CITY OF COLUMBIA
TENNESSEE

AGENDA

The Columbia Planning Commission Development Review Committee will meet on Tuesday, January 9, 2024 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. 23-0536 - Request from Crunk Engineering, LLC for Final Plat approval with surety for The Landing at Greens Mill Road Phase 1 consisting of 100 lots off Greens Mill Road.

   Documents:

   1. 23-0536_Final Plat_1218
   2. 23-0536_Development Agreement
   3. 23-0536_Application

3. 23-0532 - Request from Allen O'Leary for Preliminary and Final Plat approval of three lots at 1485 Bear Creek Pike and Lasea Road.

Documents:

1. 23-0532_Final Plat_1218
2. 23-0532_Submittal Letter
3. 23-0532_Application

4. 23-0531 - Request from Allen O'Leary for Final Plat approval with surety for Rutherford Subdivision Phase 1 consisting of 31 lots off Hays Drive.

Documents:

1. 23-0531_Final Plat_1218
2. 23-0531_Development Agreement
3. 23-0531_Submittal Letter
4. 23-0531_Application

5. 23-0544 - Request from Colton Davis for Preliminary and Final Plat approval for properties at Tax Map 51 Parcels, 19, 20, and 20.01 at Nashville Highway and Greens Mill Road.

Documents:

1. 23-0544_Development Agreement
2. 23-0544_Application

6. 23-0542 - Request from Allen O'Leary for Final Plat approval with surety for The Preserve at Drumwright Phase 1 consisting of 68 lots off Williams Ridge Drive.

Documents:

1. 23-0542_Final Plat_1218
2. 23-0542_Submittal Letter

II. Items for Additional Review

1. 23-0414 - 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.

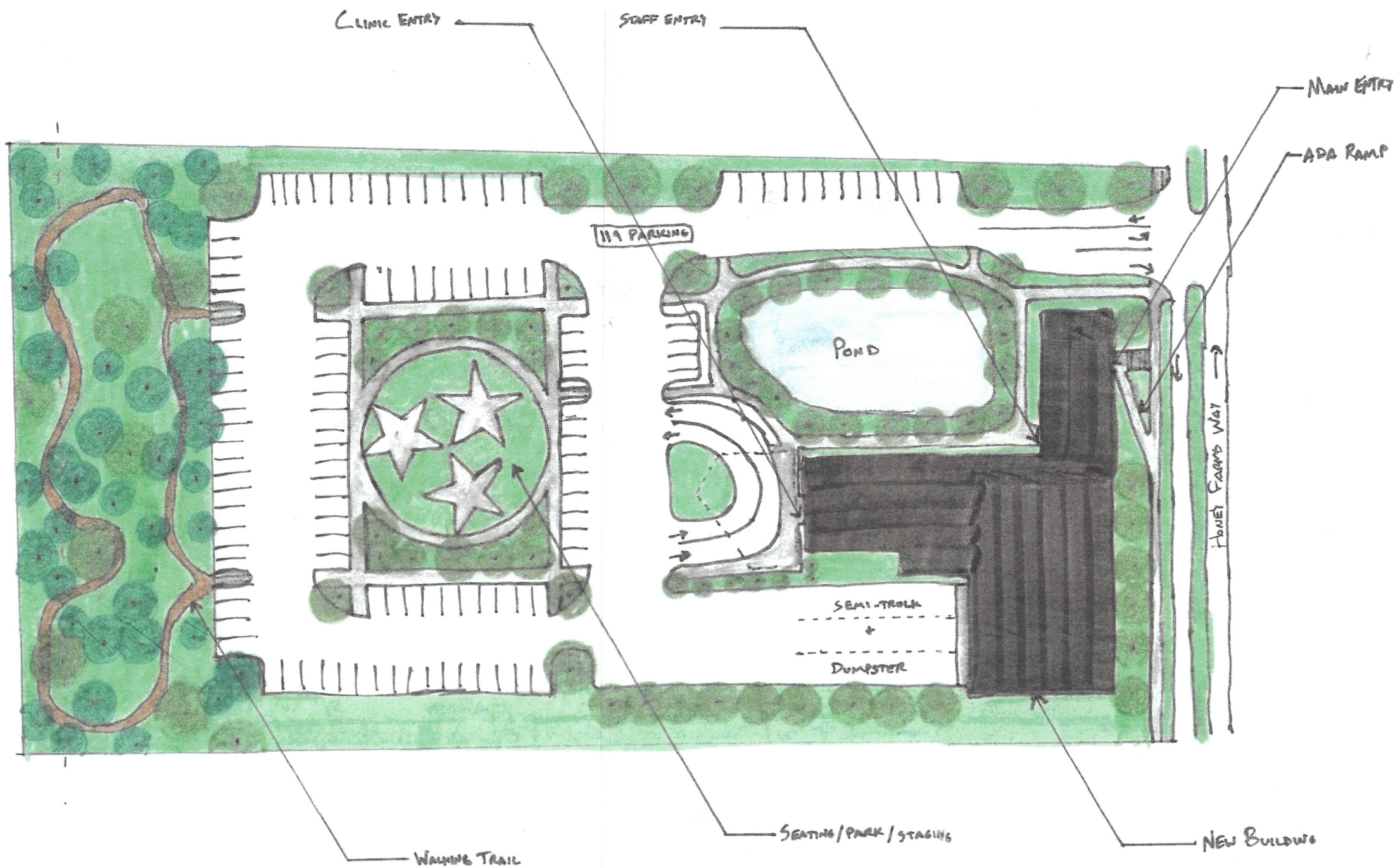
Documents:

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

2. 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



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	

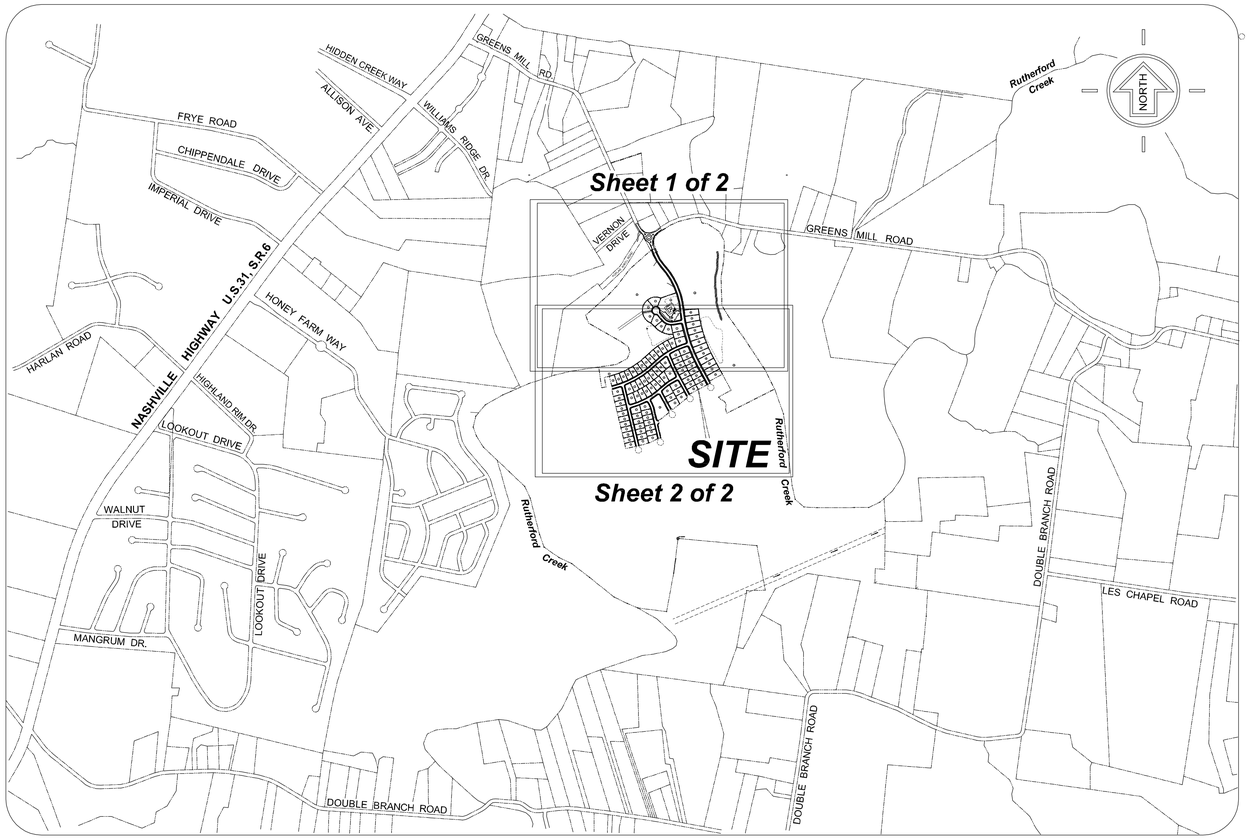
DATE NOTICES SENT TO ADJACENT PROPERTY OWNERS	
DATE OF PUBLIC NOTICES IN DAILY HERALD	

BOARD ACTION	

TOTAL AREA: 4,366,767 SQUARE FEET OR 100.247 ACRES ±

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAT IS TO CREATE 100 BUILDABLE LOTS, 4 OPEN SPACE LOTS, DEDICATION OF RIGHT OF WAY AND EASEMENTS.
2. PROPERTY SHOWN HEREON IS PART OF PARCEL (55.00) ON MAURY COUNTY PROPERTY MAP 51.
3. BEARINGS SHOWN HEREON ARE BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM, ZONE 5301, FIPZONE 4100, NAD 83 DATUM.
4. BEING PART OF THE SAME PROPERTY CONVEYED TO 2558 GREENS MILL, LLC AS OF RECORD IN BOOK R2799, PAGE 298 REGISTERS' OFFICE, MAURY COUNTY, TENNESSEE.
5. ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY MAP, A PORTION OF THIS PROPERTY IS LOCATED WITHIN AN AREA OF FLOOD INUNDATION AS SHOWN ON FEMA MAP NUMBER: 47119C0180E, DATED: 4/16/2007.
6. THIS PROPERTY IS CURRENTLY ZONED: RS 10.
7. WATER AND SANITARY SEWER SERVICES TO BE PROVIDED BY COLUMBIA PUBLIC UTILITIES.
8. THERE IS A 20' PUBLIC UTILITY & DRAINAGE EASEMENT ALONG THE REAR PROPERTY LINE AND ALONG ALL STREET R.O.W. UNLESS SHOWN OTHERWISE.
9. XXX INDICATES STREET ADDRESS.
10. ALL UTILITIES ARE TO BE UNDERGROUND.
11. NO MOBILE HOMES SHALL BE PERMITTED.
12. NO DRIVEWAY TO BE CONSTRUCTED OVER SANITARY SEWER SERVICE LINE.
13. FOR MINIMUM YARD LINES SEE THE TYPICAL LOT DETAILS.
14. ALL NOTES AND CERTIFICATES APPLY TO ALL SHEETS.
15. SIDEWALKS ARE 5' WIDE, UNLESS OTHERWISE NOTED.
16. EXISTING USE: VACANT, PROPOSED USE : ONE-FAMILY, DETACHED DWELLINGS
17. ALL OPEN SPACE TRACTS SHALL BE OWNED AND MAINTAINED BY THE LANDING AT GREENS MILL ROAD HOMEOWNERS ASSOCIATION.
18. ROADS, UTILITIES, AND OTHER FACILITIES HAVE BEEN FILED AS REQUIRED BY THE MAURY COUNTY SUBDIVISION REGULATIONS.
19. THIS SUBDIVISION IS SUBJECT TO THE TERMS AND CONDITIONS OF THE RECORDED STORMWATER INSPECTION AND MAINTENANCE AGREEMENT FOR THESE FACILITIES AS RECORDED IN BOOK _____ PAGE _____, R.O.M.C., TN.
20. SEE DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR THE LANDING AT GREENS MILL ROAD, AS RECORDED IN BOOK _____, PAGE _____, REGISTERS' OFFICE FOR MAURY COUNTY, TENNESSEE.
21. A STREAM BUFFER AS SHOWN ON THIS PLAN IS TO BE A PERMANENT WATER QUALITY BUFFER IN ACCORDANCE WITH ARTICLE 6 SECTION 9 OF THE CITY OF COLUMBIA STORMWATER ORDINANCE. THIS STREAM BUFFER IS TO REMAIN IN A NATURAL VEGETATED STATE FREE OF OBSTRUCTIONS, STRUCTURES, AND INTRUSIONS. BUFFER IS TO BE A NO MOW BUFFER AREA, AND THE MAINTENANCE WITHIN STREAM BUFFERS TO BE LIMITED TO HAND OPERATED TOOLS AND BE PERFORMED IN ACCORDANCE WITH CURRENT CITY OF COLUMBIA STORMWATER ORDINANCE AND OR AT THE DIRECTION OF THE CITY OF COLUMBIA ENGINEERING DIVISION.
22. NO OBSTRUCTIONS OR ENCROACHMENTS WHICH IMPEDE THE FLOW OF STORMWATER SHALL BE PERMITTED WITHIN PUBLIC DRAINAGE EASEMENTS. THE CITY OF COLUMBIA IS NOT RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY ENCROACHMENTS THAT ARE DAMAGED OR REMOVED IN THE COURSE OF MAINTENANCE ACTIVITY WITHIN EASEMENTS AS REFERENCED IN THE COLUMBIA GENERAL MANAGEMENT CODE, CHAPTER 15, ARTICLE 1, SECTION 15-8.



LOCATION & KEY MAP
Scale 1" = 1000'

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 PUBLIC SEWER SYSTEM

I hereby certify that the sewer system(s) outlined or indicated on the final subdivision plat entitled The Landing at Greens Mills Road - Phase 1 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) _____ Name, Title, and Agency or Authorized Approving Agent

CERTIFICATE OF APPROVAL OF PUBLIC WAYS OR BOND POSTING

I hereby certify: (1) that all designated public ways on this final subdivision plat have been installed in an acceptable manner and according to the specifications of the Maury County Subdivision Regulations, or (2) that a performance bond or other surety has been posted with the Planning Commission to guarantee completion of all required improvements in case of default.

_____ (Date) _____ Appropriate Governmental Representative

CERTIFICATE OF APPROVAL OF PUBLIC SEWER SYSTEM

I hereby certify that the sewer system(s) outlined or indicated on the final subdivision plat entitled The Landing at Greens Mill 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) _____ Name, Title, and Agency or Authorized Approving Agent

CERTIFICATE FOR APPROVAL FOR RECORDING

I hereby certify that the subdivision plat shown hereon has been found to comply with the Maury County 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 Maury County Regional Planning Commission

CERTIFICATE OF COMMON AREAS DEDICATION

2558 Greens Mill, LLC, in recording this plat has designated certain areas of land shown hereon as common areas intended for use by the homeowners within The Landing At Green Mills Road - Phase 1, for recreation and related activities. The above-described areas are not dedicated for use by the general public, but are dedicated to the common use of the homeowners within the named subdivision.

"Declaration of Covenants and Restrictions", applicable to the above named subdivision, is hereby incorporated and made part of this plat.

_____, ____ _____ Date Owner

CERTIFICATE OF SURVEY ACCURACY

I hereby certify that to the best of my knowledge, information and belief the survey shown hereon was made in accordance with the requisite ration of precision of 1:10,000 and is true and correct as drawn. All monuments have been placed as indicated. All side lines are shown in relation to the street unless otherwise noted.

12-15-2023 (Date) M. Trevor Rainey, RLS # 2875

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (we) hereby certify that I am (we are) the owners of the property shown and described hereon as evidenced in Book R2799, Page 298, Maury County Register's Office and I (we) 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, public easements, utilities, and other facilities have been filed.

_____ (Date) _____ (Owner)

_____ Title (If Acting for Partnership or Corporation)

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled The Landing at Greens Mill Road - Phase 1 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) _____ Name, Title, and Agency or Authorized Approving Agent

OWNER:
2558 Greens Mill, LLC
308 Letterman Road
Knoxville, TN 37919

DEVELOPER:
Safe Harbor Residential
105 Westpark Drive, Suite 365
Brentwood, TN 37027

SITE DATA:
Property Location / Address:
2558 Greens Mill Road
Columbia, TN 38401

ZONING: RS10

Dwg.Name: Landing-At-Greens-Mill-Ph1-COVER.dwg

Prepared By:
JTA LAND SURVEYING, INC.
2403 Elm Hill Pike, Suite K - Nashville, TN. 37214
Phone: 615 490 6920

FINAL PLAT
THE LANDING AT GREEN MILLS ROAD PHASE 1

2558 GREENS MILL ROAD
Property Map # 51 - P/O Parcel (55.00)
CITY OF COLUMBIA,
MAURY COUNTY, TENNESSEE

Scale : 1" = 1000'

DATE: DEC. 15, 2023
JOB NUMBER: 2023-507 ***SHEET 1 OF 3***

NORTH

(NAD83)

1" = 100'

0' 50' 100' 200'

GRAPHIC SCALE

CURVE TABLE						
CURVE	DELTA	RADIUS	TANGENT	LENGTH	CHD BEARING	CHORD
C1	23°23'46"	113.00'	23.40'	46.14'	S14°42'24"E	45.82'
C2	15°26'03"	113.00'	15.48'	30.77'	S05°43'25"W	30.67'
C3	81°29'22"	76.00'	65.47'	108.09'	N27°40'32"W	99.21'
C4	15°08'32"	113.00'	15.02'	29.86'	S60°51'26"E	29.78'
C5	20°31'03"	113.00'	20.45'	40.47'	S42°05'44"E	40.25'
C6	79°28'18"	19.00'	15.79'	26.35'	N11°14'31"E	24.29'
C7	96°53'54"	19.00'	21.44'	32.13'	S80°34'23"E	28.44'
C8	79°28'18"	19.00'	15.79'	26.35'	N11°14'31"E	24.29'
C9	24°03'37"	100.00'	21.31'	41.99'	N63°00'28"E	41.69'
C10	4°43'34"	19.00'	0.78'	1.57'	N77°24'03"E	1.57'
C11	89°57'56"	17.00'	16.99'	26.69'	S31°31'59"W	24.03'
C12	0°30'51"	1325.00'	5.94'	11.89'	N76°20'14"E	11.89'
C13	3°36'45"	1138.00'	35.89'	71.75'	N77°53'11"E	71.74'
C14	1°34'34"	1275.00'	17.54'	35.07'	N80°28'51"E	35.07'
C15	23°39'02"	115.00'	24.08'	47.47'	S08°21'52"E	47.13'
C16	15°29'22"	115.00'	15.64'	31.09'	S12°07'46"W	30.99'
C17	4°47'41"	77.00'	3.22'	6.44'	N16°50'16"E	6.44'
C18	15°23'18"	115.00'	15.54'	30.89'	S21°56'26"W	30.79'
C19	23°56'55"	115.00'	24.39'	48.07'	S42°31'42"W	47.72'
C20	23°20'35"	1955.00'	403.85'	796.49'	S16°49'20"E	790.99'
C21	8°04'28"	2015.00'	142.22'	283.96'	S24°17'24"E	283.73'
C22	88°45'38"	19.00'	18.59'	29.43'	N64°47'58"W	26.58'
C23	11°05'26"	975.00'	94.66'	188.73'	S65°16'29"W	188.43'
C24	80°28'12"	19.00'	16.08'	26.68'	S19°29'40"W	24.55'
C25	7°45'11"	2290.00'	155.18'	309.88'	S24°37'02"E	309.64'
C26	90°00'00"	19.00'	19.00'	29.85'	N73°29'38"W	26.87'
C27	16°44'03"	375.00'	55.16'	109.53'	S53°08'20"W	109.14'
C28	2°24'40"	1025.00'	21.57'	43.13'	N45°58'39"E	43.13'
C29	75°40'37"	19.00'	14.76'	25.10'	S09°20'40"W	23.31'
C30	3°37'48"	19.00'	0.60'	1.20'	S30°18'32"E	1.20'
C31	99°23'13"	19.00'	22.40'	32.96'	N78°11'14"W	28.98'
C32	5°58'17"	1025.00'	53.46'	106.83'	N55°06'18"E	106.78'
C33	88°42'23"	19.00'	18.58'	29.42'	S13°44'15"W	26.57'
C34	17°09'58"	225.00'	33.96'	67.41'	N22°01'58"W	67.16'
C35	86°47'11"	19.00'	17.96'	28.78'	S56°50'34"E	26.11'
C36	17°09'58"	175.00'	26.41'	52.43'	N22°01'58"W	52.23'
C37	86°27'42"	19.00	17.86'	28.67'	N73°50'48"W	26.03'
C38	12°11'17"	1025.00'	109.43'	218.04'	N69°01'00"E	217.63'
C39	88°33'37"	19.00'	18.53'	29.37'	S30°49'50"W	26.53'
C40	95°09'53"	19.00'	20.79'	31.56'	N61°01'55"W	28.05'
C41	4°41'40"	1325.00'	54.31'	108.56'	N73°43'58"E	108.53'
C42	30°59'37"	1275.00'	353.51'	689.70'	N60°35'00"E	681.32'
C43	25°44'01"	1025.00'	234.13'	460.36'	S57°57'12"W	456.50'
C44	88°45'38"	19.00'	18.59'	29.43'	N26°26'23"E	26.58'
C45	6°52'03"	2015.00'	120.90'	241.52'	S14°30'24"E	241.38'
C46	88°45'38"	19.00'	18.59'	29.43'	N55°27'11"W	26.58'
C47	60°22'34"	175.00'	101.80'	184.41'	S69°38'43"E	175.99'
C48	56°09'15"	19.00'	10.14'	18.62'	N67°32'03"W	17.89'
C49	292°18'29"	60.00'	60.24'	306.10'	S50°32'34"W	66.84'
C50	56°09'15"	19.00'	10.14'	18.62'	S11°22'49"E	17.89'
C51	60°22'34"	125.00'	72.72'	131.72'	S69°38'43"E	125.71'
C52	88°45'38"	19.00'	18.59'	29.43'	N35°47'11"E	26.58'
C53	3°26'35"	2015.00'	60.56'	121.08'	S06°52'20"E	121.07'
C54	104°27'39"	19.00'	24.52'	34.64'	N73°26'02"W	30.04'
C55	6°46'31"	2340.00'	138.52'	276.71'	S24°35'28"E	276.55'
C56	89°29'06"	19.00'	18.83'	29.67'	N16°45'49"E	26.75'
C57	16°44'03"	425.00'	62.51'	124.13'	S53°08'20"W	123.69'
C58	30°12'23"	975.00'	263.13'	514.02'	N59°52'30"E	508.09'
C59	91°34'20"	19.00'	19.53'	30.37'	S59°14'09"E	27.24'
C60	81°03'16"	19.00'	16.24'	26.88'	S27°04'36"W	24.69'
C61	22°31'06"	1325.00'	263.78'	520.75'	N56°20'44"E	517.41'
C62	9°14'57"	975.00'	78.87'	157.39'	S49°42'40"W	157.22'
C63	23°14'34"	1755.00'	360.93'	711.94'	S16°52'21"E	707.07'
C64	1°57'45"	2153.00'	36.87'	73.74'	S27°30'45"E	73.74'
C65	2°04'24"	2153.00'	38.96'	77.91'	S25°29'41"E	77.91'
C66	2°04'24"	2153.00'	38.96'	77.91'	S23°25'17"E	77.91'
C67	2°28'44"	2153.00'	46.58'	93.14'	S21°08'43"E	93.14'
C68	2°26'04"	2153.00'	45.75'	91.48'	S21°07'23"E	91.47'
C69	2°00'14"	2153.00'	37.66'	75.30'	S23°20'32"E	75.30'
C70	2°00'14"	2153.00'	37.66'	75.30'	S25°20'46"E	75.30'
C71	2°00'14"	2153.00'	37.66'	75.30'	S27°21'01"E	75.30'
C72	4°21'32"	1462.00'	55.64'	111.23'	N66°54'15"E	111.20'
C73	3°05'55"	1462.00'	39.54'	79.07'	N63°10'32"E	79.06'
C74	3°05'55"	1462.00'	39.54'	79.07'	N60°04'37"E	79.06'
C75	3°05'55"	1462.00'	39.54'	79.07'	N56°58'42"E	79.06'
C76	3°05'55"	1462.00'	39.54'	79.07'	N53°52'47"E	79.06'
C77	3°05'55"	1462.00'	39.54'	79.07'	N50°46'52"E	79.06'
C78	3°05'55"	1462.00'	39.54'	79.07'	N47°40'57"E	79.06'
C79	1°02'48"	1462.00'	13.35'	26.71'	N45°36'35"E	26.71'
C80	3°06'59"	838.00'	22.79'	45.58'	S46°38'41"W	45.57'
C81	5°35'50"	838.00'	40.96'	81.86'	S51°00'05"W	81.83'
C82	8°25'06"	838.00'	61.67'	123.13'	S49°35'27"W	123.02'
C83	0°17'42"	838.00'	2.16'	4.32'	S45°14'02"W	4.32'
C84	1°02'48"	1462.00'	13.35'	26.71'	N45°36'35"E	26.71'
C85	2°27'58"	1462.00'	31.47'	62.93'	N47°21'59"E	62.92'
C86	3°20'16"	1462.00'	42.60'	85.17'	N50°16'06"E	85.16'
C87	2°46'48"	1462.00'	35.48'	70.95'	N53°19'38"E	70.94'
C88	2°45'24"	1462.00'	35.18'	70.34'	N56°05'45"E	70.33'
C89	2°44'43"	1462.00'	35.03'	70.05'	N58°50'48"E	70.05'
C90	2°44'48"	1462.00'	35.05'	70.08'	N61°35'34"E	70.08'
C91	2°45'37"	1462.00'	35.22'	70.44'	N64°20'46"E	70.43'
C92	3°21'26"	1462.00'	42.85'	85.67'	N67°24'18"E	85.65'
C93	30°59'37"	1138.00'	315.53'	615.59'	N60°35'00"E	608.11'
C94	22°08'22"	1162.00'	227.34'	449.01'	S56°09'23"W	446.22'
C95	2°55'14"	2165.00'	55.19'	110.35'	S11°51'31"E	110.34'
C96	2°22'12"	2165.00'	44.78'	89.56'	S14°30'14"E	89.55'
C97	2°54'34"	2165.00'	54.98'	109.94'	S17°08'37"E	109.92'
C98	3°38'56"	2165.00'	68.96'	137.88'	S16°46'26"E	137.86'
C99	1°03'01"	2165.00'	19.84'	39.69'	S14°25'27"E	39.68'
C100	53°55'09"	305.00'	155.13'	287.03'	S67°11'18"E	276.55'
C101	180°00'00"	190.00'	INFINITE	596.90'	S21°59'11"W	380.00'

AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1001	17,017	0.39
1002	17,017	0.39
1003	17,017	0.39
1004	14,912	0.34
1005	13,469	0.31
1006	14,496	0.33
1007	15,290	0.35
1008	12,968	0.30
1009	15,357	0.35
1010	11,104	0.25
1011	10,417	0.24
1012	10,417	0.24
1013	10,417	0.24
1014	10,417	0.24
1015	10,066	0.23
1016	10,422	0.24
1017	10,422	0.24
1018	10,422	0.24
1019	10,422	0.24
1020	10,422	0.24
1021	10,422	0.24
1022	10,422	0.24
1023	10,415	0.24
1026	17,079	0.39
1027	17,079	0.39
1028	17,079	0.39
1029	17,079	0.39
1030	17,079	0.39
1031	17,079	0.39
1032	17,079	0.39
1033	17,252	0.40
1034	17,000	0.39
1035	17,000	0.39
1036	17,000	0.39
1040	12,511	0.29
1041	10,407	0.24
1042	10,407	0.24
1043	10,397	0.24
1044	10,212	0.23
1045	10,212	0.23
1046	10,212	0.23
1047	10,212	0.23
1051	11,912	0.27
1052	10,645	0.24
1053	10,645	0.24
1054	10,645	0.24
1055	10,428	0.24
1056	10,412	0.24
1057	10,412	0.24
1058	10,412	0.24
1063	14,209	0.33
1064	10,242	0.24

AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1065	10,325	0.24
1066	10,325	0.24
1067	10,325	0.24
1068	10,325	0.24
1069	10,325	0.24
1070	10,325	0.24
1071	13,240	0.30
1072	13,199	0.30
1073	11,412	0.26
1074	11,614	0.27
1075	11,632	0.27
1076	11,468	0.26
1077	11,118	0.26
1078	10,741	0.25
1079	11,609	0.27
1080	19,233	0.44
1081	13,477	0.31
1082	11,692	0.27
1083	14,621	0.34
1084	15,013	0.34
1085	11,805	0.27
1086	14,553	0.33
1104	11,400	0.26
1105	10,001	0.23
1106	10,001	0.23
1107	10,001	0.23
1108	10,001	0.23
1109	10,001	0.23
1110	12,377	0.28
1111	12,950	0.30
1112	10,138	0.23
1113	10,138	0.23
1114	10,138	0.23
1115	10,138	0.23
1116	10,138	0.23
1117	10,530	0.24
1121	10,575	0.24
1122	10,575	0.24
1123	10,575	0.24
1124	10,575	0.24
1125	10,575	0.24
1126	10,575	0.24
1127	10,575	0.24
1128	10,575	0.24
1129	10,575	0.24
1130	10,575	0.24
1131	14,369	0.33
3291	17,079	0.39
OS1	981,474	22.53
OS2	93,107	2.14
OS3	1,651,664	37.92
OS5	49,797	1.14

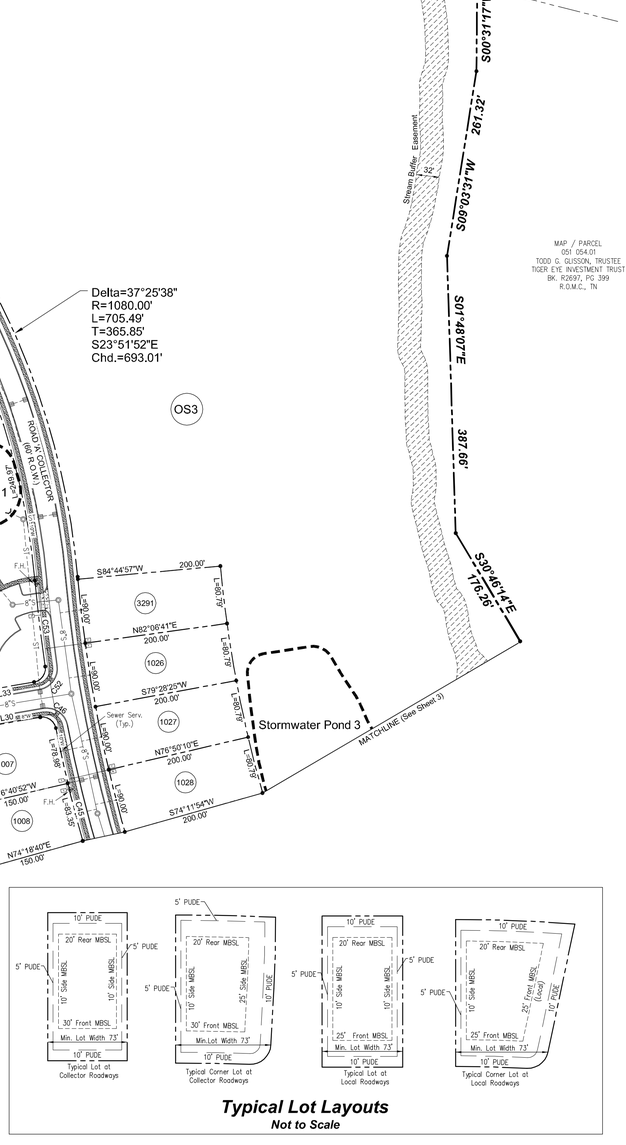
LINE TABLE		
LINE	BEARING	LENGTH
L1	S26°52'09"E	5.50'
L2	S26°50'43"E	8.99'
L3	S02°32'34"E	1.84'
L4	S13°36'46"W	2.06'
L5	S68°52'34"E	2.98'
L6	S52°49'13"E	1.84'
L7	N28°29'38"W	28.04'
L8	N28°29'38"W	1.33'
L9	S28°29'38"E	12.06'
L10	N61°30'22"E	50.04'
L11	S28°29'38"E	15.15'
L12	S77°24'39"W	110.55'
L13	S10°18'26"E	137.00'
L14	S81°16'08"W	26.85'
L15	S16°34'13"E	80.88'
L16	N69°20'56"E	60.00'
L17	N20°39'04"W	26.09'
L18	N20°38'34"W	25.14'
L19	N03°55'22"E	1.85'
L20	N19°53'25"E	2.30'
L21	N13°50'52"E	3.22'
L22	N55°17'21"E	36.94'
L23	N39°03'31"E	17.26'
L24	N20°39'04"W	75.86'
L25	N70°49'12"E	52.74'
L26	N61°30'22"E	91.17'
L27	N30°36'57"W	29.79'
L28	N30°36'57"W	31.51'
L29	S70°49'12"W	52.74'
L30	S80°10'00"W	95.81'
L31	N39°27'26"W	95.39'
L32	S39°27'26"E	95.39'

LINE TABLE		
LINE	BEARING	LENGTH
L33	N80°10'00"E	95.81'
L34	N20°39'04"W	75.86'
L35	N28°29'38"W	74.00'
L36	N28°29'38"W	74.00'
L37	N28°29'38"W	74.00'
L38	N28°29'38"W	74.00'
L39	N28°29'38"W	3.96'
L40	S28°29'38"E	70.63'
L41	S28°29'38"E	76.00'
L42	S28°29'38"E	76.00'
L43	S28°29'38"E	76.00'
L44	N28°29'38"W	119.82'
L45	N28°29'38"W	85.34'
L46	N28°29'38"W	98.04'
L47	N28°29'38"W	122.67'
L48	S28°29'38"E	86.17'
L49	S28°29'38"E	94.35'
L50	S13°26'59"E	96.11'
L51	S13°26'59"E	1.85'
L52	S13°26'59"E	2.30'
L53	S13°26'59"E	73.00'
L54	S13°26'59"E	73.00'
L55	S13°26'59"E	73.00'
L56	S13°26'59"E	84.58'
L57	S13°26'59"E	101.70'
L58	S13°26'59"E	74.00'
L59	S13°26'59"E	74.00'
L60	S13°26'59"E	74.00'
L61	S13°26'59"E	74.00'
L62	S13°26'59"E	74.00'
L63	S13°26'59"E	74.00'

LEGEND:

IP(0)○	Existing Iron Pipe – IP(0)
IR(0)○	Existing Iron Rod – IR(0)
IR(N)●	Iron Rod (New) – IR(N)
	Sanitary Manhole
	Fire Hydrant (F.H.)
	Catch Basin
	Storm Manhole
	Concrete Headwall
PUDE	Public Utility & Drainage Easement
MBSL	Minimum Building Setback Line
R.O.M.C.	Registers' Office Maury County

Prepared By:
JTA
LAND SURVEYING, INC.
2163 Elm Hill Pike, Suite K · Nashville, TN. 37214
Phone: 615-400-0920


KENNETH & ELIZABETH ADKINS
051-035.03
BK. R2144 PG. 523
PLAT BK. 6 PG 598A
TRACT 4
R.O.M.C., TN.
JAMES & NANCY HENSLEY
051C-A-001.00
BK. R2025 PG. 1294
PLAT BK. 7 PG. 12
R.O.M.C., TN.
GENE ISOM
051C-A-003.00
BK. R2387 PG. 1257
PLAT BK. 7 PG. 12
R.O.M.C., TN.
JOHN & MAGDALENA ROHDY
051C-A-004.00
BK. R2090 PG. 173
PLAT BK. 7 PG. 12
R.O.M.C., TN.
CLYDE & SHERYL HOWELL
051C-A-002.00
BK. R2147 PG. 670
PLAT BK. 7 PG. 12
R.O.M.C., TN.
LENNAR HOMES OF TN
051-034.00
BK. R2871 PG. 1405
R.O.M.C., TN.
CINDY CONAWAY
051-034.03
BK. R2799 PG. 627
R.O.M.C., TN.
MAP / PARCEL
051 036.00
MARSHALL KENNETH P ETUX
BK. R1884, PG 1441
R.O.M.C., TN
MAP / PARCEL
051 037.01
TAGART ROBERT W ETUX
PLAT BK. 10, PG 46, LOT2
BK. R1748, PG 581
R.O.M.C., TN
MAP / PARCEL
051 054.01
TODD G. GUSSON, TRUSTEE
TIGER EYE INVESTMENT TRUST
BK. R2697, PG 399
R.O.M.C., TN
MAP / PARCEL
051 034.03
CONAWAY RICHARD S ETUX CINDY
PLAT BK. 11, PG 27, LOT 1
BK. R2397, PG 369
R.O.M.C., TN
GREENS MILL ROAD
VERNON DRIVE
POPLAR KNOLL ROAD
ROAD A COLLECTOR (60' R.O.W.)
ROAD B LOCAL (50' R.O.W.)
Storm Buffer Easement
30' Sewer Easement
Water Serv. (Typ.)
Sewer Serv. (Typ.)
Stormwater Pond 1
Stormwater Pond 2
Stormwater Pond 3
OS1
OS2
OS3
N67°08'41"E 136.00'
N76°49'01"E 202.24'
N85°28'58"E 85.29'
S20°20'38"E 86.35'
S83°35'13"E 78.91'
S55°59'23"E 195.41'
S23°25'59"E 145.81'
S00°31'17"W 258.09'
S00°31'17"W 261.32'
S09°03'37"W 387.66'
S01°48'07"E 176.26'
S20°46'14"E
N57°18'58"E 169.06'
S48°33'37"W 407.05'
N43°26'09"E 286.72'
N37°04'47"E 186.23'
N48°16'41"E 419.23'
N20°16'19"W 118.16'
N60°19'43"W 526.04'
N54°54'15"W 116.61'
L15
MATCHLINE (See Sheet 3)
MATCHLINE (See Sheet 4)
Delta=21°55'37"
R=470.00'
L=179.87'
T=91.05'
S31°36'53"E
Chd.=178.77'
Delta=21°55'37"
R=530.00'
L=202.83'
T=102.67'
N31°36'53"W
Chd.=201.59'
Delta=37°25'38"
R=1020.00'
L=666.29'
T=345.52'
N23°51'52"W
Chd.=654.51'
Delta=37°25'38"
R=1080.00'
L=705.49'
T=365.85'
S23°51'52"E
Chd.=693.01'
N25°51'52"W
N70°48'26"E 223.67'
S84°44'57"W 200.00'
N82°06'41"E 200.00'
S79°28'25"W 200.00'
N76°50'10"E 200.00'
S74°11'54"W 200.00'
N74°18'40"E 150.00'
S76°40'52"W 150.00'
S00°23'34"W 130.02'
N24°48'54"E 130.00'
N46°34'07"E 130.00'
S81°59'11"W 130.00'
N21°59'11"E 130.00'
N68°00'49"W 120.00'
S21°59'11"W 130.00'
L=198.97'
L=62.83'
L=28.29'
L=4.11'
L=74.43'
L=70.06'
L=35.81'
L=154.25'
L=152.78'
L=198.97'
L=62.83'
L=198.97'
L=62.83'
L=198.97'
L=62.83

TOTAL AREA THIS RECORDING = 747,245 S.F. or 17.1544 Acres ±

NORTH

(NAD83)

1" = 100'

0' 50' 100' 200'

GRAPHIC SCALE

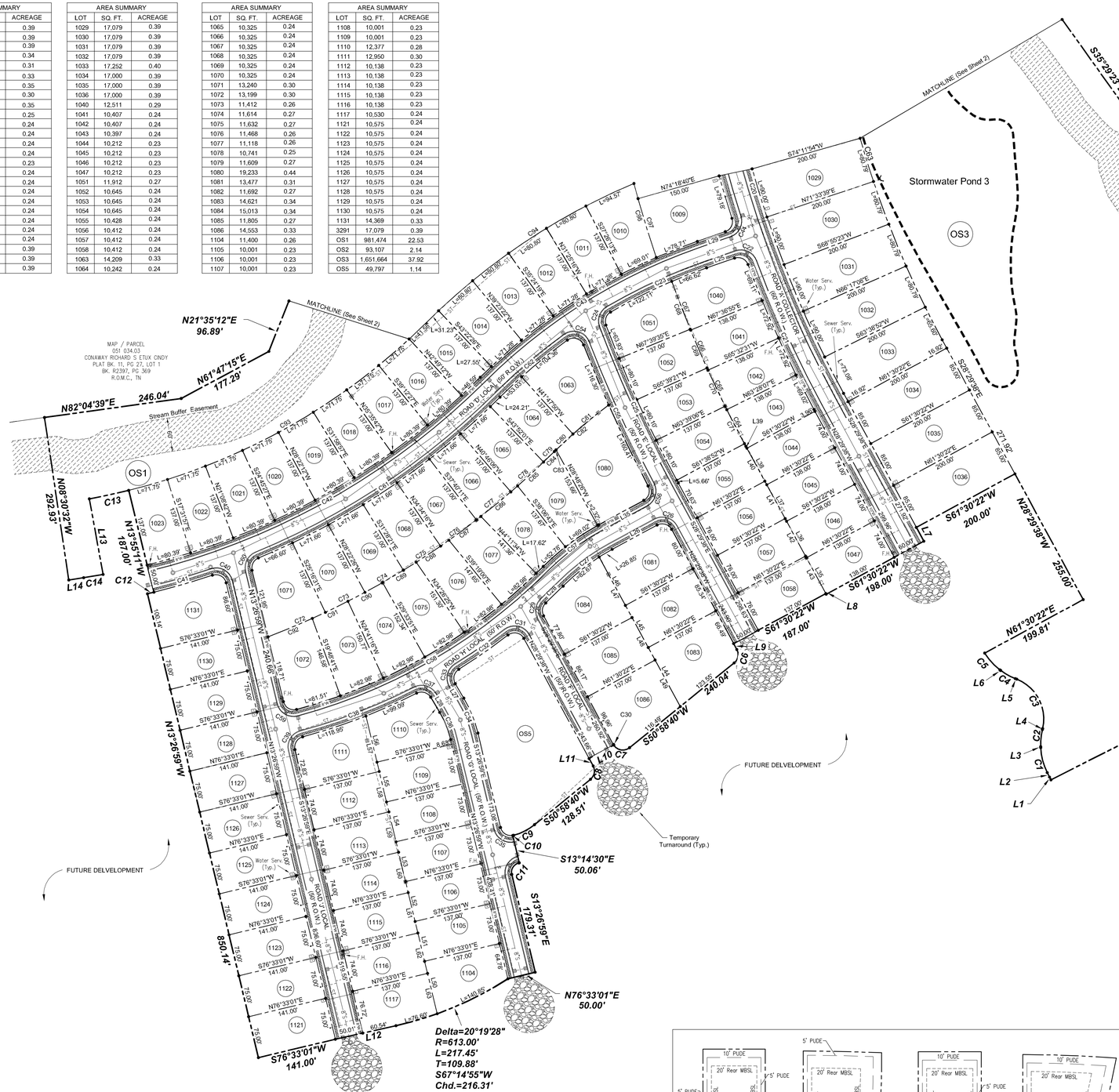
AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1001	17,017	0.39
1002	17,017	0.39
1003	17,017	0.39
1004	14,912	0.34
1005	13,469	0.31
1006	14,496	0.33
1007	15,290	0.35
1008	12,968	0.30
1009	15,357	0.35
1010	11,104	0.25
1011	10,417	0.24
1012	10,417	0.24
1013	10,417	0.24
1014	10,417	0.24
1015	10,066	0.23
1016	10,422	0.24
1017	10,422	0.24
1018	10,422	0.24
1019	10,422	0.24
1020	10,422	0.24
1021	10,422	0.24
1022	10,422	0.24
1023	10,415	0.24
1026	17,079	0.39
1027	17,079	0.39
1028	17,079	0.39

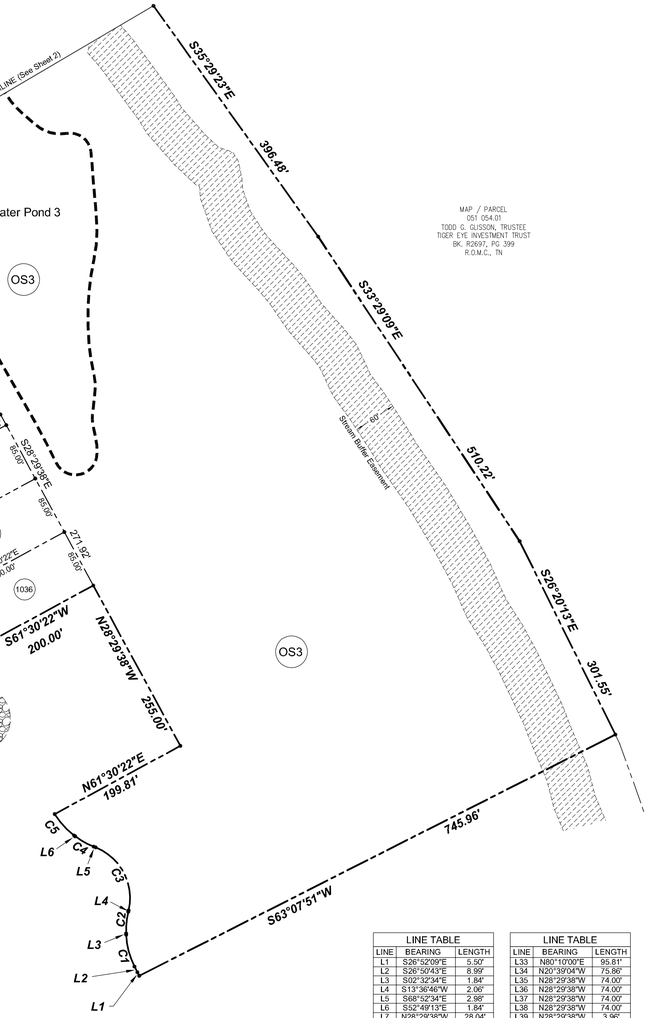
AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1029	17,079	0.39
1030	17,079	0.39
1031	17,079	0.39
1032	17,079	0.39
1033	17,252	0.40
1034	17,000	0.39
1035	17,000	0.39
1036	17,000	0.39
1040	12,511	0.29
1041	10,407	0.24
1042	10,407	0.24
1043	10,397	0.24
1044	10,212	0.23
1045	10,212	0.23
1046	10,212	0.23
1047	10,212	0.23
1051	11,912	0.27
1052	10,645	0.24
1053	10,645	0.24
1054	10,645	0.24
1055	10,428	0.24
1056	10,412	0.24
1057	10,412	0.24
1058	10,412	0.24
1063	14,209	0.33
1064	10,242	0.24

AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1065	10,325	0.24
1066	10,325	0.24
1067	10,325	0.24
1068	10,325	0.24
1069	10,325	0.24
1070	10,325	0.24
1071	13,240	0.30
1072	13,199	0.30
1073	11,412	0.26
1074	11,614	0.27
1075	11,632	0.27
1076	11,468	0.26
1077	11,118	0.26
1078	10,741	0.25
1079	11,609	0.27
1080	19,233	0.44
1081	13,477	0.31
1082	11,692	0.27
1083	14,621	0.34
1084	15,013	0.34
1085	11,805	0.27
1086	14,553	0.33
1104	11,400	0.26
1105	10,001	0.23
1106	10,001	0.23
1107	10,001	0.23

AREA SUMMARY		
LOT	SQ. FT.	ACREAGE
1108	10,001	0.23
1109	10,001	0.23
1110	12,377	0.28
1111	12,950	0.30
1112	10,138	0.23
1113	10,138	0.23
1114	10,138	0.23
1115	10,138	0.23
1116	10,138	0.23
1117	10,530	0.24
1121	10,575	0.24
1122	10,575	0.24
1123	10,575	0.24
1124	10,575	0.24
1125	10,575	0.24
1126	10,575	0.24
1127	10,575	0.24
1128	10,575	0.24
1129	10,575	0.24
1130	10,575	0.24
1131	14,369	0.33
3291	17,079	0.39
OS1	981,474	22.53
OS2	93,107	2.14
OS3	1,651,664	37.92
OS5	49,797	1.14

CURVE TABLE						
CURVE	DELTA	RADIUS	TANGENT	LENGTH	CHD BEARING	CHORD
C1	23°23'46"	113.00'	23.40'	46.14'	S14°42'24"E	45.82'
C2	15°26'03"	113.00'	15.48'	30.77'	S05°43'25"W	30.67'
C3	81°29'22"	76.00'	65.47'	108.09'	N27°40'32"W	99.21'
C4	15°08'32"	113.00'	15.02'	29.86'	S60°51'26"E	29.78'
C5	20°31'03"	113.00'	20.45'	40.47'	S42°05'44"E	40.25'
C6	79°28'18"	19.00'	15.79'	26.35'	N11°14'31"E	24.29'
C7	96°53'54"	19.00'	21.44'	32.13'	S80°34'23"E	28.44'
C8	79°28'18"	19.00'	15.79'	26.35'	N11°14'31"E	24.29'
C9	24°03'37"	100.00'	21.31'	41.99'	N63°10'28"E	41.69'
C10	4°43'34"	19.00'	0.78'	1.57'	N77°24'03"E	1.57'
C11	89°57'56"	17.00'	16.99'	26.69'	S31°31'59"W	24.03'
C12	0°30'51"	1325.00'	5.94'	11.89'	N76°20'14"E	11.89'
C13	3°36'45"	1138.00'	35.89'	71.75'	N77°53'11"E	71.74'
C14	1°34'34"	1275.00'	17.54'	35.07'	N80°28'51"E	35.07'
C15	23°39'02"	115.00'	24.08'	47.47'	S08°21'52"E	47.13'
C16	15°29'22"	115.00'	15.64'	31.09'	S12°07'46"W	30.99'
C17	4°47'41"	77.00'	3.22'	6.44'	N16°50'16"E	6.44'
C18	15°23'18"	115.00'	15.54'	30.89'	S21°56'26"W	30.79'
C19	23°56'55"	115.00'	24.39'	48.07'	S42°31'42"W	47.72'
C20	23°20'35"	1955.00'	403.89'	796.49'	S16°49'20"E	790.99'
C21	8°04'28"	2015.00'	142.22'	283.96'	S24°27'24"E	283.73'
C22	88°45'38"	19.00'	18.59'	29.43'	N64°47'58"W	26.58'
C23	11°05'26"	975.00'	94.66'	188.73'	S65°16'29"W	188.43'
C24	80°28'12"	19.00'	16.08'	26.68'	S19°29'40"W	24.55'
C25	7°45'11"	2290.00'	155.18'	309.88'	S24°37'02"E	309.64'
C26	90°00'00"	19.00'	19.00'	29.85'	N73°23'38"W	26.87'
C27	16°44'03"	375.00'	55.16'	109.53'	S53°08'20"W	109.14'
C28	2°24'40"	1025.00'	21.57'	43.13'	N45°58'39"E	43.13'
C29	75°40'37"	19.00'	14.76'	25.10'	S09°20'40"W	23.31'
C30	3°37'48"	19.00'	0.60'	1.20'	S30°18'32"E	1.20'
C31	99°23'13"	19.00'	22.40'	32.96'	N78°11'14"W	28.98'
C32	5°58'17"	1025.00'	53.46'	106.83'	N55°06'18"E	106.78'
C33	88°42'23"	19.00'	18.58'	29.42'	S13°44'15"W	26.57'
C34	17°09'58"	225.00'	33.96'	67.41'	N22°01'58"W	67.16'
C35	86°47'11"	19.00'	17.96'	28.78'	S56°50'34"E	26.11'
C36	17°09'58"	175.00'	26.41'	52.43'	N22°01'58"W	52.23'
C37	88°27'42"	19.00'	16.80'	28.67'	N73°50'48"W	26.03'
C38	12°11'17"	1025.00'	109.43'	218.04'	N69°01'00"E	217.63'
C39	88°33'37"	19.00'	18.53'	29.37'	S30°49'50"W	26.53'
C40	95°09'53"	19.00'	20.79'	31.56'	N61°01'55"W	28.05'
C41	4°41'40"	1325.00'	54.31'	108.56'	N73°43'58"E	108.53'
C42	30°59'37"	1275.00'	353.51'	689.70'	N60°35'00"E	681.32'
C43	25°44'01"	1025.00'	234.13'	460.36'	S57°57'12"W	456.50'
C44	88°45'38"	19.00'	18.59'	29.43'	N26°26'23"E	26.58'
C45	6°52'03"	2015.00'	120.90'	241.52'	S14°30'24"E	241.38'
C46	88°45'38"	19.00'	18.59'	29.43'	N55°27'11"W	26.58'
C47	60°22'34"	175.00'	101.80'	184.41'	S69°38'43"E	175.99'
C48	56°09'15"	19.00'	10.14'	18.62'	N61°32'03"W	17.89'
C49	292°18'29"	60.00'	40.24'	306.10'	S50°32'34"W	66.84'
C50	56°09'15"	19.00'	10.14'	18.62'	S11°22'49"E	17.89'
C51	60°22'34"	125.00'	72.72'	131.72'	S69°38'43"E	125.71'
C52	88°45'38"	19.00'	18.59'	29.43'	N35°47'11"E	26.58'
C53	3°26'35"	2015.00'	60.56'	121.08'	S06°52'20"E	121.07'
C54	104°27'39"	19.00'	24.52'	34.64'	N73°26'02"W	30.04'
C55	6°46'31"	2340.00'	138.52'	276.71'	S24°39'28"E	276.55'
C56	89°29'06"	19.00'	18.83'	29.67'	N16°45'49"E	26.75'
C57	16°44'03"	425.00'	62.51'	124.13'	S53°08'20"W	123.69'
C58	30°12'23"	975.00'	263.13'	514.02'	N59°52'30"E	508.09'
C59	91°34'20"	19.00'	19.53'	30.37'	S59°14'09"E	27.24'
C60	81°03'16"	19.00'	16.24'	26.88'	S27°04'39"W	24.69'
C61	22°31'06"	1325.00'	263.78'	520.75'	N56°20'44"E	517.41'
C62	9°14'57"	975.00'	78.87'	157.39'	S49°42'46"W	157.22'
C63	23°14'34"	1755.00'	360.93'	711.94'	S16°52'21"E	707.07'
C64	1°57'45"	2153.00'	36.87'	73.74'	S27°30'45"E	73.74'
C65	2°04'24"	2153.00'	38.96'	77.91'	S25°29'41"E	77.91'
C66	2°04'24"	2153.00'	38.96'	77.91'	S23°25'17"E	77.91'
C67	2°28'44"	2153.00'	46.58'	93.14'	S21°08'43"E	93.14'
C68	2°26'04"	2153.00'	45.75'	91.48'	S21°07'23"E	91.47'
C69	2°00'14"	2153.00'	37.66'	75.30'	S23°20'32"E	75.30'
C70	2°00'14"	2153.00'	37.66'	75.30'	S25°20'46"E	75.30'
C71	2°00'14"	2153.00'	37.66'	75.30'	S27°21'01"E	75.30'
C72	4°21'32"	1462.00'	55.64'	111.23'	N66°54'15"E	111.20'
C73	3°05'55"	1462.00'	39.54'	79.07'	N63°10'32"E	79.06'
C74	3°05'55"	1462.00'	39.54'	79.07'	N60°04'37"E	79.06'
C75	3°05'55"	1462.00'	39.54'	79.07'	N56°58'42"E	79.06'
C76	3°05'55"	1462.00'	39.54'	79.07'	N53°52'47"E	79.06'
C77	3°05'55"	1462.00'	39.54'	79.07'	N50°46'52"E	79.06'
C78	3°05'55"	1462.00'	39.54'	79.07'	N47°40'57"E	79.06'
C79	1°02'48"	1462.00'	13.35'	26.71'	N45°36'35"E	26.71'
C80	3°06'59"	838.00'	22.79'	45.58'	S46°38'41"W	45.57'
C81	5°35'50"	838.00'	40.96'	81.86'	S51°00'05"W	81.83'
C82	8°25'06"	838.00'	61.67'	123.13'	S49°35'27"W	123.02'
C83	0°17'42"	838.00'	2.16'	4.32'	S45°14'02"W	4.32'
C84	1°02'48"	1462.00'	13.35'	26.71'	N45°36'35"E	26.71'
C85	2°27'58"	1462.00'	31.47'	62.93'	N47°21'59"E	62.92'
C86	3°20'16"	1462.00'	42.60'	85.17'	N50°16'06"E	85.16'
C87	2°46'48"	1462.00'	35.48'	70.95'	N53|19'38"E	70.94'
C88	2°45'24"	1462.00'	35.18'	70.34'	N56°05'45"E	70.33'
C89	2°44'43"	1462.00'	35.03'	70.05'	N58°50'48"E	70.05'
C90	2°44'48"	1462.00'	35.05'	70.08'	N61°35'34"E	70.08'
C91	2°45'37"	1462.00'	35.22'	70.44'	N64°20'46"E	70.43'
C92	3°21'26"	1462.00'	42.85'	85.67'	N67°24'18"E	85.65'
C93	30°59'37"	1138.00'	315.53'	615.59'	N60°35'00"E	608.11'
C94	22°08'22"	1162.00'	227.34'	449.01'	S56°09'23"W	446.22'
C95	2°55'14"	2165.00'	55.19'	110.35'	S11°51'31"E	110.34'
C96	2°22'12"	2165.00'	44.78'	89.56'	S14°30'14"E	89.55'
C97	2°54'34"	2165.00'	54.98'	109.94'	S17°08'37"E	109.92'
C98	3°38'56"	2165.00'	68.96'	137.88'	S16°46'26"E	137.86'
C99	1°03'01"	2165.00'	19.84'	39.69'	S14°25'27"E	39.68'
C100	53°55'09"	305.00'	155.13'	287.03'	S67°11'18"E	276.55'
C101	180°00'00"	190.00'	INFINITE	596.90'	S21°59'11"W	380.00'





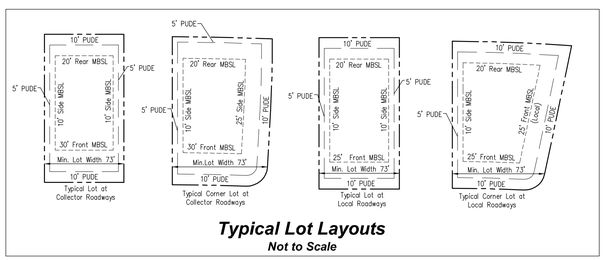
LINE TABLE		
LINE	BEARING	LENGTH
L1	S26°52'09"E	5.50'
L2	S26°50'43"E	8.99'
L3	S02°32'34"E	1.84'
L4	S13°36'46"W	2.06'
L5	S68°52'34"E	2.98'
L6	S02°49'13"E	1.84'
L7	N28°29'38"W	28.04'
L8	N28°29'38"W	1.33'
L9	S28°29'38"E	12.06'
L10	N61°30'22"E	50.04'
L11	S28°29'38"E	15.15'
L12	S77°24'39"W	110.55'
L13	S10°18'26"E	137.00'
L14	S81°16'08"W	26.85'
L15	S16°34'13"E	80.88'
L16	N69°20'56"E	60.00'
L17	N20°39'04"W	26.09'
L18	N20°38'34"W	25.14'
L19	N03°55'22"E	1.85'
L20	N19°53'22"E	2.30'
L21	N13°50'52"E	3.22'
L22	N55°12'21"E	36.94'
L23	N39°03'31"E	17.26'
L24	N20°39'04"W	75.86'
L25	N70°49'12"E	52.74'
L26	N61°30'22"E	91.17'
L27	N30°36'57"W	29.79'
L28	N30°36'57"W	31.51'
L29	S70°49'12"W	52.74'
L30	S80°10'00"W	95.81'
L31	N39°27'26"W	95.39'
L32	S39°27'26"E	95.39'

LINE TABLE		
LINE	BEARING	LENGTH
L33	N80°10'00"E	95.81'
L34	N20°39'04"W	75.86'
L35	N28°29'38"W	1.84'
L36	N28°29'38"W	74.00'
L37	N28°29'38"W	74.00'
L38	N28°29'38"W	74.00'
L39	N28°29'38"W	3.96'
L40	S28°29'38"E	70.63'
L41	S28°29'38"E	76.00'
L42	S28°29'38"E	76.00'
L43	S28°29'38"E	76.00'
L44	N28°29'38"W	119.82'
L45	N28°29'38"W	85.34'
L46	N28°29'38"W	98.04'
L47	N28°29'38"W	122.67'
L48	S28°29'38"E	86.17'
L49	S28°29'38"E	94.35'
L50	S13°26'59"E	96.11'
L51	S13°26'59"E	73.00'
L52	S13°26'59"E	73.00'
L53	S13°26'59"E	73.00'
L54	S13°26'59"E	73.00'
L55	S13°26'59"E	73.00'
L56	S13°26'59"E	84.58'
L57	S13°26'59"E	101.70'
L58	S13°26'59"E	74.00'
L59	S13°26'59"E	74.00'
L60	S13°26'59"E	74.00'
L61	S13°26'59"E	74.00'
L62	S13°26'59"E	74.00'
L63	S13°26'59"E	74.00'

LEGEND:

IP(O) ○	Existing Iron Pipe – IP(O)
IR(O) ○	Existing Iron Rod – IR(O)
IR(N) ●	Iron Rod (New) – IR(N)
◎	Sanitary Manhole
FH	Fire Hydrant (F.H.)
▤	Catch Basin
◉	Storm Manhole
⌒	Concrete Headwall
PUDE	Public Utility & Drainage Easement
MBSL	Minimum Building Setback Line
R.O.M.C.	Registers' Office Maury County

Prepared By:
JTA
LAND SURVEYING, INC.
2603 Elm Hill Pike, Suite K - Nashville, TN. 37214
Phone: 615-490-6820



Typical Lot Layouts
Not to Scale

FINAL PLAT
THE LANDING AT GREENS MILL ROAD
PHASE 1
GREEN MILLS ROAD
Property Map # 51 - Parcel (55.00)

CITY OF COLUMBIA,
MAURY COUNTY, TENNESSEE

DRAWN BY: MTG, TMF, RR Scale : 1" = 100' DATE: DECEMBER 15, 2023

Job No. 2023-507

SHEET 3 OF 3

DOCUMENT PREPARED BY:
Name: Alexander Mollica
Company Crunk Engineering
Address: 7112 Crossroads Blvd.December
Brentwood, TN 37027
After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 051, Parcel 55.00
Project Name: Landing at Greens Mill - Phase 1

Recorded by deed in the Register of Deeds Office of Maury County in Deed Book _____, Page(s) _____.

THIS AGREEMENT, made this 18 day of _____, 2023 , by and between Safe Harbor hereinafter referred to as the "OWNER(S)" of the following property and City of Columbia, Tennessee, hereinafter referred to as the "CITY",

WE, the OWNER(S), with full authority to execute deeds, mortgages, other covenants, all rights, titles, and interests in the property described above, do hereby covenant with the CITY and agree as follows:

1. The OWNER(S) covenant and agree with the CITY that the OWNER(S) shall provide for adequate long term maintenance and continuation of stormwater control measures described in the Long Term Maintenance Plan and shown on the location map, deed of easement drawing or plat attached hereto to ensure that the facilities, are and remain in proper working condition in accordance with approved design standards, rules and regulations, and applicable laws. The OWNER(S) shall perform preventative maintenance activities at intervals described in the schedule attached hereto along with necessary landscaping (grass cutting, etc.) and trash removal as part of regular maintenance.

2. The OWNER(S) shall perform routine inspections to ensure that all long term stormwater management facilities are properly functioning. These inspections shall be conducted on an annual basis, at a minimum. These inspections shall be conducted by a person familiar with control measures implemented at the site. The OWNER(S) or operators shall maintain documents of these inspections.

3. The OWNER(S) shall perform comprehensive inspections of all stormwater management facilities and practices. These inspections shall be conducted once every five years, at a minimum. Such inspections must be conducted by either a professional engineer or landscape architect.

4. The OWNER(S) shall grant to the CITY or its agent or contractor the right of entry at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facility within the CITY.

5. The OWNER(S) shall record and grant to the CITY the necessary easements and rights-of-way and maintain perpetual access from public rights-of-way to the facility for the CITY or its agent and contractor.

6. If, upon inspection, the CITY finds that the OWNER(S) has failed to properly maintain the facilities, the CITY may order the work performed within ten (10) days. In the event the work is not performed within the specified time, the ONWER(S) agrees to allow the CITY to enter the property and take whatever steps it deems necessary to maintain the stormwater control facilities. This provision shall not be construed to allow the CITY to erect any structure of a permanent nature on the PROPERTY without first obtaining written approval of the OWNER(S)

7. The CITY is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any obligation on the CITY. The OWNER(S) shall reimburse the CITY upon demand the costs incurred in the maintenance of the facilities.

8. If the OWNER(S) fails to pay the CITY for the above expensive after forty-five (45) days written notice, the OWNER(S) authorizes the CITY to collect said expenses from the OWNER(S) through appropriate legal action and the OWNER(S) shall be liable for the reasonable expenses of collection, court costs, and attorney fees.

9. The OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold harmless the CITY and its officers, agents and employees for any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part,

against the CITY from the construction, presence, existence, or maintenance of the stormwater control facilities subject to this AGREEMENT. In the event a claim is asserted against the CITY, its officers, agents or employees, the CITY shall notify OWNER(S) and the OWNER(S) shall defend at OWNER(S) expense any suit based on such claim. If any judgment or claims against the CITY, its officers, agents or employees, shall be allowed, the OWNER(S) shall pay all costs and expenses in connection therewith. The CITY will not indemnify, defend or hold harmless in any fashion the OWNER(S) from any claims arising from any failure, regardless of any language in any attachment or other document that the OWNER(S) may provide

10. The OWNER(S) shall not be able to transfer, assign or modify its responsibilities with respect to this agreement without the CITY's written prior consent. Nothing herein shall be construed to prohibit a transfer by OWNER(S) to subsequent owners and assigns.

11. No waiver of any provision of this AGREEMENT shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any default.

12. The OWNER(S) shall record a plat showing and accurately defining the easements for stormwater control facilities. The plat must reference the Instrument Number where this AGREEMENT and its attachments are recorded and contain a note that the OWNER(S) is responsible for maintaining the stormwater management facilities.

13. The OWNER(S) shall record this AGREEMENT in the office of the Register of Deeds for the county of Maury, Tennessee, and the AGREEMENT shall constitute a covenant running with the land, and shall be binding upon the OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns, and any other successors in interest

ATTEST BY OWNER(S):

Print Name Koby DuMont

Title Division President

Signature

Owner ZCSB Greens Mill LLC

Address 105 West Park Suite 305

Brentwood, TN 37027

City, State ZIP

STATE OF Tennessee
COUNTY OF Robertson .

Before me, Lisa Dziezgowski of the state and county mentioned, personally appeared Koby Dumont, with whom I am personally acquainted and who acknowledged that he/she executed the foregoing instrument of the purposes therein contained.

Witness my hand this the 18 day of December 2023.

Lisa Dziezgowski
Notary Public

LISA DZIEZGOWSKI NOTARY PUBLIC My Comm Exp. August 18, 2026 COUNTY OF ROBERTSON

My Commission Expires: August 18 2026

CITY OF COLUMBIA, TENNESSEE
ENGINEERING DEPARTMENT

APPROVED BY :_____

STATE OF TENNESSEE
COUNTY OF MAURY

Before me, _____ of the state and county mentioned, personally appeared _____, with whom I am personally acquainted, and who acknowledged themselves to be the City Engineer of the City of Columbia or his designee and as such, being authorized so to do, executed the foregoing instrument of the purposes therein contained.

Witness my hand this the _____ day of _____, 20_____.

_____
Notary Public
My Commission Expires:_____

Post Construction Long Term Maintenance Plan

Project Name: Landing at Greens Mill – Phase 1

Columbia, TN

December 18, 2023

Table of Contents

Section Name

System Description
Maintenance Procedures

System Description

The site consists of a series of stormwater conveyances both open channel and piped, detention / retention and water quality ponds.

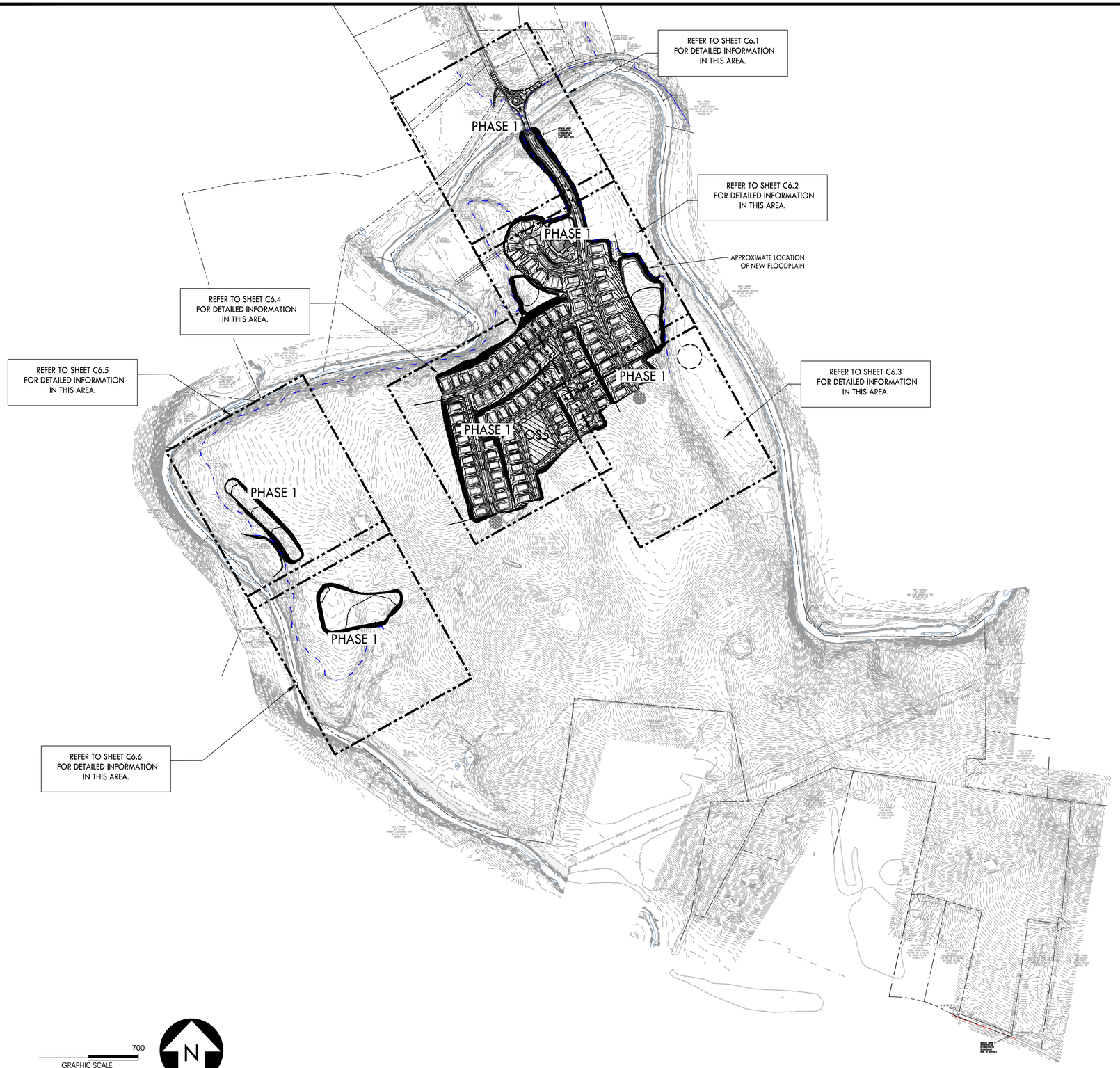
- There are 5 stormwater detention ponds sized to detain through the 100 year peak event. The orifice is designed to contain the first flush, 1 inch, for 24 hour.
- 2,907 feet of grass lined open channel.
- 306 feet of 36 in ADS pipe, 834 feet 30 in ADS pipe, 2,763 feet of 24 in ADS pipe, 6,048 feet of 18 in ADS pipe and 118 storm inlets.

Upon completion of the site construction, 'Record Drawings' in a version not less than AutoCAD 2006 LT (NAD83, NAVD88) of the stormwater controls will be provided to the City of Columbia for verification.

A copy of the INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES that has been completed, notarized, and recorded in the Land Records of the County of Maury, Tennessee will be kept on site with this document.

Maintenance Procedures

1. **STORMWATER DETENTION PONDS**
    - **a.** The outlet structures shall be checked regularly for clogging and shall be cleaned and repaired as necessary---monthly after it is first built then a regular sequence should be established or at least quarterly or after a large rain event.
    - **b.** Check banks and bottom surface of basins for erosion and correct as necessary.
    - **c.** Check at least quarterly and after each extreme storm event, the facility should be cleaned of accumulated debris. The banks of surface ponds should be checked and areas of erosion repaired. Remove nuisance wetland species and take appropriate measures to control mosquitos.
    - **d.** This maintenance typically includes sediment, floatable, and debris removal from inlets, outlets and skimmers.
    - **e.** Pond vegetation to be trimmed or harvested as appropriate, grassy areas, frequently mowed. Grass should be mowed so that it does not get over 12.
    - **f.** Remove sediment when accumulation reached 6 inches, or if re-suspension is observed or probable.
    - **g.** Some sediment may contain contaminants which the Tennessee Department of Environment and Conservation (TDEC) requires special disposal procedure. If there is any uncertainty about what the sediment contains or it is known to contain contaminants, then TDEC should be consulted and their disposal recommendations followed. The TDEC Division of Water Pollution Control should be contacted at (931) 380-3371. Generally, special attention or sampling should be given to sediment accumulated in facilities serving industrial, manufacturing or heavy commercial sites, Page 2 of 4 Rev. 9/26/2016 fueling centers or automotive maintenance areas, large parking areas, or other areas where pollutants (other than clean soil) are suspected to accumulate and be conveyed by storm runoff.
    - **h.** Some sediment collected may be innocuous (free of pollutants) and can be used as fill material, cover or land spreading. It is important that this material not be placed in any way that will promote or allow re-suspension in storm runoff.
2. **306 feet of 36 in ADS pipe, 834 feet 30 in ADS pipe, 2,763 feet of 24 in ADS pipe, 6,048 feet of 18 in ADS pipe and 118 storm inlets.**
    a. These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.



