with diversity of housing options and civic opportunities.

- **Preservation of historic, cultural and environmental assets**
  Columbia Bluffs seeks to build civic areas around the historic/cultural history of the property and utilize proactive measures to protect the natural environmental systems supporting the Duck River.

- **Connectivity**
  Columbia Bluffs seeks to provide a north-south roadway connection between Iron Bridge and Bear Creek Parkway as well as provide stub road opportunities for future development to the east.

- ***Connect Columbia* Top Priorities: allowing a PUD model that will allow flexibility with more assurance of the final outcome**
  Columbia Bluffs seeks to create a master planned neighborhood with commitments on density, architectural character, quality amenities, and protected open space.

- **Suburban Neighborhood goals: future development emphasizing connectivity and housing diversity, pedestrian friendly**
  Columbia Bluffs seeks to development a master plan with all of these goals.

- ***Connect Columbia* Near-Term Priorities: promote master planned housing opportunities for a "full-life cycle" to accommodate retirees and young professionals and to review zoning standards to permit smaller lot and home sizes to encourage such developments.**
  Columbia Bluffs seeks to create a master planned neighborhood with housing opportunities that range from Active Adult age-restricted living, larger lots/homes to support growing families and generational living opportunities, to smaller lots and town homes for young families.

greg.gamble@gdc-tn.com | 615.975.5765 cell | 3020 Stansberry Lane, Suite 201, Franklin, TN 37069

PUD Justification

PUD Zoning is only to be used under certain very specific conditions.

- 2.4.4 – *PUD district may be assigned to an area within a parcel of land over 10 gross acres, only if due to unique site conditions or the necessary and intrinsic uses, size, or form a proposed development* ***cannot under any plan, design, or circumstances conform to one or more of the character districts*** *and standards therefor.*

Environmental Uniqueness. The uniqueness of the land and its proximity to the Duck River provides a unique opportunity to master plan the community with greater environmental protection.

The Duck River may be the most significant natural feature in Columbia. It's the protection and preservation of this resource for aquatic species diversity, wildlife, and a clean Columbia is paramount. Open spaces should be identified and preserved with these specific goals in mind. Based on the Zoning Ordinance Primary Use Table 4.3.9.A-1, open spaces are defined based on the use type. While some uses on this chart are similar, they do not seem to capture the breadth of environmental resource protections and would therefore fall under "other open space use not listed under any use category" which is limited to use within a PUD only. The use of the PUD-R for this property ensures the City's oversight and the design team's plans for development are thought about on the front end and not left to speculation. The property should be developed using Conservation Design Concepts where low impact development is proposed and where conservation is the top priority within sensitive land and around environmental features in order to protect them. These conservation areas include floodplains, steep slopes, natural drainage areas, and areas of established tree canopy along the Duck River.

The Zoning Ordinance does not require a Conservation Plan, nor a development strategy to protect a resource as significant as the Duck River. Section 6.2 Preservation of Natural Features states: Development shall preserve the natural features of the site, such as wetlands, unique wildlife habitats, Historic Structures, major trees and scenic views both from and into the site. This regulation is too vague and not specific enough for the subject property.

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Environmental Protection Strategy

1. **Strategy for Resource Protection utilizing a PUD Planning and Design Approach**

    a. Establish a Limits of Disturbance along the Duck River and its tributaries based upon slopes, natural drainage ways, floodplain areas, and mature tree canopy.
    b. Design new development around open space areas to highlight them as community amenities with pedestrian systems that will connect the entire conservation design open space throughout the community.
    c. Pedestrian circulation and trails are highly encouraged along the river, along stream corridors, and through scenic areas.
    d. The quantity of Open Space preservation should greatly exceed any established base zone district.
    e. New home lots should generally be smaller, clustered areas away from the protected banks of the Duck River.
    f. Document on-site natural resources through a State approved Hydrologist and concurrence reports with local, state, and federal agencies.
    g. Remove debris removal along creek banks to prevent impact to Bear Creek (shoes, clothing, random bottles, containers, fencing, wood)
    h. Use Best Management Practices for Stormwater Pollution Prevention Plans during construction.
    i. Use only one crossing point (< less than approx. 50’ - 60’ feet that spans the creek with no structures within Bear Creek (similar to several crossings visible from US (Highway 412).

2. **Strategy for Protection through Construction**

    Implementation of the Plan requires protective measures. PUD phasing and areas of disturbance should be documented and considered through the PUD process. Protection practices shall include:

    A. Storm water erosion control applications I.E.
        i. Stormwater Detention Areas,
        ii. natural riparian buffers
        iii. silt fencing
        iv. sediment ponds
        v. Check dams

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vi. Ongoing stormwater monitoring of Environmental Controls of water runoff areas and tributaries

B. Compliance with CGP, ARAP and NPDES permitting to address the protections that provide additional oversight to the project.

Throughout the duration of the project, these types of practices within the action areas will ensure environmental compliance with local, state and federal requirements.

3. Strategy for Protection when construction is completed.

Once development is completed permanent storm water detention areas and water out fall locations will be cleaned and stabilized in accordance with the local, state, and federal guidelines.

PUD Standards and the Columbia Bluffs Plans

The Columbia Bluffs Master Plan will address and satisfy the standards for PUD Development as defined in 3.7.1 PUD-R District Standards: **PUD-Residential**: *Specifically, this District is intended for predominantly Residential areas on sites where there are sufficient existing infrastructure, services, and utilities available for a proposed Development. Development in this District:*

a. Is walkable and provides a diverse mixture of housing choices and Building Types,
b. Is necessary to implement and is consistent with the Comprehensive Plan,
c. Cannot under any circumstances, plan, or design conform to one or more of the other Districts and standards therefor due to its necessary and intrinsic Uses or size or form,
d. Provides an innovative plan and design,
e. Is harmonious with and respects the land use, character, and natural or man-made features of both the subject property and Adjacent property,
f. Promotes quality and environmentally sensitive planning and design by taking advantage of special site characteristics, locations and land uses,
g. Provides Civic Space,
h. Is the best use of the site consistent with the goals of protecting and enhancing the natural environment. There are specific Development standards provided for this District, which may be supplemented by additional standards approved as part of the applicable Final Master PUD Development Plan.

Modifications of Standards

The following modifications of standards will be requested by the developer to reduce the development footprint and increase the open space held in preservation. The reduction in ROW width, setbacks, and variations in garage locations will provide for a unique, clustered neighborhood experience.

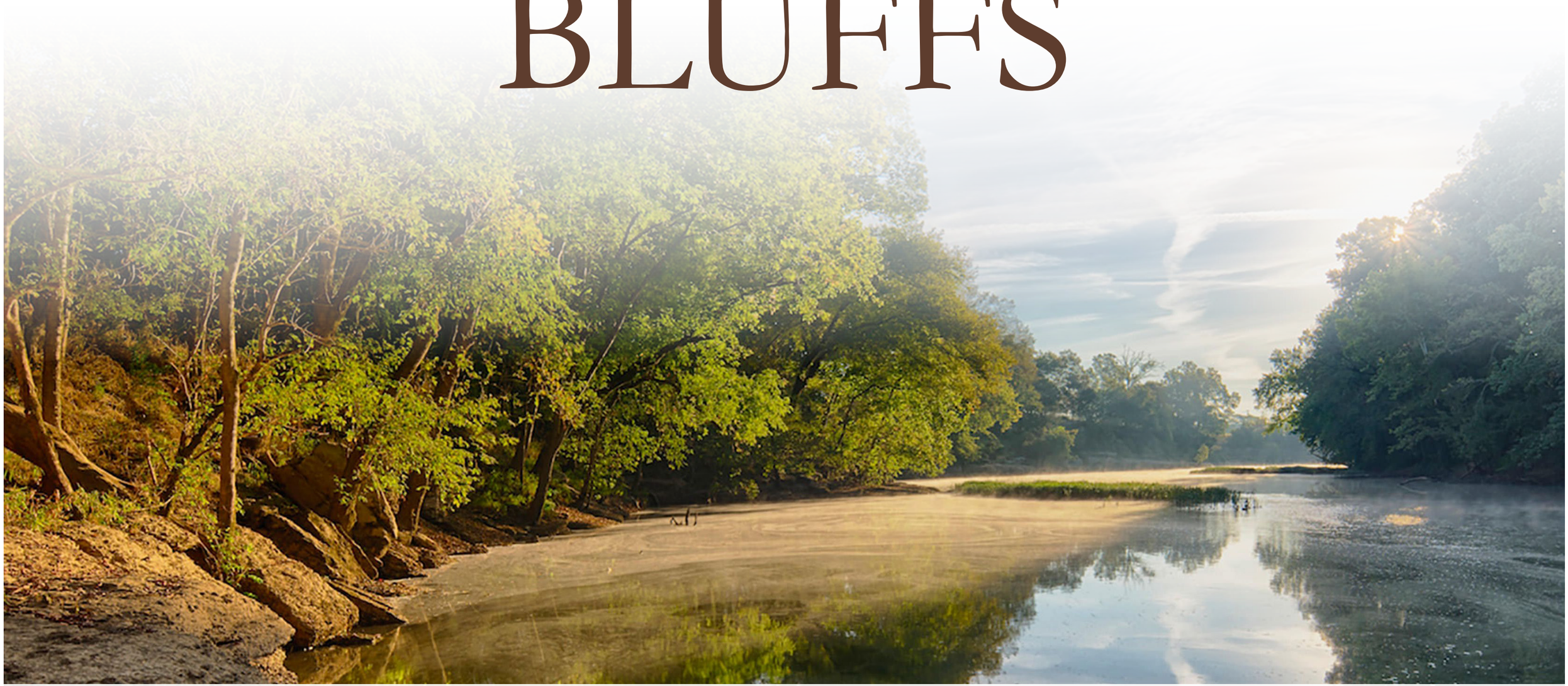
1. Reduction in ROW width from 70' to 50' provides approximately 19 acres of additional land placed into open space. (+/-41,730 LF of roadway).
2. Reduction in side setbacks from 10' to 7.5' on front loaded homes and townhomes provides approximately 6.6 acres of additional land placed into open space. (113,400 sf townhomes + 175,500 sf front load x 2 side yards x 2.5' reduction).
3. Reduction in side setbacks from 10' to 5' on detached alley loaded homes and active adult homes provides approximately 9.7 acres of additional land placed into open space. (397 homes x 120' depth x 2 side yards x 5' reduction = 422,400 SF)
4. Allow garage in 2nd layer on courtyard style homes (garage doors not facing frontage in second layer)
5. Allow double garage doors with a maximum width of 16' wide, single door with windows
6. Allow primary residential driveways to be 12' instead of 10' across the 1st layer and active adult driveways to be 18' across the 1st layer

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COLUMBIA

City of Columbia, Tennessee

BLUFFS



Architectural Review Team Submittal



COLUMBIA BLUFFS ARCHITECTURE

DEVELOPER
JIM HARVEY
KOLTER LAND
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL 33637

ENGINEER
JIM HARRISON
CIVIL SITE DESIGN GROUP
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211

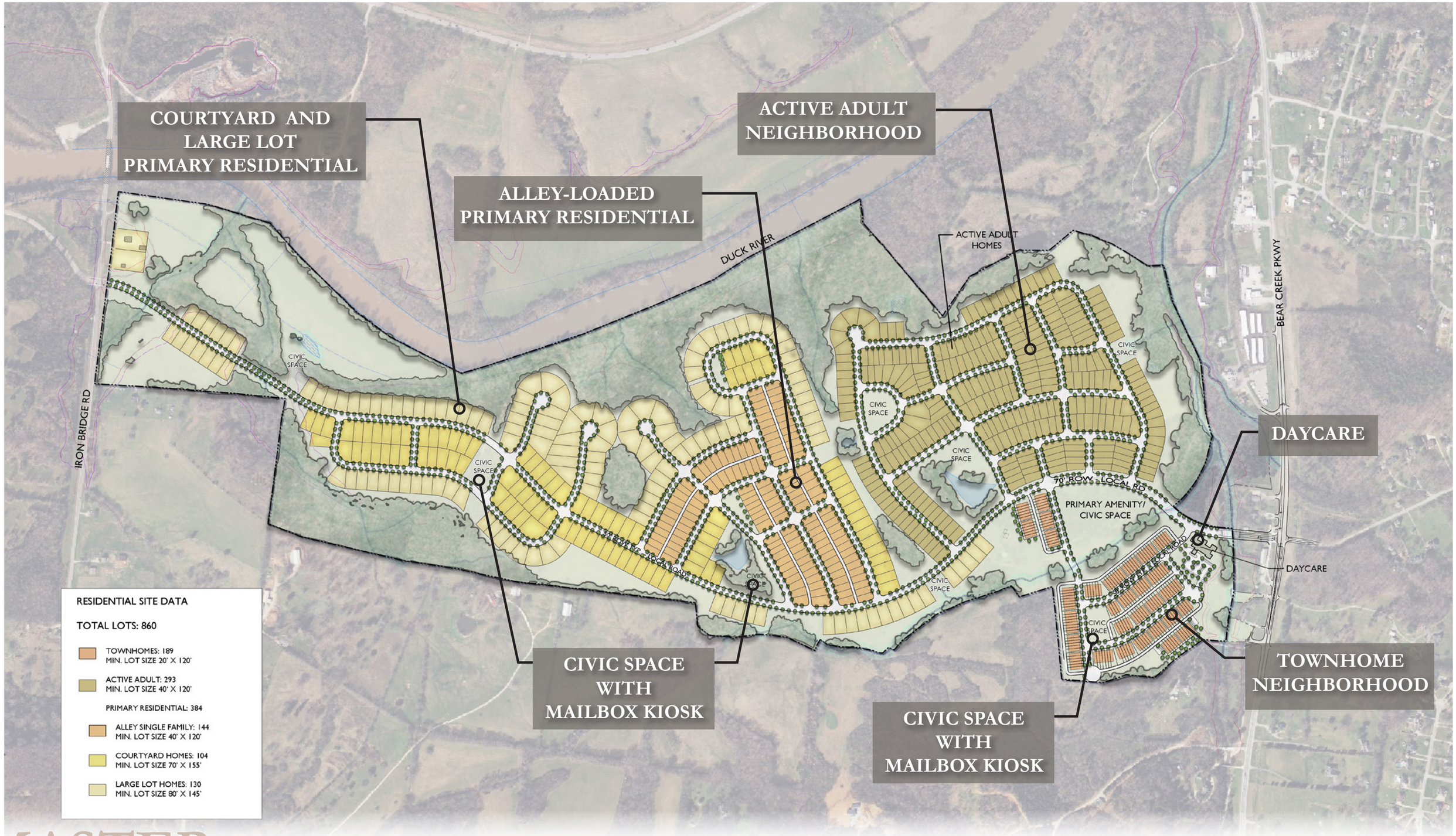
LANDSCAPE ARCHITECT
GREG GAMBLE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069

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8. COURTYARD AND LARGE LOT HOMES
11. ALLEY-LOADED PRIMARY RESIDENTIAL
13. TOWNHOMES
15. DAYCARE
11. MAIN AMENITY ARCHITECTURE
12. CIVIC SPACE ARCHITECTURE

SUBMITTED: 10/16/2023

DEVELOPMENT TEAM



MASTER DEVELOPEMNT PLAN

	Single Family & Townhomes	Active Adult Single Family
Building Height and Massing	• Primarily a mix of 1-story and 2-story, with a maximum of 3-story • Attached garages encouraged	
Building Separation	• Single Family: 10' minimum • Townhomes: 15' minimum	• Single Family: 10' minimum
Street Facades	• Maximize frontage and orientation onto residential streets • Porches should orient to residential streets • Entries visible from residential streets	• Maximize frontage and orientation onto residential streets • Porches should orient to residential streets • Entries visible from residential streets
Building Entries	• Porches minimum 6' deep and 6' wide	
Roof Forms	• Roofs may vary in style, but should be designed to create unity to the full community • All roof forms to be reviewed and approved by the master developer	• Roofs may vary in style, but should be designed to create unity to the full community • All roof forms to be reviewed and approved by the master developer
Roof Detail	• All roofs should create eaves for shadow and rain protection • Where used, gutters should be expressed as positive elements adding desirable detail	• All roofs should create eaves for shadow and rain protection • Where used, gutters should be expressed as positive elements adding desirable detail
Parking	• Garage-parked • Garages minimum depth of 22' • Garage doors with windows required	• Garage-parked • Garages minimum depth of 22' • Garage doors should have windows

ARCHITECTURAL GUIDELINE NOTE:

The architectural guidelines and conceptual elevations are intended to convey the architectural quality and design intent. Final elevations and color schemes will be brought back to be approved by the ADRT at final PUD-R Development Plan.

COMPLIANCE NOTE:

The architectural guidelines as shown in this pattern book represent compliance with the standards set by the Zoning Ordinance except in areas requesting a modification of standards which are requeted to be approved through the PUD-R Preliminary Development Plan process.

Architectural Building Materials

In keeping with the upscale project image, the materials used for structures at Columbia Bluffs should be appropriate for the individual building design concepts and shall be consistent with the project theme. Materials shall be selected and used with consideration to building scale, color scheme, mass, and the surrounding environment.

Roofing Materials

Permitted:
- Dimensional Asphalt Shingles
- Laminated Shingles
- Copper Finishes
- Standing Seam Metal Roofs

Not Permitted:
- Rolled Asphalt
- Asbestos Cement Shingles
- Brightly Colored Metal Roofing

Exterior Siding Materials

Permitted:
- Brick
- Stone
- Natural Wood Accents
- Stucco
- Hardie Plank/Panels
- Cementitious Fiber Siding/Cladding

Not Permitted:
- All Plastics (including vinyl)
- Plywood
- Exposed Concrete Block

Awnings

Permitted:
High Quality Heavy Canvas
Illuminated Awnings
Metal Awnings

Colors

Permitted:
- Muted
- Natural
- Earth Tones

Conditional Permitted:
- Bright
- Primary Colors (per review and approval of the Master Developer)

Building Requirements:
- Maximum Height (Stories) 3 stories

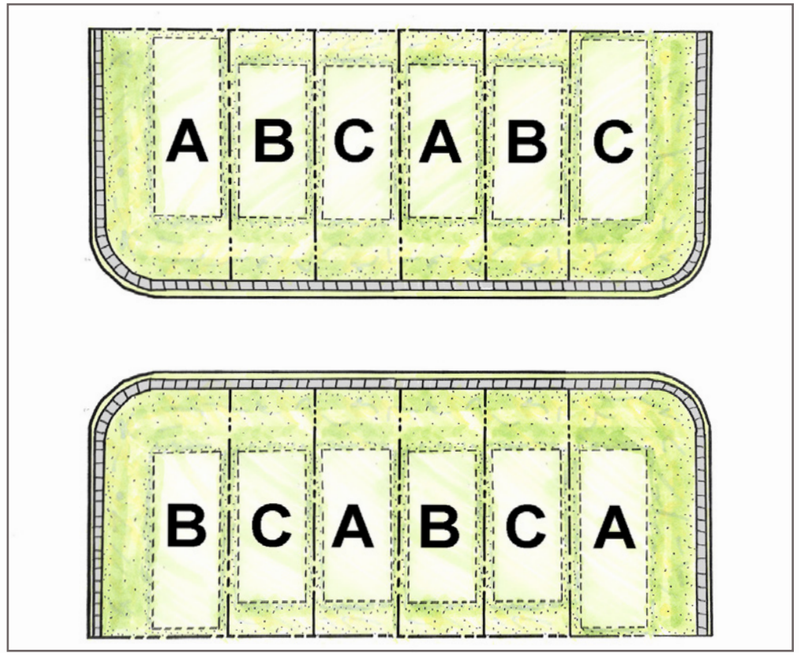








IMAGE OF HOMES REPRESENT AN EXAMPLE OF FACADE VARIETY ALONG SAME STREET. FINAL SELECTION OF MATERIALS AND STYLES TO BE APPROVED AT FMDP.



In order to avoid monotony of architectural design, no approval shall be issued for the construction of a dwelling if it is substantially like any proposed neighboring building for which on approval has already been issued or is being concurrently considered.

- A building shall be considered neighboring if it fronts on the same street as the building under construction or an intersecting street; no building elevation may be repeated across from, adjacent to, or diagonal to a similar building elevation. There shall be a minimum of a 2-lot gap between each similar building elevation (see diagram to above in which A, B, and C represent different elevation styles).
- Vary garage door locations to the front facade of the house when possible. Avoid continuous runs of garages in the same unbroken plain.
- Vary roof orientation, ridge lines, and eave heights between each lot when possible.
- Building facade colors and design elements should vary between each lot with a variation of massing and architectural details on each block.
- Landscaping should vary in composition from building to building when possible.

Final determination of the appropriate elevation pattern and variety is subject to review by the Architectural Design Review Team.

FACADE VARIETY













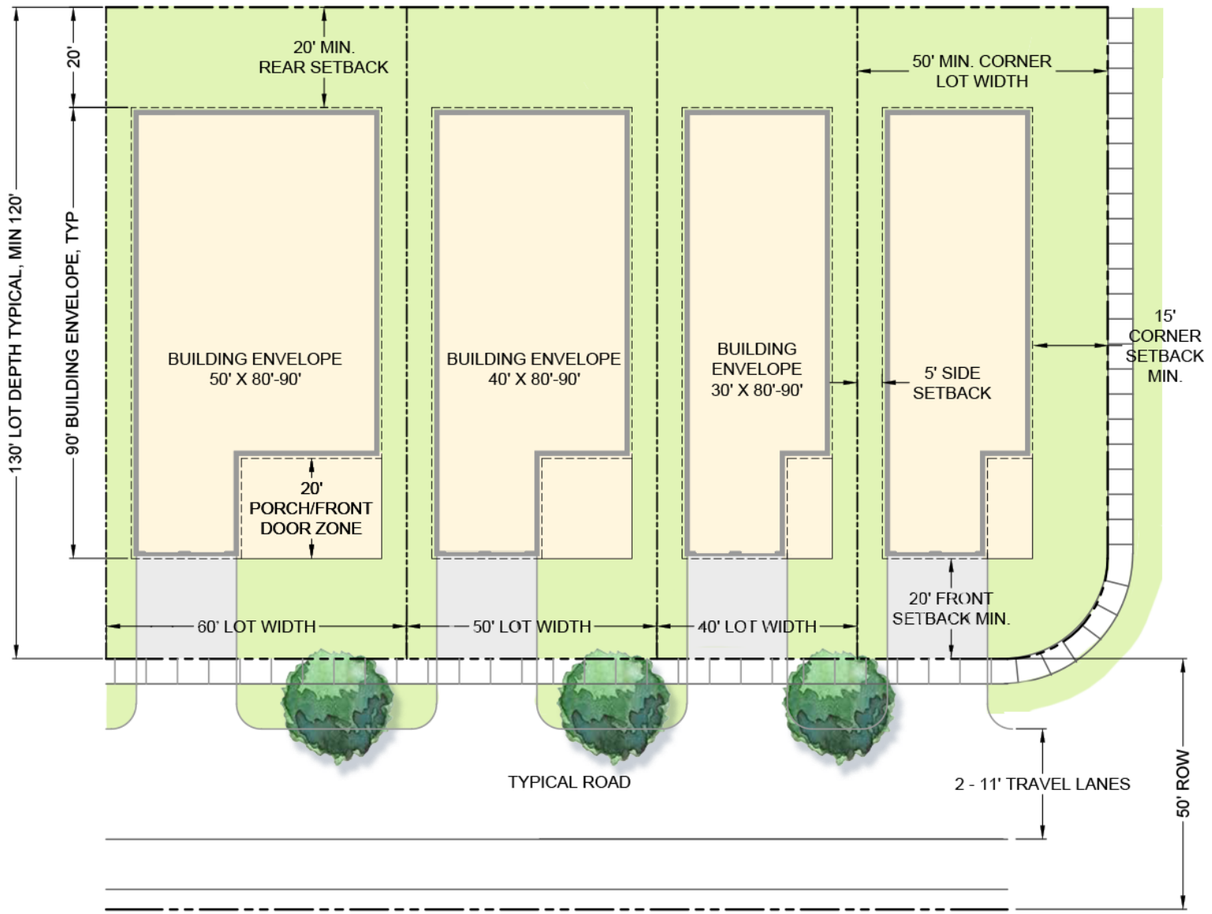






ACTIVE ADULT SINGLE FAMILY

COLOR RENDERING PRESENTS AN
ILLUSTRATIVE DEPICTION OF ARCHITECTURE
AND LANDSCAPE MATERIAL





LOT RANGE: 40'-60'
208 HOMES

BUILDING SETBACKS:
- FRONT: 20'
- REAR: 20'
- SIDE: 5'
- CORNER: 15'

ALL LOTS TO HAVE FRONT LOADED GARAGES
- MINIMUM 20' OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

SITE SETBACKS ARE DUE TO ALL INCLUSIVE MAINTENANCE APPLICATION GOVERNED BY THE PROPOSED HOA, TO BE DEED RESTRICTED.