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ENGINEERING CRUNK

ANDREW L. WILSON 134180 REGISTERED ENGINEER AGRICULTURE COMMERCE STATE OF TENNESSEE 9/21/23

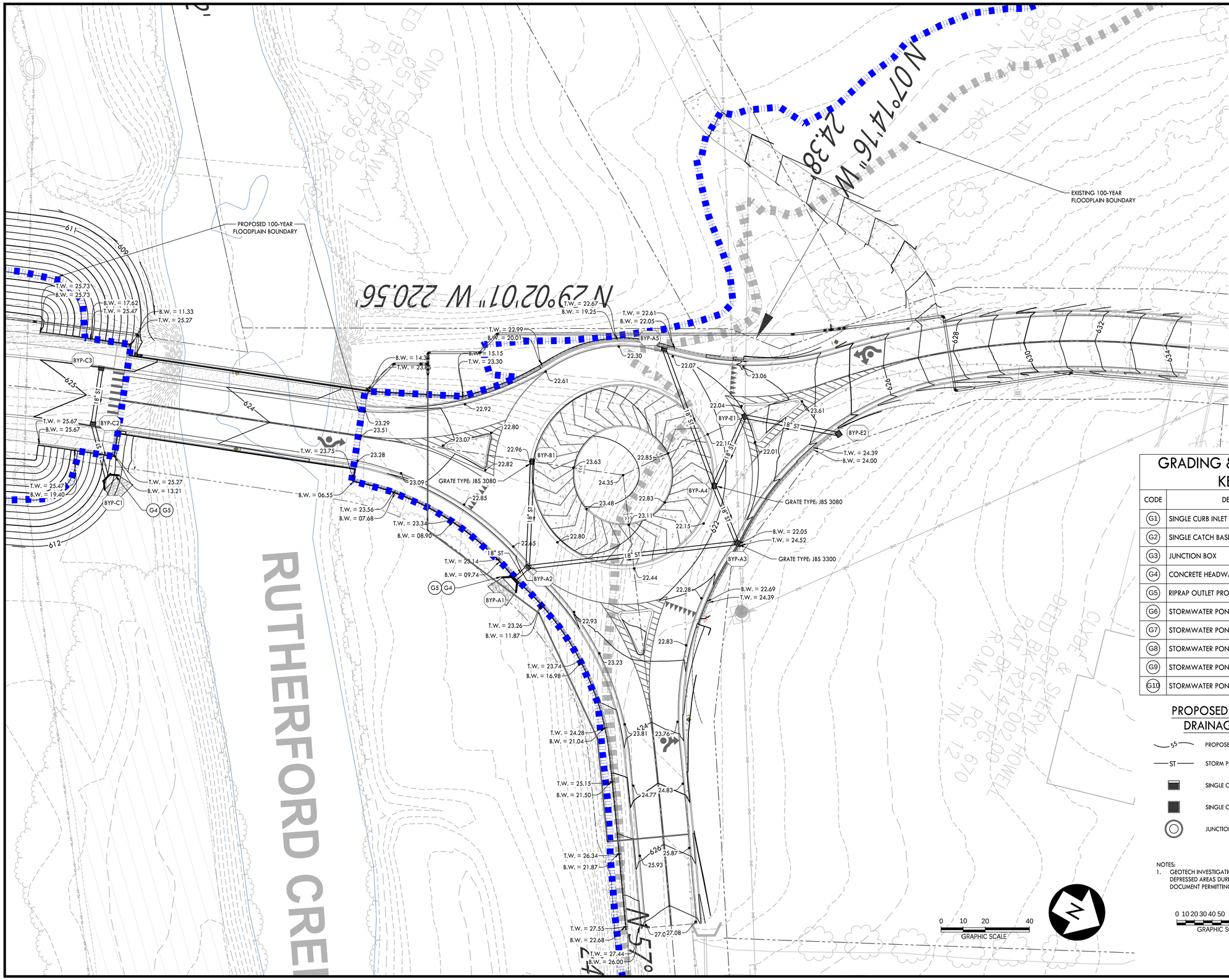
GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS

No.	DATE

09/21/23 17067

C6.0
OVERALL GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- PROPOSED CONTOUR
- STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

0 10 20 30 40 50 100
GRAPHIC SCALE

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ENGINEERING CRUNK

ANDREW L. SCHNEIDER
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
9/21/23
STATE OF TENNESSEE

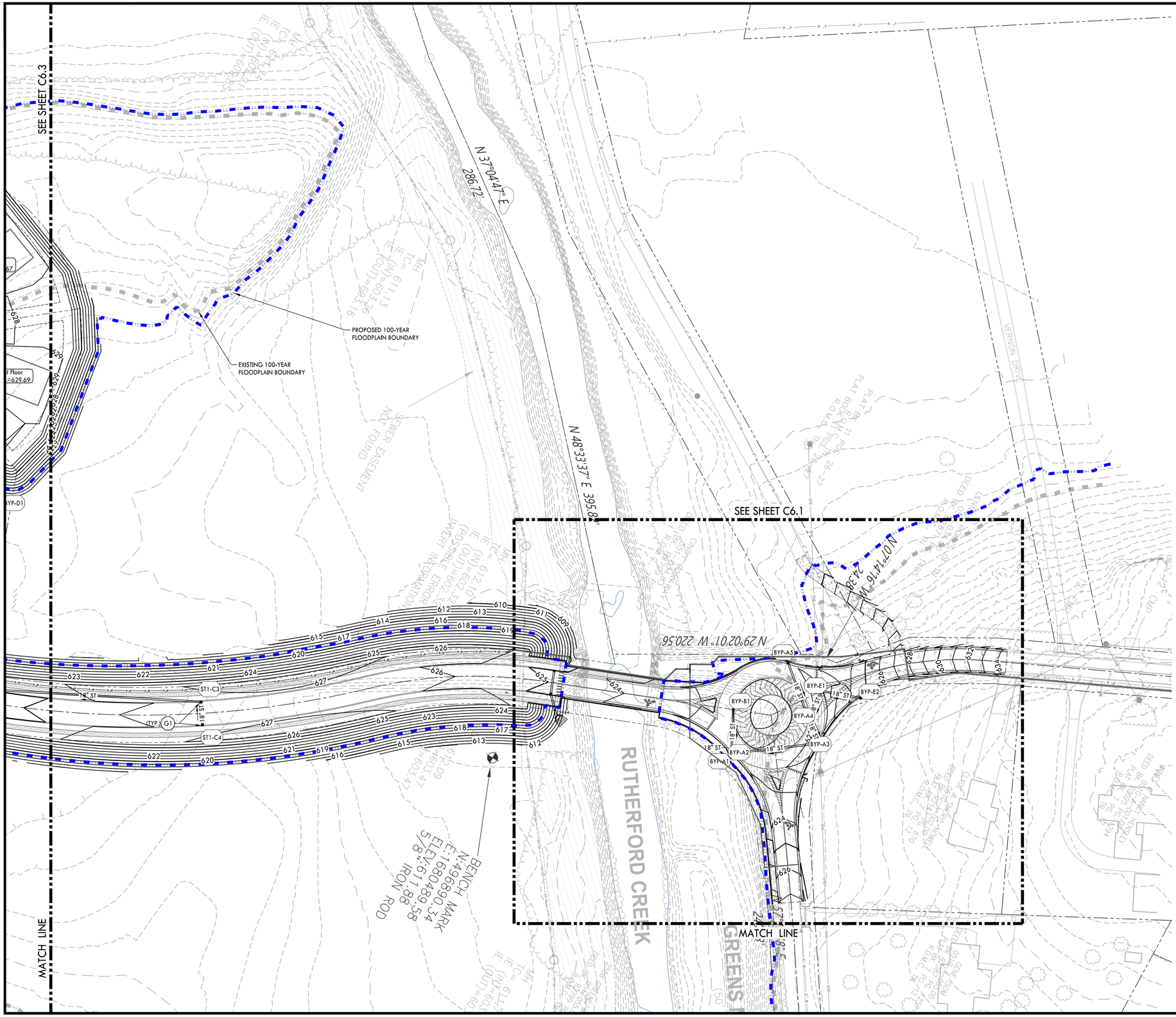
GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS

No.	DATE

09/21/23 17067

C6.1
ROUNDABOUT GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- 55 — PROPOSED CONTOUR
- ST — STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

0 10 20 30 40 50 100
GRAPHIC SCALE

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RACHAEL WILSON CRAWFORD
REGISTERED ENGINEER
AGRICULTURE
STATE OF TENNESSEE
9/21/23

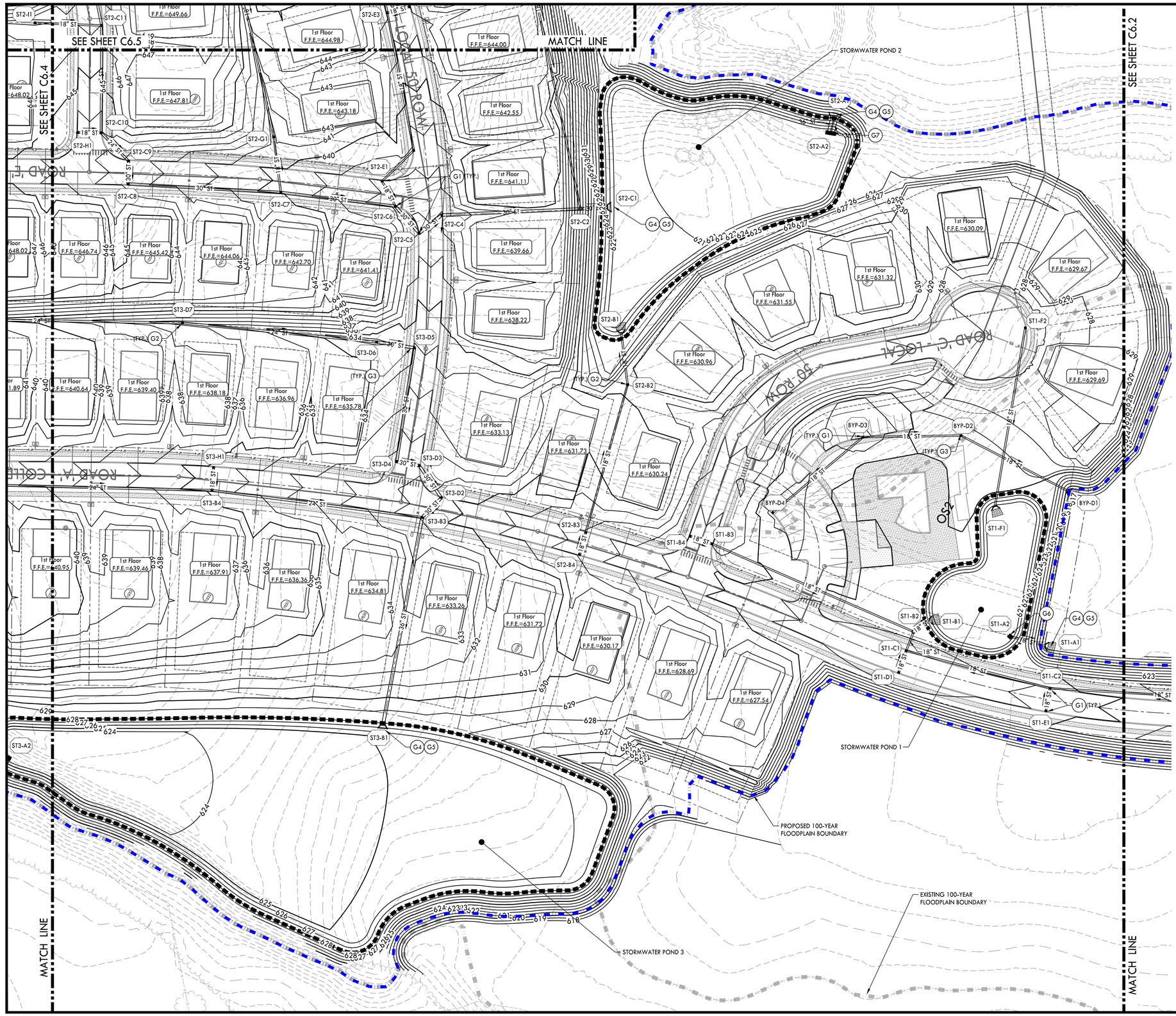
GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS

No.	DATE

09/21/23 17067

C6.2
GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- 55 — PROPOSED CONTOUR
- ST — STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

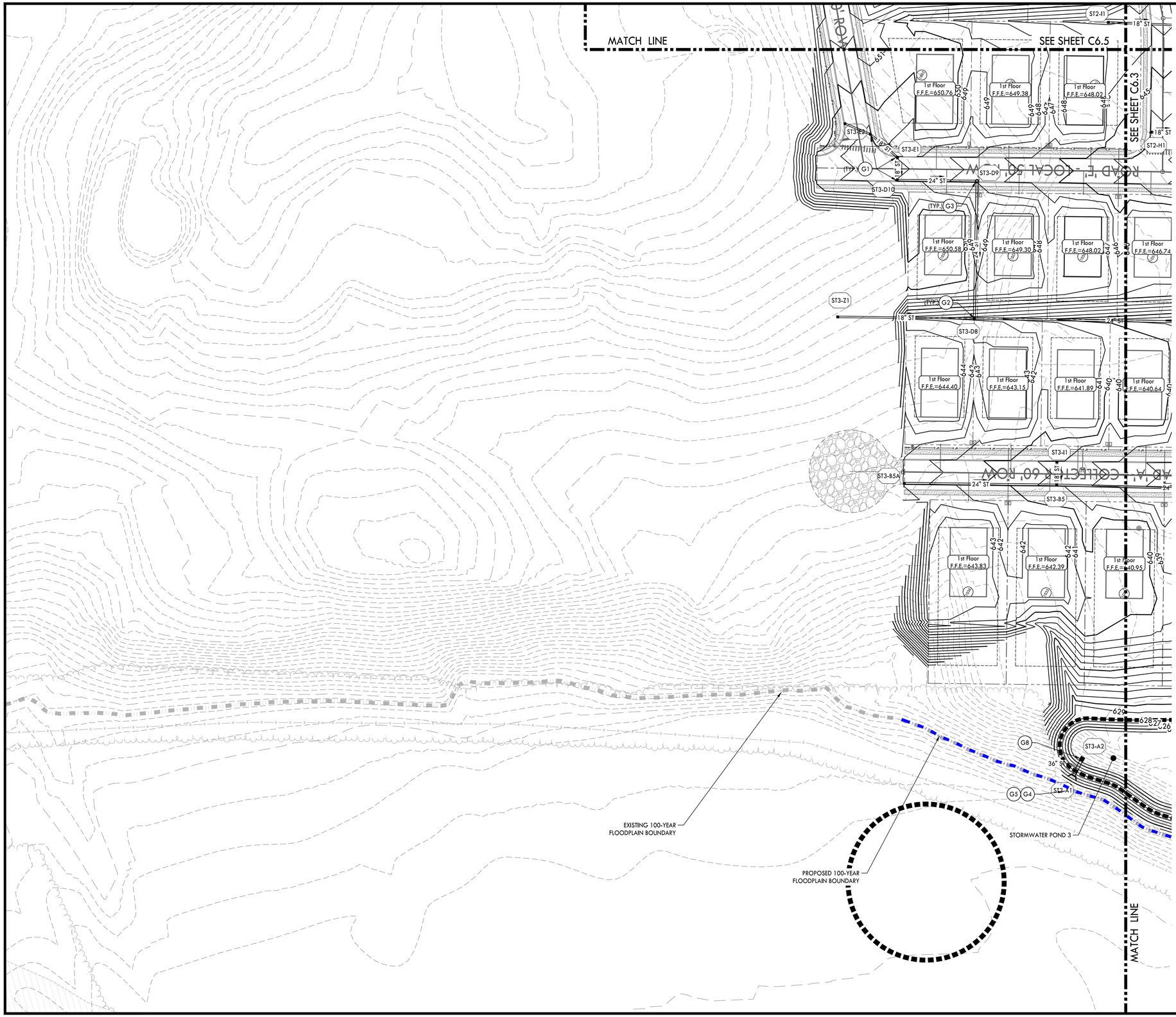
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GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS	
No.	DATE

09/21/23 17067

C6.3
GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- PROPOSED CONTOUR
- STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
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ENGINEERING CRUNK

WILSON COUNTY TENNESSEE DEPARTMENT OF AGRICULTURE 9/21/23 COMMERCE NO. 114180 STATE OF TENNESSEE

GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS	
No.	DATE

09/21/23 17067

C6.4
GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- 55 — PROPOSED CONTOUR
- ST — STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

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GRAPHIC SCALE

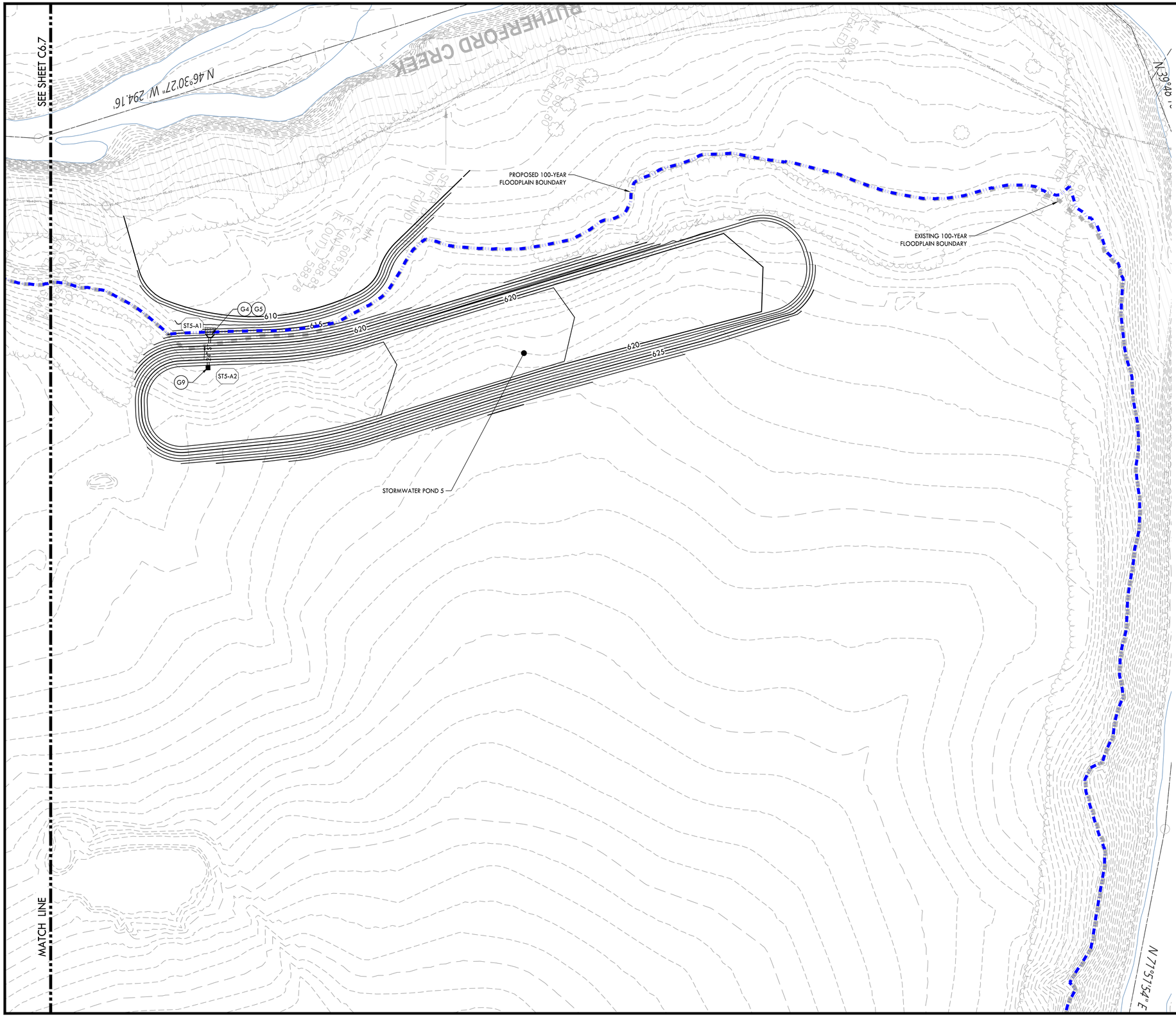
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GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS		
No.	DATE	

09/21/23 17067

C6.5
GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- 55 — PROPOSED CONTOUR
- ST — STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

0 10 20 30 40 50 100
GRAPHIC SCALE

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ENGINEERING CRUNK

ANDREW L. WILSON 134180 REGISTERED ENGINEER AGRICULTURE COMMERCE STATE OF TENNESSEE 9/21/23

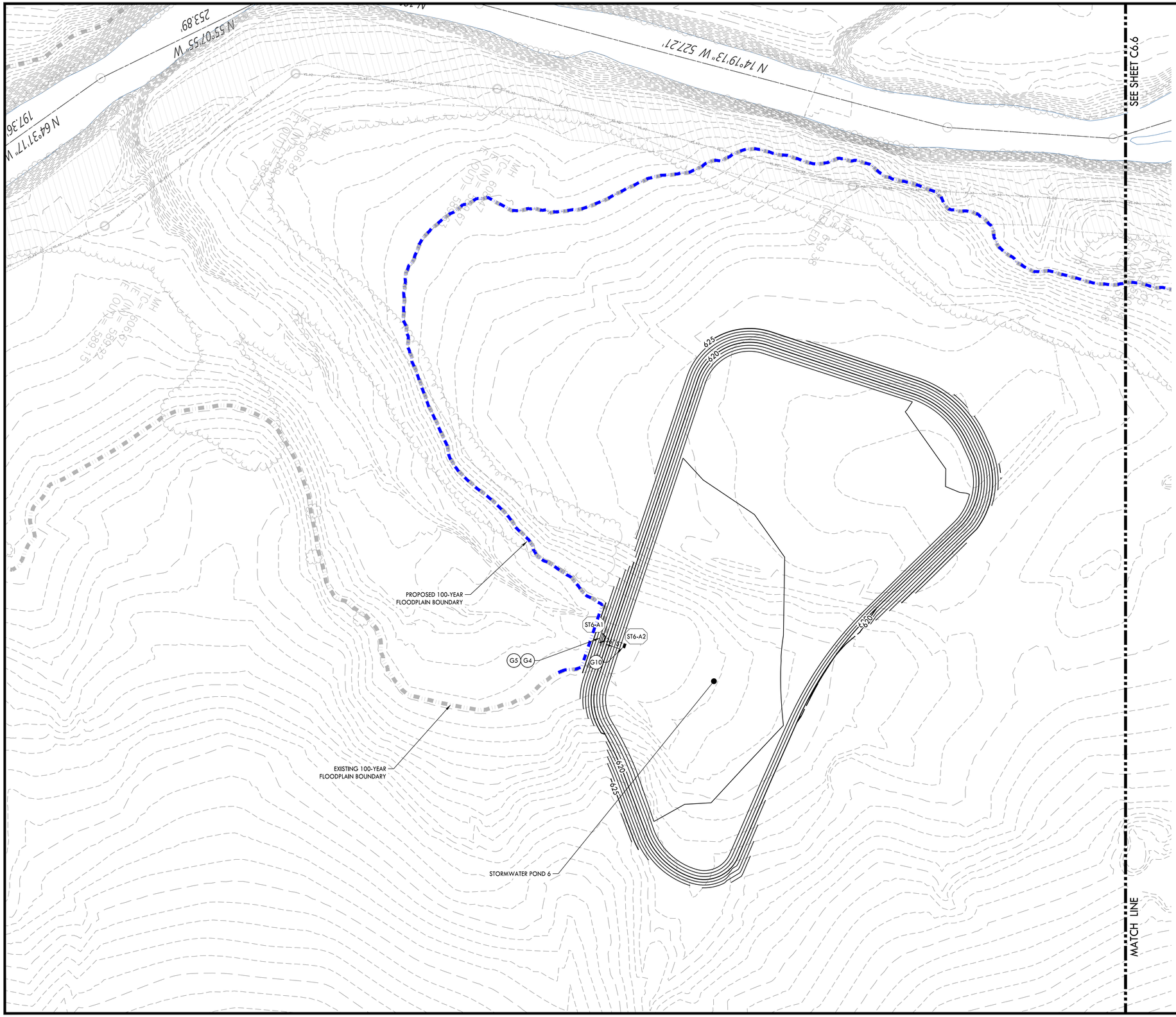
GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS

No.	DATE

09/21/23 17067

C6.6
GRADING & DRAINAGE PLAN



GRADING & DRAINAGE PLAN KEYNOTES

CODE	DESCRIPTION	DETAIL LOCATION
G1	SINGLE CURB INLET	C6.9 - 4
G2	SINGLE CATCH BASIN	C6.9 - 3
G3	JUNCTION BOX	C6.9 - 6
G4	CONCRETE HEADWALL	-
G5	RIPRAP OUTLET PROTECTION	C6.9 - 5
G6	STORMWATER POND 1 OUTLET STRUCTURE	C6.8 - 1
G7	STORMWATER POND 2 OUTLET STRUCTURE	C6.8 - 3
G8	STORMWATER POND 3 OUTLET STRUCTURE	C6.8 - 2
G9	STORMWATER POND 5 OUTLET STRUCTURE	C6.9 - 1
G10	STORMWATER POND 6 OUTLET STRUCTURE	C6.9 - 2

PROPOSED GRADING & DRAINAGE LEGEND

- 55 — PROPOSED CONTOUR
- ST — STORM PIPE
- SINGLE CURB INLET
- SINGLE CATCH BASIN
- JUNCTION BOX

NOTES:
1. GEOTECH INVESTIGATION TO BE PERFORMED ON ALL DEPRESSED AREAS DURING CONSTRUCTION DOCUMENT PERMITTING.

0 10 20 30 40 50 100
GRAPHIC SCALE

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ENGINEERING CRUNK

ANDREW WILSON CRUNK
REGISTERED
AGRICULTURE
9/21/23
COMMERCE
STATE OF TENNESSEE

GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS	
No.	DATE

09/21/23 17067

C6.7
GRADING & DRAINAGE PLAN

STORM STRUCTURE TABLE			
ID	RIM	INVERT	TYPE
BYP-A1	611.93	18" ADS (IN): 610.30	18" - 24" CONCRETE HEADWALL
BYP-A2	622.50	18" ADS (IN): 618.00 18" ADS (IN): 614.00 18" ADS (OUT): 611.00	SINGLE CURB INLET
BYP-A3	621.59	18" ADS (IN): 616.00 18" ADS (OUT): 615.90	SINGLE CURB INLET
BYP-A4	622.10	18" ADS (IN): 617.45 18" ADS (IN): 617.45 18" ADS (OUT): 617.45	ROLL OVER INLET
BYP-A5	622.02	18" ADS (OUT): 618.80	SINGLE CURB INLET
BYP-B1	622.94	18" ADS (OUT): 618.50	ROLL OVER INLET
BYP-C1	613.63	18" ADS (IN): 612.00	18" - 24" CONCRETE HEADWALL
BYP-C2	624.69	18" ADS (IN): 621.00 18" ADS (OUT): 621.00	SINGLE CURB INLET
BYP-C3	624.68	18" ADS (OUT): 621.25	SINGLE CURB INLET
BYP-D1	618.46	18" ADS (IN): 616.82	18" - 24" CONCRETE HEADWALL
BYP-D2	625.71	18" ADS (IN): 618.10 18" ADS (OUT): 618.00	SINGLE CATCH BASIN
BYP-D3	622.69	18" ADS (IN): 619.35 18" ADS (OUT): 619.25	SINGLE CURB INLET
BYP-D4	623.20	18" ADS (OUT): 620.00	SINGLE CURB INLET
BYP-E1	621.63	18" ADS (IN): 618.50 18" ADS (OUT): 618.40	SINGLE CURB INLET
BYP-E2	624.30	18" ADS (OUT): 621.00	SINGLE CATCH BASIN
ST1-A1	618.08	18" ADS (IN): 616.44	18" - 24" CONCRETE HEADWALL
ST1-A2	623.85	18" ADS (OUT): 620.00	POND 1 OUTLET STRUCTURE
ST1-B1	621.63	18" ADS (IN): 620.00	18" - 24" CONCRETE HEADWALL
ST1-B2	624.05	18" ADS (IN): 620.15 18" ADS (IN): 620.20 18" ADS (OUT): 620.15	JUNCTION MANHOLE
ST1-B3	625.54	18" ADS (IN): 622.10 18" ADS (OUT): 622.00	SINGLE CURB INLET
ST1-B4	625.54	18" ADS (OUT): 622.40	SINGLE CURB INLET
ST1-C1	623.26	18" ADS (IN): 620.20 18" ADS (IN): 620.30 18" ADS (OUT): 620.20	SINGLE CURB INLET
ST1-C2	624.17	18" ADS (IN): 620.90 18" ADS (IN): 620.90 18" ADS (OUT): 620.90	SINGLE CURB INLET
ST1-C3	626.27	18" ADS (IN): 622.73 18" ADS (OUT): 622.79	SINGLE CURB INLET
ST1-C4	626.27	18" ADS (OUT): 622.98	SINGLE CURB INLET
ST1-D1	623.26	18" ADS (OUT): 620.26	SINGLE CURB INLET
ST1-E1	624.17	18" ADS (OUT): 621.20	SINGLE CURB INLET
ST1-F1	622.29	18" ADS (IN): 620.66	18" - 24" CONCRETE HEADWALL
ST1-F2	626.10	18" ADS (OUT): 622.90	SINGLE CURB INLET
ST2-A1	623.00	36" ADS (IN): 619.79 36" ADS (IN): 619.79	60" - 72" CONCRETE HEADWALL
ST2-A2	623.76	36" ADS (OUT): 620.00 36" ADS (OUT): 620.00	OUTLET STRUCTURE
ST2-B1	623.22	18" ADS (IN): 621.59	18" - 24" CONCRETE HEADWALL
ST2-B2	629.60	18" ADS (IN): 622.10 18" ADS (OUT): 622.00	SINGLE CATCH BASIN
ST2-B3	627.47	18" ADS (IN): 623.30 18" ADS (OUT): 623.20	SINGLE CURB INLET
ST2-B4	627.47	18" ADS (OUT): 623.60	SINGLE CURB INLET
ST2-C1	624.23	30" ADS (IN): 621.52	30" - 36" CONCRETE HEADWALL
ST2-C2	632.91	18" ADS (IN): 628.00 30" ADS (IN): 628.00 30" ADS (OUT): 625.00	JUNCTION MANHOLE
ST2-C4	636.93	30" ADS (IN): 630.50 30" ADS (OUT): 630.40	SINGLE CURB INLET
ST2-C5	636.53	30" ADS (IN): 631.10 30" ADS (OUT): 631.10	SINGLE CURB INLET
ST2-C6	637.46	18" ADS (IN): 631.80 30" ADS (IN): 631.80 30" ADS (OUT): 631.70	SINGLE CURB INLET
ST2-C7	639.58	30" ADS (IN): 634.00 18" ADS (IN): 634.00 30" ADS (OUT): 633.87	SINGLE CURB INLET
ST2-C8	642.40	30" ADS (IN): 635.60 30" ADS (OUT): 635.60	SINGLE CURB INLET
ST2-C9	642.40	24" ADS (IN): 636.00 30" ADS (OUT): 635.90	SINGLE CURB INLET
ST2-C10	643.49	18" ADS (IN): 639.60 24" ADS (IN): 636.50 24" ADS (OUT): 636.40	SINGLE CURB INLET

STORM STRUCTURE TABLE			
ID	RIM	INVERT	TYPE
ST2-C11	645.97	24" ADS (IN): 642.00 18" ADS (IN): 640.70 24" ADS (OUT): 637.70	SINGLE CURB INLET
ST2-C12	648.86	24" ADS (IN): 644.60 24" ADS (OUT): 644.50	SINGLE CURB INLET
ST2-C13	648.86	24" ADS (IN): 645.10 24" ADS (OUT): 645.00	SINGLE CURB INLET
ST2-C14	649.70	18" ADS (IN): 645.50 24" ADS (IN): 645.50 24" ADS (OUT): 645.40	SINGLE CURB INLET
ST2-C15	653.84	18" ADS (IN): 650.00 18" ADS (OUT): 649.90	SINGLE CURB INLET
ST2-C16	654.10	18" ADS (IN): 650.40 18" ADS (OUT): 650.30	SINGLE CURB INLET
ST2-C17	659.20	18" ADS (IN): 655.50 18" ADS (IN): 654.80 18" ADS (OUT): 654.70	SINGLE CURB INLET
ST2-C18	659.25	18" ADS (IN): 655.30 18" ADS (OUT): 655.20	SINGLE CURB INLET
ST2-C19	659.25	18" ADS (OUT): 655.70	SINGLE CURB INLET
ST2-D1	647.65	18" ADS (OUT): 644.50	SINGLE CATCH BASIN
ST2-E1	637.76	18" ADS (IN): 632.40 18" ADS (OUT): 632.30	SINGLE CURB INLET
ST2-E2	638.44	18" ADS (IN): 633.10 18" ADS (OUT): 633.00	SINGLE CURB INLET
ST2-E3	641.66	18" ADS (IN): 636.10 18" ADS (IN): 636.10 18" ADS (OUT): 636.00	SINGLE CURB INLET
ST2-E4	646.85	18" ADS (IN): 642.60 18" ADS (OUT): 642.50	SINGLE CURB INLET
ST2-E5	646.85	18" ADS (OUT): 643.00	SINGLE CURB INLET
ST2-G1	640.27	18" ADS (IN): 635.30 18" ADS (OUT): 635.20	SINGLE CATCH BASIN
ST2-G2	646.26	18" ADS (IN): 640.80 18" ADS (OUT): 640.70	SINGLE CATCH BASIN
ST2-G3	649.71	18" ADS (OUT): 645.00	SINGLE CATCH BASIN
ST2-H1	643.50	18" ADS (OUT): 640.00	SINGLE CURB INLET
ST2-I1	645.17	18" ADS (OUT): 642.00	SINGLE CATCH BASIN
ST2-J1	649.99	24" ADS (IN): 646.00 24" ADS (OUT): 645.90	SINGLE CURB INLET
ST2-J2	654.14	24" ADS (IN): 649.50 24" ADS (OUT): 649.40	SINGLE CURB INLET
ST2-J3	654.10	24" ADS (IN): 649.80 24" ADS (OUT): 649.70	SINGLE CURB INLET
ST2-J4	654.68	18" ADS (IN): 650.50 24" ADS (IN): 650.10 24" ADS (OUT): 650.00	SINGLE CURB INLET
ST2-J5	656.82	24" ADS (IN): 651.50 18" ADS (IN): 653.30 24" ADS (OUT): 651.40	SINGLE CURB INLET
ST2-J6	659.34	18" ADS (IN): 655.30 18" ADS (OUT): 655.20	SINGLE CURB INLET
ST2-J7	659.21	18" ADS (OUT): 655.70	SINGLE CURB INLET
ST2-K1	654.68	18" ADS (OUT): 651.00	SINGLE CURB INLET
ST2-L1	655.39	18" ADS (IN): 652.20 24" ADS (OUT): 652.10	SINGLE CATCH BASIN
ST2-L2	661.32	18" ADS (OUT): 658.00	SINGLE CATCH BASIN
ST2-M1	659.22	18" ADS (OUT): 656.20	SINGLE CURB INLET
ST2-N1	641.66	18" ADS (OUT): 637.00	SINGLE CURB INLET
ST3-A1	626.09	36" ADS (IN): 622.87	30" - 36" CONCRETE HEADWALL
ST3-A2	627.75	36" ADS (OUT): 623.00	POND 3 OUTLET STRUCTURE
ST3-B1	626.21	36" ADS (IN): 623.00	30" - 36" CONCRETE HEADWALL
ST3-B3	630.48	24" ADS (IN): 625.40 30" ADS (IN): 625.70 36" ADS (OUT): 625.30	SINGLE CURB INLET
ST3-B4	634.42	24" ADS (IN): 630.60 18" ADS (IN): 630.60 24" ADS (OUT): 630.50	SINGLE CURB INLET
ST3-B5	638.66	24" ADS (IN): 634.50 18" ADS (IN): 635.20 24" ADS (OUT): 634.40	SINGLE CURB INLET
ST3-B5A	641.47	24" ADS (OUT): 637.42	SINGLE CURB INLET
ST3-D2	630.20	30" ADS (IN): 626.00 30" ADS (OUT): 625.90	SINGLE CURB INLET
ST3-D3	631.27	30" ADS (IN): 626.40 30" ADS (OUT): 626.30	SINGLE CURB INLET
ST3-D4	631.27	30" ADS (IN): 626.70 30" ADS (OUT): 626.60	SINGLE CURB INLET
ST3-D5	633.90	30" ADS (IN): 627.60 30" ADS (OUT): 627.50	SINGLE CURB INLET
ST3-D6	633.12	24" ADS (IN): 628.10 30" ADS (OUT): 628.00	SINGLE CATCH BASIN

STORM STRUCTURE TABLE			
ID	RIM	INVERT	TYPE
ST3-D7	636.44	24" ADS (IN): 631.00 24" ADS (OUT): 630.90	SINGLE CATCH BASIN
ST3-D8	641.53	24" ADS (IN): 636.50 18" ADS (IN): 636.50 24" ADS (OUT): 636.40	SINGLE CATCH BASIN
ST3-D9	646.51	24" ADS (IN): 641.70 24" ADS (OUT): 641.60	JUNCTION MANHOLE
ST3-D10	647.97	18" ADS (IN): 644.30 24" ADS (OUT): 643.50	SINGLE CURB INLET
ST3-E1	647.97	18" ADS (IN): 644.70 18" ADS (OUT): 644.60	SINGLE CURB INLET
ST3-E2	648.81	18" ADS (IN): 645.60 18" ADS (OUT): 645.50	SINGLE CURB INLET
ST3-F1	649.13	18" ADS (OUT): 645.90	SINGLE CURB INLET
ST3-H1	634.42	18" ADS (OUT): 631.00	SINGLE CURB INLET
ST3-I1	638.66	18" ADS (OUT): 635.45	SINGLE CURB INLET
ST3-Z1	644.05	18" ADS (OUT): 640.00	SINGLE CATCH BASIN
ST5-A1	617.80	24" ADS (IN): 613.64	18" - 24" CONCRETE HEADWALL
ST5-A2	621.88	24" ADS (OUT): 617.00	POND 5 OUTLET STRUCTURE
ST5-C12	648.95	18" ADS (IN): 644.60 18" ADS (IN): 644.10 24" ADS (IN): 644.60 24" ADS (OUT): 644.00	SINGLE CURB INLET
ST5-C13	650.05	18" ADS (IN): 645.10 18" ADS (OUT): 645.00	JUNCTION MANHOLE
ST5-C14	651.04	18" ADS (IN): 645.80 18" ADS (IN): 645.80 18" ADS (OUT): 645.70	SINGLE CURB INLET
ST5-C15	658.77	18" ADS (IN): 653.80 18" ADS (IN): 653.80 18" ADS (OUT): 653.70	SINGLE CURB INLET
ST5-C16	664.61	18" ADS (IN): 661.10 18" ADS (OUT): 661.00	SINGLE CURB INLET
ST5-C17	664.61	18" ADS (OUT): 662.00	SINGLE CURB INLET
ST5-Q1	648.95	18" ADS (OUT): 645.00	SINGLE CURB INLET
ST5-R1	648.48	24" ADS (IN): 645.00 24" ADS (OUT): 644.90	SINGLE CATCH BASIN
ST5-R2	658.98	24" ADS (OUT): 656.20	SINGLE CATCH BASIN
ST5-S1	650.68	18" ADS (OUT): 646.20	SINGLE CURB INLET
ST5-T1	658.77	18" ADS (OUT): 654.50	SINGLE CURB INLET
ST6-A1	619.64	36" ADS (IN): 614.43	30" - 36" CONCRETE HEADWALL
ST6-A2	618.30	36" ADS (OUT): 615.00	POND 6 OUTLET STRUCTURE
ST6-L1	658.80	18" ADS (OUT): 652.60	SINGLE CATCH BASIN
ST6-M3	664.10	18" ADS (IN): 659.10	JUNCTION MANHOLE
ST6-M4	665.26	18" ADS (IN): 660.50 18" ADS (OUT): 660.40	SINGLE CURB INLET
ST6-M5	665.26	18" ADS (OUT): 660.80	SINGLE CURB INLET

STORM PIPE TABLE								
INLET	INVERT	OUTLET	INVERT	LENGTH (FT)	SLOPE (%)	SHAPE	DIAMETER (IN)	MATERIAL
BYP-A2	611.00	BYP-A1	610.30	8	8.39%	CIRCULAR	18	ADS
BYP-A3	615.90	BYP-A2	614.00	95	1.99%	CIRCULAR	18	ADS
BYP-A4	617.45	BYP-A3	616.00	28	5.20%	CIRCULAR	18	ADS
BYP-A5	618.80	BYP-A4	617.45	66	2.05%	CIRCULAR	18	ADS
BYP-B1	618.50	BYP-A2	618.00	48	1.04%	CIRCULAR	18	ADS
BYP-C2	621.00	BYP-C1	612.00	25	35.97%	CIRCULAR	18	ADS
BYP-C3	621.25	BYP-C2	621.00	26	0.98%	CIRCULAR	18	ADS
BYP-D2	618.00	BYP-D1	616.82	131	0.90%	CIRCULAR	18	ADS
BYP-D3	619.25	BYP-D2	618.10	107	1.08%	CIRCULAR	18	ADS
BYP-D4	620.00	BYP-D3	619.35	128	0.51%	CIRCULAR	18	ADS
BYP-E1	618.40	BYP-A4	617.45	34	2.77%	CIRCULAR	18	ADS
BYP-E2	621.00	BYP-E1	618.50	43	5.77%	CIRCULAR	18	ADS
ST1-A2	620.00	ST1-A1	616.44	39	9.01%	CIRCULAR	18	ADS
ST1-B2	620.20	ST1-B3	622.00	240	0.75%	CIRCULAR	18	ADS
ST1-B2	620.15	ST1-B1	620.00	21	0.71%	CIRCULAR	18	ADS
ST1-B3	622.10	ST1-B4	622.40	25	1.20%	CIRCULAR	18	ADS
ST1-C1	620.20	ST1-B2	620.15	22	0.22%	CIRCULAR	18	ADS
ST1-C2	620.90	ST1-C1	620.30	162	0.37%	CIRCULAR	18	ADS
ST1-C3	622.79	ST1-C2	620.90	246	0.77%	CIRCULAR	18	ADS
ST1-C4	622.98	ST1-C3	622.73	25	1.00%	CIRCULAR	18	ADS
ST1-D1	620.26	ST1-C1	620.20	25	0.22%	CIRCULAR	18	ADS
ST1-E1	621.20	ST1-C2	620.90	25	1.20%	CIRCULAR	18	ADS
ST1-F2	622.90	ST1-F1	620.66	198	1.13%	CIRCULAR	18	ADS
ST2-A2	620.00	ST2-A1	619.79	14	1.47%	CIRCULAR	36	ADS
ST2-A2	620.00	ST2-A1	619.79	14	1.44%	CIRCULAR	36	ADS
ST2-B2	622.00	ST2-B1	621.59	57	0.72%	CIRCULAR	18	ADS
ST2-B3	623.20	ST2-B2	622.10	167	0.66%	CIRCULAR	18	ADS
ST2-B4	623.60	ST2-B3	623.30	25	1.20%	CIRCULAR	18	ADS
ST2-C2	625.00	ST2-C1	621.52	30	11.77%	CIRCULAR	30	ADS
ST2-C4	630.50	ST2-C5	631.10	32	1.90%	CIRCULAR	30	ADS
ST2-C4	630.40	ST2-C2	628.00	152	1.58%	CIRCULAR	30	ADS
ST2-C6	631.70	ST2-C5	631.10	39	1.52%	CIRCULAR	30	ADS
ST2-C7	633.87	ST2-C6	631.80	126	1.65%	CIRCULAR	30	ADS
ST2-C8	635.60	ST2-C7	634.00	167	0.96%	CIRCULAR	30	ADS
ST2-C9	635.90	ST2-C8	635.60	25	1.20%	CIRCULAR	30	ADS
ST2-C10	636.40	ST2-C9	636.00	43	0.93%	CIRCULAR	24	ADS
ST2-C11	637.70	ST2-C10	636.50	117	1.03%	CIRCULAR	24	ADS
ST2-C12	644.50	ST2-C11	642.00	138	1.82%	CIRCULAR	24	ADS
ST2-C13	645.00	ST2-C12	644.60	25	1.60%	CIRCULAR	24	ADS
ST2-C14	645.40	ST2-C13	645.10	37	0.80%	CIRCULAR	24	ADS
ST2-C15	649.90	ST2-C14	645.50	263	1.67%	CIRCULAR	18	ADS
ST2-C16	650.30	ST2-C15	650.00	30	1.01%	CIRCULAR	18	ADS
ST2-C17	654.70	ST2-C16	650.40	207	2.08%	CIRCULAR	18	ADS
ST2-C18	655.20	ST2-C17	654.80	43	0.92%	CIRCULAR	18	ADS
ST2-C19	655.70	ST2-C18	655.30	25	1.60%	CIRCULAR	18	ADS
ST2-D1	644.50	ST2-C2	628.00	459	3.60%	CIRCULAR	18	ADS
ST2-E1	632.30	ST2-C6	631.80	31	1.61%	CIRCULAR	18	ADS
ST2-E2	633.00	ST2-E1	632.40	48	1.24%	CIRCULAR	18	ADS
ST2-E3	636.00	ST2-E2	633.10	153	1.90%	CIRCULAR	18	ADS
ST2-E4	642.50	ST2-E3	636.10	252	2.54%	CIRCULAR	18	ADS
ST2-E5	643.00	ST2-E4	642.60	25	1.60%	CIRCULAR	18	ADS
ST2-G1	635.20	ST2-C7	634.00	61	1.96%	CIRCULAR	18	ADS
ST2-G2	640.70	ST2-G1	635.30	289	1.87%	CIRCULAR	18	ADS
ST2-G3	645.00	ST2-G2	640.80	201	2.09%	CIRCULAR	18	ADS
ST2-H1	640.00	ST2-C10	639.60	25	1.60%	CIRCULAR	18	ADS
ST2-I1	642.00	ST2-C11	640.70	73	1.79%	CIRCULAR	18	ADS
ST2-J1	645.90	ST2-C14	645.50	31	1.30%	CIRCULAR	24	ADS
ST2-J2	649.40	ST2-J1	646.00	172	1.98%	CIRCULAR	24	ADS
ST2-J3	649.70	ST2-J2	649.50	25	0.80%	CIRCULAR	24	ADS
ST2-J4	650.00	ST2-J3	649.80	42	0.48%	CIRCULAR	24	ADS
ST2-J5	651.40	ST2-J4	650.10	101	1.28%	CIRCULAR	24	ADS
ST2-J6	655.20	ST2-J5	653.30	116	1.64%	CIRCULAR	18	ADS
ST2-J7	655.70	ST2-J6	655.30	25	1.59%	CIRCULAR	18	ADS
ST2-K1	651.00	ST2-J4	650.50	25	2.00%	CIRCULAR	18	ADS
ST2-L1	652.10	ST2-J5	651.50	55	1.08%	CIRCULAR	24	ADS

STORM PIPE TABLE								
INLET	INVERT	OUTLET	INVERT	LENGTH (FT)	SLOPE (%)	SHAPE	DIAMETER (IN)	MATERIAL
ST2-L2	658.00	ST2-L1	652.20	260	2.23%	CIRCULAR	18	ADS
ST2-M1	656.20	ST2-C17	655.50	25	2.80%	CIRCULAR	18	ADS
ST2-N1	637.00	ST2-E3	636.10	25	3.60%	CIRCULAR	18	ADS
ST3-A2	623.00	ST3-A1	622.87	20	0.62%	CIRCULAR	36	ADS
ST3-B3	625.30	ST3-B1	623.00	231	1.00%	CIRCULAR	36	ADS
ST3-B4	630.50	ST3-B3	625.40	231	2.21%	CIRCULAR	24	ADS
ST3-B5	634.40	ST3-B4	630.60	249	1.52%	CIRCULAR	24	ADS
ST3-B5A	637.42	ST3-B5	634.50	166	1.76%	CIRCULAR	24	ADS
ST3-D2	625.90	ST3-B3	625.70	30	0.67%	CIRCULAR	30	ADS
ST3-D3	626.30	ST3-D2	626.00	43	0.70%	CIRCULAR	30	ADS
ST3-D4	626.60	ST3-D3	626.40	25	0.80%	CIRCULAR	30	ADS
ST3-D5	627.50	ST3-D4	626.70	126	0.64%	CIRCULAR	30	ADS
ST3-D6	628.00	ST3-D5	627.60	42	0.96%	CIRCULAR	30	ADS
ST3-D7	630.90	ST3-D6	628.10	213	1.32%	CIRCULAR	24	ADS
ST3-D8	636.40	ST3-D7	631.00	307	1.76%	CIRCULAR	24	ADS
ST3-D9	641.60	ST3-D8	636.50	149	3.41%	CIRCULAR	24	ADS
ST3-D10	643.50	ST3-D9	641.70	87	2.07%	CIRCULAR	24	ADS
ST3-E1	644.60	ST3-D10	644.30	25	1.20%	CIRCULAR	18	ADS
ST3-E2	645.50	ST3-E1	644.70	39	2.05%	CIRCULAR	18	ADS
ST3-F1	645.90	ST3-E2	645.60	30	1.01%	CIRCULAR	18	ADS
ST3-H1	631.00	ST3-B4	630.60	25	1.60%	CIRCULAR	18	ADS
ST3-I1	635.45	ST3-B5	635.20	25	1.00%	CIRCULAR	18	ADS
ST3-Z1	640.00	ST3-D8	636.50	149	2.35%	CIRCULAR	18	ADS
ST5-A2	617.00	ST5-A1	613.64	33	10.09%	CIRCULAR	24	ADS
ST5-C12	644.00		640.50	204	1.71%	CIRCULAR	24	ADS
ST5-C13	645.00	ST5-C12	644.10	117	0.77%	CIRCULAR	18	ADS
ST5-C14	645.70	ST5-C13	645.10	47	1.29%	CIRCULAR	18	ADS
ST5-C15	653.70	ST5-C14	645.80	232	3.41%	CIRCULAR	18	ADS
ST5-C16	661.00	ST5-C15	653.80	257	2.80%	CIRCULAR	18	ADS
ST5-C17	662.00	ST5-C16	661.10	25	3.60%	CIRCULAR	18	ADS
ST5-Q1	645.00	ST5-C12	644.60	25	1.60%	CIRCULAR	18	ADS
ST5-R1	644.90	ST5-C12	644.60	33	0.90%	CIRCULAR	24	ADS
ST5-R2	656.20	ST5-R1	645.00	304	3.68%	CIRCULAR	24	ADS
ST5-S1	646.20	ST5-C14	645.80	27	1.47%	CIRCULAR	18	ADS
ST5-T1	654.50	ST5-C15	653.80	25	2.80%	CIRCULAR	18	ADS
ST6-A2	615.00	ST6-A1	614.43	22	2.61%	CIRCULAR	36	ADS
ST6-L1	652.60		650.80	171	1.05%	CIRCULAR	18	ADS
ST6-M4	660.40	ST6-M3	659.10	126	1.03%	CIRCULAR	18	ADS
ST6-M5	660.80	ST6-M4	660.50	25	1.20%	CIRCULAR	18	ADS

CRUNK ENGINEERING LLC
7112 CROSSROADS BOULEVARD
SUITE 201
FRANKLIN, TN 37027
(615) 873-1795
WWW.CRUNKENG.COM

ENGINEERING CRUNK

TENNESSEE DEPARTMENT OF AGRICULTURE
REGISTERED LANDSCAPE ARCHITECT
ANNA WILSON CALL
No. 1341
COMMERCE
STATE OF TENNESSEE
9/21/23

GREENS MILL ROAD - PHASE 1
LAND DISTURBANCE PLANS
COLUMBIA, TENNESSEE

REVISIONS	
No.	DATE

09/21/23 17067

C6.8
STORM PIPE & STRUCTURE TABLES

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	2558 Greens Mill Rd., Columbia, TN 38401		
	TAX MAP: 51	GROUP:	PARCEL: 55.00
SUMMARY OF NATURE OF REQUEST AND WORK	The purpose of this plat is to create 100 build-able lots, 4 open space lots, dedication of Right of Way, and Easements.		

DATE OF PRE-APPLICATION CONFERENCE	12/06/23	*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) The Landing at Greens Mill Rd. - Phase 1 ☐ Total Number of Lots 100 Lots ☐ Total acreage 17.154 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	Crunk Engineering, LLC	PHONE	615-873-1795
ADDRESS	7112 Crossroads Blvd., #201, Brentwood, TN 37027	EMAIL	alex@crunkeng.com

PROPERTY OWNER NAME	Safe Harbor Residential	PHONE	865-622-1774
ADDRESS	105 Westpark Dr., #365, Brentwood, TN 37027	EMAIL	taylor@safeharborresidential.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.

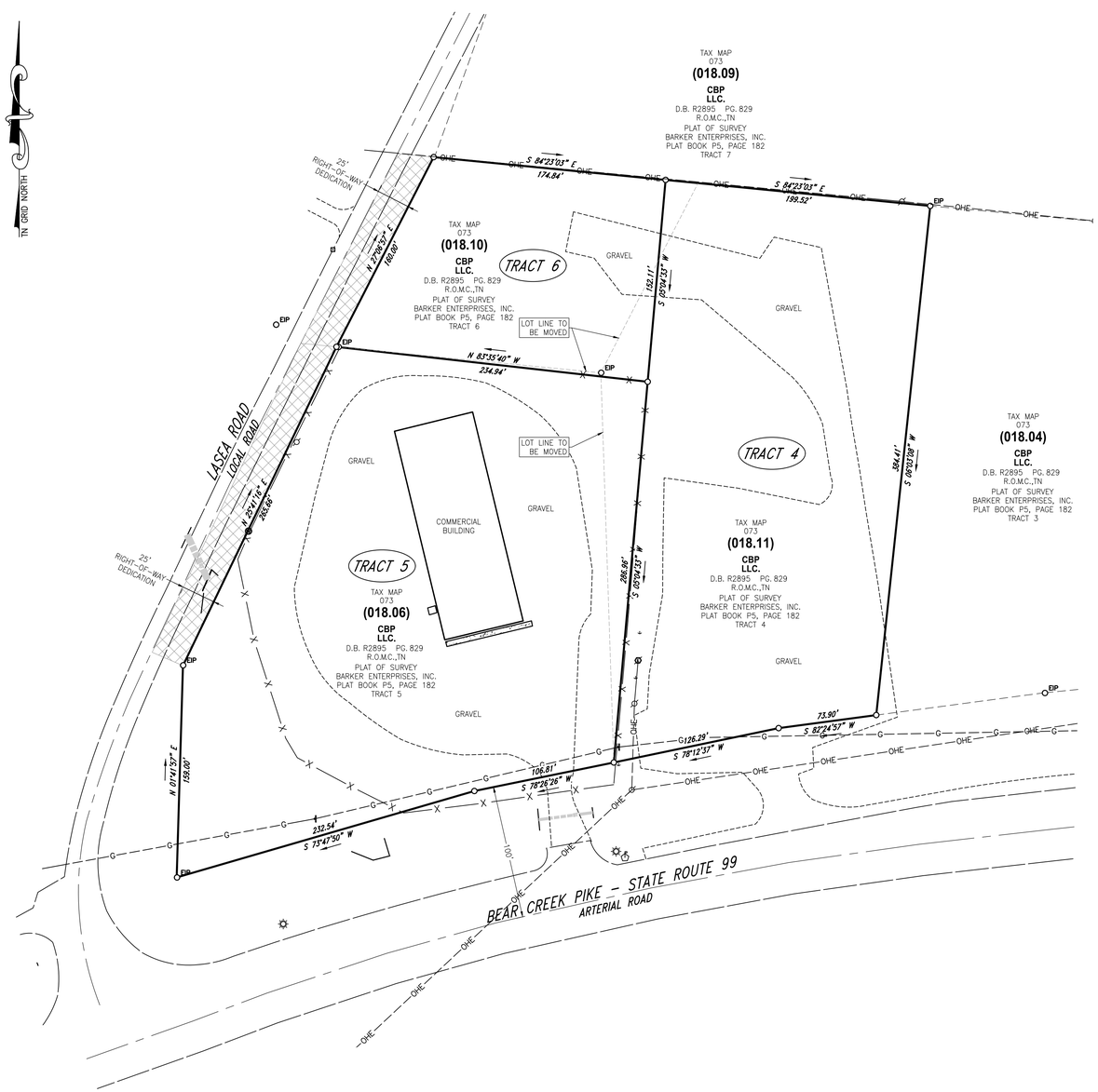
Adam Crunk, PE	Adam Crunk	12/18/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Kelsey DuMont		12/18/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

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	



LOT AREA TABLE

TRACT	SQ. FT.	ACRES
4	80,366.5	1.84
5	101,426.8	2.33
6	30,877.8	0.71

PURPOSE NOTE:
The purpose of this plat is to reconfigure 3 existing commercial lots and dedicate right-of-way.

DRIVEWAY NOTE:
All driveways shall be constructed to contain gutter flow within the street and right-of-way, particularly lots that do not have a sidewalk.

GENERAL NOTE:
The recording of this plat vacates, voids, and supercedes previous plat of record P5, Page 182 for Tracts 4, 5, and 6.

PARCEL NUMBER:
TAX MAP 073, PARCEL 018.06, 018.10, 018.11

DEED BOOK:
R2895, PAGE 829

PLAT BOOK:
P5, PAGE 182

PARCEL ADDRESS:
PARCEL 018.06: 1485 BEAR CREEK PIKE
PARCEL 018.10: LASEA ROAD
PARCEL 018.11: BEAR CREEK PIKE

EXISTING ZONING:
CD-4C

BUILDING SETBACKS:
PRINCIPAL BUILDING
FRONT(PRINCIPAL) – 6' MIN., 40' MAX
FRONT(SECONDARY) – 6' MIN., 40' MAX
SIDE – 0'
REAR – 3' MIN. OR 15' FROM CENTER LINE OF REAR ALLEY
ACCESSORY BUILDING
FRONT(PRINCIPAL) – 20' MIN. BEHIND PRINCIPAL BUILDING FRONTAGE
FRONT(SECONDARY) – 5' MIN.
SIDE – 0'
REAR – 3' MIN. OR 5' IF GARAGE DOOR FACES REAR ALLEY

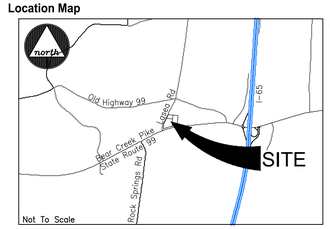
ACREAGE OF PARCEL:
±5.13 ACRES
±0.24 ACRES – RIGHT-OF-WAY DEDICATION

PROPERTY OWNER:
CBP LLC
2205 GOLF CLUB LN
COLUMBIA, TN 38401

Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category 1 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 parcels as shown hereon.
7. This property currently identified as Tax Map No. 073, Parcel No. 018.06, 018.10, 018.11, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: P5, Page 182
9. Deed reference: Book R2895, Page 829
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 does not represent a title search or a guarantee of title, and is subject to any state of facts a current and accurate search may reveal.
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. This property is not located in a Special Flood Hazard Area on a not printed F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0195E, dated April 16, 2007, and shown hereon graphically.
17. All public utility and drainage easements located on proposed lots are to be maintained by the individual property owner for said lot.
18. All property corners are ½" rebar with cap reading "WES 1987" unless otherwise noted.

Location Map



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2486 NASHVILLE HIGHWAY
COLUMBIA, TN 38401
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ENGINEERS & SURVEYORS

Client
PARMAN HOLDINGS CORPORATION

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 R2895, Page 829, 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.

Date CBP LLC

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, STREET SIGNS, AND UTILITIES

I hereby certify that the streets, drainage, and utilities designated in CBP LLC Property, Tracts 4, 5, 6 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.

Date City Engineer, Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date Maury County E-911, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF 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 has been filed to guarantee said installation.

Date Director of Wastewater Department, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled CBP LLC Property, Tracts 4, 5, 6 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 & Water Systems, Columbia, Tennessee

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

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, Columbia, Tennessee

SURVEYOR'S CERTIFICATION (TENNESSEE)

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 category "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

12/18/23 Date — Allen B. O'Leary — TN RLS #1987 Number

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — TENNESSEE NO. 1987

Register of Deed Recording Stamp

FINAL PLAT

CBP LLC PROPERTY, TRACTS 4, 5, 6
LASEA RD AND BEAR CREEK PIKE, COLUMBIA, TN

REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 12-18-2023

Job. no. 23582
Scale: Vertical: 1"=50' Horizontal:

1 of 1

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

Legend

EIP Iron Rod Found
IPS Iron Rod Set
I.P.F. Iron Pipe Found
AXLE Axle Found
FENCE 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
Gas Line
Sanitary Sewer Line
Water Line
Storm Sewer Line
Overhead Utility Line
Overhead Cable Line
Overhead Electric Line
Overhead Telephone Line
Underground Utility Line
Underground Cable Line
Underground Electric Line
Underground Telephone Line
Forced Main Line

FILE: J:\WES_Engineers_Surveyors 2023\23582 – 1485 Bear Creek Pike – Parman Holdings\Dwg\Survey\23582 Bear Creek Survey.dwg

December 18, 2023

City of Columbia
Development Services
700 North Garden Street
Columbia, TN 38401

RE: **Project Name: CBP LLC PROPERTY, TRACTS 4, 5, 6**
City of Columbia Staff Review Submittal

On behalf of CBP, LLC, the owner of the proposed final plat reconfiguring of 3 existing commercial lots, **WES Engineers & Surveyors** would like to submit this Final Plat to the City of Columbia for approval.

If you have any questions or comments with this submittal, please do not hesitate to contact me directly.

Sincerely,
WES Engineers & Surveyors



Allen B. O'Leary, RLS
Principal

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	Lasea Road & Bear Creek Pike, Columbia, TN		
	TAX MAP: 073	GROUP:	PARCEL: 18.06,18.10,18.11
SUMMARY OF NATURE OF REQUEST AND WORK	Request Final Plat approval for re-configuring 3 existing commercial lots and dedicate right-of-way.		

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: **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) CBP LLC PROPERTY, TRACTS 4, 5, 6 ☑ Total Number of Lots 3 ☑ Total acreage ±5.13

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	Allen B. O'Leary	PHONE	931-388-2329
ADDRESS	2486 Nashville Hwy, Columbia, TN	EMAIL	allen@wesengineers.com

PROPERTY OWNER NAME	CBP, LLC	PHONE	
ADDRESS	2205 Golf Club Lane 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.

Allen OLeary
APPLICANT NAME

APPLICANT SIGNATURE

12/18/23
DATE

CBP, LLC
PROPERTY OWNER NAME

PROPERTY OWNER SIGNATURE

12/18/23
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	

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 R2839, Page 368, 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.

Date — Regent Homes LLC

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, STREET SIGNS, AND UTILITIES

I hereby certify that the streets, drainage, and utilities designated in Rutherford Subdivision, Phase 1 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.

Date — City Engineer, Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date — Maury County E-911, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF 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 has been filed to guarantee said installation.

Date — Director of Wastewater Department, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Rutherford Subdivision, Phase 1 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 & Water Systems, Columbia, Tennessee

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

CERTIFICATE OF APPROVAL FOR RECORDING

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Date — Secretary, Planning Commission, Columbia, Tennessee

SURVEYOR'S CERTIFICATION (TENNESSEE)

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 category "I" Land Survey as defined in Title 62 Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

12/18/23 — Allen B. O'Leary — TN RLS #1987
Date — Allen B. O'Leary — Number

PURPOSE NOTE:
The purpose of this plat is to create 31 single family lots and dedicate right-of-way.

DRIVEWAY NOTE:
All driveways shall be constructed to contain gutter flow within the street and right-of-way, particularly lots that do not have a sidewalk.

STORMWATER MANAGEMENT AGREEMENT:
RECORDED:_____
DEED BOOK:_____ PAGE:_____

PARCEL NUMBER:
TAX MAP 112, PARCEL 003.06

DEED BOOK:
R2839, PAGE 368

PARCEL ADDRESS:
RUTHERFORD LANE
COLUMBIA, TN 38401

EXISTING ZONING:
CD-3, NEIGHBORHOOD DISTRICT

BUILDING SETBACKS:
FRONT – 30'
SIDE – 10'
REAR – 30'

ACREAGE OF PARCEL:
±65.64 ACRES – TOTAL
±4844 ACRES – REMAINING PROPERTY
±17.20 ACRES – PHASE 1
±2.10 ACRE – 91,375.3 S.F. – R.O.W. DEDICATION

PROPERTY OWNER:
REGENT HOMES LLC
6901 LENOX VILLAGE DR
STE 107
NASHVILLE, TN 37211

TAX MAP 112
(003.06)
Regent Homes LLC
D.B. R2839 PG. 368
R.O.M.C.,TN
REMAINING PROPERTY

TAX MAP 112C, GRP 'A'
(006.00)
Barbara S Bridges
D.B. 1343 PG. 890
R.O.M.C.,TN
PB P4, PG 95

TAX MAP 112C, GRP 'A'
(007.00)
Scroggins Revocable Living Trust
D.B. R2891 PG. 1191
R.O.M.C.,TN
PB P4, PG 95

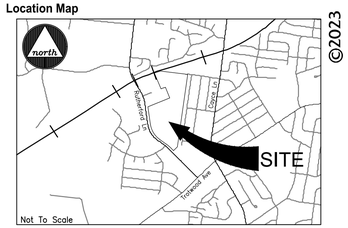
TAX MAP 112C, GRP 'A'
(008.00)
George R Jr & Anita Kaye Richards
D.B. R2594 PG. 915
R.O.M.C.,TN
PB P4, PG 95

TAX MAP 112C, GRP 'A'
(009.00)
Beverly Heirs Navarre
D.B. R2909 PG. 677
R.O.M.C.,TN
PB P4, PG 95

TAX MAP 112C, GRP 'B'
(001.00)
Daniel P & Diana J Goad
D.B. R1435 PG. 753
R.O.M.C.,TN
PB P4, PG 95

TAX MAP 112C, GRP 'A'
(003.07)
CBP LLC
D.B. R2895 PG. 1276
R.O.M.C.,TN

Location Map



©2023

LOT	SQ. FT.	ACRES
22	10,720.0	0.25
23	10,720.0	0.25
24	10,050.0	0.23
25	10,050.0	0.23
26	10,050.0	0.23
27	14,859.2	0.34
28	14,866.9	0.34
29	11,152.8	0.26
30	13,878.1	0.32
31	11,421.4	0.26
32	11,250.7	0.26
33	15,509.8	0.36
34	16,841.4	0.39
35	19,254.3	0.44
36	15,544.5	0.36
37	14,855.0	0.34
38	14,488.5	0.33
39	13,379.2	0.31
40	10,017.0	0.23
41	10,152.3	0.23
42	10,187.9	0.23
43	10,591.5	0.24
44	12,326.8	0.28
45	16,351.1	0.38
46	13,477.6	0.31
47	13,519.4	0.31
48	10,050.0	0.23
49	10,050.0	0.23
50	10,050.0	0.23
51	11,390.0	0.26
52	11,390.0	0.26
OS–3A	26,011.4	0.60
OS–4A	188,610.9	4.33
OS–8	55,220.0	1.27

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	25.00'	38.57'	34.86'	N 81°23'45" E	88°23'52"
C2	425.00'	5.58'	5.58'	N 37°34'23" E	0°45'07"
C3	425.00'	60.00'	59.95'	N 41°59'35" E	8°05'19"
C4	25.00'	36.49'	33.33'	N 04°13'38" E	83°37'14"
C5	225.00'	31.45'	31.42'	N 41°35'15" W	8°00'32"
C6	225.00'	68.45'	68.18'	N 54°18'24" W	17°25'47"
C7	175.00'	6.19'	6.19'	N 62°00'32" W	2°01'32"
C8	175.00'	88.99'	88.03'	N 46°25'44" W	29°08'03"
C9	175.00'	76.35'	75.75'	N 19°21'43" W	24°59'50"
C10	25.00'	32.95'	30.62'	N 44°37'33" W	75°31'21"
C11	55.00'	42.49'	41.44'	N 60°15'16" W	44°15'54"
C12	55.00'	39.19'	38.37'	N 17°42'28" W	40°49'41"
C13	55.00'	38.69'	37.90'	N 22°51'40" E	40°18'35"
C14	55.00'	45.19'	43.93'	N 66°33'06" E	47°04'17"
C15	55.00'	39.08'	38.26'	S 69°33'25" E	40°42'41"
C16	55.00'	34.41'	33.85'	S 31°16'36" E	35°50'57"
C17	55.00'	6.23'	6.22'	S 10°06'30" E	6°29'15"
C18	125.00'	122.52'	117.67'	S 34°56'35" E	56°09'26"
C19	275.00'	55.04'	54.95'	S 57°17'17" E	11°28'01"
C20	275.00'	67.06'	66.89'	S 44°34'08" E	13°58'17"
C21	25.00'	36.49'	33.33'	S 79°23'56" E	83°37'14"
C22	425.00'	44.70'	44.68'	N 61°48'35" E	6°01'32"
C23	425.00'	44.70'	44.68'	N 67°50'05" E	6°01'32"
C24	25.00'	36.49'	33.33'	N 29°02'14" E	83°37'14"
C25	225.00'	82.06'	81.60'	N 02°19'31" W	20°53'44"
C72	175.00'	63.80'	63.47'	S 02°19'31" E	20°53'44"
C73	25.00'	36.49'	33.33'	S 54°35'00" E	83°37'14"
C74	425.00'	88.79'	88.62'	N 89°35'28" E	11°58'11"
C75	425.00'	18.94'	18.94'	S 83°08'51" E	2°33'11"
C76	375.00'	45.50'	45.47'	N 85°20'50" W	6°57'08"
C77	375.00'	77.06'	76.92'	S 85°17'24" W	11°46'24"
C78	375.00'	177.99'	176.32'	S 65°48'22" W	27°11'40"
C79	375.00'	75.15'	75.03'	S 46°28'03" W	11°28'58"
C80	375.00'	23.10'	23.09'	S 38°57'42" W	3°31'45"
C81	25.00'	38.56'	34.85'	S 06°59'03" E	88°21'44"
C82	1472.39'	159.85'	159.77'	N 48°03'19" W	6°13'13"
C83	1472.39'	88.62'	88.61'	N 52°53'23" W	3°26'55"
C84	874.94'	708.93'	689.69'	N 31°11'35" W	46°25'28"

Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category 1 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 parcels as shown hereon.
7. This property currently identified as Tax Map No. 112, Parcel No. 003.06, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: N/A
9. Deed reference: Book R2839, Page 368
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 does not represent a title search or a guarantee of title, and is subject to any state of facts a current and accurate search may reveal.
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. This property is not located in a Special Flood Hazard Area as shown on F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0280E, dated April 16, 2007, and shown hereon graphically.
17. All public utility and drainage easements located on proposed lots are to be maintained by the individual property owner for said lot.
18. All property corners are ½" rebar with cap reading "WES 1987" unless otherwise noted.

Register of Deed Recording Stamp

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — TENNESSEE — NO. 1987

DEVELOPMENT AREA

PHASE 1

SUBDIVISION TYPICAL LOT LAYOUT



OPEN SPACE NOTE:
ALL OPEN SPACE AREA IS TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION, CREATED FOR THE PURPOSE OF MAINTAINING ALL COMMON OPEN SPACE AND GROUNDS INCLUDING THE DETENTION AREAS SHOWN ON THIS PLAT. ALL OPEN SPACE AREA IS CONSIDERED A PUBLIC UTILITY, AND DRAINAGE EASEMENT.

Legend

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

Evergreen Tree	
Deciduous Tree	
Bush	
Sign	

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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

ENGINEERS & SURVEYORS

Client
REGENT HOMES LLC
6901 LENOX VILLAGE DR
SUITE 107
NASHVILLE, TN 37211

FINAL PLAT
RUTHERFORD SUBDIVISION, PHASE 1
COLUMBIA, TN

REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 12-18-2023

Job. no. 23528
Scale: Vertical: 1"=50'
Horizontal:

1 of 1

Appendix B: Subdivision Development Agreement

This DEVELOPMENT AGREEMENT is made and entered into on this

29th day of November, 2023,
between THE CITY OF COLUMBIA, TENNESSEE, (hereinafter the "CITY"), and

Regent Homes 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

_____ day of _____, 20_____,
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.

Rutherford Phase 1
PROJECT

Completed by the Developer	*Completed by the City*
Regent Homes LLC DEVELOPER NAME	
David A McGowan AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
11-29-2023 DATE	DATE
6901 Lenox Village Dr #107 STREET	
Nashville, TN 37211 CITY, STATE, ZIP	
615-981-0900 PHONE	
Andy.Davidson@regenthomes-TN.com EMAIL	
Attest	*Attest*
Andy Davidson ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
11/29/23 DATE	DATE

December 18, 2023

City of Columbia
Development Services
700 North Garden Street
Columbia, TN 38401

RE: **Project Name: Rutherford Subdivision, Phase 1, Final Plat**
City of Columbia Staff Review Submittal

On behalf of Regent Homes LLC, the owner of these 31 proposed single family lots, **WES Engineers & Surveyors** would like to submit this Final Plat to the City of Columbia for Planning Commission approval.

If you have any questions or comments with this submittal, please do not hesitate to contact me directly.

Sincerely,
WES Engineers & Surveyors



Allen B. O'Leary, RLS
Principal

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	Rutherford Lane, Columbia, TN		
	TAX MAP: 112	GROUP:	PARCEL: 003.06
SUMMARY OF NATURE OF REQUEST AND WORK	Request Final Plat approval for 31 single family residential lots for Rutherford Subdivision, Phase 1.		

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: **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) Rutherford Subdivision, Phase 1 ☑ Total Number of Lots 31 ☑ Total acreage ±17.20

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	Allen B. O'Leary	PHONE	931-388-2329
ADDRESS	2486 Nashville Hwy, Columbia, TN	EMAIL	allen@wesengineers.com

PROPERTY OWNER NAME	Regent Homes LLC	PHONE	
ADDRESS	6901 Lenox Village Dr, Ste 107 Nashville, TN 37211	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.

Regent Homes LLC		12-14-2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
McGowan FLP		12-14-2023
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	

Appendix B: Subdivision Development Agreement

This DEVELOPMENT AGREEMENT is made and entered into on this

_____ day of _____, 20_____ ,
between THE CITY OF COLUMBIA, TENNESSEE, (hereinafter the "CITY"), and

Greens Mill Development Holdings, 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

14th day of September, 20 22 ,
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.

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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.

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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.

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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.

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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.

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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.

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

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

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

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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.

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B3.1 Construction Plans

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

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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
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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.

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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.

Greens Mill Road Consolidation Plat PROJECT	
Completed by the Developer	*Completed by the City*
Greens Mill Development Holdings, LLC DEVELOPER NAME	
_____ AUTHORIZED AGENT NAME	_____ CITY ENGINEER
_____ SIGNATURE	_____ SIGNATURE
_____ DATE	_____ DATE
18100 Von Karman Ave., Suite 500 STREET	
Invine, CA 92612 CITY, STATE, ZIP	
949.852.0700 PHONE	
patrick.woepse@steadfastco.com EMAIL	
Attest	*Attest*
_____ ATTEST NAME	_____ ATTEST NAME
_____ ATTEST SIGNATURE	_____ ATTEST SIGNATURE
_____ DATE	_____ DATE

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 of submittal on USB thumb drive or CD*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	2446 Nashville HWY / 2417 Greens Mill Rd / 2417 Greens Mill Rd		
	TAX MAP: 051	GROUP:	PARCEL: 19.00, 20.00, 20.01
SUMMARY OF NATURE OF REQUEST AND WORK	The applicant is requesting approval of the submitted preliminary and final plat to combine the three parcels mentioned above. The plat also dedicated adequate Right-of-Way for the improvements to the Greens Mill/Nashville HWY intersection and the public utilities being proposed by others.		

REQUEST DATE FOR PRE-APPLICATION CONFERENCE	N/A	*Pre-application meetings are scheduled for Wednesdays.*

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Sketch Plat – *Must be submitted at least two weeks prior to Preliminary Plat submittal* ☒ Preliminary Plat ☒ Final Plat ❑ PUD Preliminary Master Plan + Checklist ❑ PUD Final Site Plan + Checklist ❑ Multi-Family Site Plan ❑ Other: _____ **File naming nomenclature examples:* *Freedom Point Site Plan* *Freedom Point Master Plan* *Freedom Point Final Plat* *Freedom Point Elevations*	<u>Annexations/Rezoning:</u> ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards <u>Plats/PUDs:</u> • 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.

APPLICANT

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

NAME	Colton Dorris	PHONE	931.561.4604
ADDRESS	10 Lea Avenue, Suite 400, Nashville, TN 37210	EMAIL	Colton.dorris@kimley-horn.com

PROPERTY OWNER NAME	Greens Mill Development Holdings, LLC	PHONE	(949) 518-2191
ADDRESS	18100 Von Karman, Suite 500 Irvine, CA 92612	EMAIL	patrick.woepse@steadfastco.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
Greens Mill Development Holdings, LLC Dinesh Davar, Authorized Signer	Dinesh Davar (Dec 14, 2023 17:13 PST)	Dec 14, 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	

Greens Mill Application

Final Audit Report 2023-12-15

Created:	2023-12-14
By:	Breana Finney (Breana.Finney@SteadfastCo.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA2uVbTvIgLuXJJWEXwEF7ipPEGxMWsB3a

"Greens Mill Application" History

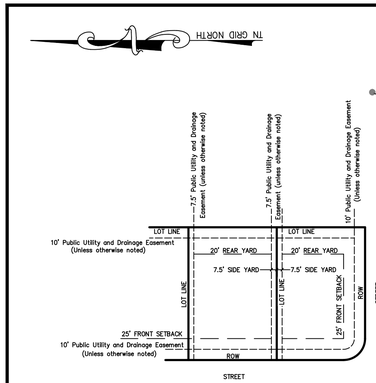
Document created by Breana Finney (Breana.Finney@SteadfastCo.com)
2023-12-14 - 9:48:35 PM GMT- IP address: 72.194.102.130

Document emailed to Dinesh Davar (dinesh.davar@steadfastco.com) for signature
2023-12-14 - 9:48:53 PM GMT

Email viewed by Dinesh Davar (dinesh.davar@steadfastco.com)
2023-12-15 - 1:12:44 AM GMT- IP address: 68.111.85.238

Document e-signed by Dinesh Davar (dinesh.davar@steadfastco.com)
Signature Date: 2023-12-15 - 1:13:41 AM GMT - Time Source: server- IP address: 68.111.85.238

Agreement completed.
2023-12-15 - 1:13:41 AM GMT

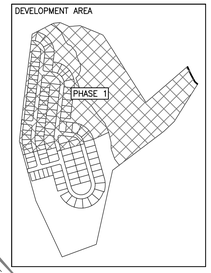


SUBDIVISION
TYPICAL LOT LAYOUT

Legend

- IPS Iron Rod Found
- Iron Rod Set
- I.P.F. Iron Pipe Found
- AXLE Axle Found
- FCM Fence Post
- 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
- Gas Line
- Sanitary Sewer Line
- Water Line
- Storm Sewer Line
- Overhead Utility Line
- Overhead Cable Line
- Overhead Electric Line
- Overhead Telephone Line
- Underground Utility Line
- Underground Cable Line
- Underground Electric Line
- Underground Telephone Line
- Forced Main Line

DEVELOPMENT AREA



PAGE 5 OF 5

MATCH LINE 5 OF 5
MATCH LINE 2 OF 5

MATCH LINE 5 OF 5
MATCH LINE 3 OF 5

PAGE 3 OF 5

PAGE 2 OF 5

PAGE 4 OF 5

FUTURE DEVELOPMENT REMAINING PROPERTY

TEMPORARY P.U.D.A.E.

FUTURE DEVELOPMENT REMAINING PROPERTY

TEMPORARY P.U.D.A.E.

MATCH LINE 4 OF 5
MATCH LINE 3 OF 5

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 R2871, Page 1405, 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.

Date — Lennar Homes of Tennessee LLC

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, STREET SIGNS, AND UTILITIES

I hereby certify that the streets, drainage, and utilities designated in Preserve at Drumwright 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.

Date — City Engineer, Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date — Maury County E-911, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF 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 has been filed to guarantee said installation.

Date — Director of Wastewater Department, Columbia, Tennessee

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Preserve at Drumwright 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 & Water Systems, Columbia, Tennessee

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

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, Columbia, Tennessee

SURVEYOR'S CERTIFICATION (TENNESSEE)

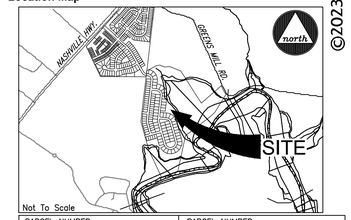
I hereby certify that to the best of my knowledge and belief this is a true and accurate survey of the property shown hereon; that this is a category "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

12/18/23 — Allen B. O'Leary — TN RLS #1987
Date — Number

Surveyor's Notes

1. All distances were measured with E.D.M. equipment and have been adjusted for temperature and pressure.
2. The property (Boundary) Line Survey exceeds the minimum requirements of an Urban Land Survey Category 1 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 parcels as shown hereon.
7. This property currently identified as Tax Map No. 051, Parcel No. 034.00 & 034.01, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: P11, Page 26 & P11, Page 81
9. Deed reference: Book R2871, Page 1405
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 does not represent a title search or a guarantee of title, and is subject to any state of facts a current and accurate search may reveal.
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. This property is located in a Special Flood Hazard Area as shown on F.E.M.A. Flood Insurance Rate Map, Community Panel No. 47119C0180E, dated April 16, 2007, and shown hereon graphically.
17. All public utility and drainage easements located on proposed lots are to be maintained by the individual property owner for said lot.
18. All property corners are ½" rebar with cap reading "WES 1987" unless otherwise noted.

Location Map



Not To Scale

©2023

PARCEL NUMBER: TAX MAP 051, PARCEL 034.00
DEED BOOK: R2871, PAGE 1405
PLAT BOOK: P11, PAGE 27
PARCEL ADDRESS: 2554 GREENS MILL RD COLUMBIA, TN 38401

PARCEL NUMBER: TAX MAP 051, PARCEL 034.01
DEED BOOK: R2871, PAGE 1405
PLAT BOOK: P11, PAGE 27 & P11, PAGE 81
PARCEL ADDRESS: VERNON RD COLUMBIA, TN 38401

EXISTING ZONING: PUD

BUILDING SETBACKS: FRONT – 25' SIDE – 7.5' REAR – 20'

ACREAGE OF PARCEL: ±77.50 ACRES TOTAL ±51.98 ACRES PHASE 1 ±3.65 ACRE – 158,925.5 S.F. – R.O.W. DEDICATION

PROPERTY OWNER: LENNAR HOMES OF TENNESSEE LLC 381 MALLORY STATION RD SUITE 200 FRANKLIN, TN 37067

PURPOSE NOTE: The purpose of this plat is to create 68 single family lots and dedicate right-of-way.

STORMWATER MANAGEMENT AGREEMENT: RECORDED:_____ DEED BOOK:_____ PAGE:_____

DRIVEWAY NOTE: All driveways shall be constructed to contain gutter flow within the street and right-of-way, particularly lots that do not have a sidewalk.

OPEN SPACE NOTE:

ALL OPEN SPACE AREA IS TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION, CREATED FOR THE PURPOSE OF MAINTAINING ALL COMMON OPEN SPACE AND GROUNDS INCLUDING THE DETENTION AREAS SHOWN ON THIS PLAT. ALL OPEN SPACE AREA IS CONSIDERED A PUBLIC UTILITY, AND DRAINAGE EASEMENT.

GRAPHIC SCALE

100' 0 50' 100' 200' 400'

(IN FEET)
1 inch = 100' ft.

Register of Deed Recording Stamp

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — COMMERCIAL — RESIDENTIAL — 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
LENNAR HOMES
381 MALLORY STATION ROAD
SUITE 200
FRANKLIN, TN 37067

FINAL PLAT
PRESERVE AT DRUMWRIGHT, PHASE 1
COLUMBIA, TN

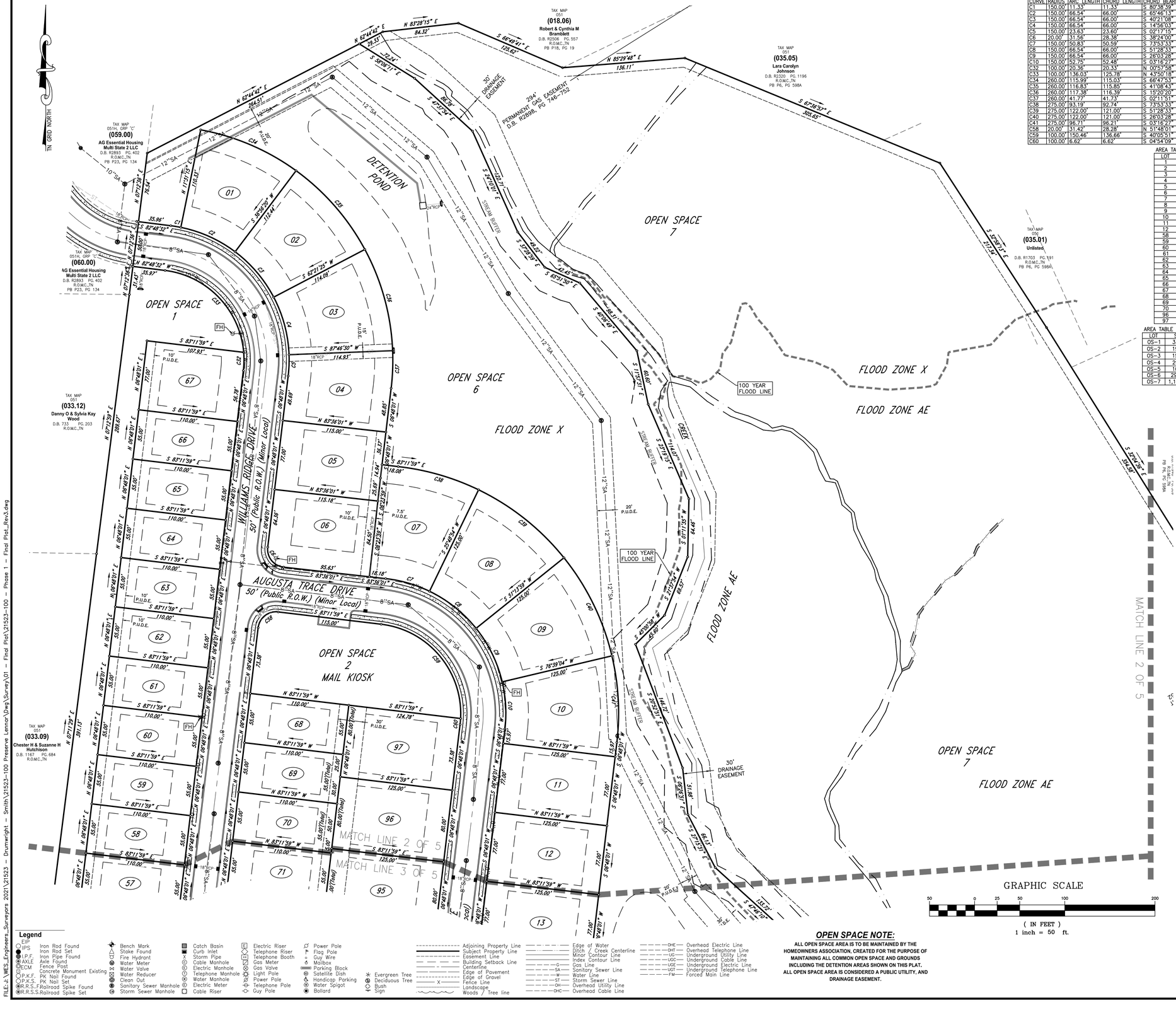
REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 10-16-2023

Job. no. 21523-100
Scale: Vertical: 1"=100'
Horizontal:

1 of 5

FILE: J:\WES_Engineers_Surveyors 2021\21523 - Drumwright - Smith\21523-100 Preserve Lennar\Dwg\Survey\01 - Final Plat\21523-100 - Phase 1 - Final Plat_Rev3.dwg



CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	150.00'	111.33'	111.33'	S 80°38'39" E	4°15'47"
C2	150.00'	66.54'	66.00'	S 65°46'13" E	25°25'05"
C3	150.00'	66.54'	66.00'	S 40°21'08" E	25°25'05"
C4	150.00'	66.54'	66.00'	S 14°56'03" E	25°25'05"
C5	150.00'	23.63'	23.60'	S 02°17'15" W	9°01'31"
C6	20.00'	31.56'	28.38'	S 38°24'00" E	90°24'02"
C7	150.00'	50.83'	50.59'	S 73°53'33" E	19°24'55"
C8	150.00'	66.54'	66.00'	S 51°28'33" E	25°25'05"
C9	150.00'	66.54'	66.00'	S 26°03'28" E	25°25'05"
C10	150.00'	52.75'	52.48'	S 03°16'27" E	20°08'57"
C32	100.00'	20.36'	20.33'	N 00°57'58" E	11°40'06"
C33	100.00'	136.03'	125.78'	N 43°50'18" W	77°56'27"
C34	260.00'	115.99'	115.03'	S 66°47'53" E	25°33'37"
C35	260.00'	116.83'	115.85'	S 41°08'43" E	25°44'43"
C36	260.00'	117.38'	116.39'	S 15°20'20" E	25°52'02"
C37	260.00'	41.77'	41.73'	S 02°11'51" W	9°12'20"
C38	275.00'	93.19'	92.74'	S 73°53'33" E	19°24'55"
C39	275.00'	122.00'	121.00'	S 51°28'33" E	25°25'05"
C40	275.00'	122.00'	121.00'	S 26°03'28" E	25°25'05"
C41	275.00'	96.71'	96.21'	S 03°16'27" E	20°08'57"
C58	20.00'	31.42'	28.28'	N 51°48'01" E	90°00'00"
C59	100.00'	150.46'	136.66'	S 40°05'51" E	86°12'18"
C60	100.00'	6.62'	6.62'	S 04°54'09" W	3°47'44"

AREA TABLE

LOT	SQ. FT.	ACRES
1	10,167.0	0.23
2	10,369.4	0.24
3	10,537.6	0.24
4	9,426.2	0.22
5	8,857.5	0.20
6	9,670.6	0.22
7	11,274.1	0.26
8	11,783.9	0.27
9	11,783.9	0.27
10	11,337.5	0.26
11	9,625.0	0.22
12	9,625.0	0.22
58	6,050.0	0.14
59	6,050.0	0.14
60	6,050.0	0.14
61	6,050.0	0.14
62	6,050.0	0.14
63	6,050.0	0.14
64	6,050.0	0.14
65	6,050.0	0.14
66	6,050.0	0.14
67	8,456.1	0.19
68	6,050.0	0.14
69	6,050.0	0.14
70	6,050.0	0.14
96	10,000.0	0.23
97	9,999.5	0.23

AREA TABLE

LOT	SQ. FT.	ACRES
OS-1	33,203.0	0.76
OS-2	19,713.0	0.45
OS-3	15,795.4	0.36
OS-4	29,172.6	0.67
OS-5	10,232.3	0.23
OS-6	291,488.3	6.69
OS-7	1,179,852.6	27.09

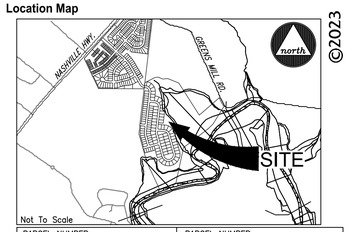
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Legend

EIP Iron Rod Found
IPS Iron Rod Set
I.P.F. Iron Pipe Found
AXLE Axle Found
FENCE Fence Post
CONC Concrete Monument Existing
P.K.F. PK Nail Found
P.K.S. PK Nail Set
R.R.S.-F Railroad Spike Found
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Bench Mark
Stake Found
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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
Gas Line
Sanitary Sewer Line
Water Line
Storm Sewer Line
Overhead Utility Line
Overhead Cable Line
Overhead Electric Line
Overhead Telephone Line
Underground Utility Line
Underground Cable Line
Underground Electric Line
Underground Telephone Line
Forced Main Line

Location Map



Not To Scale

PARCEL NUMBER: TAX MAP 051, PARCEL 034.00
DEED BOOK: R2871, PAGE 1405
PLAT BOOK: P11, PAGE 27
PARCEL ADDRESS: 2556 GREENS MILL RD COLUMBIA, TN 38401

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PARCEL ADDRESS: VERNON RD COLUMBIA, TN 38401

EXISTING ZONING: PUD

BUILDING SETBACKS: FRONT – 25' SIDE – 7.5' REAR – 20'

PROPERTY OWNER: LENNAR HOMES OF TENNESSEE LLC 381 MALLORY STATION RD SUITE 200 FRANKLIN, TN 37067

ACREAGE OF PARCEL: ±77.50 ACRES TOTAL ±51.98 ACRES PHASE 1 ±3.65 ACRE – 158,925.5 S.F. – R.O.W. DEDICATION

PURPOSE NOTE:
The purpose of this plat is to create 68 single family lots and dedicate right-of-way.

STORMWATER MANAGEMENT AGREEMENT:
RECORDED: _____
DEED BOOK: _____ PAGE: _____

DRIVEWAY NOTE:
All driveways shall be constructed to contain gutter flow within the street and right-of-way, particularly lots that do not have a sidewalk.

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 R2871, Page 1405, 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.

Date _____ Lennar Homes of Tennessee LLC

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, STREET SIGNS, AND UTILITIES

I hereby certify that the streets, drainage, and utilities designated in Preserve at Drumwright, Phase 1 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.

Date _____ City Engineer Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date _____ Maury County E-911 Columbia, Tennessee

CERTIFICATE OF APPROVAL OF 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 has been filed to guarantee said installation.

Date _____ Director of Wastewater Department Columbia, Tennessee

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Preserve at Drumwright, Phase 1 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 & Water Systems Columbia, Tennessee

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

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 Columbia, Tennessee

SURVEYOR'S CERTIFICATION (TENNESSEE)

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 category "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

12/18/23 Date — Allen B. O'Leary — TN RLS #1987 Number

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — AGRICULTURE — TENNESSEE NO. 1987

Register of Deed Recording Stamp

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

©2023

Client
LENNAR HOMES
381 MALLORY STATION ROAD
SUITE 200
FRANKLIN, TN 37067

FINAL PLAT
PRESERVE AT DRUMWRIGHT, PHASE 1
COLUMBIA, TN

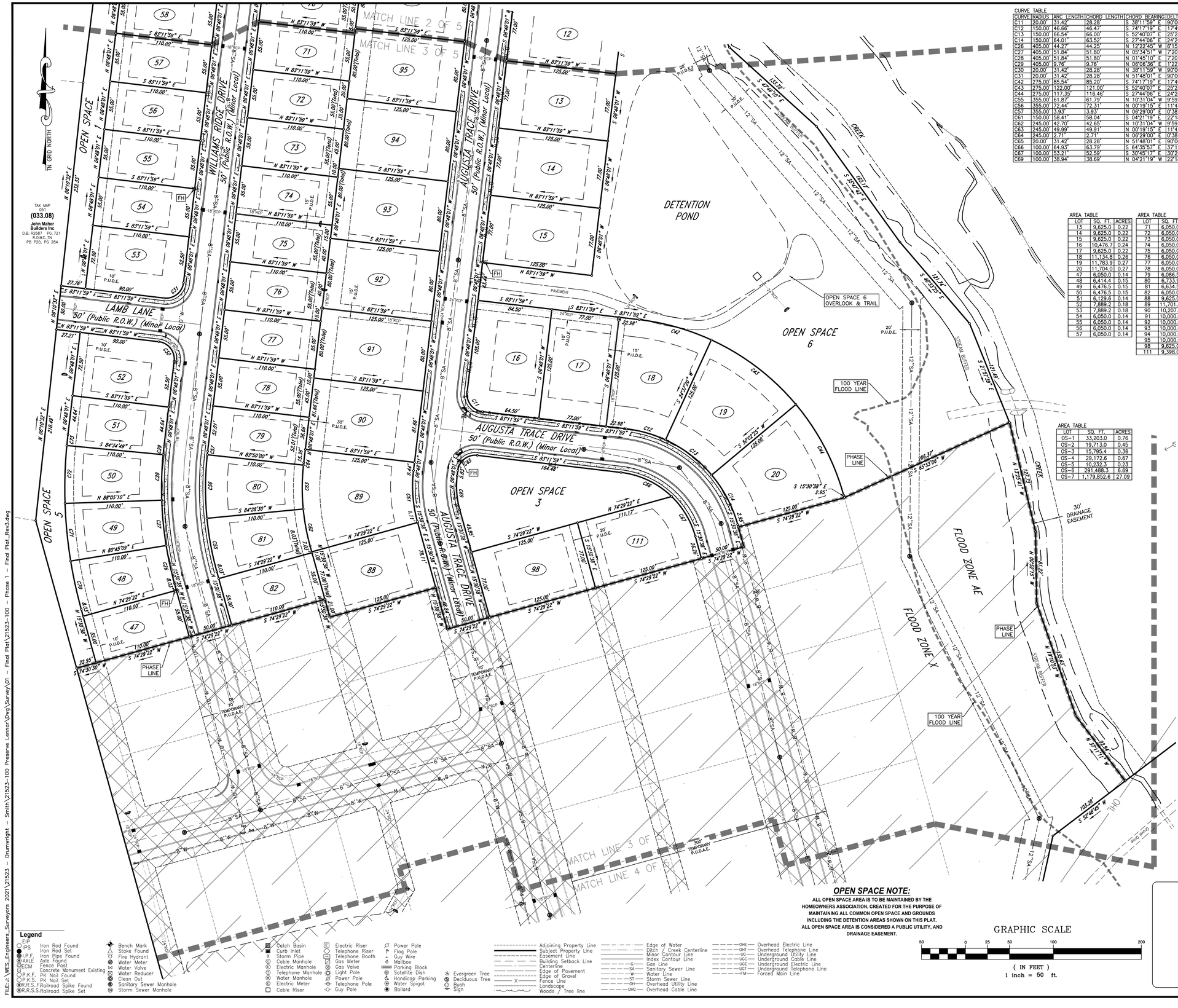
REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 10-16-2023

Job. no. 21523-100
Scale: Vertical: ____ Horizontal: 1"=50'

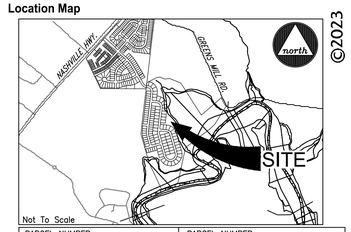
2 of 5

FILE: J:\WES_Engineers_Surveyors 2021\21523 - Drumwright - Smith\21523-100 Preserve Lennar\Dwg\Survey\01 - Final Plat\21523-100 - Phase 1 - Final Plat_Rev3.dwg


MATCH LINE 2 OF 5
MATCH LINE 3 OF 5
MATCH LINE 3 OF 5
MATCH LINE 4 OF 5
TN GRID NORTH
OPEN SPACE
WILLIAMS RIDGE DRIVE
50' (Public R.O.W.) (Minor Local)
AUGUSTA TRACE DRIVE
50' (Public R.O.W.) (Minor Local)
LAMB LANE
50' (Public R.O.W.) (Minor Local)
AUGUSTA TRACE DRIVE
50' (Public R.O.W.) (Minor Local)
DETENTION POND
OPEN SPACE 6
OVERLOOK & TRAIL
OPEN SPACE 5
OPEN SPACE 3
PHASE LINE
PHASE LINE
PHASE LINE
100 YEAR FLOOD LINE
100 YEAR FLOOD LINE
FLOOD ZONE AE
FLOOD ZONE X
STREAM BUFFER
CREEK
PAVEMENT
TAX MAP 051 (033.08) John Maher Builders Inc D.B. R2687 PG. 721 R.O.M.C.,TN PB P20, PG 284
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OS-7
30' DRAINAGE EASEMENT
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20' P.U.D.E.
10' P.U.D.E.
15' P.U.D.E.
30' P.U.D.E.
20' P.U.D.E.
30' TEMPORARY P.U.D.A.E.
8' TEMPORARY P.U.D.A.E.
30' TEMPORARY P.U.D.A.E.
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18"RCP
24"RCP
8"SA
8"W
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S 08°48'01" W 1095.00'
S 08°48'01" W 1096.00'
S 08°48'01" W 1097.00'
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S 08°48'01" W 1099.00'
S 08°48'01" W 1100.00'
S 08°48'01" W 1101.00'
S 08°48'01" W 1102.00'
S 08°48'01" W 1103.00'
S 08°48'01" W 1104.00'
S 08°48'01" W 1105.00'
S 08°48'01" W 1106.00'
S 08°48'01" W 1107.00'
S 08°48'01" W 1108.00'
S 08°48'01" W 1109.00'
S 08°48'01" W 1110.00'
S 08°48'01" W 1111.00'
S 08°48'01" W 1112.00'
S 08°48'01" W 1113.00'
S 08°48'01" W 1114.00'
S 08°48'01" W 1115.00'
S 08°48'01" W 1116.00'
S 08°48'01" W 1117.00'
S 08°48'01" W 1118.00'
S 08°48'01" W 1119.00'
S 08°48'01" W 1120.00'
S



Location Map



Not To Scale

©2023

PARCEL NUMBER: TAX MAP 051, PARCEL 034.00 DEED BOOK: R2871, PAGE 1405 PLAT BOOK: P11, PAGE 27 PARCEL ADDRESS: 2554 GREENS MILL RD COLUMBIA, TN 38401	PARCEL NUMBER: TAX MAP 051, PARCEL 034.01 DEED BOOK: R2871, PAGE 1405 PLAT BOOK: P11, PAGE 27 & P11, PAGE 81 PARCEL ADDRESS: VERNON RD COLUMBIA, TN 38401

EXISTING ZONING: PUD

BUILDING SETBACKS: FRONT – 25' SIDE – 7.5' REAR – 20'

ACREAGE OF PARCEL: ±77.50 ACRES TOTAL ±51.98 ACRES PHASE 1 ±3.65 ACRE – 158,925.5 S.F. – R.O.W. DEDICATION

PROPERTY OWNER: LENNAR HOMES OF TENNESSEE LLC 381 MALLORY STATION RD SUITE 200 FRANKLIN, TN 37067

PURPOSE NOTE:
The purpose of this plat is to create 68 single family lots and dedicate right-of-way.

STORMWATER MANAGEMENT AGREEMENT:
RECORDED:
DEED BOOK: _____ PAGE: _____

DRIVEWAY NOTE:
All driveways shall be constructed to contain gutter flow within the street and right-of-way, particularly lots that do not have a sidewalk.

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 R2871, Page 1405, 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.

Date _____ Lennar Homes of Tennessee LLC

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE, STREET SIGNS, AND UTILITIES

I hereby certify that the streets, drainage, and utilities designated in Preserve at Drumwright, Phase 1 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.

Date _____ City Engineer Columbia, Tennessee

CERTIFICATE OF APPROVAL FOR SUBDIVISION NAME AND STREET NAMES

Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date _____ Maury County E-911 Columbia, Tennessee

CERTIFICATE OF APPROVAL OF 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 has been filed to guarantee said installation.

Date _____ Director of Wastewater Department Columbia, Tennessee

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Preserve at Drumwright, Phase 1 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 & Water Systems Columbia, Tennessee

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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.

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Date _____ Secretary, Planning Commission Columbia, Tennessee

SURVEYOR'S CERTIFICATION (TENNESSEE)

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 category "I" Land Survey as defined in Title 62, Chapter 18, Tennessee Code Annotated, and that the ratio of precision is greater than or equal to 1:10,000.

12/18/23 Allen B. O'Leary TN RLS #1987
Date Allen B. O'Leary Number

ALLEN B. O'LEARY — REGISTERED LAND SURVEYOR — STATE OF TENNESSEE — No. 1987 — AGRICULTURE

allen@wesengineers.com

Register of Deed Recording Stamp

OPEN SPACE NOTE:

ALL OPEN SPACE AREA IS TO BE MAINTAINED BY THE HOMEOWNERS ASSOCIATION, CREATED FOR THE PURPOSE OF MAINTAINING ALL COMMON OPEN SPACE AND GROUNDS INCLUDING THE DETENTION AREAS SHOWN ON THIS PLAT. ALL OPEN SPACE AREA IS CONSIDERED A PUBLIC UTILITY, AND DRAINAGE EASEMENT.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

Legend

- EIP / IPS — Iron Rod Found / Iron Rod Set
- I.P.F. — Iron Pipe Found
- AXLE — Axle Found
- FCM — Fence Post
- 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
- Adjoining Property Line
- Subject Property Line
- Easement Line
- Building Setback Line
- Centerline
- Edge of Pavement
- Edge of Gravel
- Fence Line
- Landscape
- Woods / Tree line
- 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
- Edge of Water
- Ditch / Creek Centerline
- Minor Contour Line
- Index Contour Line
- Gas Line
- Sanitary Sewer Line
- Water Line
- Storm Sewer Line
- Overhead Utility Line
- Overhead Cable Line
- Electric Riser
- Telephone Riser
- Telephone Booth
- Gas Meter
- Gas Valve
- Light Pole
- Power Pole
- Telephone Pole
- Guy Pole
- Overhead Electric Line
- Overhead Telephone Line
- Underground Utility Line
- Underground Cable Line
- Underground Electric Line
- Underground Telephone Line
- Forced Main Line
- Power Pole
- Flag Pole
- Guy Wire
- Mailbox
- Parking Block
- Satellite Dish
- Handicap Parking
- Water Spigot
- Bollard
- Evergreen Tree
- Deciduous Tree
- Bush
- Sign

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

Client
LENNAR HOMES
381 MALLORY STATION ROAD
SUITE 200
FRANKLIN, TN 37067

FINAL PLAT
PRESERVE AT DRUMWRIGHT, PHASE 1
COLUMBIA, TN

REVISIONS	DATE

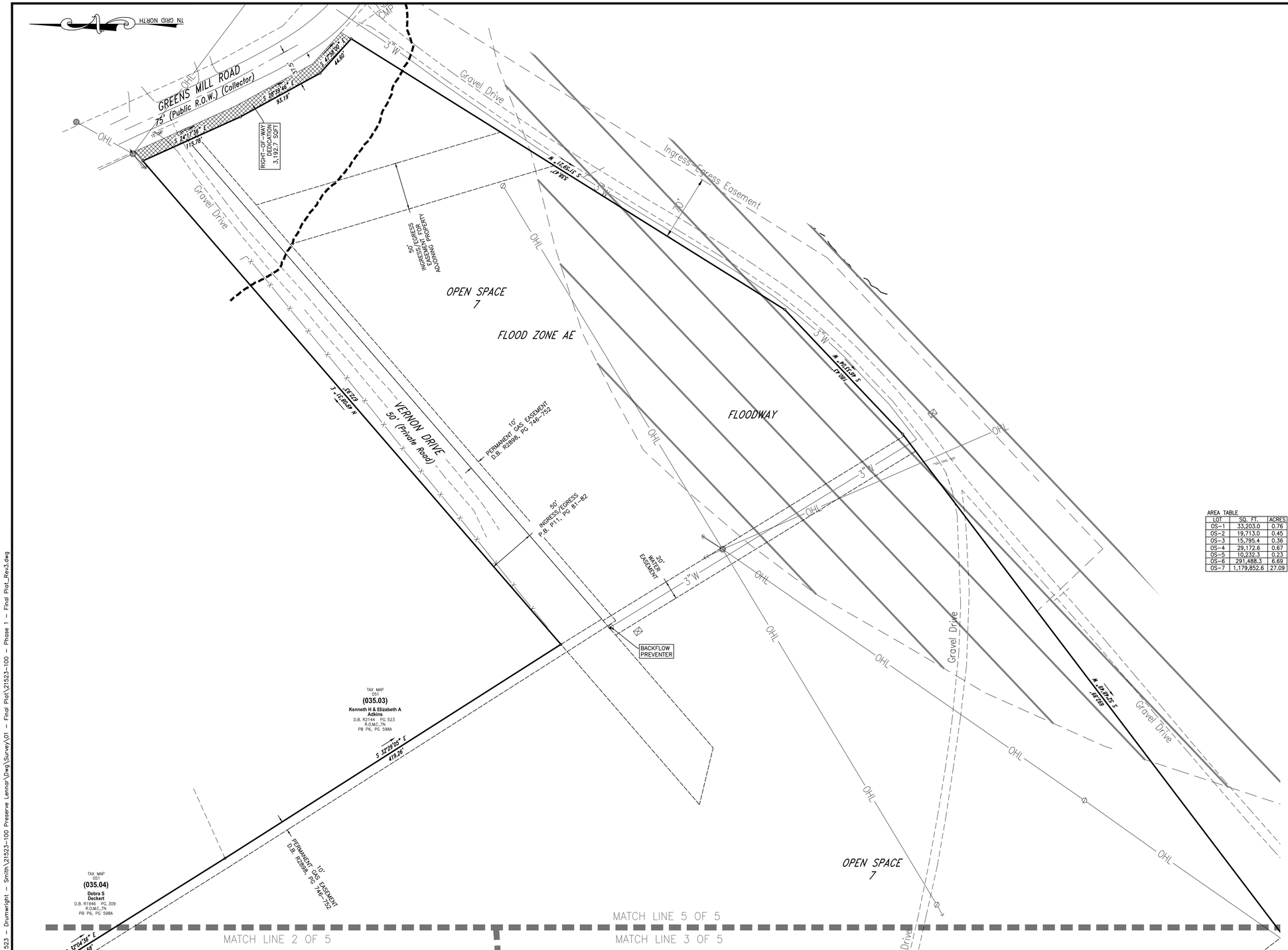
Drawn: EB Checked: AO Approved: AO Date: 10-16-2023

Job. no. 21523-100

Scale: Vertical: 1"=50' Horizontal:

4 of 5

FILE: J:_WES_Engineers_Surveyors 2021\21523 - Drumwright - Smith\21523-100 Preserve Lennar\Dwg\Survey\01 - Final Plat\21523-100 - Phase 1 - Final Plat_Rev3.dwg



Legend

EIP		Bench Mark	Catch Basin	Electric Riser	Power Pole	Adjoining Property Line	Edge of Water
IPS	Iron Rod Found	Stake Found	Curb Inlet	Telephone Riser	Flag Pole	Subject Property Line	Ditch / Creek Centerline
I.P.F.	Iron Rod Set	Fire Hydrant	Storm Pipe	Telephone Booth	Guy Wire	Easement Line	Minor Contour Line
AXLE	Iron Pipe Found	Water Meter	Cable Manhole	Gas Meter	Mailbox	Building Setback Line	Index Contour Line
ECM	Axle Found	Water Valve	Electric Manhole	Gas Valve	Parking Block	Centerline	Gas Line
P.K.F.	Fence Post	Water Reducer	Telephone Manhole	Light Pole	Satellite Dish	Edge of Pavement	Sanitary Sewer Line
P.K.S.	Concrete Monument Existing	Clean Out	Water Manhole	Power Pole	Handicap Parking	Edge of Gravel	Water Line
R.R.S.-F	PK Nail Found	Sanitary Sewer Manhole	Electric Meter	Telephone Pole	Water Spigot	Fence Line	Storm Sewer Line
R.R.S.-S	PK Nail Set	Storm Sewer Manhole	Cable Riser	Guy Pole	Ballard	Landscape	Overhead Utility Line
	Railroad Spike Found					Woods / Tree line	Overhead Cable Line
	Railroad Spike Set						

Evergreen Tree	Overhead Electric Line	OHE
Deciduous Tree	Overhead Telephone Line	OHT
Bush	Underground Utility Line	UG
Sign	Underground Cable Line	UGC
	Underground Electric Line	UGE
	Underground Telephone Line	UGT
	Forced Main Line	FM

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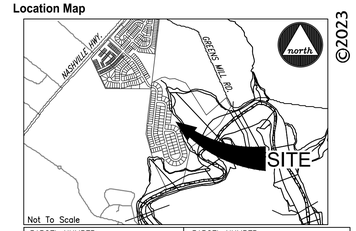
(IN FEET)
1 inch = 50 ft.

AREA TABLE

LOT	SQ. FT.	ACRES
OS-1	33,203.0	0.76
OS-2	19,713.0	0.45
OS-3	15,795.4	0.36
OS-4	29,172.6	0.67
OS-5	10,232.3	0.23
OS-6	291,488.3	6.69
OS-7	1,179,852.6	27.09

Register of Deed Recording Stamp

Location Map



Not To Scale

©2023

PARCEL NUMBER: TAX MAP 051, PARCEL 034.00 DEED BOOK: R2871, PAGE 1405 PLAT BOOK: P11, PAGE 27 PARCEL ADDRESS: 2554 GREENS MILL RD COLUMBIA, TN 38401	PARCEL NUMBER: TAX MAP 051, PARCEL 034.01 DEED BOOK: R2871, PAGE 1405 PLAT BOOK: P11, PAGE 27 & P11, PAGE 81 PARCEL ADDRESS: VERNON RD COLUMBIA, TN 38401

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±77.50 ACRES TOTAL
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Date _____ City Engineer
Columbia, Tennessee

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Subdivision name and street names approved by the City Engineering Department and by E-911 Maury County.

Date _____ Maury County E-911
Columbia, Tennessee

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Columbia, Tennessee

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12/18/23 Date — Allen B. O'Leary — TN RLS #1987 Number

ALLEN B. O'LEARY
REGISTERED LAND SURVEYOR
AGRICULTURE
STATE OF TENNESSEE
1987
TENNESSEE NO. 1987

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

Client
LENNAR HOMES
381 MALLORY STATION ROAD
SUITE 200
FRANKLIN, TN 37067

FINAL PLAT
PRESERVE AT DRUMWRIGHT, PHASE 1
COLUMBIA, TN

REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 10-16-2023

Job. no. 21523-100
Scale: Vertical: 1"=50' Horizontal:

5 of 5

FILE: J:\WES_Engineers_Surveyors 2021\21523 – Drumwright – Smith\21523-100 Preserve Lennar\Dwg\Survey\01 – Final Plat\21523-100 – Phase 1 – Final Plat_Rev3.dwg

December 18, 2023

City of Columbia
Development Services
700 North Garden Street
Columbia, TN 38401

RE: **Project Name: Preserve at Drumwright, Phase 1, Final Plat**
City of Columbia Staff Review Submittal

On behalf of Lennar Homes of Tennessee LLC, the owner of these 68 proposed single family lots, **WES Engineers & Surveyors** would like to resubmit this Final Plat to the City of Columbia for Planning Commission approval. Comments are addressed below in red.

Planning

1. Prelim indicates 111 lots, FP shows 111, but tab indicates 112. Change notation to show correct number of lots. 111 is the correct number of lots for the subdivision. With change the subdivision to be done in phases, the count is now 68 lots for Phase 1.
2. Show pull-off and parking at open space (OS) 2 as indicated on C3.1 of the approved Master PUD. The pull off has been shown.
3. Identify OS uses as shown on approved Master PUD. Open space uses have been noted on the plat.
4. Identify surfacing of OS 6 walking trail. The walking trail is pavement and has been noted on the plat.

Engineering

1. Include ROW dedication along Greens Mill Rd. 37.5 ft from the centerline of the existing ROW. Right-of-Way dedication has been added.
2. Provide MOU with Greens Mill Rd PUD, Drumwright, and Steadfast Greens Mill regarding installation of traffic improvement at Nashville Hwy and Greens Mill Rd. Provide proposed timing of construction of improvements. Platting of the development cannot be offered as a result of the full TIS requirements not being installed. It is our understanding that this is being handled by the developer.
3. Platting of development may not proceed until construction has commenced on the improvements. Full platting of the development may not be completed until improvements are complete. The development is now being broken into multiple phases.
4. Provide surety in the amount of $1,190,000 by 11/20. The value of the surety will need to be adjusted now that the subdivision is broken up into phases. This will be handled by the developer.
5. Record stormwater maintenance agreement by 11/20. This is being handled by the developer.
6. Binder and curbing to be installed by 11/20 Binder and curbing has been installed.

7. Relocate driveway to Vernon Drive and provide appropriate access easement as indicated on the Master Plan. An access easement has been added.

Wastewater

1. Page 1 north arrow facing wrong way. Otherwise Columbia Wastewater has no concern. The north arrow was corrected.

If you have any questions or comments with this submittal, please do not hesitate to contact me directly.

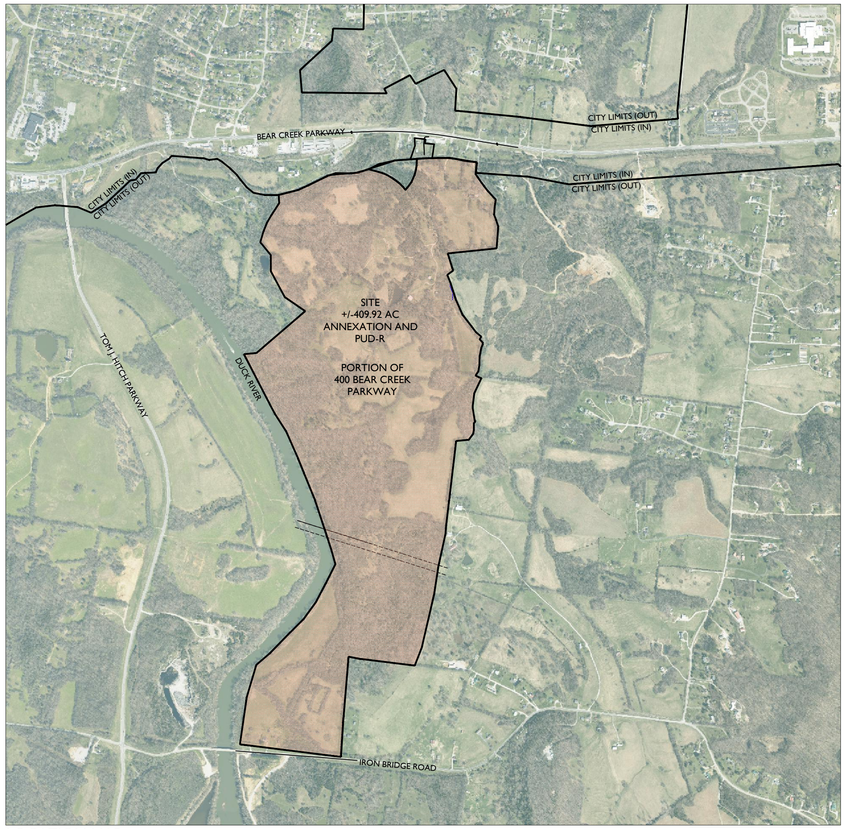
Sincerely,
WES Engineers & Surveyors



Allen B. O'Leary, RLS
Principal

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

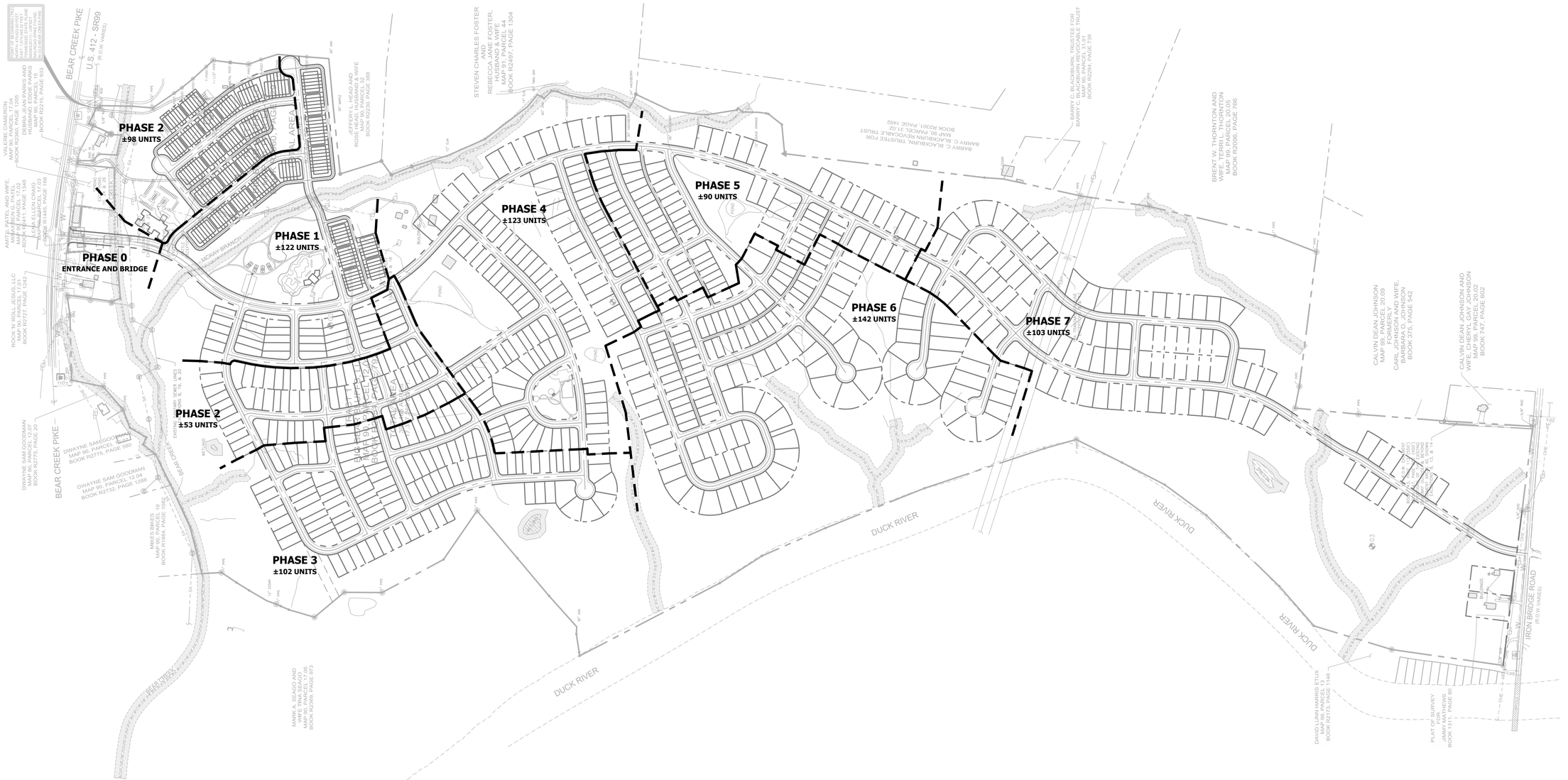
DRAWN BY: TWG
CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CADD\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
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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
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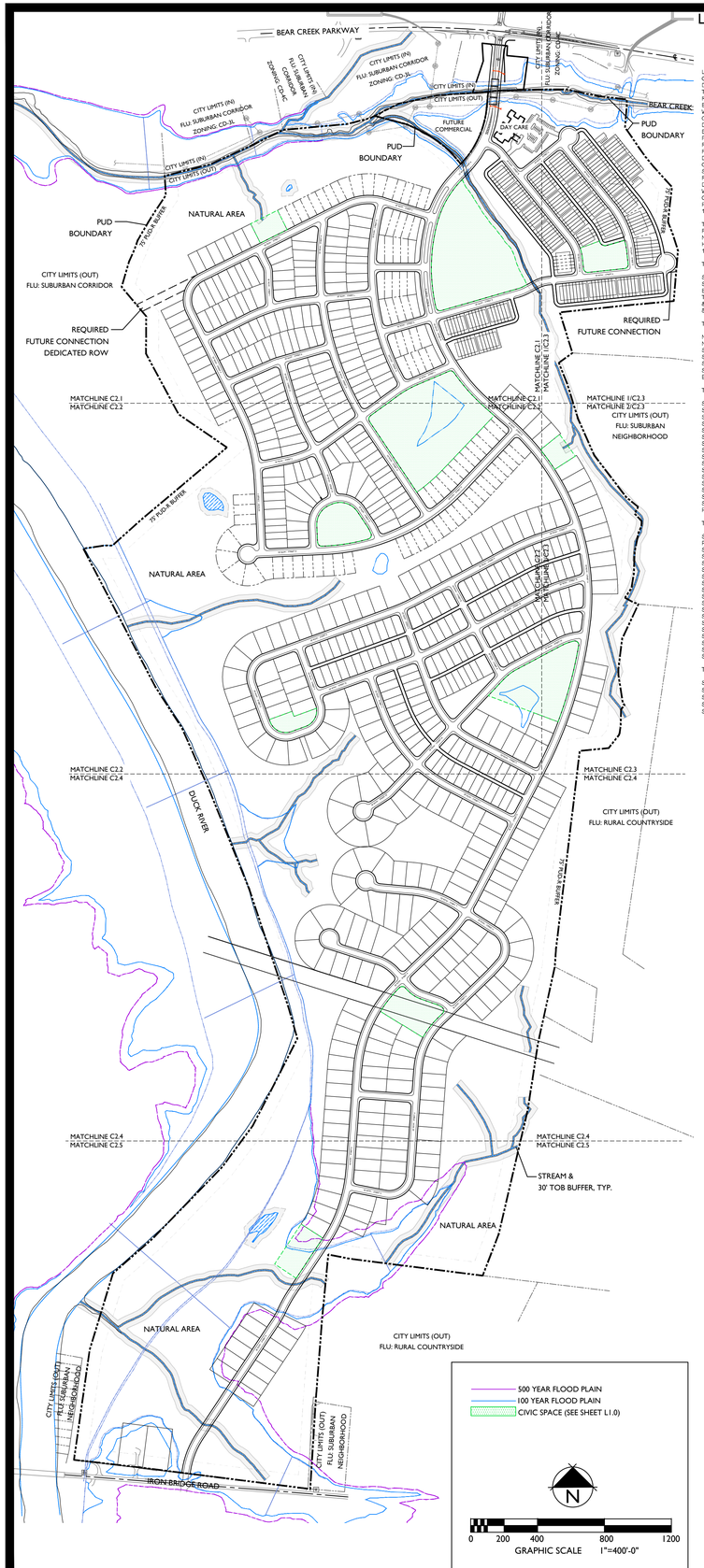
Rev.	Description	Date
1	Initial Submittal	10/16/23

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;

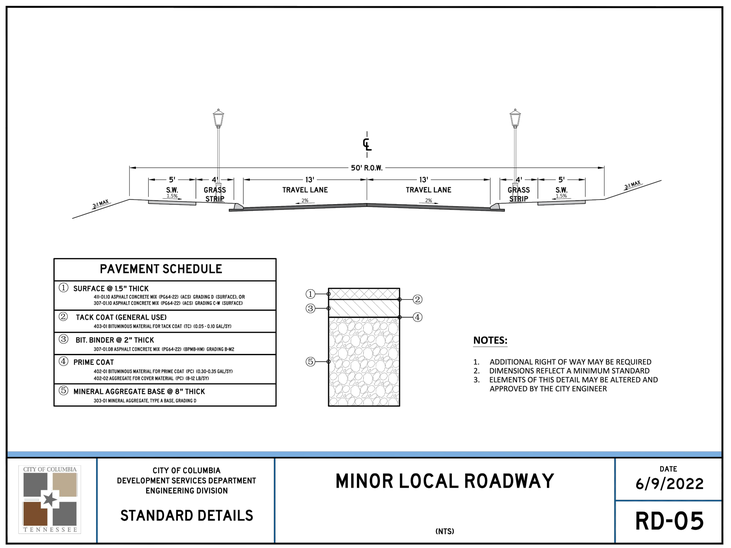
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

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.

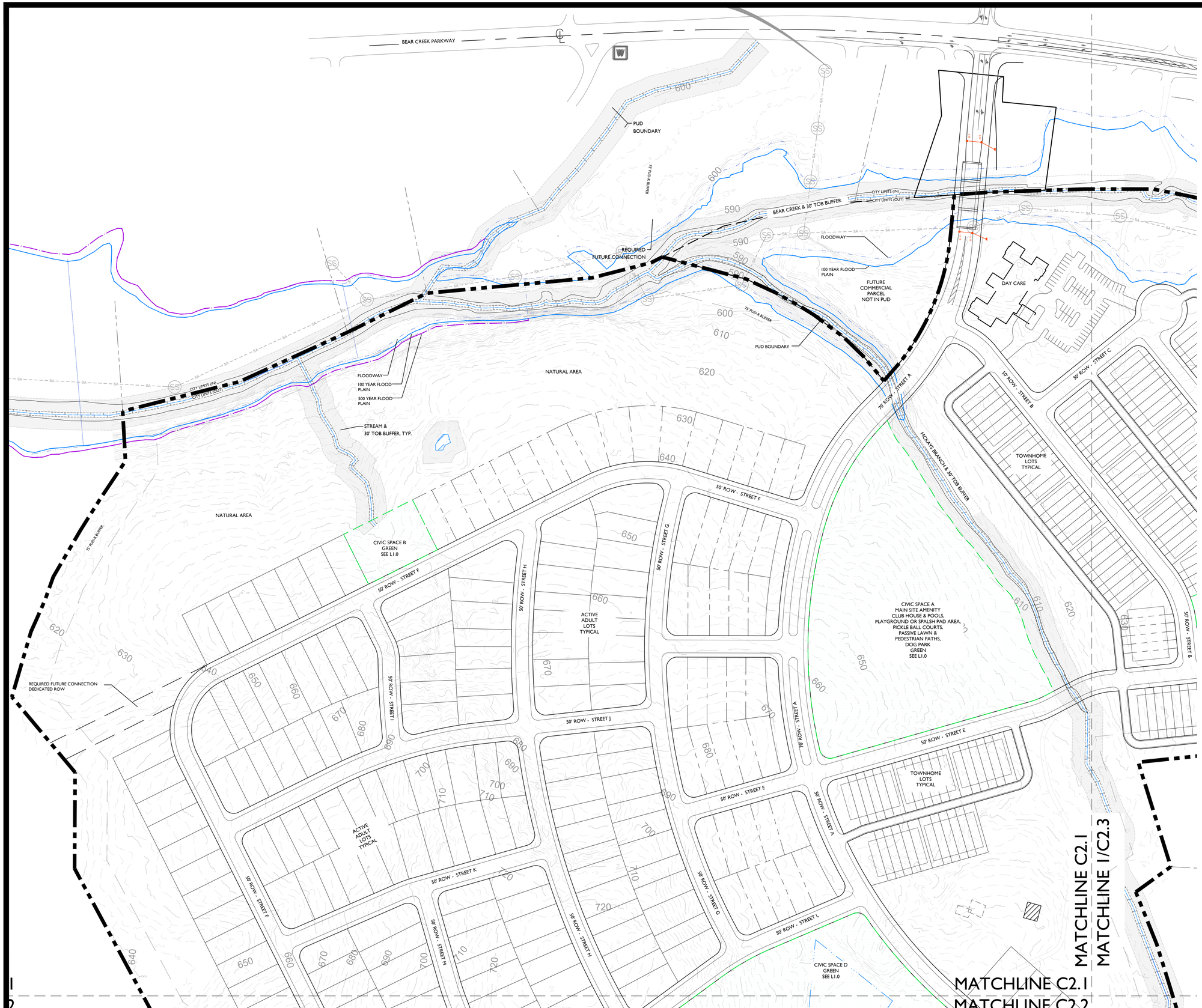
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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



GAMBLE DESIGN COLLABORATIVE

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
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

C2.1

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 M

50' ROW - STREET H

50' ROW - STREET F

50' ROW - STREET N

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

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

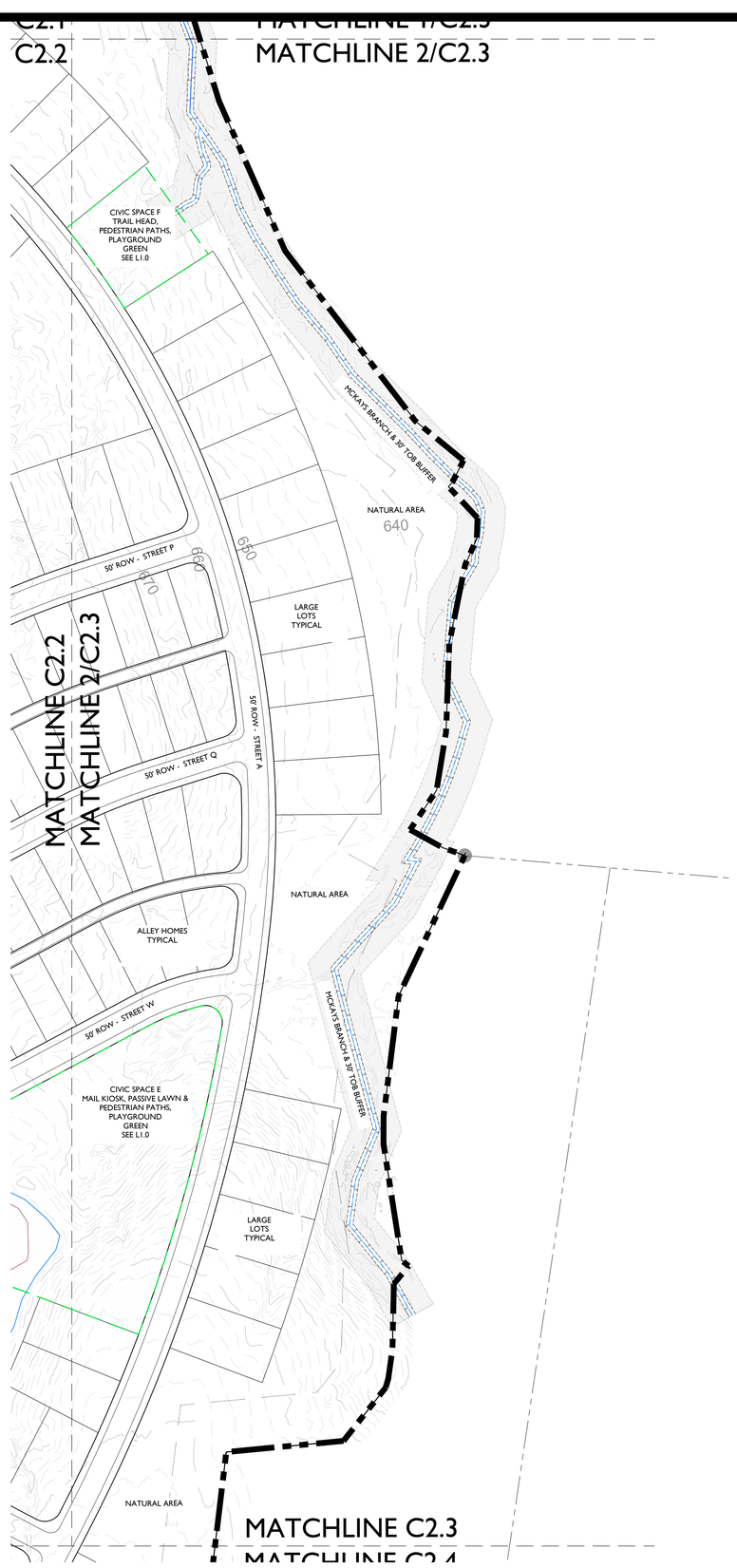
Date: October 16, 2023

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
No. 1016328

Date: October 16, 2023

Revision Date
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OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300

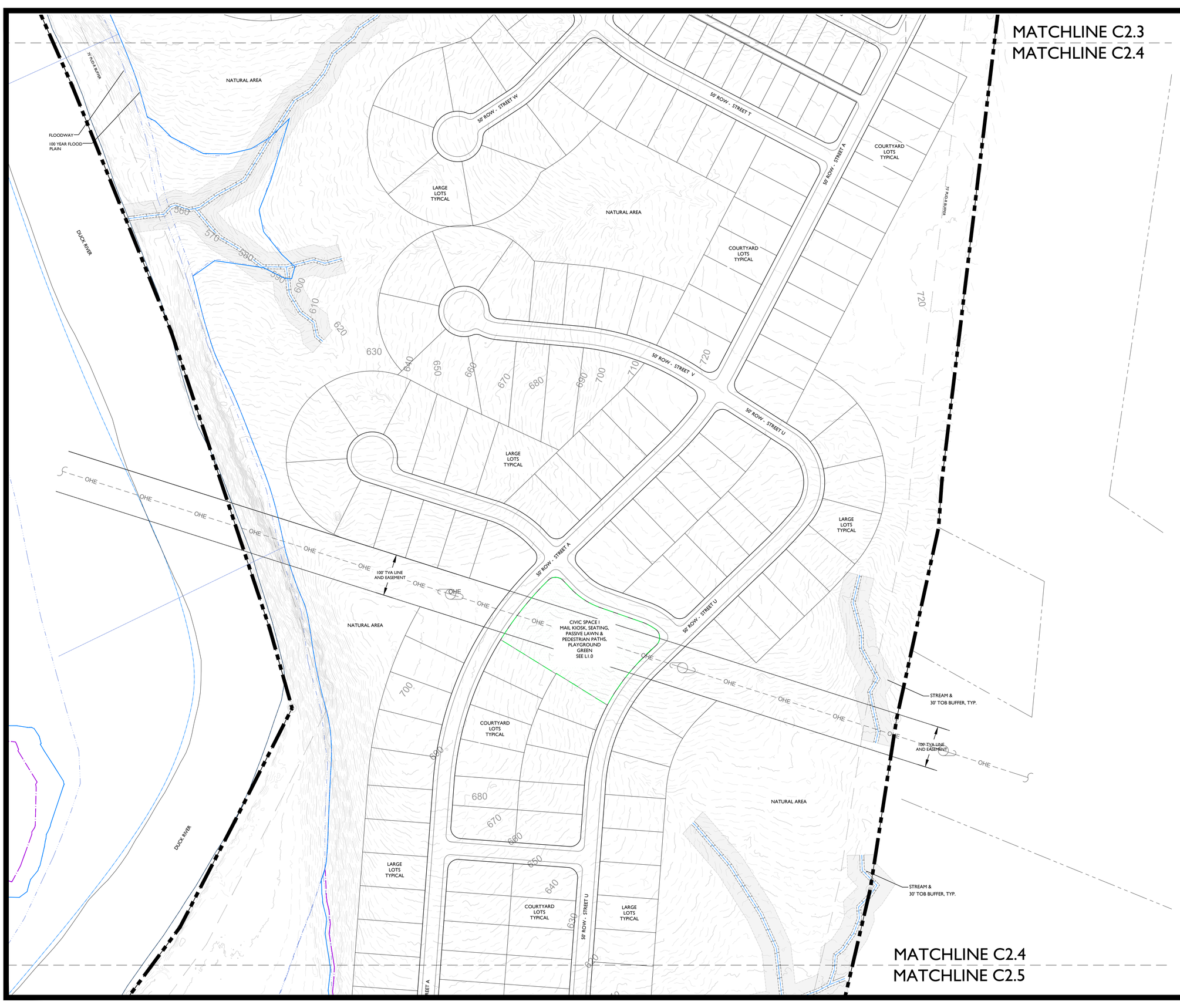
GRAPHIC SCALE 1"=100'-0"

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
△
△
△

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
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640
650
660
OHE

OVERALL CONCEPT DEVELOPMENT PLAN

N

0 50 100 200 300
GRAPHIC SCALE 1"=100'-0"

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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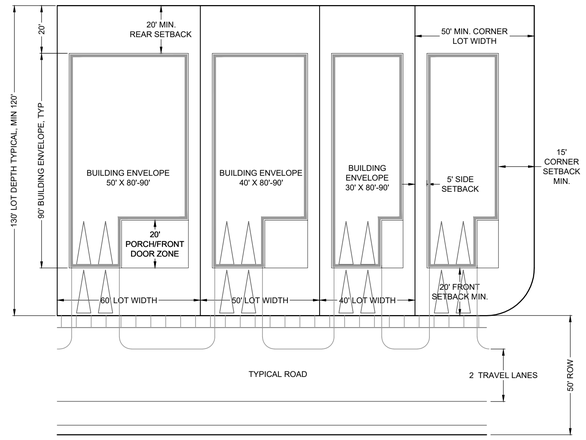
GREGORY C. GAMBLE
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TENNESSEE
10/16/23

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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'

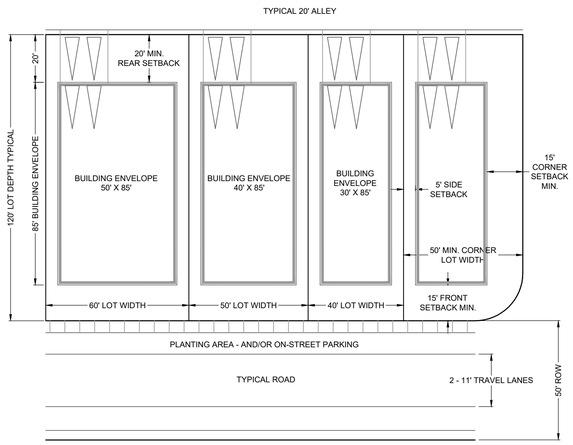
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



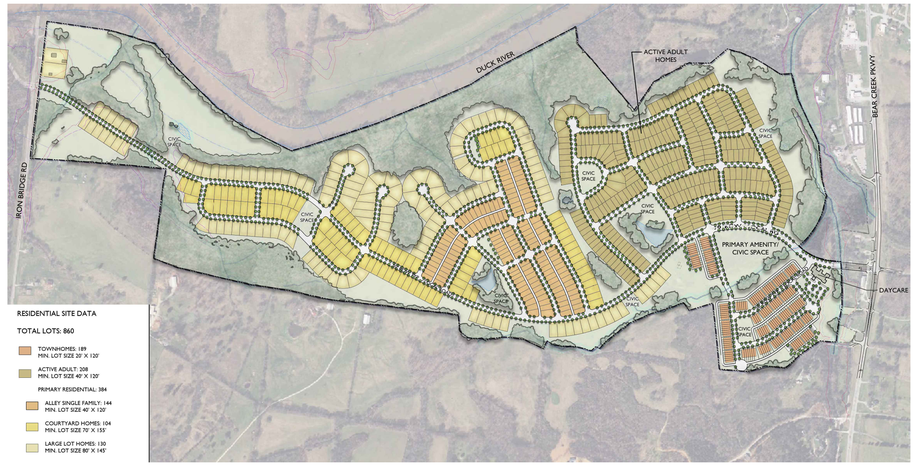
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

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.	



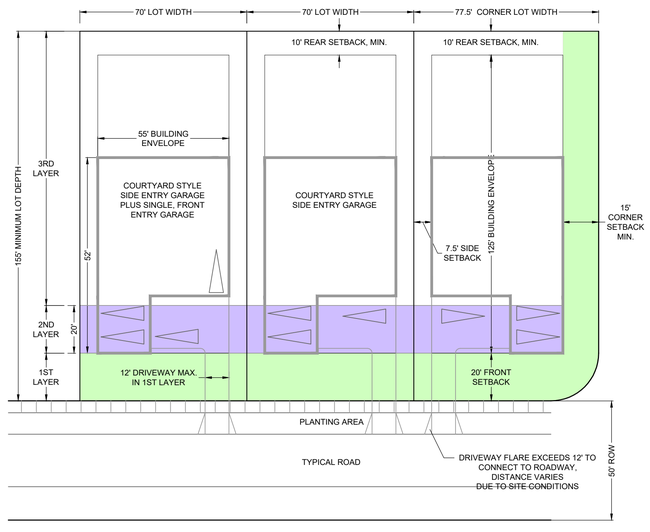
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

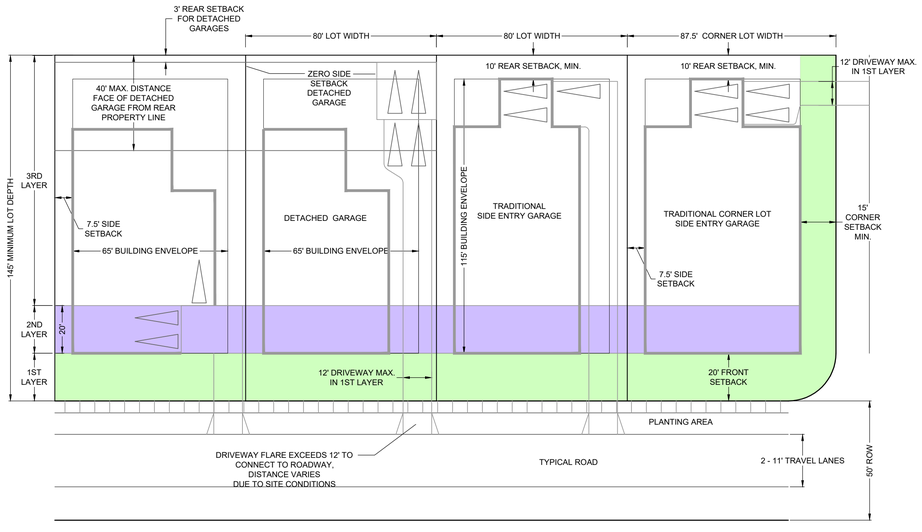
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

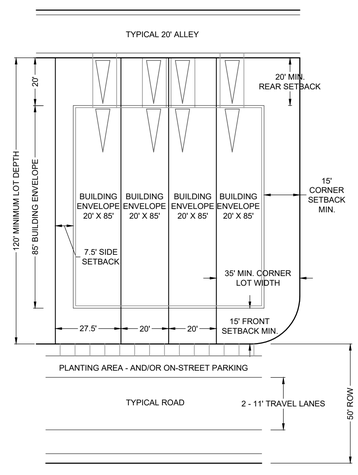
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



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

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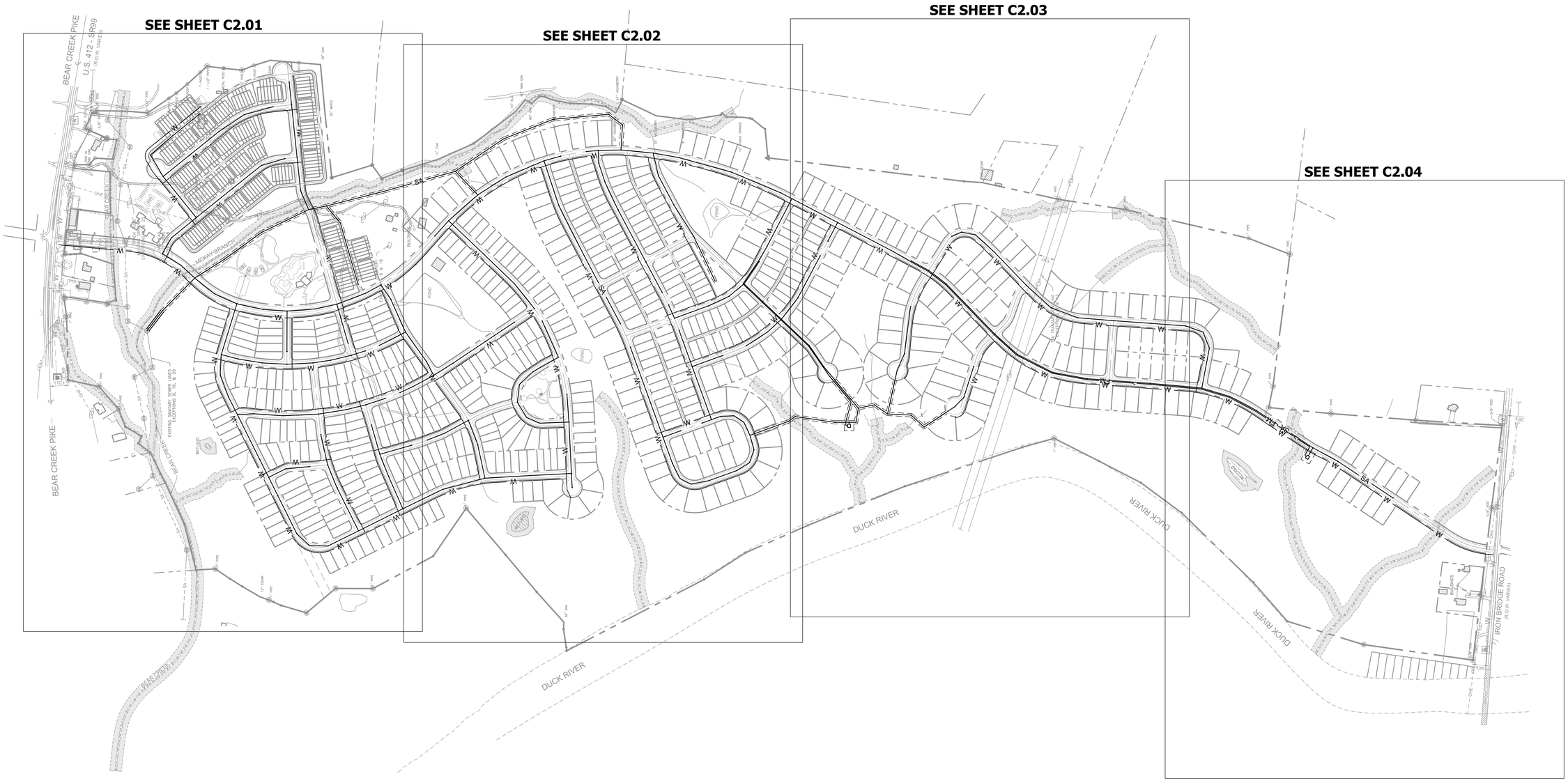
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

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LOT DIAGRAMS

SHEET C2.6



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0 300 600
SCALE: 1"= 300'

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COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

INITIAL SUBMITTAL

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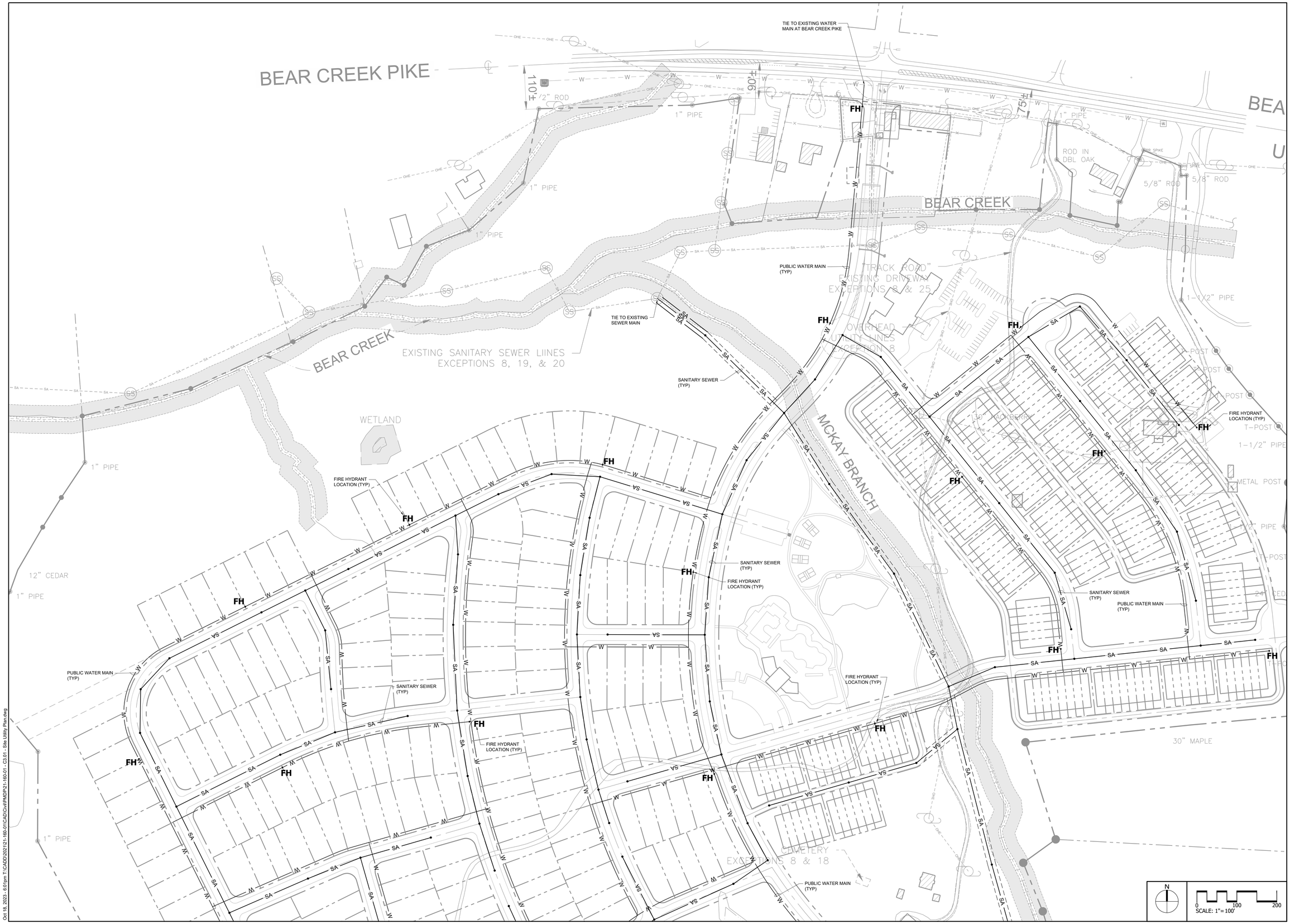
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OVERALL UTILITY PLAN

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

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SCALE: 1"= 100'

Oct 18, 2023 - 6:01pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.02 - Site Utility Plan.dwg



N

0 100 200
SCALE: 1"= 100'

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10-16-23

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Columbia, Maury County, Tennessee

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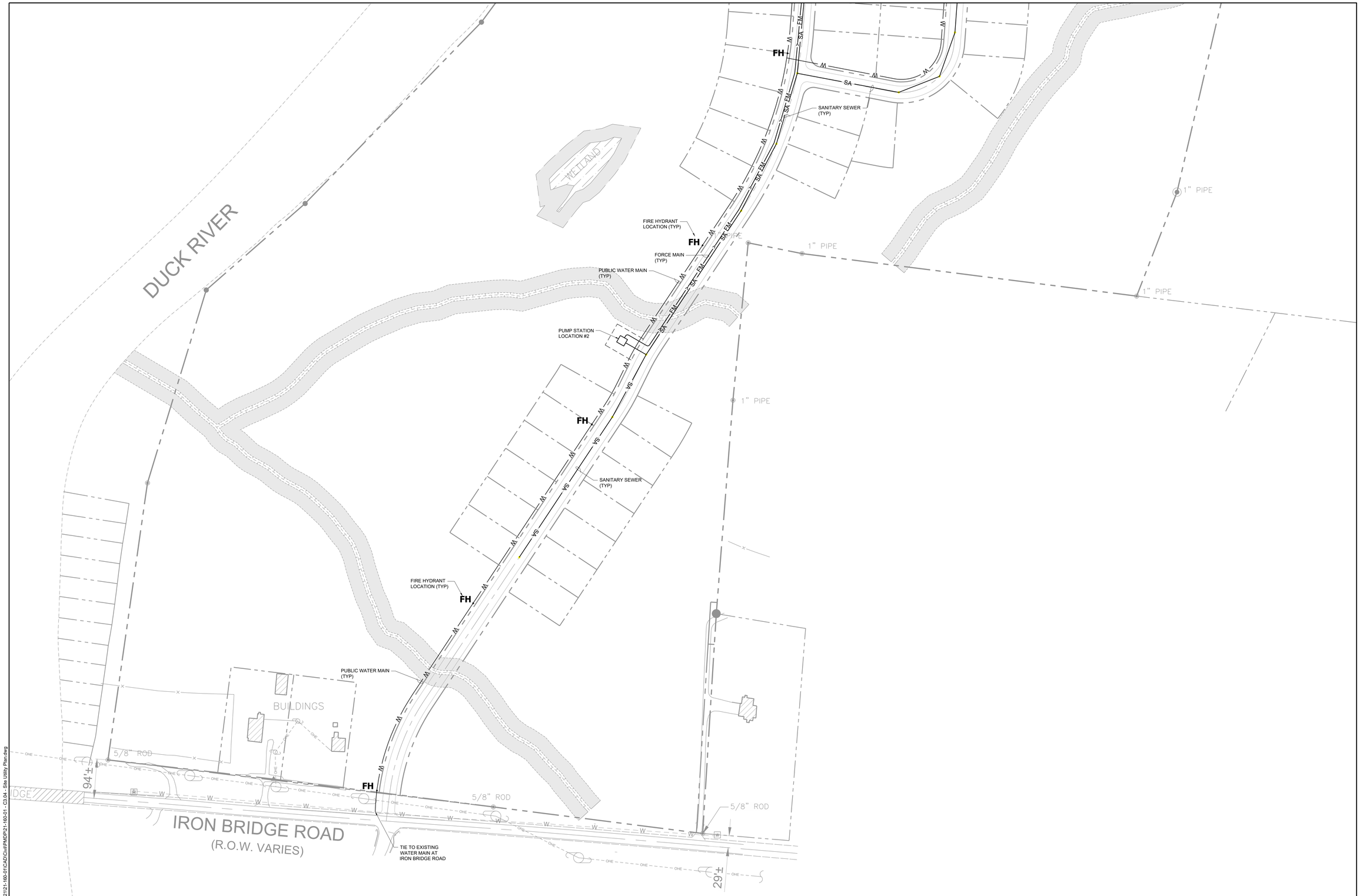
Rev.	Description	Date
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CHECKED BY: TWG

SITE UTILITY PLAN

C3.03
PROJECT NO.: 21-160-01

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Columbia, Maury County, Tennessee

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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



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0 300 600
SCALE: 1"= 300'

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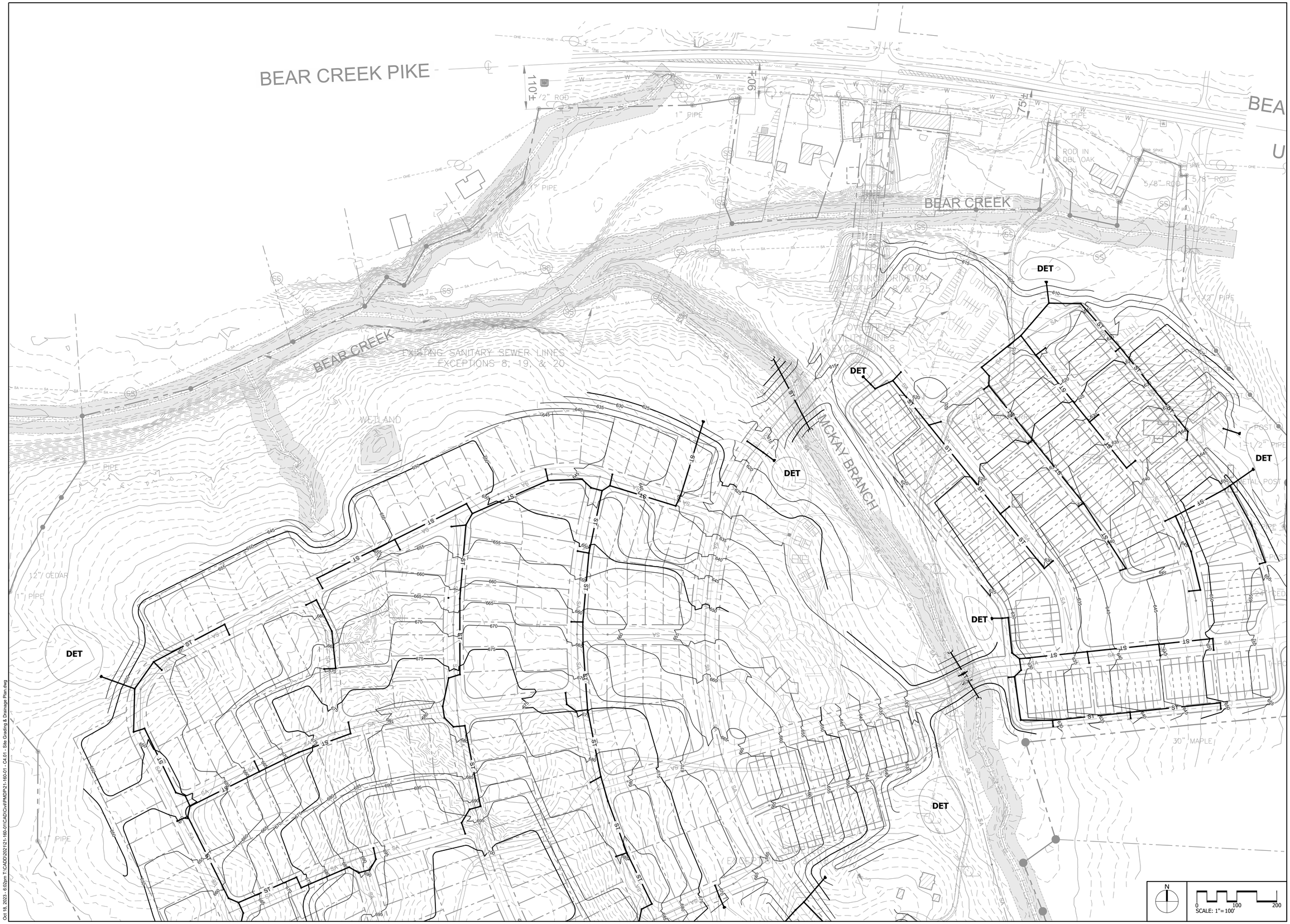
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OVERALL GRADING & DRAINAGE PLAN

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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PMDP

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Columbia, Maury County, Tennessee

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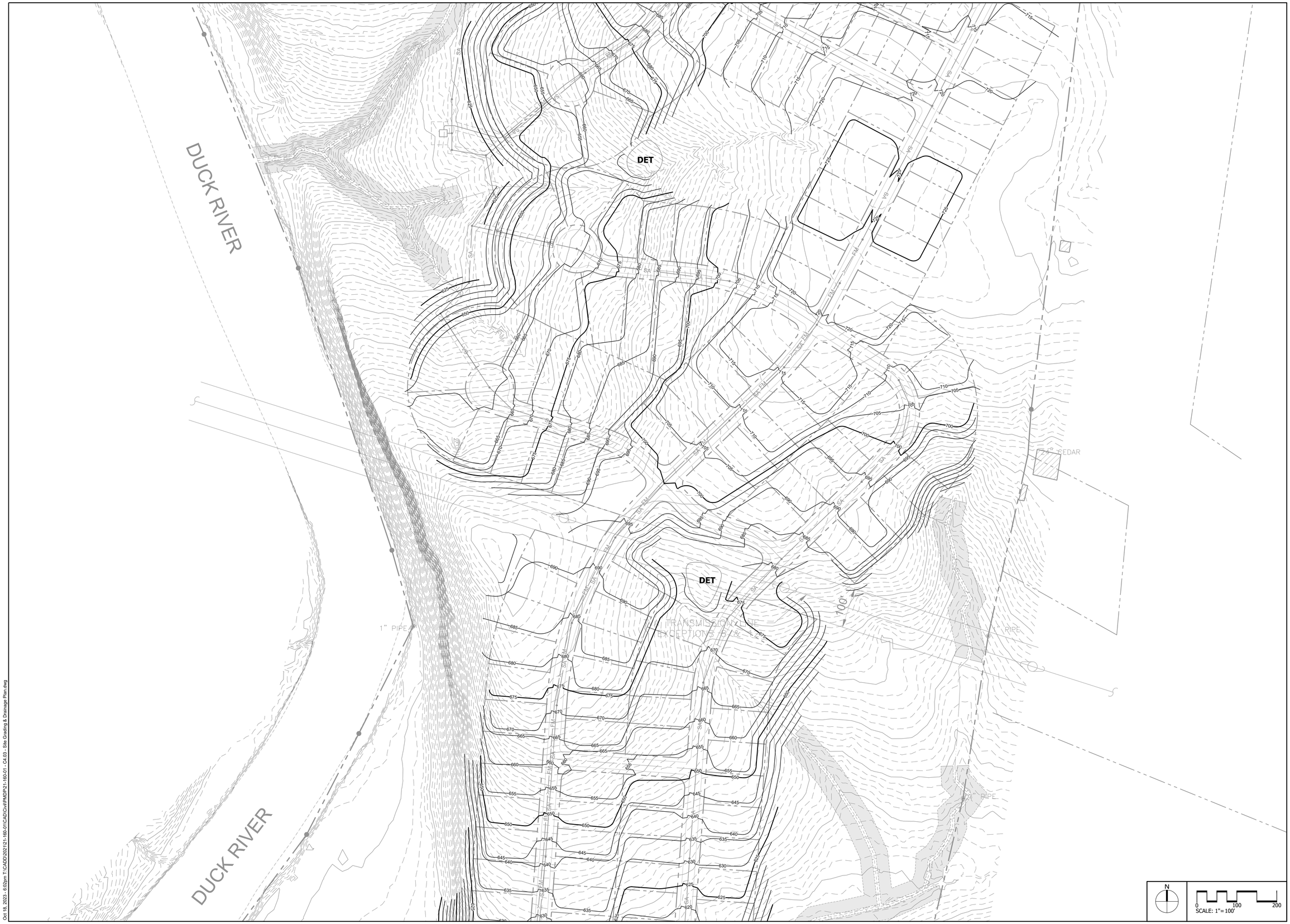
SITE GRADING & DRAINAGE PLAN

C4.01

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:02pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.01 - Site Grading & Drainage Plan.dwg


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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

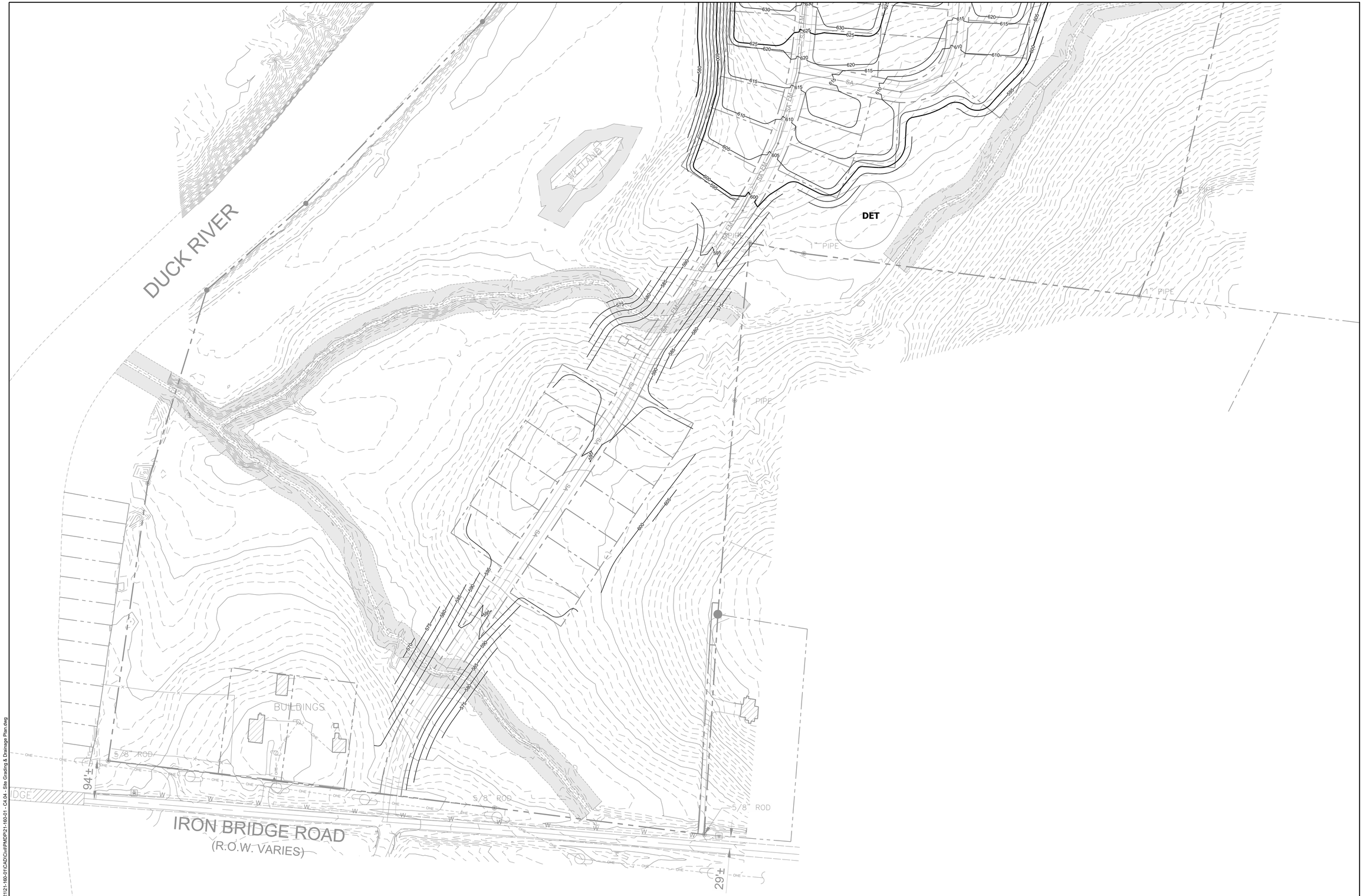
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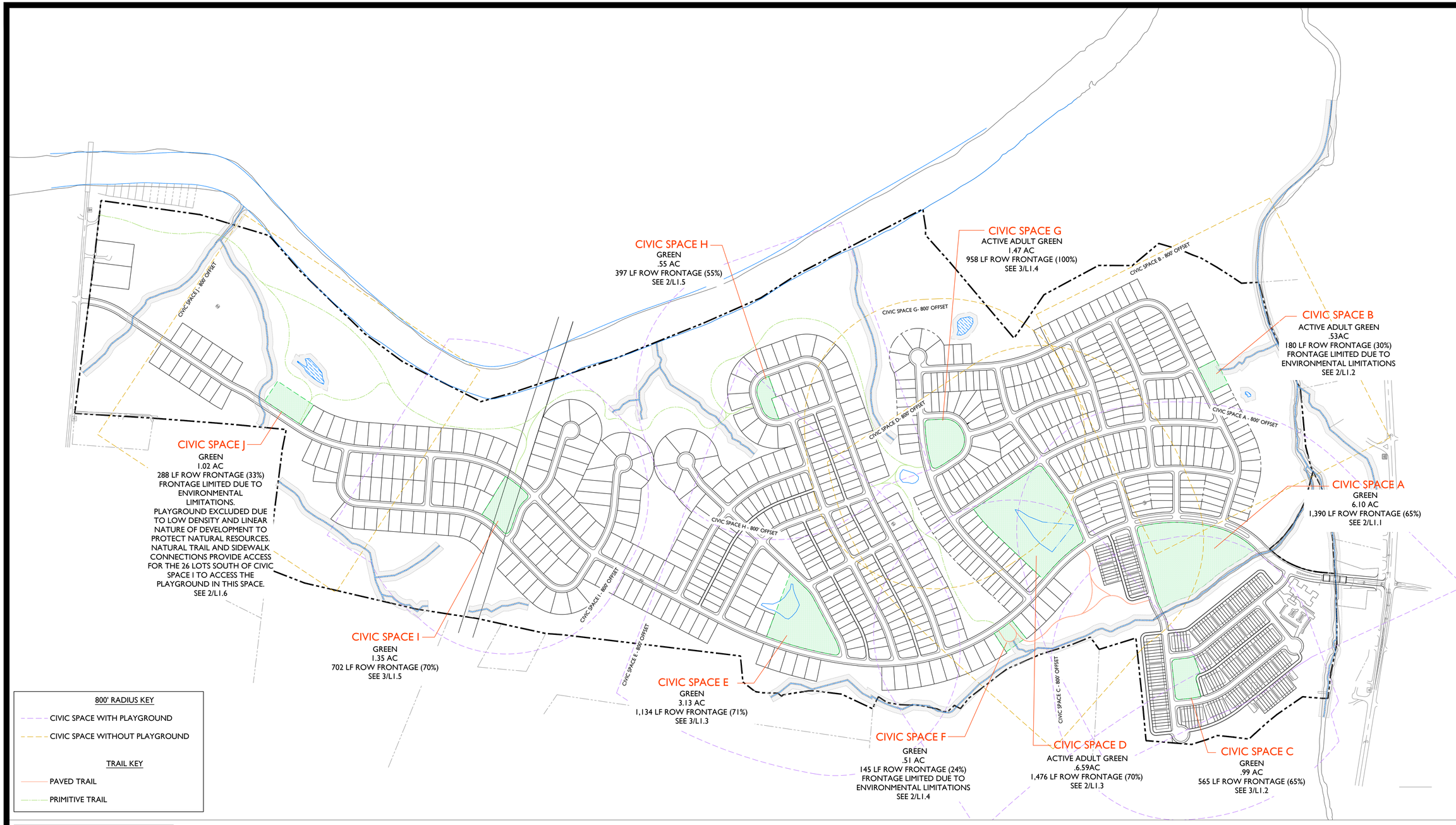
PROJECT NO.: 21-160-01

N

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SCALE: 1"= 100'

Oct 18, 2023 - 6:02pm T:\CAD\D\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C4.03 - Site Grading & Drainage Plan.dwg


DUCK RIVER
WETLAND
DET
1" PIPE
1" PIPE
1" PIPE
1" PIPE
SA
SA
SA
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WS



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

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 50' 100'

GAMBLE DESIGN COLLABORATIVE
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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 PLANTING





FORMAL LAWN



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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△

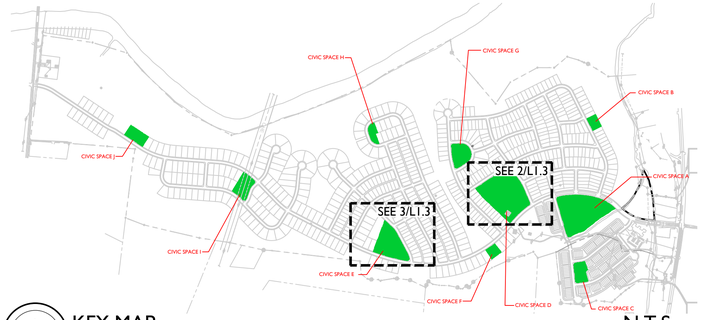
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OVERALL CIVIC SPACE PLAN

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.