ACTIVE ADULT SINGLE FAMILY





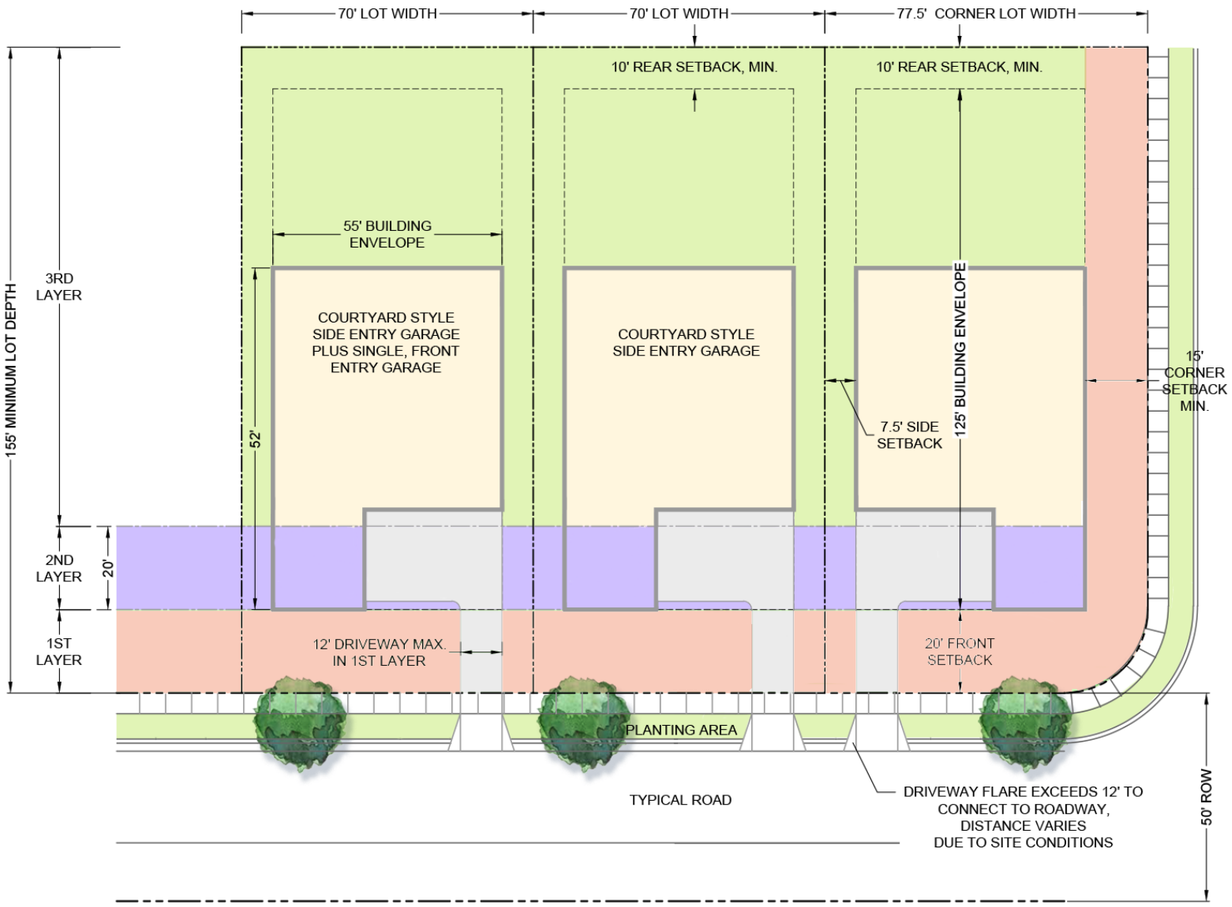







COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL

COURTYARD HOMES







LOT: 70' MINIMUM

104

BUILDING SETBACKS:

FRONT:	20'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

ALL LOTS TO HAVE SIDE LOADED GARAGES WITH THE OPTION OF A SINGLE, FRONT-LOADED GARAGE IN THE 3RD LAYER.

- MINIMUM 20' LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

COURTYARD HOMES











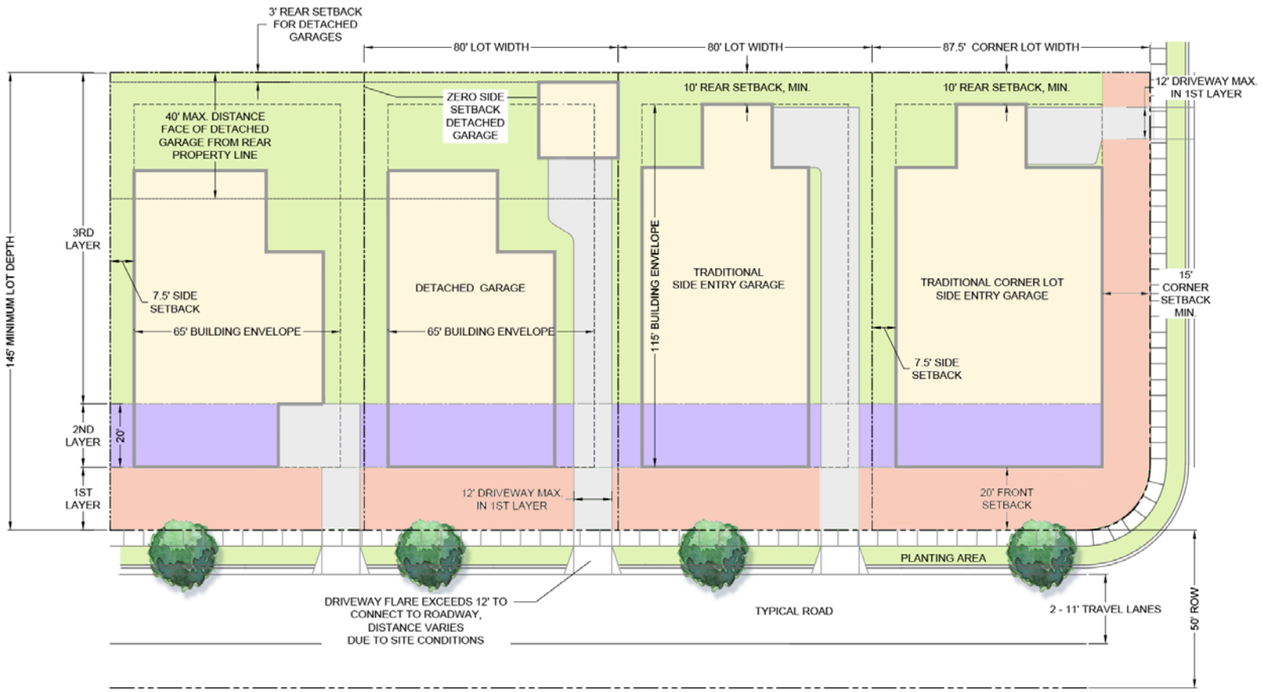







LARGE LOT HOMES

COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 80' MINIMUM
130 HOMES

BUILDING SETBACKS:

FRONT:	20'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

LOTS WILL HAVE A MIX OF GARAGE LOCATIONS, ATTACHED AND DETACHED
- MINIMUM 20' OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

LARGE LOT HOMES



















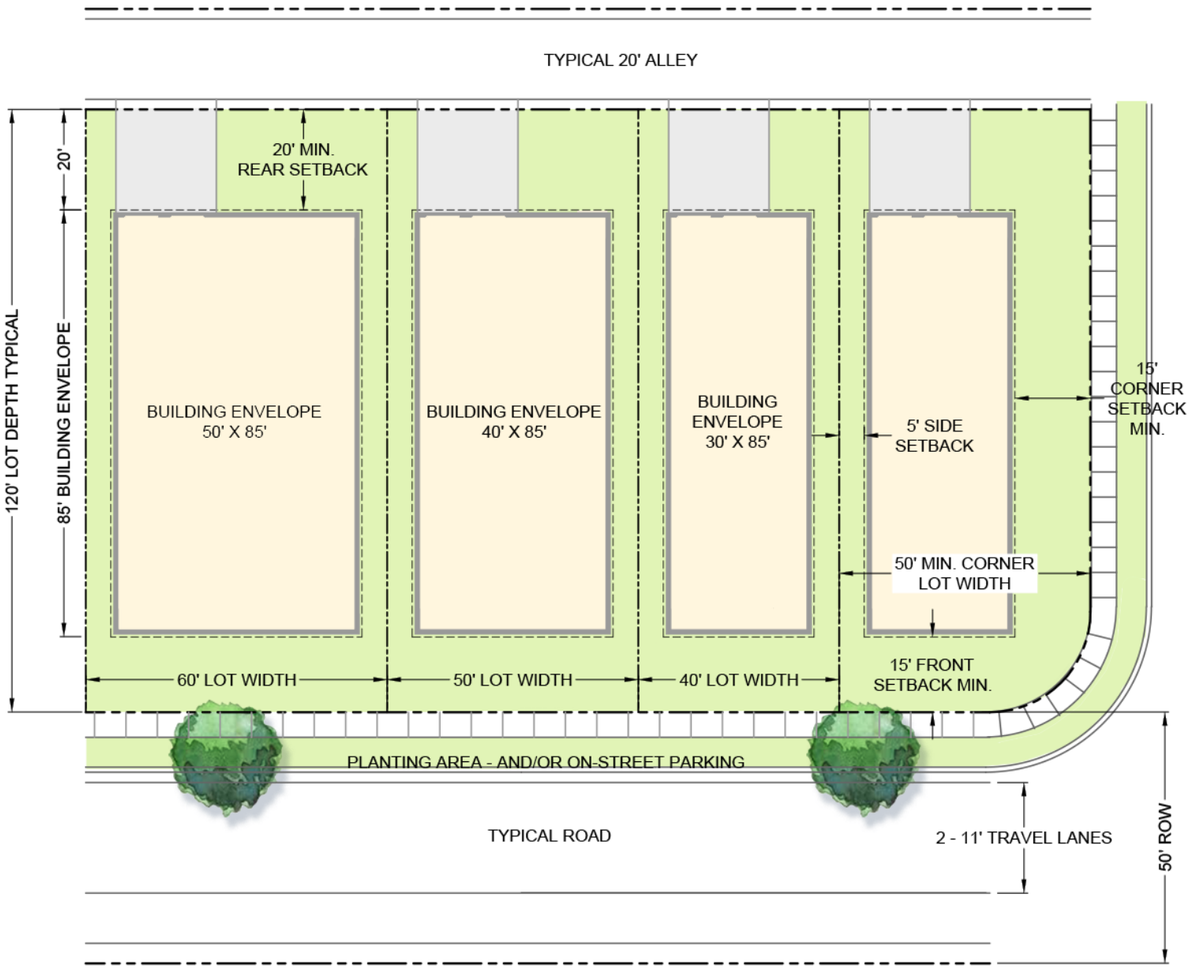







SINGLE-FAMILY ALLEY LOADED

COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOT RANGE: 40’-60’
144 HOMES

BUILDING SETBACKS:
- FRONT: 15’
- REAR: 20’
- SIDE: 5’
- CORNER: 15’

ALL LOTS TO HAVE REAR LOADED GARAGES
- MINIMUM 20’ LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22’ DEPTH FOR ALL GARAGES

SINGLE-FAMILY ALLEY LOADED









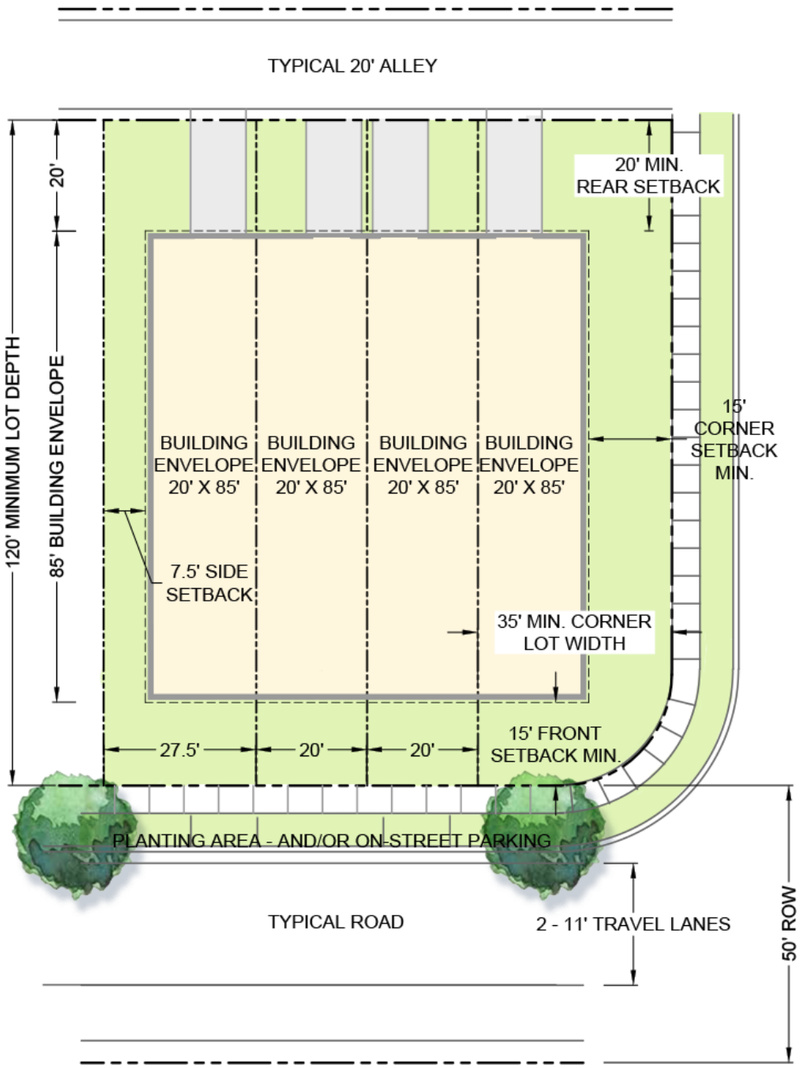


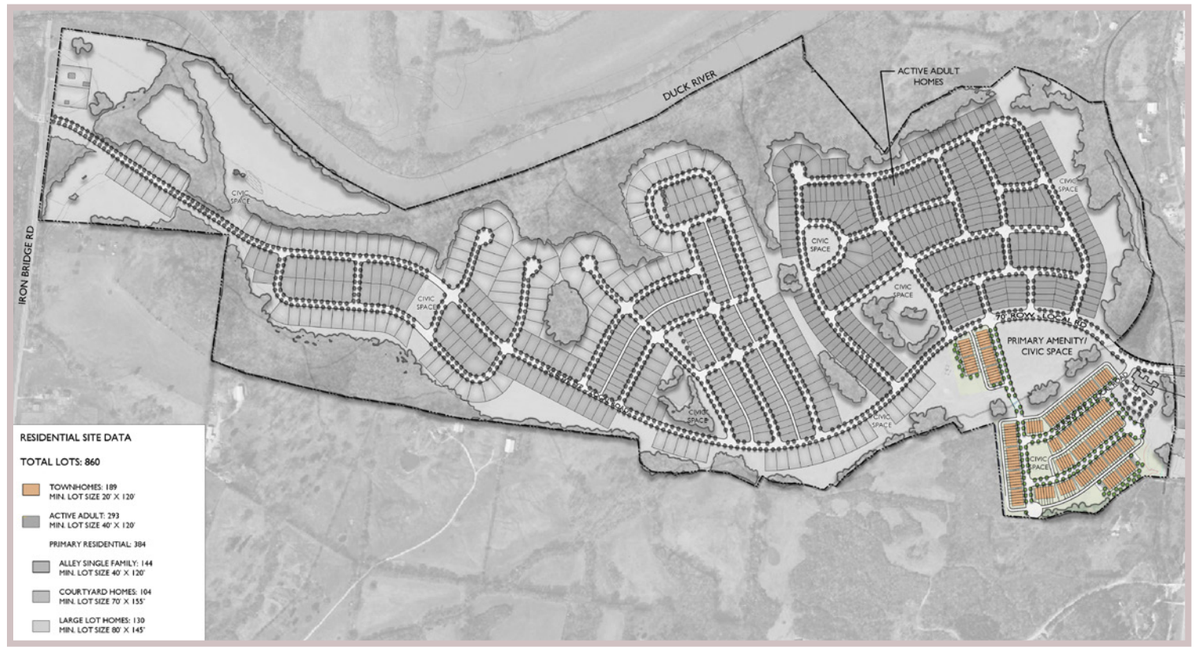






COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 20' MINIMUM
189 HOMES

BUILDING SETBACKS:

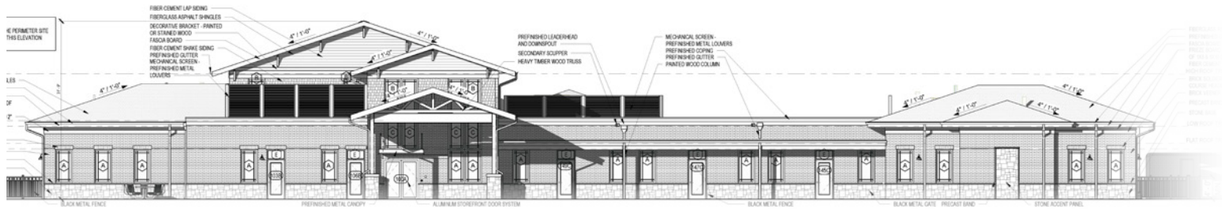
FRONT:	15'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

ALL LOTS TO HAVE REAR LOADED GARAGES
- MINIMUM 20' LENGTH OF DRIVEWAY ON LOT
- MINIMUM 22' DEPTH FOR ALL GARAGES

TOWNHOME BUILDINGS WILL CONSIST OF 4, 6, 7, AND 8 UNIT BUILDINGS.

TOWNHOMES

DAYCARE ELEVATIONS



WEST ELEVATION



EAST ELEVATION

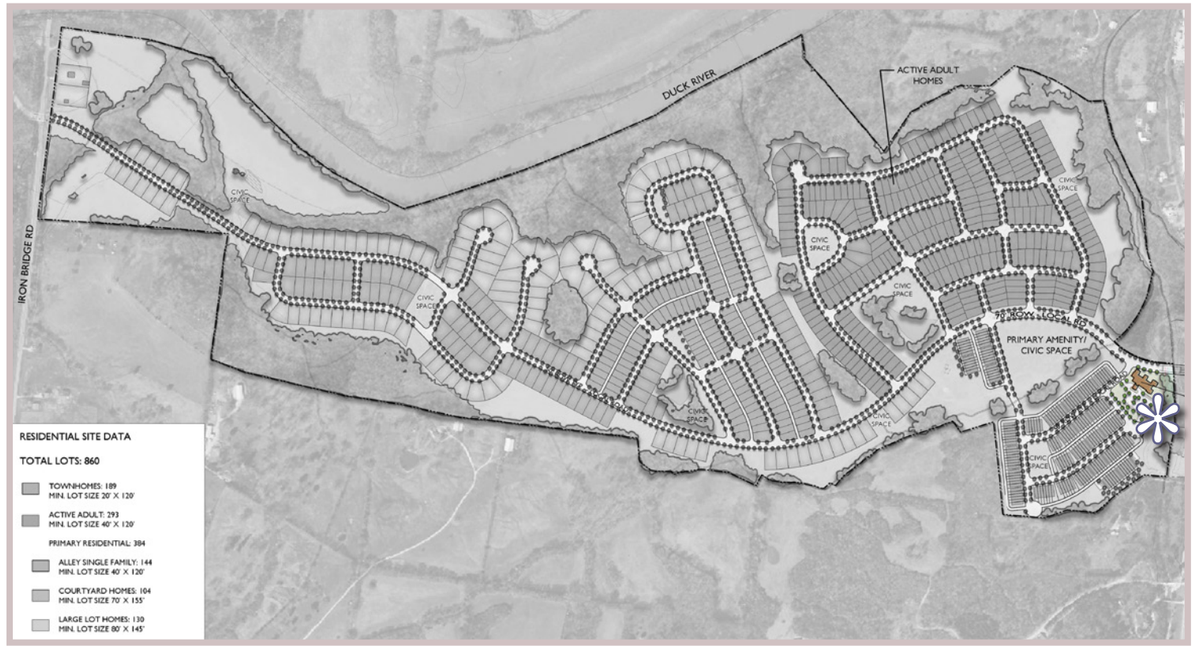


SOUTH ELEVATION



NORTH ELEVATION

ELEVATIONS ARE CONCEPTUAL.
FINAL APPROVALS TO BE DETERMINED WITH FMDP.



DAYCARE

CHILD DAYCARE TO BE APPROXIMATELY 12,000-14,000 SQFT., AND WILL SERVE AS A BENEFIT NOT ONLY TO THE LOCAL NEIGHBORHOOD BUT TO THE COMMUNITY AS WELL.

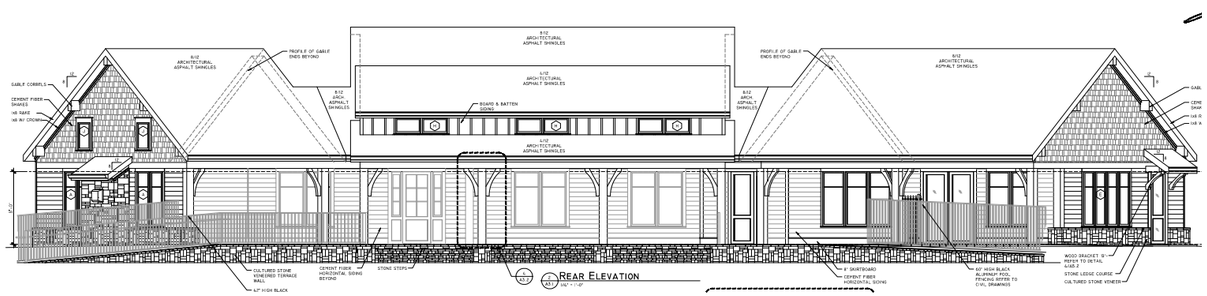
AMENITY PHOTOGRAPHS

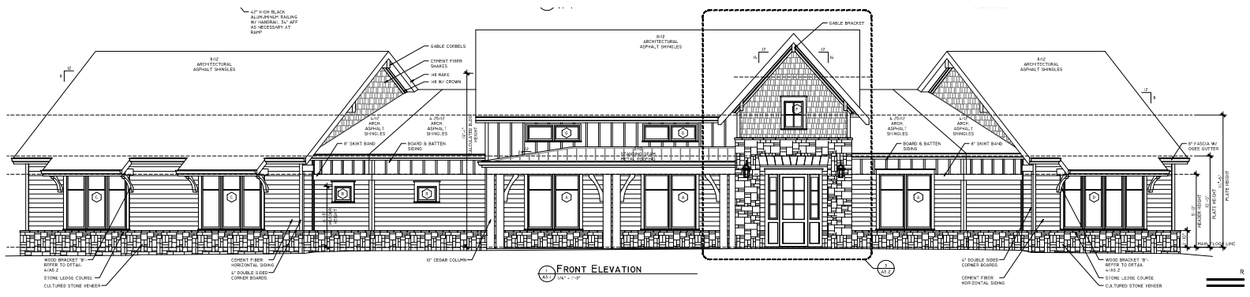




POOL AND CLUBHOUSE FROM SIMILAR KOLTER PROJECT

AMENITY ELEVATIONS





IMAGES AND ELEVATIONS ARE CONCEPTUAL.
FINAL APPROVALS TO BE DETERMINED WITH FMDP.









5 CIVIC SPACES ARE PLANNED FOR THIS SITE.

THREE OF THESE SITES WILL HAVE COVERED MAILBOX KIOSKS. COVERED SEATING WILL BE PROVIDED IN MOST PARKS.

IMAGES ARE TO PROVIDE EXAMPLES OF TYPES OF COVERED SEATING AND MAILBOX KIOSKS, BUT COULD BE SUBJECT TO REVISIONS AT FMDP APPROVALS.

CIVIC SPACE ARCHITECTURE

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

Preliminary Plat, Site Development Plan, and PUD Checklist

Development: Columbia Bluffs PUD-R Preliminary Master Development Plan

This checklist shall be completed, and included with the submittal documents. If the submittal does not contain a completed checklist, it shall be deemed incomplete. All below listed items shall be included in the submittal documents and plans, as well as any further information required by the City of Columbia to evaluate compliance and to perform a full and complete review. See Zoning Ordinance Article 8 and Subdivision Regulations.

General

- ☑ Name of development
- ☑ Contact info for the owner and licensed design professional(s) preparing plan: name, address, email, phone
- ☑ Plan sealed by a Design Professional licensed in the State of Tennessee.
- ☑ North Arrow, legend, and site vicinity map
- ☑ Graphic Scale: between 1 in. = 10 ft. and 1 in. =100 ft.
- ☑ Survey stamped by a State of Tennessee Licensed Professional Land Surveyor, with all project boundaries including bearings and angles to the nearest hundredth, utilities, and existing streets and rights-of-way.
- ☑ Note referencing Tennessee State Plane Coordinate System, NAD 83 Datum
- ☑ All property boundaries, existing easements, and encumbrances
- ☑ Parcel identification, owner, and deed and plat references of adjoining properties
- ☑ Proposed phasing and timetable for all phases of development
- ☑ Traffic Impact Study, as required.
- ☑ The substance of all existing and proposed covenants, easements, or other restrictions.