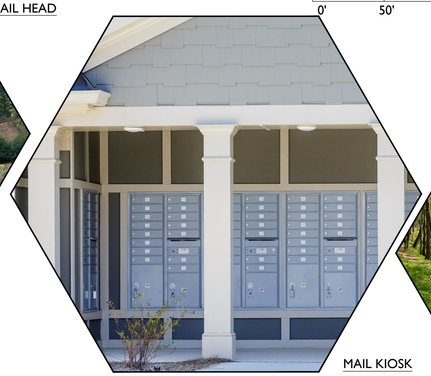
0' 50' 100'



POND



TRAIL HEAD



MAIL KIOSK

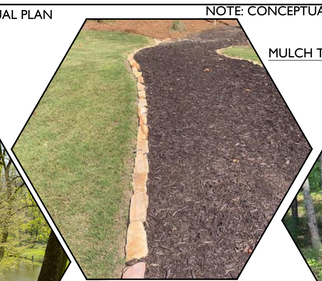
3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

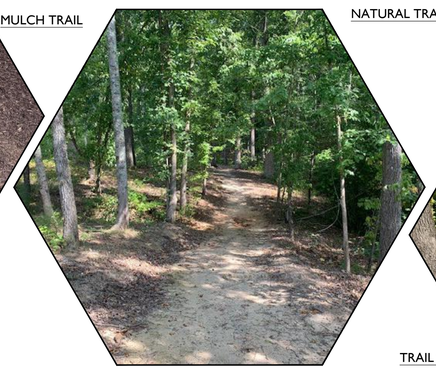
0' 30' 60'



NATURAL POND



MULCH TRAIL



NATURAL TRAIL



TRAIL SIGN

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

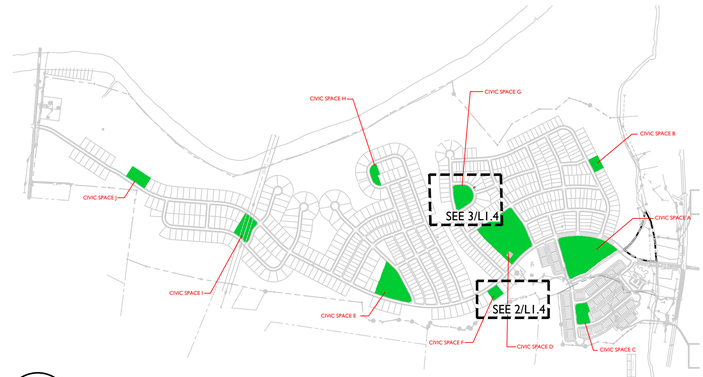
COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — STATE OF TENNESSEE — REGISTERED LANDSCAPE ARCHITECT — No. 1622

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
10-16-23

Date: October 16, 2023

Revision Date

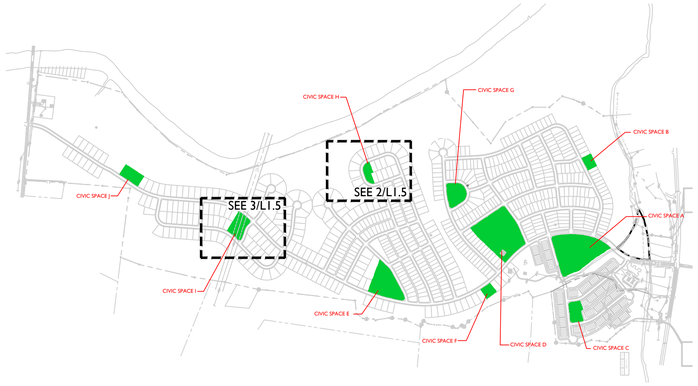
△

△

△

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 — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — NO. 001287

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

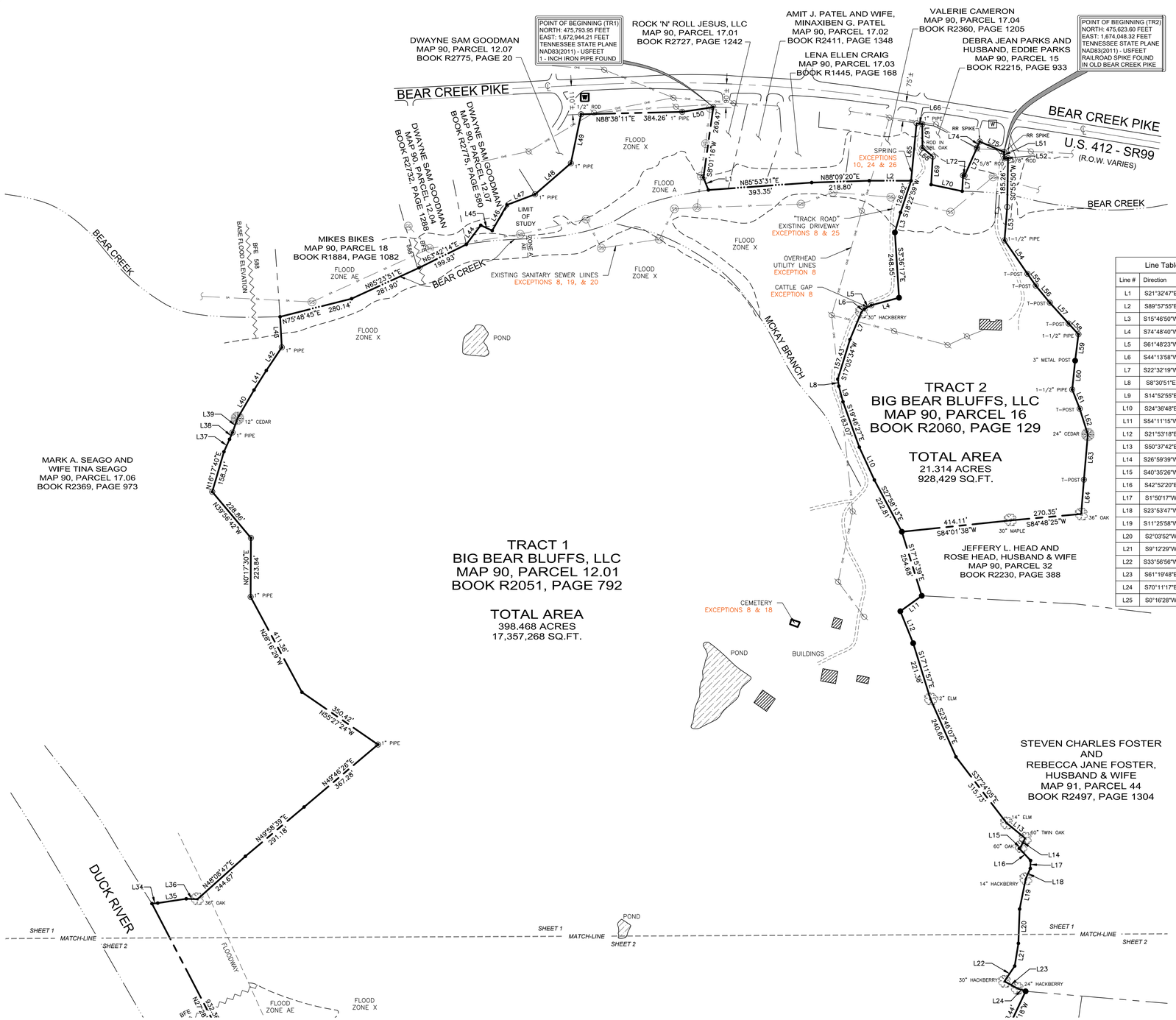
GREGORY C. GAMBLE — REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision	Date
△	
△	
△	

OVERALL CIVIC SPACE PLAN

SHEET L1.6



VICINITY MAP
NOT TO SCALE

NO.	DATE	COMMENT

108 Beasley Drive
Franklin, TN
37064
615.794.2275

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

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.

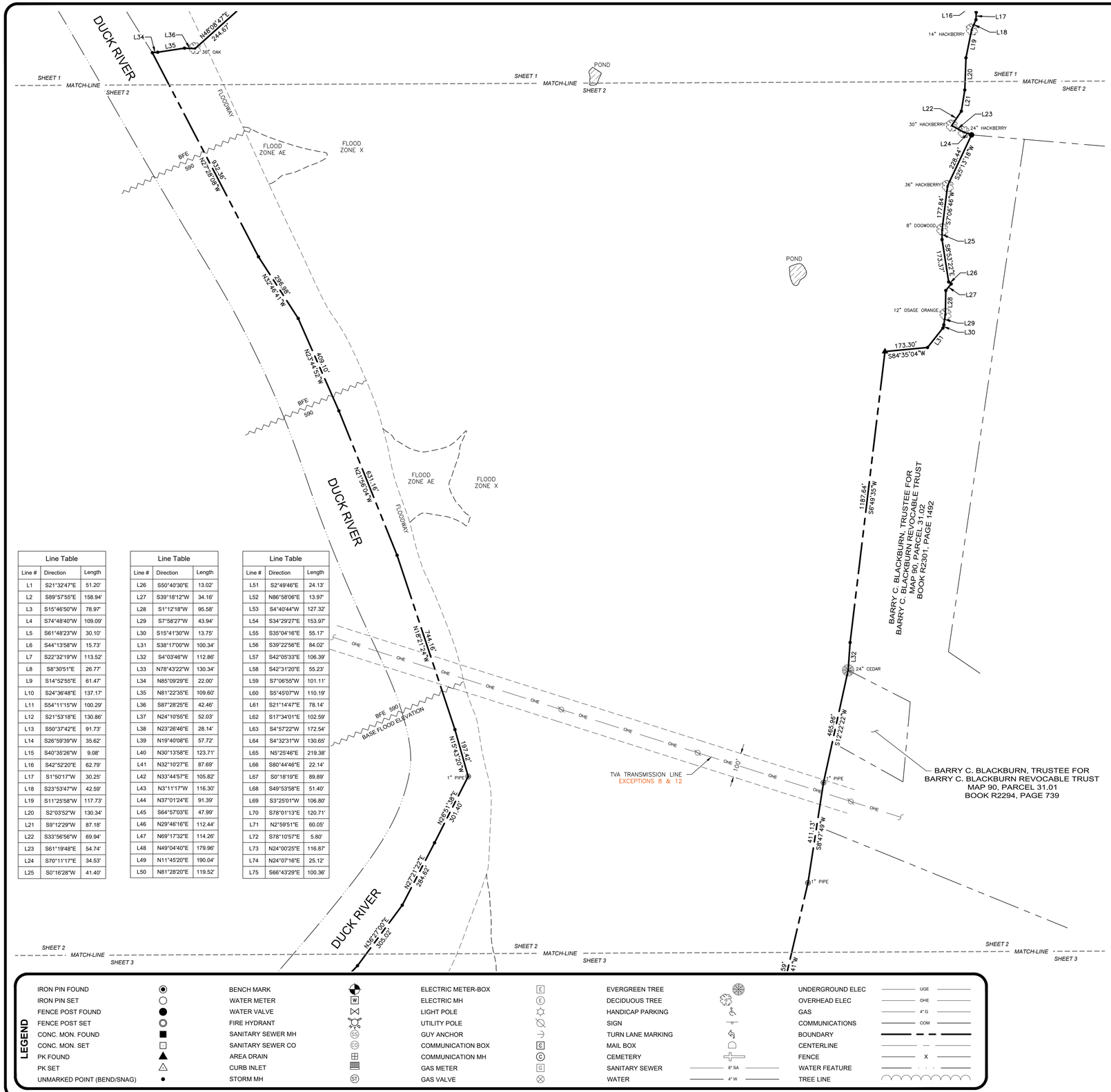
200 0 100 200 400
GRAPHIC SCALE: 1" = 100'

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.
1 OF 4



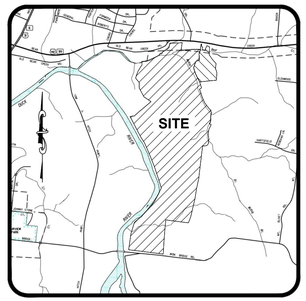
Line Table		
Line #	Direction	Length
L1	S21°32'47"E	51.20'
L2	S89°57'55"E	158.94'
L3	S15°46'50"W	78.97'
L4	S74°48'40"W	109.09'
L5	S61°48'23"W	30.10'
L6	S44°13'58"W	15.73'
L7	S22°32'19"W	113.52'
L8	S8°30'51"E	26.77'
L9	S14°52'55"E	61.47'
L10	S24°36'48"E	137.17'
L11	S54°11'15"W	100.29'
L12	S21°53'18"E	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'
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	
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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
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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

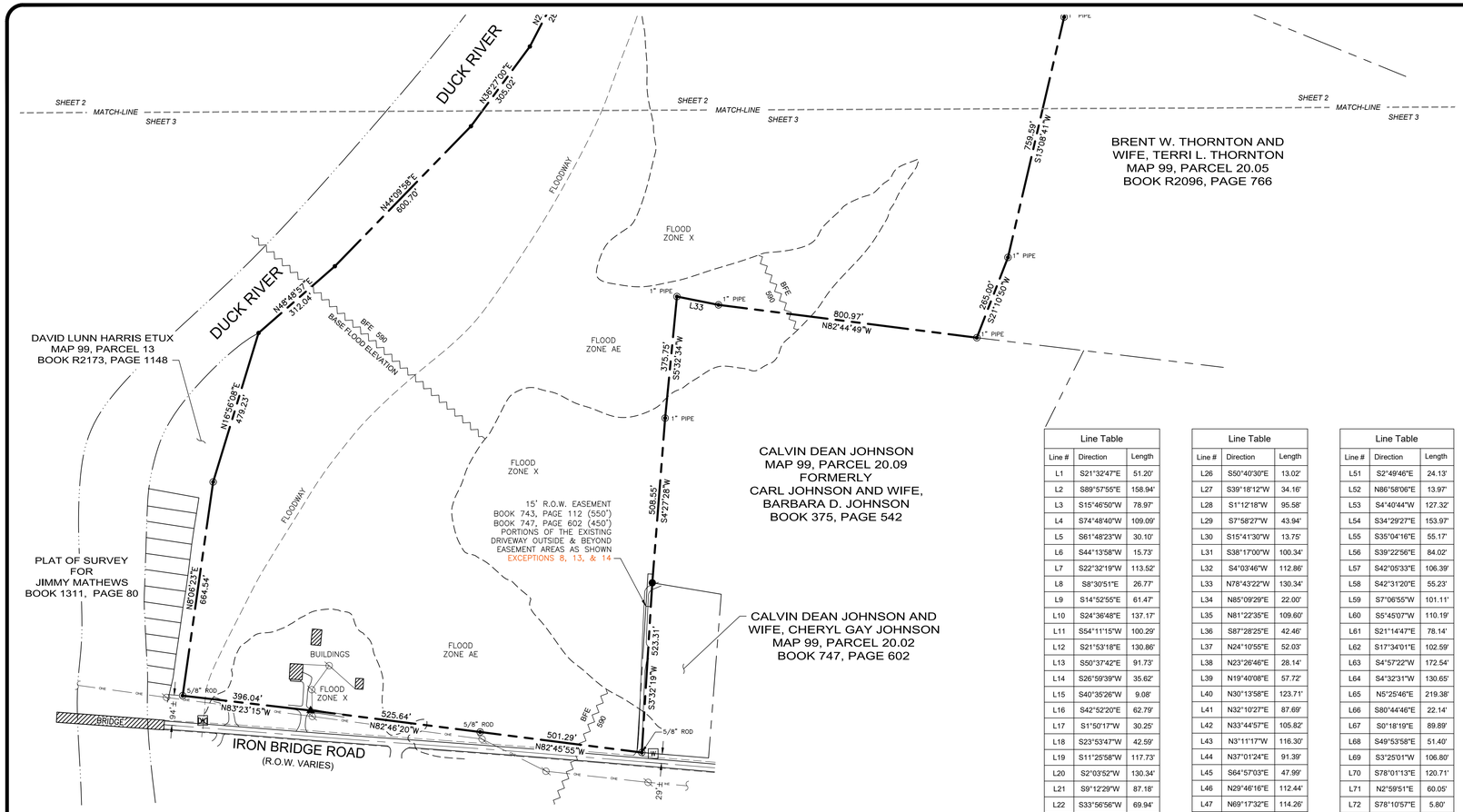
WILSON & ASSOCIATES, P.C.
Engineering/Surveying/Environmental

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'

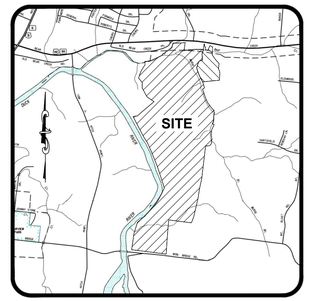
SHEET No.
2 OF 4



Line Table		
Line #	Direction	Length
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L47	N69°17'32"E	114.26'
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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.

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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
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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
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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	WATER FEATURE	
UNMARKED POINT (BEND/SNAG)	STORM MH	GAS VALVE	WATER	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'

NO.	DATE	COMMENT

108 Beasley Drive
Franklin, TN
37064
615.794.2275

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

JOEY C. WILSON II LAND SURVEYOR XV AGRICULTURE COMMERCE 2089 TENNESSEE NO. 2089 1/7/22

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

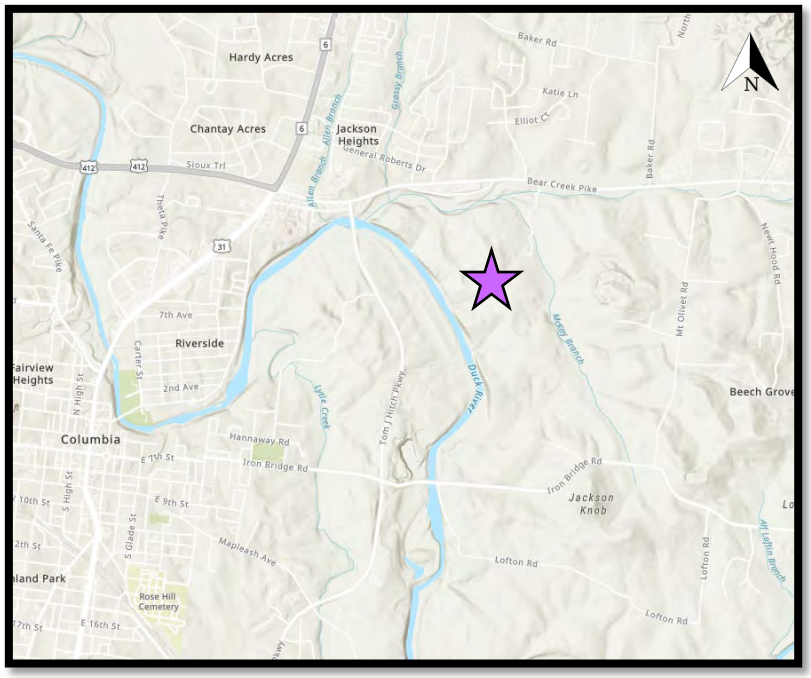
DRAWN BY: JEC
APPVD. BY: JCW II
DATE 1/7/2022
PROJ. No. 21-1801
SCALE: 1" = 200'

SHEET No.
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

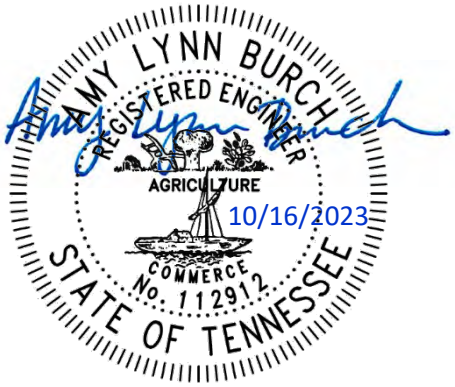
BURCH TRANSPORTATION

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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.

<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.

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.

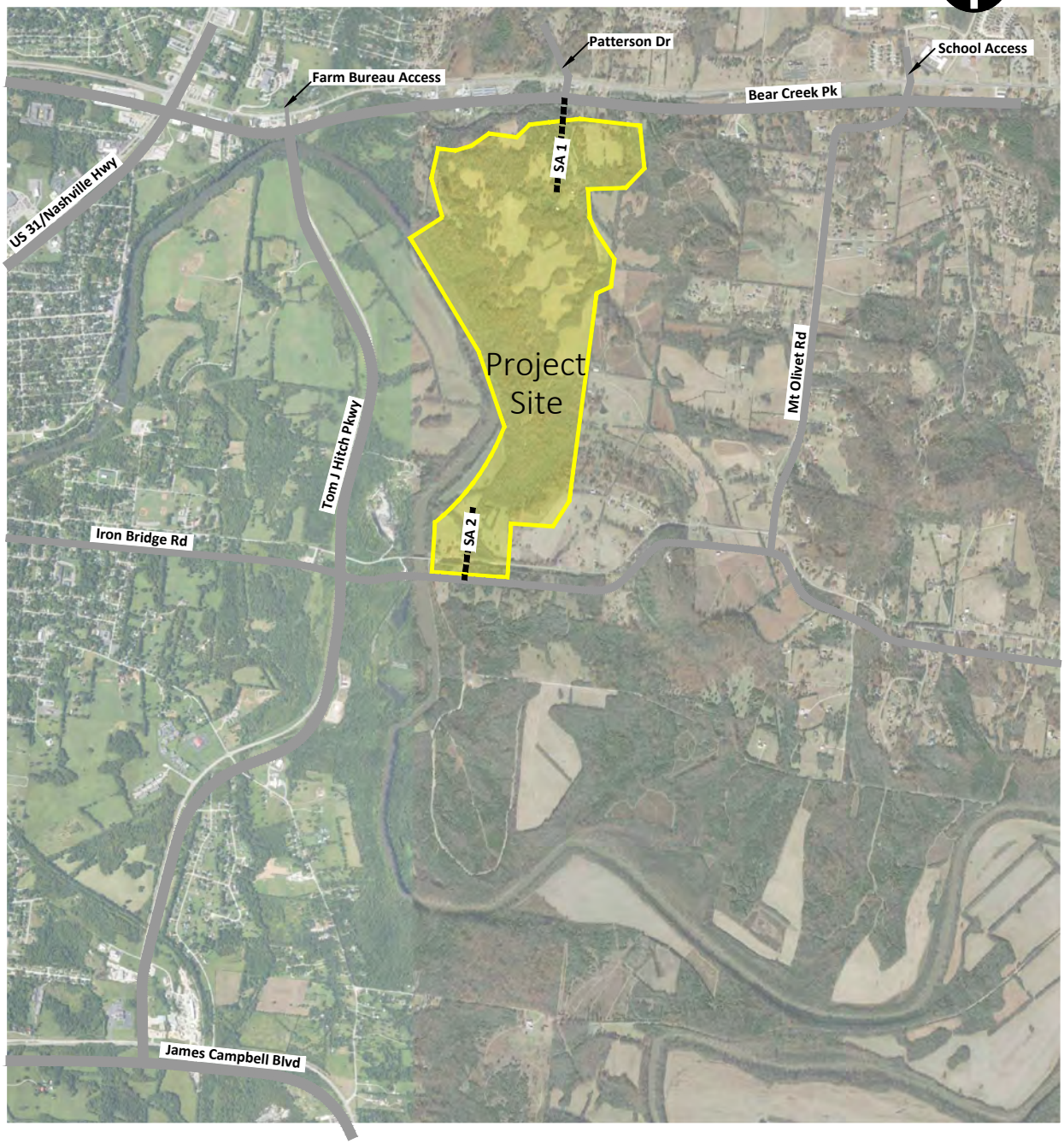
According to Kolter Group Acquisitions LLC, the construction and phasing will begin at the north end of the project site and work towards the south. The connection to Iron Bridge Road is not planned to be constructed until the beginning of Phase 4. Therefore, the following two (2) development scenarios 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.

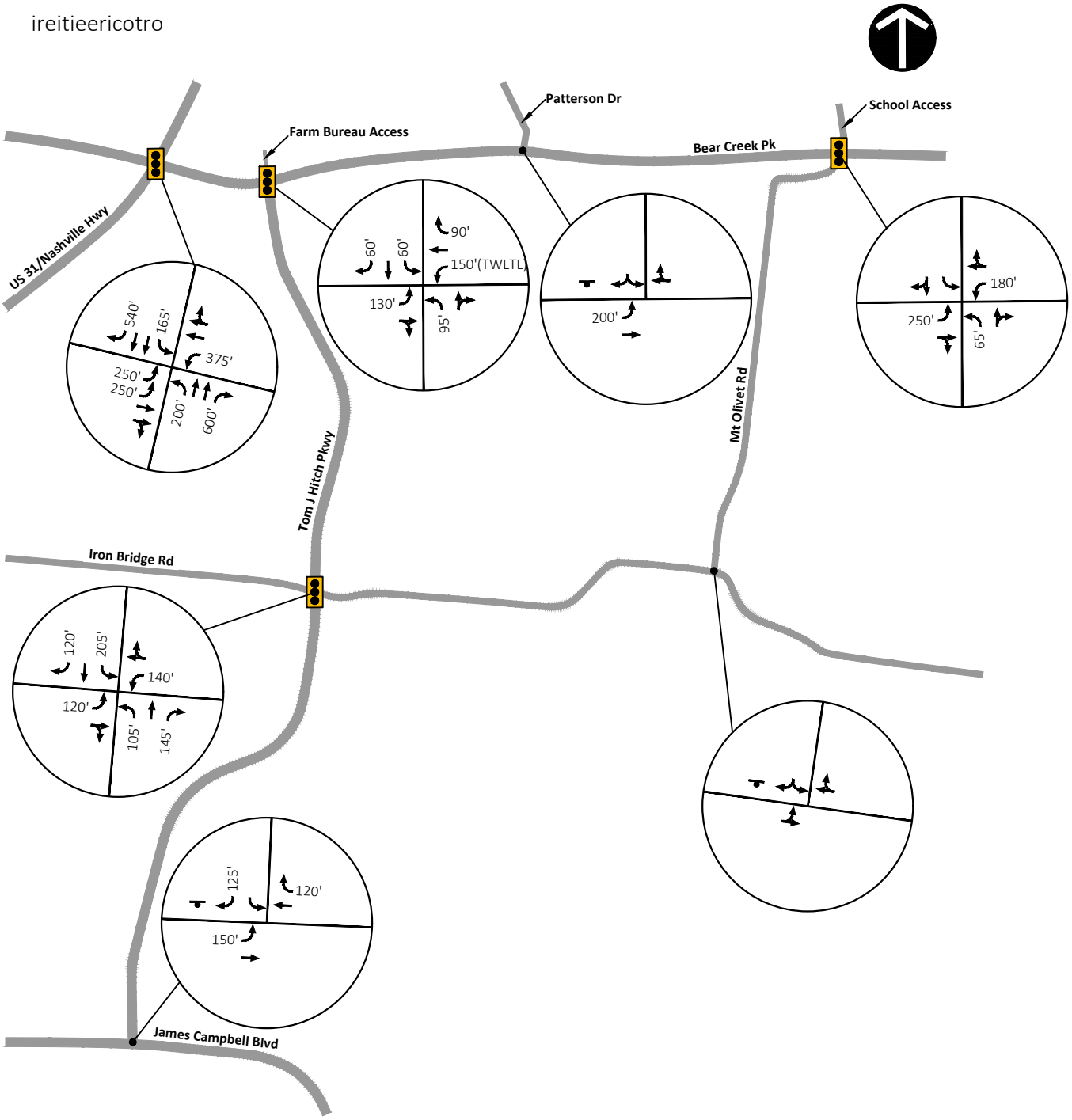
The intersection of **Iron Bridge Road and Mt Olivet Road** is unsignalized with three approaches. The eastbound approach of Iron Bridge Road includes one shared lane for left turn and through movements. The westbound approach of Iron Bridge Road includes one shared lane for through and right turn

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.

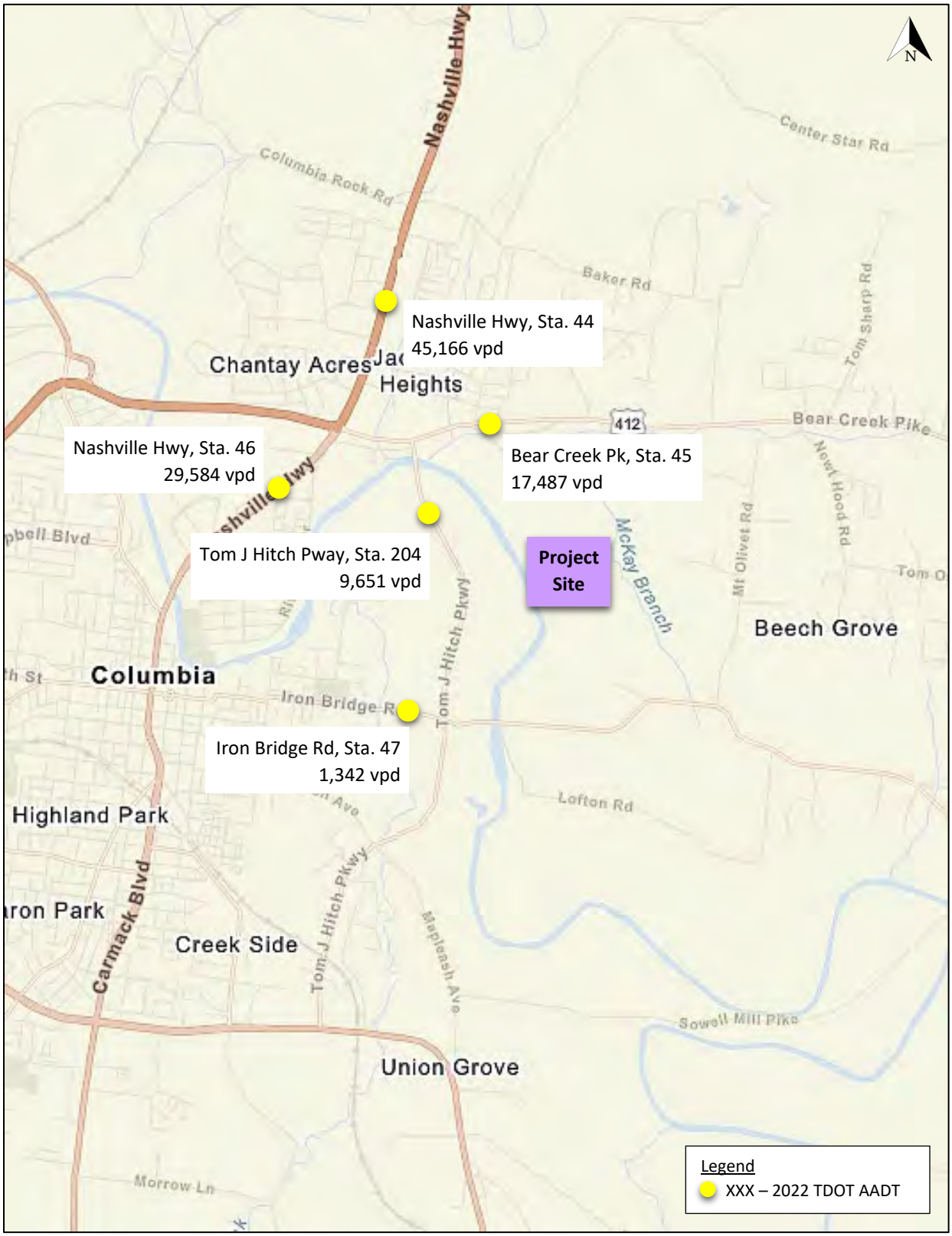
Turning movement count data conducted for the study intersections in May 2021 by Marr Traffic were obtained from a TIS prepared by Ragan-Smith for the same project site. Although the AADT comparison appears to show that traffic volumes in the study area have normalized, a peak hour comparison of the 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.

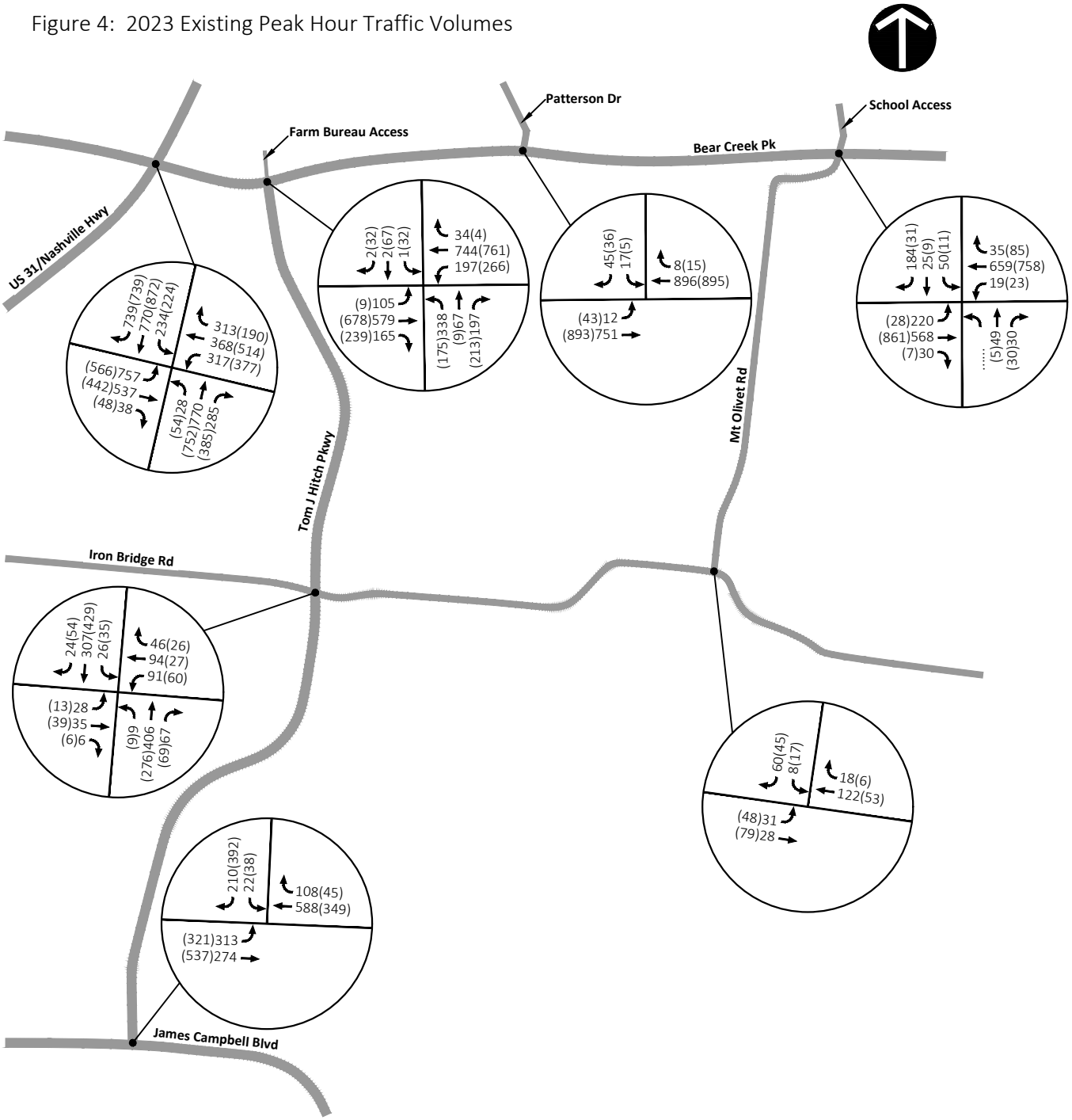
The 2023 Existing Conditions Peak Hour Traffic Volumes are presented in Figure 4. This represents the baseline conditions for the traffic analysis. The turning movement count data that was used to establish baseline conditions is included in Appendix D.

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)

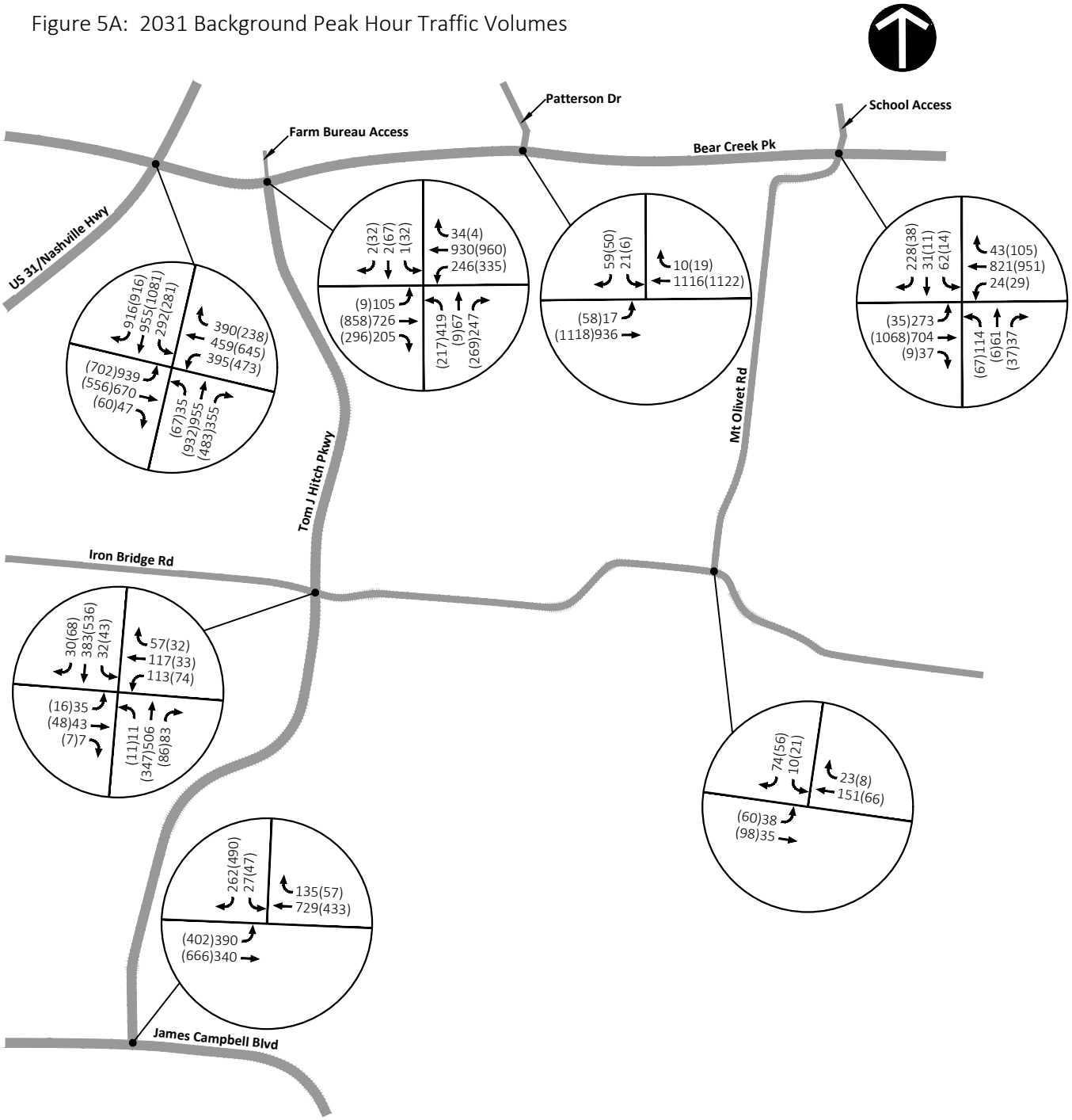
4. Background Conditions

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.

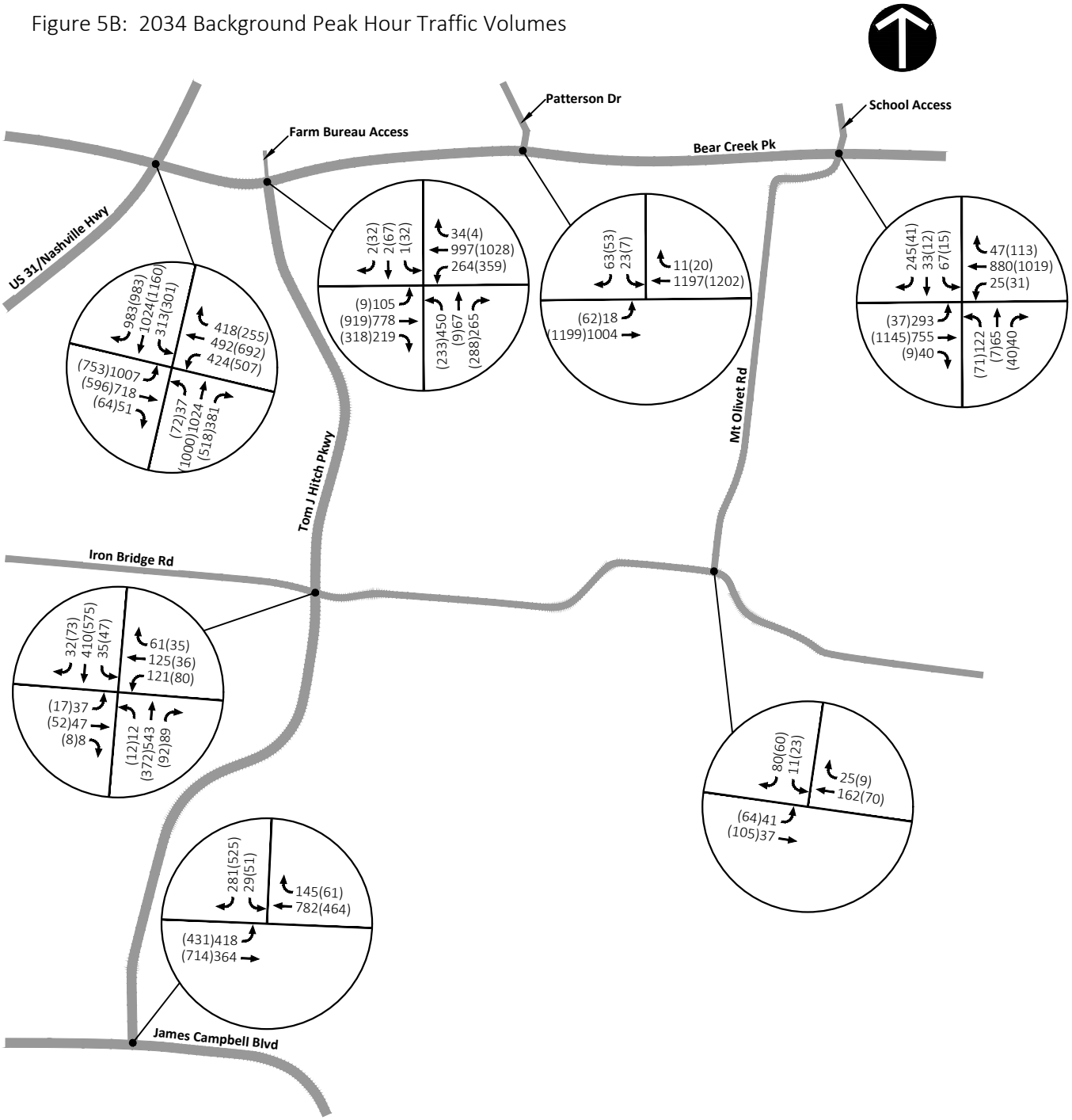
Figure 5A: 2031 Background Peak Hour Traffic Volumes



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.

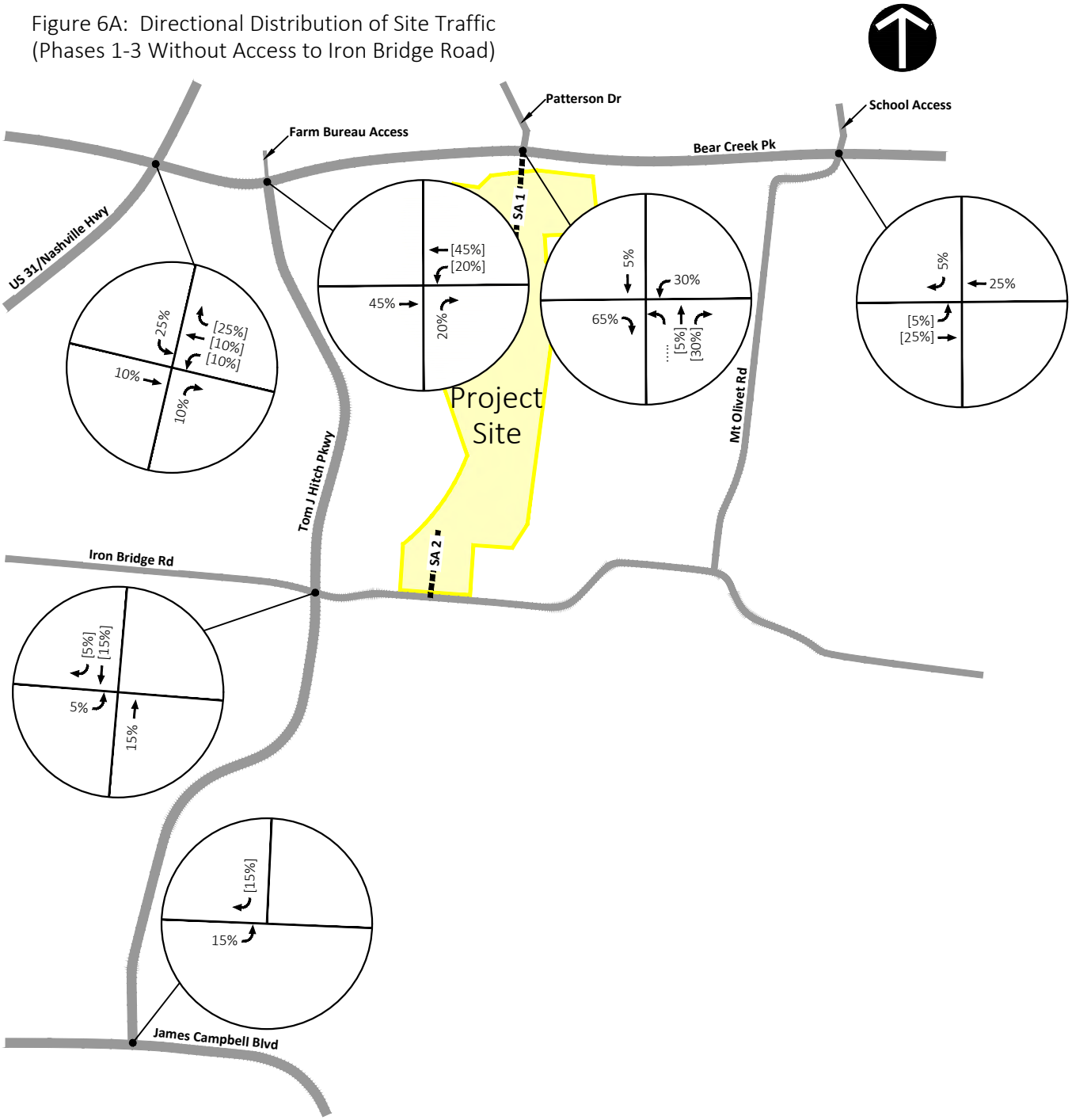
Table 3: Directional Distribution

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.

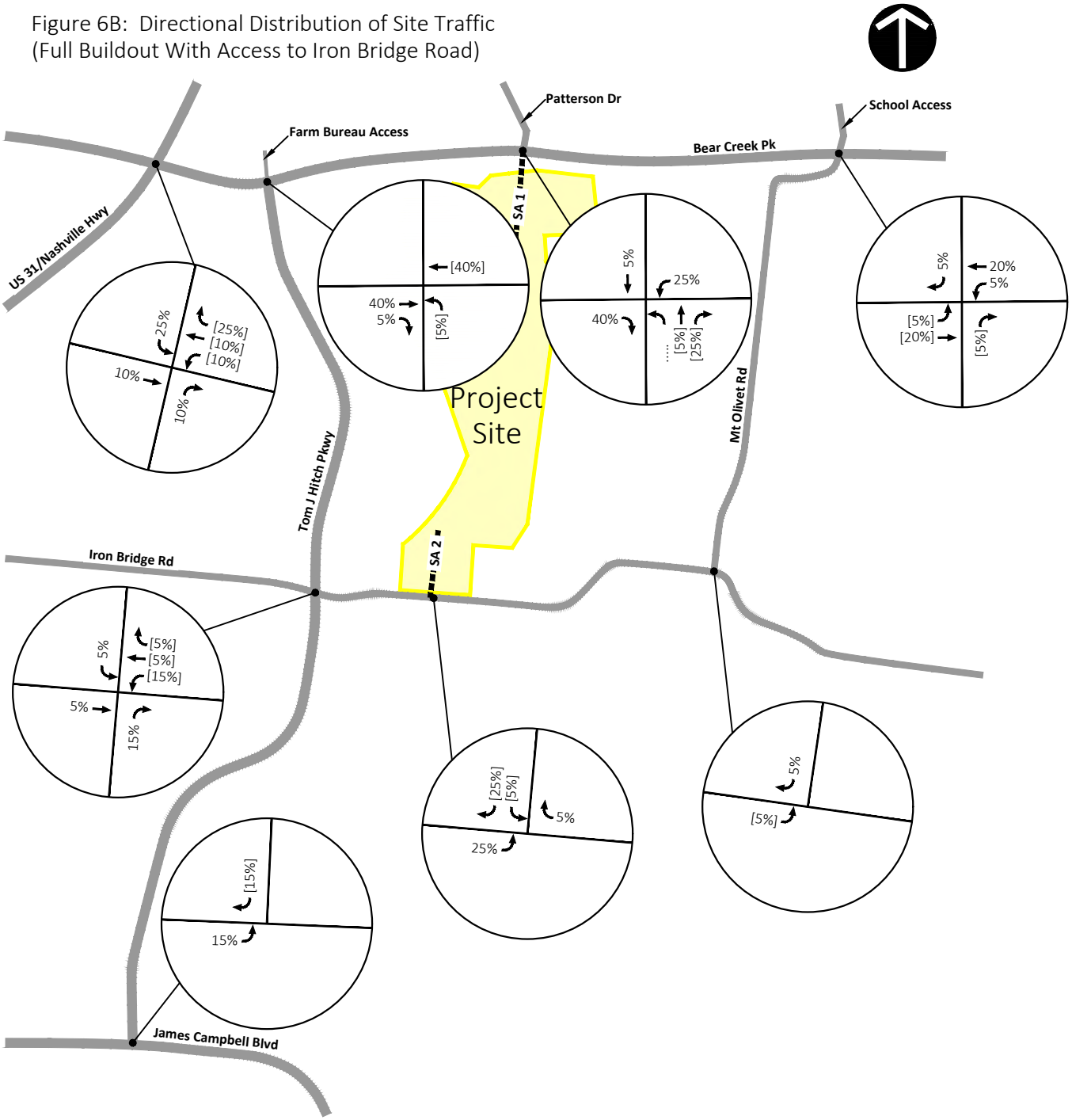
Figure 6A: Directional Distribution of Site Traffic
(Phases 1-3 Without Access to Iron Bridge Road)



Legend:
XX% - Enter
[XX%] - Exit

(Not to Scale)

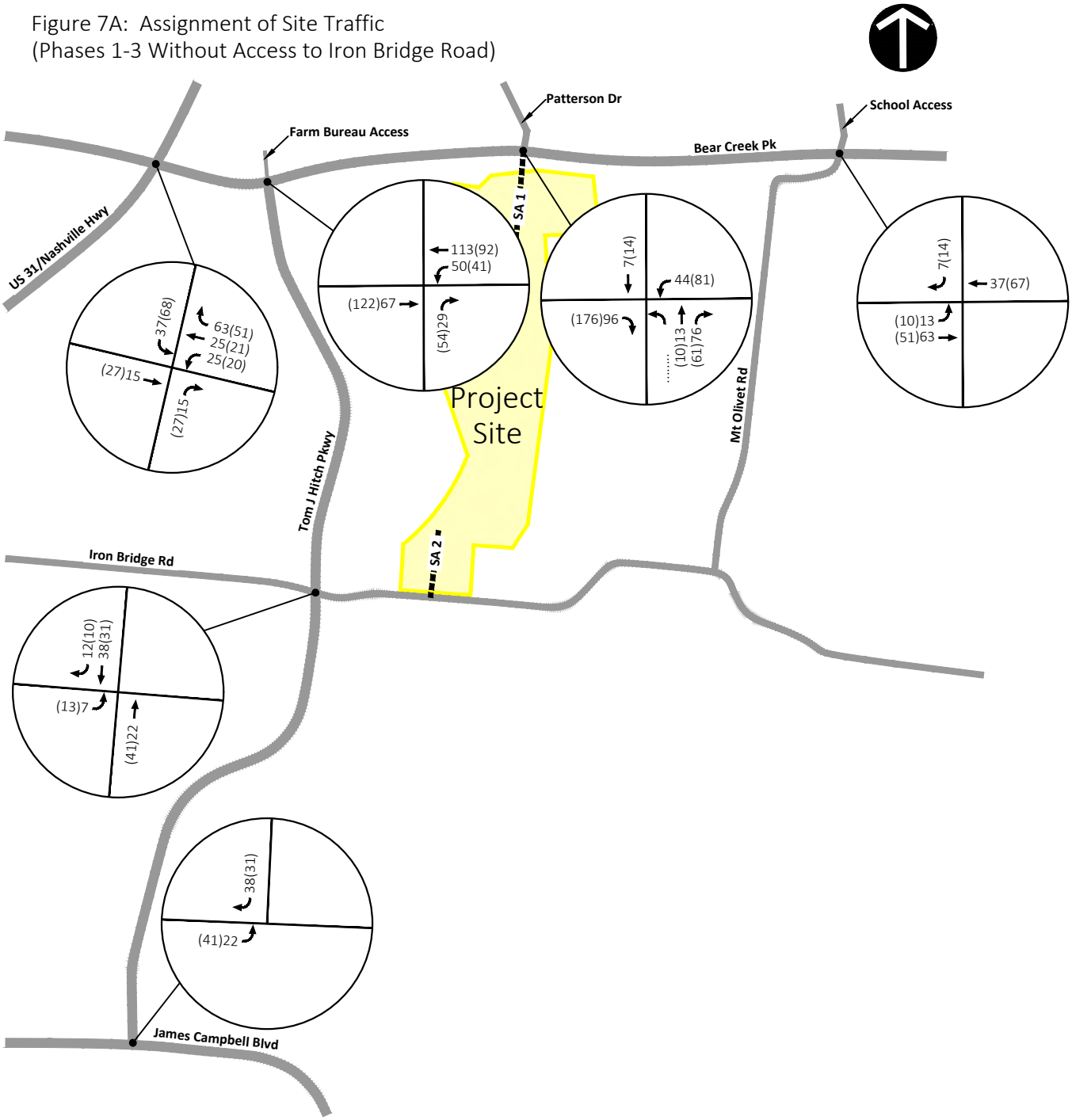
Figure 6B: Directional Distribution of Site Traffic
(Full Buildout With Access to Iron Bridge Road)



Legend:
XX% - Enter
[XX%] - Exit

(Not to Scale)

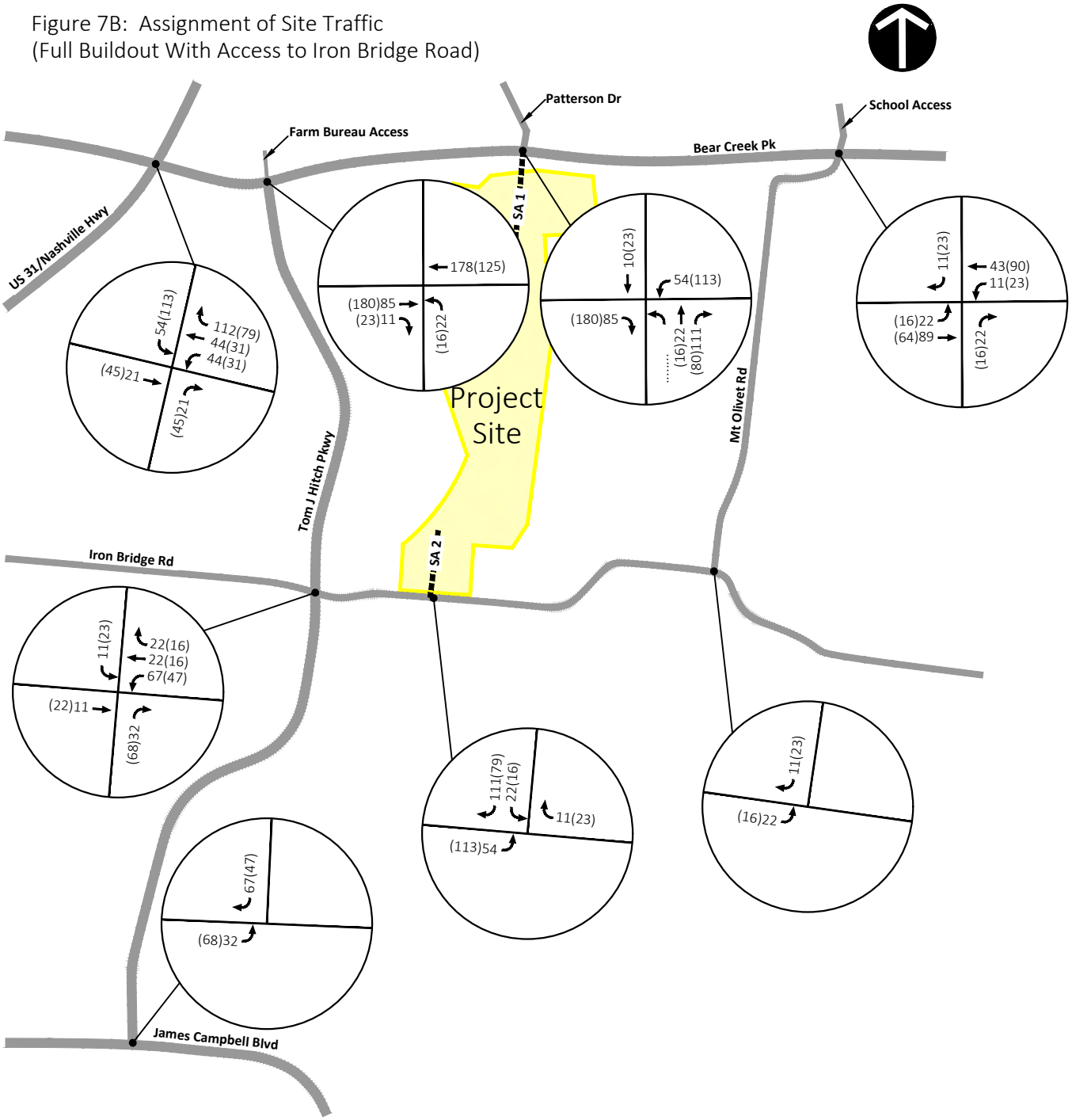
Figure 7A: Assignment of Site Traffic
(Phases 1-3 Without Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

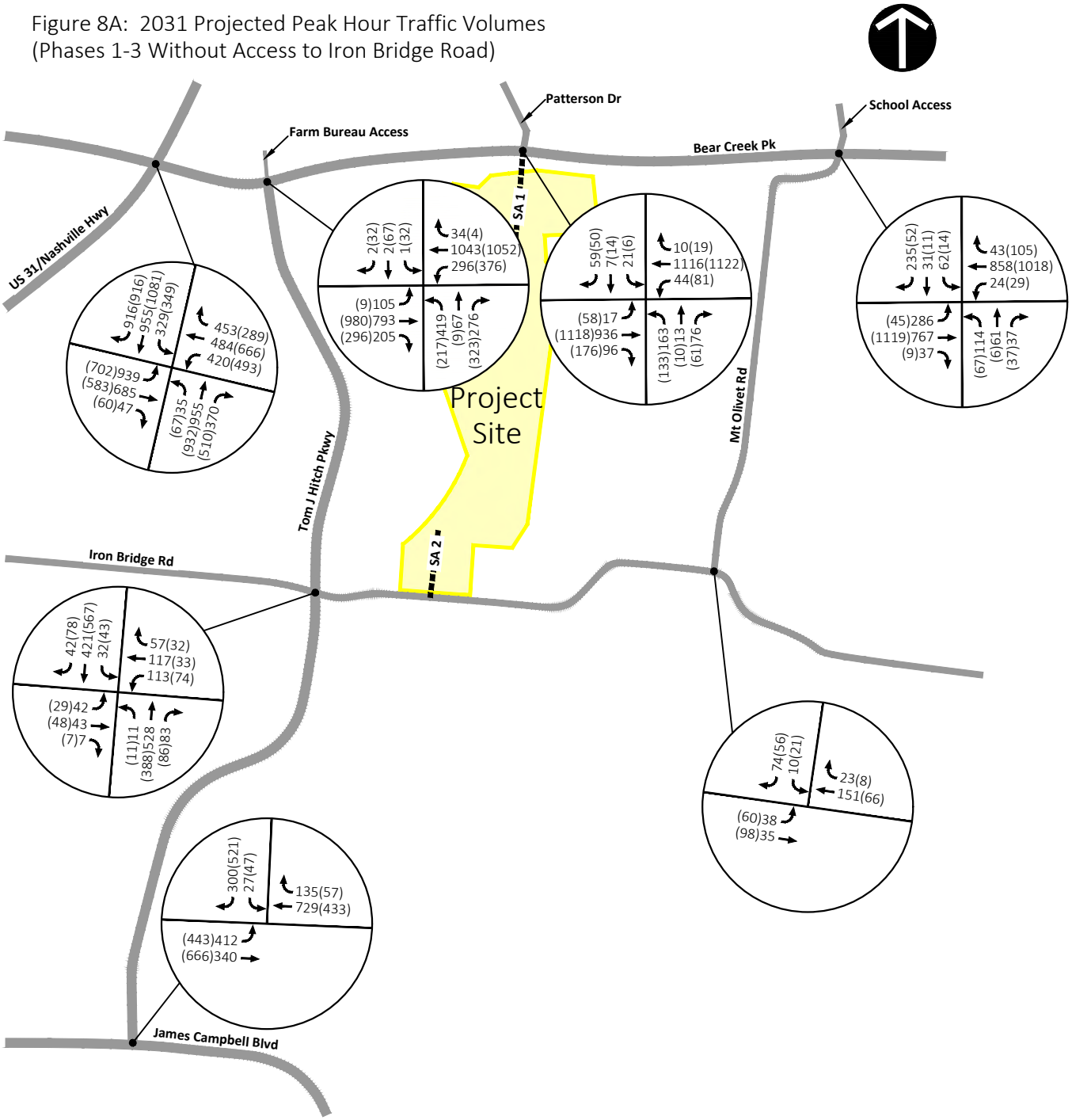
Figure 7B: Assignment of Site Traffic
(Full Buildout With Access to Iron Bridge Road)



Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

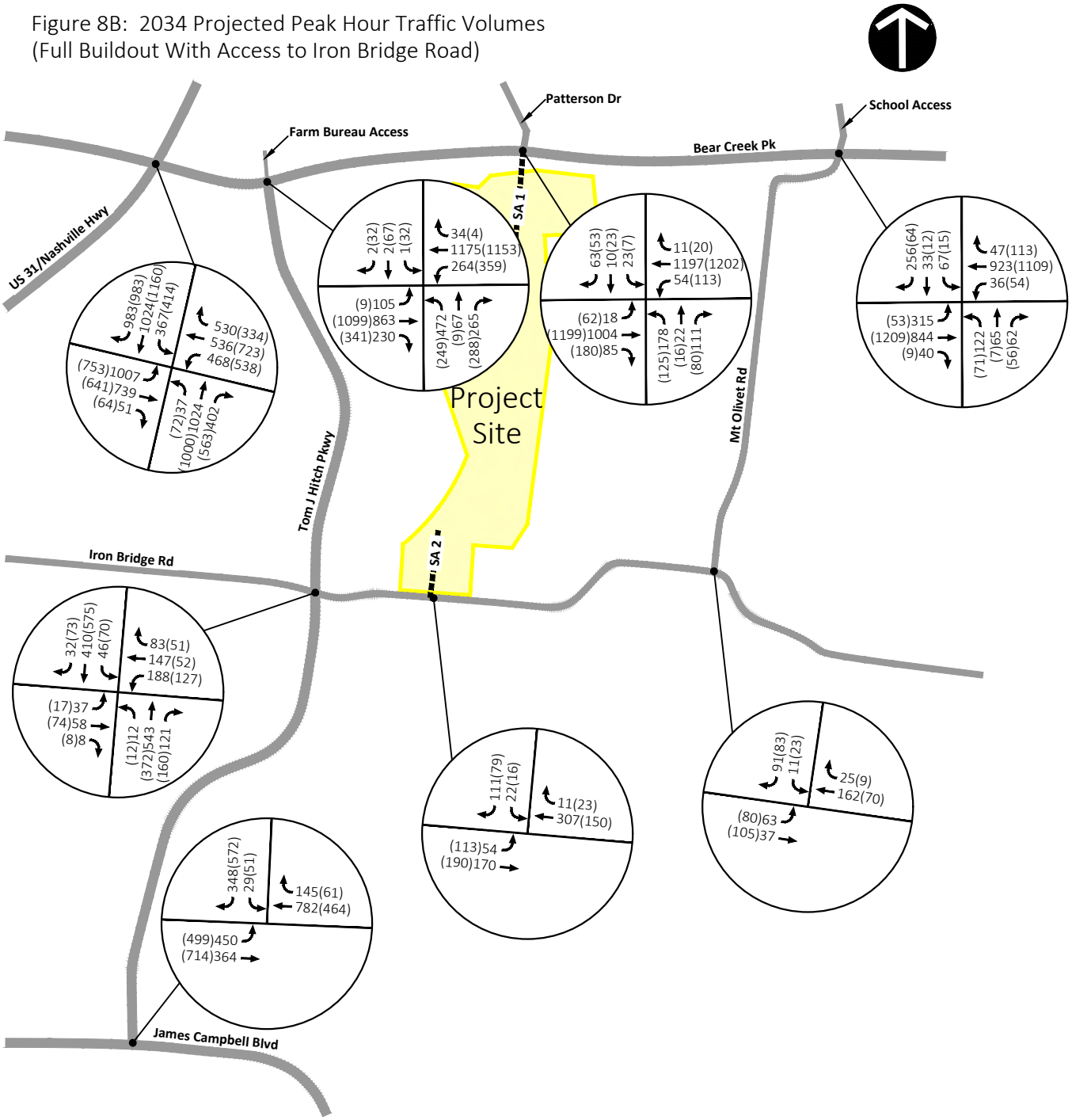
Figure 8A: 2031 Projected Peak Hour Traffic Volumes
(Phases 1-3 Without Access to Iron Bridge Road)



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>

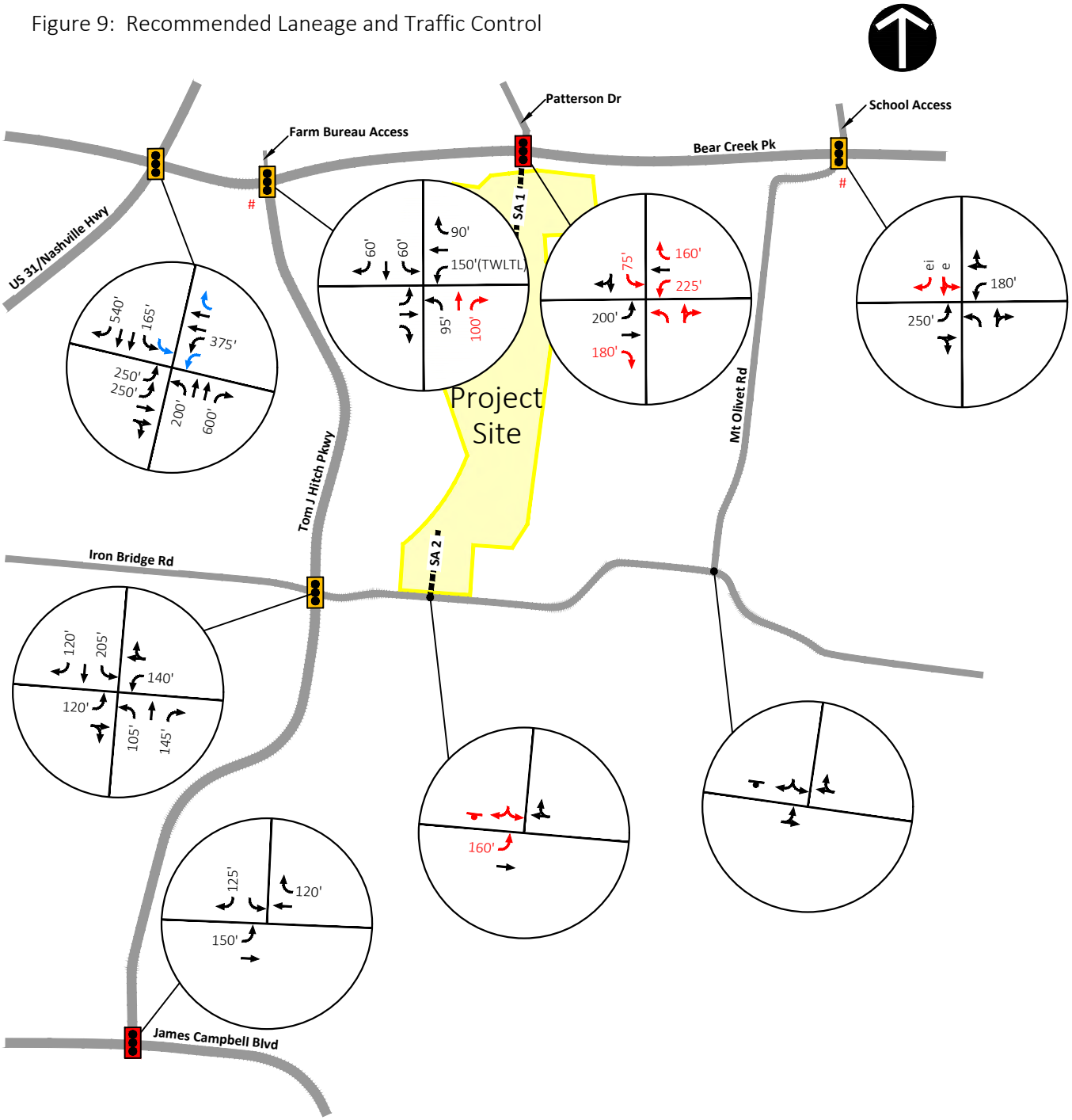
With the planned widening of Bear Creek Pike between Nashville Highway and Tom J Hitch Parkway, the following improvements should be made:

- 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

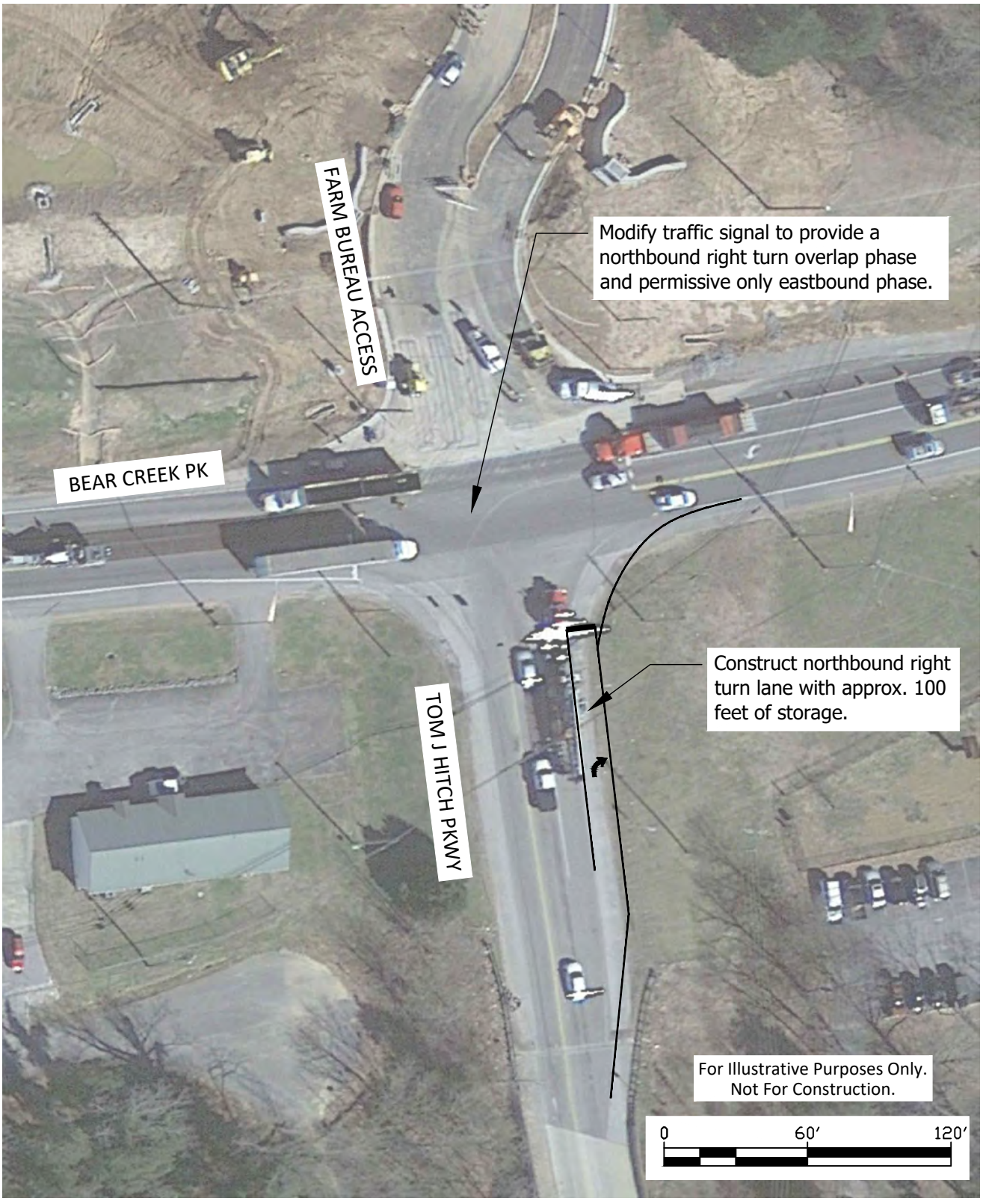


Figure 10B: Conceptual Layout of Recommended Improvements at Bear Creek Pike and Patterson Drive/Site Access 1

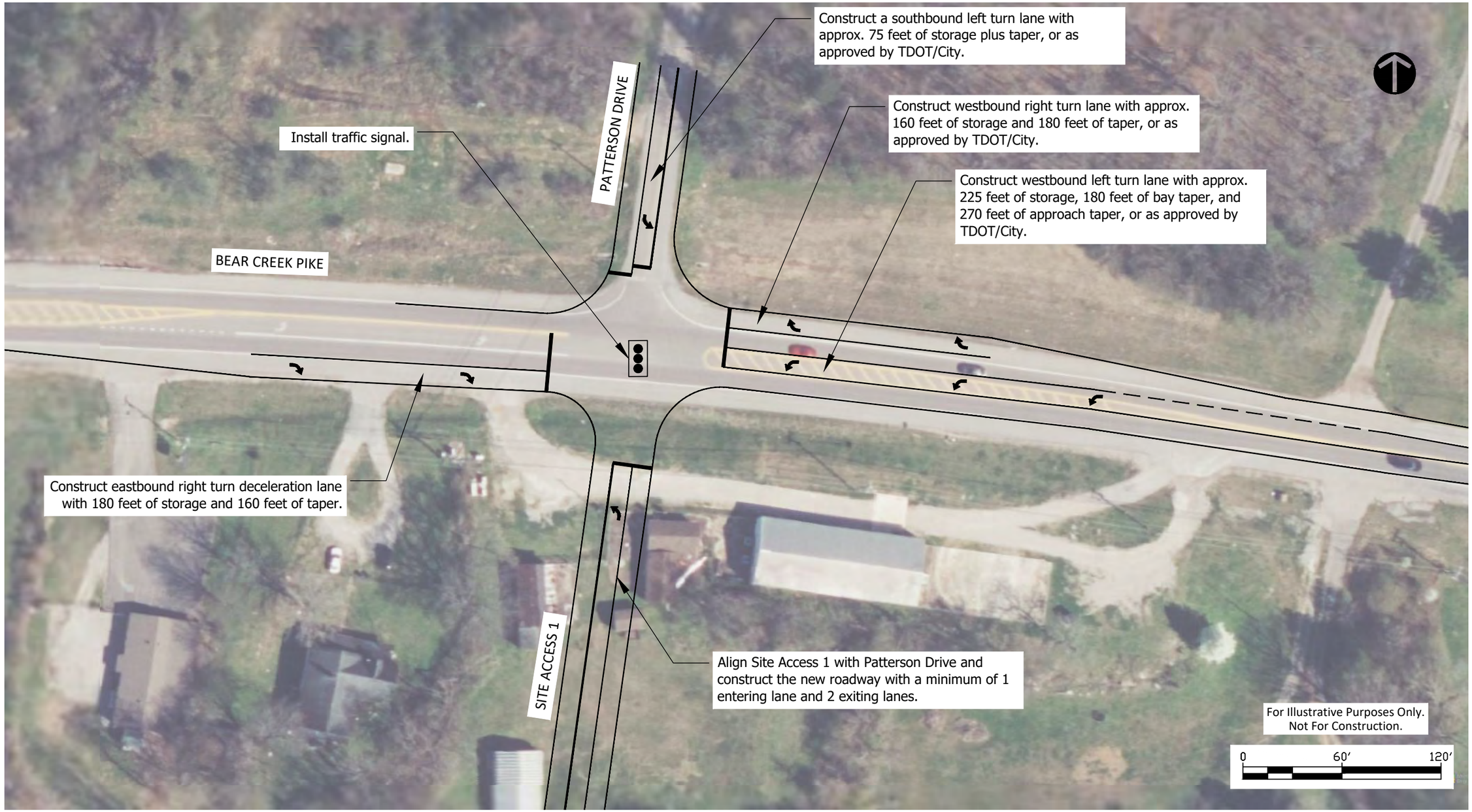


Figure 10C: Conceptual Layout of Recommended Improvements at Bear Creek Pike and Mt Olivet Road/School Access

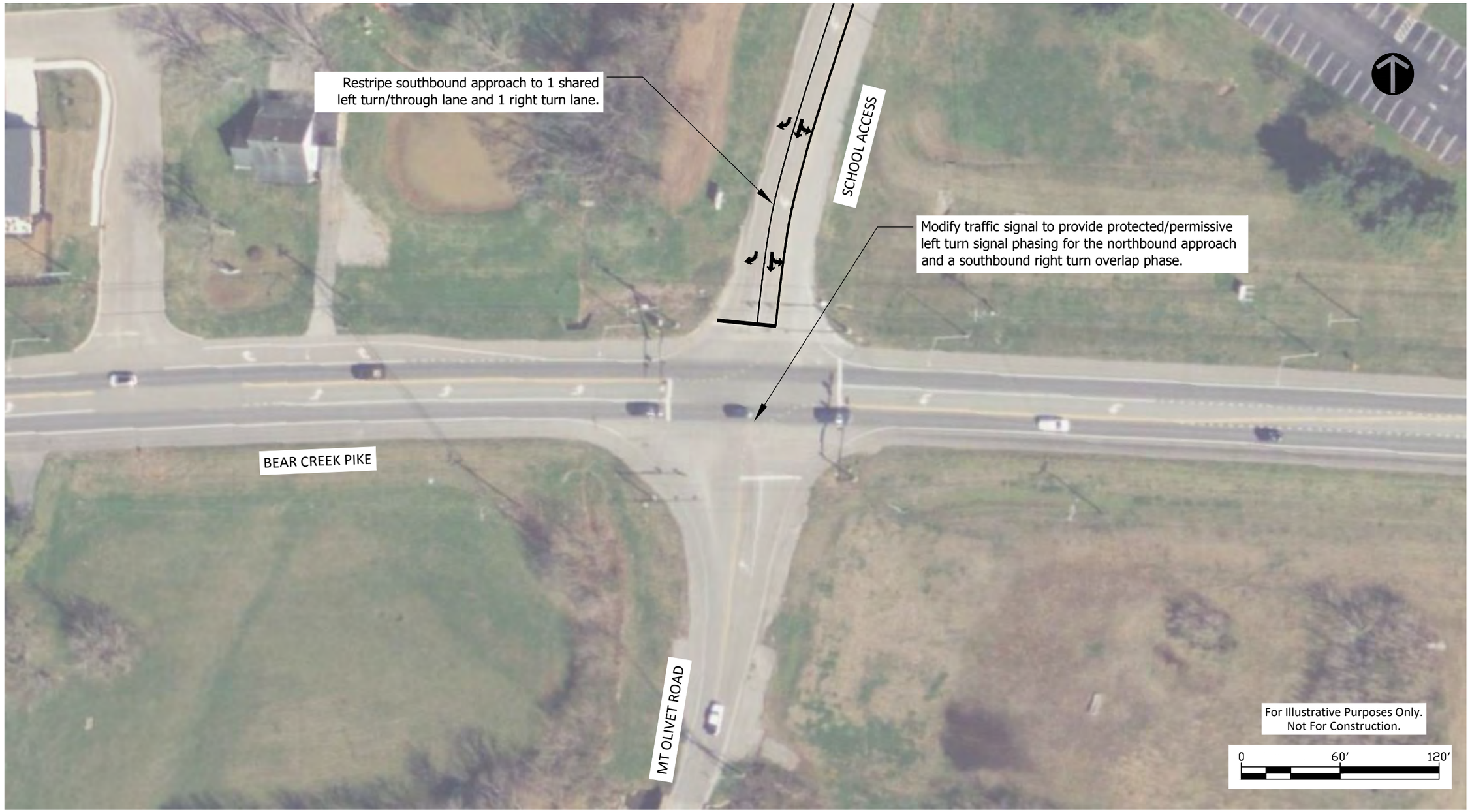


Figure 10D: Conceptual Layout of Recommended Improvements at Iron Bridge Road and Site Access 2



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

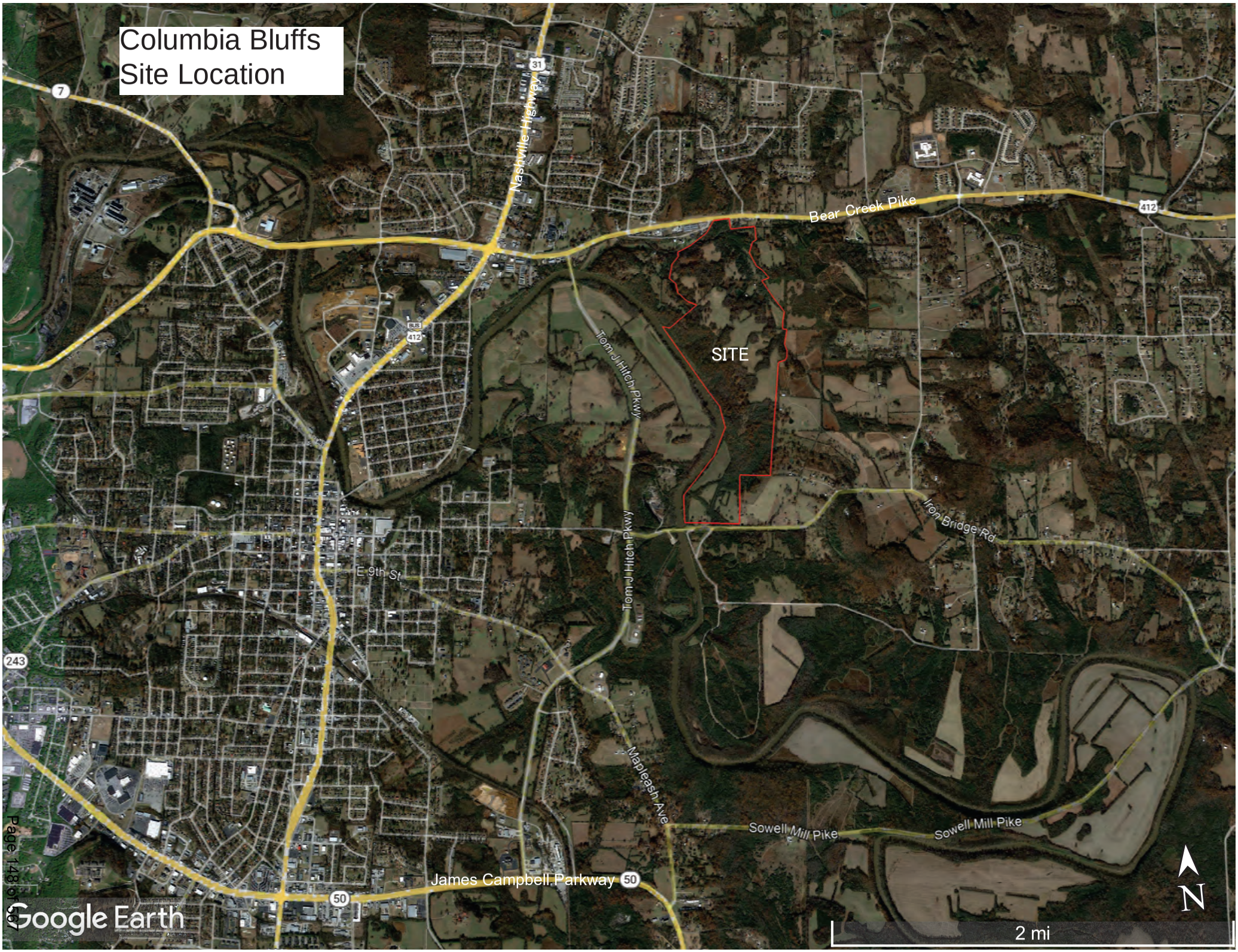
MEMORANDUM OF UNDERSTANDING SIGN OFF:

	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

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

www.marrtraffic.com

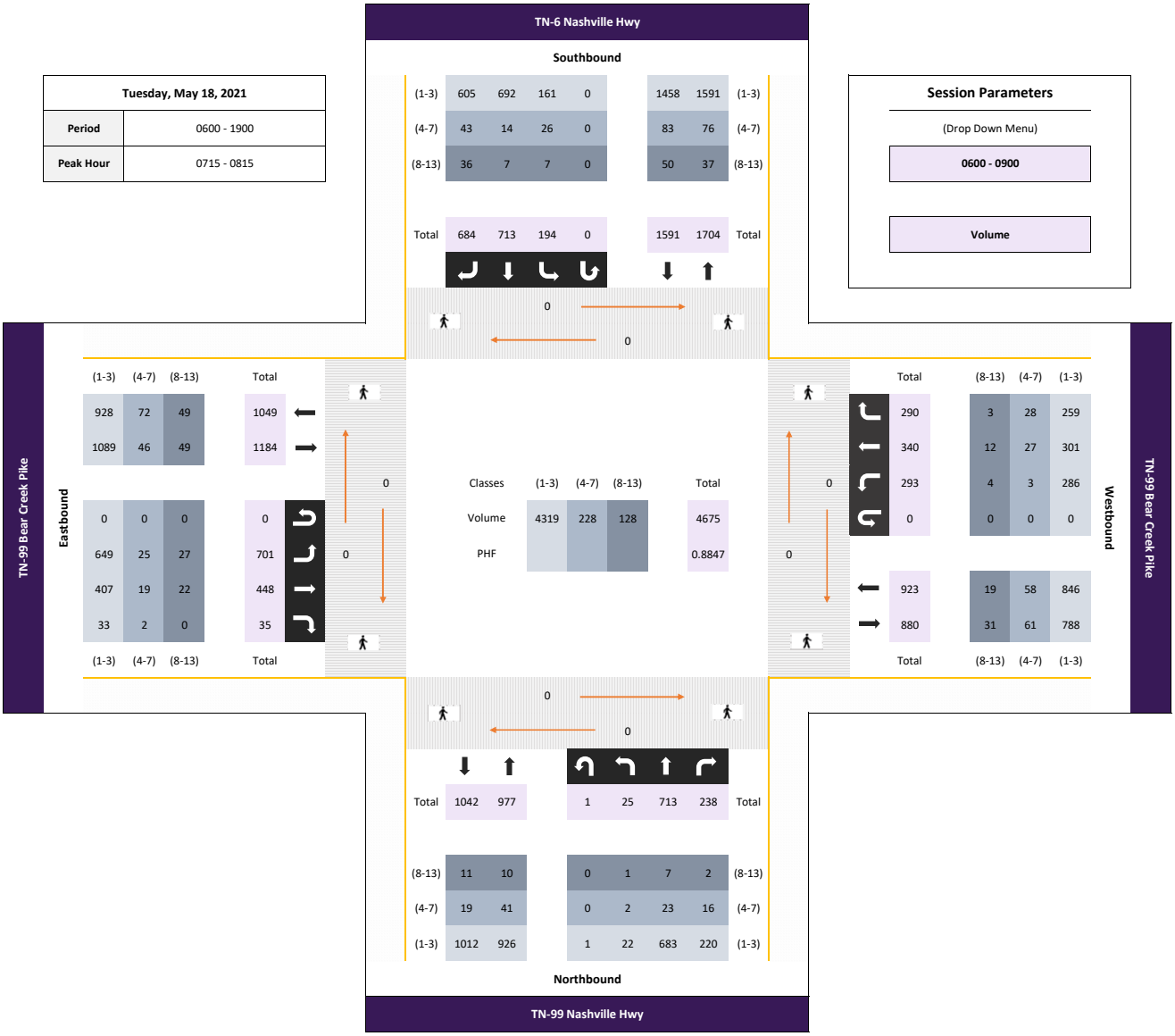
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

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**

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

www.marrtraffic.com



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

www.marrtraffic.com

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)					
	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
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)					
	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
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)					
	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
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)					
	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
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)					
	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
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)					
	EB	WB			App					App	NB	SB			App	NB	SB			App	Int
Time	6a	6b			Total					Total	6e	6f			Total	6g	6h			Total	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

www.marrtraffic.com

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

www.marrtraffic.com

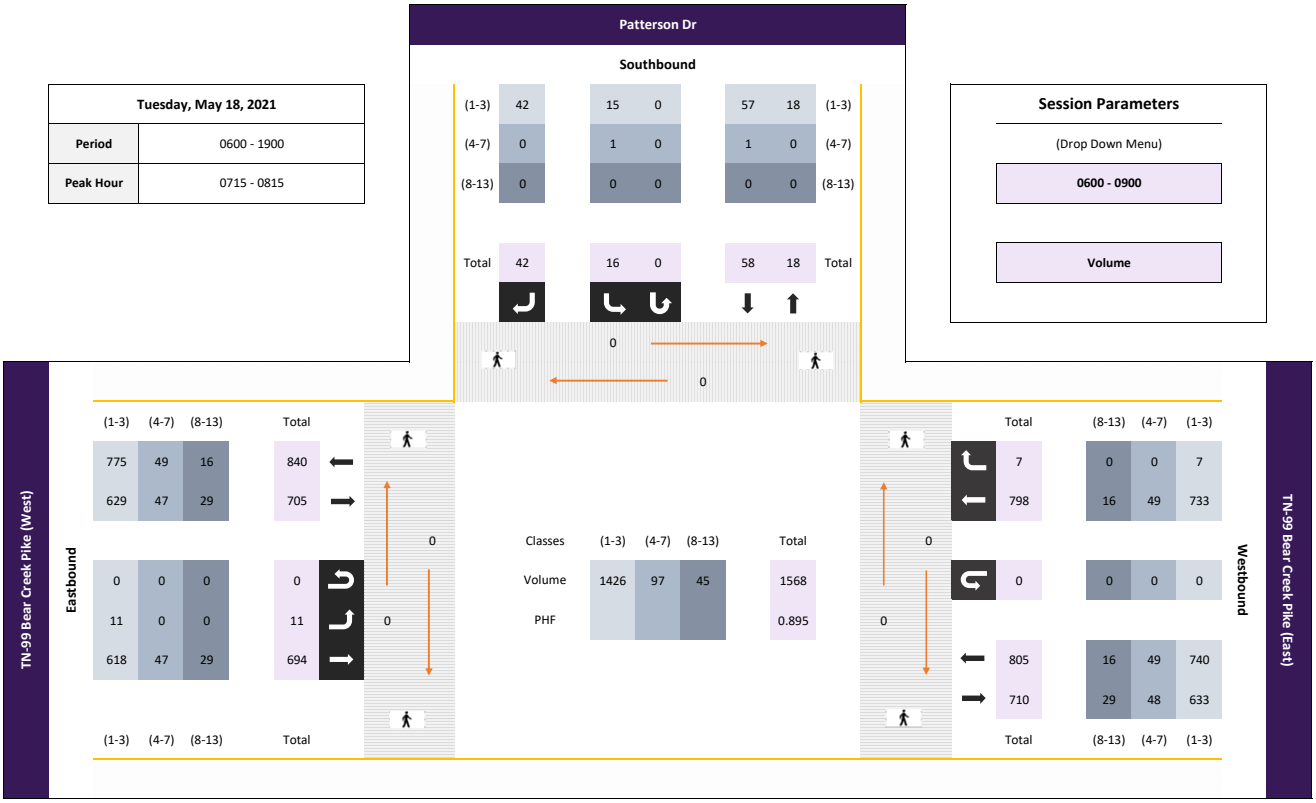
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0715 - 0815

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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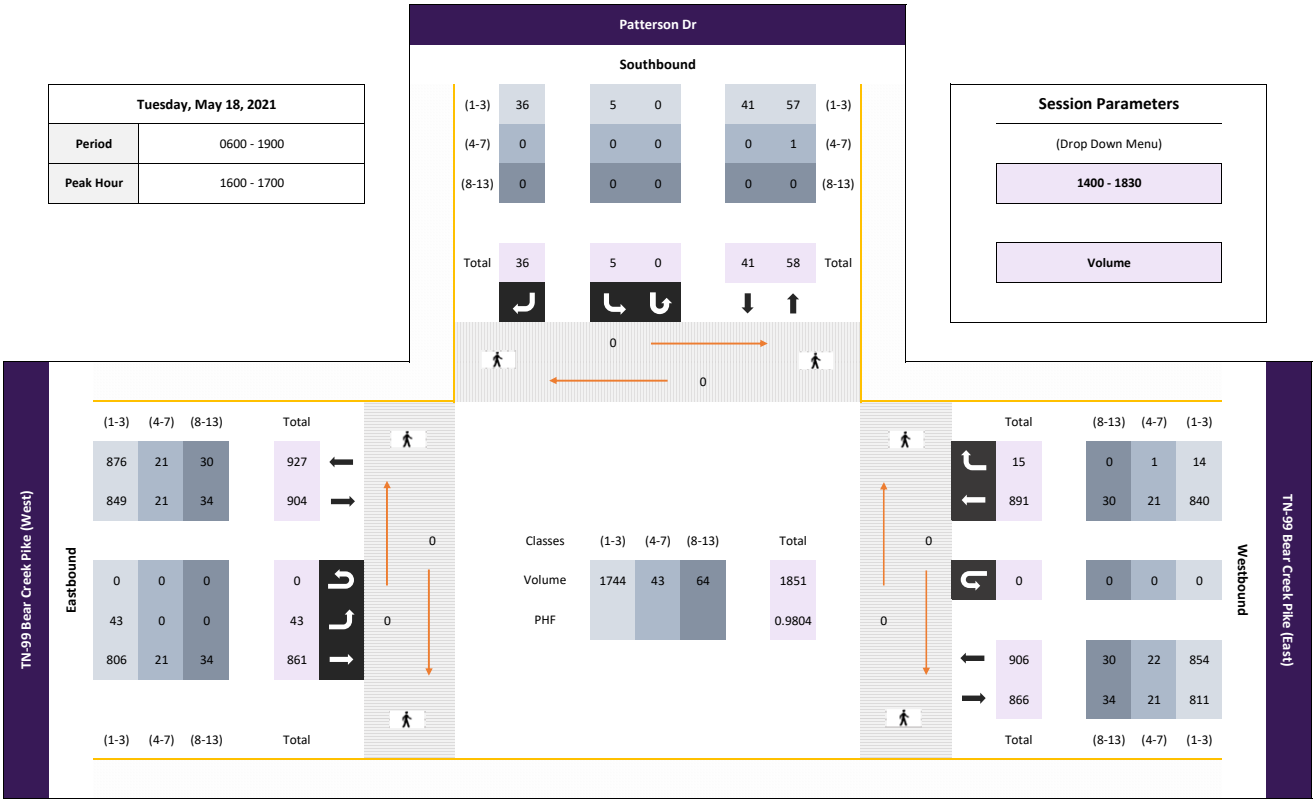
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1600 - 1700

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

www.marrtraffic.com

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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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**

Click here for Map

Peak Hour Turning Movement Count

Columbia, TN

Marr Traffic DATA COLLECTION

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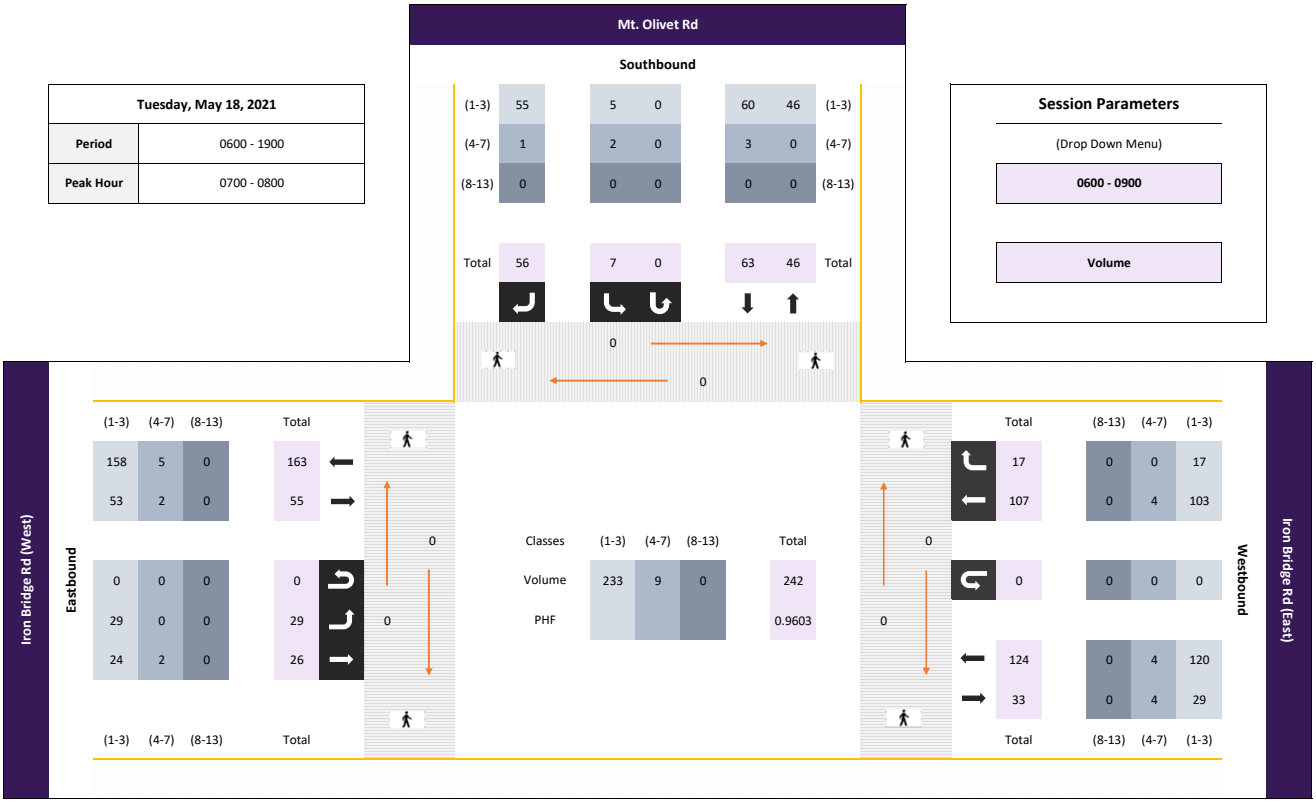
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0700 - 0800

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

Marr Traffic DATA COLLECTION

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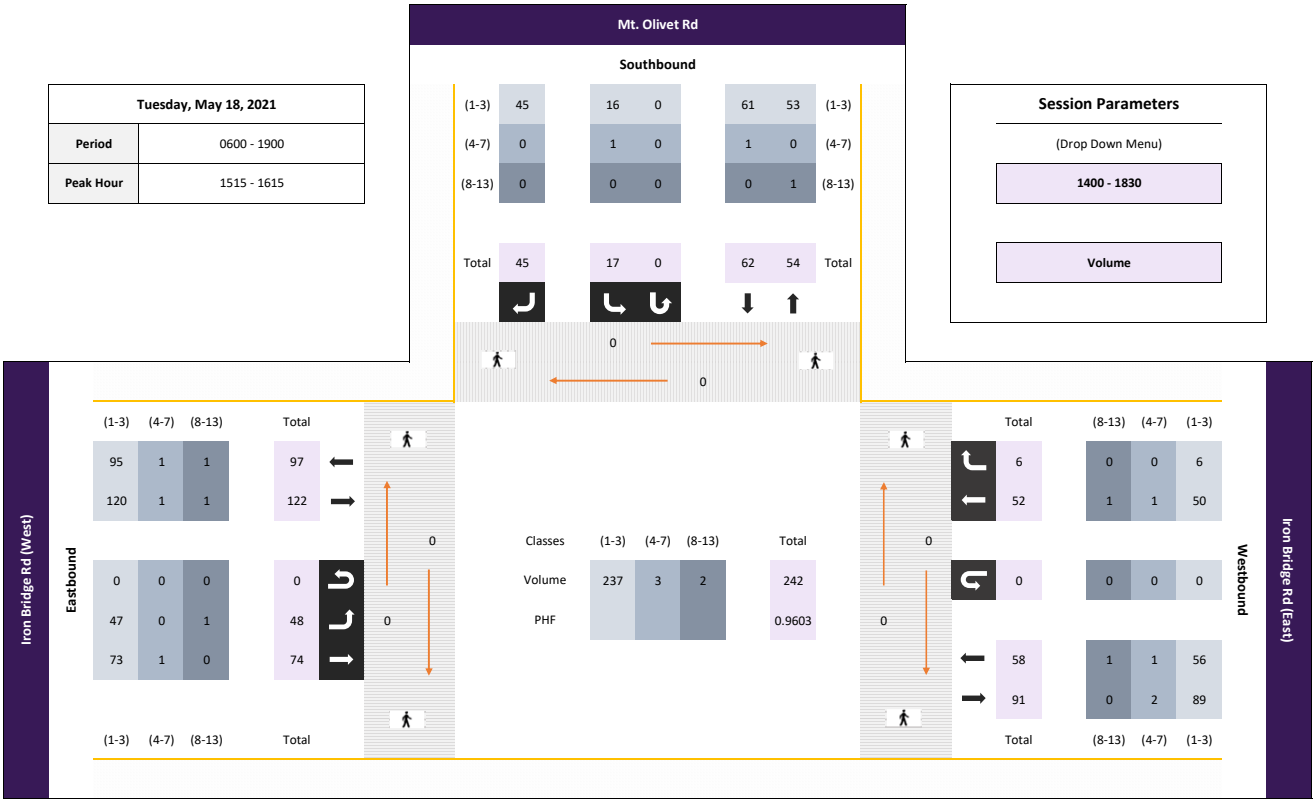
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1515 - 1615

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	
1515 - 1530	-	-	-	-	0	4	-	12	0	16	14	16	-	0	30	-
1530 - 1545	-	-	-	-	0	7	-	17	0	24	11	13	-	0	24	-
1545 - 1600	-	-	-	-	0	1	-	10	0	11	10	22	-	0	32	-
1600 - 1615	-	-	-	-	0	5	-	6	0	11	13	23	-	0	36	-
Total	0	0	0	0	0	17	0	45	0	62	48	74	0	0	122	0
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total	
1515 - 1530	13	3	0	16	62	
1530 - 1545	14	1	0	15	63	
1545 - 1600	13	1	0	14	57	
1600 - 1615	12	1	0	13	60	
Total	52	6	0	58	242	
Approach %	89.66	10.34	0.00	-		
PHF	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	
1515 - 1530	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1600 - 1615	-	-	-	-	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
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total	
1515 - 1530	0	0	0	0	0	
1530 - 1545	0	0	0	0	0	
1545 - 1600	0	0	0	0	0	
1600 - 1615	0	0	0	0	0	
Total	0	0	0	0	0	
Approach %	0.00	0.00	0.00	-		
PHF	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	
1515 - 1530	-	-	-	-	0	3	-	12	0	15	13	16	-	0	29	-
1530 - 1545	-	-	-	-	0	7	-	17	0	24	11	13	-	0	24	-
1545 - 1600	-	-	-	-	0	1	-	10	0	11	10	21	-	0	31	-
1600 - 1615	-	-	-	-	0	5	-	6	0	11	13	23	-	0	36	-
Total	0	0	0	0	0	16	0	45	0	61	47	73	0	0	120	0
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total	
1515 - 1530	13	3	0	16	60	
1530 - 1545	12	1	0	13	61	
1545 - 1600	13	1	0	14	56	
1600 - 1615	12	1	0	13	60	
Total	50	6	0	56	237	
Approach %	89.29	10.71	0.00	-		
PHF	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	
1515 - 1530	-	-	-	-	0	1	-	0	0	1	0	0	-	0	0	-
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	1	-	0	1	-
1600 - 1615	-	-	-	-	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
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total	
1515 - 1530	0	0	0	0	1	
1530 - 1545	1	0	0	1	1	
1545 - 1600	0	0	0	0	1	
1600 - 1615	0	0	0	0	0	
Total	1	0	0	1	3	
Approach %	100.00	0.00	0.00	-		
PHF	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	
1515 - 1530	-	-	-	-	0	0	-	0	0	0	1	0	-	0	1	-
1530 - 1545	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1545 - 1600	-	-	-	-	0	0	-	0	0	0	0	0	-	0	0	-
1600 - 1615	-	-	-	-	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
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	Thru 8.7	Right 8.8	U-Turn 8.9	App Total	Int Total	
1515 - 1530	0	0	0	0	1	
1530 - 1545	1	0	0	1	1	
1545 - 1600	0	0	0	0	0	
1600 - 1615	0	0	0	0	0	
Total	1	0	0	1	2	
Approach %	100.00	0.00	0.00	-		
PHF	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	
1515 - 1530	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	-	-	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1600 - 1615	-	-	-	-	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
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
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

	Westbound					
	Iron Bridge Rd (East)					
Time	NB 8g	SB 8h			App Total	Int Total
1515 - 1530	0	0	-	-	0	0
1530 - 1545	0	0	-	-	0	0
1545 - 1600	0	0	-	-	0	0
1600 - 1615	0	0	-	-	0	0
Total	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	
PHF	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

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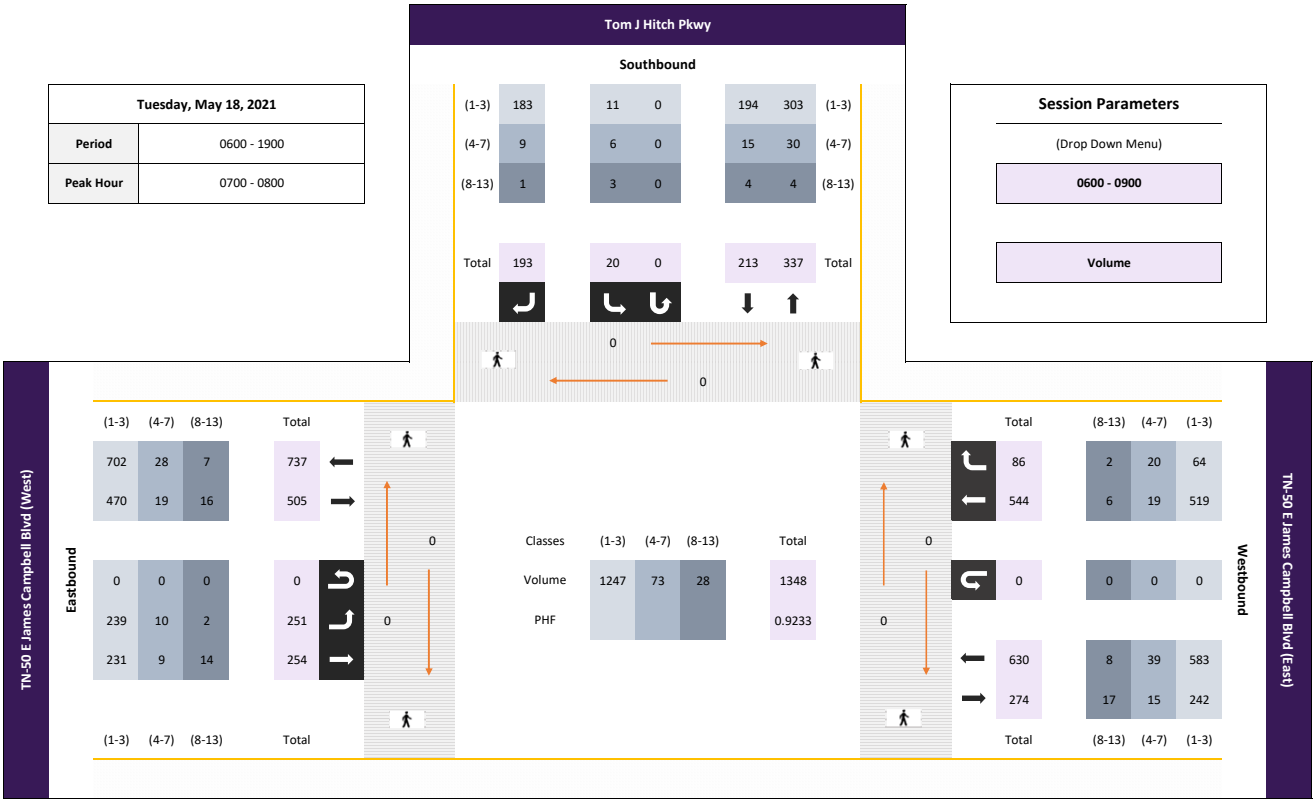
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	0700 - 0800

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

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Columbia, TN

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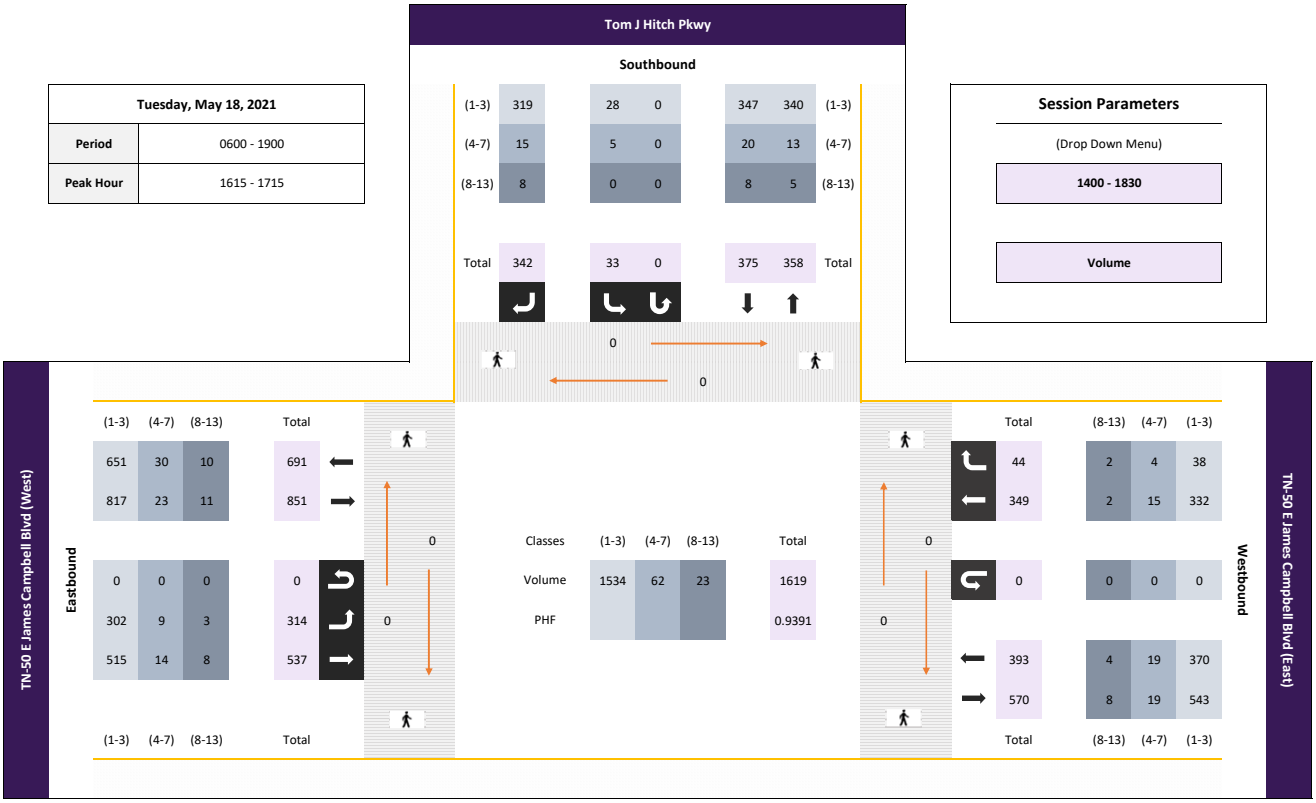
Tuesday, May 18, 2021	
Period	0600 - 1900
Peak Hour	1615 - 1715

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

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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

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Site 1 of 1
Driveway
Patterson Dr
TN-99 Bear Creek Pike (West)
TN-99 Bear Creek Pike (East)

Date
Tuesday, February 22, 2022

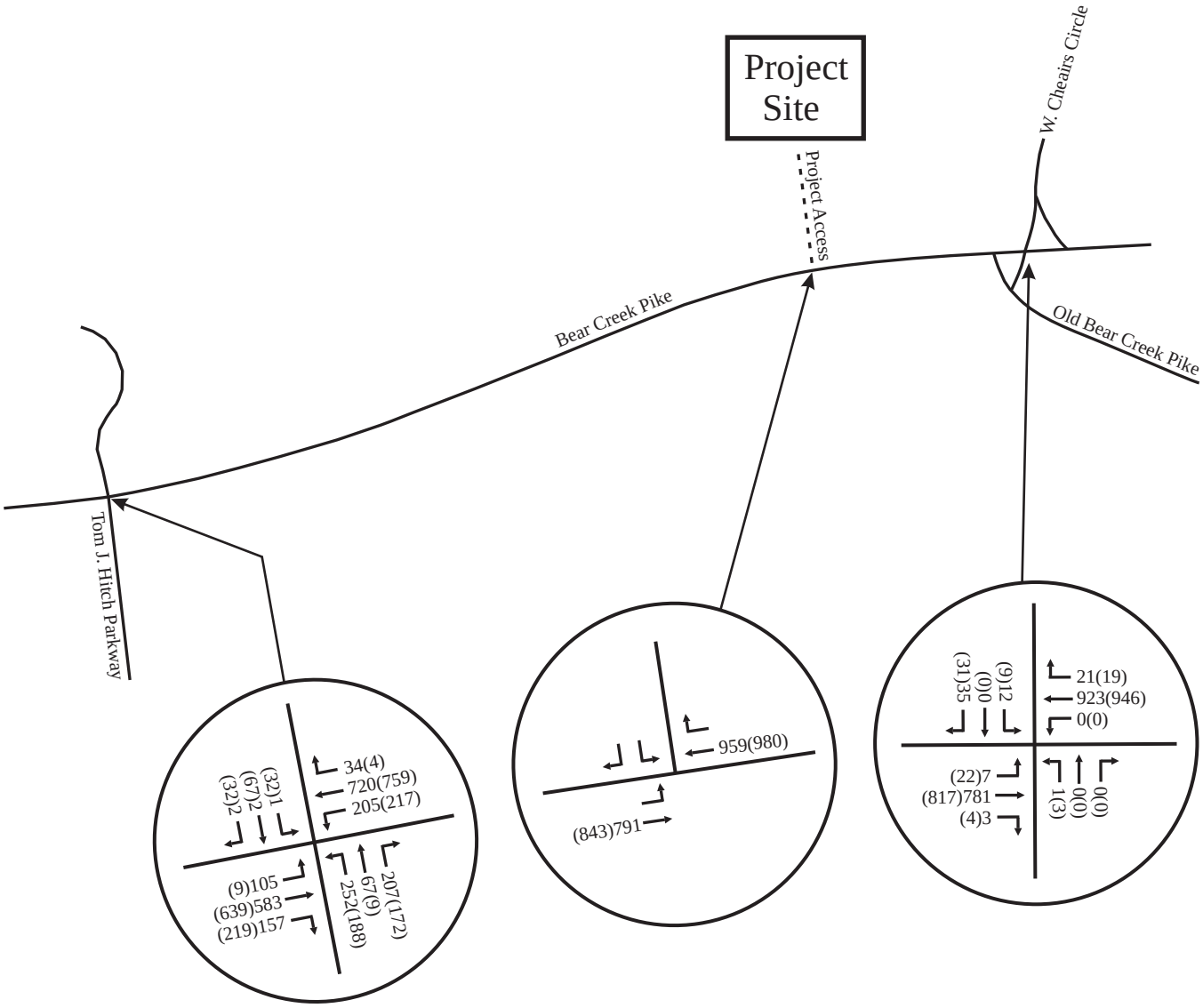
Weather
Cloudy
60°F

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**

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 4.
Existing Year 2023 Peak Hour Traffic Volumes

Peak Hour Turning Movement Count

Columbia, TN

Click here for Map

Marr Traffic DATA COLLECTION

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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

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

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**

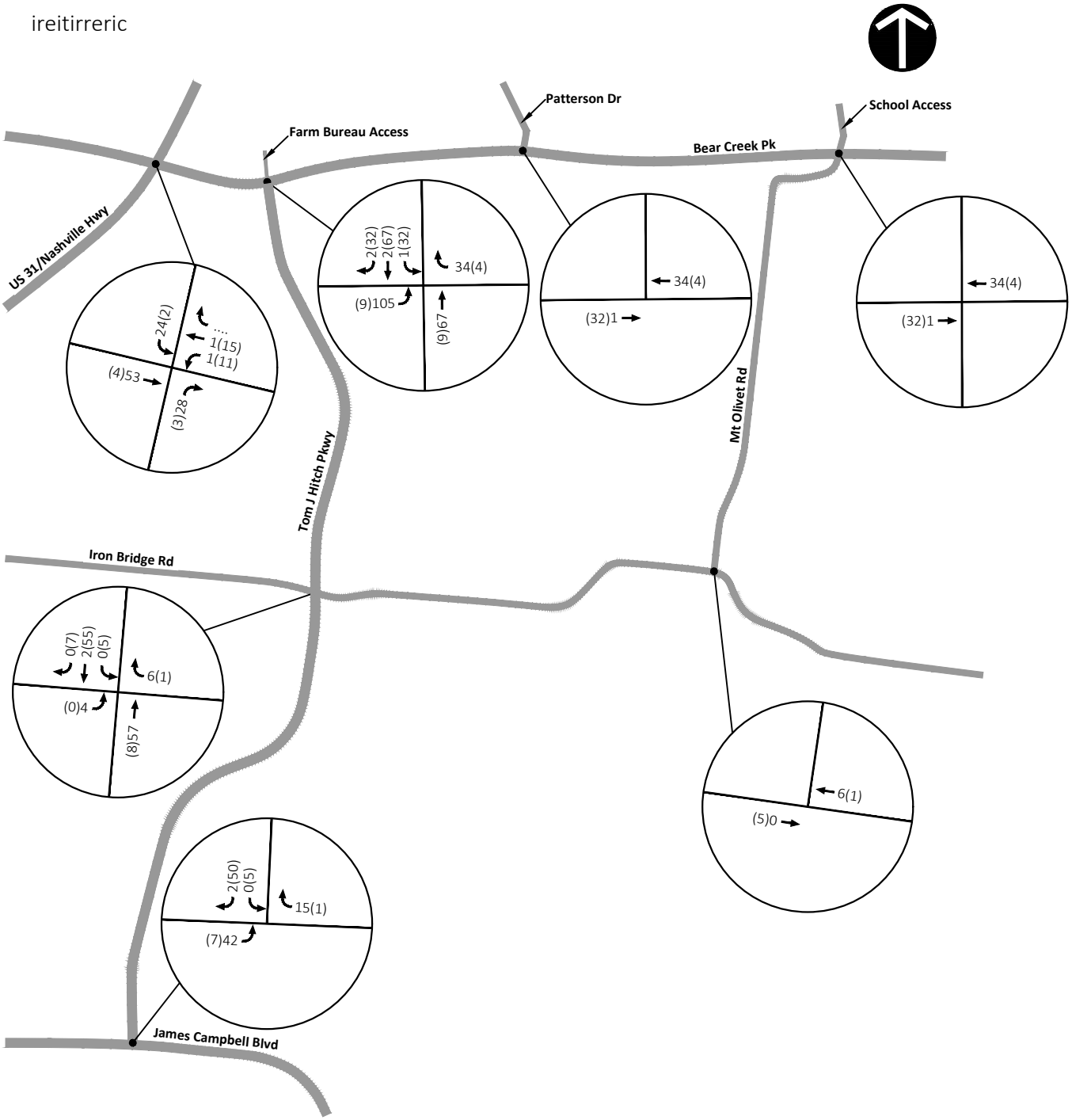
Combination Trucks (8-13)

	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**

ireitirreric

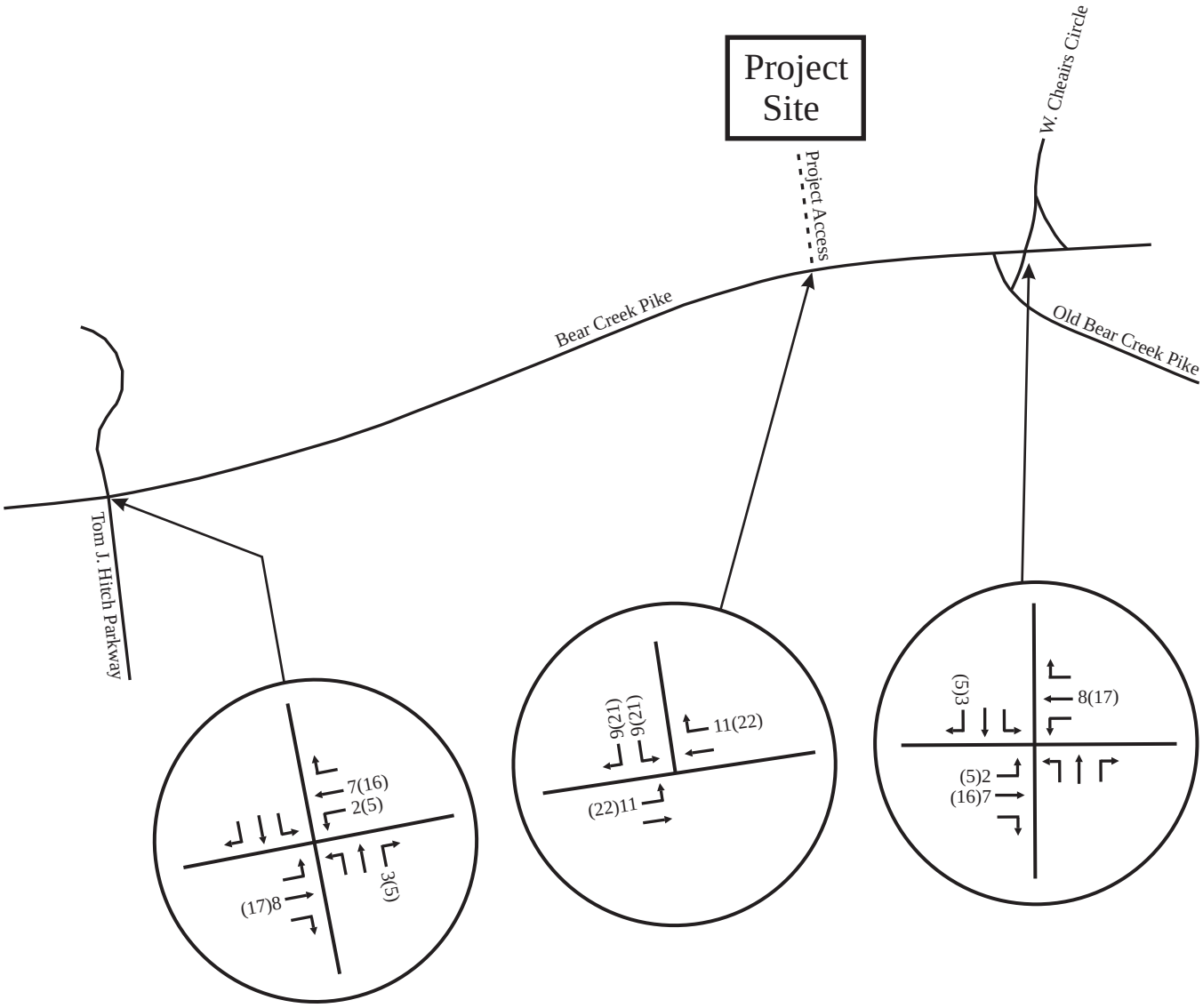


Legend:
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

(Not to Scale)

APPENDIX E
BACKGROUND PROJECT DATA

F i s c h b a c h
Transportation Group, LLC
Traffic Engineering and Planning



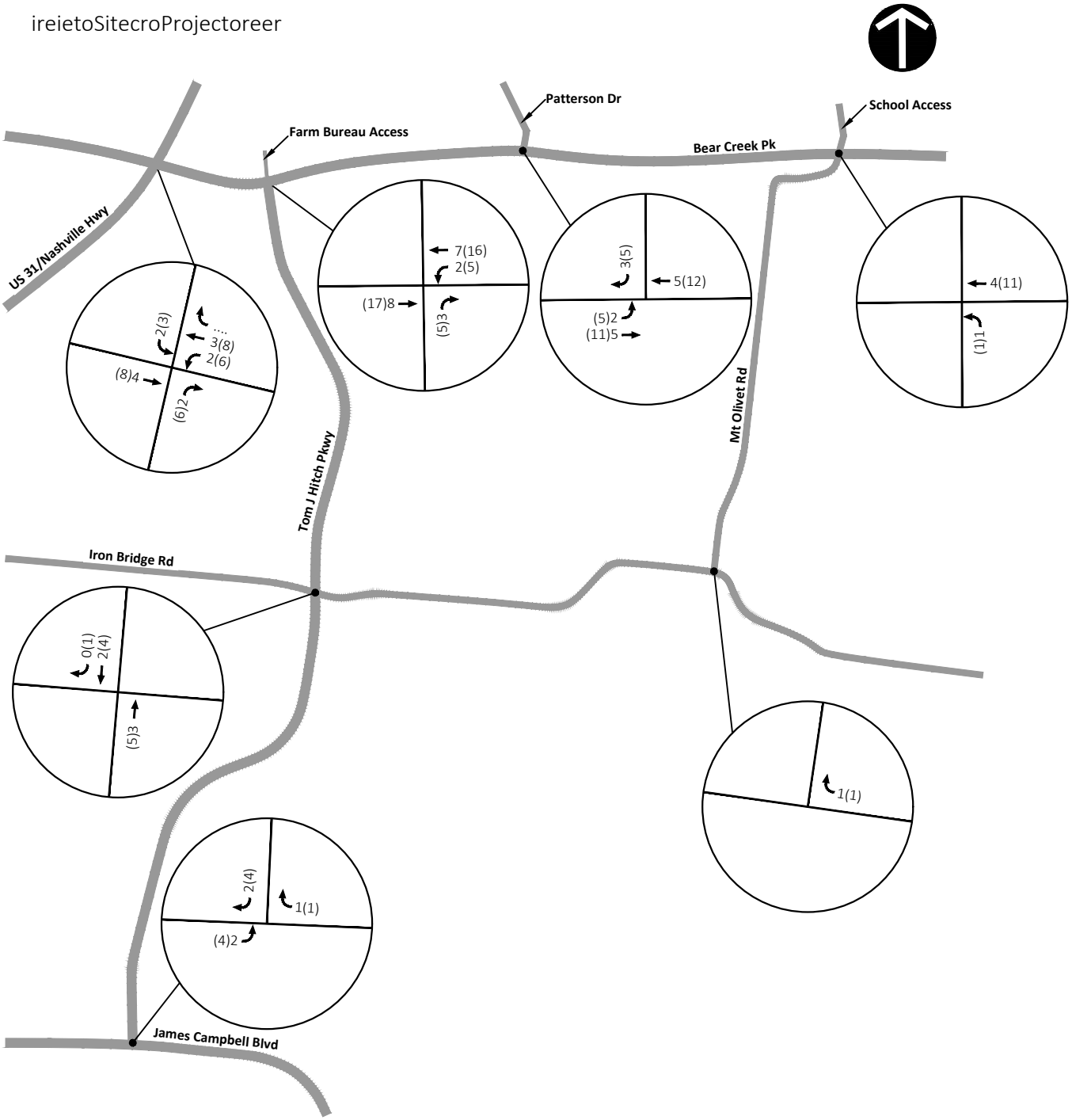
N

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)

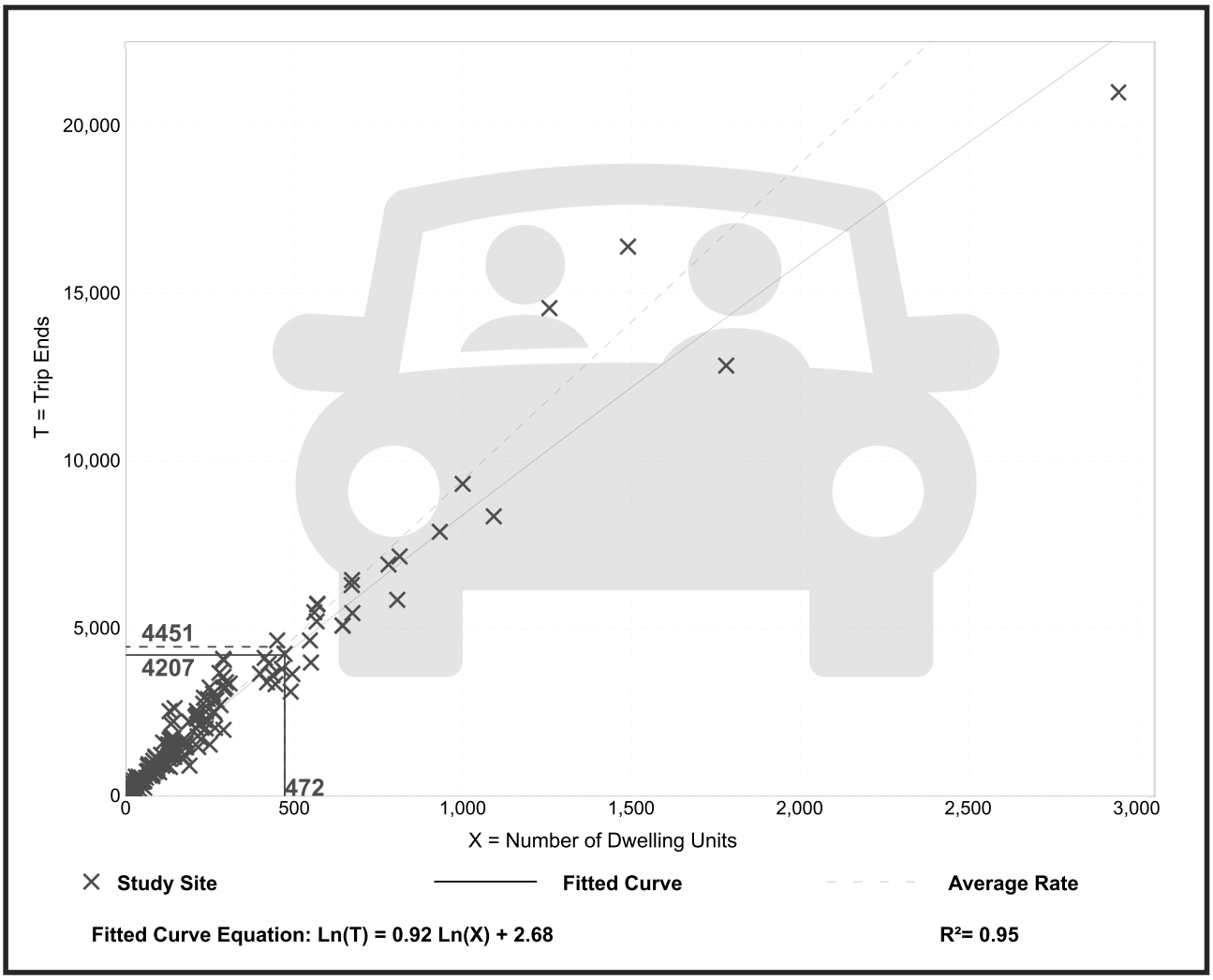
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

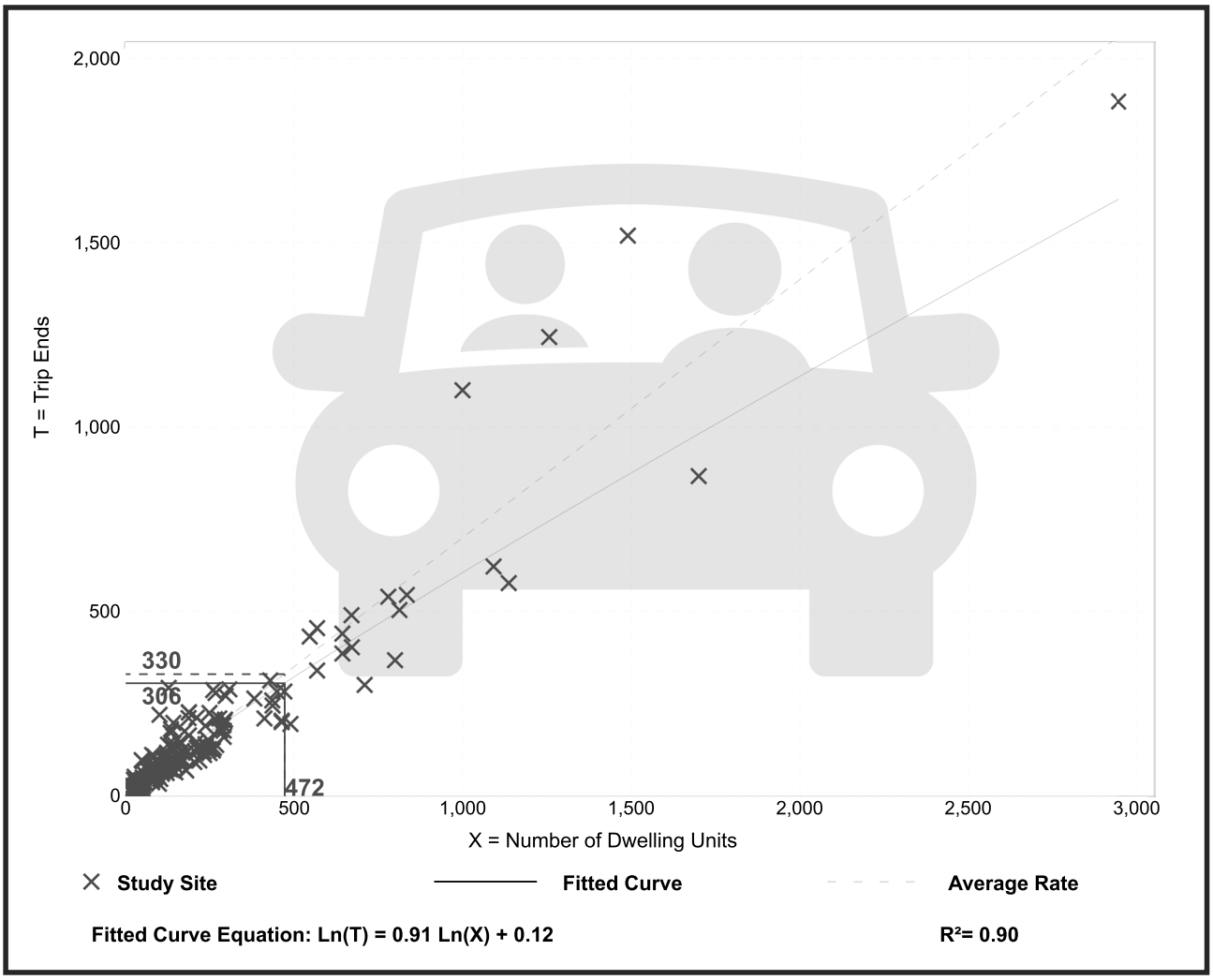
Single-Family Detached Housing
(210)

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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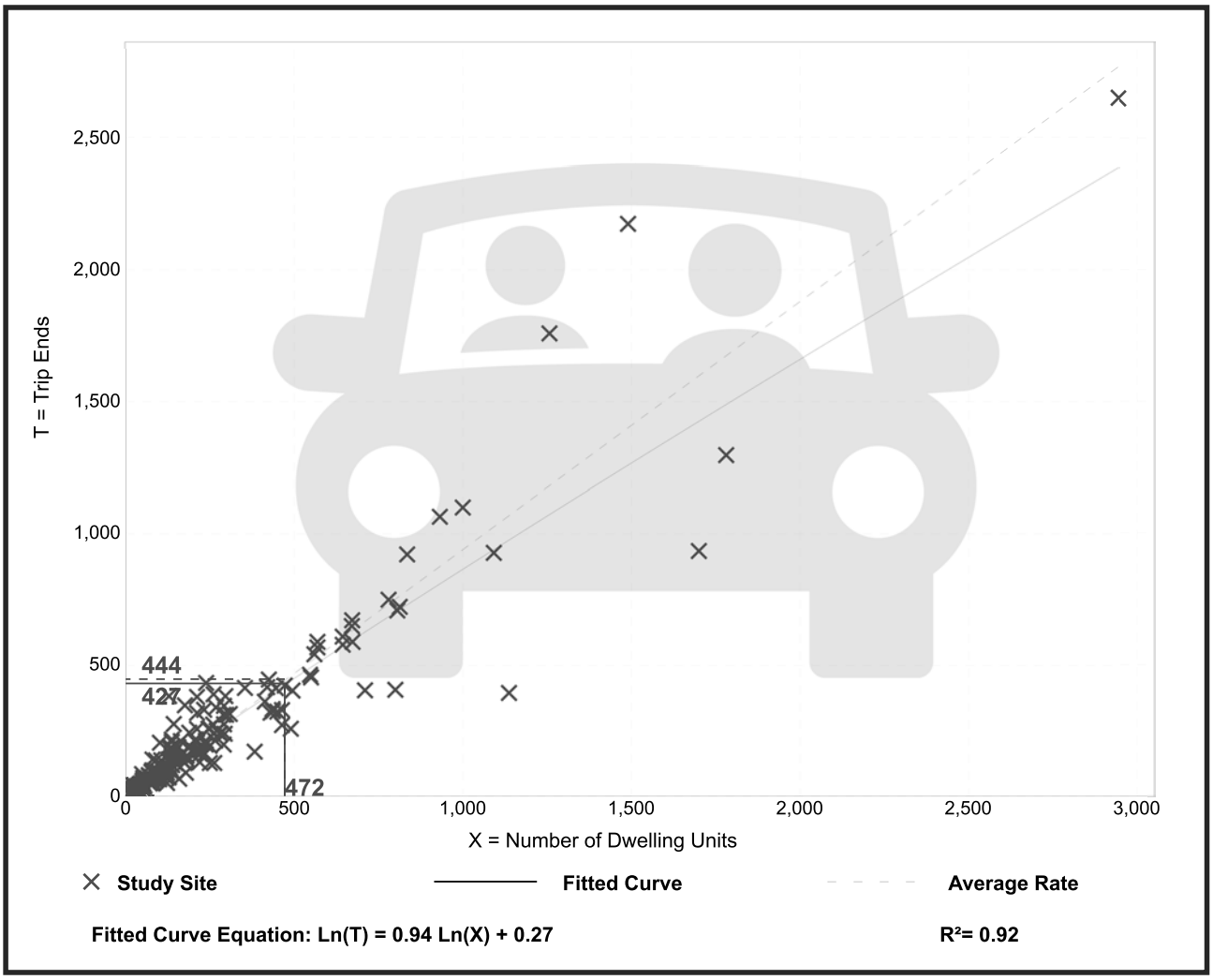
Single-Family Detached Housing
(210)

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)

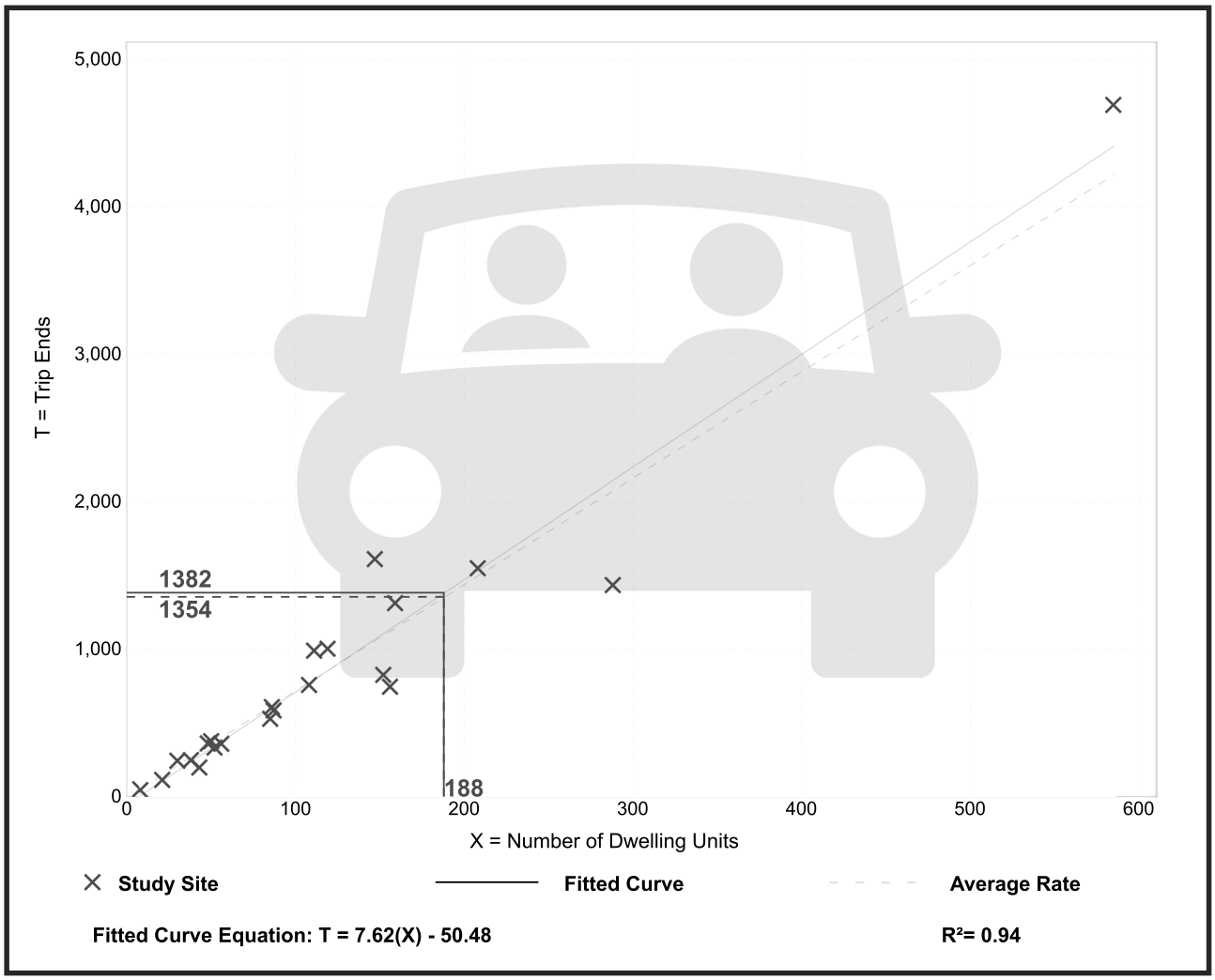
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

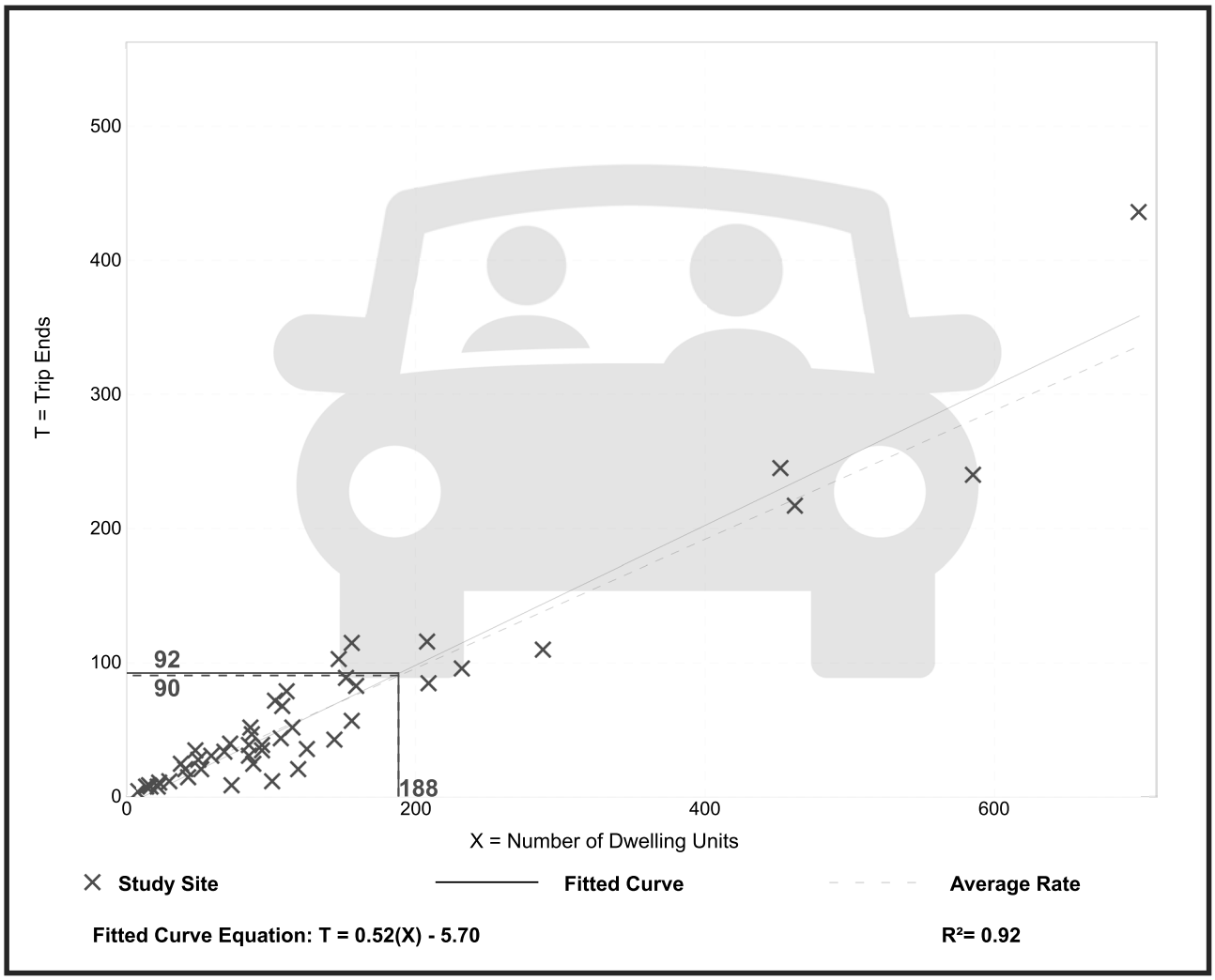
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 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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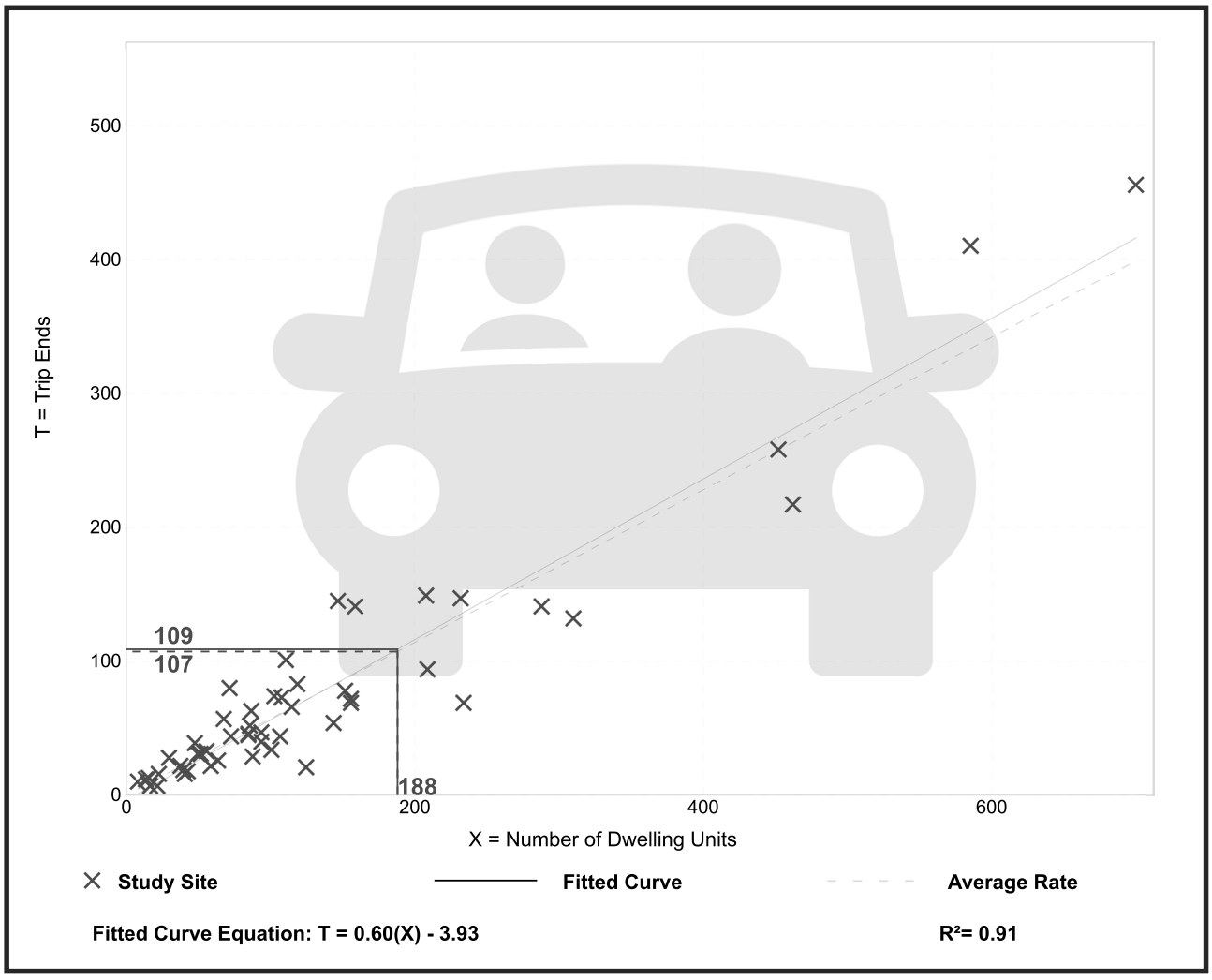
Single-Family Attached Housing
(215)

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)