Lots and Land-Use

- ☑ The size of total property to be developed in square feet and acres
- ☑ Lot numbers of all proposed lots, with dimensions, locations, and square footage
- ☑ A tabulation of the land area to be devoted to various uses and activities and overall densities.
- ☑ Typical lot layout depicting proposed setbacks, yards, and easements, where applicable

Structures

- ☑ Location and approximate dimensions of all existing and proposed structures.
- ☑ Location of all earth retaining structures, with approximate top and bottom of wall elevations.
- ☑ Existing and intended use of all buildings and structures on site, including the number of dwelling units and density, where applicable
- ☐ Location, type, and size of proposed signs FMDP
- ☑ Approximate height, bulk, and the utilization of structures including activities and the number of living units.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
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COLUMBIA, TN 38401
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Grading, Drainage, and Storm

- ☑ Existing conditions and contours at vertical intervals of not more than two (2) feet
- ☑ General proposed contours at vertical intervals of not more than two (2) feet
- ☑ FEMA Special Flood Hazard Area (SFHA), 100-year Floodplain (F-P), and Floodway (F-W) boundaries with elevations and the exact location of the nearest benchmark. Indicate the Flood Insurance Rate Map (FIRM) panel number, its effective date, and flood insurance zones
- ☑ Location and dimension of aquatic buffer zones
- ☑ General layout of the proposed storm drainage system including surface and subsurface drainage systems, areas for detention, and water quality devices.
- ☑ Identification of all critical lots

Streets, Parking, and Pedestrian Elements

- ☑ Proposed street and alley rights-of-way, typical sections, widths, classification, names, and proposed ownership and maintenance responsibility
- ☑ Proposed connections to existing and proposed streets (including classification) located outside the development
- ☑ Proposed improvements as identified in the Traffic Impact Study, as required
- ☑ Existing and proposed sidewalks, trails, and other pedestrian elements
- ☑ Existing and proposed on-street and off-street parking and loading areas
- ☑ Summary of all provided and required parking

Landscaping, Open Space, and Amenities

- ☑ Natural features on site including, but not limited to, wetlands, streams, ponds, springs, sinkholes, wells, rock outcroppings, excessive slopes, and forested areas
- ☑ Landscaped areas and buffers with details on proposed plantings, existing vegetation, and other features. FMDP
- ☑ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ☑ Any amenity features and structures for private or public benefit.
- ☑ Location, dimension, and materials of fences and walls
- ☑ Tree Canopy retention FMDP

Utilities

- ☑ General layout and location of existing and proposed utilities and utility features including, but not limited to potable water, fire hydrants, sanitary sewer, storm sewer, and power and communication facilities.
- ☑ Acknowledgement from water, sewer, and power utility providers that the proposed development may be adequately served with existing infrastructure, or if improvements are required to adequately serve the development, a general statement of the improvements.

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PUD Specific Items

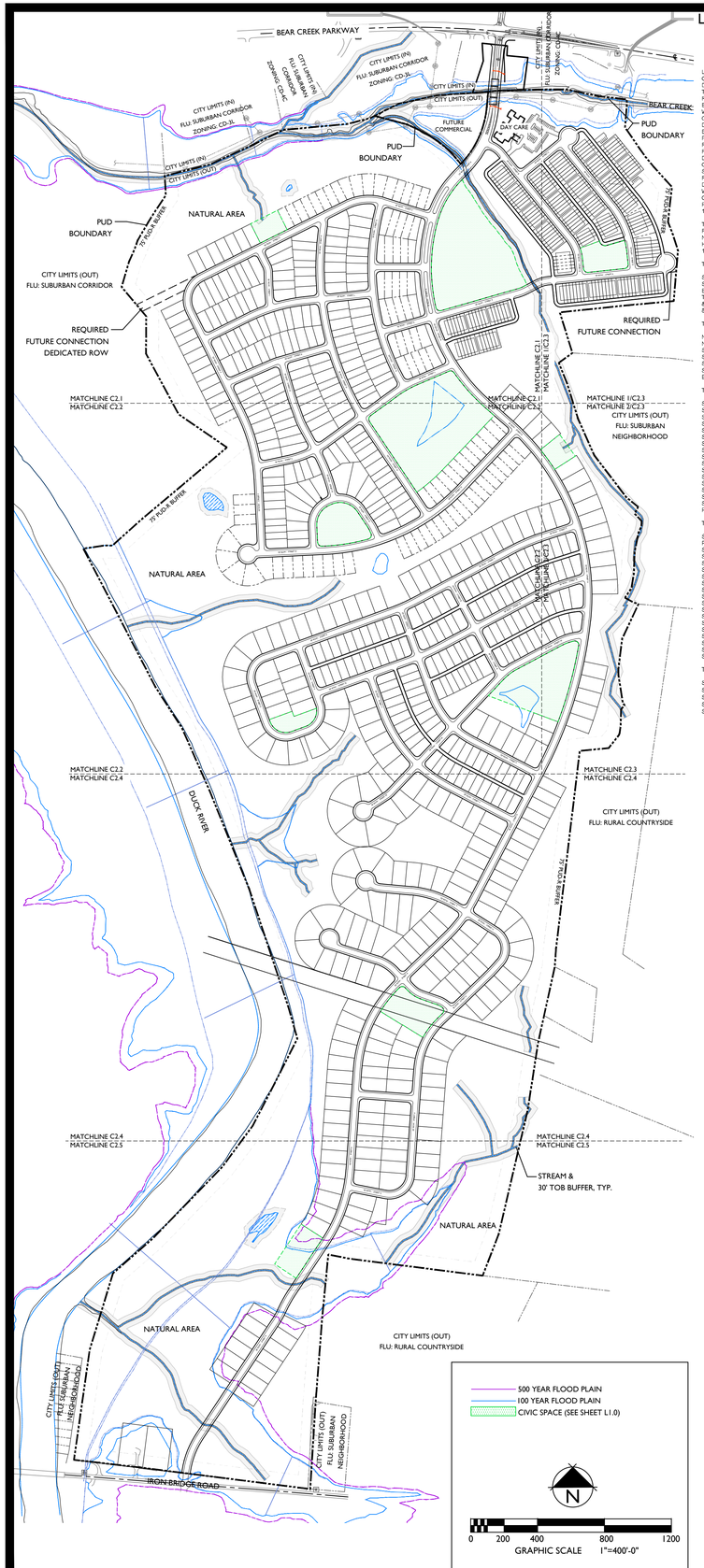
- ☑ Legal Description of Property
- ☑ Owner's Affidavit
- ☑ List of all variances requested
- ☑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ☑ Location and approximate dimensions of all existing and proposed structures including approximate height, bulk, and the utilization of structures including activities and the number of living units. Include architectural renderings of all proposed structures with materials listed.
- ☑ The substance of covenants, grants of easements or other restrictions to be imposed upon the use of the land, buildings and structures including proposed easements for public utilities on the property or documentation of off-site easements.
- ☐ Exterior lighting FMDP

If the application is deemed incomplete by the Zoning Administrator, a written request shall be made within ten days after the original submittal, for further information. In such case the application shall be held in abeyance until deemed complete for final review. No plan shall be formally presented for Planning Commission action until such plan is found complete, compliant with City standards, and ready for review.

Checklist Completed By:

KELI FRYMIRE	[signature]	10/16/2023
Print Name	Signature	Date

Rev. 6/7/2022



LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN); AMIT J. PATEL AND WIFE, MINAXBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN; HK BIG BEAR BLUFFS, LLC (R BOOK R2678, PAGE 961, ROMCTN; ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1334, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R0396, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 543, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK R2411, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2115, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,872,344.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 05°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 89°39'27" E, FOR A DISTANCE OF 118.80 FEET TO A POINT;
S 89°57'56" E, FOR A DISTANCE OF 168.93 FEET TO A POINT;
S 81°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'43" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;
S 83°35'45" E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°55'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2" PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.87 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 64.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2" PIPE FOUND;
S 7°06'58" W, FOR A DISTANCE OF 101.11 FEET TO A 3" METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2" PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24" CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36" OAK;
S 84°46'29" W, FOR A DISTANCE OF 270.35 FEET TO 20" MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6" ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'5" W, FOR A DISTANCE OF 100.29 FEET TO 6" ROTTED HACKBERRY FENCE POST;
S 21°03'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12" ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14" ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60" TWIN OAK;
S 28°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60" OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14" HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.73 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.94 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°58'56" W, FOR A DISTANCE OF 69.04 FEET TO A 30" HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24" HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12" CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 225.44 FEET TO A 36" HACKBERRY;
S 7°09'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8" DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24" HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6" FENCE POST;
S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'16" W, FOR A DISTANCE OF 95.58 FEET TO A 12" OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6" ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6" TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14" ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°40'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.89 FEET TO A 26" CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'46" W, FOR A DISTANCE OF 411.13 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1" PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1" PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 600.97 FEET TO 1" PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°33'34" W, FOR A DISTANCE OF 375.75 FEET TO 1" PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 5°35'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8" IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8" IRON PIN FOUND;
N 82°46'22" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8" IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 864.54 FEET TO 1/2" IRON PIN FOUND;
N 1°16'09" E, FOR A DISTANCE OF 478.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.82 FEET TO A POINT;
N 26°51'08" E, FOR A DISTANCE OF 301.40 FEET TO 1" PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°27'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 031.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 286.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°29'25" E, FOR A DISTANCE OF 42.46 FEET TO 26" OAK;
N 46°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 46°56'39" E, FOR A DISTANCE OF 291.18 FEET TO 10" HACKBERRY AND 8" CEDAR;
N 49°46'28" E, FOR A DISTANCE OF 367.28 FEET TO 1" PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1" PIPE FOUND;
N 71°17'50" E, FOR A DISTANCE OF 220.64 FEET TO AN IRON PIN FOUND;
N 39°36'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 27°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1" PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12" CEDAR;
N 30°13'56" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.89 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1" PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 85°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

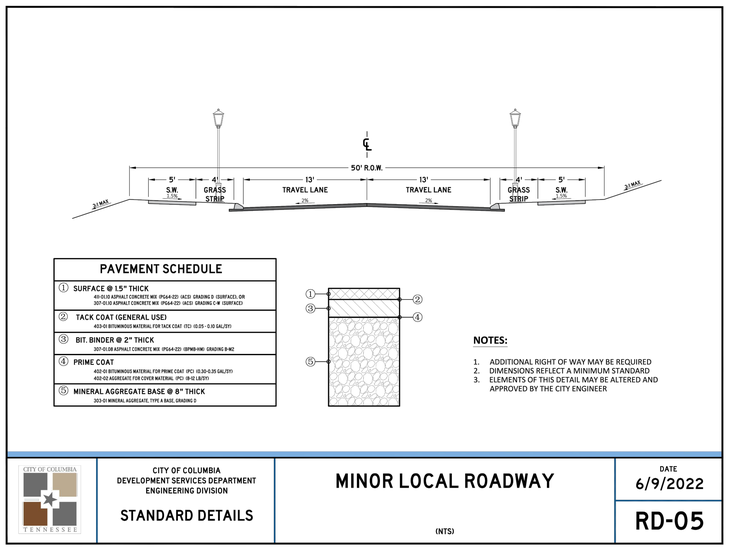
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

N 84°40'48" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 83°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:
S 7°51'27" E, FOR A DISTANCE OF 201.29 FEET TO A POINT;
S 85°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;
S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 51°12'54" E, FOR A DISTANCE OF 88.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°48'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.50 FEET, CHORD BEARING N 24°33'52" E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 84.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2837, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.



REQUESTED STREET SECTION

PROJECT DESCRIPTION AND SITE DATA:

REQUEST TO ANNEX AND REZONE THE COLUMBIA BLUFFS PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN.

THE PUD-R PLAN PROPOSES AN ENVIRONMENTALLY SENSITIVE MASTER PLAN FOR A DIVERSE RESIDENTIAL DEVELOPMENT. APPROXIMATELY ONE-THIRD OF THE PROPOSED DEVELOPMENT IS RESERVED FOR ACTIVE ADULT/AGE RESTRICTED SINGLE-FAMILY HOMES. ADDITIONALLY, TOWN HOMES AND A VARIETY OF DETACHED SINGLE-FAMILY HOMES ARE PROPOSED.

IN ADDITION TO THE RESIDENTIAL COMPONENT, THE PUD-R PLANS PROPOSES A DAY CARE FACILITY AND A VARIETY OF NEIGHBORHOOD AMENITIES.

TOTAL SITE AREA: 409.92 ACRES
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

TOTAL DWELLING UNITS: 860 HOMES
OVERALL SITE DENSITY: 2.1 DUA

RESIDENTIAL BREAKDOWN		NON RESIDENTIAL
ACTIVE ADULT HOMES:	293	DAYCARE 12,000 - 14,000 SF
TOWNHOMES:	189	
ALLEY SINGLE-FAMILY:	144	
COURTYARD HOMES:	104	
LARGE LOT HOMES:	130	

EXISTING TREE CANOPY COVERAGE: 262.2 ACS; 64% OF TOTAL SITE
REQUIRED TREE CANOPY RETENTION: 36%; REQUIRED WITH FMDP

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA
OPEN SPACE BREAKDOWN
CIVIC SPACE: 22.2 AC
ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC
ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC
CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

PARKING: SEE LOT DIAGRAMS (C2.6) FOR PROPOSED RESIDENTIAL PARKING;
AND SHEETS L1.0-L1.6 FOR CIVIC SPACE PARKING
RESIDENTIAL: 2 PARKING SPACES PER UNIT
DAYCARE: 1 PER STAFF + 0.5 PER CHILD
CIVIC SPACE: 1 PER 5,000 SF

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-409.92 ACRES AND REZONE TO PUD-R
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed Columbia Bluffs subdivision is 2 miles from the downtown core. Density and lot size transitions from higher density/intensity at the north, along the Bear Creek Parkway corridor to the south, where a more rural character is appropriate adjacent to Iron Bridge Rd and the Yanahli Park. The properties along Bear Creek Parkway have been identified as "area of change." With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Connectivity, directly through street, sidewalks, bikeways, greenways, and trails, and indirectly, through a mixture of housing and business types, should be encouraged throughout Columbia..
Response: In addition to roadway and sidewalk connections, Columbia Bluffs proposes nature trails through out the property. The development will also provide a roadway connection between Bear Creek Parkway and Iron Bridge Road. A variety of housing types are proposed, including an age restricted Active Adult neighborhood.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity.
Response: Columbia Bluffs proposes a variety of housing styles
Near-term Priorities: HOUSING MIX/TYPES: Promote mastered planned housing opportunities for a "full-life cycle" community to accommodate retirees and young professionals. Review Zoning standards to permit smaller lot and home sizes to encourage such developments.

MODIFICATIONS FROM STANDARD PUD-R ZONING REQUEST:

RESIDENTIAL LOT DIAGRAMS: SEE SHEET C2.6
1. ACTIVE ADULT AND PRIMARY ALLEY LOADED HOMES SIDE-SETBACK REDUCED TO 5'.
2. OTHER PRIMARY RESIDENTIAL SIDE-SETBACK REDUCED TO 7.5'.
3. ACTIVE ADULT, COURTYARD, AND LARGE LOT GARAGE LOCATED IN 2ND LAYER
4. ACTIVE ADULT, COURTYARD, AND LARGE LOT ALLOWED DOUBLE CAR GARAGE DOORS, WITH A MAXIMUM WIDTH OF 16'
5. ACTIVE ADULT DRIVEWAYS TO BE 18' IN FIRST LAYER.
6. COURTYARD AND LARGE LOT DRIVEWAY TO BE 12' IN FIRST LAYER.

THOROUGHFARE STANDARDS:
1. UTILIZATION OF 50' ROW INSTEAD OF 70' ROW.

CIVIC SPACE:
1. ACTIVE ADULT NEIGHBORHOOD TO BE EXCLUDED FROM REQUIRED PLAYGROUND CRITERIA.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
TENNESSEE
LANDSCAPE ARCHITECT
1623

Date: October 16, 2023
Revision Date
△
△
△

OVERALL PUD-R PMDP
SHEET
C2.0

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	400 Bear Creek Pike		
	TAX MAP: 90	GROUP:	PARCEL: 12.01
SUMMARY OF NATURE OF REQUEST AND WORK	Annexation request and PUD-R rezoning request for a little over 400 acres between Bear Creek and Iron Bridge Road. PUD-R neighborhood to provide a variety of homes, including Active Adult/age restricted area, town homes, and large single family home lots.		

DATE OF PRE-APPLICATION CONFERENCE	8/30/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☒ Annexation ☐ Rezoning ☐ Preliminary Plat ☐ Final Plat ☒ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Columbia Bluffs PUD-R Preliminary Master Plan ☐ Total Number of Lots 866 residential lots ☐ Total acreage +/-409.52 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Greg Gamble - Gamble Design	PHONE	615-975-5765
ADDRESS	3020 Stansberry Lane, Suite 201, Franklin	EMAIL	info@gdc-tn.com

PROPERTY OWNER NAME	HK Big Bear Bluffs, LLC	PHONE	813-615-1244
ADDRESS	14025 Riveredge Dr. Ste 175 Tampa FL 33637	EMAIL	jgibbs@kolter.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Greg Gamble
APPLICANT NAME

APPLICANT SIGNATURE

10/16/2023
DATE

HK Big Bear Bluffs LLC
James P. Harvey
PROPERTY OWNER NAME

PROPERTY OWNER SIGNATURE

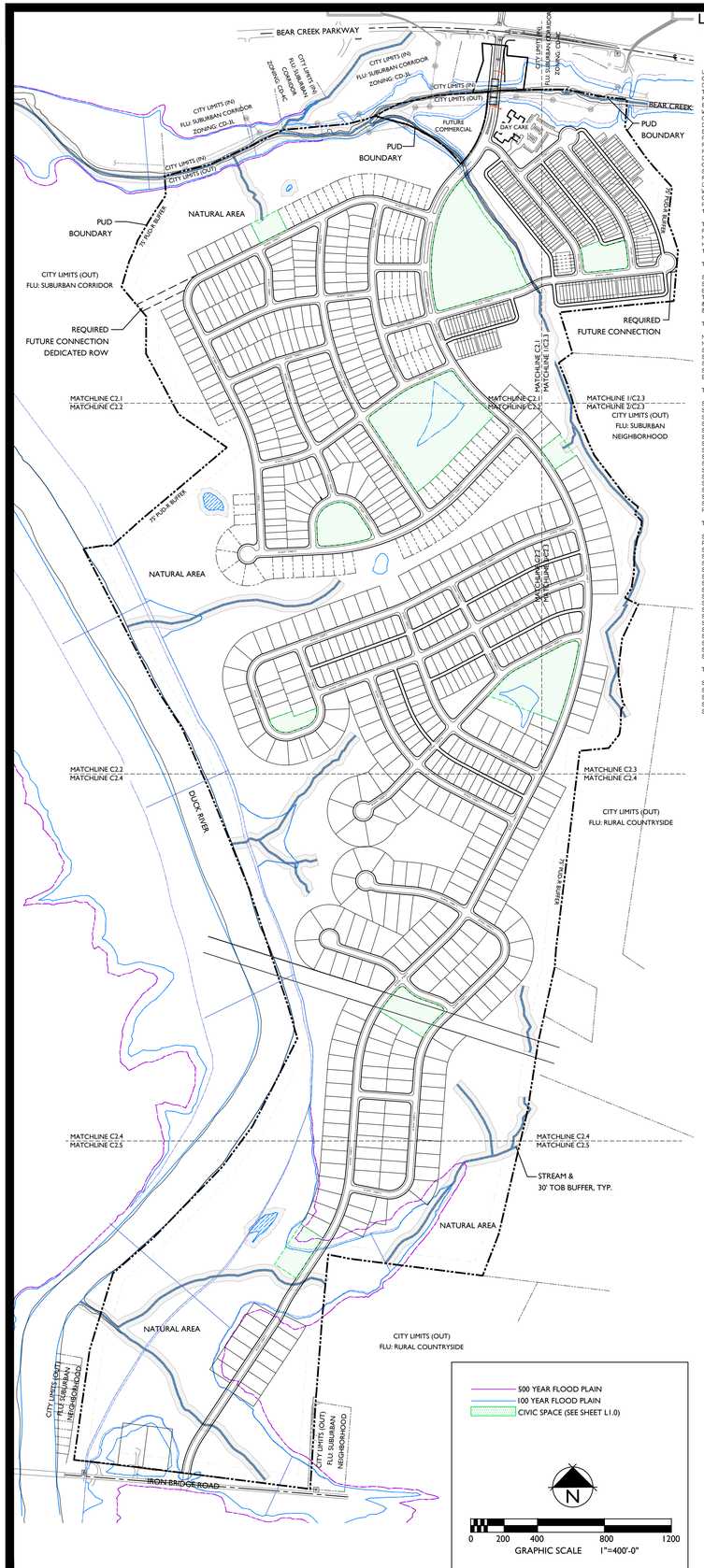
10/10/2023
DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	



LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN); AMIT J. PATEL AND WIFE, MINAXBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN; HK BIG BEAR BLUFFS, LLC (R BOOK R2678, PAGE 961, ROMCTN; ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1334, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R0396, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 543, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK R2411, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2115, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,872,344.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 05°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 89°39'27" E, FOR A DISTANCE OF 118.80 FEET TO A POINT;
S 89°57'56" E, FOR A DISTANCE OF 168.93 FEET TO A POINT;
S 81°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'13" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;
S 83°35'45" E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°55'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2" PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.87 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 64.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2" PIPE FOUND;
S 7°06'58" W, FOR A DISTANCE OF 101.11 FEET TO A 3" METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2" PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24" CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36" OAK;
S 84°46'29" W, FOR A DISTANCE OF 270.35 FEET TO 20" MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6" ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'5" W, FOR A DISTANCE OF 100.29 FEET TO 6" ROTTED HACKBERRY FENCE POST;
S 21°03'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12" ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14" ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60" TWIN OAK;
S 28°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60" OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14" HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.75 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.94 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°58'56" W, FOR A DISTANCE OF 69.04 FEET TO A 30" HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24" HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12" CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 225.44 FEET TO A 36" HACKBERRY;
S 7°09'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8" DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24" HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6" FENCE POST;
S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'16" W, FOR A DISTANCE OF 95.58 FEET TO A 12" OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6" ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6" TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14" ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°40'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.89 FEET TO A 26" CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'46" W, FOR A DISTANCE OF 411.13 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1" PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1" PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 600.97 FEET TO 1" PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°33'34" W, FOR A DISTANCE OF 375.75 FEET TO 1" PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 5°35'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8" IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8" IRON PIN FOUND;
N 82°46'22" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8" IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 864.54 FEET TO 1/2" IRON PIN FOUND;
N 1°16'09" E, FOR A DISTANCE OF 478.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.82 FEET TO A POINT;
N 26°51'08" E, FOR A DISTANCE OF 301.40 FEET TO 1" PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°27'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 031.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 286.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT, AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°29'25" E, FOR A DISTANCE OF 42.46 FEET TO 26" OAK;
N 46°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 46°56'39" E, FOR A DISTANCE OF 291.18 FEET TO 10" HACKBERRY AND 8" CEDAR;
N 49°46'28" E, FOR A DISTANCE OF 367.28 FEET TO 1" PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1" PIPE FOUND;
N 71°17'50" E, FOR A DISTANCE OF 220.64 FEET TO AN IRON PIN FOUND;
N 39°36'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 27°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1" PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12" CEDAR;
N 30°13'56" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.89 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1" PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 85°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

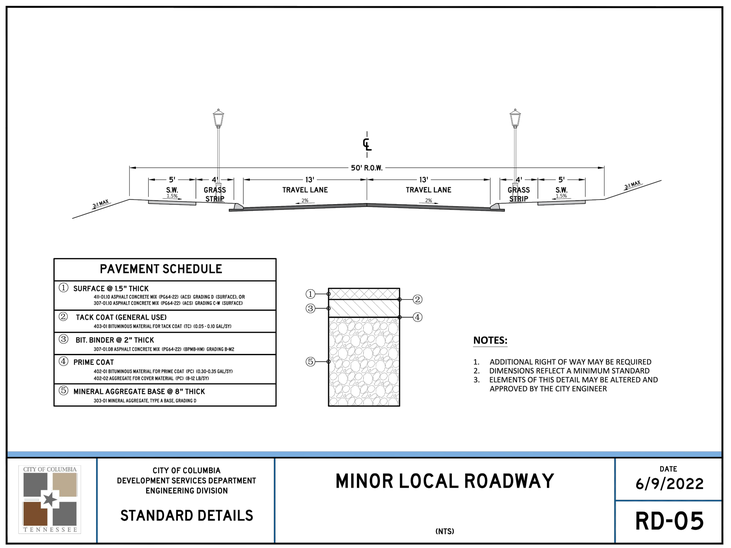
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

N 84°40'48" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 83°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:
S 7°51'27" E, FOR A DISTANCE OF 201.29 FEET TO A POINT;
S 85°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;
S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 51°12'54" E, FOR A DISTANCE OF 88.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°48'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.50 FEET, CHORD BEARING N 24°33'52" E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 84.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2837, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.