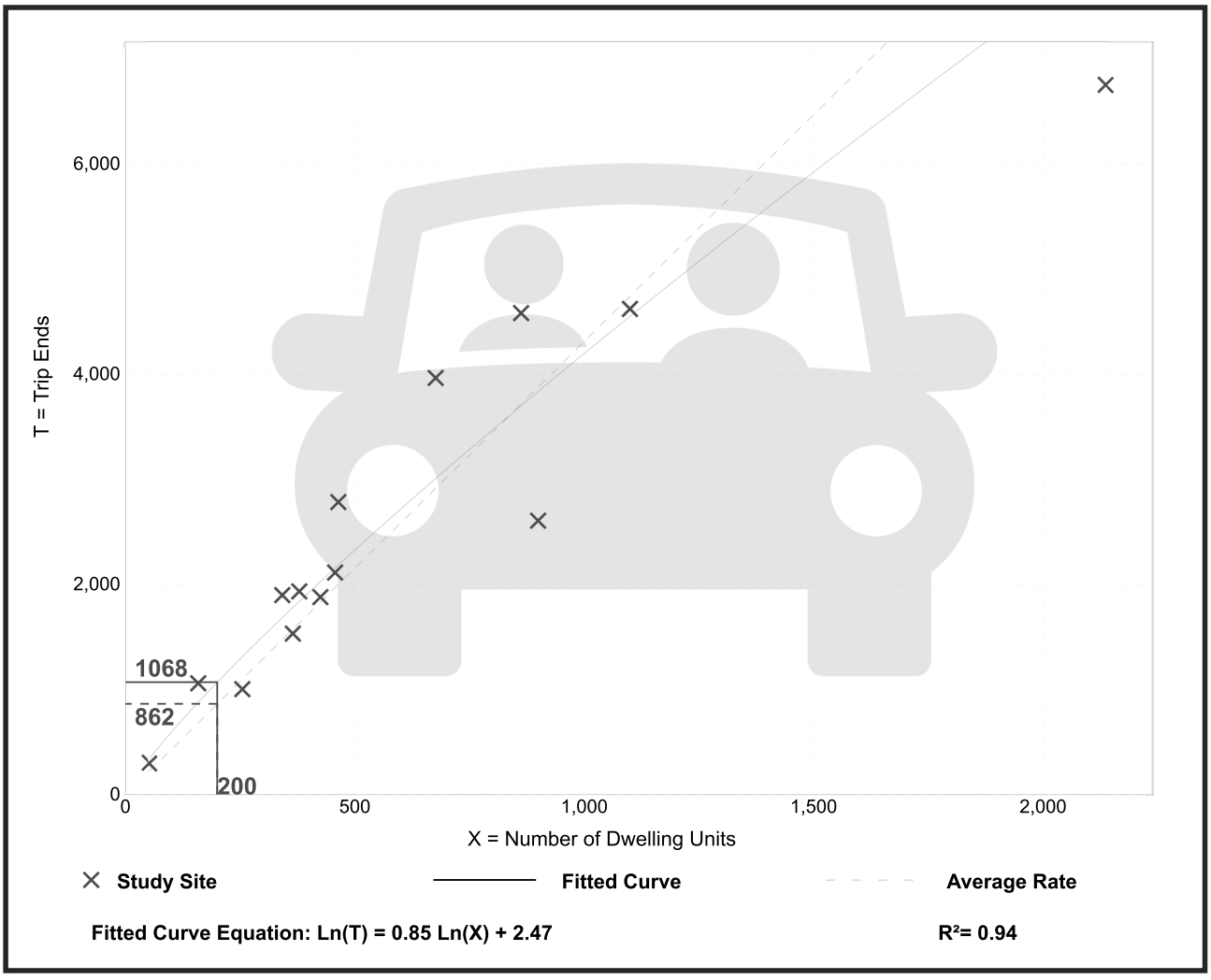
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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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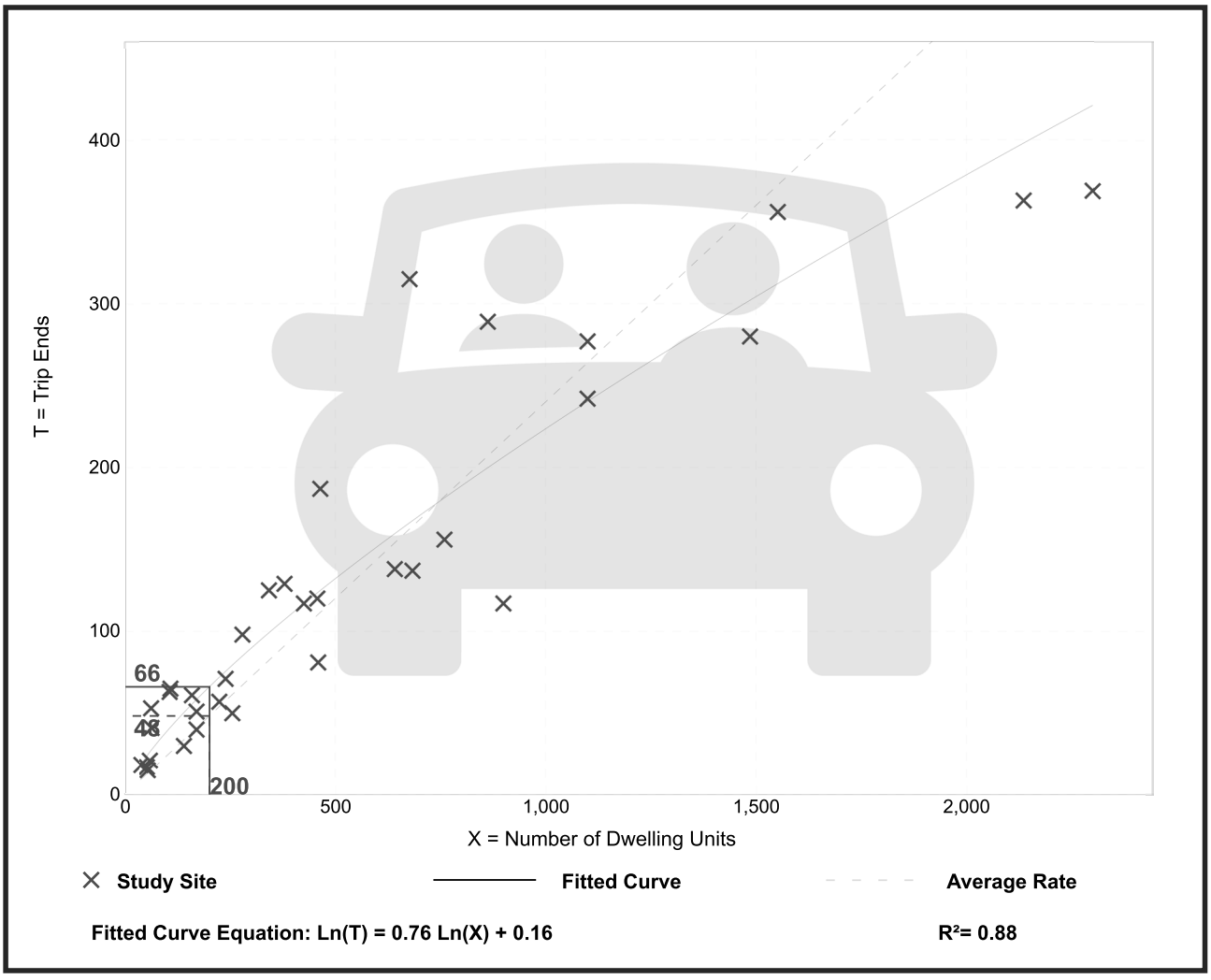
Senior Adult Housing - Single-Family
(251)

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



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

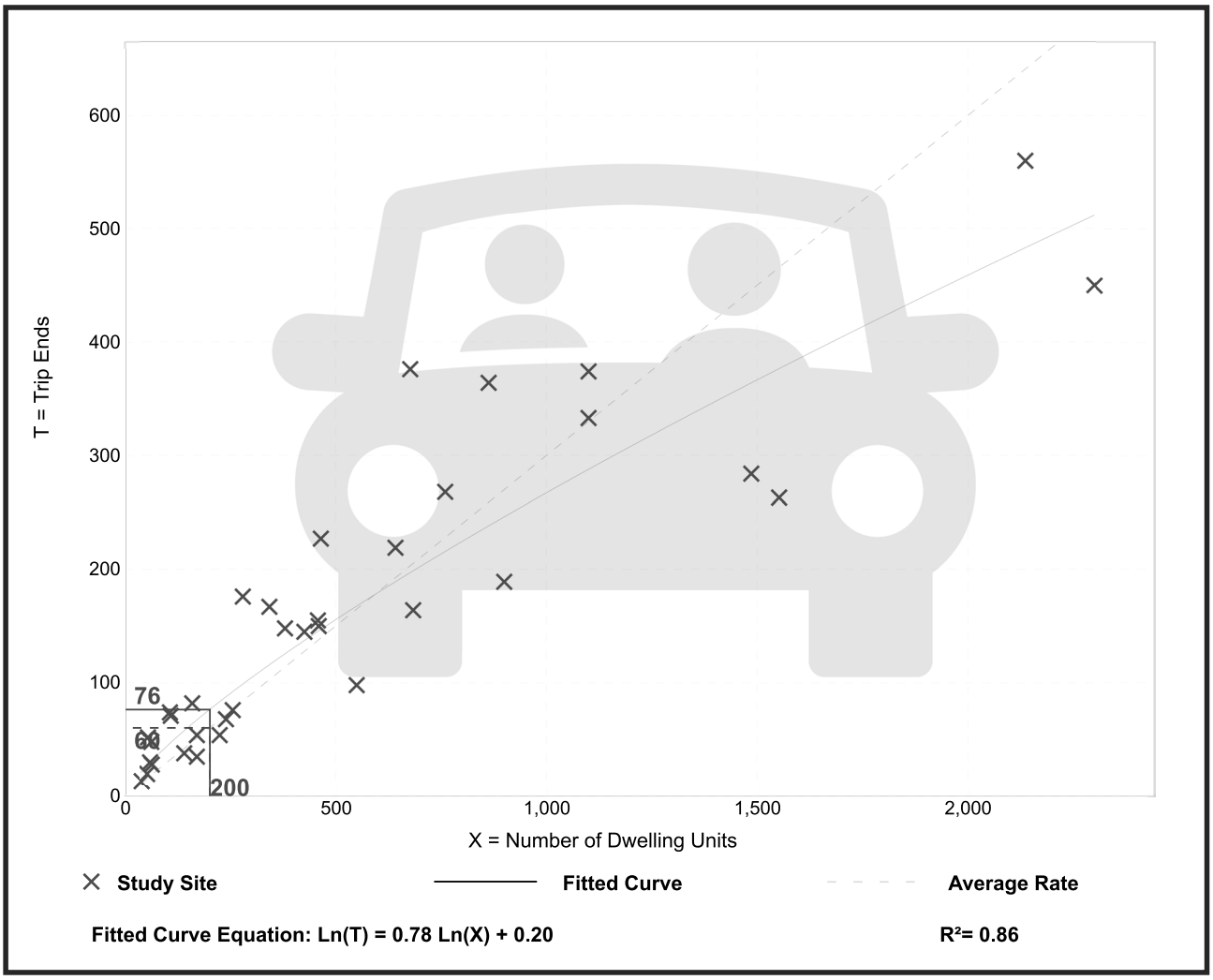
Senior Adult Housing - Single-Family
(251)

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)

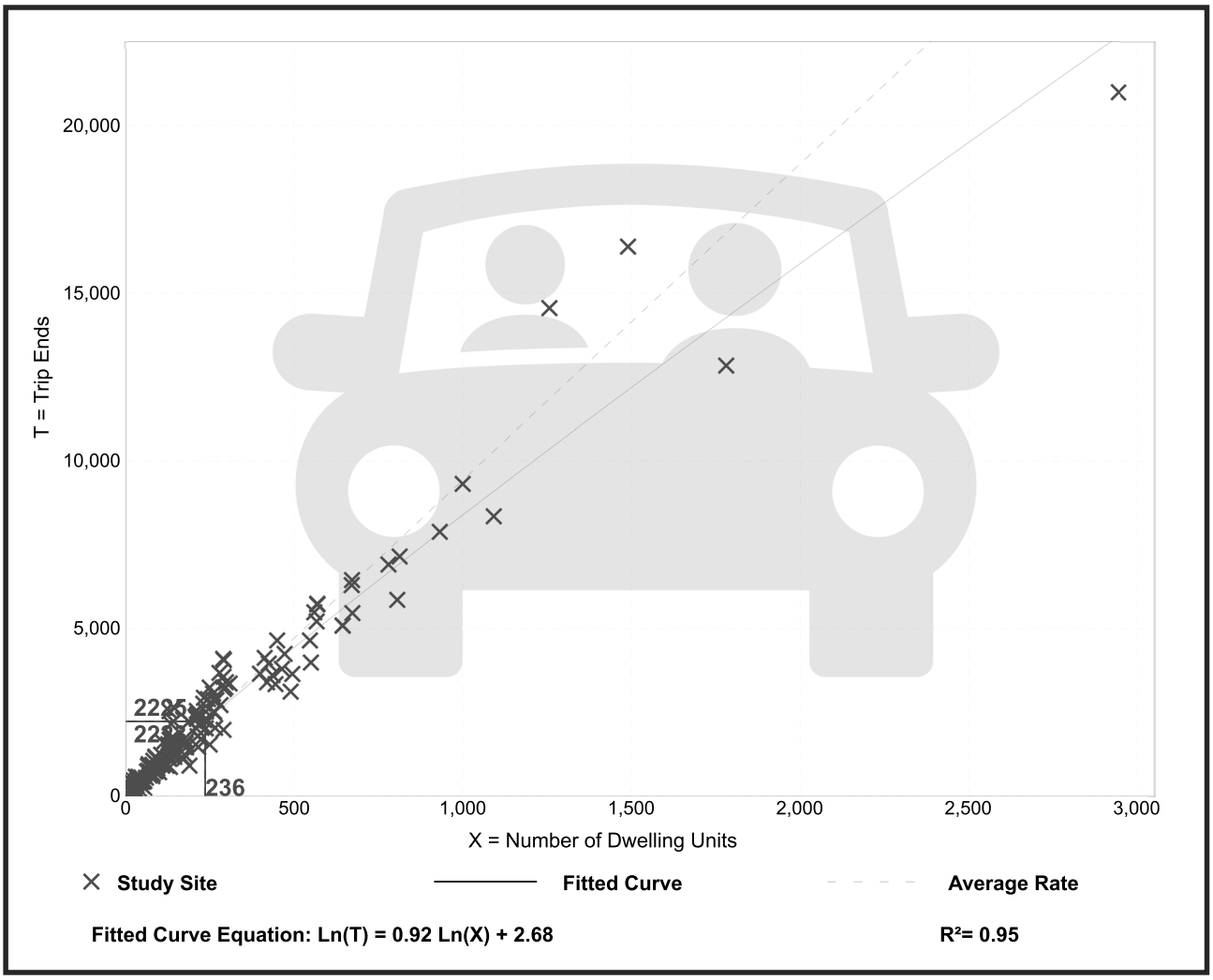
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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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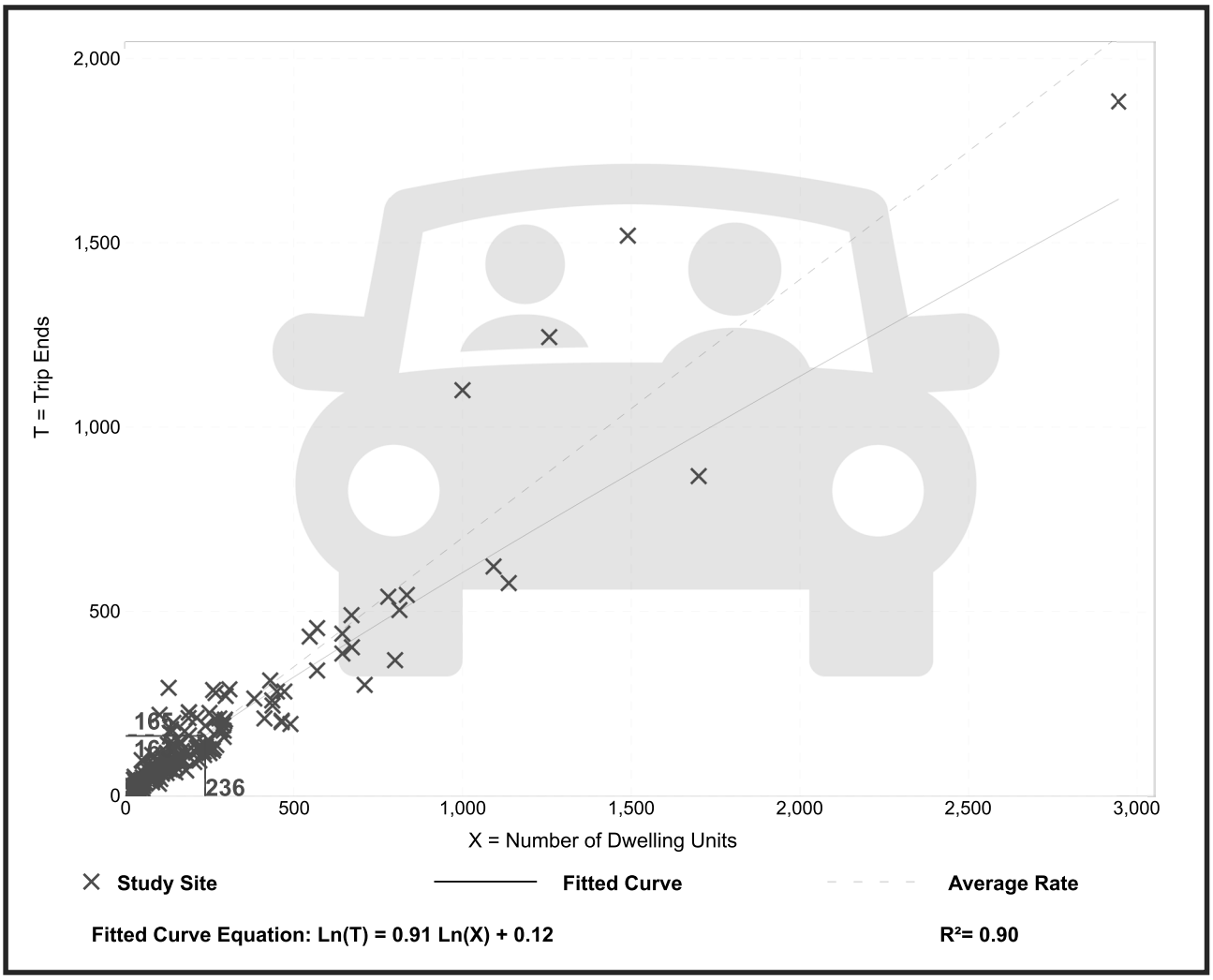
Single-Family Detached Housing
(210)

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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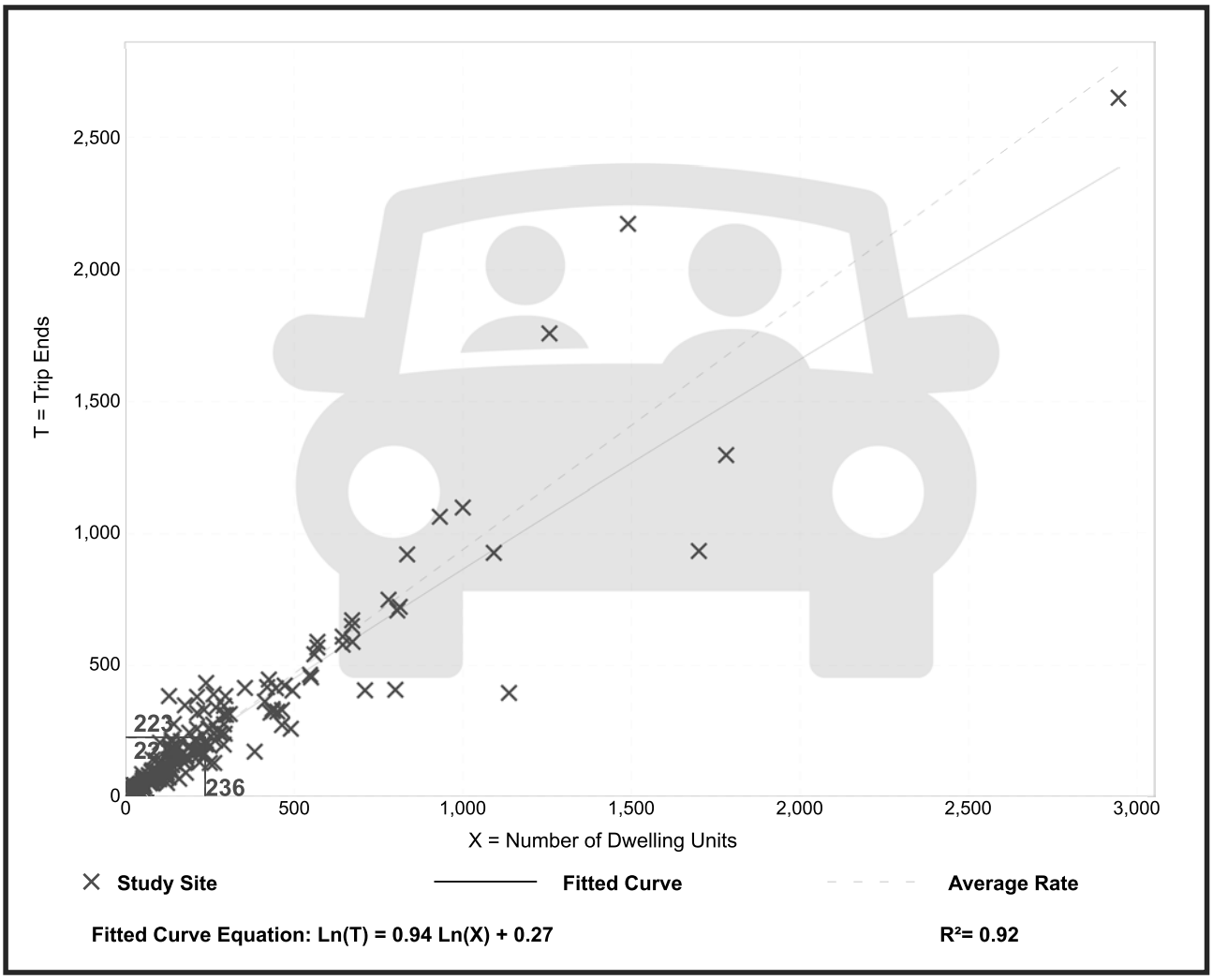
Single-Family Detached Housing
(210)

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)

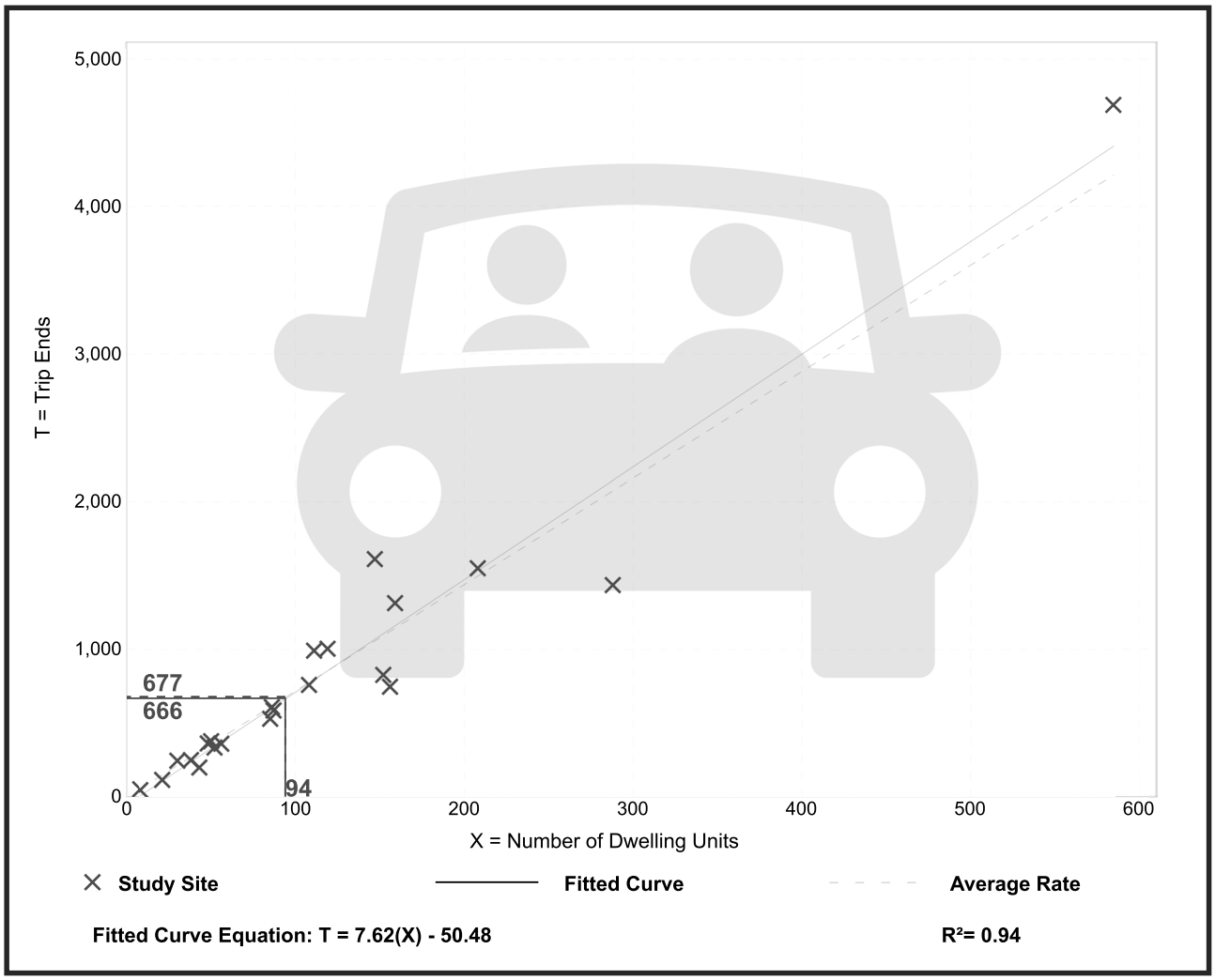
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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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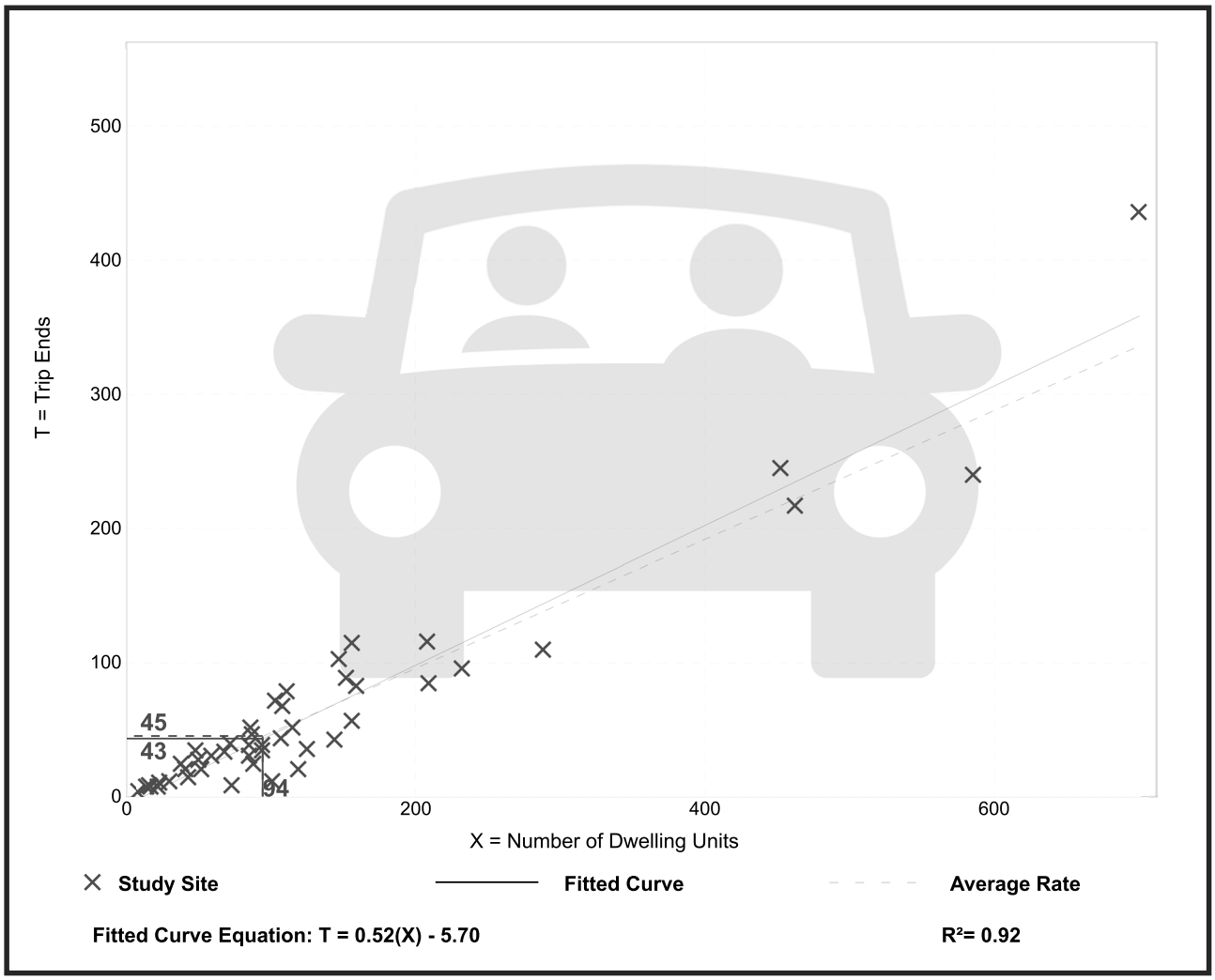
Single-Family Attached Housing
(215)

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



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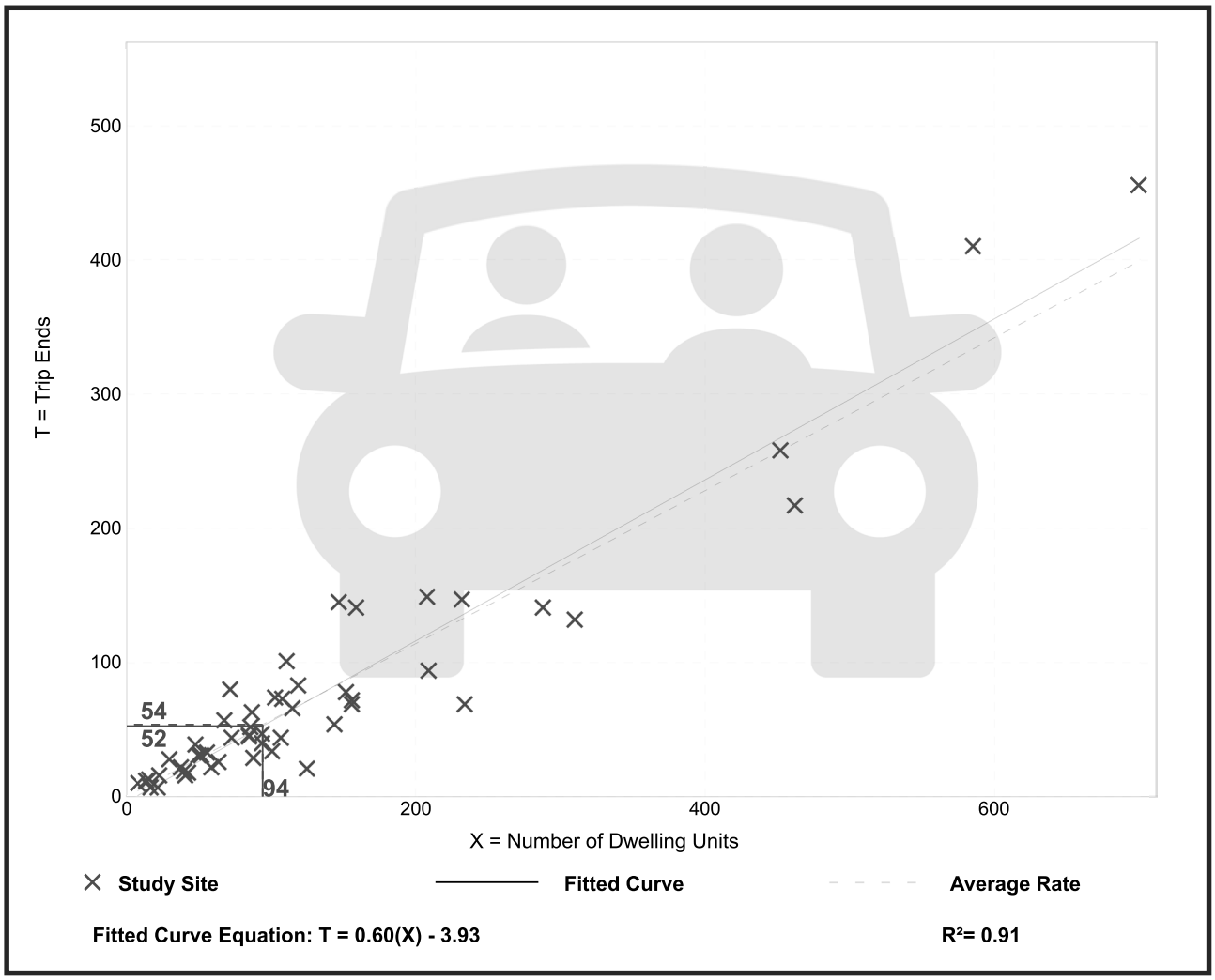
Single-Family Attached Housing
(215)

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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Day Care Center
(565)

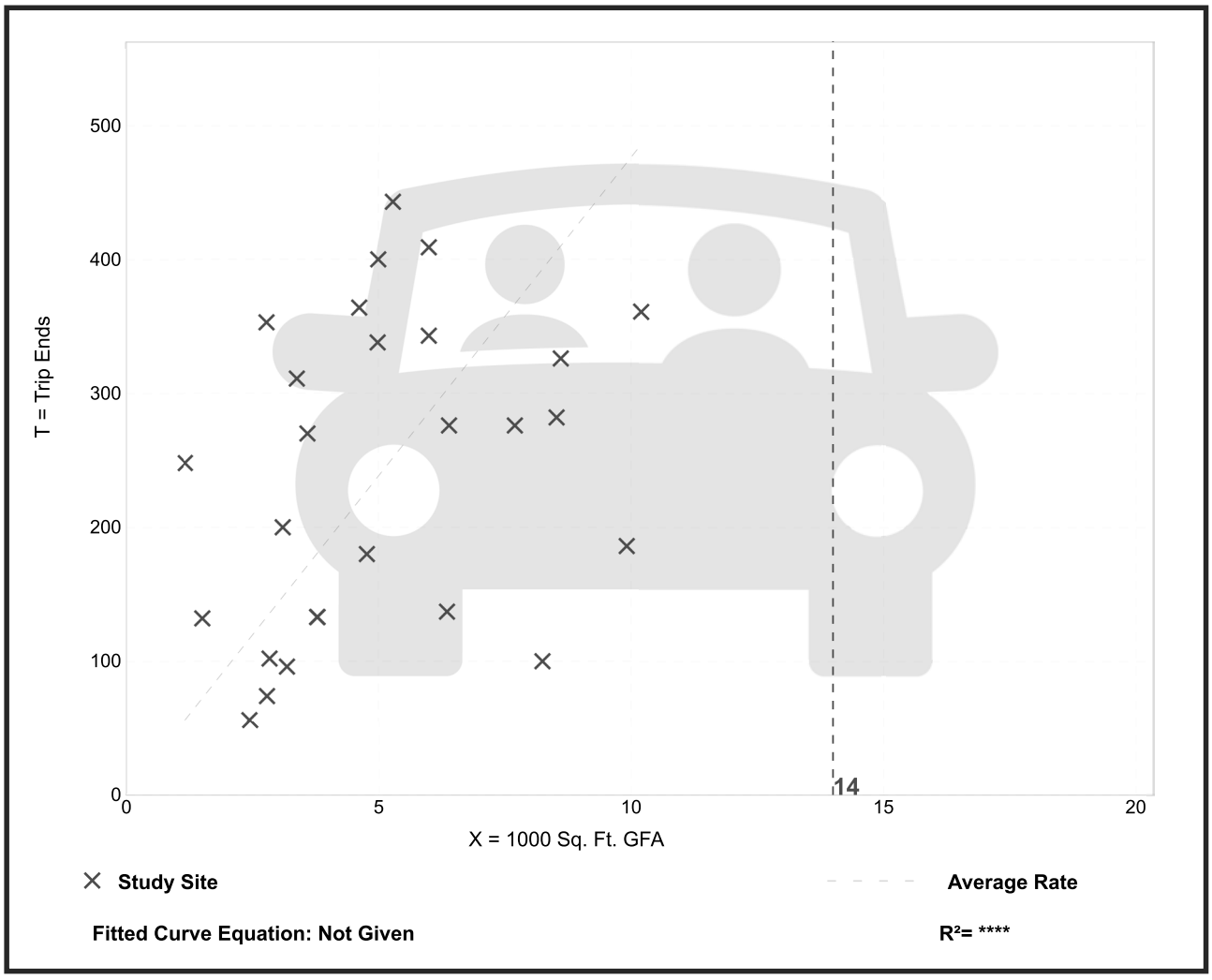
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

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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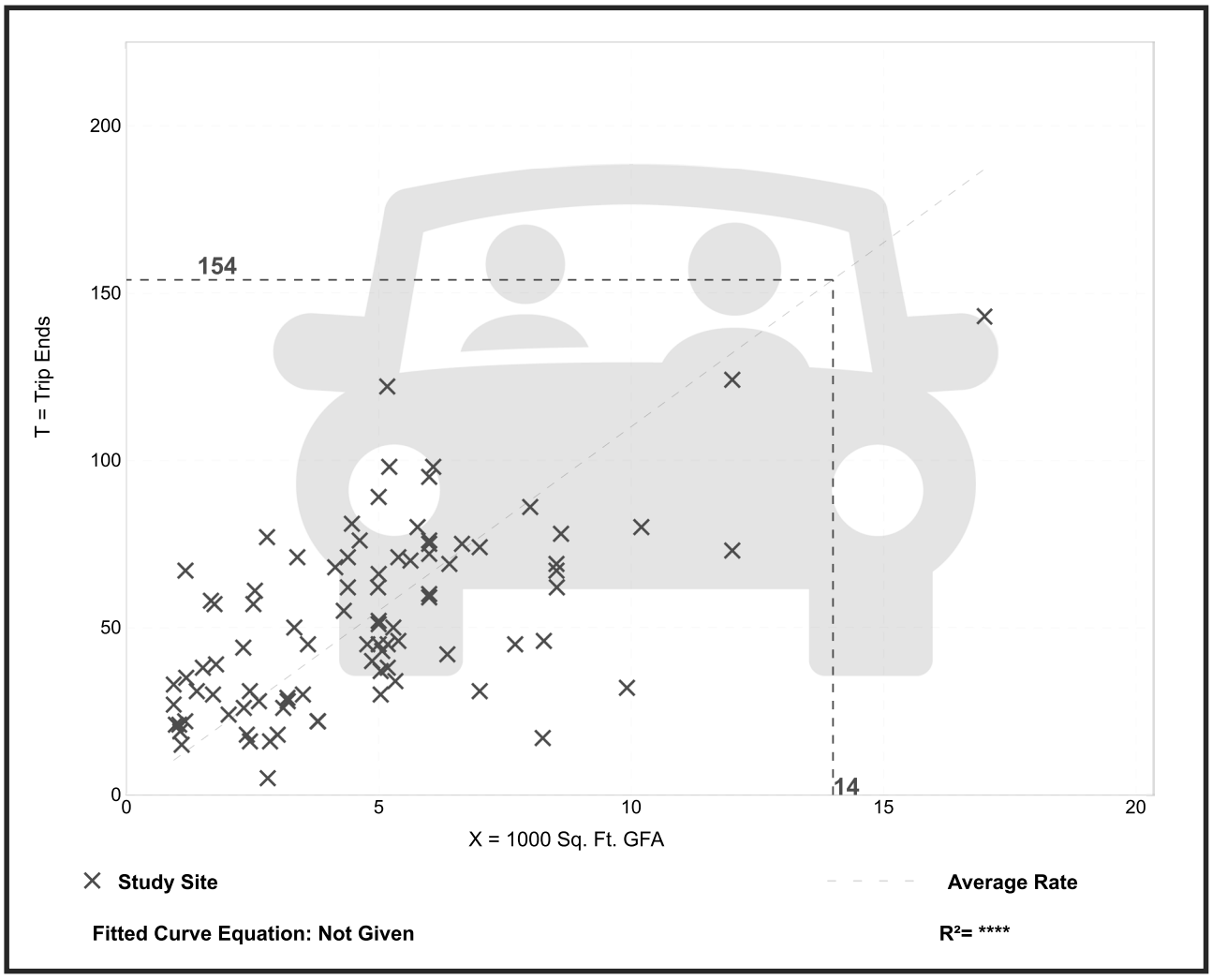
Day Care Center
(565)

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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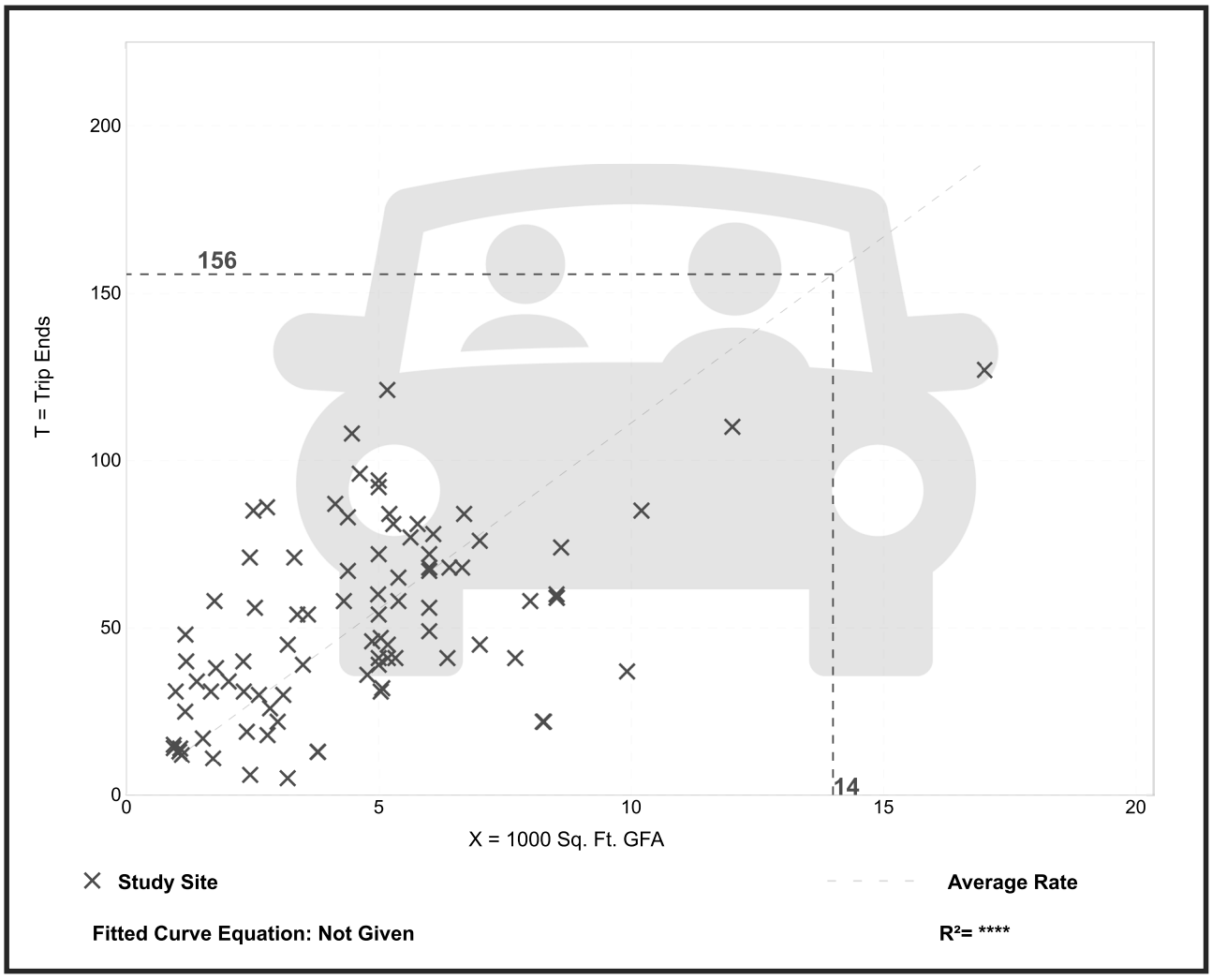
Day Care Center
(565)

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)

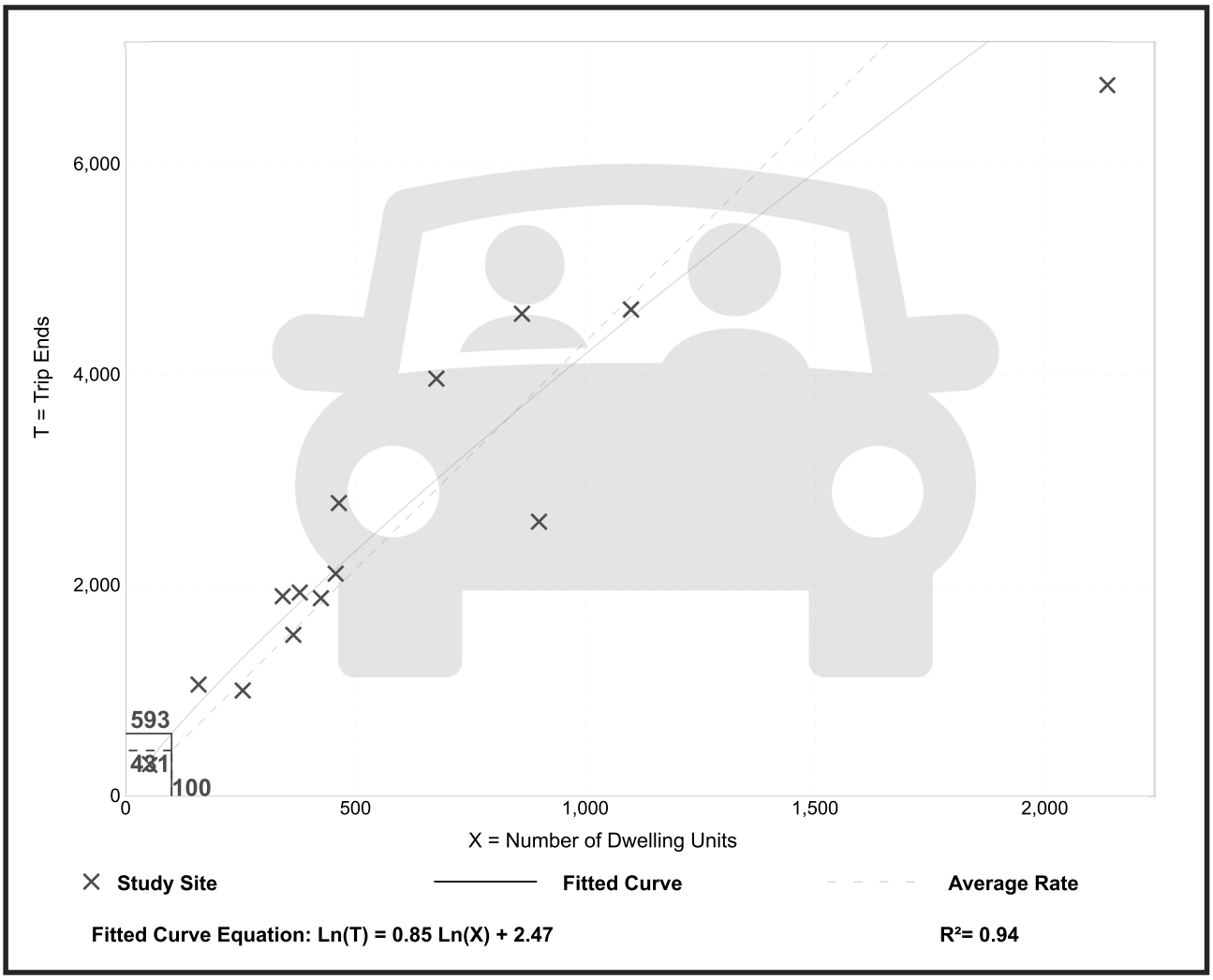
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

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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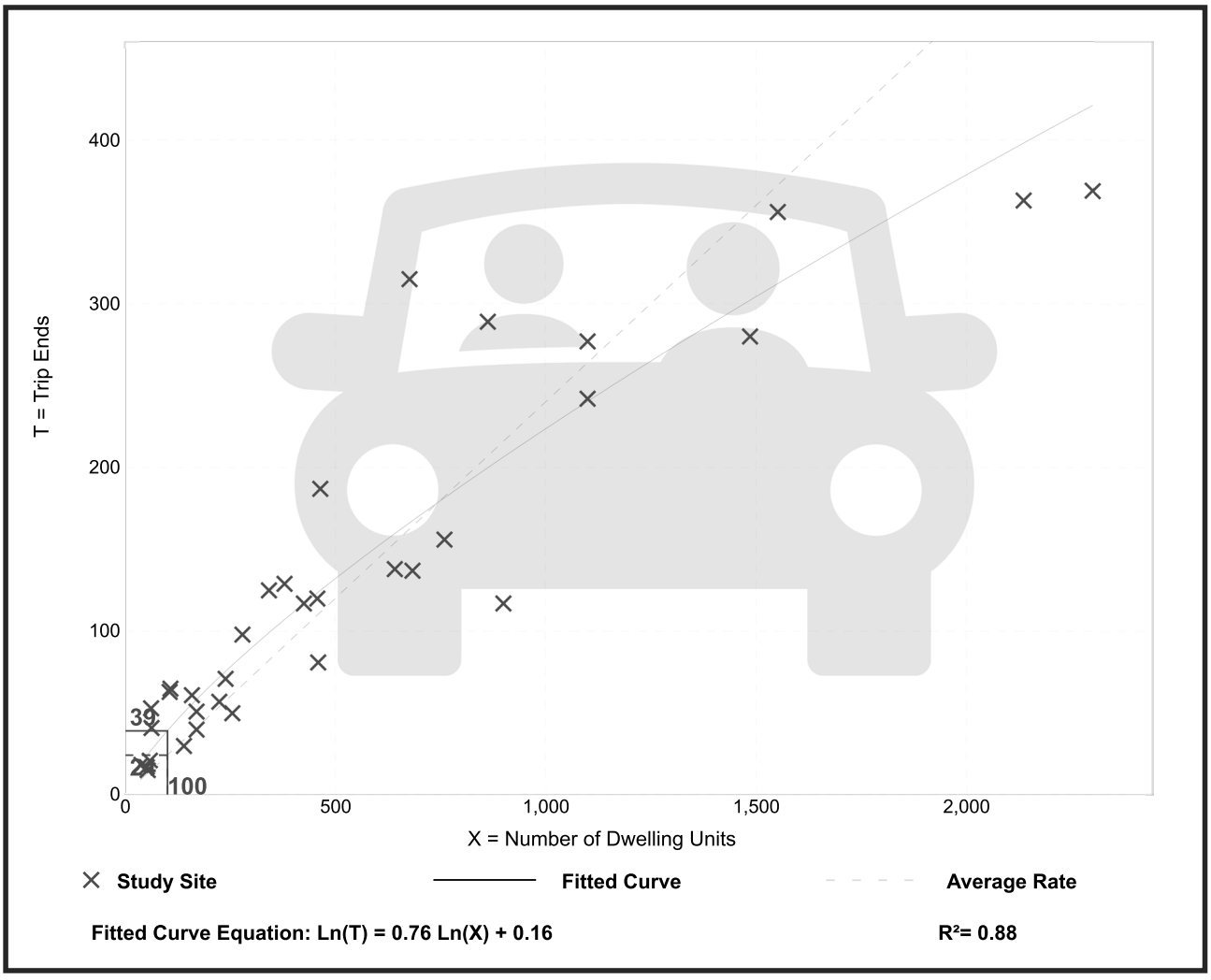
Senior Adult Housing - Single-Family
(251)

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



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

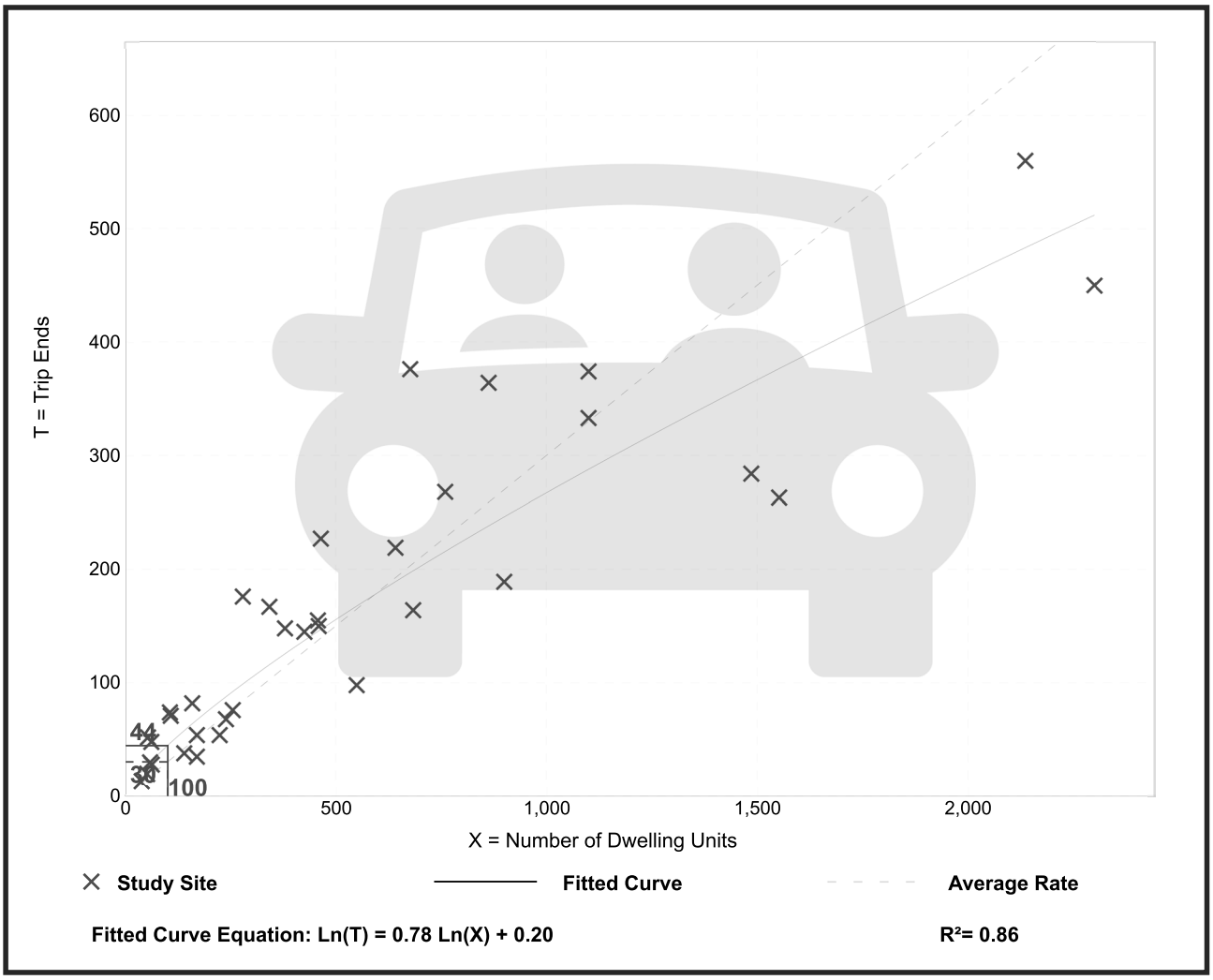
Senior Adult Housing - Single-Family
(251)

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.

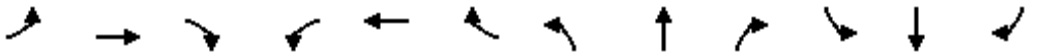
PM PEAK HOUR									
Intersection	Control	Turning Movement	Level of Service (Delay in sec/veh)						
			2023 Existing	2031			2034		
				Background	Projected	Projected w/ Imps	Background	Projected	Projected w/ Imps
Nashville Hwy & US 43/Bear Creek Pk	Signal	EB Left Turn	E (59.7)	E (68.2)	E (68.2)	F (93.3)	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

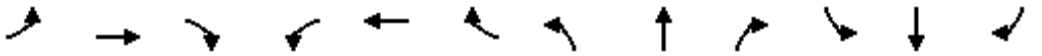
Intersection	
Int Delay, s/veh	1.6

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

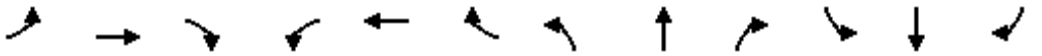
Intersection	
Int Delay, s/veh	6.4

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

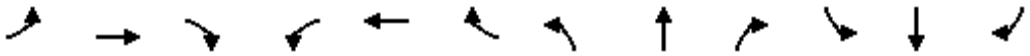
Intersection	
Int Delay, s/veh	0.8

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	2.6	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

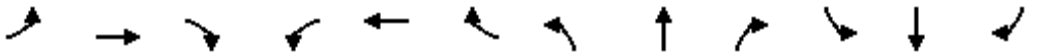
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	321	537	349	45	38	392
Future Vol, veh/h	321	537	349	45	38	392
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median 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

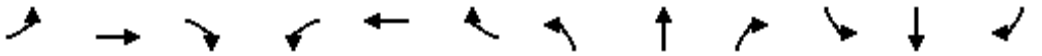
Intersection	
Int Delay, s/veh	5.2

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

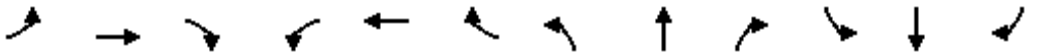
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	390	340	729	135	27	262
Future Vol, veh/h	390	340	729	135	27	262
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	120	0	125
Veh in Median 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

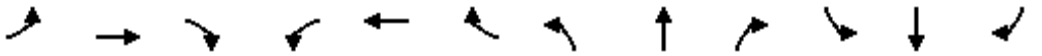
Intersection	
Int Delay, s/veh	1.4

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

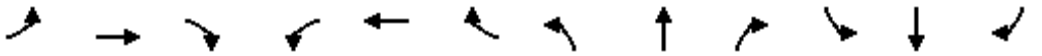
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	522	0	-	0	2026	461
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	1565	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1044	-	-	-	63	600
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	30.0	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	-

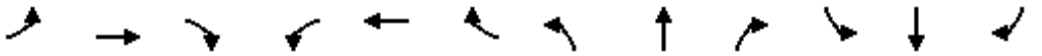
Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	90.9
HCM LOS			F

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

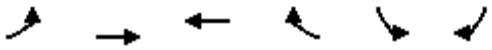
Intersection Summary	
HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C



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

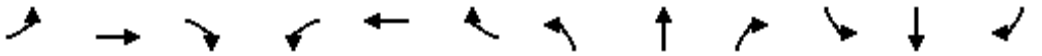
Intersection Summary	
HCM 6th Ctrl Delay	50.6
HCM 6th LOS	D



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

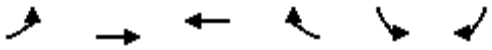
Intersection Summary	
HCM 6th Ctrl Delay	27.5
HCM 6th LOS	C



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

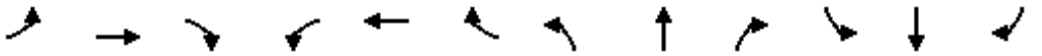


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	443	666	433	57	47	521
Future Volume (veh/h)	443	666	433	57	47	521
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
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



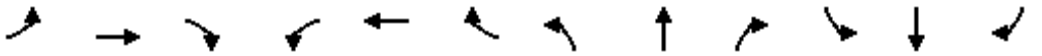
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Future Volume (veh/h)	105	793	205	296	1043	34	419	67	276	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	

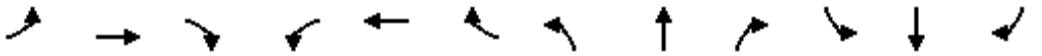
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	33.0	87.2		13.2	8.1	112.1		16.6				
Change Period (Y+Rc), s	6.4	6.9		5.6	6.4	6.9		5.6				
Max Green Setting (Gmax), s	26.6	80.3		7.6	5.0	101.9		11.0				
Max Q Clear Time (g_c+I1), s	28.6	82.3		7.8	2.4	63.9		13.0				
Green Ext Time (p_c), 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

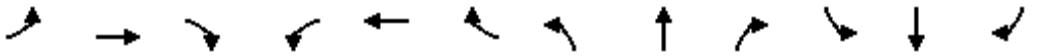
Intersection	
Int Delay, s/veh	9.6

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

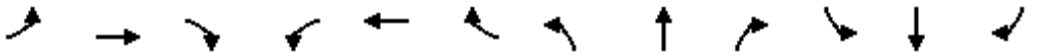
Intersection	
Int Delay, s/veh	0

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

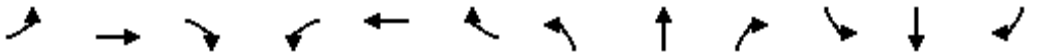
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	143	113	0	0	0
Future Vol, veh/h	0	143	113	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	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

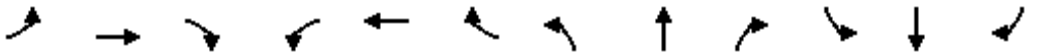
Intersection	
Int Delay, s/veh	3.1

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

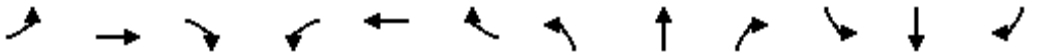
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	113	190	150	23	16	79
Future Vol, veh/h	113	190	150	23	16	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	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	21.0	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	14.6	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

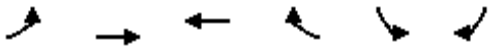
Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D



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

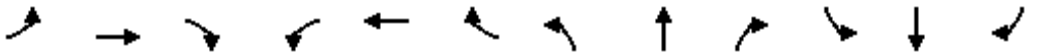
Intersection Summary	
HCM 6th Ctrl Delay	66.0
HCM 6th LOS	E



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

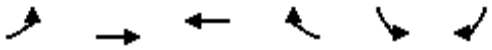
Intersection Summary	
HCM 6th Ctrl Delay	36.3
HCM 6th LOS	D



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

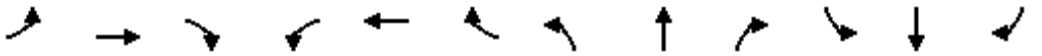


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	499	714	464	61	51	572
Future Volume (veh/h)	499	714	464	61	51	572
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
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



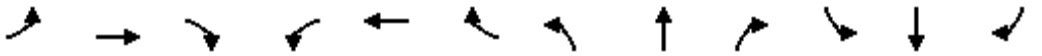
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Future Volume (veh/h)	105	863	230	264	1175	34	472	67	265	1	2	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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

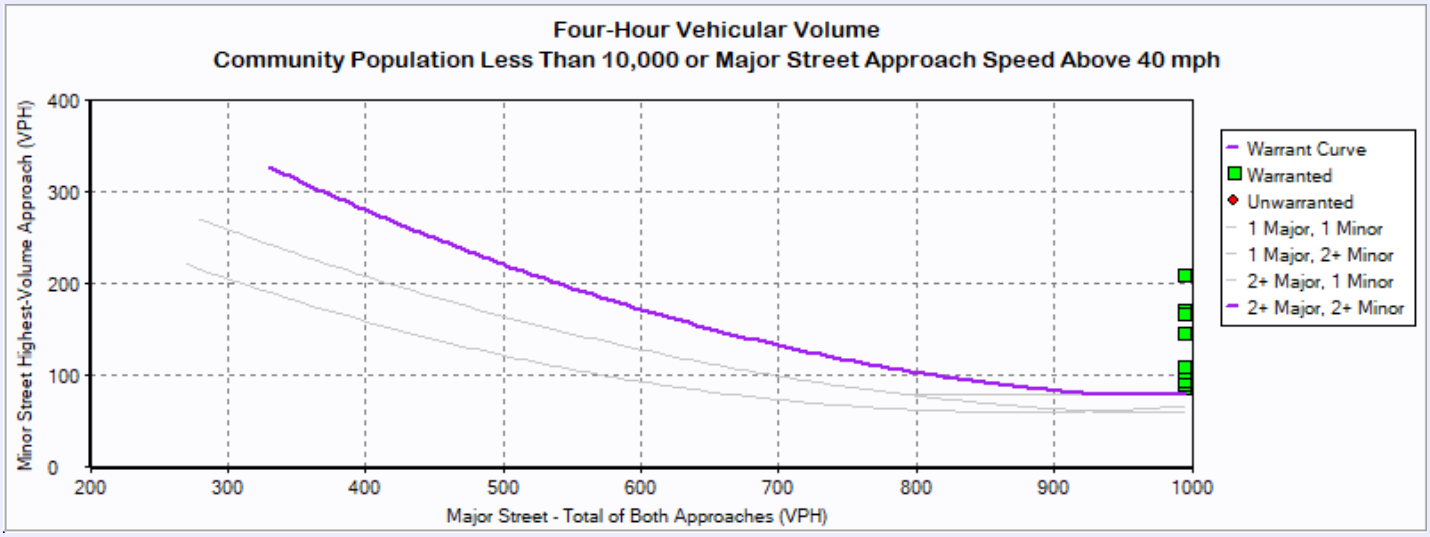
Intersection Informatior

	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)

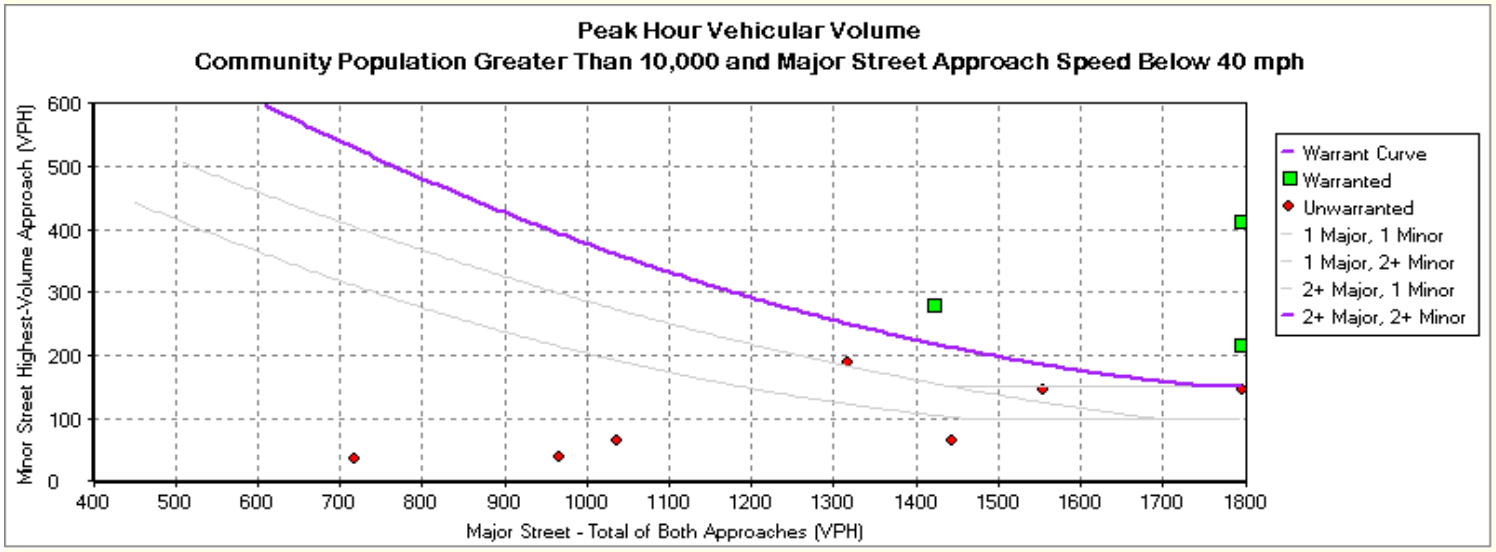
Condition B Met' Yes

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 Total	Rolling Hour Total
TOD	Hourly Increment			L	T	R	Total	L	T	R	Total	L	T	R	Total	L	T	R	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.

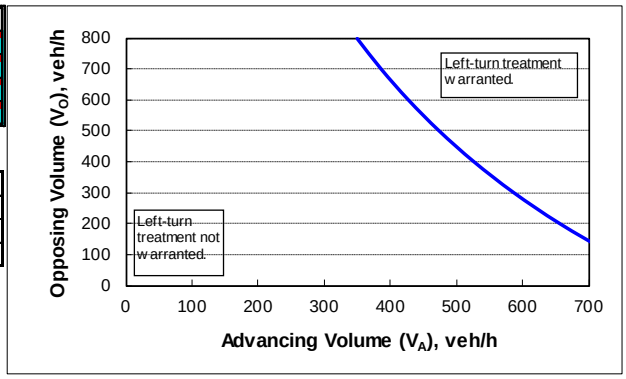
2-lane roadway (English)

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.

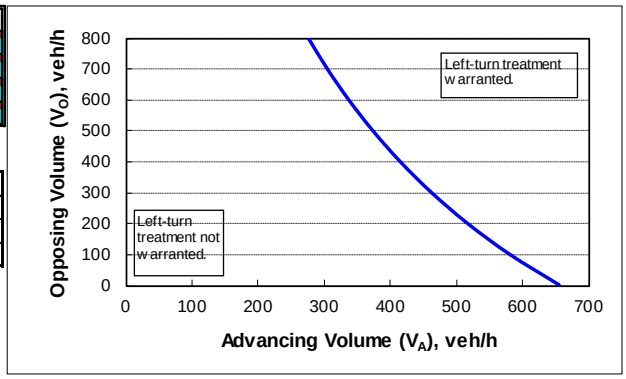
2-lane roadway (English)

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.

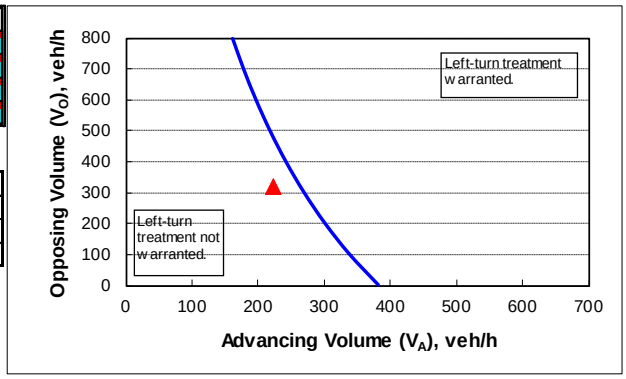
2-lane roadway (English)

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.

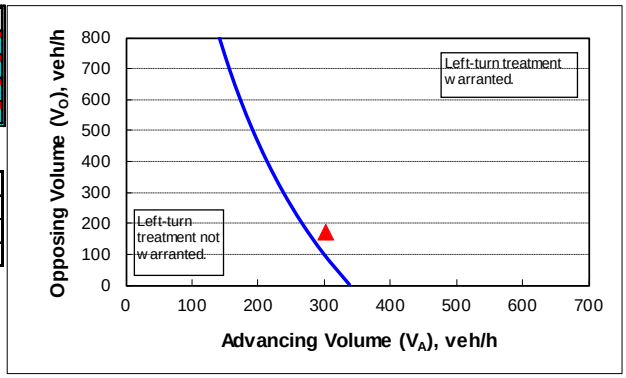
2-lane roadway (English)

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

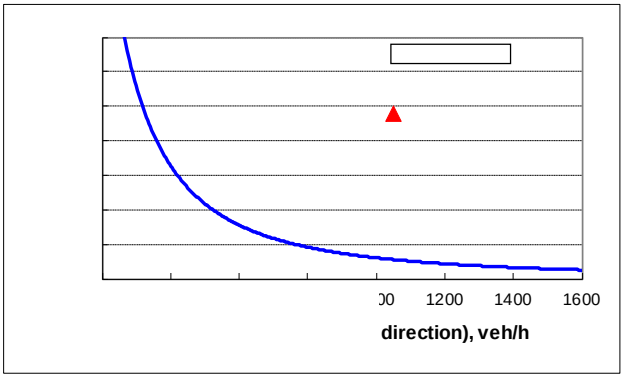
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

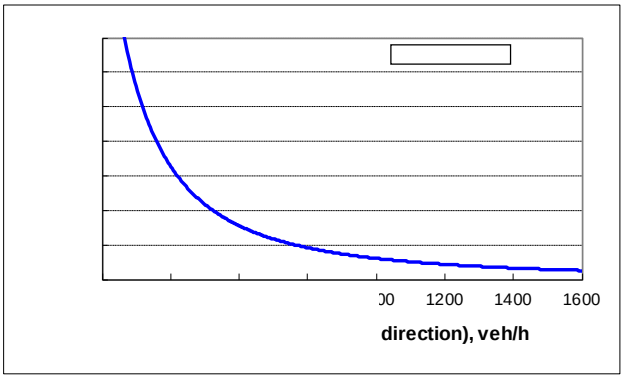
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

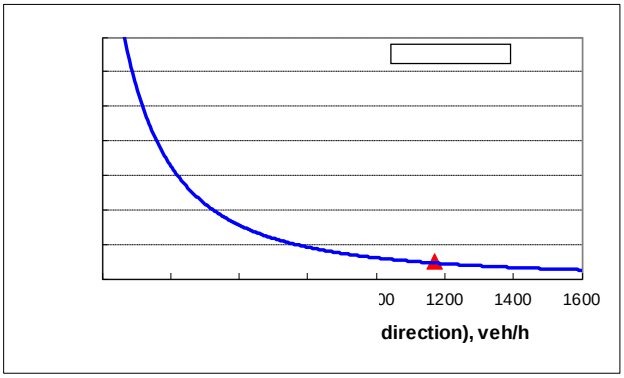
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

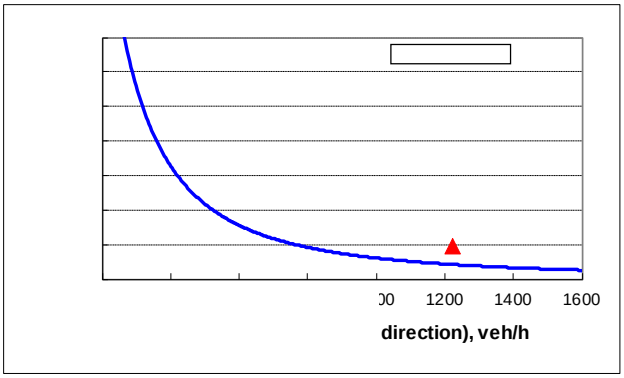
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

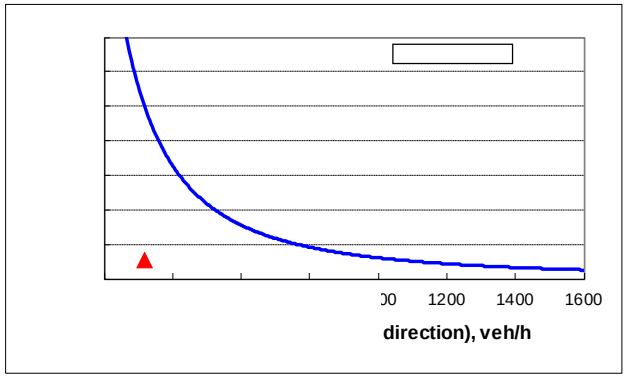
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

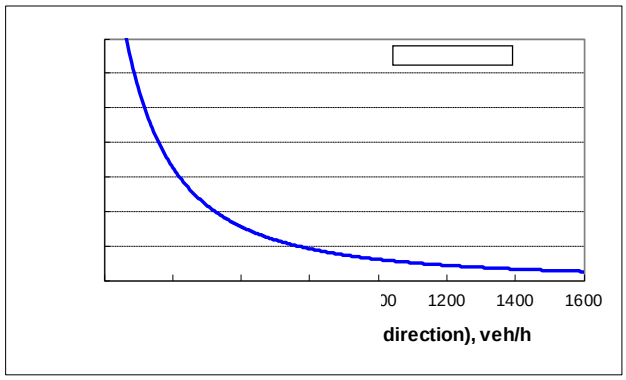
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

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

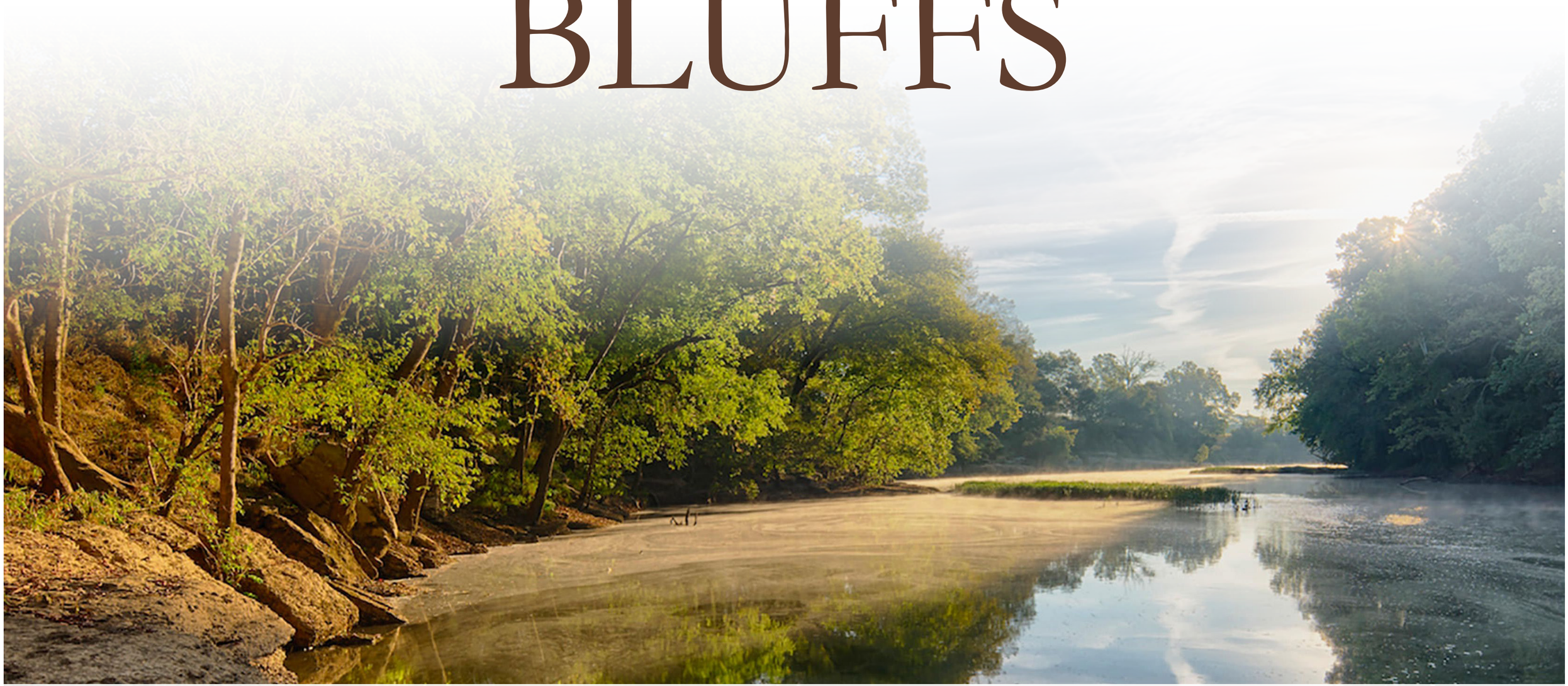
PHASE	LOCATION	LAND USE	DENSITY	CUMULATIVE DENSITY
1	North	Single-family Housing (Attached or Detatched)	143 DU	143 DU
2	North	Single-family Housing (Attached or Detatched)	143 DU	286 DU
3	North	Single-family Housing (Attached or Detatched)	143 DU	429 DU
3B	North	Day Care Center	14,000 SF	429 DU + 14,000 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

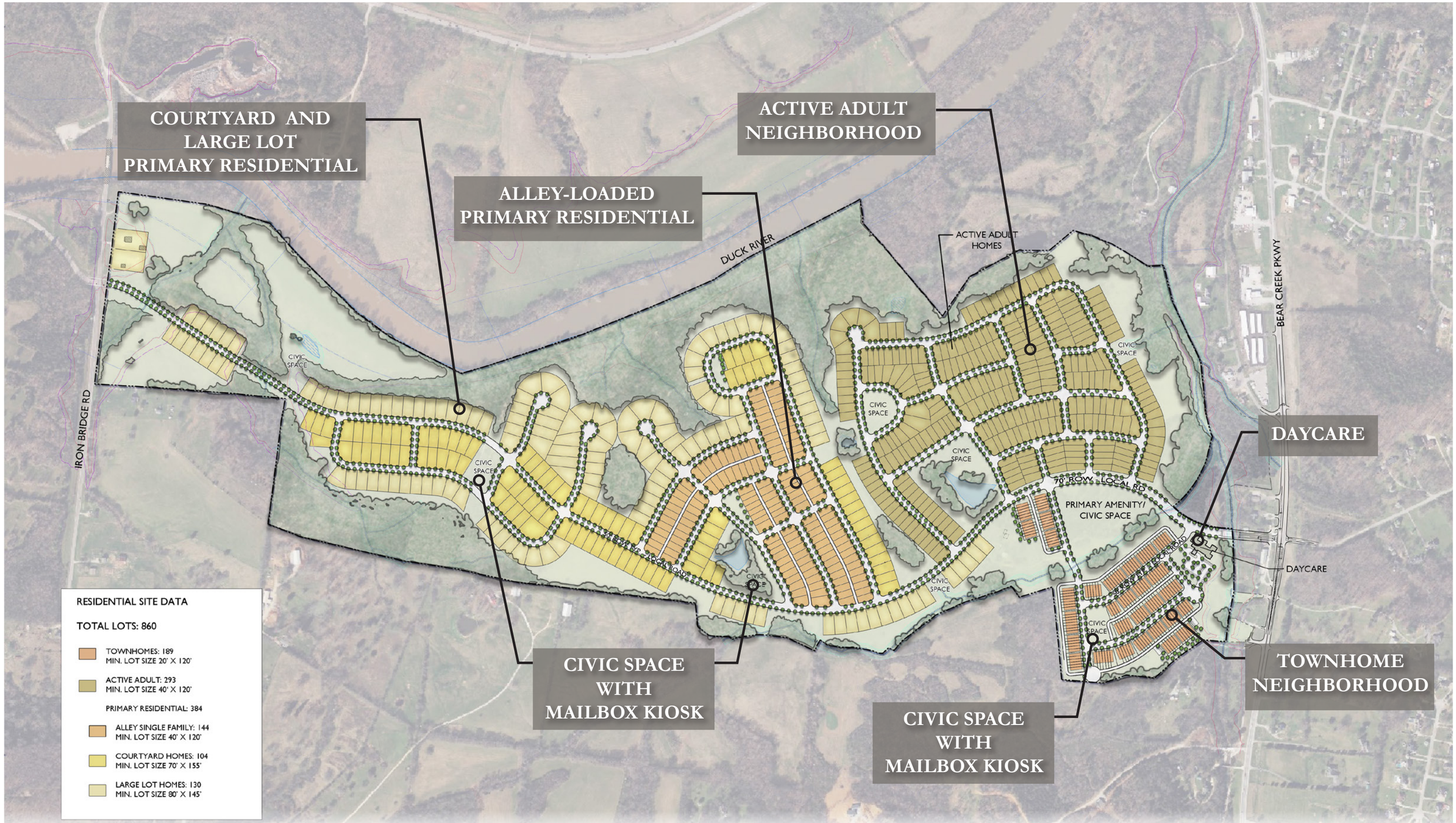
LANDSCAPE ARCHITECT
GREG GAMBLE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069

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2. DEVELOPMENT TEAM
3. DEVELOPMENT PLAN
4. ARCHITECTURAL DESIGN GUIDELINES
5. FACADE VARIETY
6. ACTIVE ADULT NEIGHBORHOOD
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

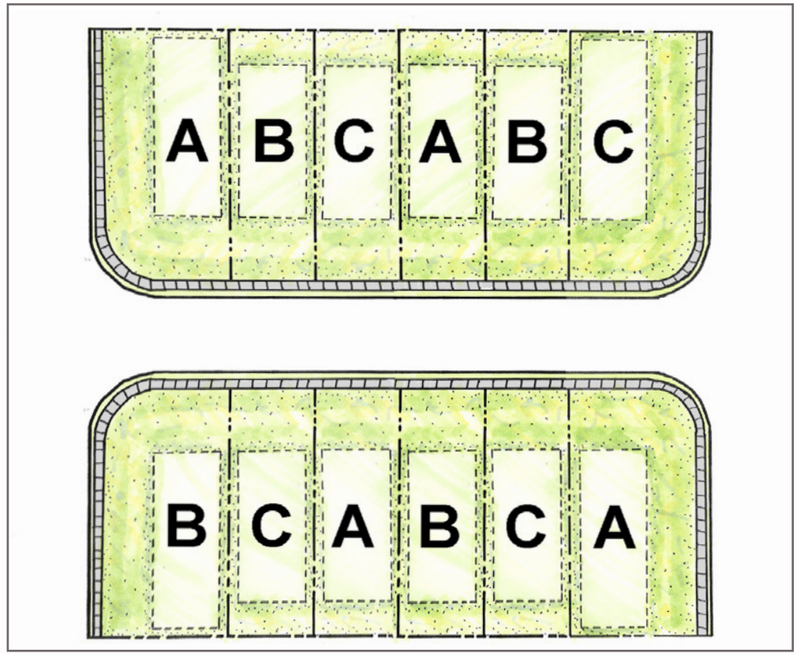








IMAGE OF HOMES REPRESENT AN EXAMPLE OF FACADE VARIETY ALONG SAME STREET. FINAL SELECTION OF MATERIALS AND STYLES TO BE APPROVED AT FMDP.



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













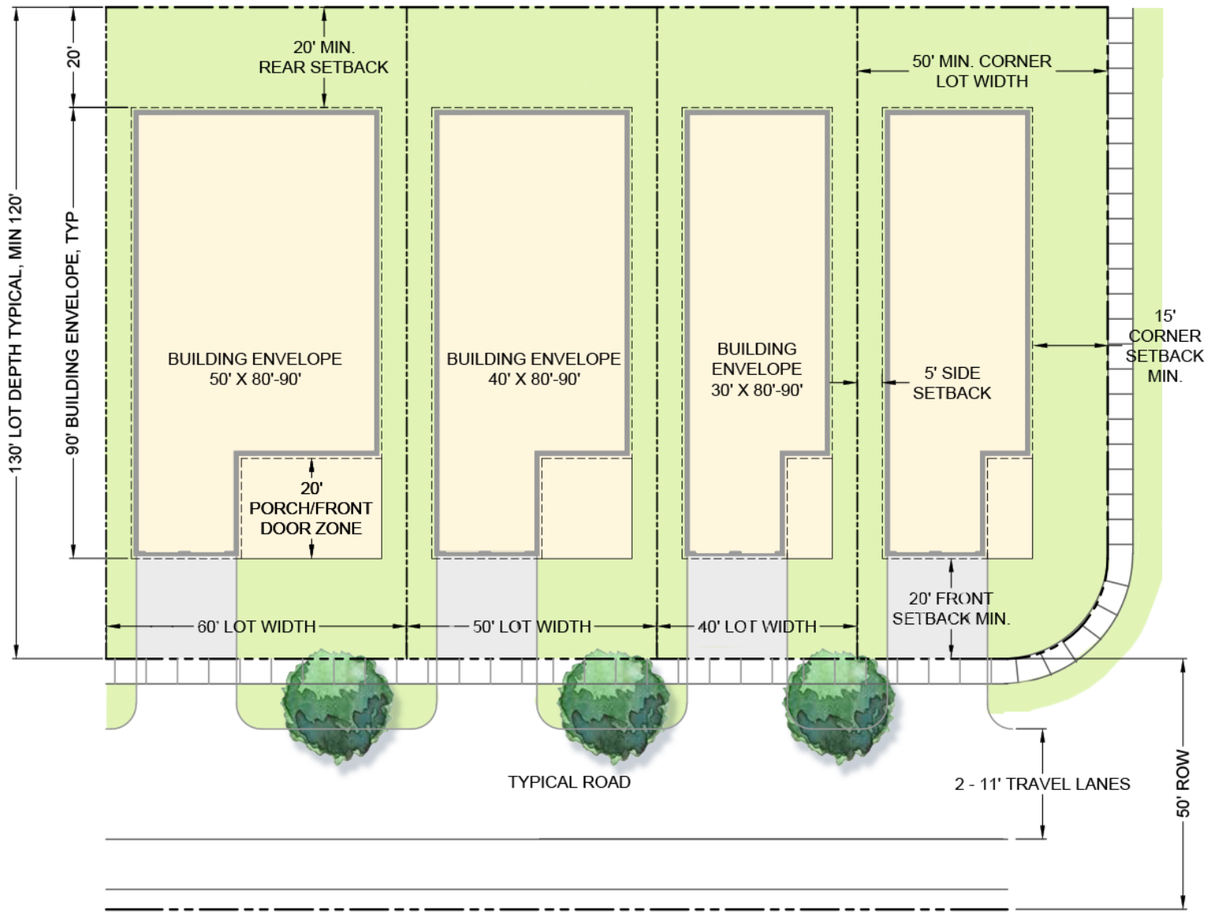






ACTIVE ADULT SINGLE FAMILY

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





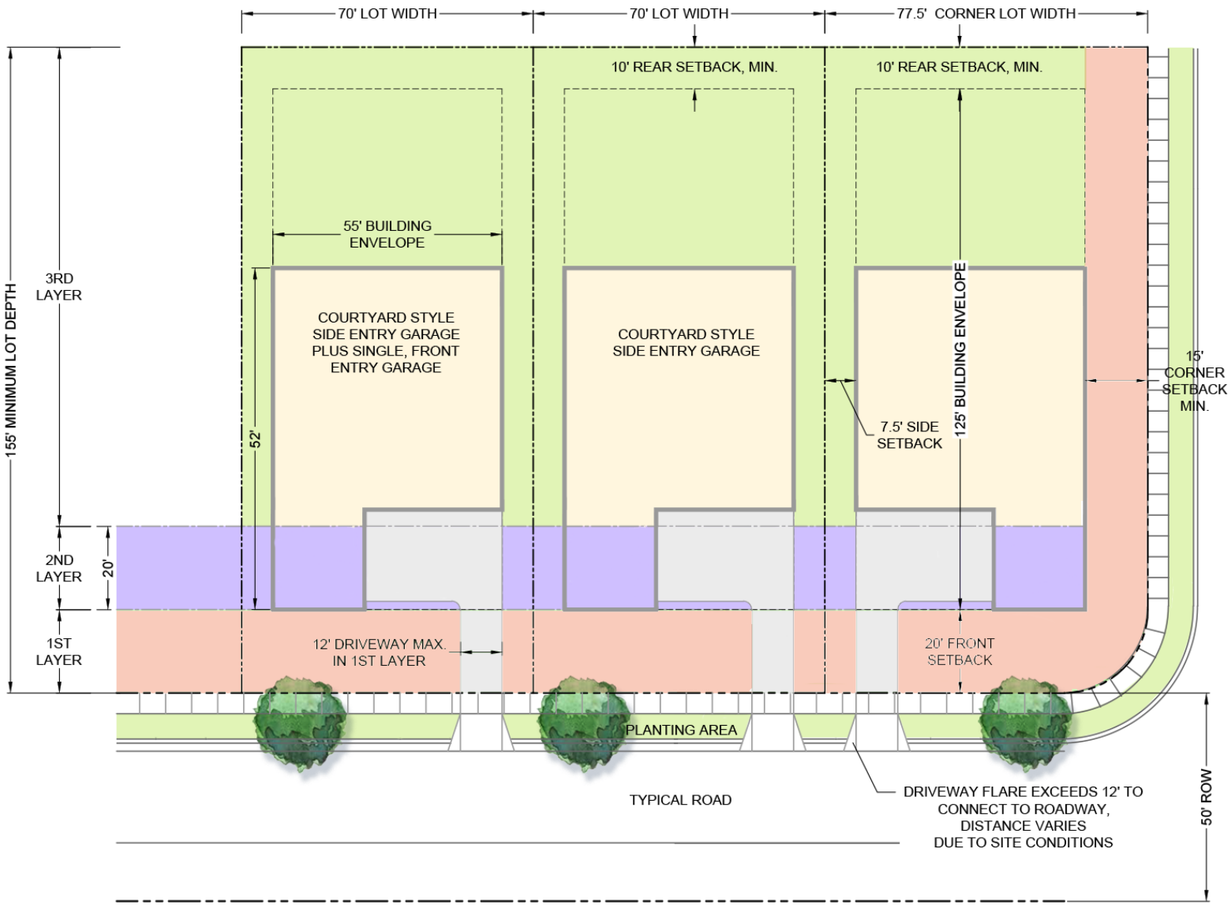







COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL

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











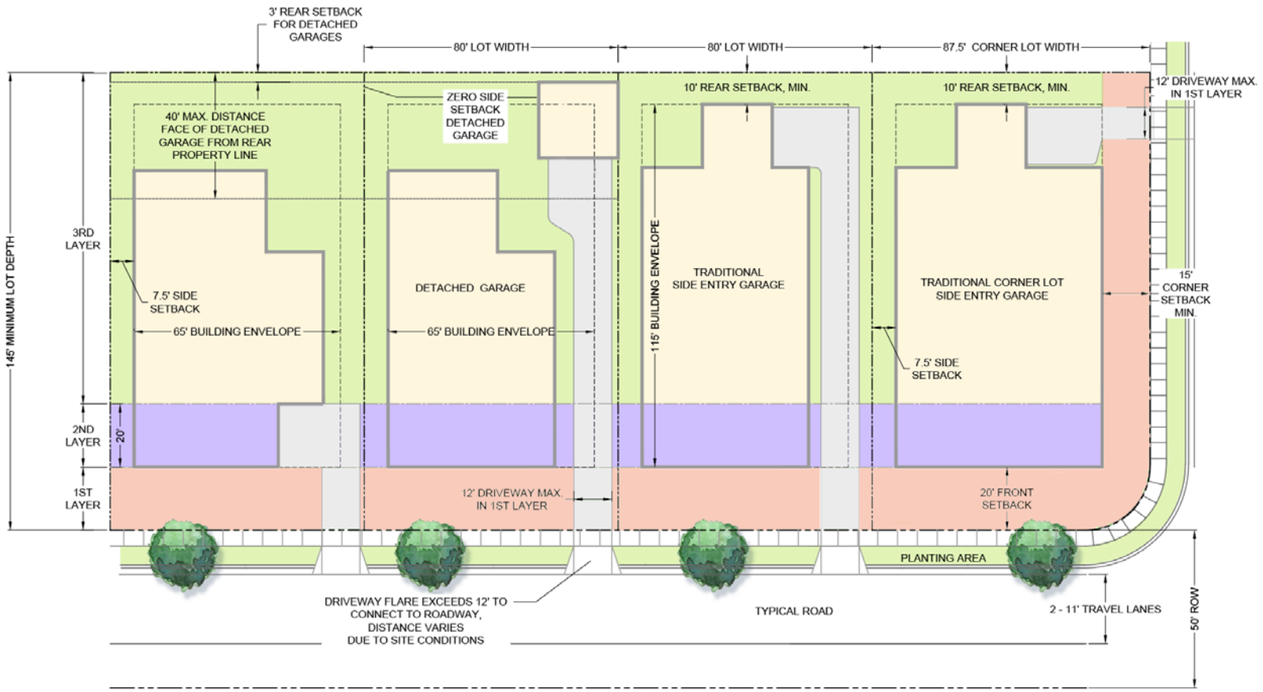







LARGE LOT HOMES

COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 80' MINIMUM
130 HOMES

BUILDING SETBACKS:

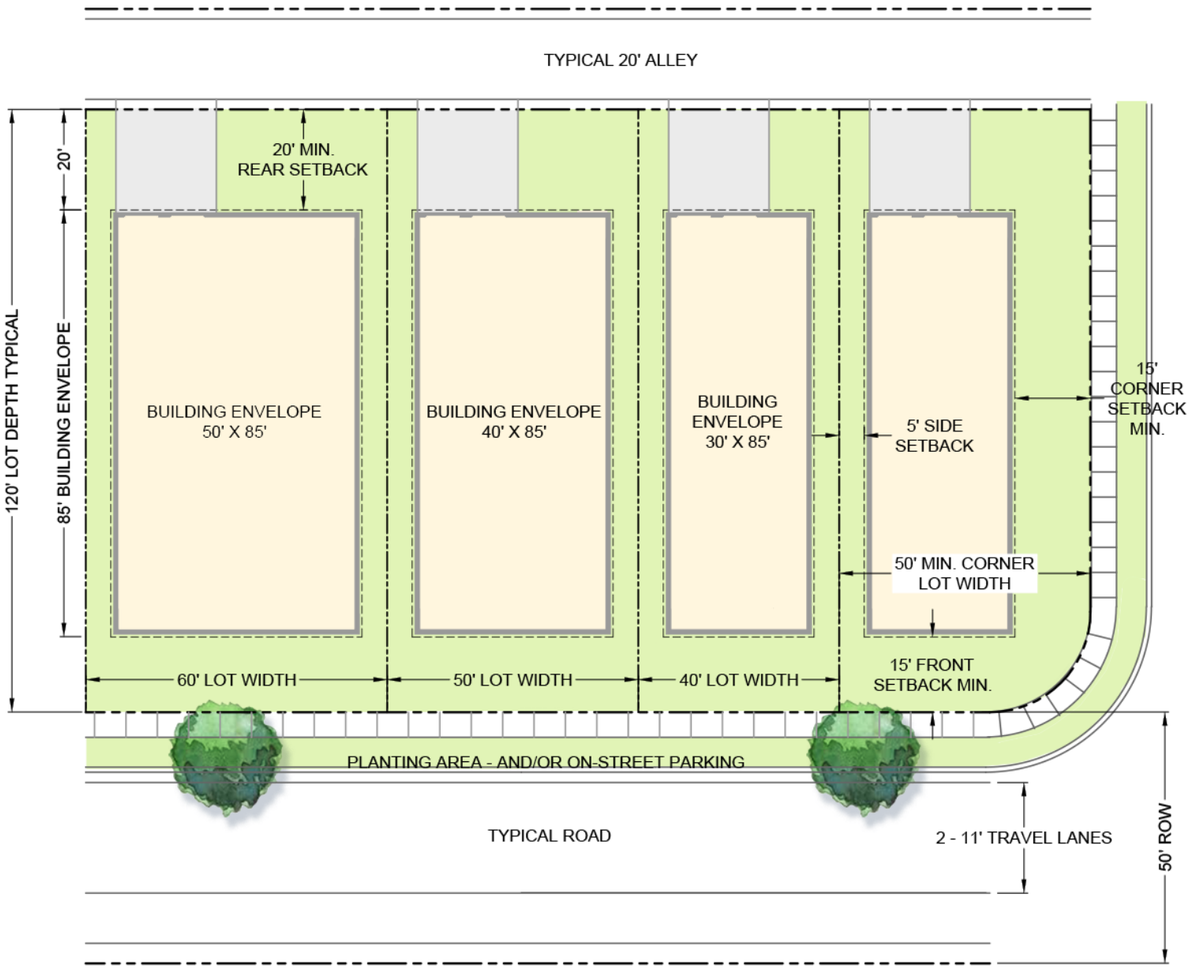
FRONT:	20'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

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









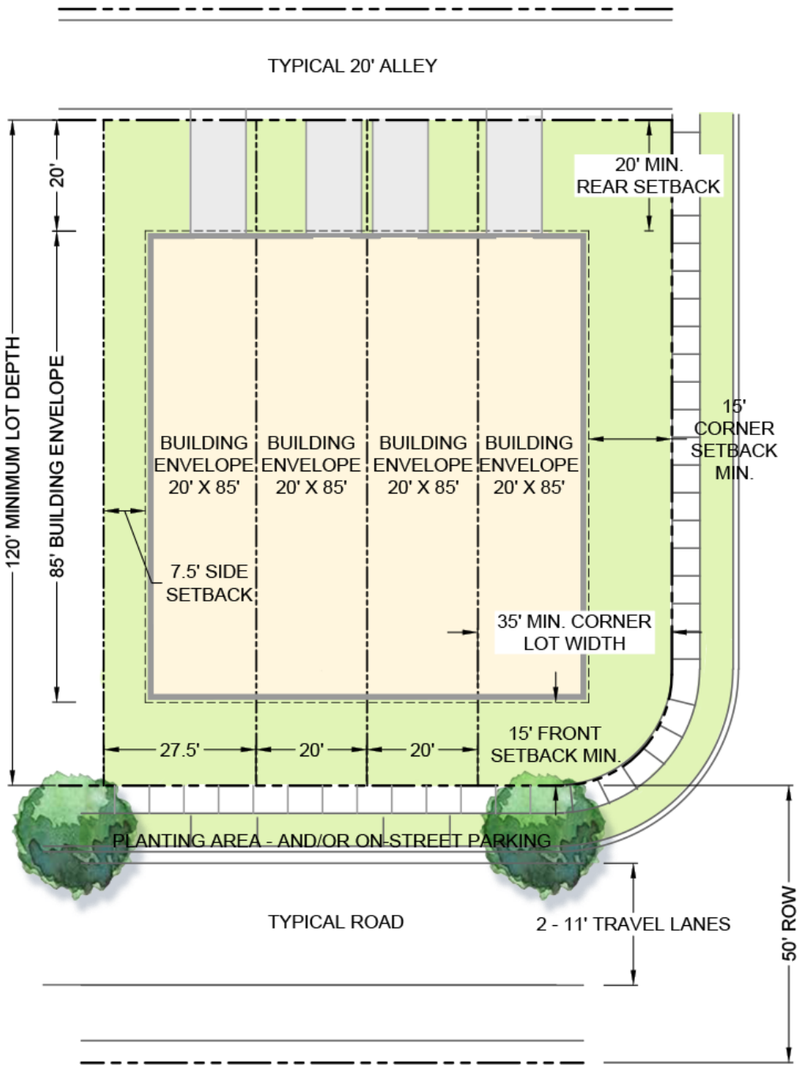


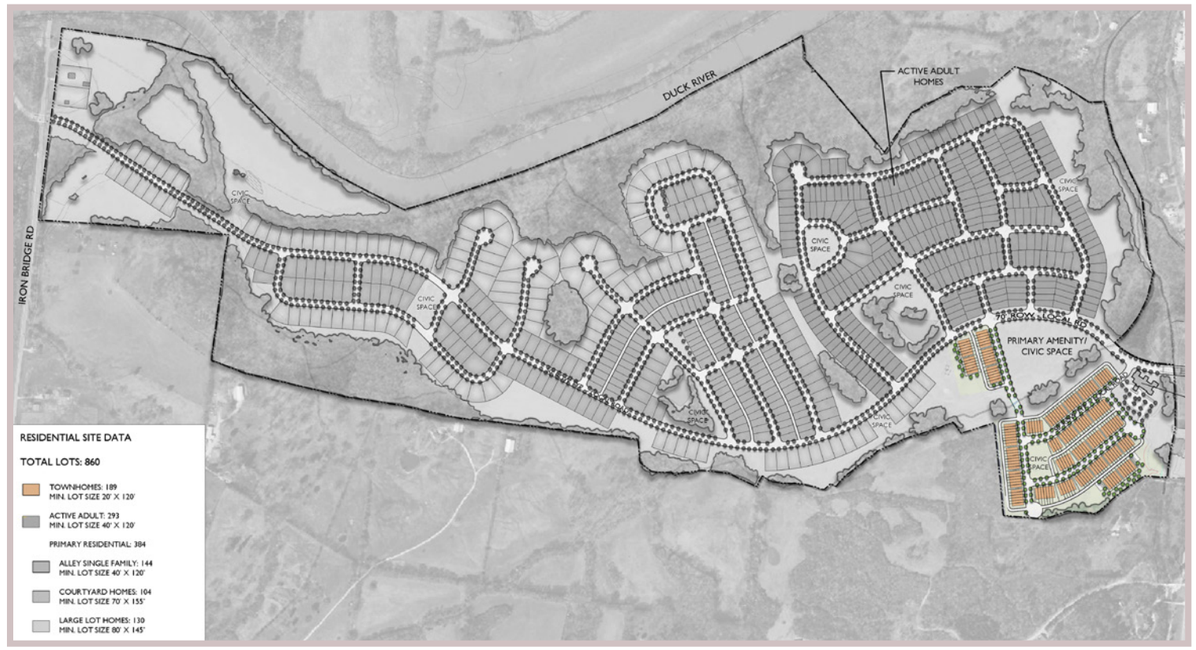






COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 20' MINIMUM
189 HOMES

BUILDING SETBACKS:

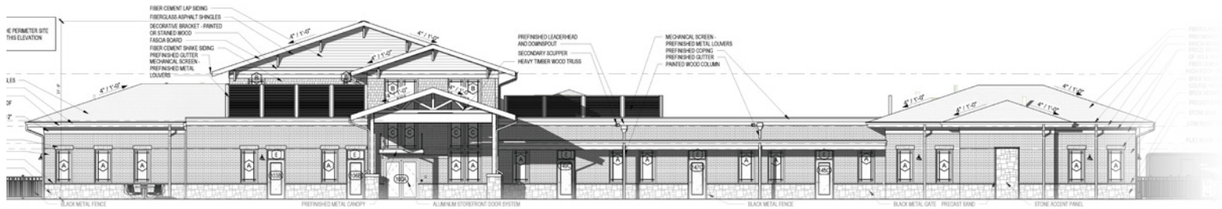
FRONT:	15'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

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

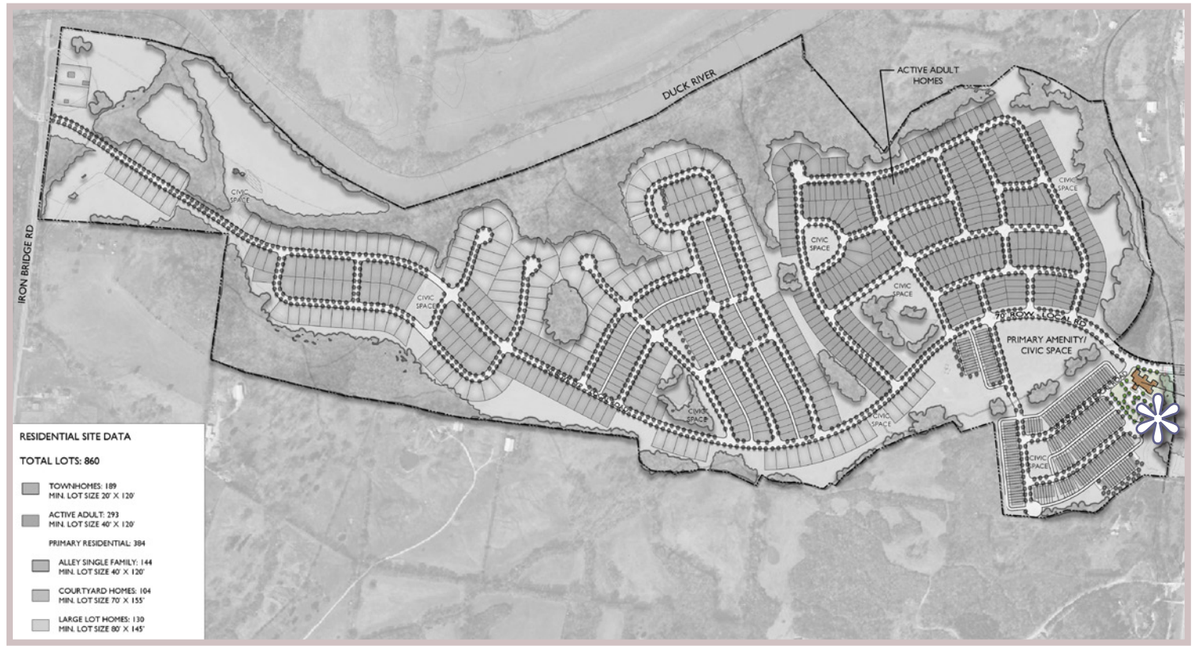


SOUTH ELEVATION



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.

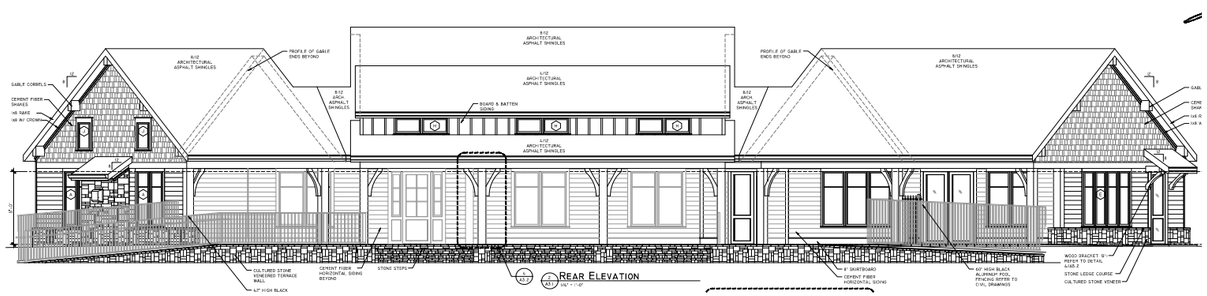
AMENITY PHOTOGRAPHS



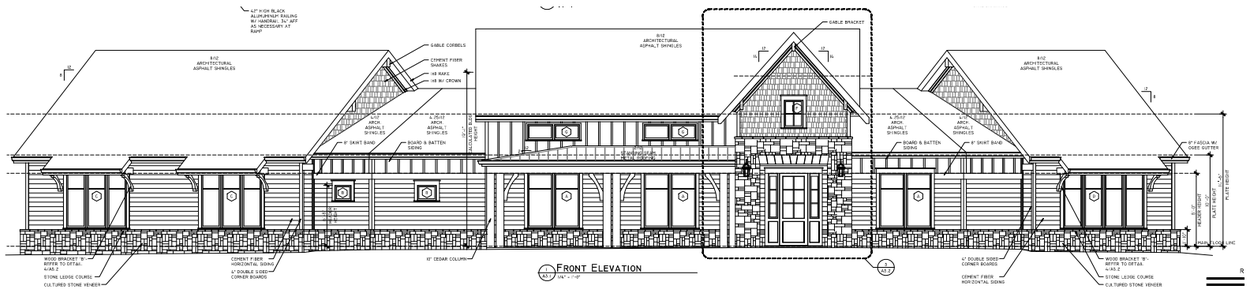


POOL AND CLUBHOUSE FROM SIMILAR KOLTER PROJECT

AMENITY ELEVATIONS



REAR ELEVATION



FRONT ELEVATION

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.

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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

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-

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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.

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,

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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



DOG PARK

WALKING PATHS





SWING BENCH



POOL



PICKLE BALL COURTS



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
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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

DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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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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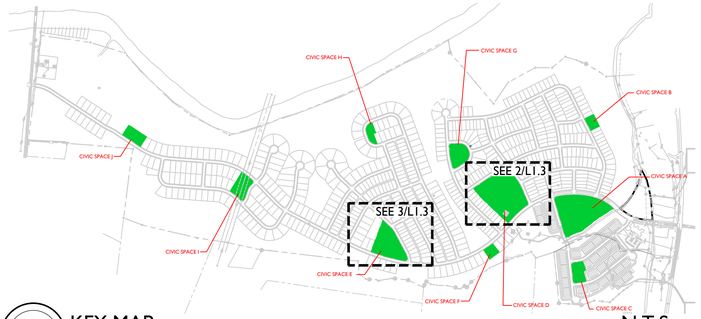
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OVERALL CIVIC SPACE PLAN

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.

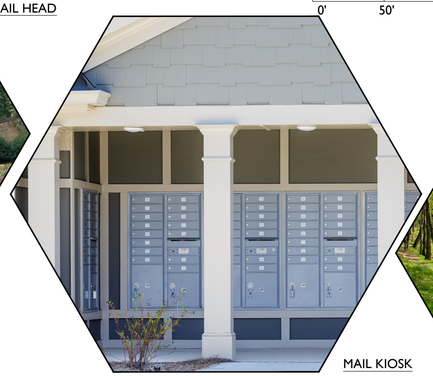
0' 50' 100'



POND



TRAIL HEAD



MAIL KIOSK

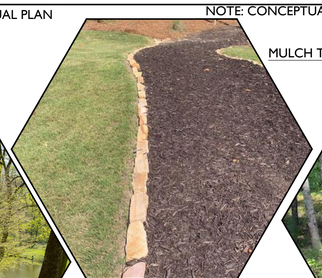
3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

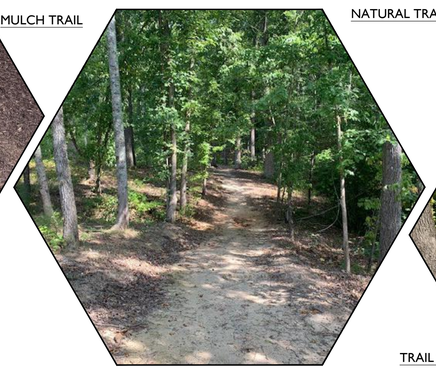
0' 30' 60'



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. 1622

Date: October 16, 2023
Revision Date
△
△
△

OVERALL CIVIC SPACE PLAN
SHEET
L1.3



2 L1.4 CIVIC SPACE - F

CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 30' 60'



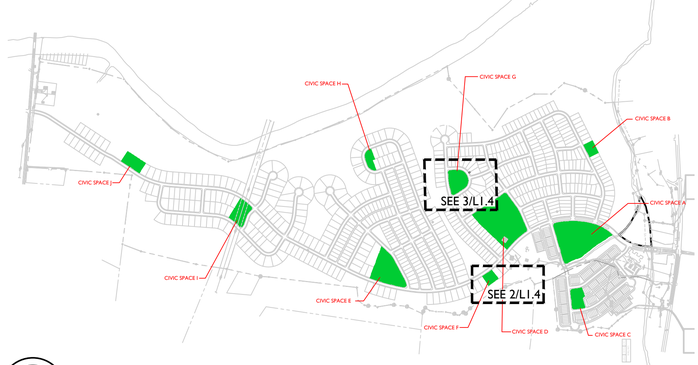
SWINGS



FORMAL PARK



PLAYGROUND



1 L1.4 KEY MAP N.T.S



3 L1.4 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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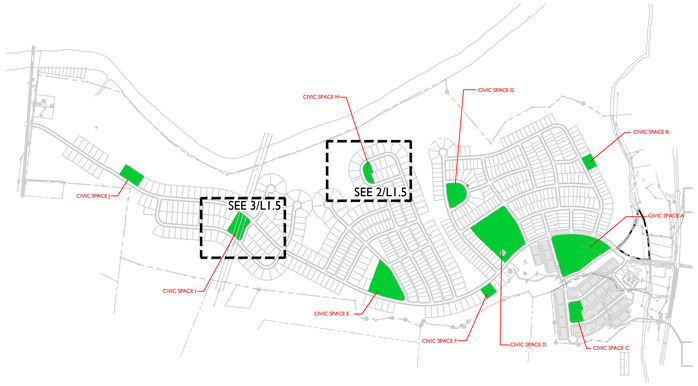
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OVERALL CIVIC SPACE PLAN

SHEET

L1.4



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'



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

Date: October 16, 2023

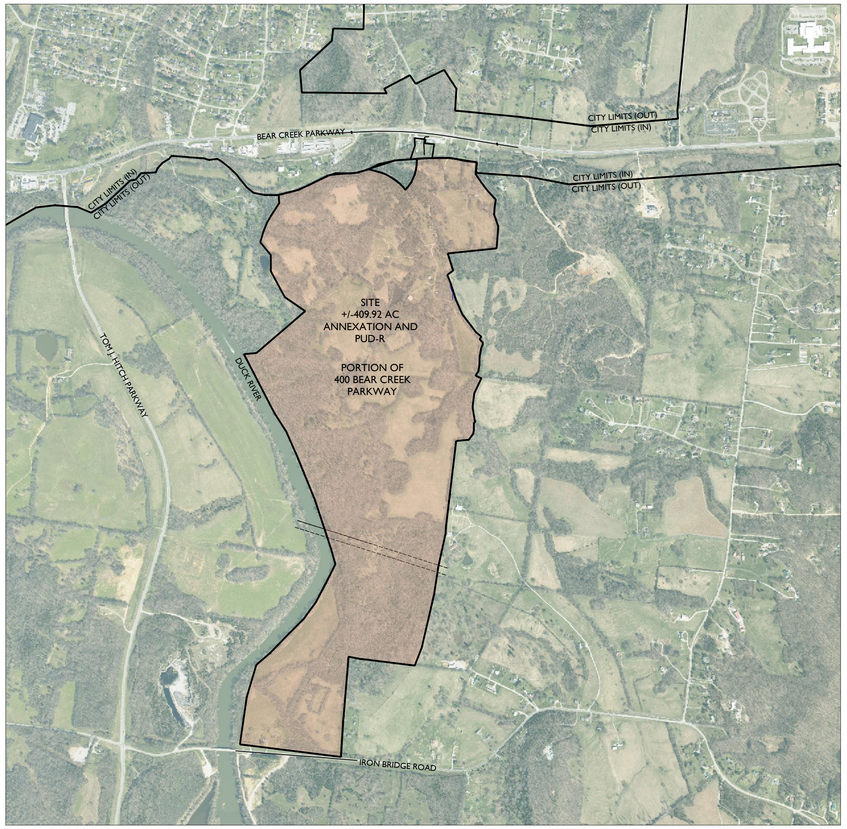
Revision	Date
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OVERALL CIVIC SPACE PLAN

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.

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

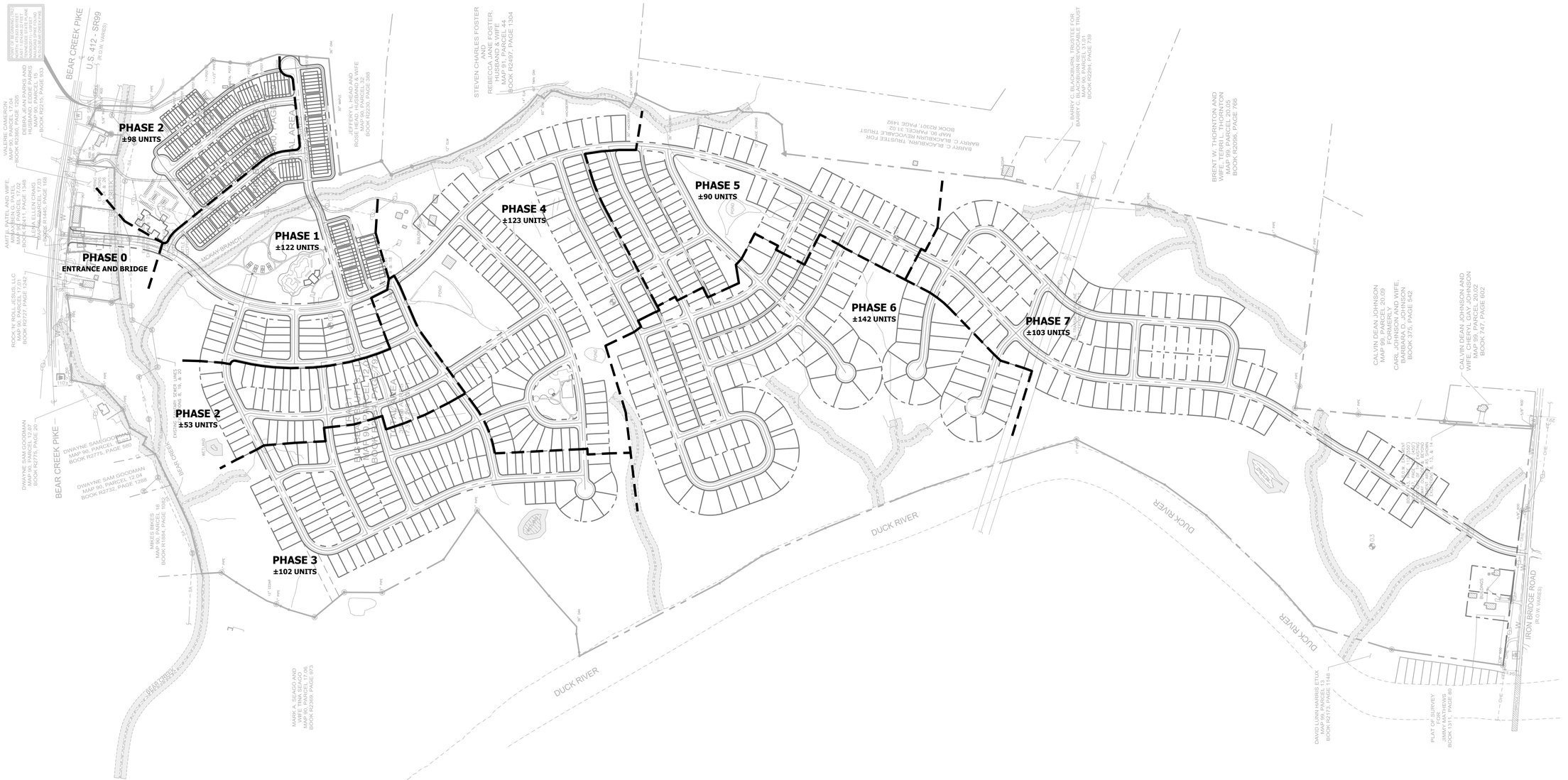
DRAWN BY: TWG
CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 16, 2023 - 3:02pm 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



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

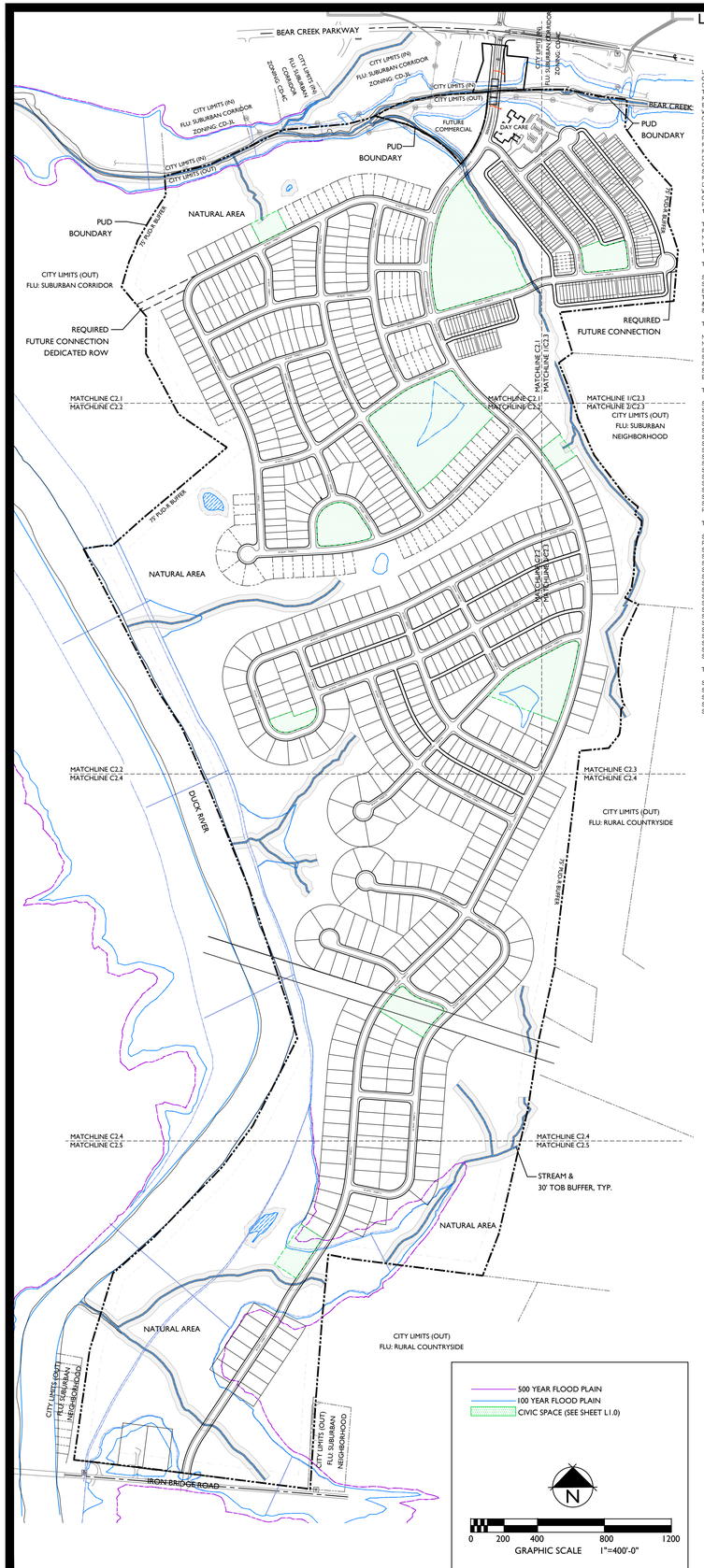
DRAWN BY: TWG
CHECKED BY: TWG

PHASING PLAN

C1.00
PROJECT NO.: 21-160-01

N
0 300 600
SCALE: 1" = 300'

Oct 16, 2023 - 3:03pm 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 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;

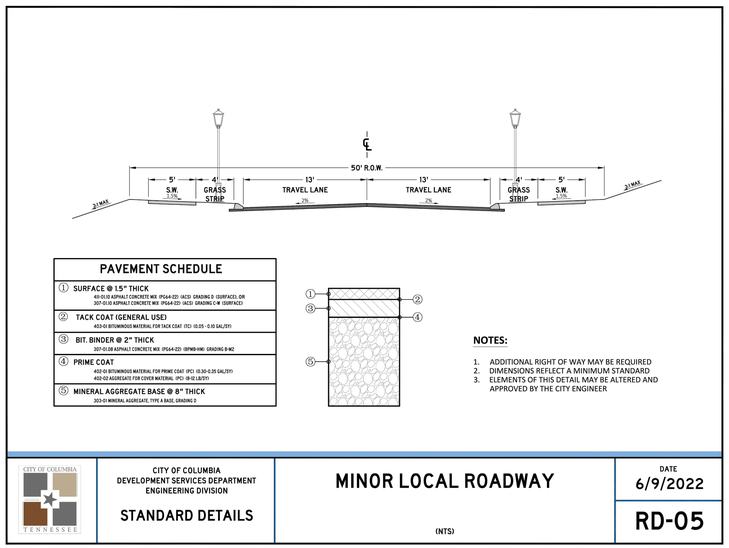
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

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.

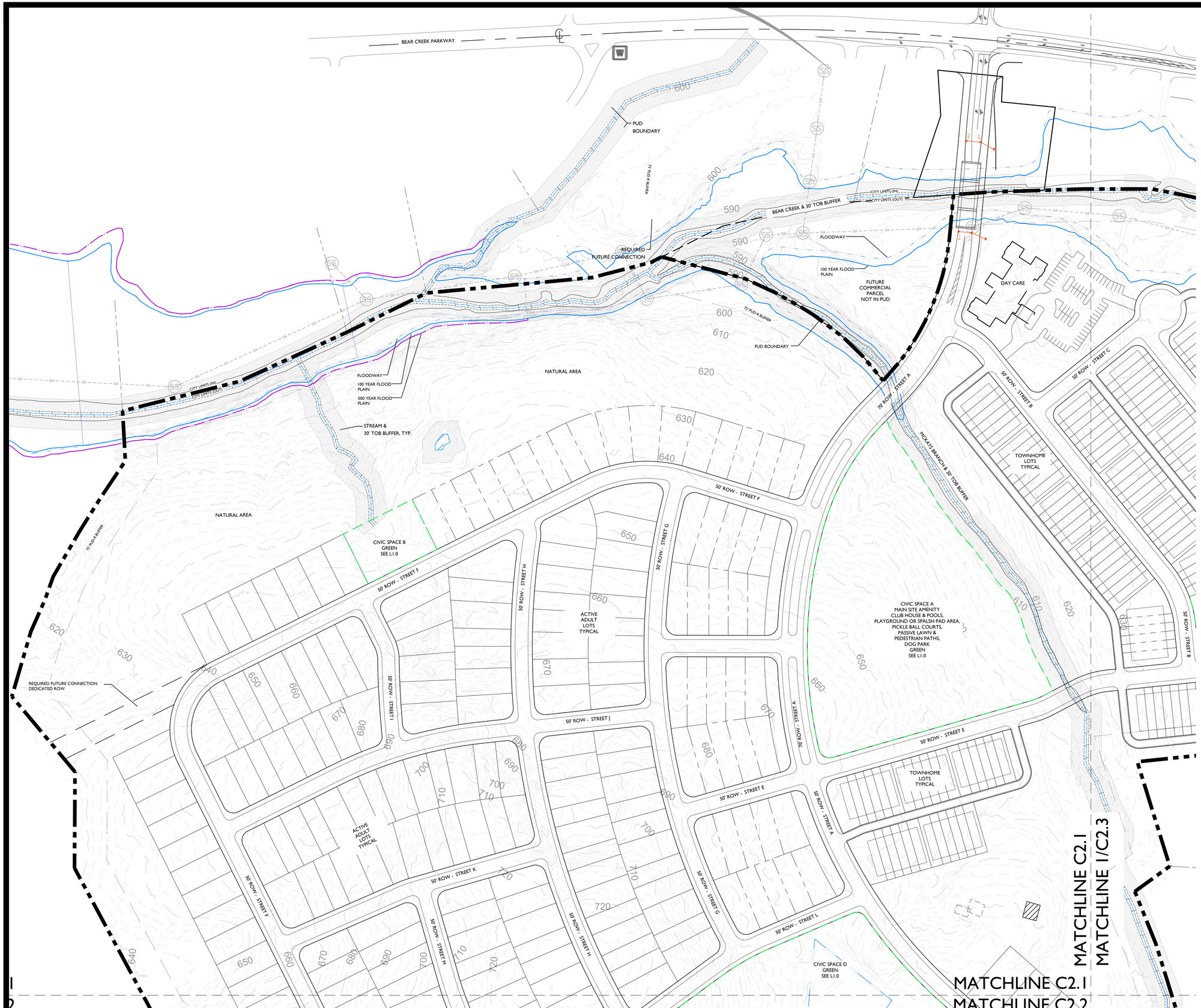
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

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



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

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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

ACTIVE ADULT LOTS TYPICAL

NATURAL AREA

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.

DUCK RIVER

LARGE LOTS TYPICAL

50' ROW - STREET S

ALLEY HOMES TYPICAL

50' ROW - STREET T

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

50' ROW - STREET W

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

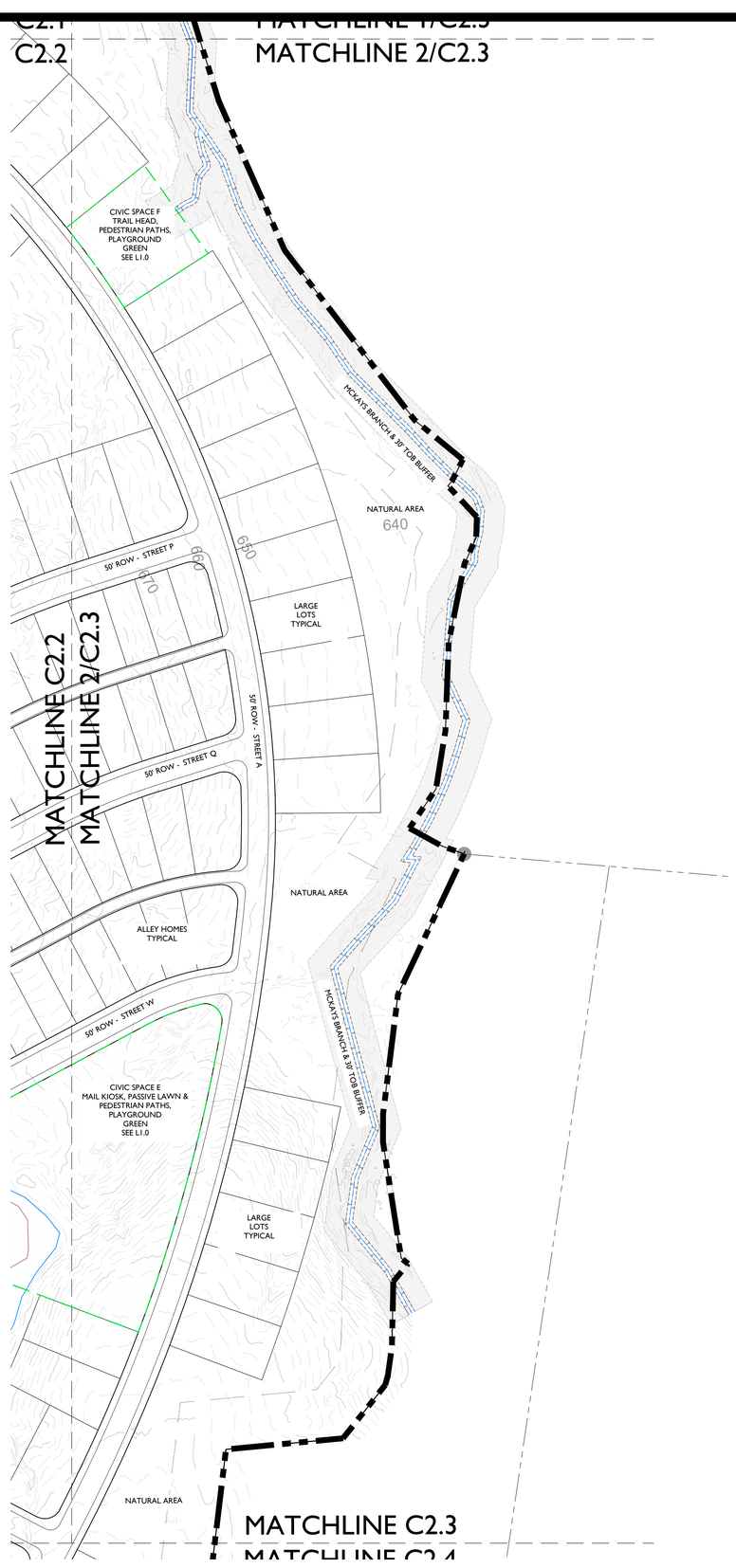
Date: October 16, 2023

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 — 1015

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 R BUFFER
FLOODWAY
100 YEAR FLOOD PLAIN
DUCK RIVER
LARGE LOTS TYPICAL
COURTYARD LOTS TYPICAL
50' ROW - STREET W
50' ROW - STREET T
50' ROW - STREET A
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

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 — 1400 — 10-16-23

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
C2.4

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

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 CONCEPT DEVELOPMENT PLAN

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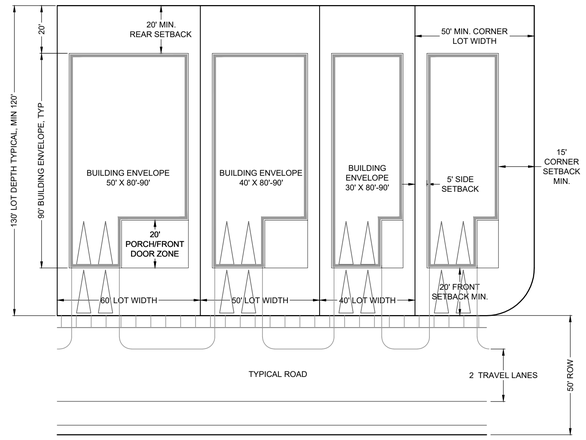
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GRAPHIC SCALE 1"=100'-0"

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'

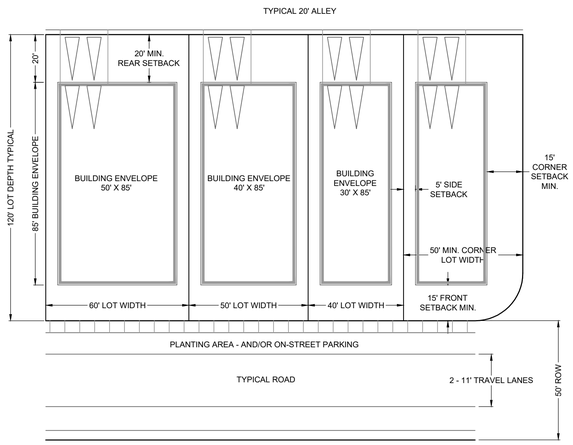
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



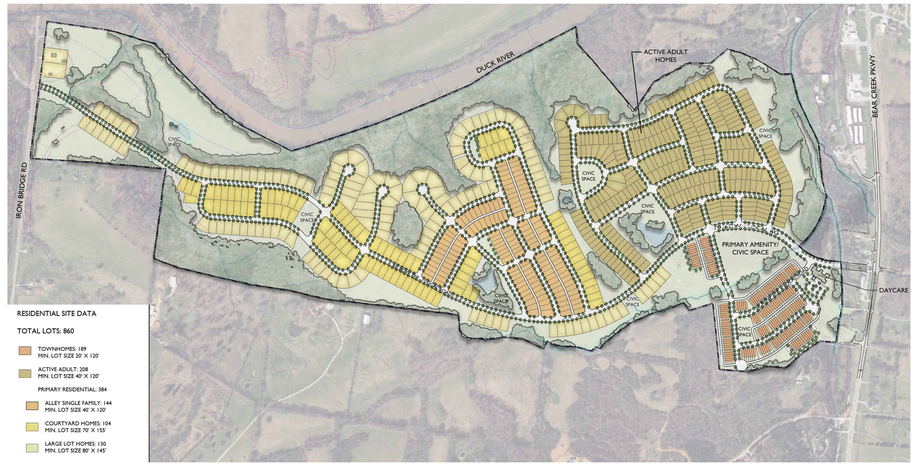
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

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.	



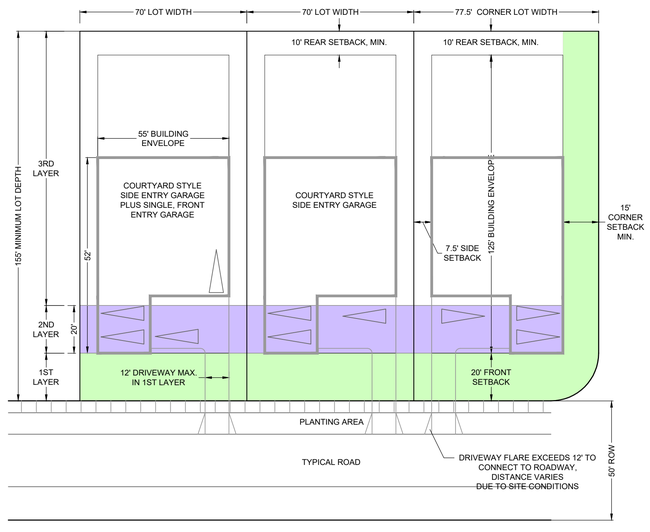
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

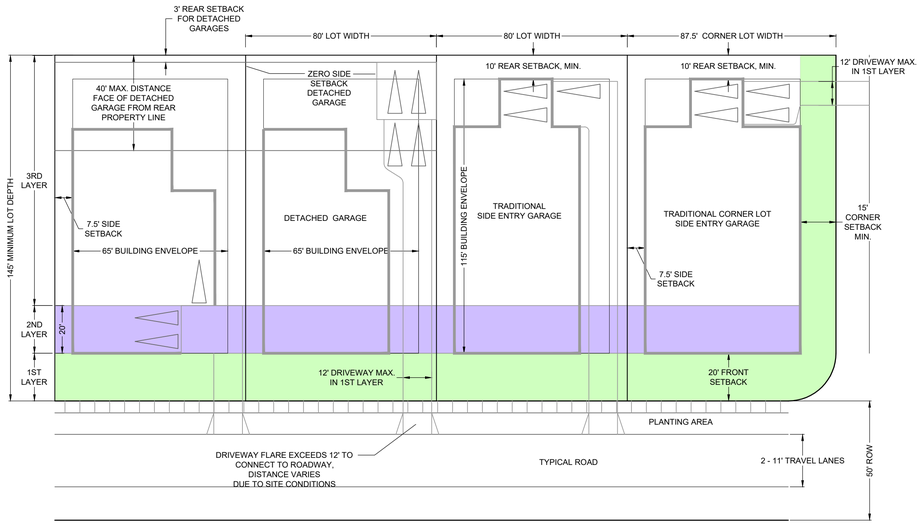
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

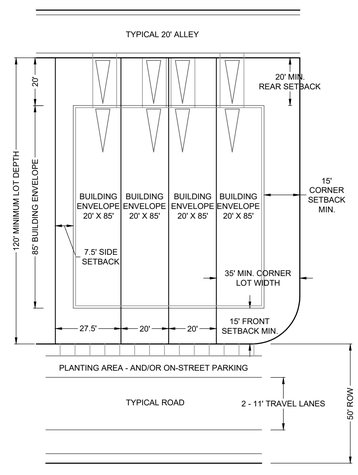
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



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

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

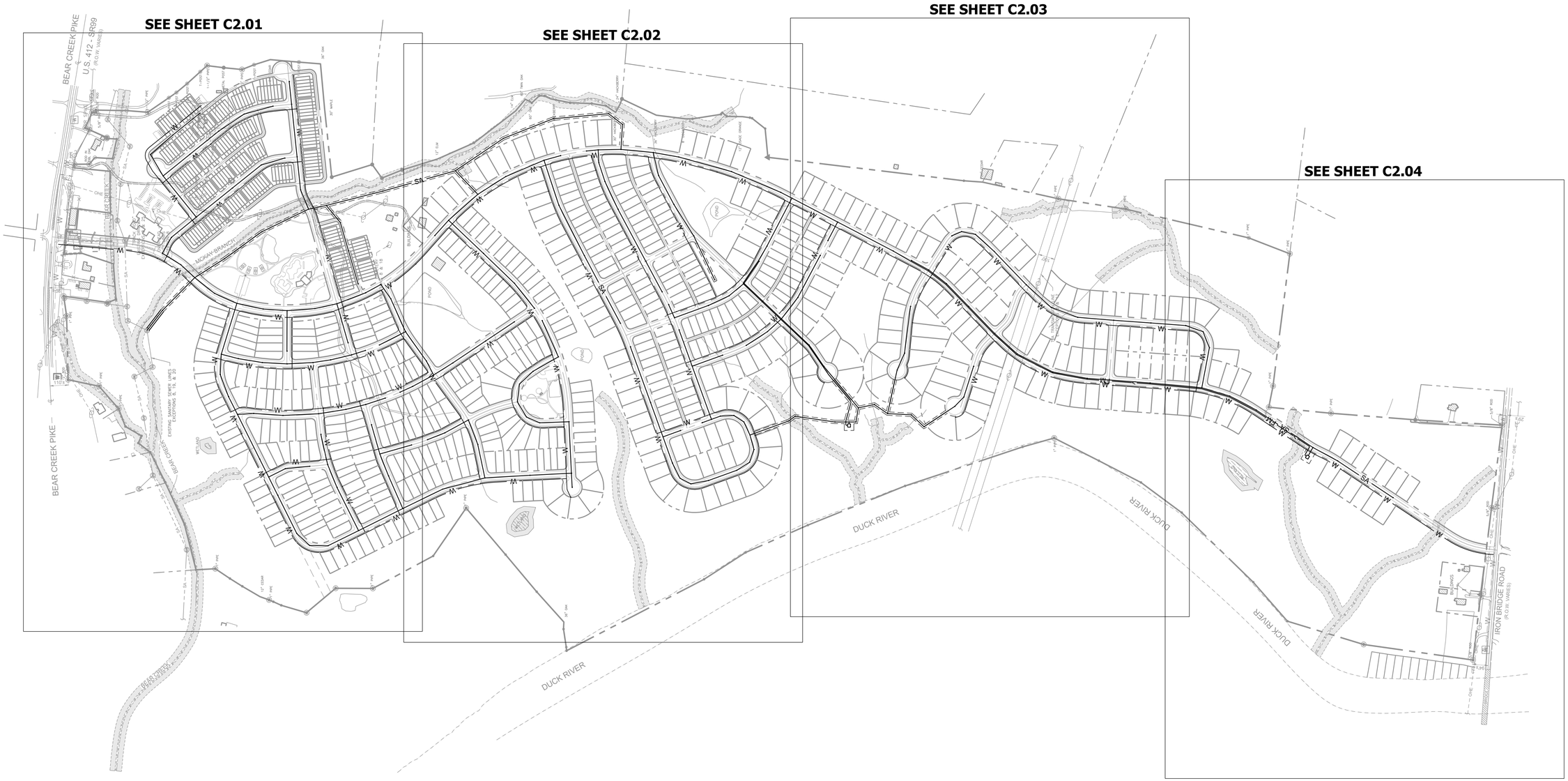
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
△
△
△

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
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

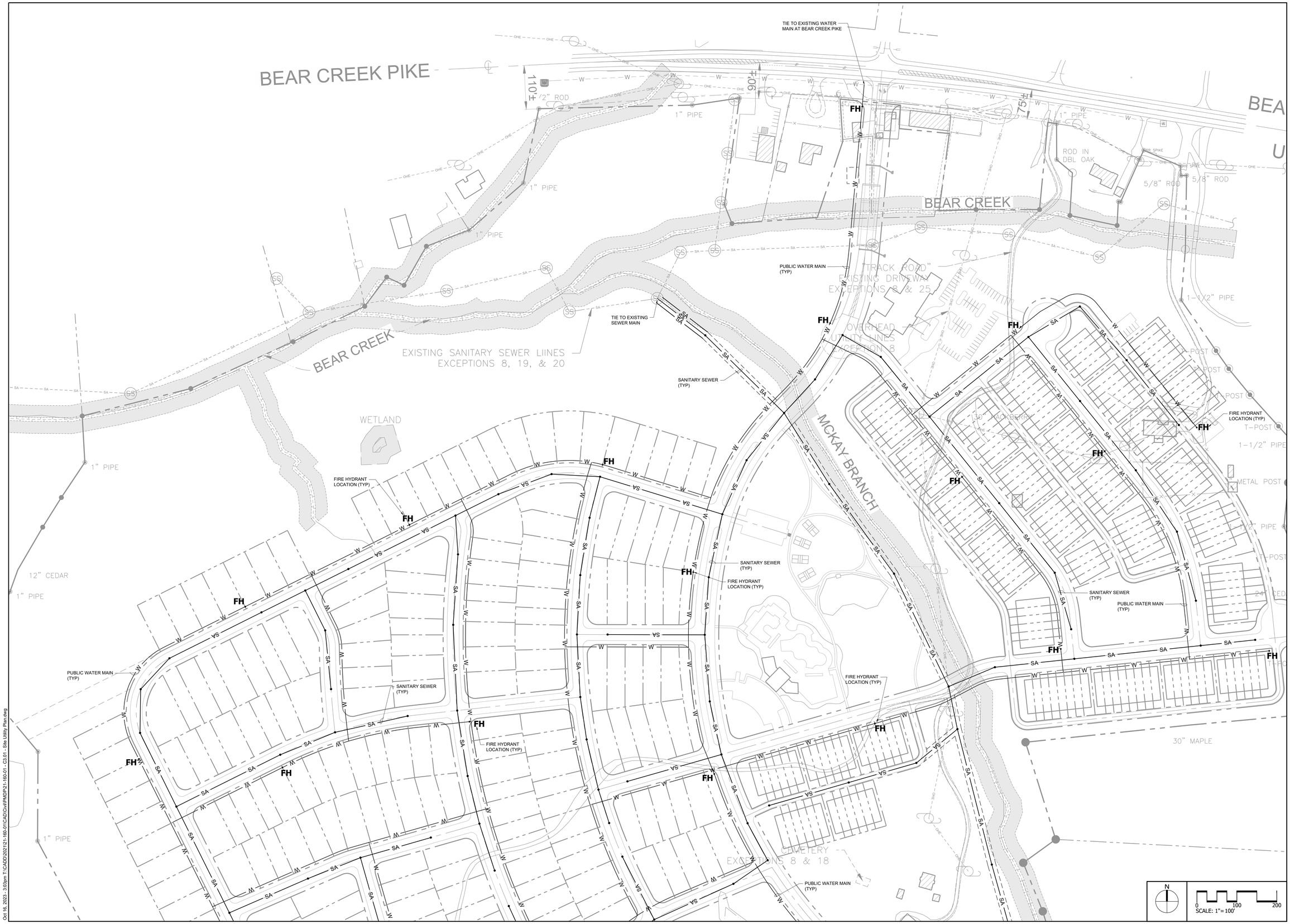
DRAWN BY: TWG
CHECKED BY: TWG

OVERALL UTILITY PLAN

C3.00

PROJECT NO.: 21-160-01

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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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



CSDG
Planning | Engineering
Landscape Architecture
2305 Kline Ave, Ste 300
Nashville, TN 37211
615.248.9999
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SEAL

JAMES T. HARRISON IV
REGISTERED
ENGINEER
10-16-23
No. 021998
STATE OF TENNESSEE

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SITE UTILITY PLAN

C3.02

PROJECT NO.: 21-160-01

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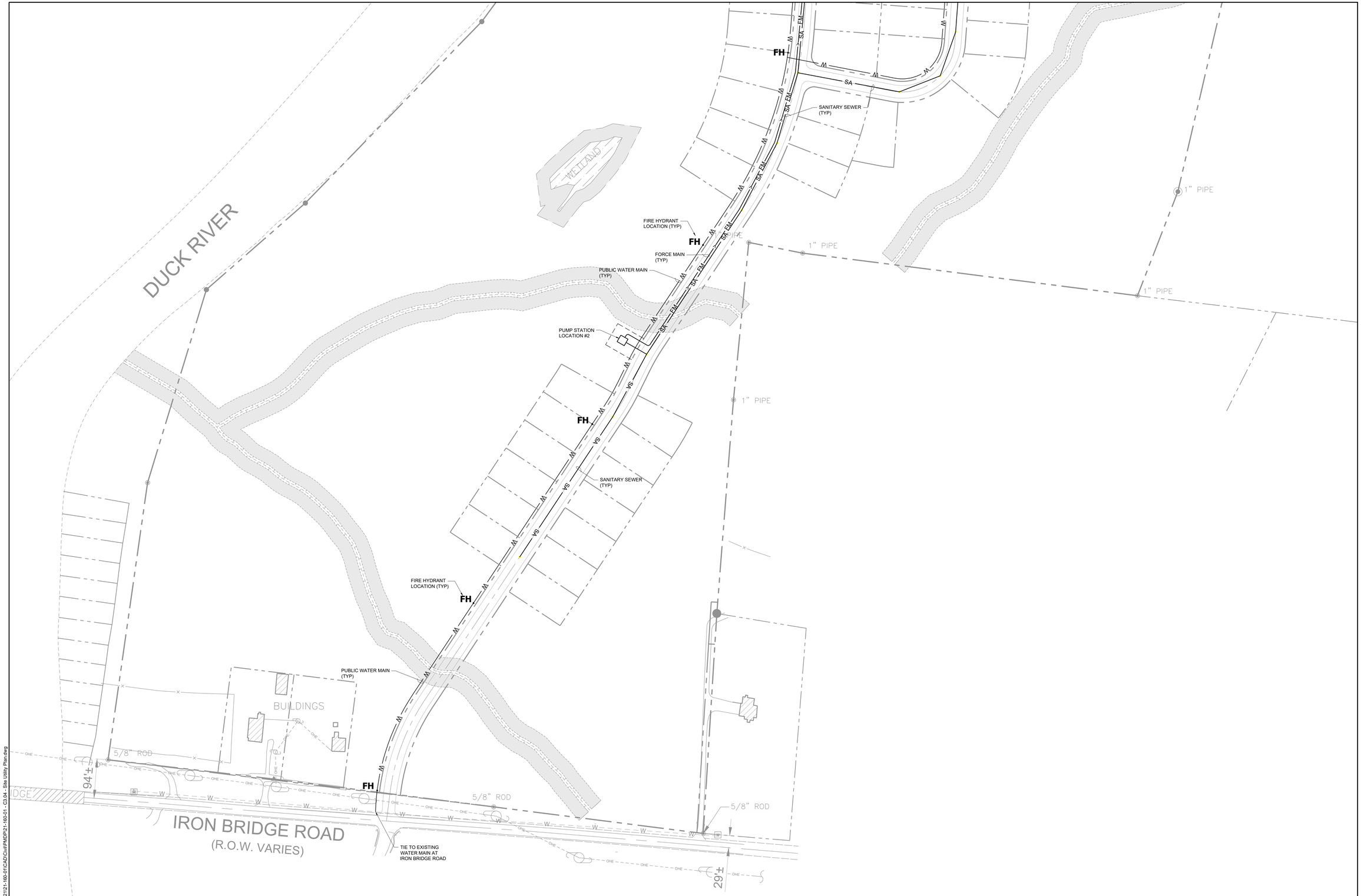
DRAWN BY: TWG
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SITE UTILITY PLAN

C3.03
PROJECT NO.: 21-160-01

N
0 100 200
SCALE: 1"= 100'

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SEAL

JAMES T. HARRISON IV
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CIVIL
10-16-23
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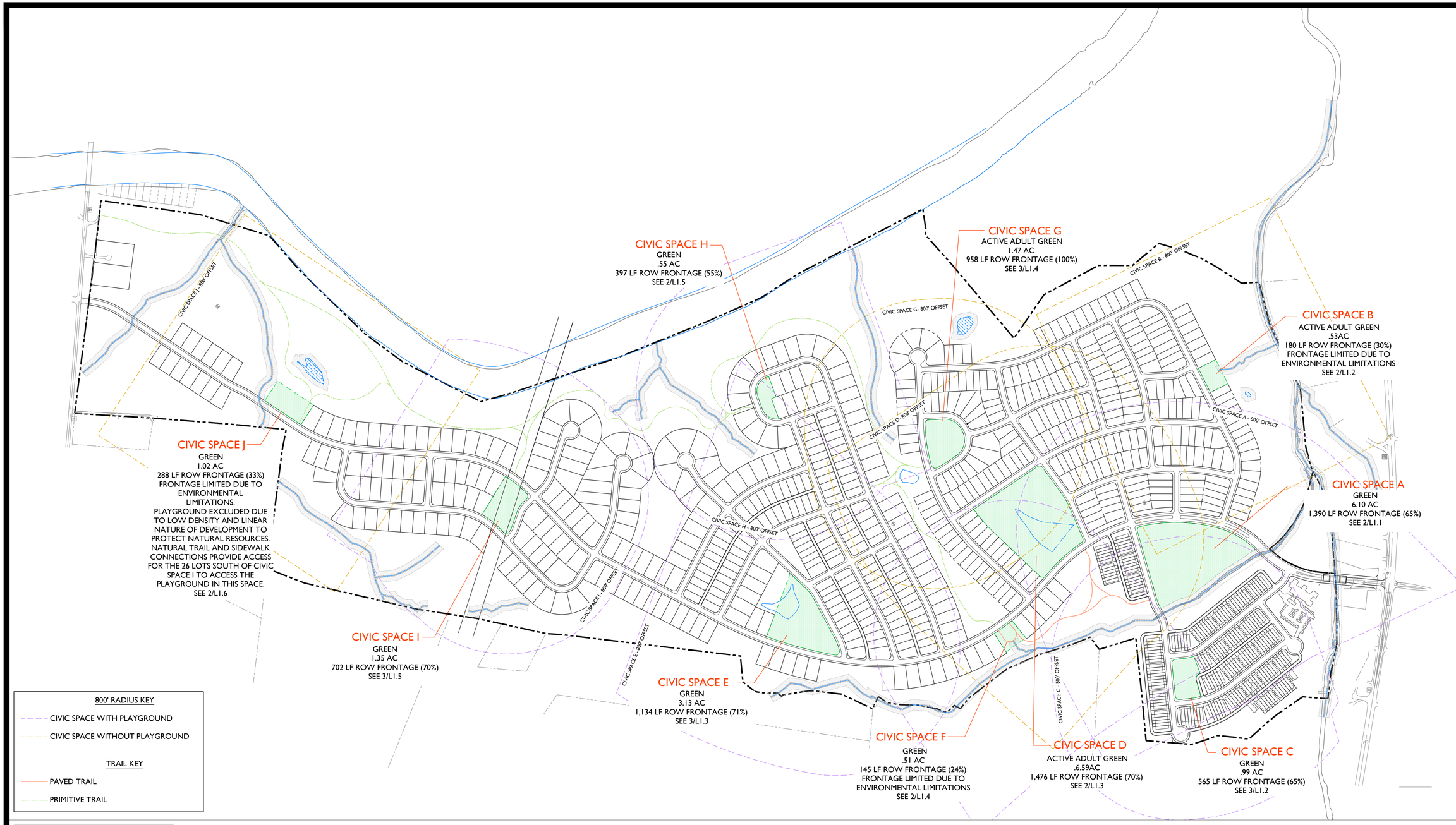
DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

N
0 100 200
SCALE: 1"= 100'

C3.04
PROJECT NO.: 21-160-01

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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.

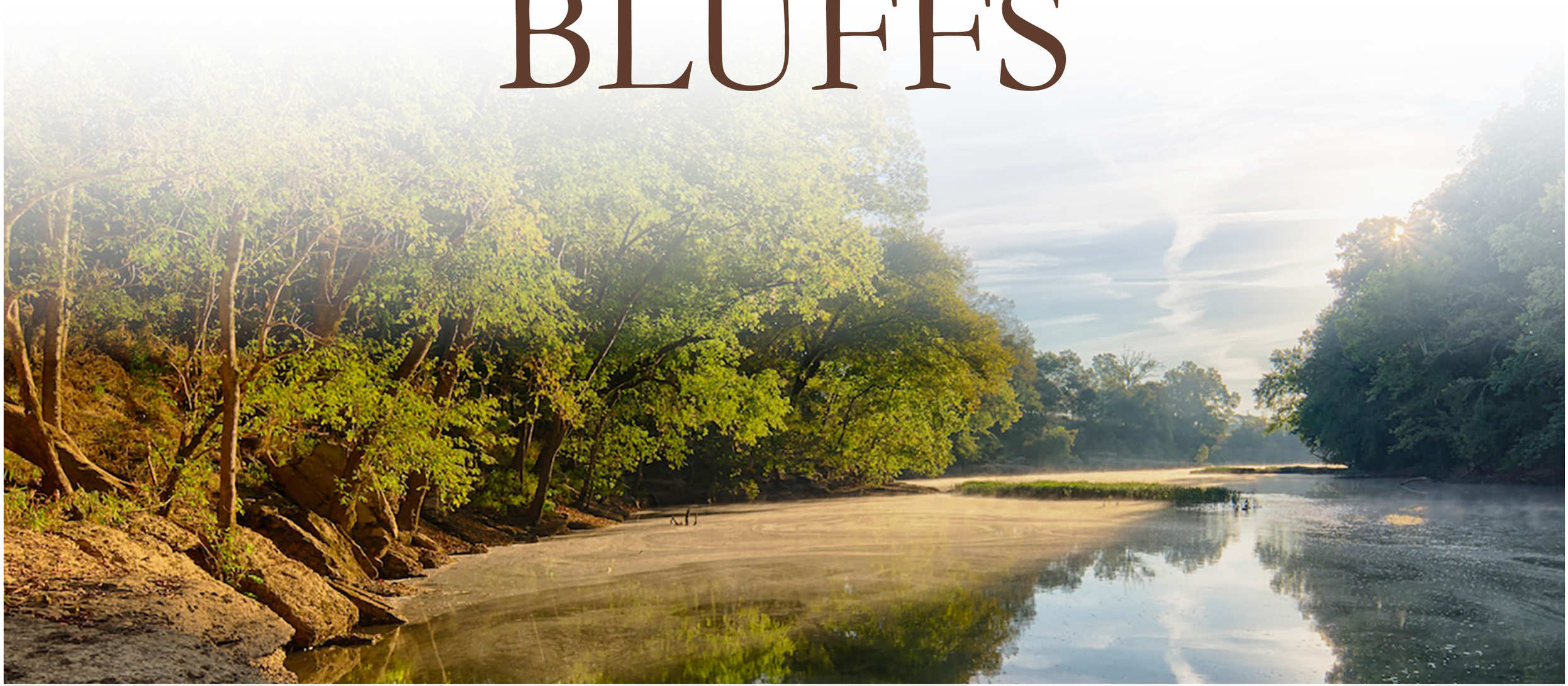
1. Reduction in ROW width from 70' to 50' provides approximately 19 acres of additional land placed into open space. (+/-41,730 LF of roadway).
2. Reduction in side setbacks from 10' to 7.5' on front loaded homes and townhomes provides approximately 6.6 acres of additional land placed into open space. (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

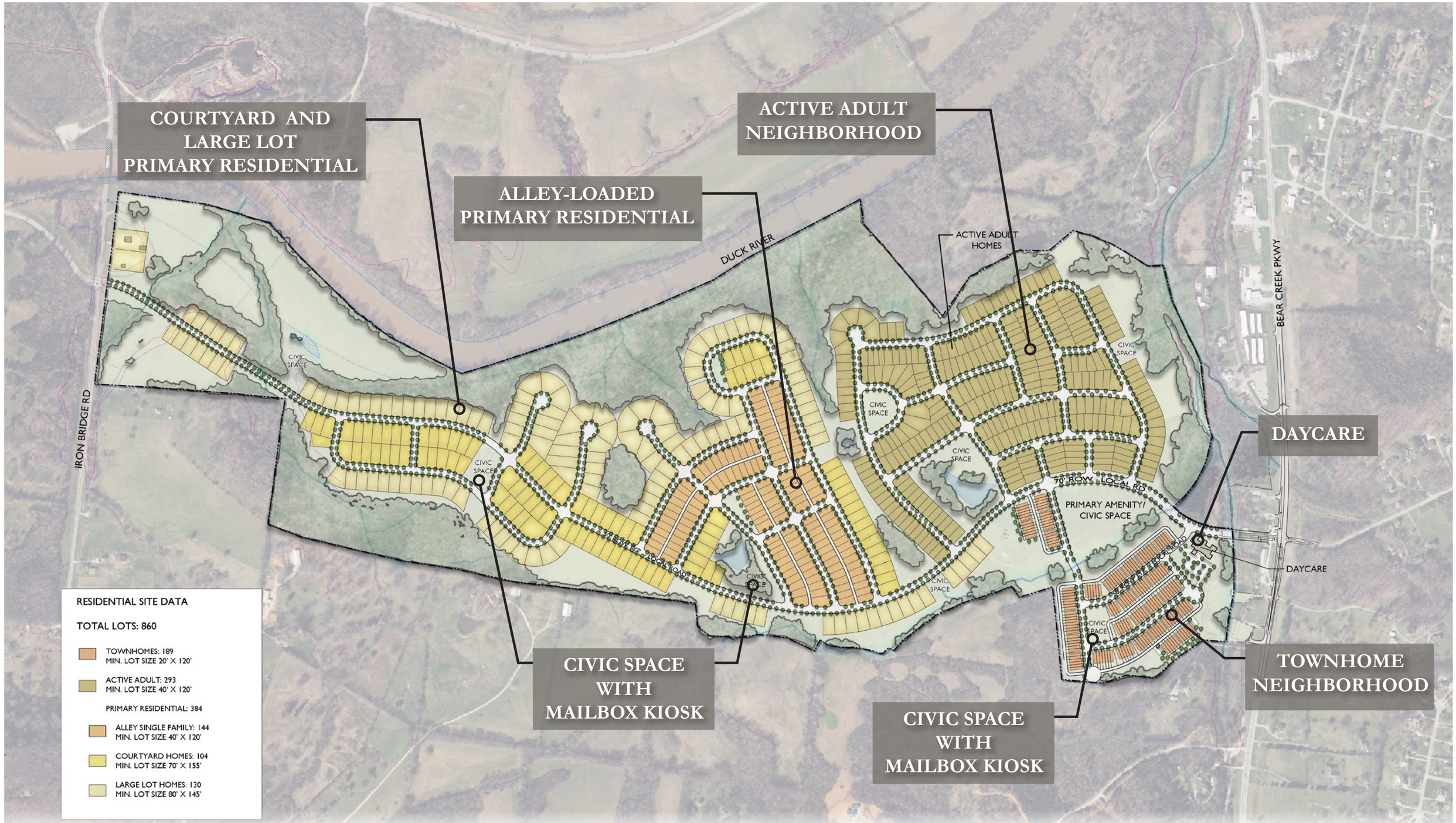
ENGINEER
JIM HARRISON
CIVIL SITE DESIGN GROUP
2305 KLINE AVENUE, SUITE 300
NASHVILLE, TN 37211

LANDSCAPE ARCHITECT
GREG GAMBLE
GAMBLE DESIGN COLLABORATIVE
3020 STANSBERRY LANE, SUITE 201
FRANKLIN, TN 37069

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3. DEVELOPMENT PLAN
4. ARCHITECTURAL DESIGN GUIDELINES
5. FACADE VARIETY
6. ACTIVE ADULT NEIGHBORHOOD
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



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

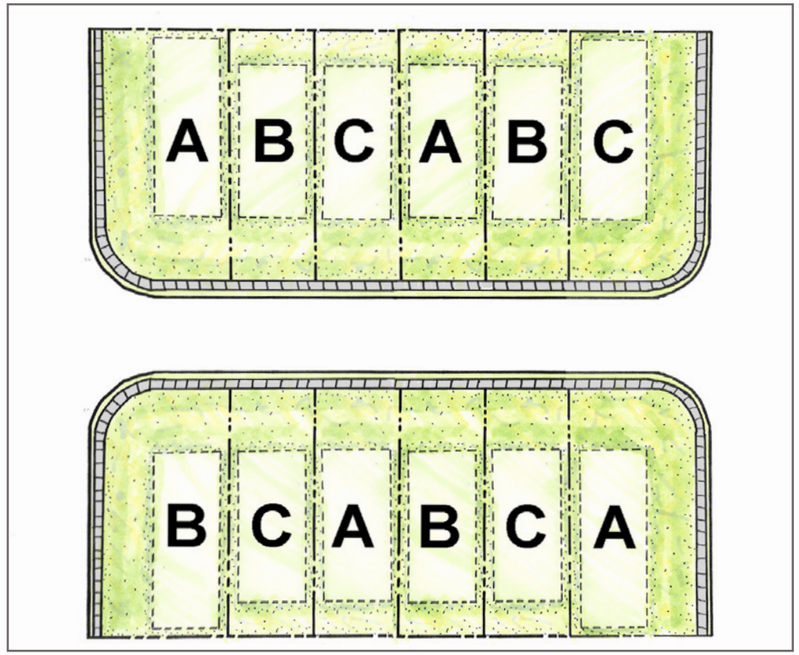








IMAGE OF HOMES REPRESENT AN EXAMPLE OF FACADE VARIETY ALONG SAME STREET. FINAL SELECTION OF MATERIALS AND STYLES TO BE APPROVED AT FMDP.