REQUESTED STREET SECTION

PROJECT DESCRIPTION AND SITE DATA:

REQUEST TO ANNEX AND REZONE THE COLUMBIA BLUFFS PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN.

THE PUD-R PLAN PROPOSES AN ENVIRONMENTALLY SENSITIVE MASTER PLAN FOR A DIVERSE RESIDENTIAL DEVELOPMENT. APPROXIMATELY ONE-THIRD OF THE PROPOSED DEVELOPMENT IS RESERVED FOR ACTIVE ADULT/AGE RESTRICTED SINGLE-FAMILY HOMES. ADDITIONALLY, TOWN HOMES AND A VARIETY OF DETACHED SINGLE-FAMILY HOMES ARE PROPOSED.

IN ADDITION TO THE RESIDENTIAL COMPONENT, THE PUD-R PLANS PROPOSES A DAY CARE FACILITY AND A VARIETY OF NEIGHBORHOOD AMENITIES.

TOTAL SITE AREA: 409.92 ACRES
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

TOTAL DWELLING UNITS: 860 HOMES
OVERALL SITE DENSITY: 2.1 DUA

RESIDENTIAL BREAKDOWN		NON RESIDENTIAL
ACTIVE ADULT HOMES:	293	DAYCARE 12,000 - 14,000 SF
TOWNHOMES:	189	
ALLEY SINGLE-FAMILY:	144	
COURTYARD HOMES:	104	
LARGE LOT HOMES:	130	

EXISTING TREE CANOPY COVERAGE: 262.2 ACS; 64% OF TOTAL SITE
REQUIRED TREE CANOPY RETENTION: 36%; REQUIRED WITH FMDP

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA
OPEN SPACE BREAKDOWN
CIVIC SPACE: 22.2 AC
ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC
ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC
CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

PARKING: SEE LOT DIAGRAMS (C2.6) FOR PROPOSED RESIDENTIAL PARKING;
AND SHEETS L1.0-L1.6 FOR CIVIC SPACE PARKING
RESIDENTIAL: 2 PARKING SPACES PER UNIT
DAYCARE: 1 PER STAFF + 0.5 PER CHILD
CIVIC SPACE: 1 PER 5,000 SF

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-409.92 ACRES AND REZONE TO PUD-R
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed Columbia Bluffs subdivision is 2 miles from the downtown core. Density and lot size transitions from higher density/intensity at the north, along the Bear Creek Parkway corridor to the south, where a more rural character is appropriate adjacent to Iron Bridge Rd and the Yanahli Park. The properties along Bear Creek Parkway have been identified as "area of change." With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Connectivity, directly through street, sidewalks, bikeways, greenways, and trails, and indirectly, through a mixture of housing and business types, should be encouraged throughout Columbia..
Response: In addition to roadway and sidewalk connections, Columbia Bluffs proposes nature trails through out the property. The development will also provide a roadway connection between Bear Creek Parkway and Iron Bridge Road. A variety of housing types are proposed, including an age restricted Active Adult neighborhood.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity.
Response: Columbia Bluffs proposes a variety of housing styles
Near-term Priorities: HOUSING MIX/TYPES: Promote mastered planned housing opportunities for a "full-life cycle" community to accommodate retirees and young professionals. Review Zoning standards to permit smaller lot and home sizes to encourage such developments.

MODIFICATIONS FROM STANDARD PUD-R ZONING REQUEST:

RESIDENTIAL LOT DIAGRAMS: SEE SHEET C2.6
1. ACTIVE ADULT AND PRIMARY ALLEY LOADED HOMES SIDE-SETBACK REDUCED TO 5'.
2. OTHER PRIMARY RESIDENTIAL SIDE-SETBACK REDUCED TO 7.5'.
3. ACTIVE ADULT, COURTYARD, AND LARGE LOT GARAGE LOCATED IN 2ND LAYER
4. ACTIVE ADULT, COURTYARD, AND LARGE LOT ALLOWED DOUBLE CAR GARAGE DOORS, WITH A MAXIMUM WIDTH OF 16'
5. ACTIVE ADULT DRIVEWAYS TO BE 18' IN FIRST LAYER.
6. COURTYARD AND LARGE LOT DRIVEWAY TO BE 12' IN FIRST LAYER.

THOROUGHFARE STANDARDS:
1. UTILIZATION OF 50' ROW INSTEAD OF 70' ROW.

CIVIC SPACE:
1. ACTIVE ADULT NEIGHBORHOOD TO BE EXCLUDED FROM REQUIRED PLAYGROUND CRITERIA.

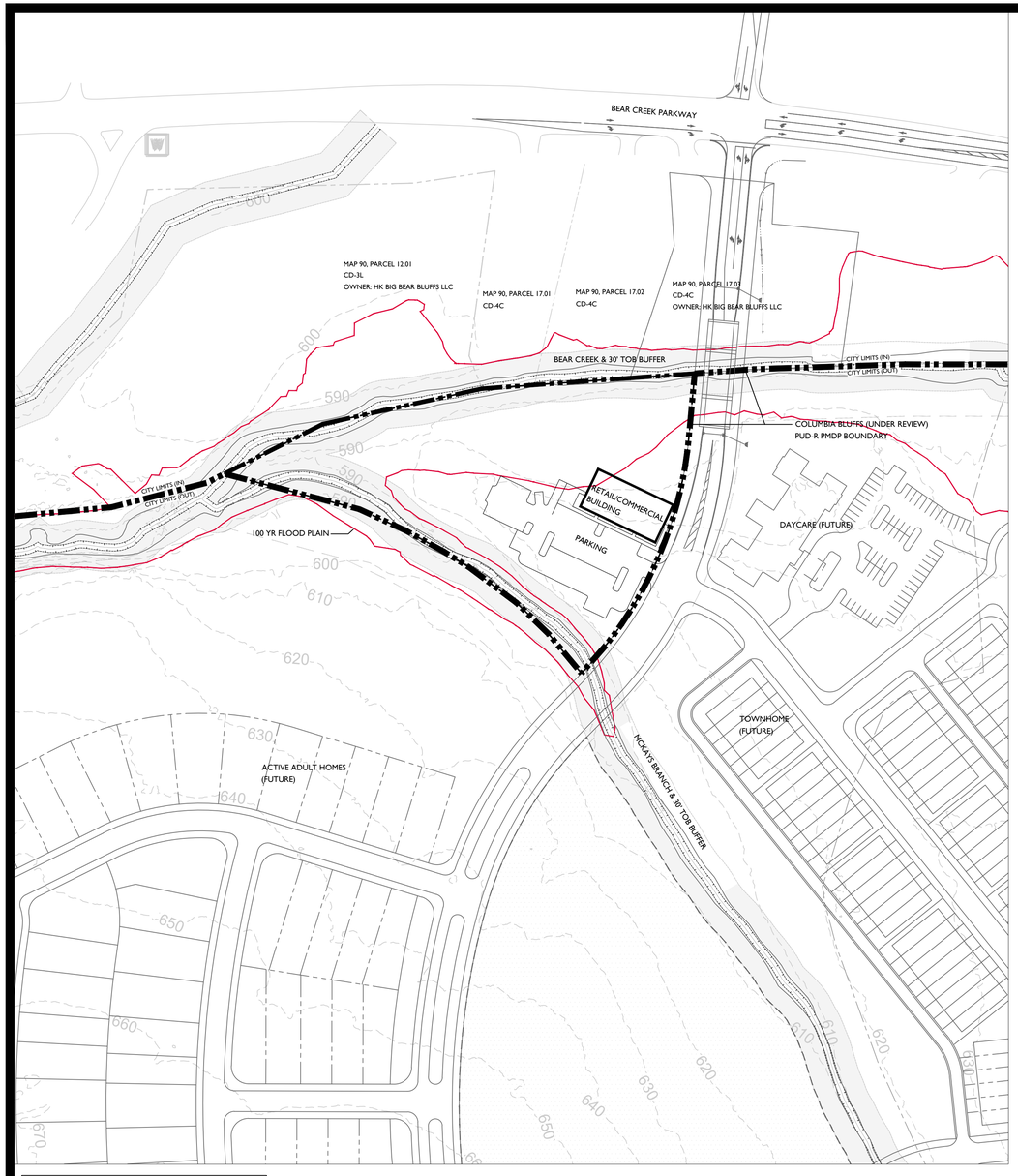
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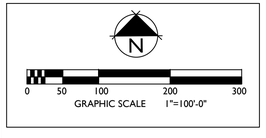
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PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
TENNESSEE
LANDSCAPE ARCHITECT
1629

Date: October 16, 2023
Revision Date
△
△
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OVERALL PUD-R PMDP
SHEET
C2.0





CONCEPTUAL DEVELOPMENT PLAN CD-4 DESIGN CRITERIA:

GROSS SITE AREA: +/-3.36 AC

7,200 SF NON-RESIDENTIAL BUILDING (60'X120')

TOTAL IMPERVIOUS SURFACE RATIO: 80% MAX
MAXIMUM BUILDING LENGTH: 120'

SETBACKS:
FRONT: 6' - 20'
SIDE: 6' MIN.
REAR: 3' MIN.

PARKING PER ZONING ORDINANCE STANDARD
PARKING PROVIDED: SURFACE IN 3RD LAYER
+/- 54 PARKING SPACES SHOWN ON PLAN (1 PER 133 SF)

LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION
FOR ANNEXATION REQUEST – 3.36 ACRES
A PORTION OF MAP 90, PARCEL 12.01
DEED BOOK R2827, PAGE 587
HK BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242), AMIT J. PATEL AND WIFE, MINAXIBEN G. PATEL (BK R2411, PAGE 1348), HK BIG BEAR BLUFFS, LLC (R2876, PG 961), AND WEST, SOUTH, AND EAST BY REMAINING PORTIONS OF BIG BEAR BLUFFS, LLC (2827, PG 587) REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN), AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS:

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,672,944.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 08°01'15" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS AND THE TRUE POINT OF BEGINNING;

THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE WITH THIS ANNEXATION OF PROPERTY, THE FOLLOWING 2 CALLS:

S 05°15'54" W, 94.01 FEET TO THE BEGINNING OF A CURVE CONCAVE WESTERLY, SAID CURVE HAS A RADIUS OF 565.00 FEET;

SOUTHERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET, CHORD BEARING S 24°32'52" W WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT ALONG THE CENTER OF MCKAY BRANCH;

THENCE, ALONG MCKAY BRANCH, THE FOLLOWING 7 CALLS:

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N 75°17'27" W, 201.23 FEET TO A POINT WHERE MCKAY BRANCH CREEK INTERSECTS WITH BEAR CREEK;

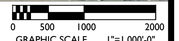
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LOCATION MAP



PROJECT INFORMATION:

PARCEL: PORTION OF MAP 90 PARCEL 12.01
ADDRESS: PORTION OF 400 BEAR CREEK PARKWAY

PROPOSED USE: NEIGHBORHOOD SERVING COMMERCIAL CONFORMING TO THE APPROVED CD-4 USES.

CONTACT:

APPLICANT/LANDSCAPE ARCHITECT:
GREG GAMBLE OR KELI FRYMIRE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069
615-975-5765
greg.gamble@gdc-tn.com
keli@gdc-tn.com

DEVELOPER:
KOLTER LAND
JIM HARVEY OR
JOSHUA GIBBS
615-582-3253
jgibbs@kolter.com

OWNER:
HK BIG BEAR BLUFFS LLC
JIM HARVEY

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-3.36 ACRES AND REZONE TO CD-4
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
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GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

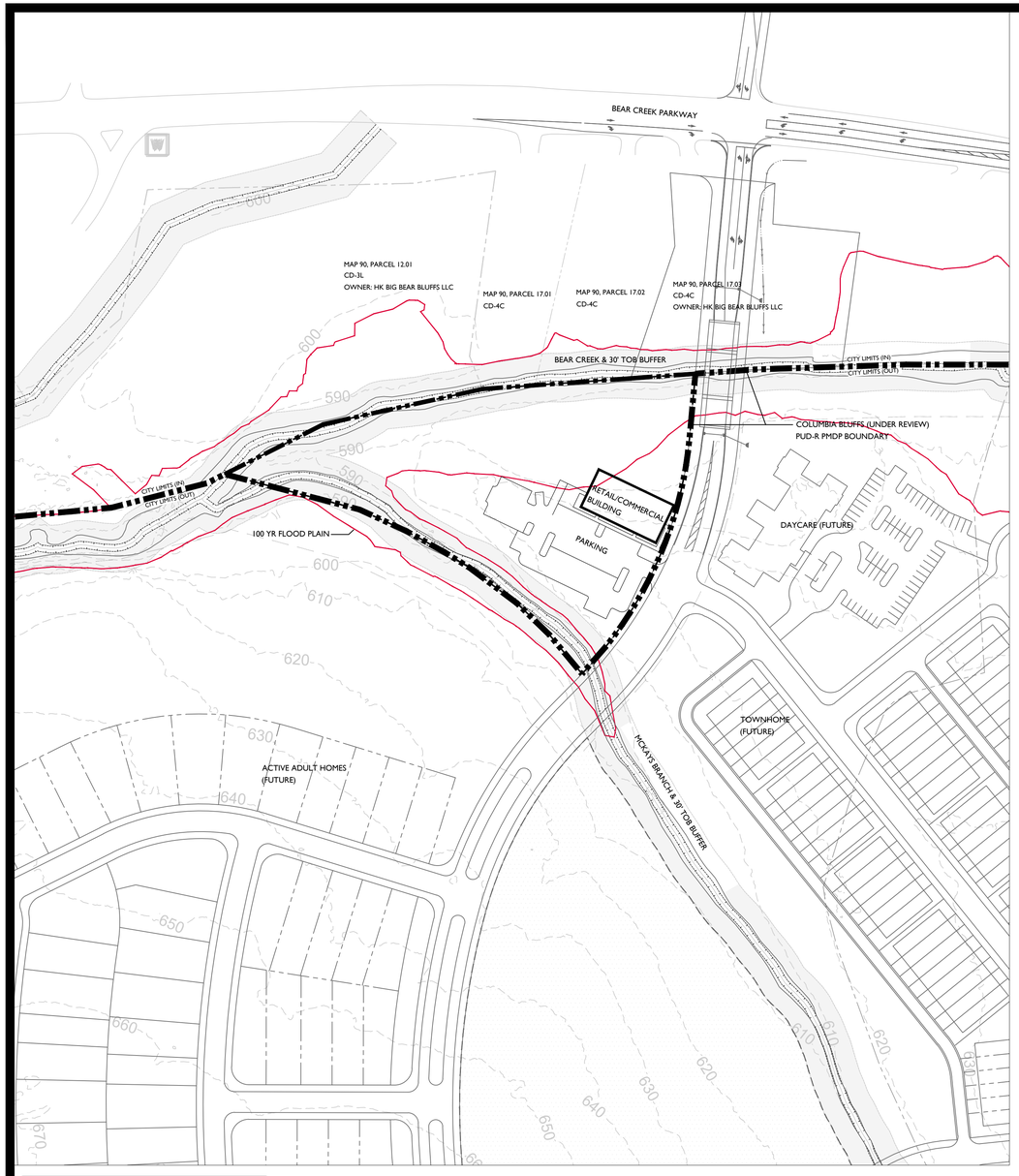
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 1400

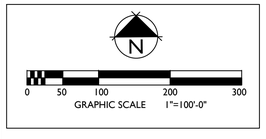
Date: OCTOBER 16, 2023

Revision Date
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CONCEPTUAL DEVELOPMENT PLAN

SHEET
L1.0





CONCEPTUAL DEVELOPMENT PLAN CD-4 DESIGN CRITERIA:

GROSS SITE AREA: +/-3.36 AC

7,200 SF NON-RESIDENTIAL BUILDING (60'X120')

TOTAL IMPERVIOUS SURFACE RATIO: 80% MAX
MAXIMUM BUILDING LENGTH: 120'

SETBACKS:
FRONT: 6' - 20'
SIDE: 6' MIN.
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A PORTION OF MAP 90, PARCEL 12.01
DEED BOOK R2827, PAGE 587
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LOCATION MAP

0 500 1000 2000
GRAPHIC SCALE 1"=1,000'-0"

PROJECT INFORMATION:

PARCEL: PORTION OF MAP 90 PARCEL 12.01
ADDRESS: PORTION OF 400 BEAR CREEK PARKWAY

PROPOSED USE: NEIGHBORHOOD SERVING COMMERCIAL CONFORMING TO THE APPROVED CD-4 USES.

CONTACT:

APPLICANT/LANDSCAPE ARCHITECT:
GREG GAMBLE OR KELI FRYMIRE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069
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DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

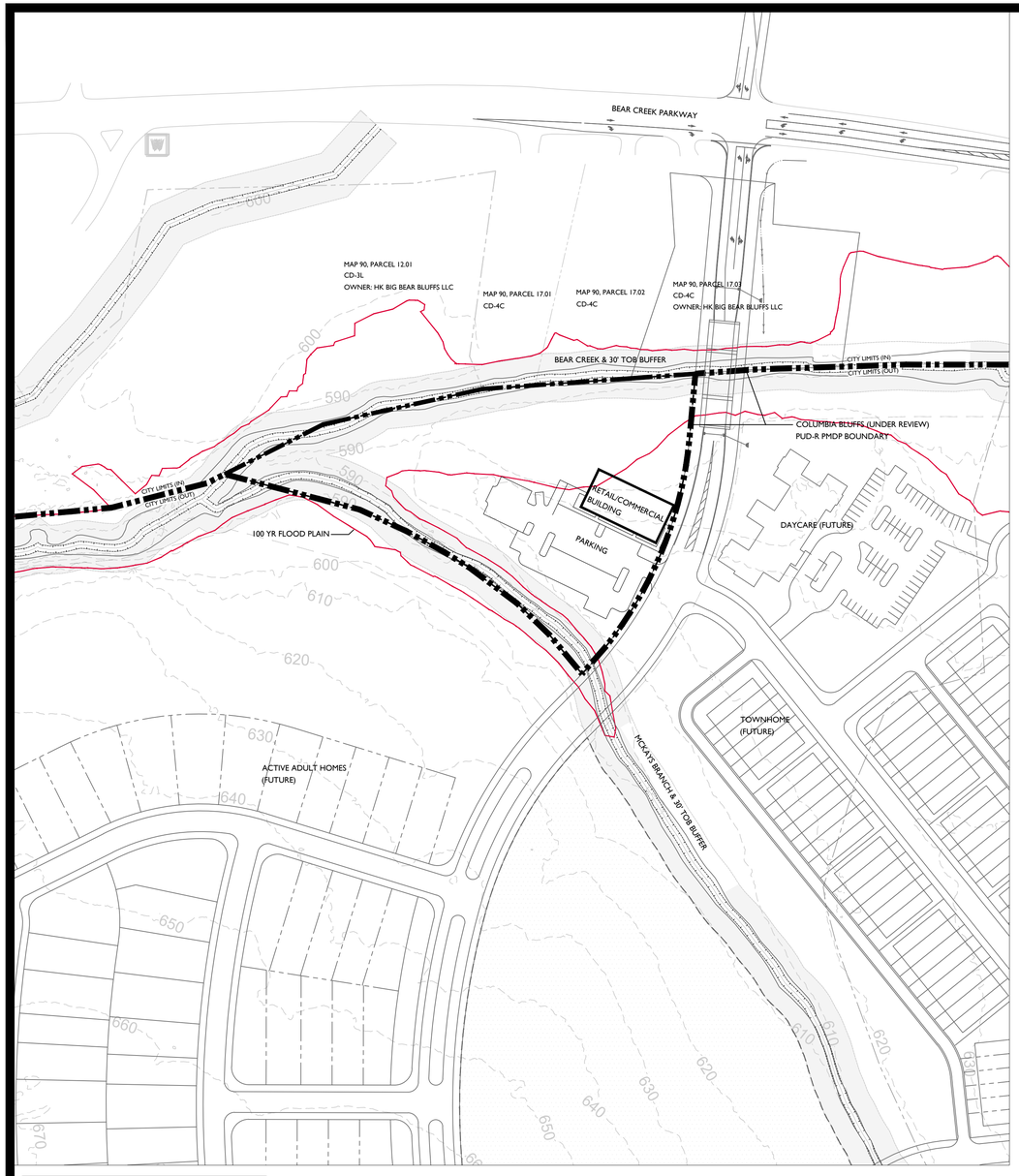
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 340

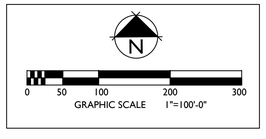
Date: OCTOBER 16, 2023

Revision Date
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CONCEPTUAL DEVELOPMENT PLAN

SHEET
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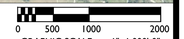
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APPLICANT/LANDSCAPE ARCHITECT:
GREG GAMBLE OR KELI FRYMIRE
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ANNEXATION AND REZONING REQUEST:

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DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — NO. 1302

Date: OCTOBER 16, 2023

Revision Date
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CONCEPTUAL DEVELOPMENT PLAN

SHEET
L1.0

LEGAL DESCRIPTION
FOR ANNEXATION REQUEST – 3.36 ACRES
A PORTION OF MAP 90, PARCEL 12.01
DEED BOOK R2827, PAGE 587
HK BIG BEAR BLUFFS, LLC

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CITY OF COLUMBIA
TENNESSEE

DEVELOPMENT SERVICES

I, HK Big Bear Bluffs, LLC_being the sole ownership of the property__ more particularly described as 090 012.01; 090-16.00____ on Plat of Record in Plat Book **R2827** Page **576-586** in the Maury County Register of Deeds office, do hereby, formally, request that the City of Columbia, Tennessee annex such property into such City.

James P. Harvey
Print Name

11/10/2022
Date

Signature

STAFF USE ONLY	
Docket Number:	Requested Agenda:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN), AMIT J. PATEL AND WIFE, MINAXIBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN, HK BIG BEAR BLUFFS, LLC (R BOOK 2878, PAGE 961, ROMCTN, ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1304, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R2096, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 542, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK 1311, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2173, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS;

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,672,944.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 08°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 88°09'20" E, FOR A DISTANCE OF 218.80 FEET TO A POINT;
S 89°57'55" E, FOR A DISTANCE OF 158.93 FEET TO A POINT;
S 78°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'13" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;

S 83°35’45” E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°55'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2” PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.97 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 84.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2” PIPE FOUND;
S 7°06'55" W, FOR A DISTANCE OF 101.11 FEET TO A 3” METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2” PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24” CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36” OAK;
S 84°48'25" W, FOR A DISTANCE OF 270.35 FEET TO 30” MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6” ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'15" W, FOR A DISTANCE OF 100.29 FEET TO 6” ROTTED HACKBERRY FENCE POST;
S 21°53'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12” ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14” ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60” TWIN OAK;
S 26°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60” OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14” HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.73 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.34 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°56'56" W, FOR A DISTANCE OF 69.94 FEET TO A 30” HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24” HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12” CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 228.44 FEET TO A 36” HACKBERRY;
S 7°06'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8” DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24” HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6” FENCE POST;

S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'18" W, FOR A DISTANCE OF 95.58 FEET TO A 12” OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6” ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6” TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14” ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°49'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.86 FEET TO A 24” CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1” PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'49" W, FOR A DISTANCE OF 411.13 FEET TO 1” PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1” PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1” PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 800.97 FEET TO 1” PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1” PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°32'34" W, FOR A DISTANCE OF 375.75 FEET TO 1” PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 3°32'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8” IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8” IRON PIN FOUND;
N 82°46'20" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8” IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 664.54 FEET TO 1/2” IRON PIN FOUND;
N 16°56'08" E, FOR A DISTANCE OF 479.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.62 FEET TO A POINT;
N 26°51'38" E, FOR A DISTANCE OF 301.40 FEET TO 1” PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°21'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 631.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 296.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°28'25" E, FOR A DISTANCE OF 42.46 FEET TO 36” OAK;
N 48°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 49°58'39" E, FOR A DISTANCE OF 291.18 FEET TO 10” HACKBERRY AND 8” CEDAR;
N 49°46'26" E, FOR A DISTANCE OF 367.28 FEET TO 1” PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1” PIPE FOUND;
N 0°17'30" E, FOR A DISTANCE OF 223.84 FEET TO AN IRON PIN FOUND;
N 39°56'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 23°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1” PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12” CEDAR;
N 30°13'58" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.69 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1” PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 65°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

N 84°40'46" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 63°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH;
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:
S 75°17'27" E, FOR A DISTANCE OF 201.23 FEET TO A POINT;
S 65°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;

S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 53°12'54" E, FOR A DISTANCE OF 86.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°46'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.00 FEET, CHORD BEARING N 24°32’52” E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 94.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2827, PAGE 287 IN THE REGISTER’S OFFICE OF MAURY COUNTY, TENNESSEE.

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	400 Bear Creek Pike		
	TAX MAP: 90	GROUP:	PARCEL: 12.01
SUMMARY OF NATURE OF REQUEST AND WORK	Annexation request and PUD-R rezoning request for a little over 400 acres between Bear Creek and Iron Bridge Road. PUD-R neighborhood to provide a variety of homes, including Active Adult/age restricted area, town homes, and large single family home lots.		

DATE OF PRE-APPLICATION CONFERENCE	8/30/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☒ Annexation ☐ Rezoning ☐ Preliminary Plat ☐ Final Plat ☒ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Columbia Bluffs PUD-R Preliminary Master Plan ☐ Total Number of Lots 866 residential lots ☐ Total acreage +/-409.52 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Greg Gamble - Gamble Design	PHONE	615-975-5765
ADDRESS	3020 Stansberry Lane, Suite 201, Franklin	EMAIL	info@gdc-tn.com

PROPERTY OWNER NAME	HK Big Bear Bluffs, LLC	PHONE	813-615-1244
ADDRESS	14025 Riveredge Dr. Ste 175 Tampa FL 33637	EMAIL	jgibbs@kolter.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Greg Gamble
APPLICANT NAME

APPLICANT SIGNATURE

10/16/2023
DATE

HK Big Bear Bluffs LLC
James P. Harvey
PROPERTY OWNER NAME

PROPERTY OWNER SIGNATURE

10/10/2023
DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
FAX: (931) 560-1541

PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

** 1 hard copy of all materials for submittal + PDF copy on a USB thumb drive or CD (no multiple applications on one storage device)*
*Fold hard copy **submittals larger than 8½"x11"***

ADDRESS/LOCATION	400 Bear Creek Pike		
	TAX MAP: 90	GROUP:	PARCEL: 12.01
SUMMARY OF NATURE OF REQUEST AND WORK	Annexation request and CD4 Rezoning Request for a parcel of about 3 and a quarter acres between Bear Creek and McKay's Branch adjacent to and accessed from the main entry road of the Columbia Bluffs PUD-R property.		

DATE OF PRE-APPLICATION CONFERENCE	8/30/2023	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
☒ Annexation ☒ Rezoning ☐ Preliminary Plat ☐ Final Plat ☐ PUD Preliminary Master Plan ☐ PUD Final Site Plan ☐ Multi-Family Site Plan ☐ Other: **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat*	**Annexations/Rezoning/PUD's:** ☐ Written Legal Description copy ☐ Requested Zone Listed ☐ Compliance with Comprehensive Plan ☐ Annexation Permission Form ☐ Plans and/or Plats conforming to City standards with check list completed ☐ Columbia Water System Availability Letter **Plats/PUDs:** ☐ Project Name (include Sections & Phases) Columbia Bluffs Annexation/Commercial CD4 Rezoning ☐ Total Number of Lots 1 non-residential lot ☐ Total acreage +/-3.27 acres

Rev. 4/14/2022

Applications and all required submittals must be filed with the Department of Development Services prior to the established deadline. Both the applicant and property owner (if different from applicant) must sign the application.

Any requests to defer or move the item to future meetings dates must be requested by the resubmittal date listed on the Planning Commission schedule.

APPLICANT

All communications go to the Applicant's email that is provided.

NAME	Greg Gamble - Gamble Design	PHONE	615-975-5765
ADDRESS	3020 Stansberry Lane, Suite 201, Franklin	EMAIL	info@gdc-tn.com

PROPERTY OWNER NAME	HK Big Bear Bluffs, LLC	PHONE	813-615-1244
ADDRESS	14025 Riveredge Dr. Ste 175 Tampa FL 33637	EMAIL	jgibbs@kolter.com

In filling out this application, I attest that (1) I am familiar with the rules, regulations, and procedures of the City of Columbia & (2) all information contained herein is accurate & true to the best of my knowledge.

Greg Gamble		10/16/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
HK Big Bear Bluffs LLC James P. Harvey		10/10/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

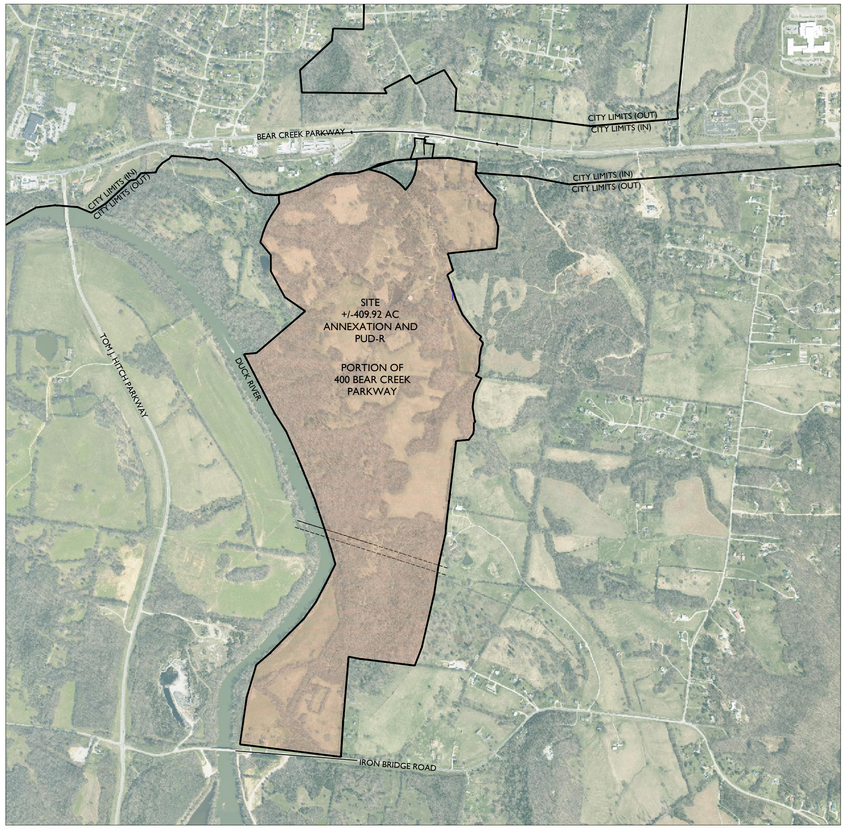
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 BEAR CREEK PARKWAY
COLUMBIA, TENNESSEE



LOCATION MAP

0 500 1000 2000
GRAPHIC SCALE 1"=1,000'-0"

OWNER:
HK BIG BEAR BLUFFS, LLC
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY

DEVELOPER:
KOLTER LAND
14025 RIVEREDGE DRIVE, SUITE 175
TAMPA, FL33637
JIM HARVEY OR JOSHUA GIBBS
615.582.3253
jgibbs@kolter.com

APPLICANT/ LAND PLANNER:
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37064
GREG GAMBLE
615-975-5765
greg.gamble@gdc-tn.com

ENGINEER:
CSDG
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211
JIM HARRISON
615-248-9999
jimh@csdgtn.com

COMMITMENT TO ENVIRONMENTAL STEWARDSHIP

1. Strategy for Resource Protection utilizing a PUD Planning and Design Approach

a. Establish a Limits of Disturbance along the Duck River and its tributaries based upon slopes, natural drainage ways, floodplain areas, and mature tree canopy.

b. Design new development around open space areas to highlight them as community amenities with pedestrian systems that will connect the entire conservation design open space throughout the community.

c. Pedestrian circulation and trails are highly encouraged along the river, along stream corridors, and through scenic areas.

d. The quantity of Open Space preservation should greatly exceed any established base zone district.

e. New home lots should generally be smaller, clustered areas away from the protected banks of the Duck River.

f. Document on-site natural resources through a State approved Hydrologist and concurrence reports with local, state, and federal agencies.

g. Remove debris removal along creek banks to prevent impact to Bear Creek (shoes, clothing, random bottles, containers, fencing, wood)

h. Use Best Management Practices for Stormwater Pollution Prevention Plans during construction.

i. Use only one crossing point (< less than approx. 50' - 60' feet that spans the creek with no structures within Bear Creek (similar to several crossings visible from US (Highway 412).

2. Strategy for Protection through Construction

Implementation of the Plan requires protective measures. PUD phasing and areas of disturbance should be documented and considered through the PUD process. Protection practices shall include:

A. Storm water erosion control applications I.E.

i. Stormwater Detention Areas,

ii. natural riparian buffers

iii. silt fencing

iv. sediment ponds

v. Check dams

vi. Ongoing stormwater monitoring of Environmental Controls of water runoff areas and tributaries

B. Compliance with CGP, ARAP and NPDES permitting to address the protections that provide additional oversight to the project.

Throughout the duration of the project, these types of practices within the action areas will ensure environmental compliance with local, state and federal requirements.

3. Strategy for Protection when construction is completed.

Once development is completed permanent storm water detention areas and water out fall locations will be cleaned and stabilized in accordance with the local, state, and federal guidelines.

SHEET INDEX

C0.0	COVER SHEET
C0.01	EXISTING CONDITIONS
C1.0	PHASING PLAN
C2.0	OVERALL PRELIMINARY MASTER DEVELOPMENT PLAN
C2.1	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.2	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.3	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.3	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.4	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.5	ENLARGED PRELIMINARY MASTER DEVELOPMENT PLAN
C2.6	PROPOSED LOT DIAGRAMS
C3.00	OVERALL SITE UTILITY PLAN
C3.01	SITE UTILITY PLAN
C3.02	SITE UTILITY PLAN
C3.03	SITE UTILITY PLAN
C3.04	SITE UTILITY PLAN
C4.00	OVERALL GRADING & DRAINAGE PLAN
C4.01	GRADING & DRAINAGE PLAN
C4.02	GRADING & DRAINAGE PLAN
C4.03	GRADING & DRAINAGE PLAN
C4.04	GRADING & DRAINAGE PLAN
L1.0	OVERALL CIVIC SPACE PLAN
L1.1	CIVIC SPACE ENLARGEMENT
L1.2	CIVIC SPACE ENLARGEMENT
L1.3	CIVIC SPACE ENLARGEMENT
L1.4	CIVIC SPACE ENLARGEMENT
L1.5	CIVIC SPACE ENLARGEMENT
L1.6	CIVIC SPACE ENLARGEMENT

GREGORY C. GAMBLE
TENNESSEE REGISTERED
LANDSCAPE ARCHITECT

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PRE-APP: August 30, 2023
INITIAL SUBMITTAL: October 16, 2023



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
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SEAL

JAMES T. HARRISON
REGISTERED
LANDSCAPE
ARCHITECT
10-16-23
No. 021998
STATE OF TENNESSEE

COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

REVISION HISTORY:

Rev.	Description	Date
1	Initial Submittal	10/16/23

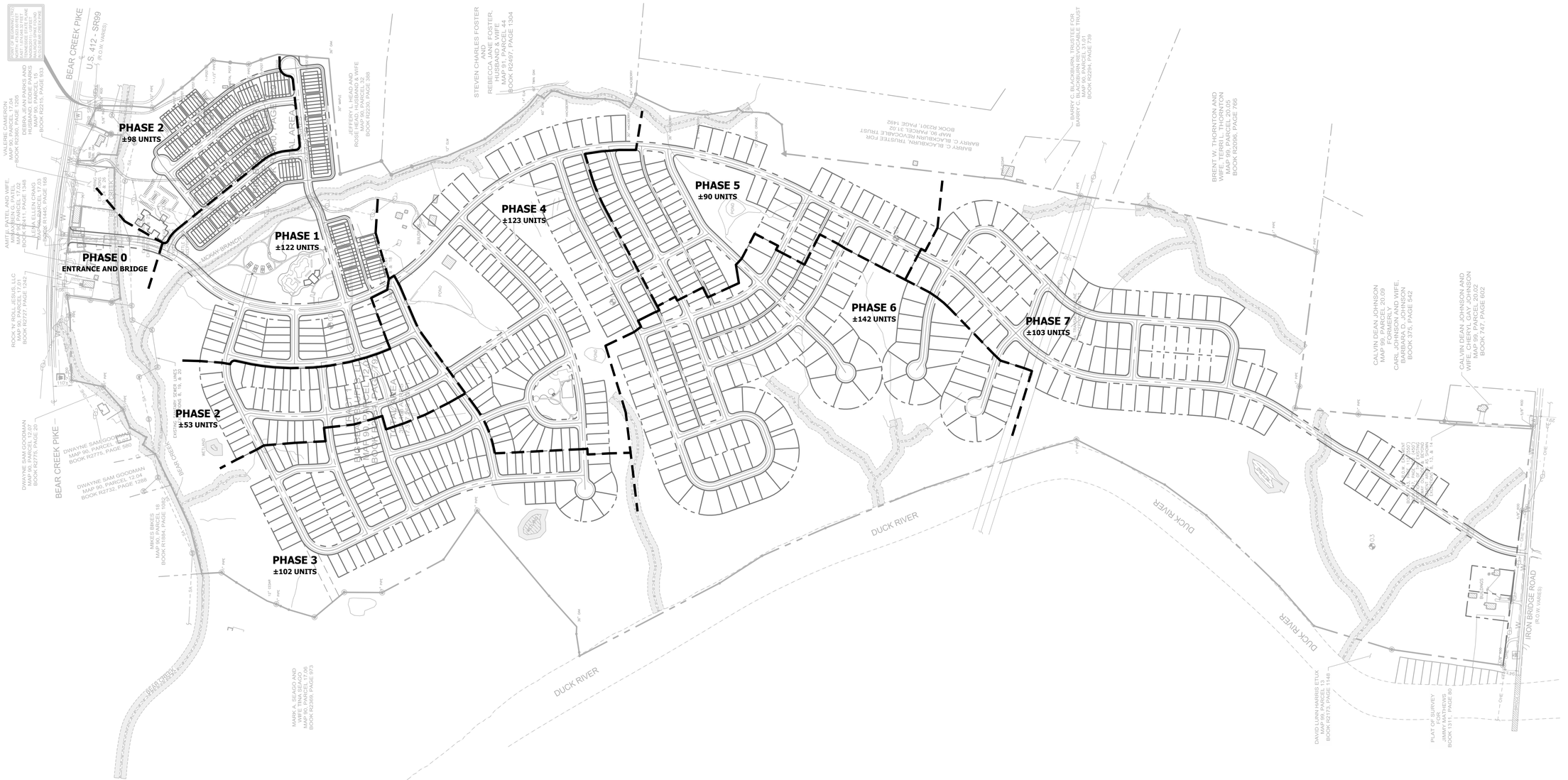
DRAWN BY: TWG
CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C0.01 - Existing Conditions Plan.dwg



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Planning | Engineering
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COLUMBIA BLUFFS
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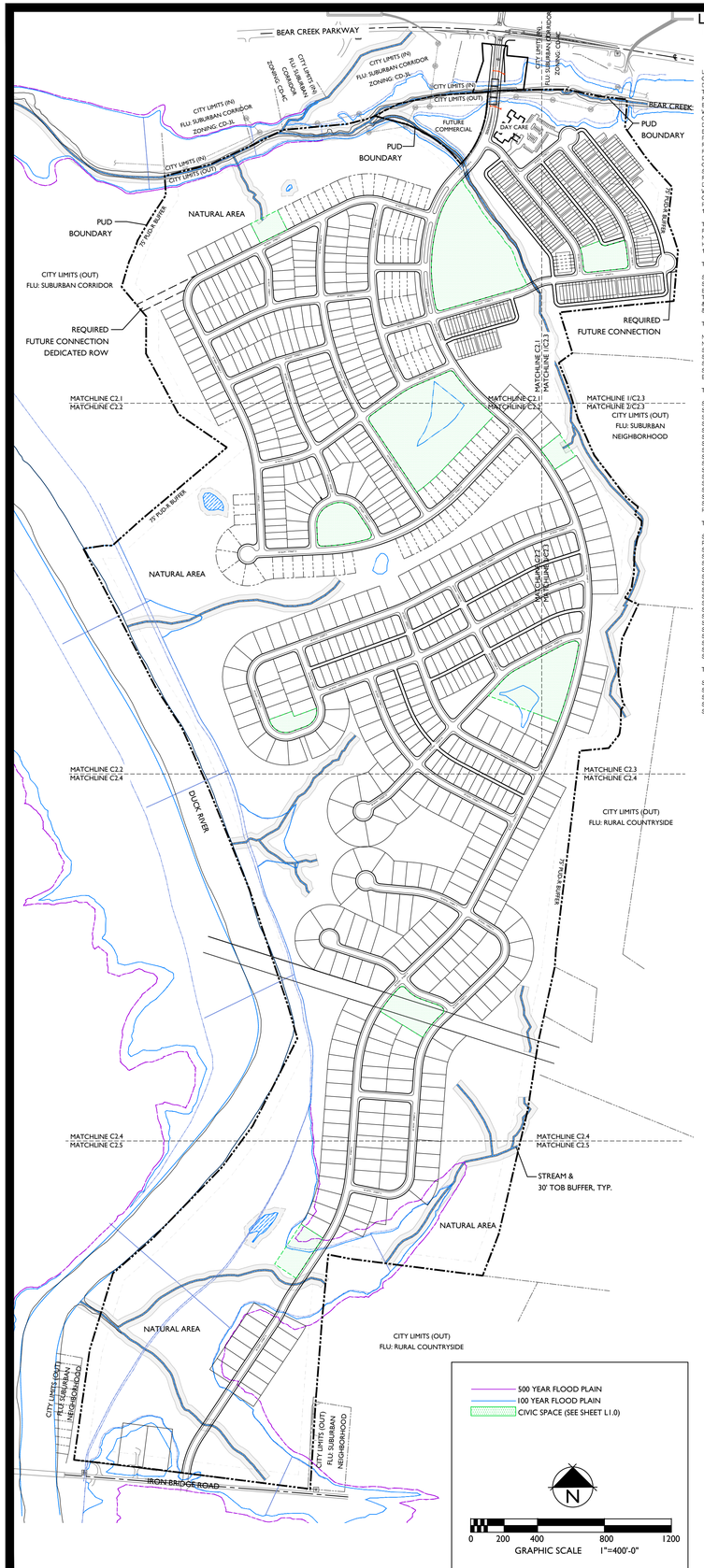
DRAWN BY: TWG
CHECKED BY: TWG

PHASING PLAN

C1.00

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C1.00 - Phasing Plan.dwg



LEGAL DESCRIPTION OF PROPERTY:

LEGAL DESCRIPTION FOR ANNEXATION OF 409.92 ACRES TO PUD
FOR PART OF MAP 90, PARCEL 12.01
DEED BOOK R2051, PAGE 792
BIG BEAR BLUFFS, LLC

LAND LYING IN THE 4TH CIVIL DISTRICT OF MAURY COUNTY, TENNESSEE, BOUNDED ON THE NORTH BY BEAR CREEK PIKE, ROCK 'N' ROLL JESUS, LLC, AS OF RECORD IN DEED BOOK R2727, PAGE 1242 OF THE REGISTERS OFFICE OF MAURY COUNTY, TENNESSEE (ROMCTN); AMIT J. PATEL AND WIFE, MINAXBEN G. PATEL AS OF RECORD IN DEED BOOK R2411, PAGE 1348, ROMCTN; HK BIG BEAR BLUFFS, LLC (R BOOK R2678, PAGE 961, ROMCTN; ON THE EAST BY JEFFERY L. HEAD AND ROSE HEAD, WIFE & HUSBAND AS OF RECORD IN DEED BOOK R2230, PAGE 388, ROMCTN, STEVEN CHARLES FOSTER AND REBECCA JANE FOSTER, HUSBAND & WIFE AS OF RECORD IN DEED BOOK R2497, PAGE 1334, ROMCTN, BARRY C. BLACKBURN, TRUSTEE FOR BARRY C. BLACKBURN REVOCABLE TRUST AS OF RECORD IN DEED BOOK R2301, PAGE 1492, ROMCTN, BRENT W. THORNTON AND WIFE TERRI L. THORNTON AS OF RECORD IN DEED BOOK R0396, PAGE 766, ROMCTN, CALVIN DEAN JOHNSON FORMERLY CARL JOHNSON AND WIFE, BARBARA D. JOHNSON AS OF RECORD IN DEED BOOK 375, PAGE 543, ROMCTN, AND CALVIN DEAN JOHNSON AND WIFE SHERYL GAY JOHNSON AS OF RECORD IN DEED BOOK R747, PAGE 602, ROMCTN; ON THE SOUTH BY IRON BRIDGE ROAD; AND ON THE WEST BY JIMMY MATHEWS AS OF RECORD IN DEED BOOK R2411, PAGE 80, DAVID LUNN HARRIS ETUX AS OF RECORD IN DEED BOOK R2115, PAGE 1148, ROMCTN, DUCK RIVER, AND MARK A. SEAGO AND WIFE TINA SEAGO AS OF RECORD DEED BOOK R2369, PAGE 973 ROMCTN; AND CONTINUED TO THE NORTH BY MIKE BIKES AS OF RECORD IN DEED BOOK R1884, PAGE 1082, DWAYNE SAM GOODMAN AS OF RECORD IN DEED BOOK R2732, PAGE 1288, AND IS MORE PARTICULARLY DESCRIBED AS FOLLOWS

TO FIND THE TRUE POINT OF BEGINNING, COMMENCE AT AN 1 INCH IRON PIPE FOUND IN THE SOUTHERN ROW OF BEAR CREEK PIKE, SAID POINT ALSO BEING THE NORTHWEST BOUNDARY OF ROCK 'N' ROLL JESUS, LLC (BK R2727, PG 1242) AND HAVING A TENNESSEE STATE PLANE COORDINATE OF NORTH 475,793.95 EAST 1,872,344.21;

THENCE, WITH THE WEST BOUNDARY OF JESUS, THE FOLLOWING CALLS:

S 05°01'16" W, FOR A DISTANCE OF 269.51 FEET, TO AN IRON PIN FOUND;
S 21°32'47" E, FOR A DISTANCE OF 51.20 FEET TO A THE CENTER OF BEAR CREEK BEING THE SOUTHWEST CORNER OF ROCK N ROLL JESUS;
THENCE, WITH THE SOUTH BOUNDARY OF ROCK 'N' ROLL JESUS, LLC, AMIT J. PATEL & HK BIG BEAR BLUFFS, LLC, AND ALSO BEING THE CENTER OF BEAR CREEK, N 85°53'31" E, 307.86 FEET TO THE TRUE POINT OF BEGINNING;

THENCE, CONTINUING WITH BEAR CREEK, THE FOLLOWING CALLS:

N 85°53'31" E, FOR A DISTANCE OF 85.49 FEET TO A POINT;
N 89°39'27" E, FOR A DISTANCE OF 118.80 FEET TO A POINT;
S 89°57'56" E, FOR A DISTANCE OF 168.93 FEET TO A POINT;
S 81°59'35" E, FOR A DISTANCE OF 77.46 FEET TO A POINT;
S 78°01'43" E, FOR A DISTANCE OF 120.71 FEET TO A POINT;
S 83°35'45" E, FOR A DISTANCE OF 172.70 FEET TO A POINT ALONG THE WEST BOUNDARY OF JEFFERY L. HEAD;

THENCE, WITH THE WEST BOUNDARY OF HEAD, THE FOLLOWING CALLS:

S 0°56'50" W, FOR A DISTANCE OF 40.52 FEET TO AN IRON PIN;
S 04°40'44" W, FOR A DISTANCE OF 127.32 FEET TO A 1-1/2" PIPE FOUND;
S 34°29'27" E, FOR A DISTANCE OF 153.87 FEET TO A T-POST;
S 35°04'16" E, FOR A DISTANCE OF 55.17 FEET TO A T-POST;
S 39°22'56" E, FOR A DISTANCE OF 64.02 FEET TO A T-POST;
S 42°05'33" E, FOR A DISTANCE OF 106.39 FEET TO A T-POST;
S 42°31'20" E, FOR A DISTANCE OF 55.23 FEET TO AN 1-1/2" PIPE FOUND;
S 7°06'58" W, FOR A DISTANCE OF 101.11 FEET TO A 3" METAL POST;
S 5°45'07" W, FOR A DISTANCE OF 110.19 FEET TO AN 1-1/2" PIPE FOUND;
S 21°14'47" E, FOR A DISTANCE OF 78.14 FEET TO A T-POST;
S 17°34'01" E, FOR A DISTANCE OF 102.59 FEET TO A 24" CEDAR;
S 4°57'22" W, FOR A DISTANCE OF 172.54 FEET TO A T-POST;
S 4°32'31" W, FOR A DISTANCE OF 130.65 FEET TO 36" OAK;
S 84°46'29" W, FOR A DISTANCE OF 270.35 FEET TO 20" MAPLE;
S 84°01'38" W, FOR A DISTANCE OF 414.11 FEET TO A FENCE POST;
S 17°15'39" E, FOR A DISTANCE OF 254.68 FEET TO A 6" ROTTED HACKBERRY FENCE POST TO THE SOUTHWEST CORNER OF HEAD;

THENCE, WITH THE WEST BOUNDARY OF FOSTER, THE FOLLOWING CALLS:

S 54°11'5" W, FOR A DISTANCE OF 100.29 FEET TO 6" ROTTED HACKBERRY FENCE POST;
S 21°03'18" E, FOR A DISTANCE OF 130.86 FEET TO A CEDAR FENCE POST;
S 17°11'57" E, FOR A DISTANCE OF 221.38 FEET TO A 12" ELM;
S 23°46'07" E, FOR A DISTANCE OF 240.66 FEET TO A T-POST;
S 37°24'05" E, FOR A DISTANCE OF 315.73 FEET TO 14" ELM;
S 50°37'42" E, FOR A DISTANCE OF 91.73 FEET TO 60" TWIN OAK;
S 28°59'39" W, FOR A DISTANCE OF 35.62 FEET TO 60" OAK;
S 40°35'26" W, FOR A DISTANCE OF 9.08 FEET TO A T-POST;
S 42°52'20" E, FOR A DISTANCE OF 62.79 FEET TO A POINT;
S 1°50'17" W, FOR A DISTANCE OF 30.25 FEET TO A POINT;
S 23°53'47" W, FOR A DISTANCE OF 42.59 FEET TO 14" HACKBERRY;
S 11°25'58" W, FOR A DISTANCE OF 117.75 FEET TO A T-POST;
S 2°03'52" W, FOR A DISTANCE OF 130.94 FEET TO ROTTED HACKBERRY;
S 9°12'29" W, FOR A DISTANCE OF 87.18 FEET A POINT;
S 33°58'56" W, FOR A DISTANCE OF 69.04 FEET TO A 30" HACKBERRY;
S 61°19'48" E, FOR A DISTANCE OF 54.74 FEET TO A 24" HACKBERRY;
S 70°11'17" E, FOR A DISTANCE OF 34.53 FEET TO 12" CEDAR POST AT THE SOUTHWEST CORNER OF FOSTER;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN, THE FOLLOWING CALLS:

S 25°13'18" W, FOR A DISTANCE OF 225.44 FEET TO A 36" HACKBERRY;
S 7°09'46" W, FOR A DISTANCE OF 177.84 FEET TO A 8" DOGWOOD;
S 0°16'28" W, FOR A DISTANCE OF 41.40 FEET TO A 24" HACKBERRY FLAGGED;
S 8°53'22" E, FOR A DISTANCE OF 173.37 FEET TO A T-POST;
S 50°40'30" E, FOR A DISTANCE OF 13.02 FEET TO 6" FENCE POST;
S 39°18'12" W, FOR A DISTANCE OF 34.16 FEET TO A POINT;
S 1°12'16" W, FOR A DISTANCE OF 95.58 FEET TO A 12" OSAGE;
S 7°58'27" W, FOR A DISTANCE OF 43.94 FEET TO A 6" ROTTED TREE;
S 15°41'30" W, FOR A DISTANCE OF 13.75 FEET TO A A 6" TREE USED AS FENCE POST;
S 38°17'00" W, FOR A DISTANCE OF 100.34 FEET TO A 14" ROTTEN CEDAR;
S 84°35'04" W, FOR A DISTANCE OF 173.30 FEET TO FENCE CORNER PK FOUND;
S 6°40'35" W, FOR A DISTANCE OF 1187.64 FEET TO A POINT;
S 4°03'46" W, FOR A DISTANCE OF 112.89 FEET TO A 26" CEDAR;
S 12°22'22" W, FOR A DISTANCE OF 465.96 FEET TO A 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF BLACKBURN AND CONTINUING TO THORNTON, THE FOLLOWING CALLS:

S 8°47'46" W, FOR A DISTANCE OF 411.13 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY THORNTON, THE FOLLOWING CALLS:

S 13°08'41" W, FOR A DISTANCE OF 759.59 FEET TO 1" PIPE FOUND;
S 21°10'50" W, FOR A DISTANCE OF 265.00 FEET TO 1" PIPE FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

N 82°44'49" W, FOR A DISTANCE OF 600.97 FEET TO 1" PIPE FOUND;
N 78°43'22" W, FOR A DISTANCE OF 130.34 FEET TO 1" PIPE FOUND;

THENCE, WITH THE WEST BOUNDARY OF JOHNSON, THE FOLLOWING CALLS:

S 5°33'34" W, FOR A DISTANCE OF 375.75 FEET TO 1" PIPE FOUND;
S 4°27'28" W, FOR A DISTANCE OF 508.55 FEET TO A POINT;
S 5°35'19" W, FOR A DISTANCE OF 523.31 FEET TO 5/8" IRON PIN FOUND AT THE SOUTHWEST CORNER OF THORNTON;

THENCE, WITH THE NORTH BOUNDARY OF IRON BRIDGE ROAD RIGHT-OF-WAY, THE FOLLOWING CALLS:

N 82°45'55" W, FOR A DISTANCE OF 501.29 FEET TO AN 5/8" IRON PIN FOUND;
N 82°46'22" W, FOR A DISTANCE OF 525.64 FEET TO RAILROAD SPIKE PK FOUND;
N 83°23'15" W, FOR A DISTANCE OF 396.04 FEET TO 5/8" IRON PIN FOUND AT SOUTHEAST CORNER OF MATTHEWS;

THENCE, WITH THE EAST BOUNDARY OF MATHEWS, HARRIS AND DUCK RIVER, THE FOLLOWING CALLS:

N 8°06'23" E, FOR A DISTANCE OF 864.54 FEET TO 1/2" IRON PIN FOUND;
N 1°16'09" E, FOR A DISTANCE OF 478.23 FEET TO A POINT;
N 48°48'57" E, FOR A DISTANCE OF 312.04 FEET TO A POINT;
N 44°09'58" E, FOR A DISTANCE OF 600.70 FEET TO A POINT;
N 36°27'00" E, FOR A DISTANCE OF 305.02 FEET TO A POINT;
N 27°21'22" E, FOR A DISTANCE OF 284.82 FEET TO A POINT;
N 26°51'08" E, FOR A DISTANCE OF 301.40 FEET TO 1" PIPE FOUND;

N 15°43'20" W, FOR A DISTANCE OF 197.42 FEET TO A POINT;
N 18°27'24" W, FOR A DISTANCE OF 744.16 FEET TO A POINT;
N 21°56'04" W, FOR A DISTANCE OF 031.16 FEET TO A POINT;
N 23°44'52" W, FOR A DISTANCE OF 409.10 FEET TO A POINT;
N 32°46'41" W, FOR A DISTANCE OF 286.98 FEET TO A POINT;
N 27°28'08" W, FOR A DISTANCE OF 932.36 FEET TO A POINT;

THENCE, DIRECTING RIGHT AWAY FROM DUCK RIVER TO THE SOUTH AND EAST BOUNDARY OF SEAGO, THE FOLLOWING CALLS:

N 85°09'29" E, FOR A DISTANCE OF 22.00 FEET TO A POINT;
N 81°22'35" E, FOR A DISTANCE OF 109.60 FEET TO A POINT;
S 87°29'25" E, FOR A DISTANCE OF 42.46 FEET TO 26" OAK;
N 46°08'47" E, FOR A DISTANCE OF 244.67 FEET TO A POINT;
N 46°56'39" E, FOR A DISTANCE OF 291.18 FEET TO 10" HACKBERRY AND 8" CEDAR;
N 49°46'28" E, FOR A DISTANCE OF 367.28 FEET TO 1" PIPE FOUND;
N 55°27'24" W, FOR A DISTANCE OF 350.42 FEET TO A POINT;
N 28°16'29" W, FOR A DISTANCE OF 411.36 FEET TO A 1" PIPE FOUND;
N 71°17'50" E, FOR A DISTANCE OF 220.64 FEET TO AN IRON PIN FOUND;
N 39°36'42" W, FOR A DISTANCE OF 228.86 FEET TO AN IRON PIN FOUND;
N 16°17'40" E, FOR A DISTANCE OF 158.31 FEET TO A POINT;
N 24°10'55" E, FOR A DISTANCE OF 52.03 FEET TO A POINT;
N 27°26'46" E, FOR A DISTANCE OF 28.14 FEET TO 1" PIPE IRON PIPE;
N 19°40'08" E, FOR A DISTANCE OF 57.72 FEET TO A 12" CEDAR;
N 30°13'56" E, FOR A DISTANCE OF 123.71 FEET TO A POINT;
N 32°10'27" E, FOR A DISTANCE OF 87.89 FEET TO A POINT;
N 33°44'57" E, FOR A DISTANCE OF 105.82 FEET TO 1" PIPE FOUND;
N 3°11'17" W, FOR A DISTANCE OF 116.30 FEET TO A POINT AT THE NORTHEAST CORNER OF SEAGO AND THE CENTER OF BEAR CREEK;

THENCE, ALONG BEAR CREEK AND SOUTHERN BOUNDARY OF MIKES BIKES, THE FOLLOWING CALLS:

N 75°48'45" E, FOR A DISTANCE OF 280.14 FEET TO A POINT;
N 85°23'51" E, FOR A DISTANCE OF 281.90 FEET TO A POINT AT THE SOUTHEAST CORNER OF BIKES;

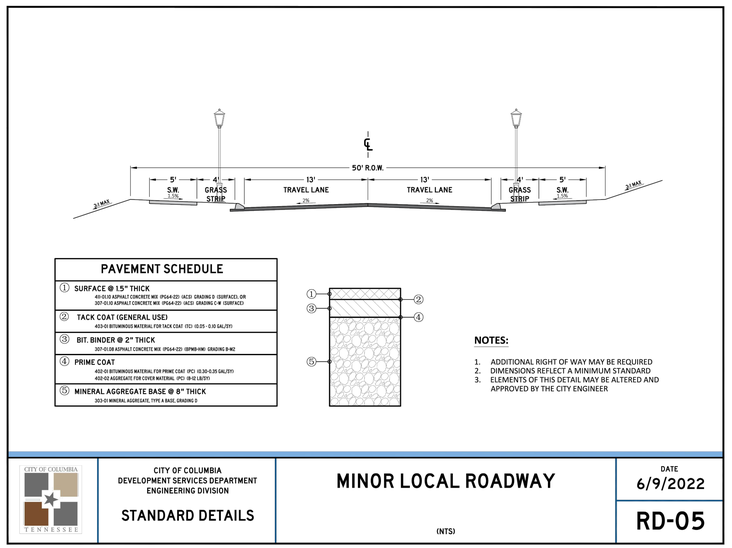
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

N 84°40'48" E, FOR A DISTANCE OF 385.89 FEET TO A POINT;
N 75°36'41" E, FOR A DISTANCE OF 141.99 FEET TO A POINT;
N 83°11'05" E, FOR A DISTANCE OF 28.87 FEET TO A POINT AT AN INTERSECTION OF MCKAY BRANCH
CONTINUING ALONG MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:
S 7°51'27" E, FOR A DISTANCE OF 201.29 FEET TO A POINT;
S 85°15'03" E, FOR A DISTANCE OF 74.45 FEET TO A POINT;
S 61°08'47" E, FOR A DISTANCE OF 61.78 FEET TO A POINT;
S 58°09'42" E, FOR A DISTANCE OF 42.46 FEET TO A POINT;
S 51°12'54" E, FOR A DISTANCE OF 88.37 FEET TO A POINT;
S 45°49'08" E, FOR A DISTANCE OF 65.41 FEET TO A POINT;
S 39°48'13" E, FOR A DISTANCE OF 73.31 FEET TO A POINT;

THENCE, LEAVING MCKAY BRANCH AND CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES, THE FOLLOWING CALLS:

NORTHEASTERLY ALONG A CURVE THROUGH A CENTRAL ANGLE OF 38°33'55", AN ARC DISTANCE OF 380.30 FEET TO A POINT OF TANGENCY, SAID CURVE IS CONCAVE NORTHWESTERLY AND HAS A RADIUS OF 565.50 FEET, CHORD BEARING N 24°33'52" E WITH A CHORD DISTANCE OF 373.16 FEET TO A POINT OF TANGENCY;
N 05°15'54" E, 84.04 FEET TO THE POINT OF BEGINNING CONTAINING 409.92 ACRES (17,855,971 SQ.FT.) AND BEING A PORTION OF THE PROPERTY SHOWN ON TAX MAP 90 PARCEL 12.01 CONVEYED TO BIG BEAR BLUFFS, LLC BY DEED OF RECORD IN BOOK R2837, PAGE 287 IN THE REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.



REQUESTED STREET SECTION

PROJECT DESCRIPTION AND SITE DATA:

REQUEST TO ANNEX AND REZONE THE COLUMBIA BLUFFS PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN.

THE PUD-R PLAN PROPOSES AN ENVIRONMENTALLY SENSITIVE MASTER PLAN FOR A DIVERSE RESIDENTIAL DEVELOPMENT. APPROXIMATELY ONE-THIRD OF THE PROPOSED DEVELOPMENT IS RESERVED FOR ACTIVE ADULT/AGE RESTRICTED SINGLE-FAMILY HOMES. ADDITIONALLY, TOWN HOMES AND A VARIETY OF DETACHED SINGLE-FAMILY HOMES ARE PROPOSED.

IN ADDITION TO THE RESIDENTIAL COMPONENT, THE PUD-R PLANS PROPOSES A DAY CARE FACILITY AND A VARIETY OF NEIGHBORHOOD AMENITIES.

TOTAL SITE AREA: 409.92 ACRES
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

TOTAL DWELLING UNITS: 860 HOMES
OVERALL SITE DENSITY: 2.1 DUA

RESIDENTIAL BREAKDOWN		NON RESIDENTIAL
ACTIVE ADULT HOMES:	293	DAYCARE 12,000 - 14,000 SF
TOWNHOMES:	189	
ALLEY SINGLE-FAMILY:	144	
COURTYARD HOMES:	104	
LARGE LOT HOMES:	130	

EXISTING TREE CANOPY COVERAGE: 262.2 ACS; 64% OF TOTAL SITE
REQUIRED TREE CANOPY RETENTION: 36%; REQUIRED WITH FMDP

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA
OPEN SPACE BREAKDOWN
CIVIC SPACE: 22.2 AC
ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC
ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC
CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

PARKING: SEE LOT DIAGRAMS (C2.6) FOR PROPOSED RESIDENTIAL PARKING;
AND SHEETS L1.0-L1.6 FOR CIVIC SPACE PARKING
RESIDENTIAL: 2 PARKING SPACES PER UNIT
DAYCARE: 1 PER STAFF + 0.5 PER CHILD
CIVIC SPACE: 1 PER 5,000 SF

ANNEXATION AND REZONING REQUEST:

REQUEST TO ANNEX +/-409.92 ACRES AND REZONE TO PUD-R
FUTURE LAND USE: SUBURBAN NEIGHBORHOOD

CONNECT COLUMBIA FINDINGS:
Annexation should provide for a continuation of orderly, planned development of the City. Lot sizes and development scale should be compatible with surrounding development. If proposed development abuts land that is undeveloped or has low density/intensity, the density and intensity of the proposed development should taper towards the periphery to provide compatibility of the development pattern. Land annexed into the City should follow the transect and Character Area Matrix to provide the most appropriate land uses and zoning for the newly annexed land.
Response: The proposed Columbia Bluffs subdivision is 2 miles from the downtown core. Density and lot size transitions from higher density/intensity at the north, along the Bear Creek Parkway corridor to the south, where a more rural character is appropriate adjacent to Iron Bridge Rd and the Yanahli Park. The properties along Bear Creek Parkway have been identified as "area of change." With the development along this corridor, residential development in close proximity to downtown and new commercial development along Tom Hitch Parkway is a logical progression of development pattern.

Connectivity, directly through street, sidewalks, bikeways, greenways, and trails, and indirectly, through a mixture of housing and business types, should be encouraged throughout Columbia..
Response: In addition to roadway and sidewalk connections, Columbia Bluffs proposes nature trails through out the property. The development will also provide a roadway connection between Bear Creek Parkway and Iron Bridge Road. A variety of housing types are proposed, including an age restricted Active Adult neighborhood.

Suburban Neighborhood: Future development should emphasize connectivity and housing diversity.
Response: Columbia Bluffs proposes a variety of housing styles
Near-term Priorities: HOUSING MIX/TYPES: Promote mastered planned housing opportunities for a "full-life cycle" community to accommodate retirees and young professionals. Review Zoning standards to permit smaller lot and home sizes to encourage such developments.

MODIFICATIONS FROM STANDARD PUD-R ZONING REQUEST:

RESIDENTIAL LOT DIAGRAMS: SEE SHEET C2.6
1. ACTIVE ADULT AND PRIMARY ALLEY LOADED HOMES SIDE-SETBACK REDUCED TO 5'.
2. OTHER PRIMARY RESIDENTIAL SIDE-SETBACK REDUCED TO 7.5'.
3. ACTIVE ADULT, COURTYARD, AND LARGE LOT GARAGE LOCATED IN 2ND LAYER
4. ACTIVE ADULT, COURTYARD, AND LARGE LOT ALLOWED DOUBLE CAR GARAGE DOORS, WITH A MAXIMUM WIDTH OF 16'
5. ACTIVE ADULT DRIVEWAYS TO BE 18' IN FIRST LAYER.
6. COURTYARD AND LARGE LOT DRIVEWAY TO BE 12' IN FIRST LAYER.

THOROUGHFARE STANDARDS:
1. UTILIZATION OF 50' ROW INSTEAD OF 70' ROW.

CIVIC SPACE:
1. ACTIVE ADULT NEIGHBORHOOD TO BE EXCLUDED FROM REQUIRED PLAYGROUND CRITERIA.

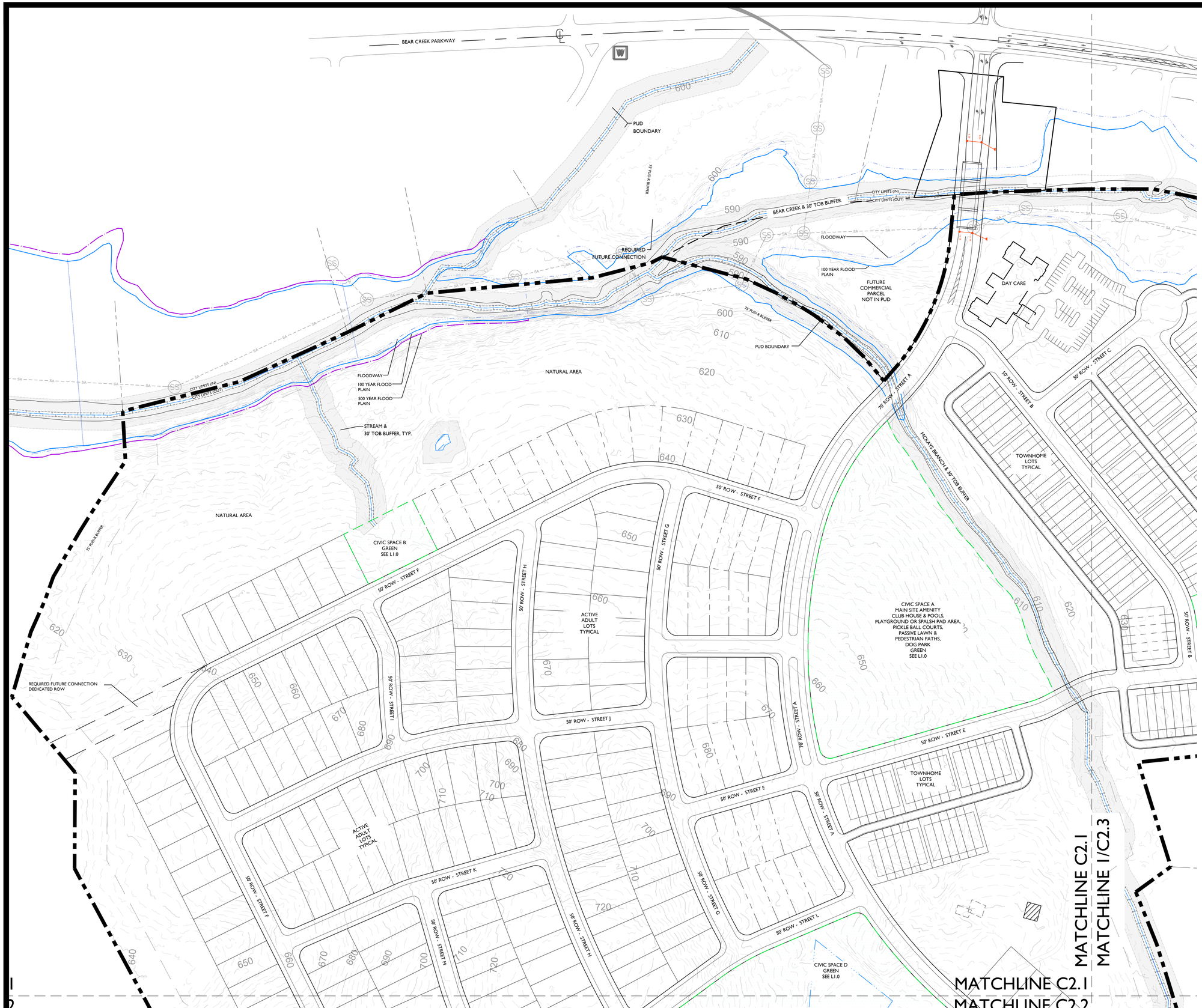
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
TENNESSEE
No. 1623

Date: October 16, 2023
Revision Date
△
△
△

OVERALL PUD-R PMDP
SHEET
C2.0



OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS

PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT TENNESSEE NO. 369 LANDSCAPE ARCHITECT 10/16/23

Date: October 16, 2023

Revision Date

△

△

△

ENLARGED PUD-R PMDP

SHEET

C2.1

MATCHLINE C2.1
MATCHLINE C2.2

MATCHLINE C2.1
MATCHLINE C2.2

ACTIVE ADULT LOTS TYPICAL

CIVIC SPACE D
MAIL KIOSK
SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN
SEE L1.0

50' ROW - STREET A

50' ROW - STREET L

50' ROW - STREET F

50' ROW - STREET M

50' ROW - STREET N

50' ROW - STREET H

50' ROW - STREET O

CIVIC SPACE G
ACTIVE ADULT AMENITY
COVERED SEATING, PASSIVE LAWN &
PEDESTRIAN PATHS,
DOG PARK,
COMMUNITY GARDEN,
GREEN
SEE L1.0

NATURAL AREA

ACTIVE ADULT LOTS TYPICAL

75' M.D.R BUFFER

75' M.D.R BUFFER

NATURAL AREA

FLOODWAY
100 YEAR FLOOD PLAIN

STREAM &
30' TOB BUFFER, TYP.

DUCK RIVER

COURTYARD LOTS TYPICAL

50' ROW - STREET P

50' ROW - STREET R

50' ROW - STREET Q

50' ROW - STREET S

LARGE LOTS TYPICAL

ALLEY HOMES TYPICAL

50' ROW - STREET T

50' ROW - STREET W

PEDESTRIAN WALKWAY & PARK

CIVIC SPACE E
MAIL KIOSK, PASSIVE LAWN & PEDESTRIAN PATHS,
PLAYGROUND
GREEN
SEE L1.0

CIVIC SPACE H
PASSIVE LAWN & PEDESTRIAN PATHS,
PLAYGROUND
GREEN
SEE L1.0

NATURAL AREA

COURTYARD LOTS TYPICAL

NATURAL AREA

LARGE LOTS TYPICAL

MATCHLINE C2.2
MATCHLINE C2.4

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE
REGISTERED
LANDSCAPE ARCHITECT

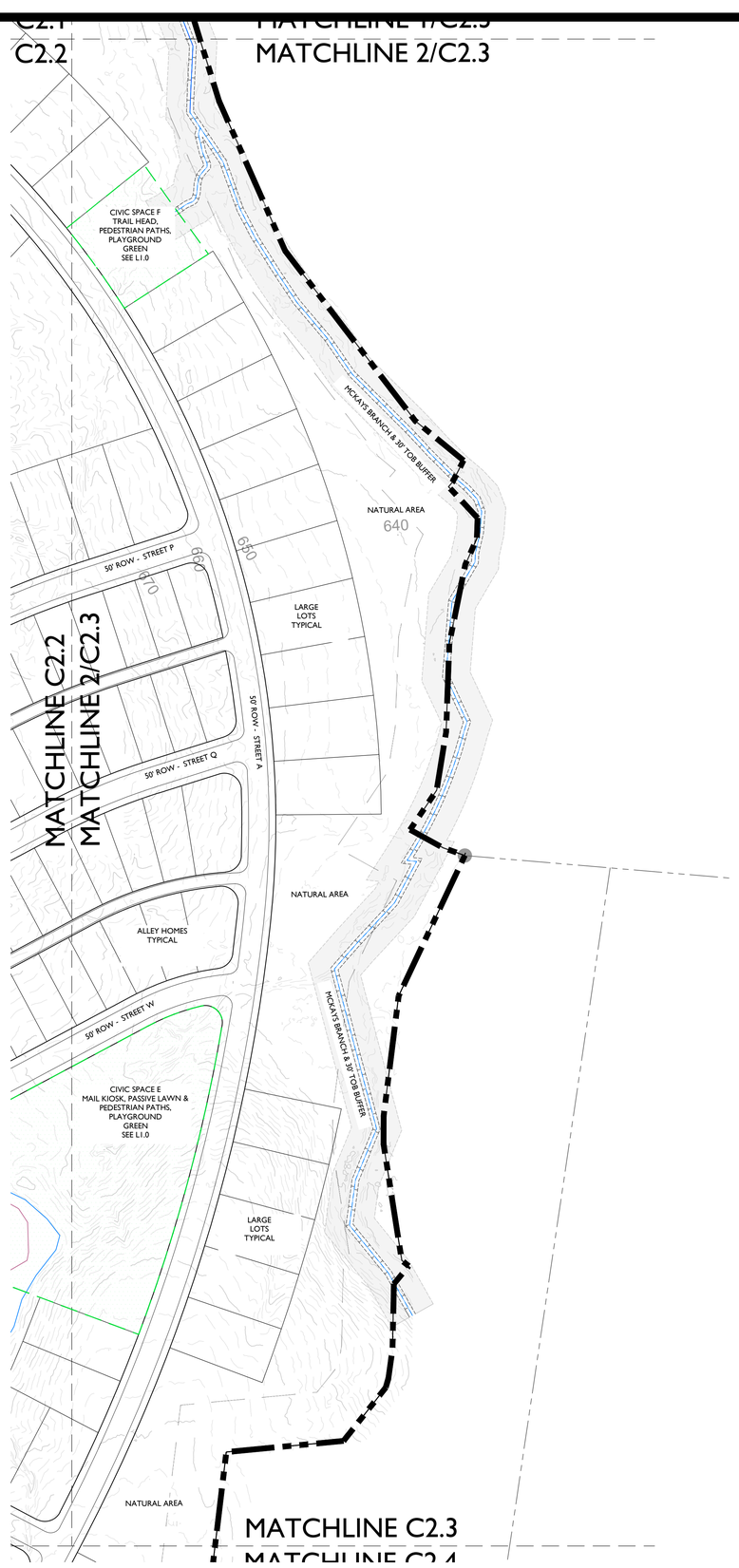
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ENLARGED PUD-R PMDP

SHEET
C2.2





GAMBLE DESIGN COLLABORATIVE

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No. 1016328

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OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

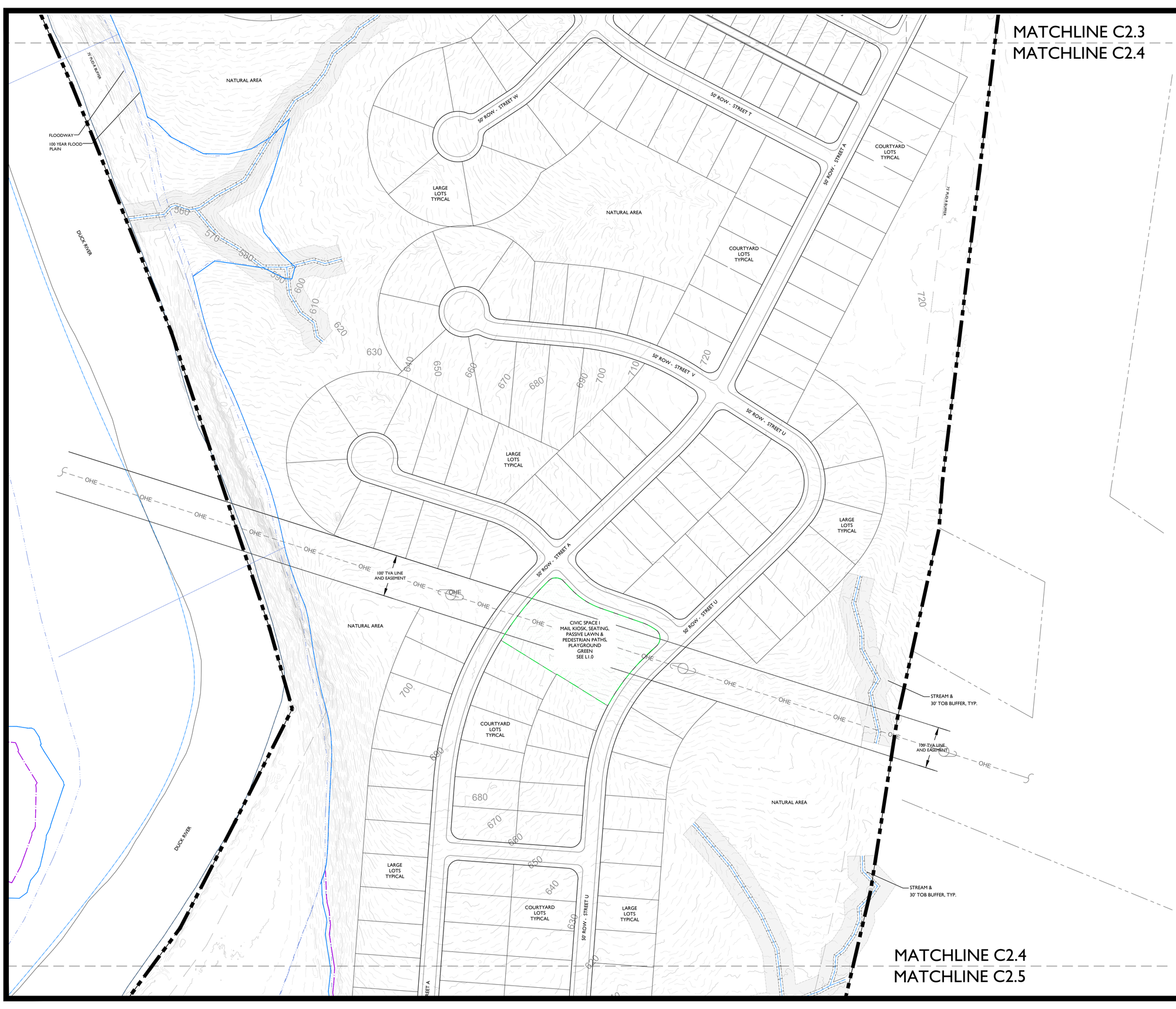
GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP

SHEET

C2.3

MATCHLINE C2.3
MATCHLINE C2.4



MATCHLINE C2.4
MATCHLINE C2.5

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OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP

SHEET
C2.4

MATCHLINE C2.4
MATCHLINE C2.5

NATURAL AREA
DUCK RIVER
50' ROW - STREET A
50' ROW - STREET U
COURTYARD LOTS TYPICAL
LARGE LOTS TYPICAL
STREAM & 30' TOB BUFFER, TYP.
CIVIC SPACE J TRAIL HEAD, SEATING, PASSIVE LAWN & PEDESTRIAN PATHS, GREEN SEE L1.0
500 YEAR FLOOD PLAIN
FLOODWAY
100 YEAR FLOOD PLAIN
75' PUD-R BUFFER
100 YEAR FLOOD PLAIN
500 YEAR FLOOD PLAIN
570
580
590
600
610
620
630
640
650
660

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TENNESSEE
10/16/23

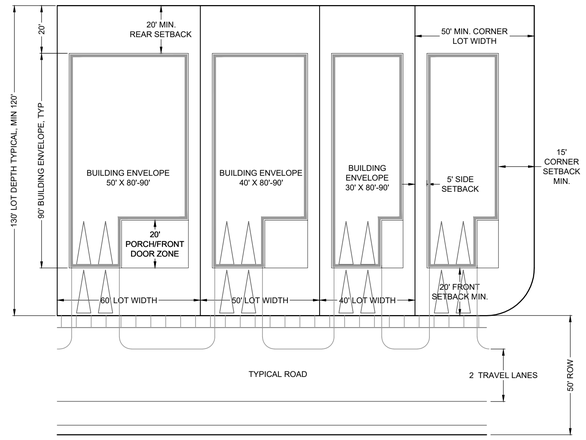
Date: October 16, 2023
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OVERALL CONCEPT DEVELOPMENT PLAN
N
0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

ENLARGED PUD-R PMDP
SHEET
C2.5

ACTIVE ADULT/ AGE RESTRICTED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

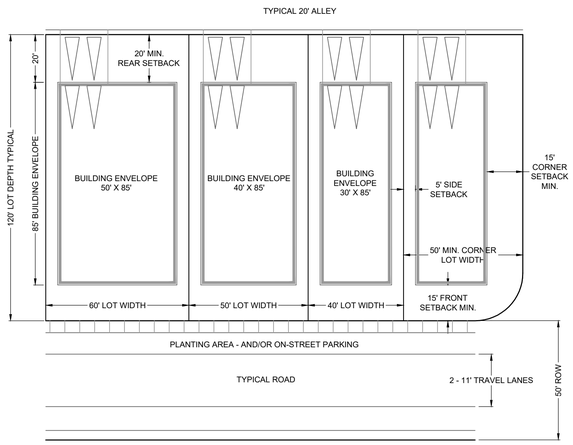
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



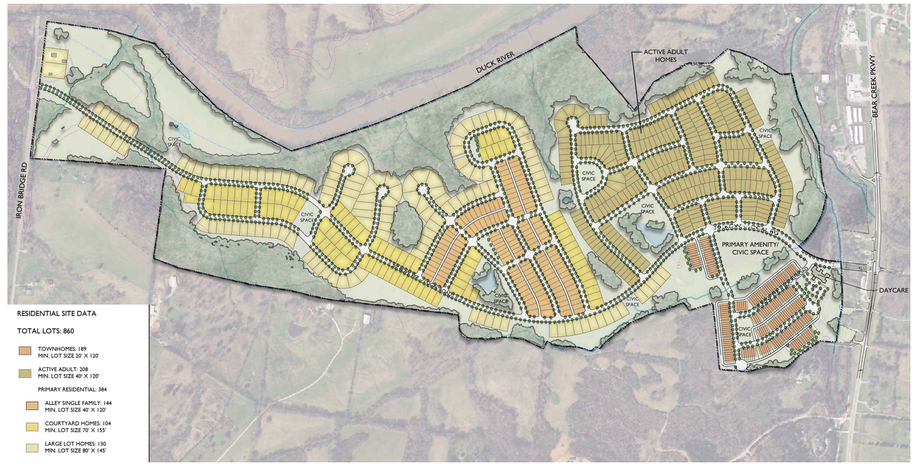
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL - ALLEY LOADED DETACHED SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 40' X 120'; 50' X 120'; 60' X 120'

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



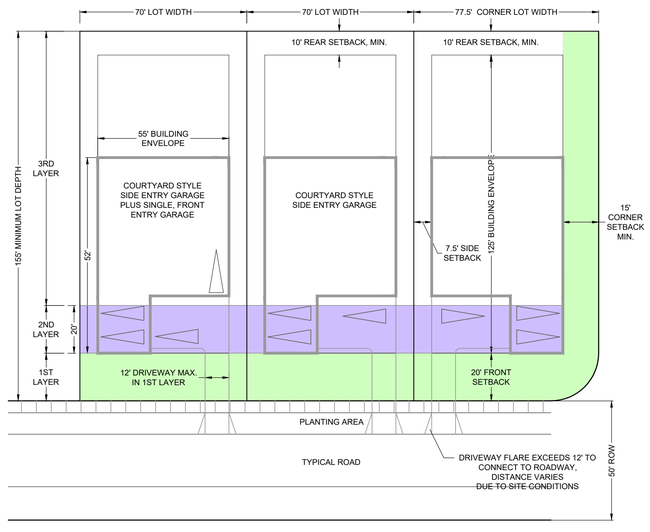
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

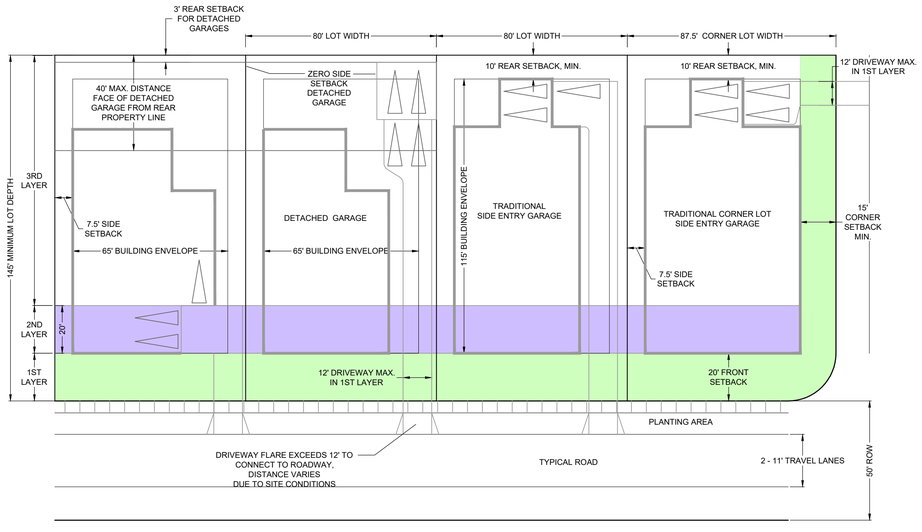
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

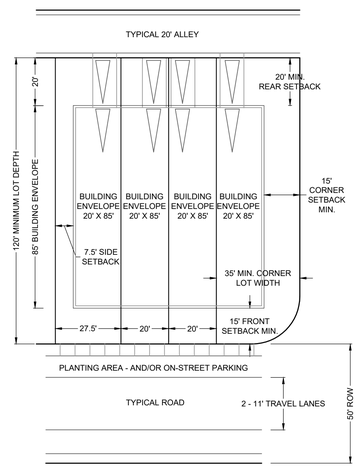
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



5 C2.6 LARGE LOT HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL ALLEY LOADED TOWN HOMES
TYPICAL INTERIOR LOT DIMENSIONS 20' MIN. X 120'
UNITS PER BUILDING: 4, 6, 7, OR 8

SETBACKS:	MODIFICATION REQUESTS:
FRONT: 15' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	
CORNER: 15' MIN.	
REAR: 20' MIN.	



6 C2.6 TOWN HOME LOT DIAGRAM N.T.S

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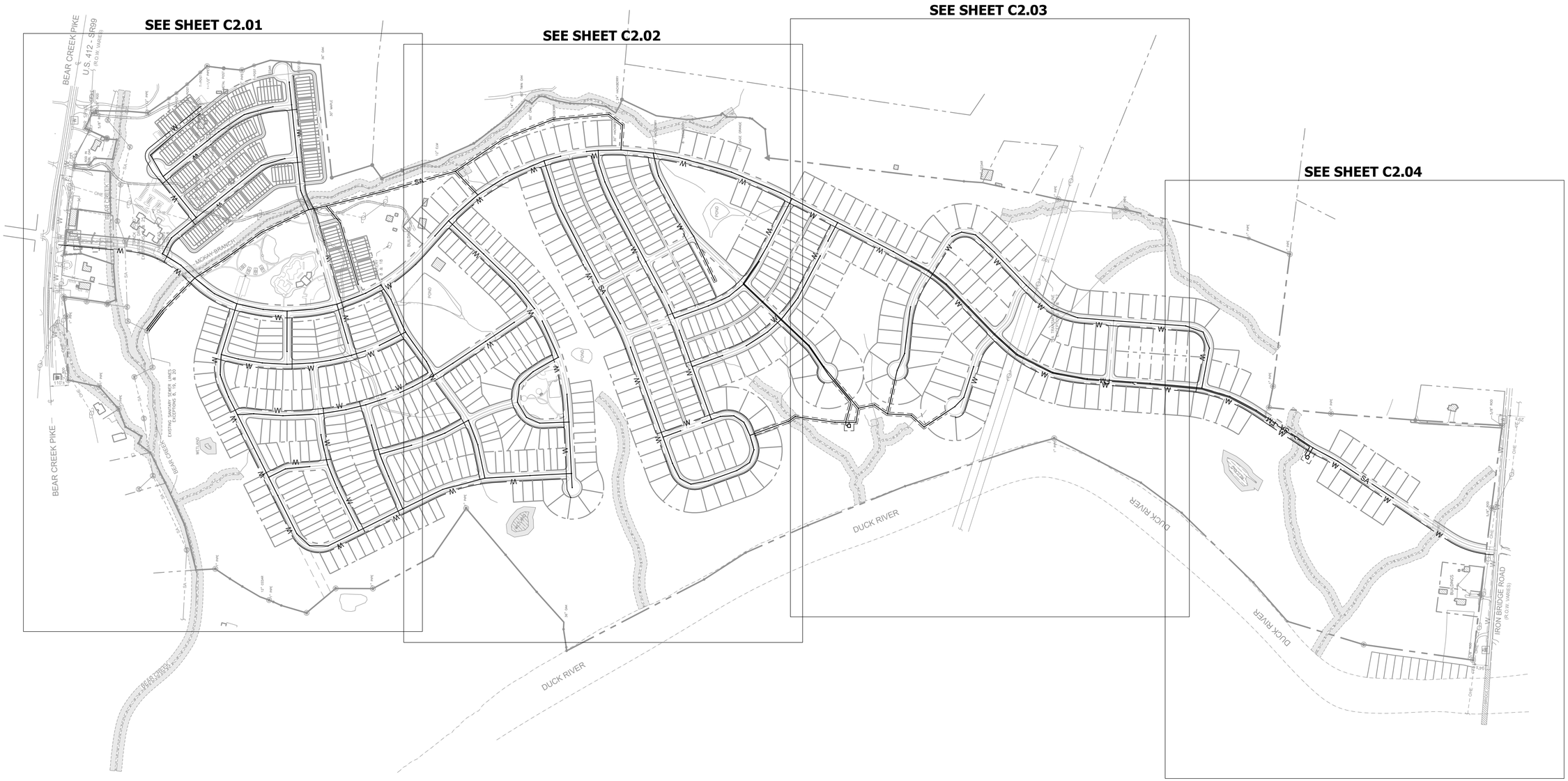
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LOT DIAGRAMS

SHEET C2.6



N

0 300 600
SCALE: 1"= 300'

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10-16-23
No. 021998
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COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

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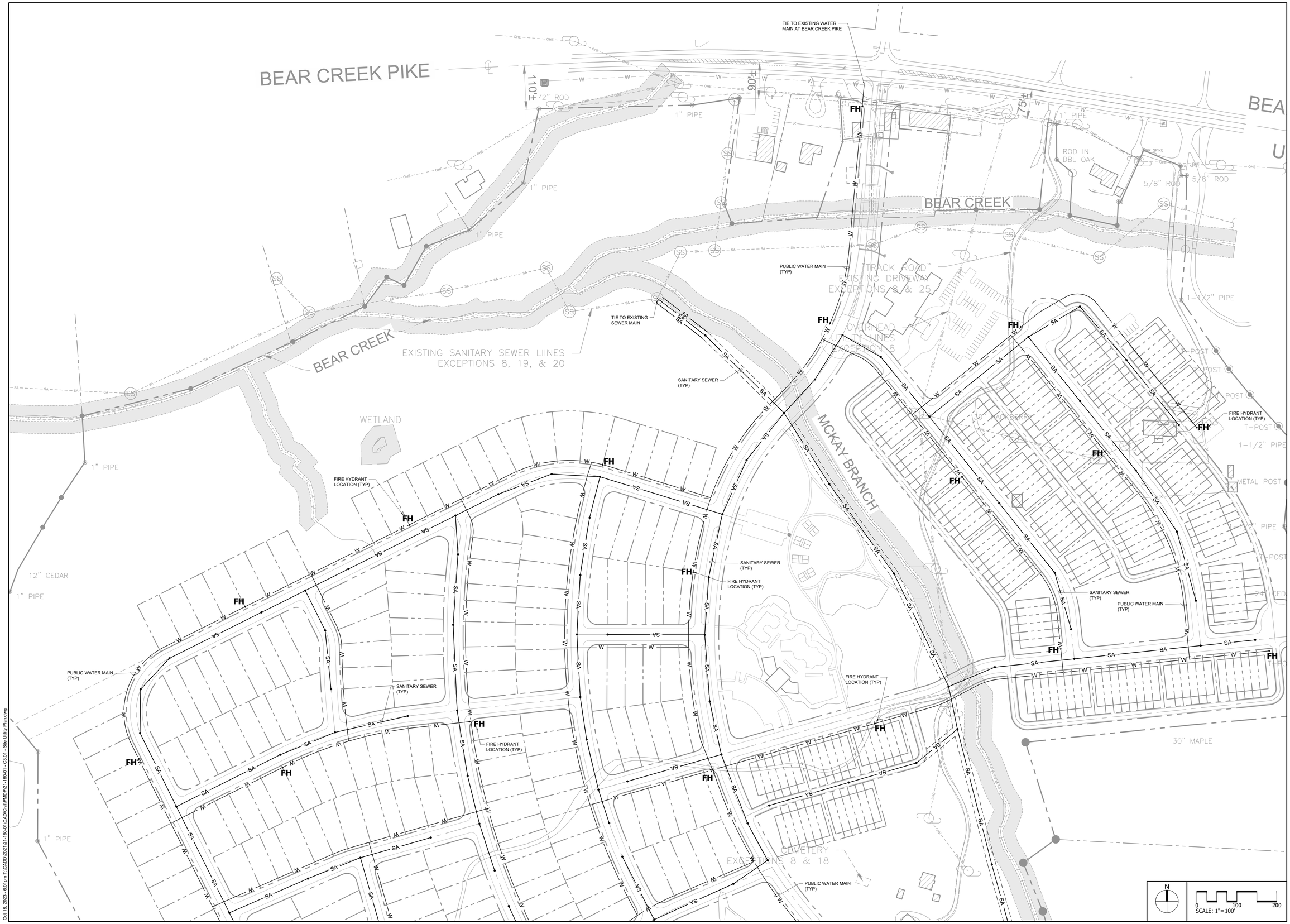
DRAWN BY: TWG
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OVERALL UTILITY PLAN

C3.00

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.00 - Overall Utility Plan.dwg



Oct 18, 2023 - 6:01pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.01 - Site Utility Plan.dwg

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SITE UTILITY PLAN

C3.01
PROJECT NO.: 21-160-01



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SITE UTILITY PLAN

C3.02

PROJECT NO.: 21-160-01

N

0 100 200
SCALE: 1"= 100'

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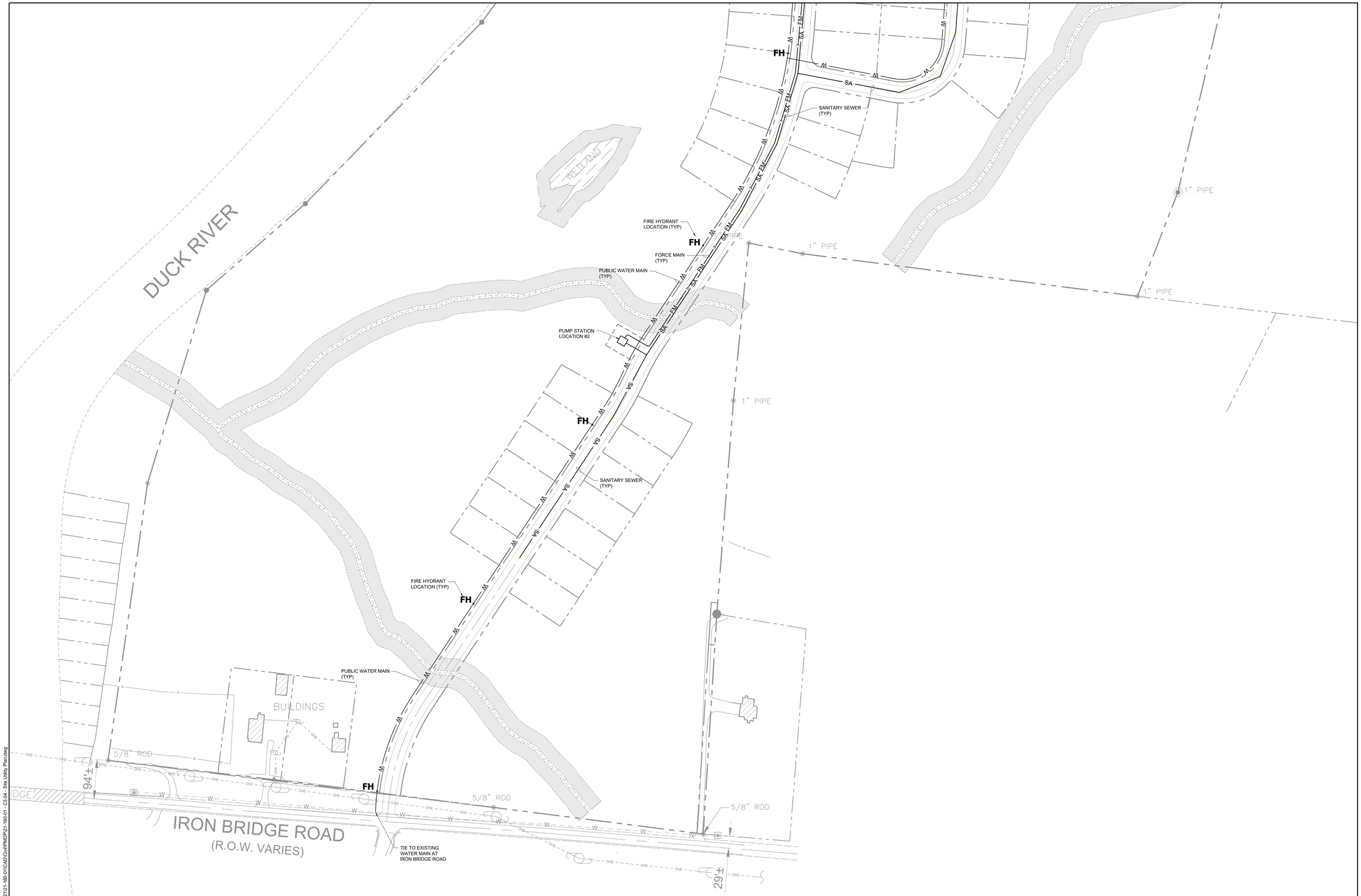
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SITE UTILITY PLAN

C3.03
PROJECT NO.: 21-160-01

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SCALE: 1"= 100'

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SITE UTILITY PLAN

N
0 100 200
SCALE: 1"= 100'

C3.04
PROJECT NO.: 21-160-01

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N

0 300 600
SCALE: 1"= 300'

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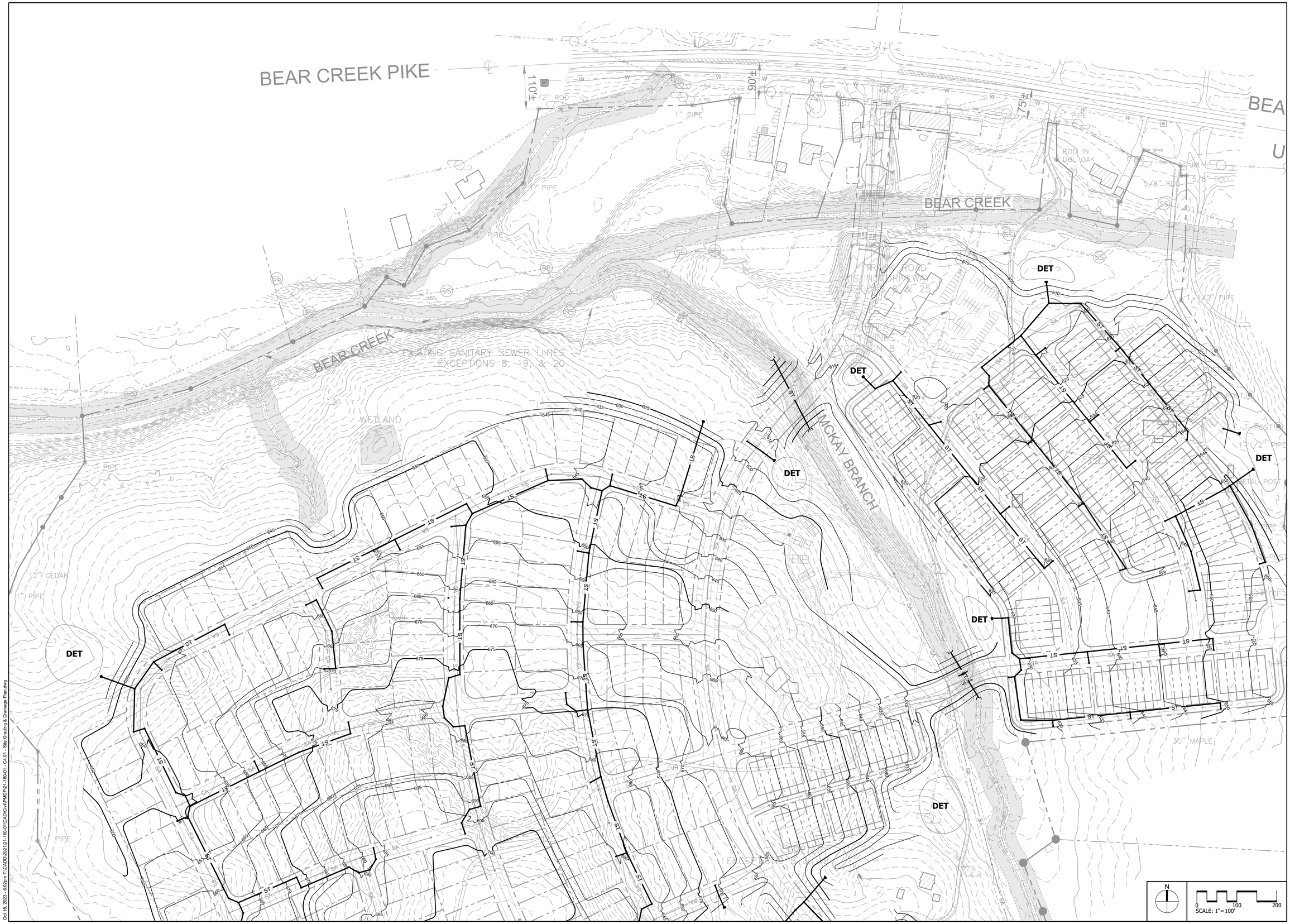
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OVERALL GRADING & DRAINAGE PLAN

C4.00

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:02pm T:\CAD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.00 - Overall Grading & Drainage Plan.dwg



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SITE GRADING & DRAINAGE PLAN

C4.01

PROJECT NO.: 21-160-01



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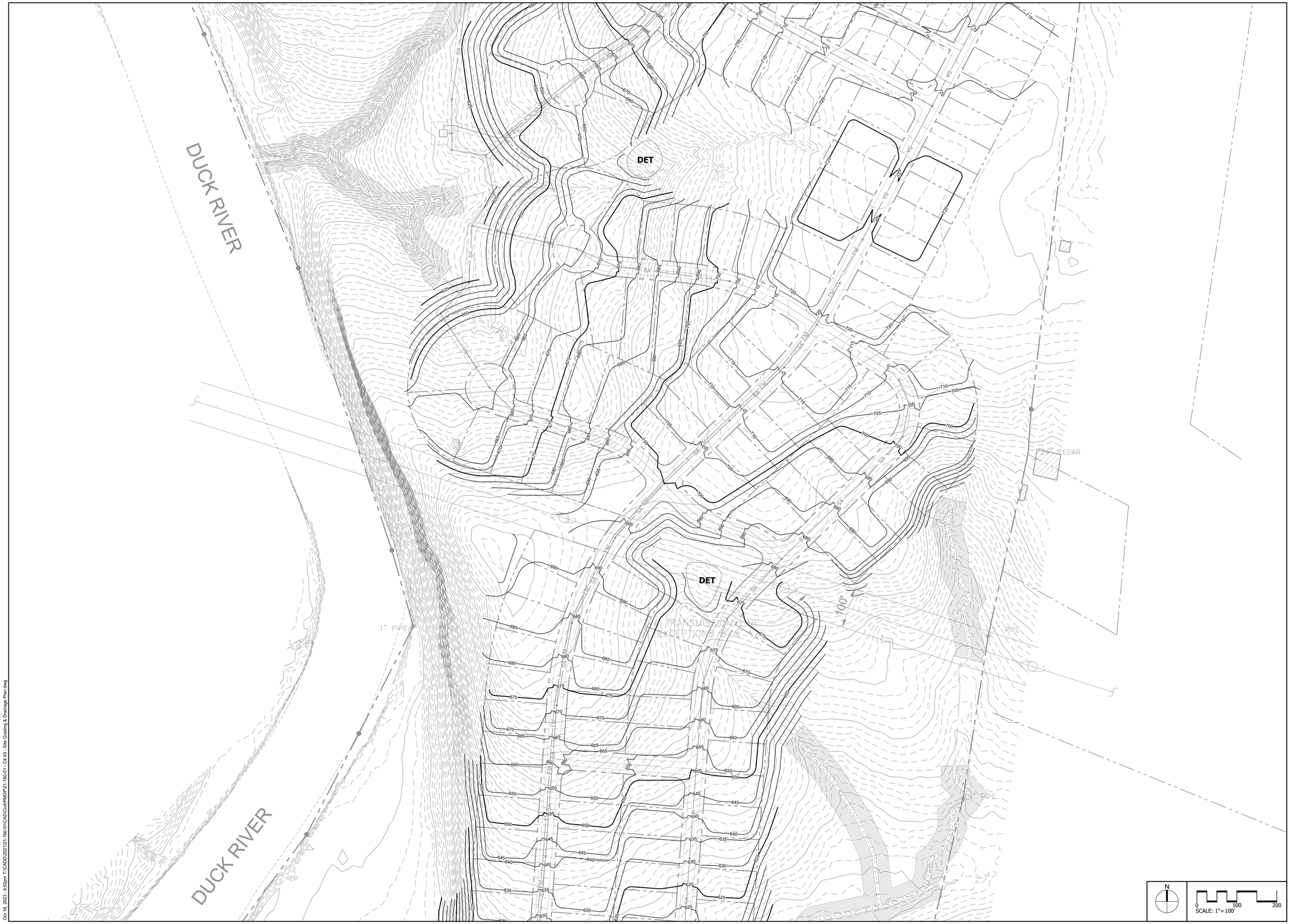
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SITE GRADING & DRAINAGE PLAN

C4.02

PROJECT NO.: 21-160-01

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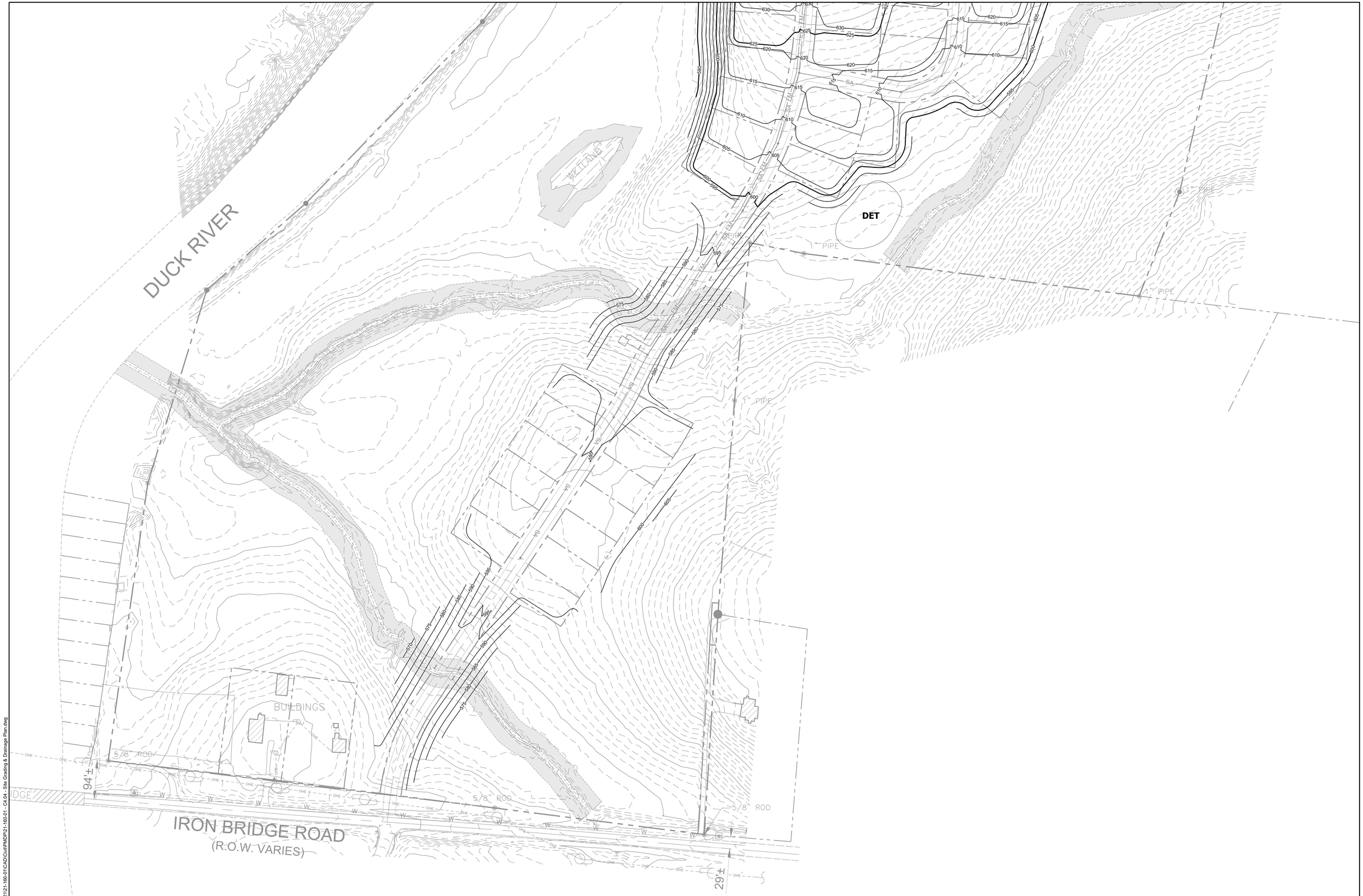
C4.03

PROJECT NO.: 21-160-01

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SCALE: 1"= 100'

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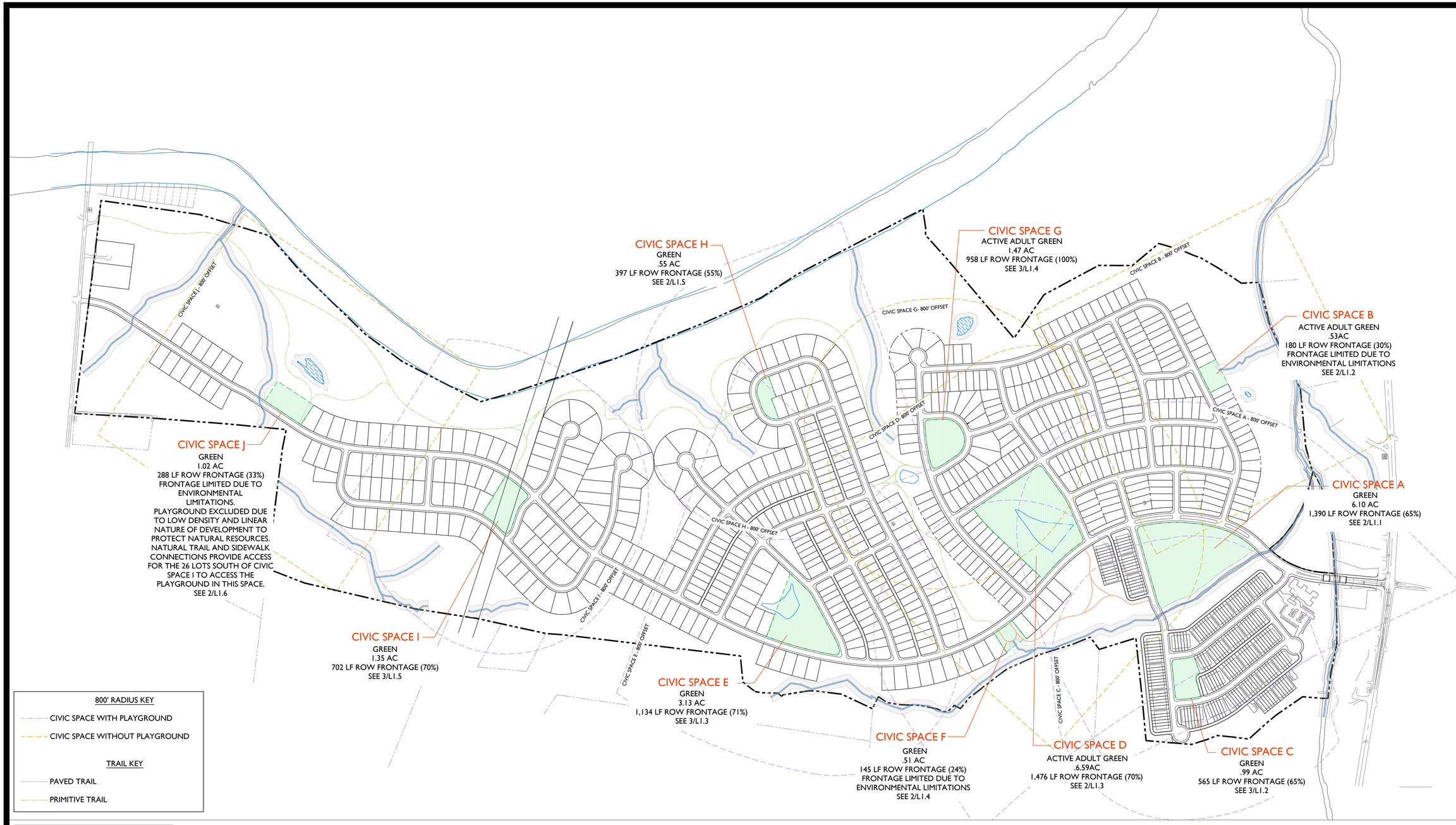
C4.04

PROJECT NO.: 21-160-01

N

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SCALE: 1"= 100'

Oct 18, 2023 - 6:03pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.04 - Site Grading & Drainage Plan.dwg



800' RADIUS KEY

- CIVIC SPACE WITH PLAYGROUND
- CIVIC SPACE WITHOUT PLAYGROUND

TRAIL KEY

- PAVED TRAIL
- PRIMITIVE TRAIL

OVERALL CIVIC SPACE PLAN

N

0 300 600 900

GRAPHIC SCALE 1"=300'-0"

TOTAL OPEN SPACE PROVIDED: 199.8 AC; 48.7% OF GROSS SITE AREA

OPEN SPACE BREAKDOWN

CIVIC SPACE: 22.2 AC

ENVIRONMENTAL PROTECTION (FLOODWAY, STREAM/BUFFERS, 100 YR FLOOD PLAIN): 75.0 AC

ALL OTHER OPEN SPACE: 102.6 AC

CIVIC SPACE REQUIRED: 5% MINIMUM; 20.5 AC

CIVIC SPACE PROVIDED: 5.4%; 22.2 AC (SEE SHEET L1.0)

CIVIC SPACE BREAKDOWN

KEY	SIZE	PLAYGROUND
A	6.10 AC	YES
B	.53 AC	NO
C	.99 AC	YES
D	6.10 AC	NO
E	3.13 AC	YES
F	.51 AC	YES
G	1.47 AC	YES
H	.55 AC	YES
I	1.35 AC	YES
J	1.02 AC	NO

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
TENNESSEE
NO. 1162

Date: October 16, 2023

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OVERALL CIVIC SPACE PLAN

SHEET

L1.0



1 / LI.1 KEY MAP N.T.S

NEIGHBORHOOD CLUBHOUSE





PICKLE BALL COURTS



DOG PARK

WALKING PATHS





SWING BENCH

POOL





PICKLE BALL COURTS



2 / LI.1 CIVIC SPACE - A
CONCEPTUAL PLAN

0' 50' 100'

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

GAMBLE DESIGN COLLABORATIVE
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Date: October 16, 2023

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OVERALL CIVIC SPACE PLAN

SHEET LI.1



1 LI.2 KEY MAP N.T.S



2 LI.2 CIVIC SPACE - B

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



BENCHES



FORMAL LAWN



FORMAL PLANTING



WALKING PATH



3 LI.2 CIVIC SPACE - C

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'

PLAYGROUND





FORMAL PLANTING

PLAYGROUND



GAMBLE DESIGN COLLABORATIVE

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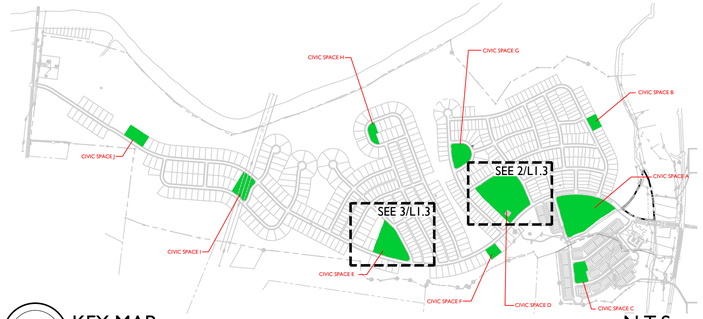
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OVERALL CIVIC SPACE PLAN

SHEET LI.2





1 / L1.3 KEY MAP N.T.S



2 / L1.3 CIVIC SPACE - D
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

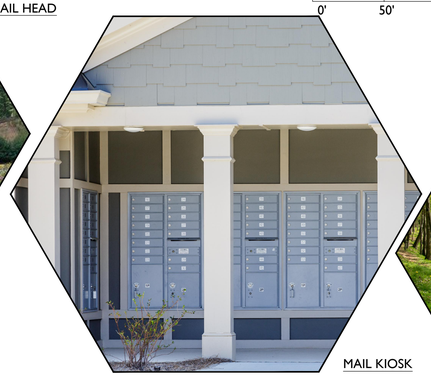
0' 50' 100'



POND



TRAIL HEAD



MAIL KIOSK

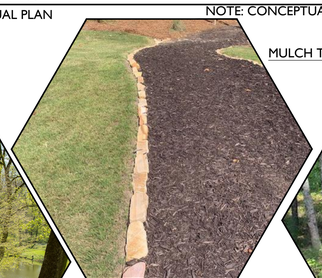
3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

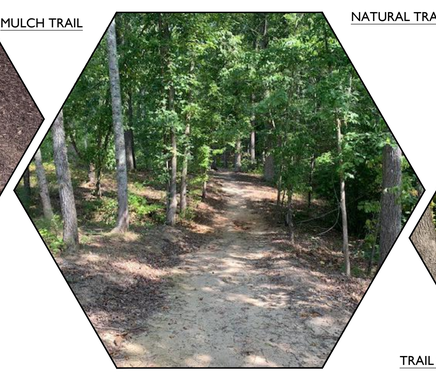
0' 30' 60'



NATURAL POND



MULCH TRAIL



NATURAL TRAIL



TRAIL SIGN

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — No. 1622

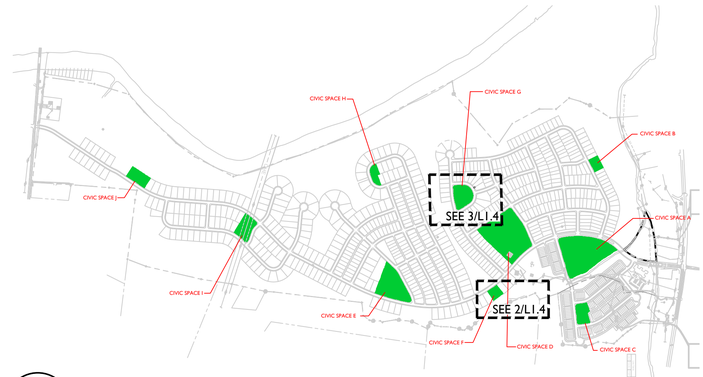
Date: October 16, 2023

Revision Date
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OVERALL CIVIC SPACE PLAN

SHEET L1.3





1 / LI.4 KEY MAP N.T.S



2 / LI.4 CIVIC SPACE - F
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'

SWINGS





FORMAL PARK



PLAYGROUND

3 / LI.4 CIVIC SPACE - G
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'

FORMAL PARK





COMMUNITY GARDEN



DOG PARK

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

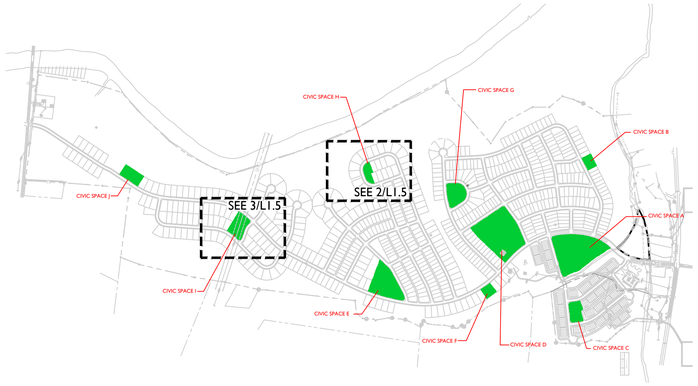
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED LANDSCAPE ARCHITECT
TENNESSEE
10/16/23

Date: October 16, 2023
Revision Date
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OVERALL CIVIC SPACE PLAN

SHEET
LI.4



1 LI.5 KEY MAP N.T.S



2 LI.5 CIVIC SPACE - H

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



PLAYGROUND



PLAYGROUND



3 LI.5 CIVIC SPACE - I

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



SWINGS



MAIL KIOSK



FORMAL PLANTING

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST

400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE REGISTERED LANDSCAPE ARCHITECT TENNESSEE

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OVERALL CIVIC SPACE PLAN

SHEET LI.5



2 / L1.6 CIVIC SPACE - J

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 100' 200'



KAYAK LAUNCH

NOTE: PRIMITIVE WALKING TRAILS AND KAYAK LAUNCH TO BE FIELD LOCATED.



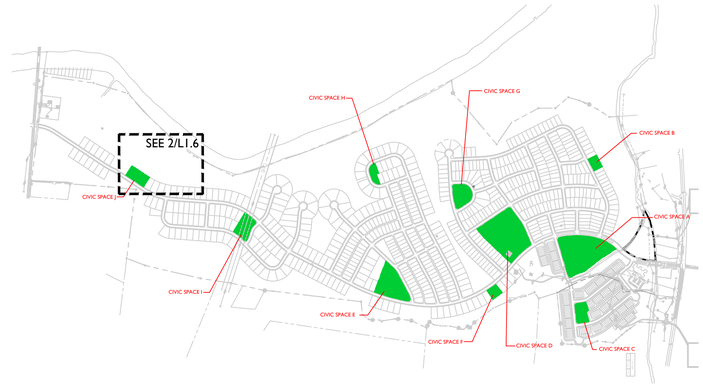
OPEN FIELD



TRAIL HEAD



MULTI-PURPOSE FIELD



1 / L1.6 KEY MAP N.T.S

GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision	Date
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OVERALL CIVIC SPACE PLAN

SHEET L1.6