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













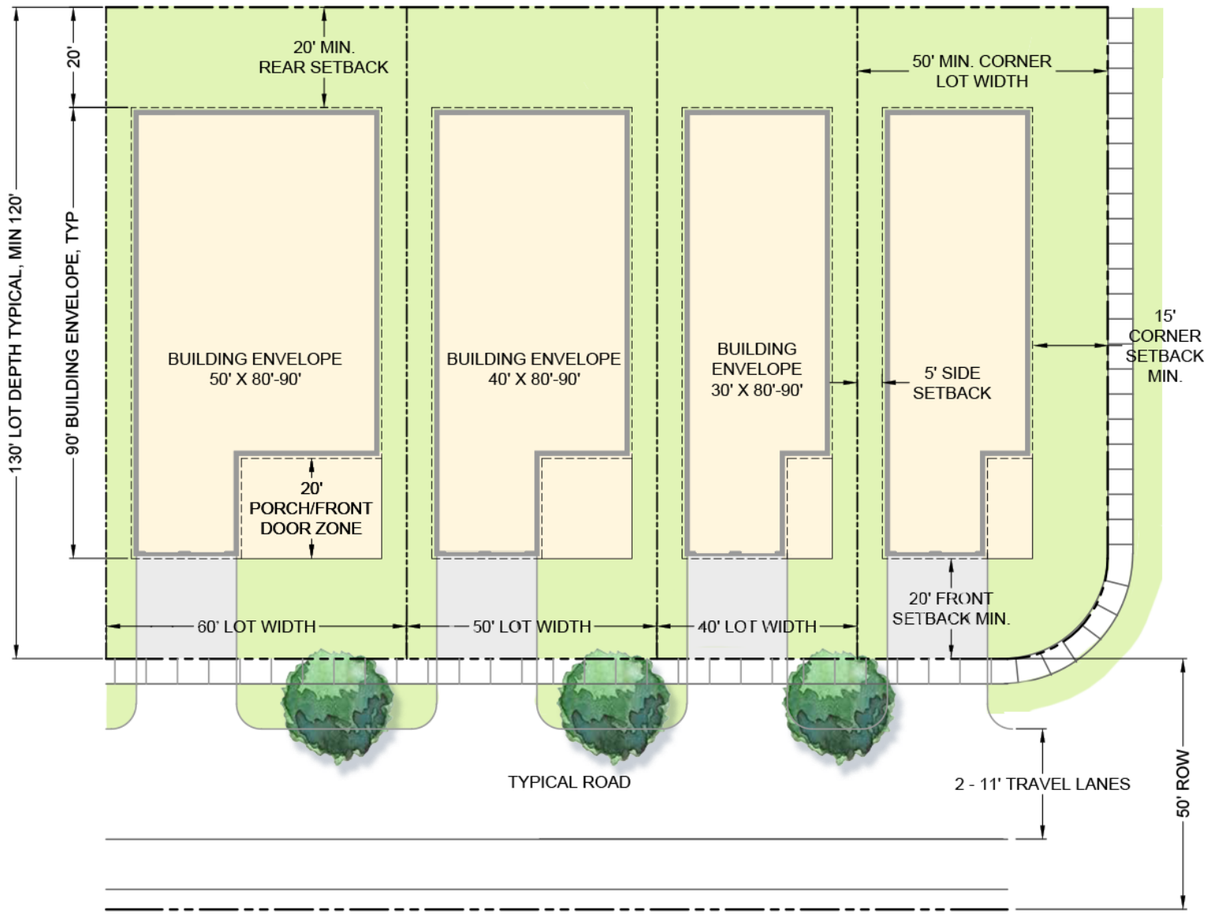






ACTIVE ADULT SINGLE FAMILY

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





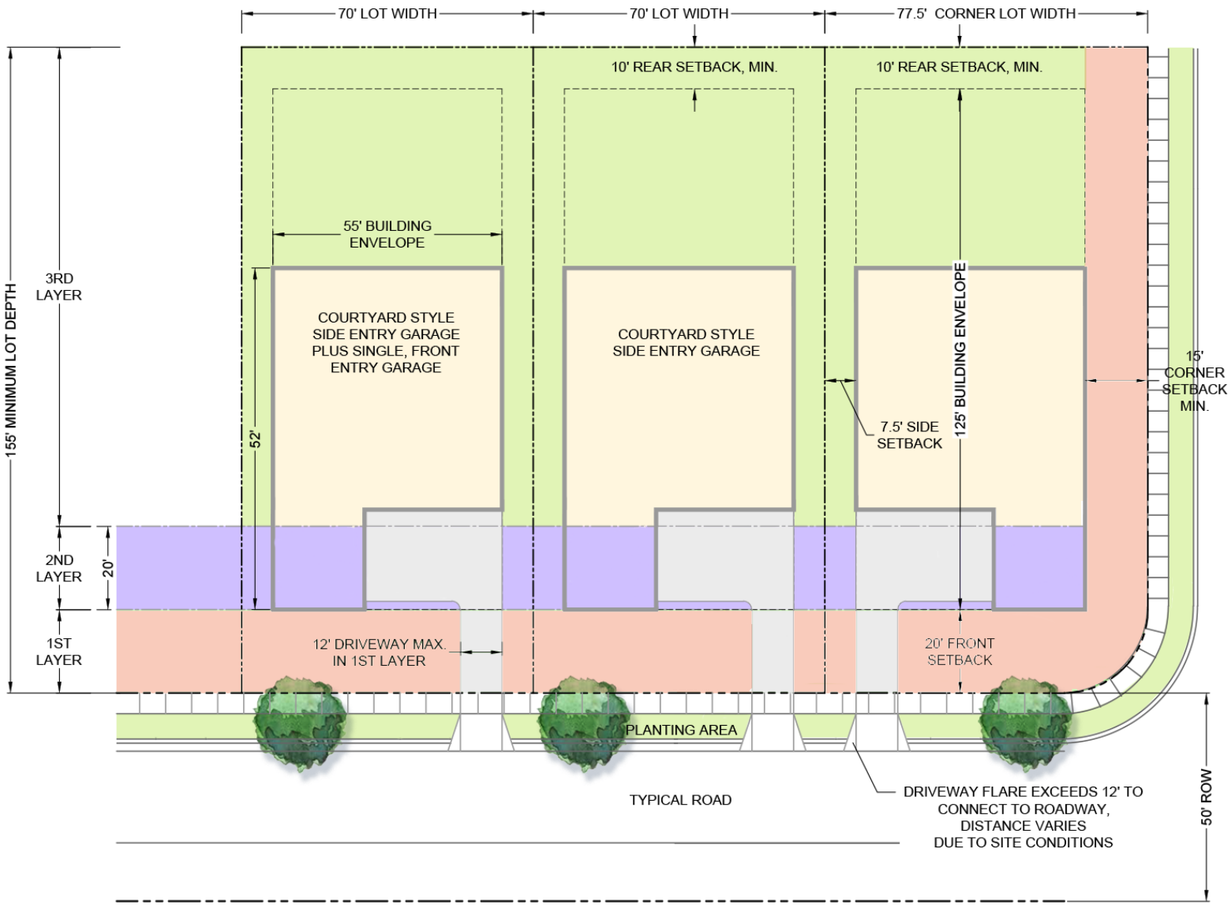







COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL

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











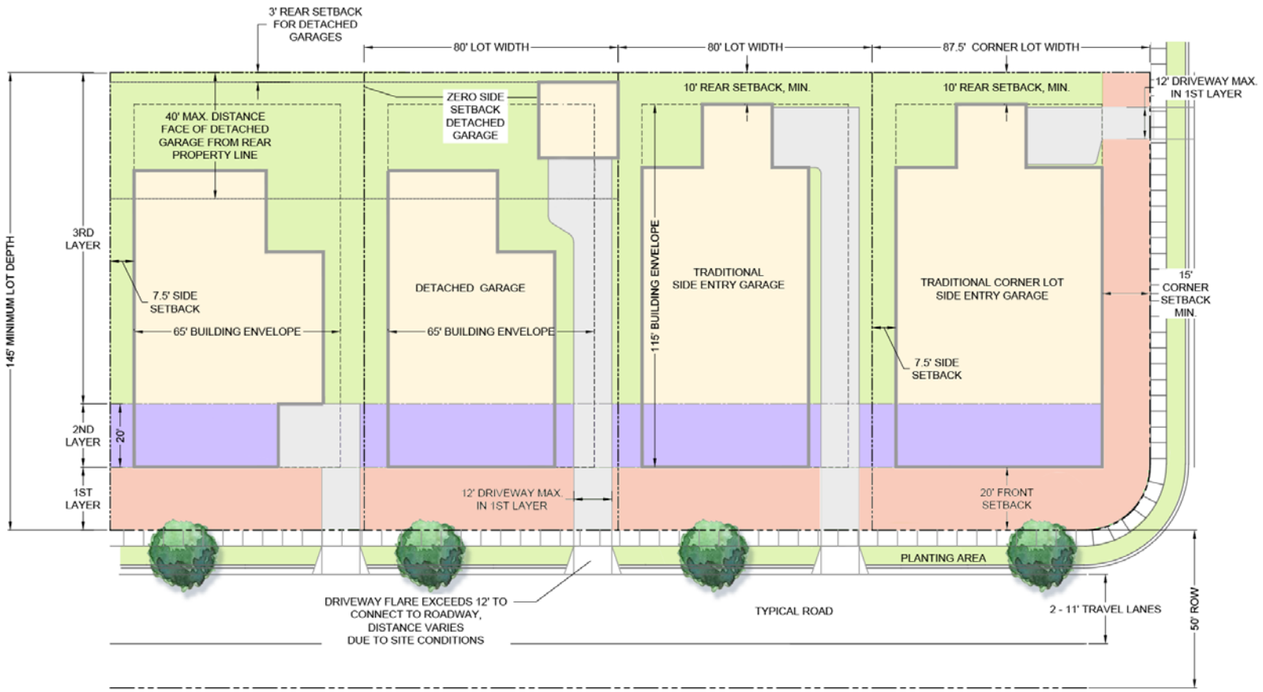







LARGE LOT HOMES

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



















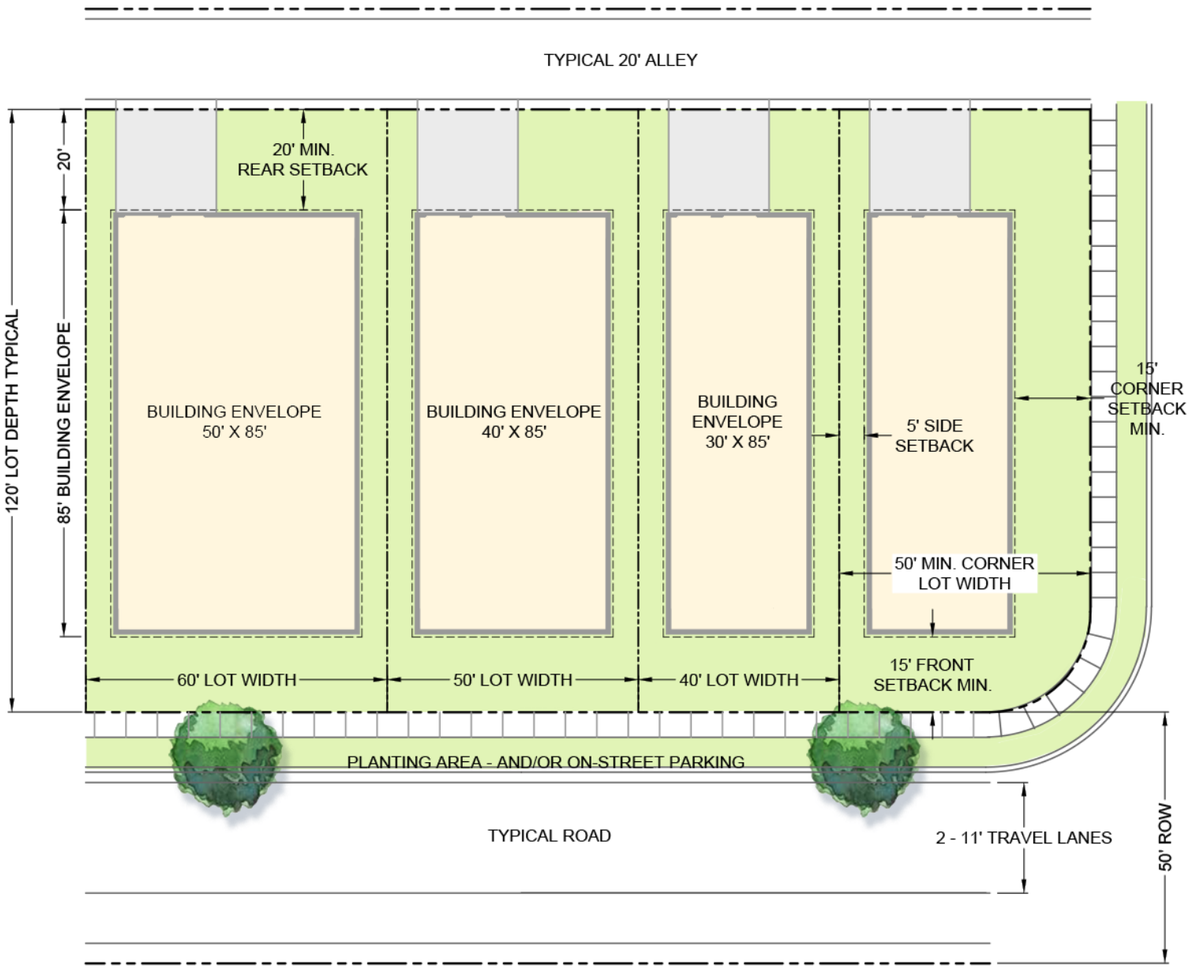







SINGLE-FAMILY ALLEY LOADED

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









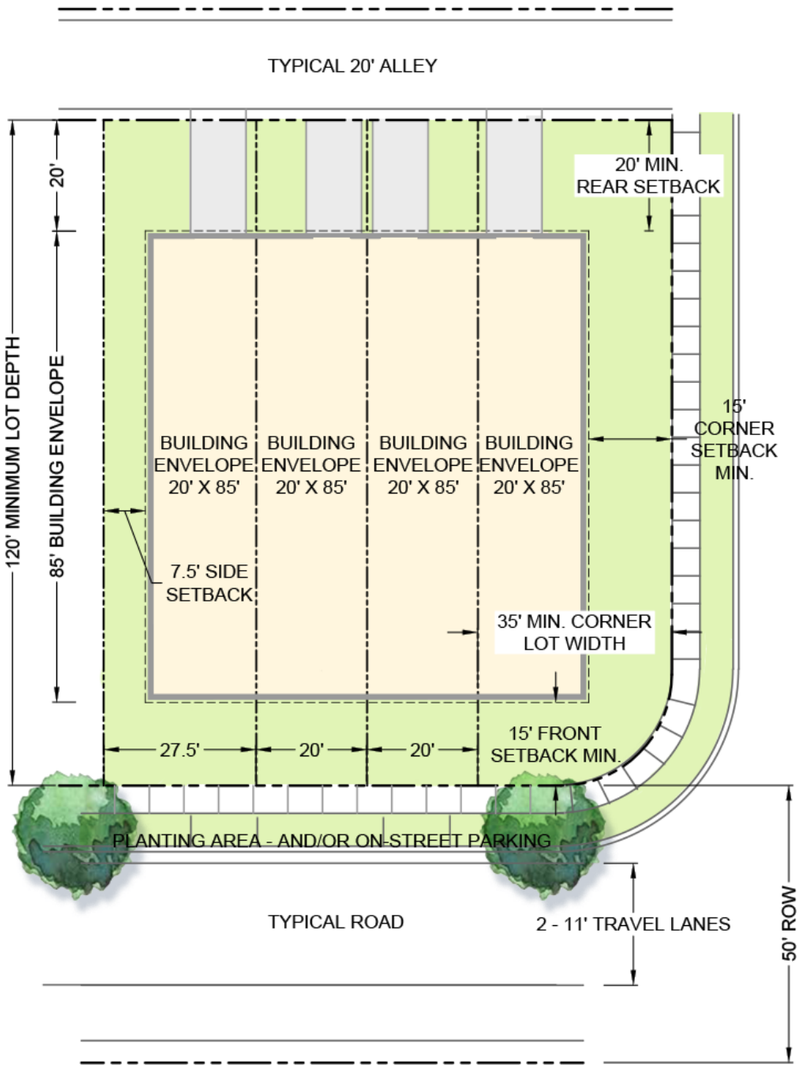


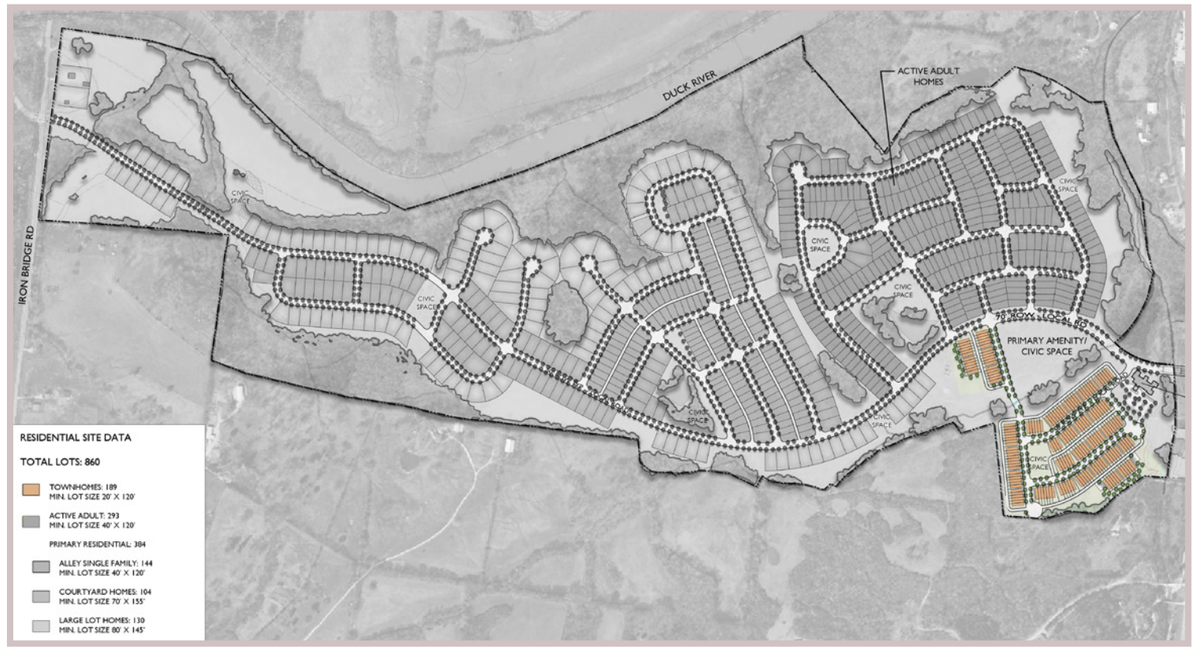






COLOR RENDERING PRESENTS AN ILLUSTRATIVE DEPICTION OF ARCHITECTURE AND LANDSCAPE MATERIAL





LOTS: 20' MINIMUM
189 HOMES

BUILDING SETBACKS:

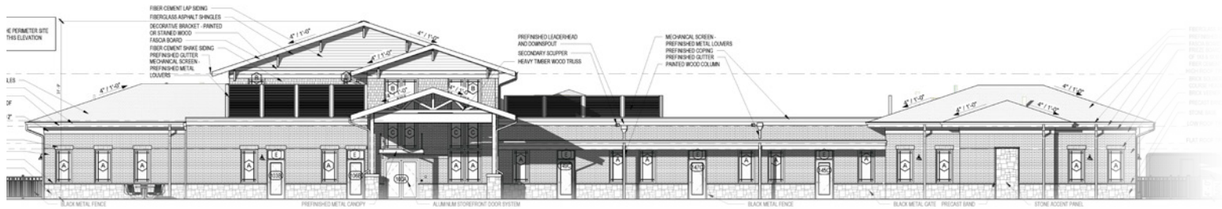
FRONT:	15'
REAR:	20'
SIDE:	7.5'
CORNER:	15'

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

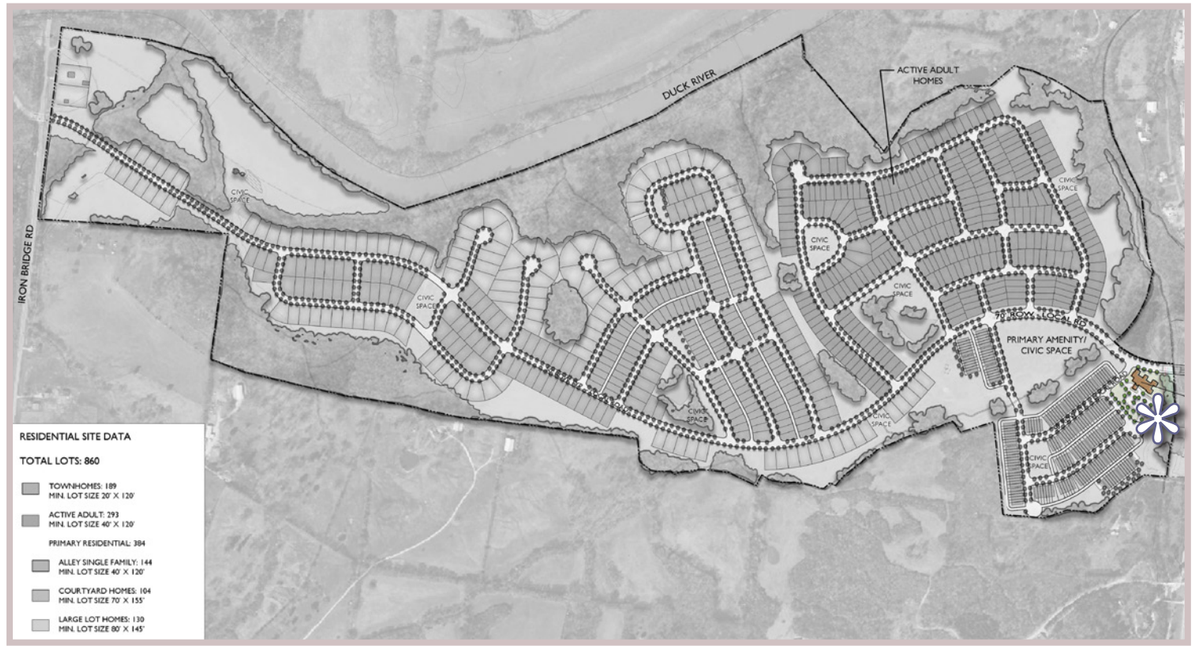


SOUTH ELEVATION



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.

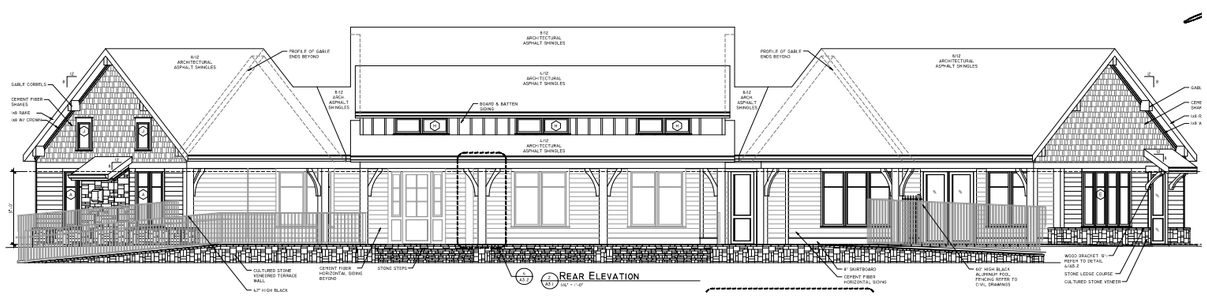
AMENITY PHOTOGRAPHS

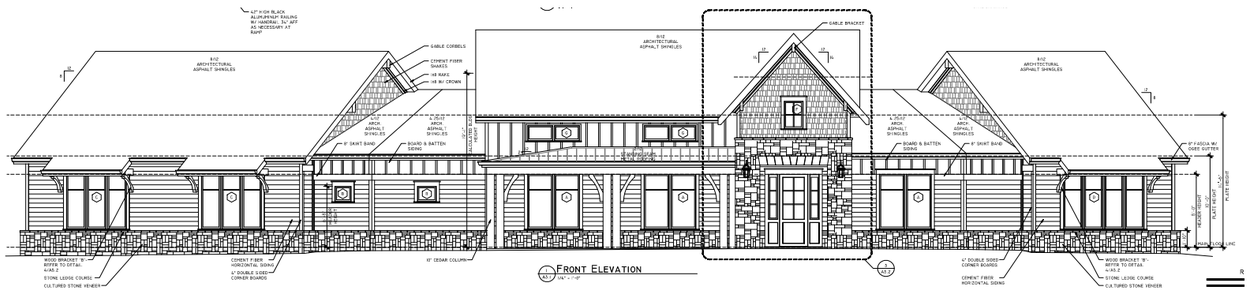




POOL AND CLUBHOUSE FROM SIMILAR KOLTER PROJECT

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.

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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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TENNESSEE

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PUD Specific Items

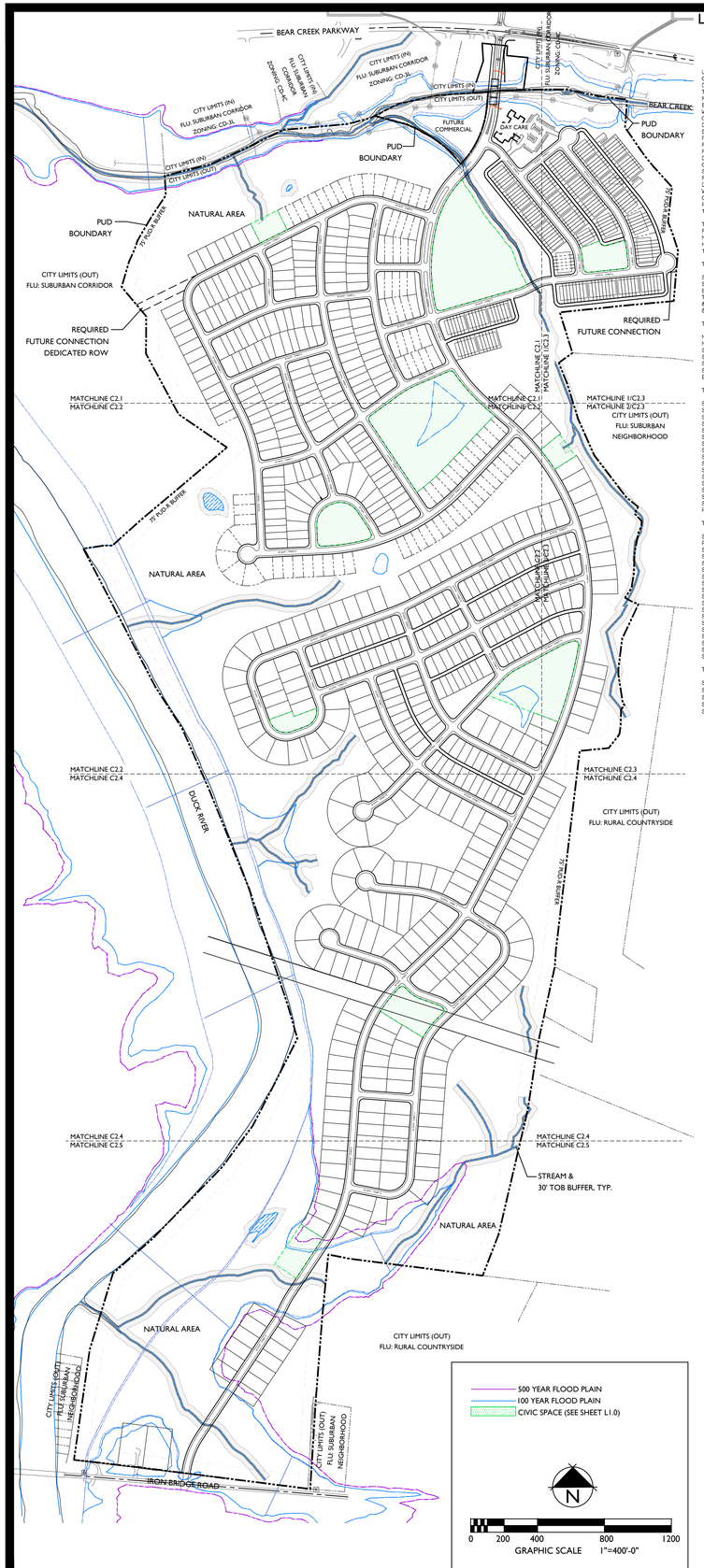
- ☑ Legal Description of Property
- ☑ Owner's Affidavit
- ☑ List of all variances requested
- ☑ The nature of the landholder's interest in the land proposed to be developed and a written statement of concurrence from all parties having a beneficial interest in the affected property.
- ☑ Location and 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, MINAXIBEN 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;

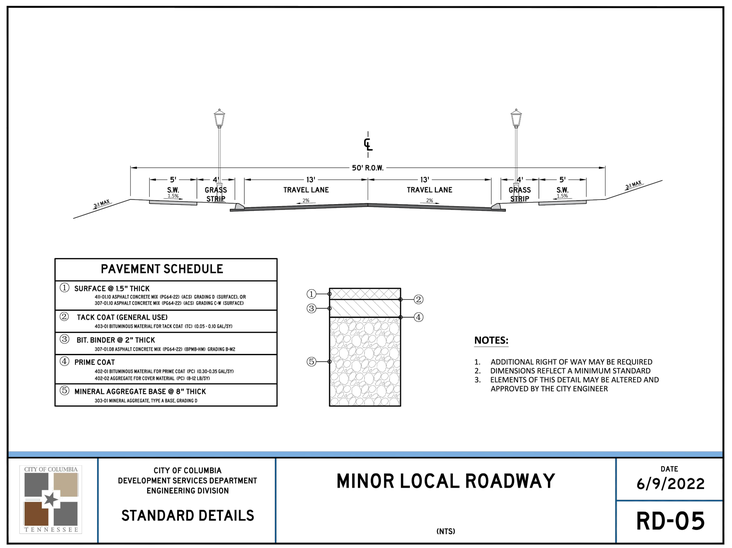
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

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
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

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

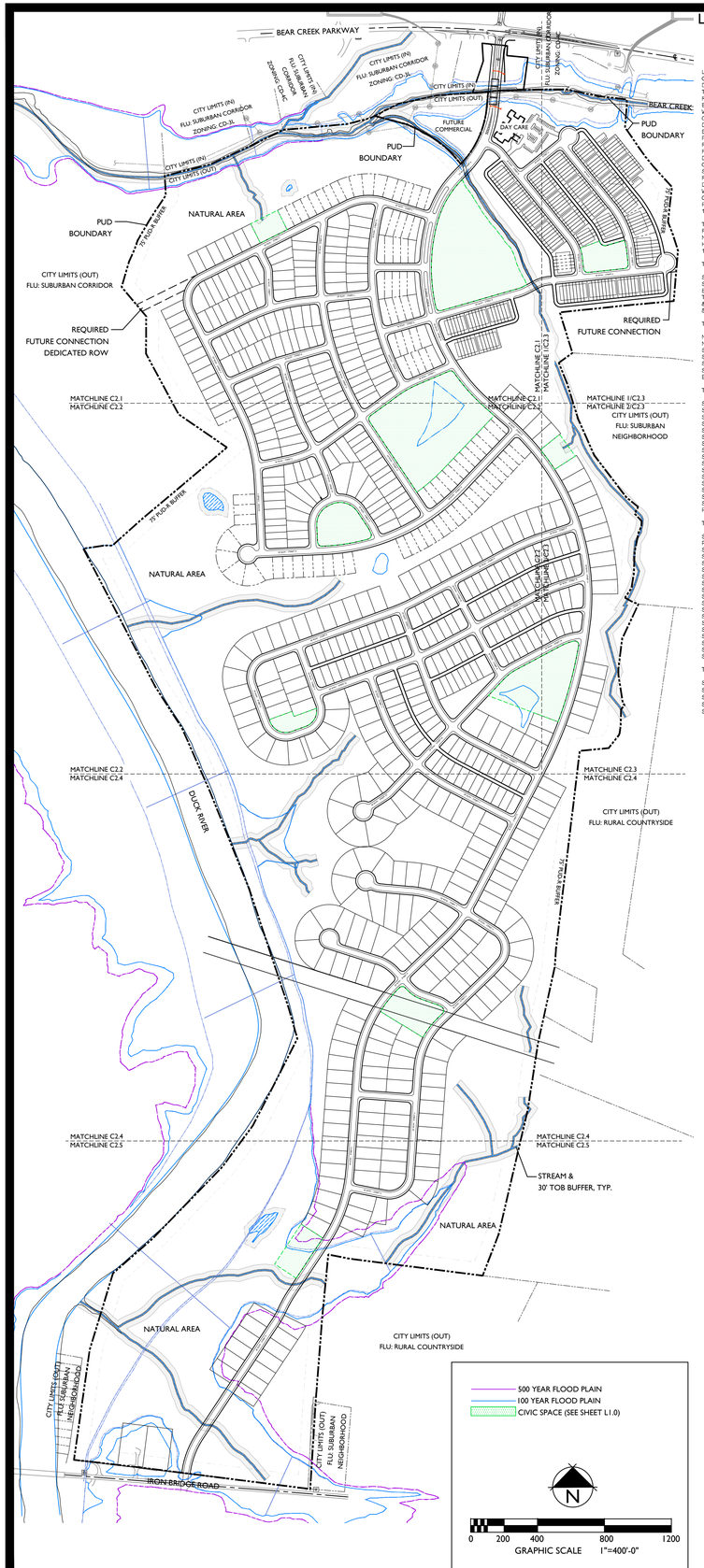
10/10/2023
DATE

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°01'43" 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;

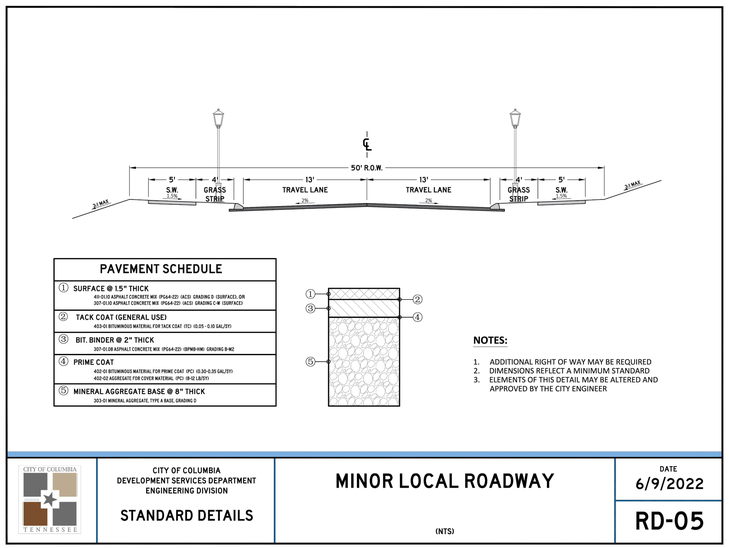
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THENCE, CREATING A NEW LINE FOR THE ANNEXATION OF 409.92 ACRES. THE FOLLOWING CALLS:

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:
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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.

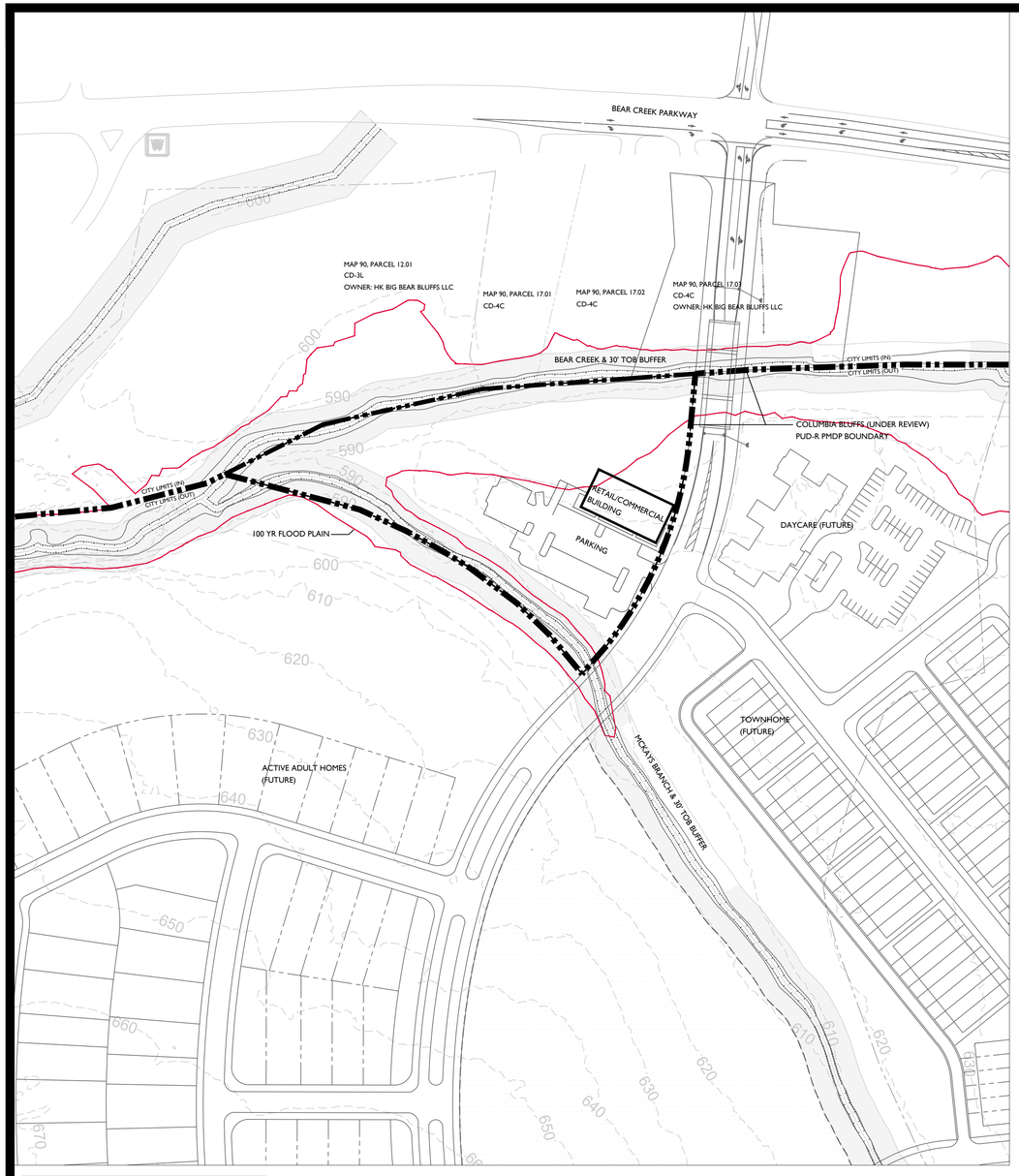
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

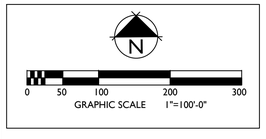
COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 1629

Date: October 16, 2023
Revision Date
△
△
△

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 (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;

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;

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N 63°11'05" E, 159.96 FEET TO A POINT;

N 77°31'07" 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.



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
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.
Response: The small commercial parcel will be a destination for nearby residents and is proposed along a new/proposed road into the Columbia Bluffs development. Sidewalk connections will link this commercial area to this residential development.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

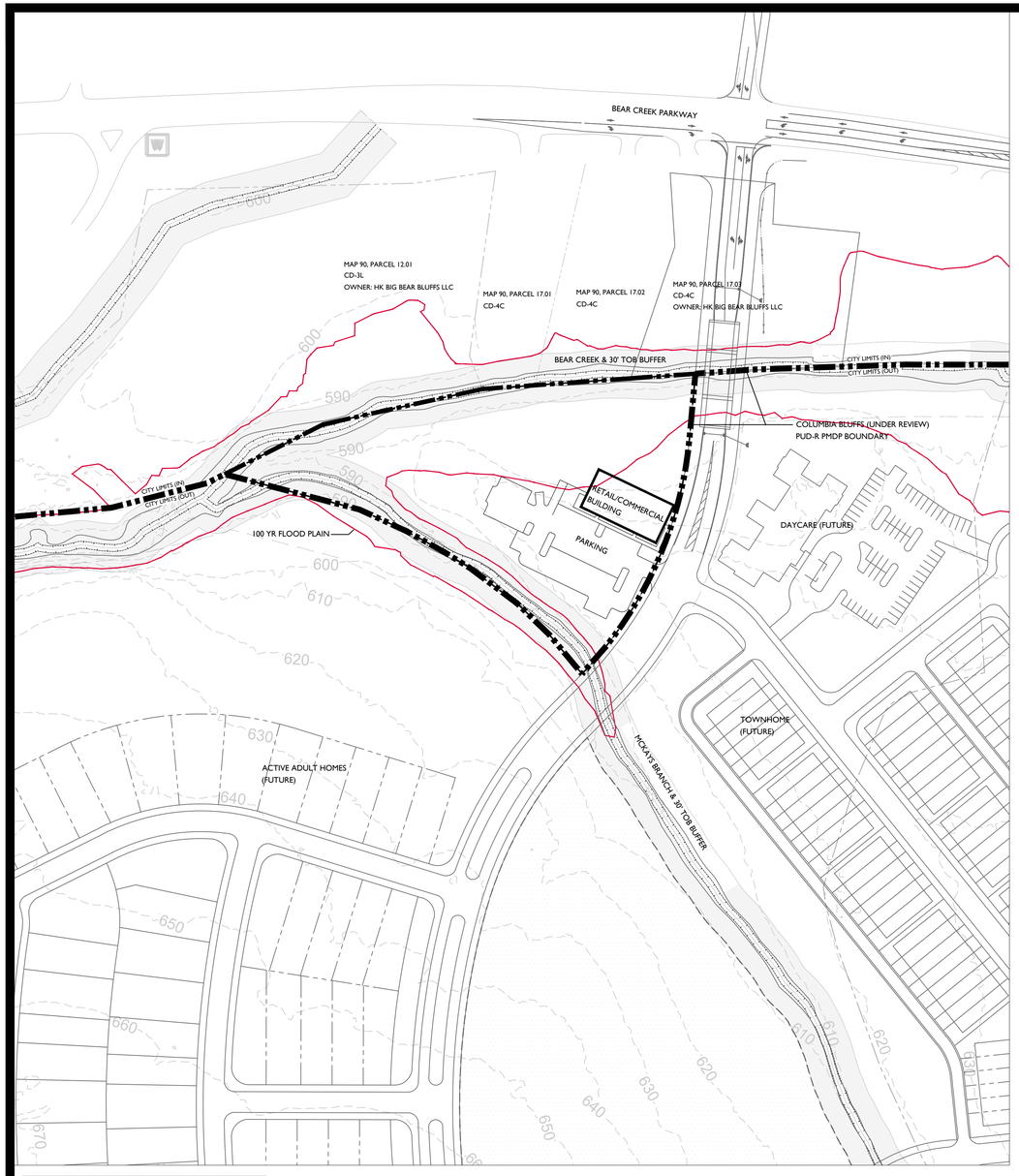
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 340 — 10.16.2023

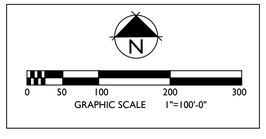
Date: OCTOBER 16, 2023

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'
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LEGAL DESCRIPTION
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DEED BOOK R2827, PAGE 587
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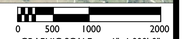
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LOCATION MAP



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:
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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

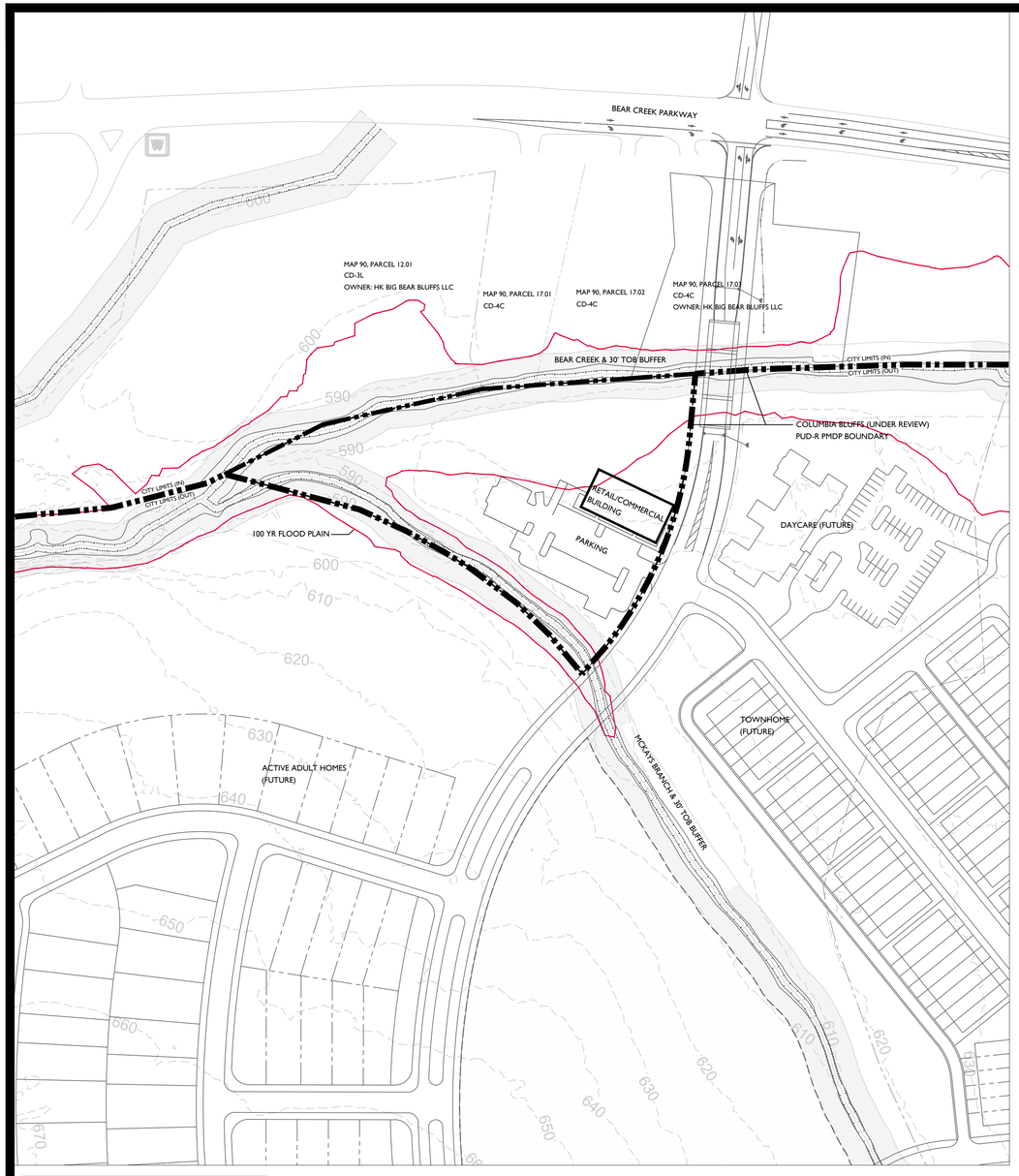
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT — 1400

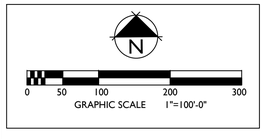
Date: OCTOBER 16, 2023

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
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N 75°17'27" W, 201.23 FEET TO A POINT WHERE MCKAY BRANCH CREEK INTERSECTS WITH BEAR CREEK;

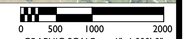
THENCE, ALONG BEAR CREEK, THE FOLLOWING 2 CALLS:

N 63°11'05" E, 159.96 FEET TO A POINT;

N 77°31'07" 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.



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.
Response: The small commercial parcel will be a destination for nearby residents and is proposed along a new/proposed road into the Columbia Bluffs development. Sidewalk connections will link this commercial area to this residential development.

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 — No. 1302

Date: OCTOBER 16, 2023

Revision Date
△
△
△

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

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 (R2878, 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°01'16" 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 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:

N 39°46'13" W, 73.31 FEET TO A POINT;

N 45°49'08" W, 65.41 FEET TO A POINT;

N 53°12'54" W, 86.37 FEET TO A POINT;

N 58°09'42" W, 42.46 FEET TO A POINT;

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:

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

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

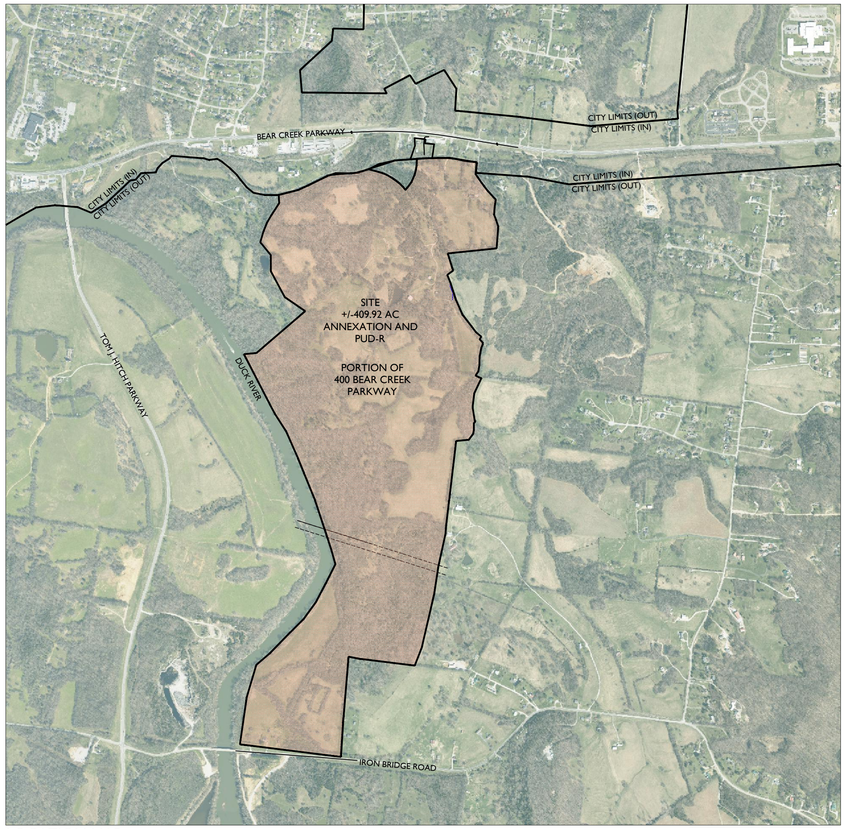
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

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

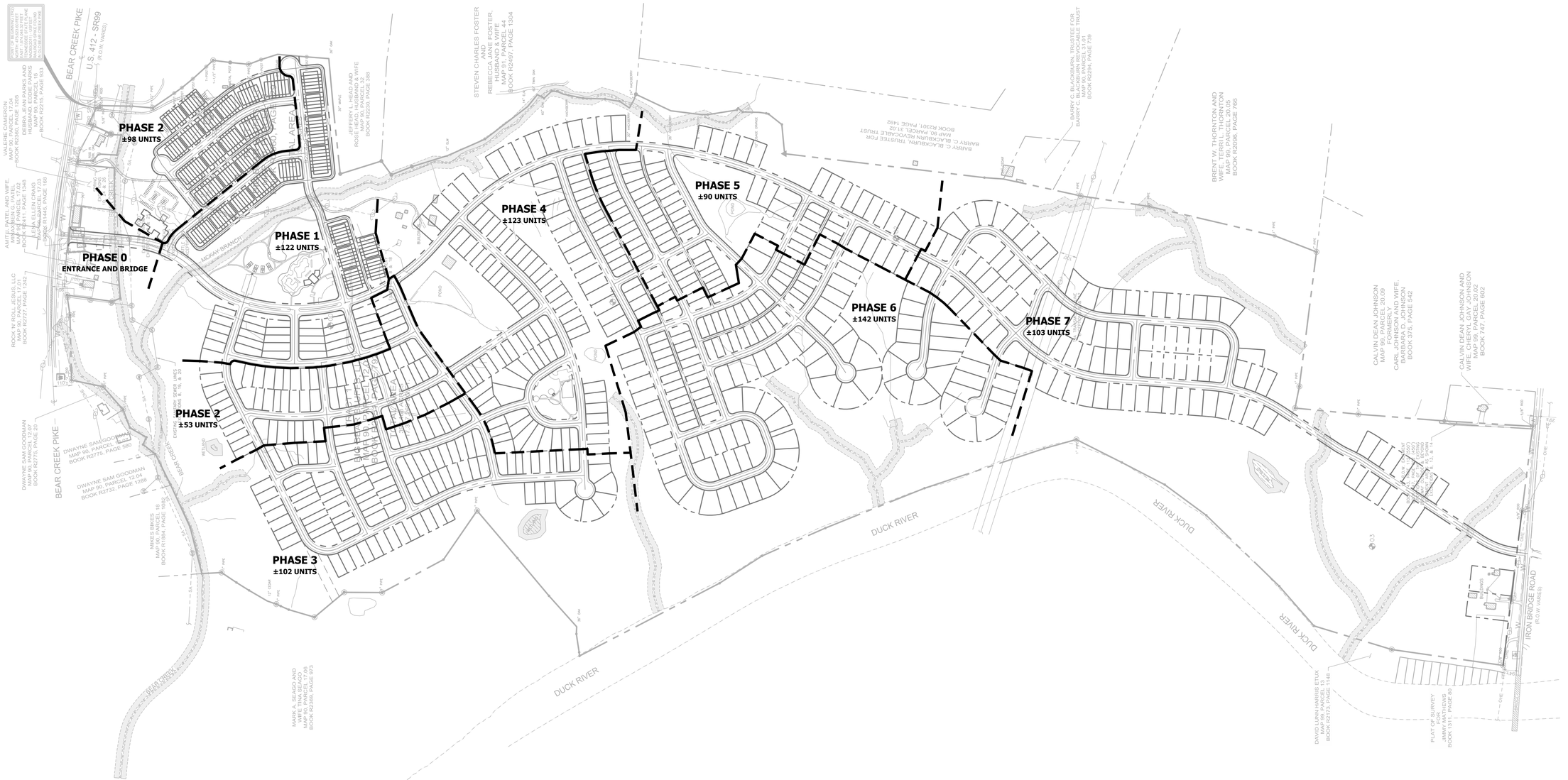
DRAWN BY: TWG
CHECKED BY: TWG

EXISTING CONDITIONS PLAN

C0.01

PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:00pm T:\CADD\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



COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL
ISSUE DATE: 10/16/2023

REVISION HISTORY:

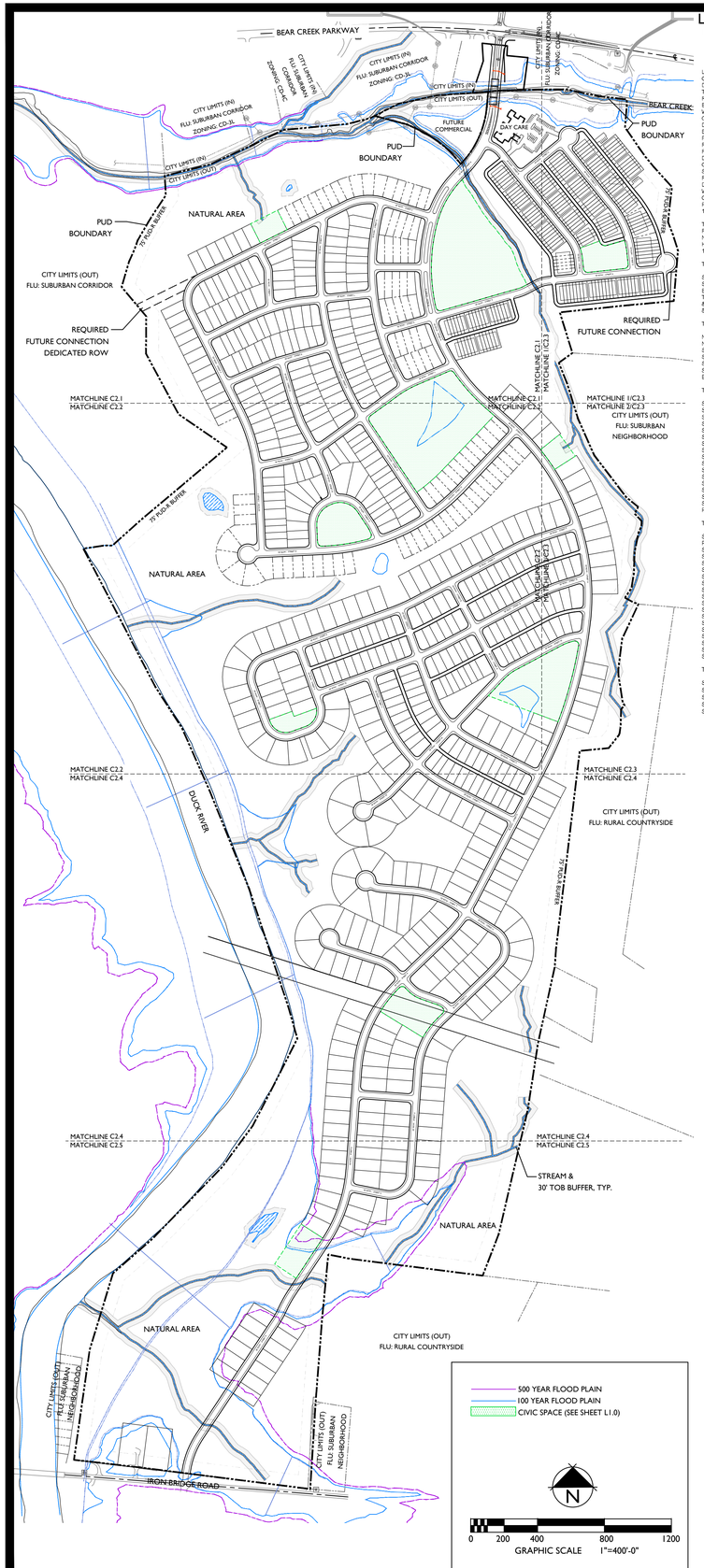
Rev.	Description	Date
1	Initial Submittal	10/16/23

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, MINAXIBEN 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 R2113, 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 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;

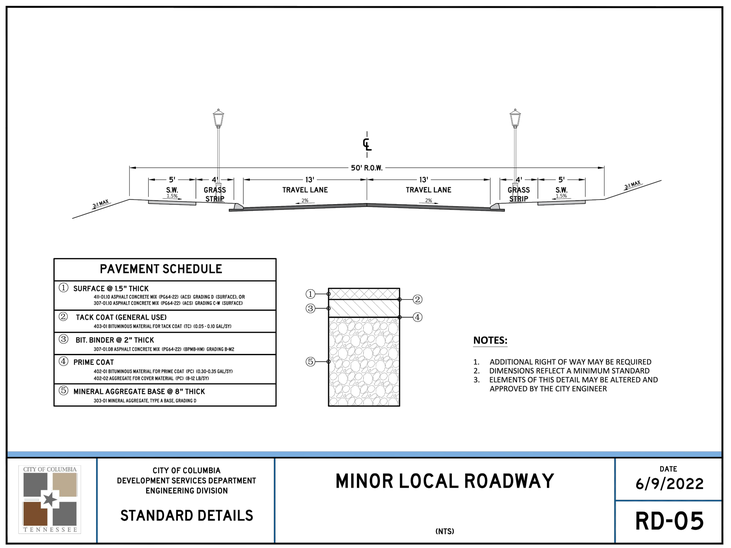
THENCE, ALONG SOUTH BOUNDARY OF GOODMAN, N 63°42'14" E, 199.86 FEET TO A POINT;

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.

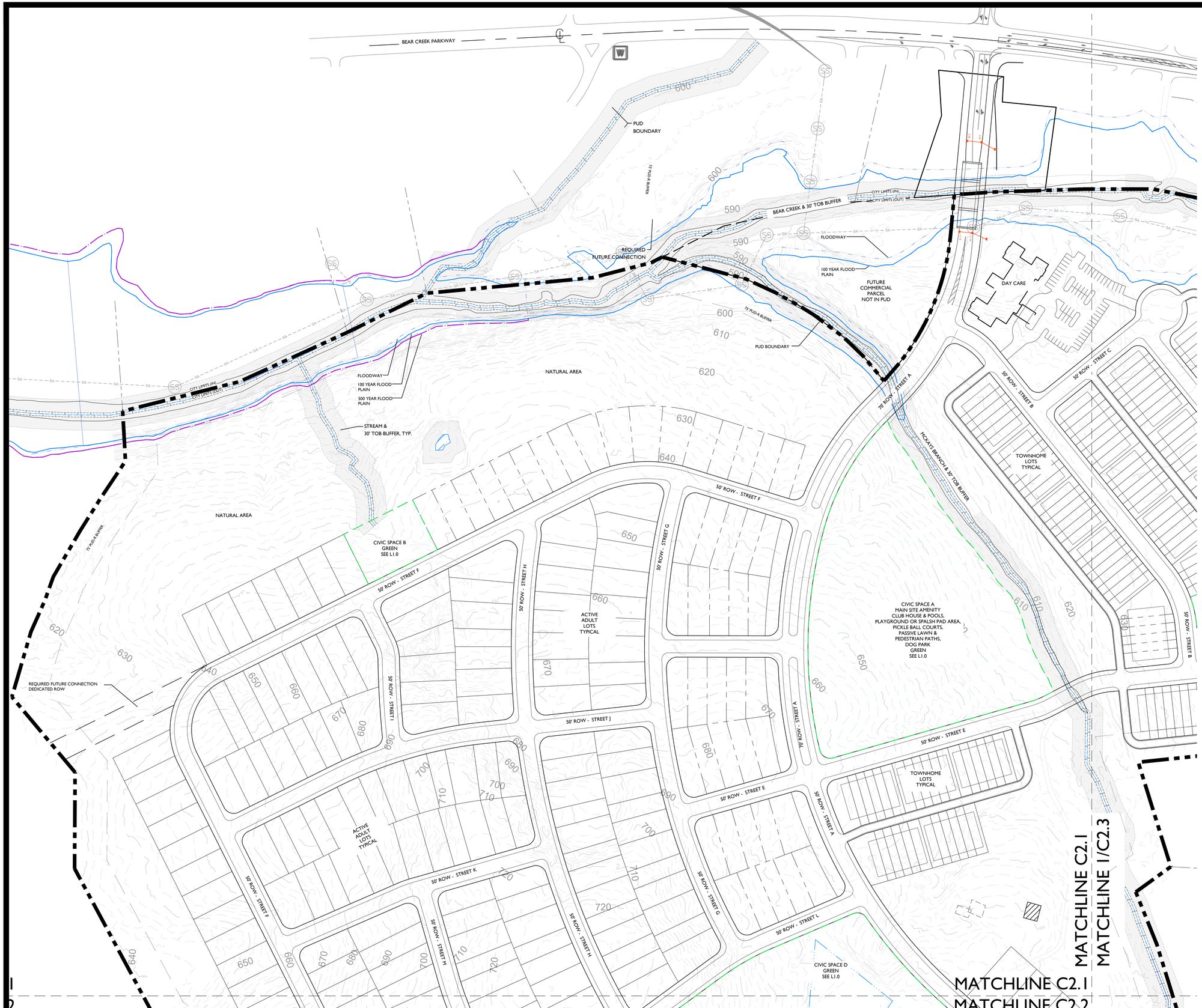
GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
REGISTERED
LANDSCAPE ARCHITECT
LA001623

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
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TENNESSEE
10/16/23

Date: October 16, 2023

Revision Date
△
△
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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 M

50' ROW - STREET H

50' ROW - STREET F

50' ROW - STREET N

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

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
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GREGORY C. GAMBLE
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REGISTERED
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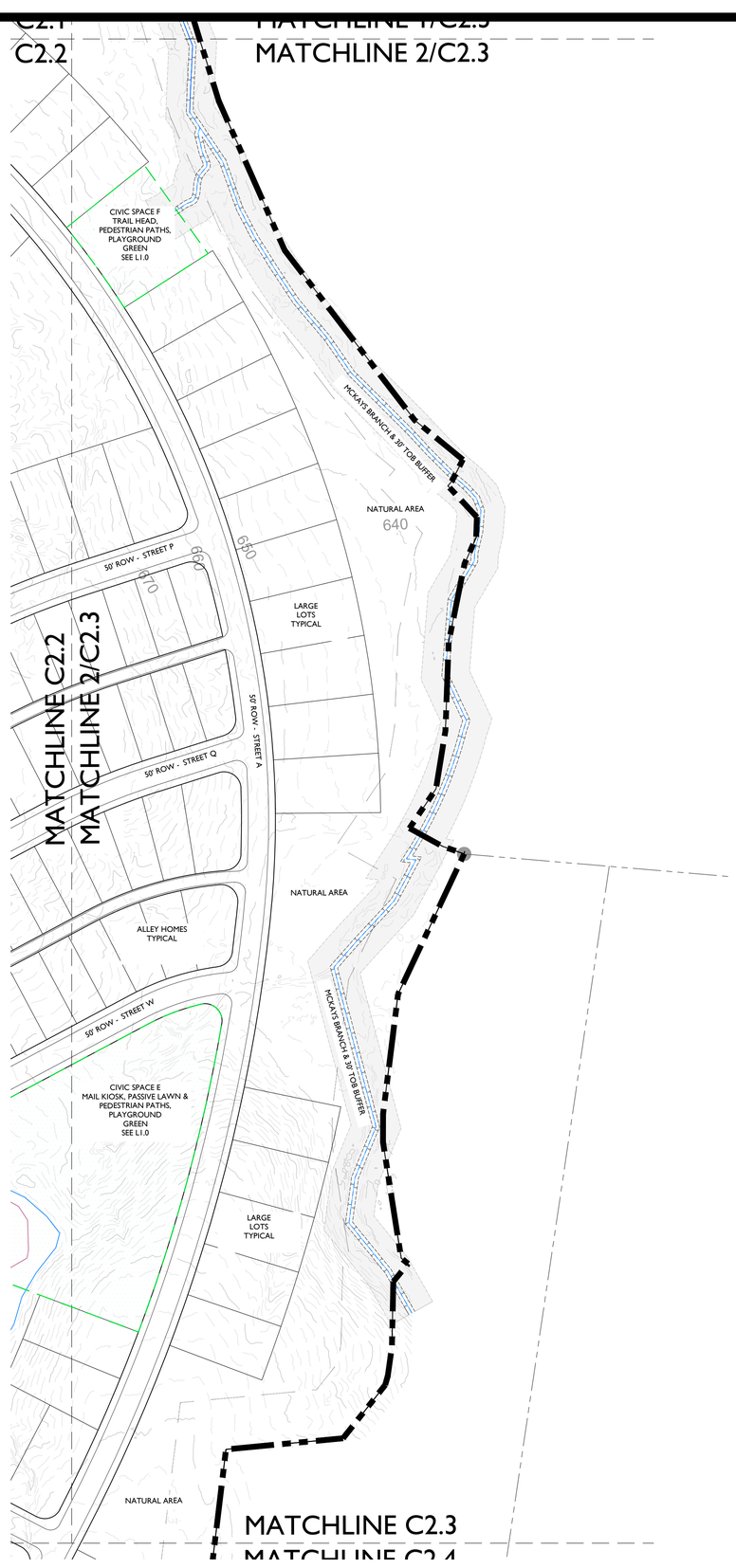
Date: October 16, 2023

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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
No. 1016328

Date: October 16, 2023

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OVERALL CONCEPT DEVELOPMENT PLAN

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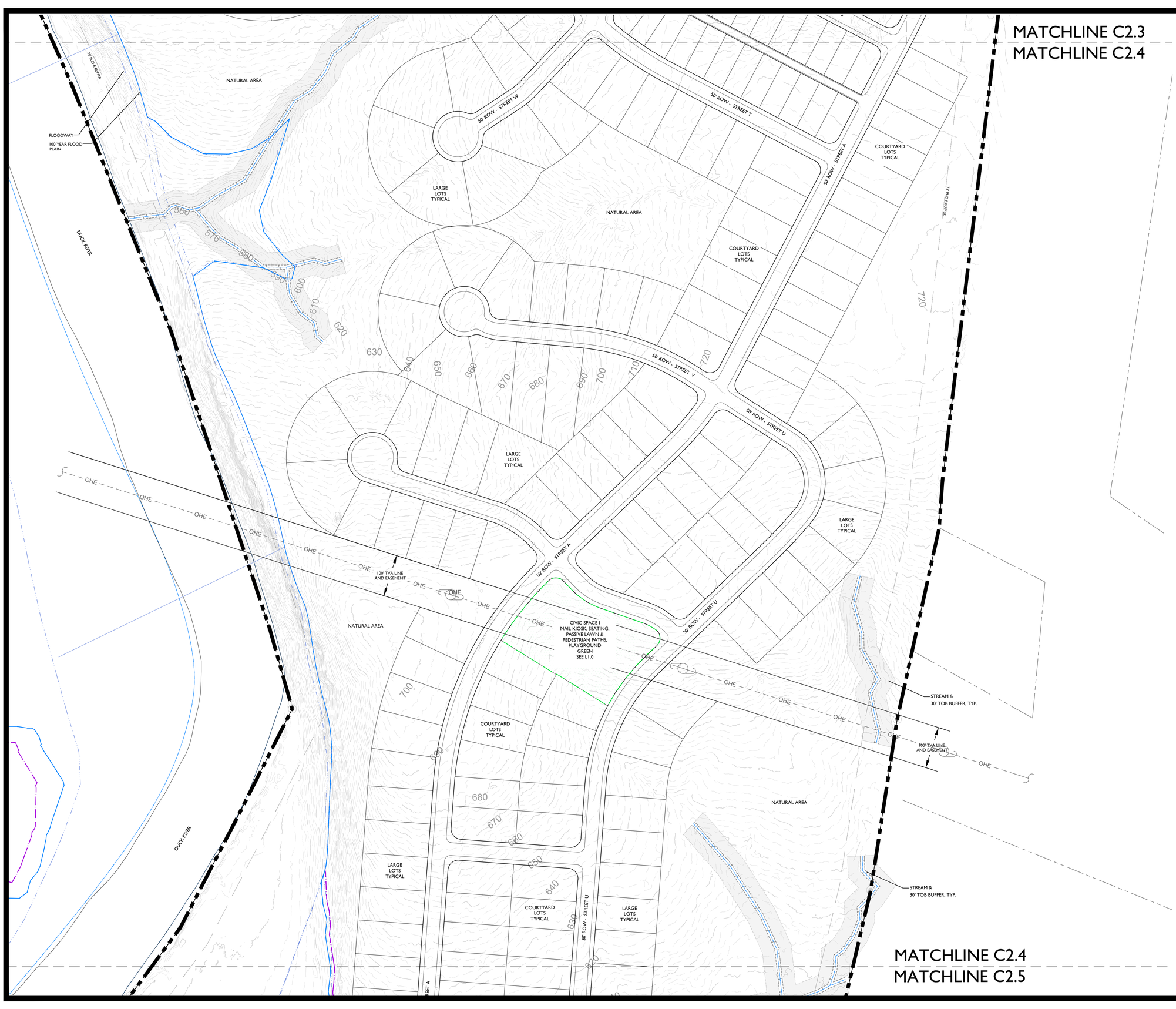
GRAPHIC SCALE 1"=100'-0"

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"

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COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

GREGORY C. GAMBLE
TENNESSEE REGISTERED LANDSCAPE ARCHITECT
LA001623

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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"

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DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
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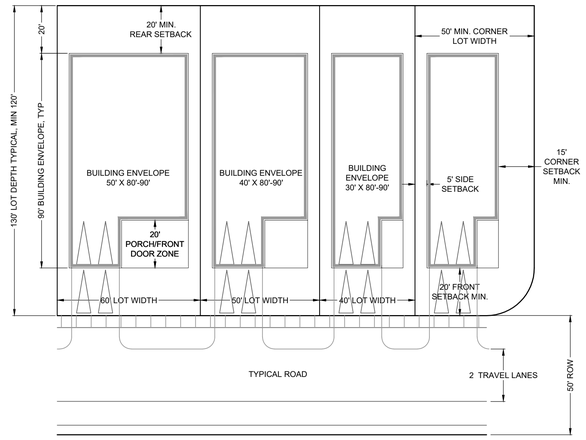
GREGORY C. GAMBLE
REGISTERED LANDSCAPE ARCHITECT
TENNESSEE
10/16/23

Date: October 16, 2023
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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'

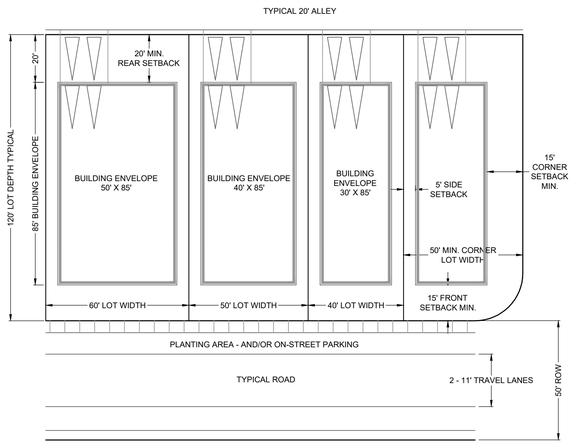
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 5'
SIDE : 5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 20' MIN.	DRIVEWAY TO BE 18' WIDE IN FIRST LAYER



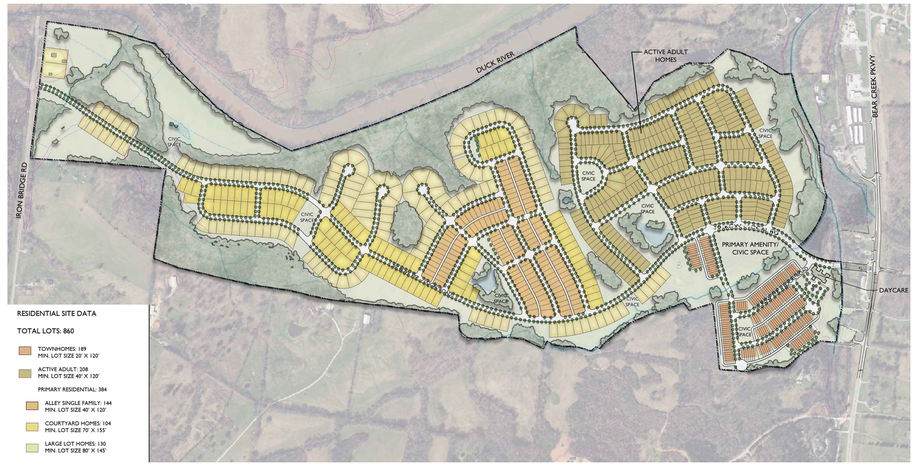
1 C2.6 ACTIVE ADULT LOT DIAGRAM N.T.S

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.	



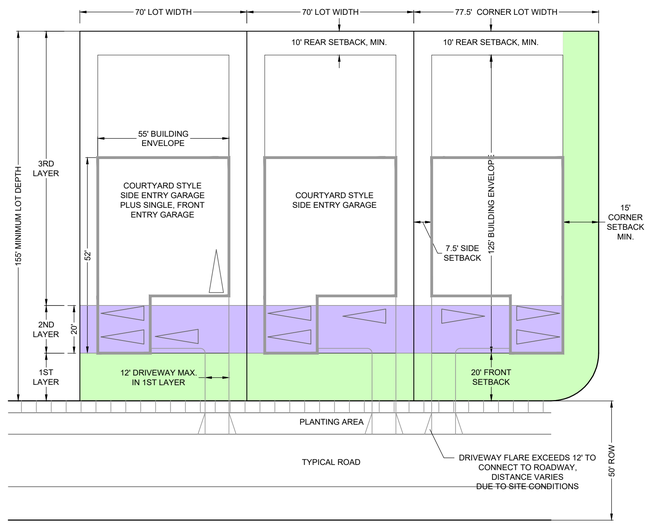
2 C2.6 SINGLE-FAMILY ALLEY LOT DIAGRAM N.T.S



3 C2.6 KEY MAP N.T.S

PRIMARY RESIDENTIAL COURTYARD SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 70' MIN. X 155'

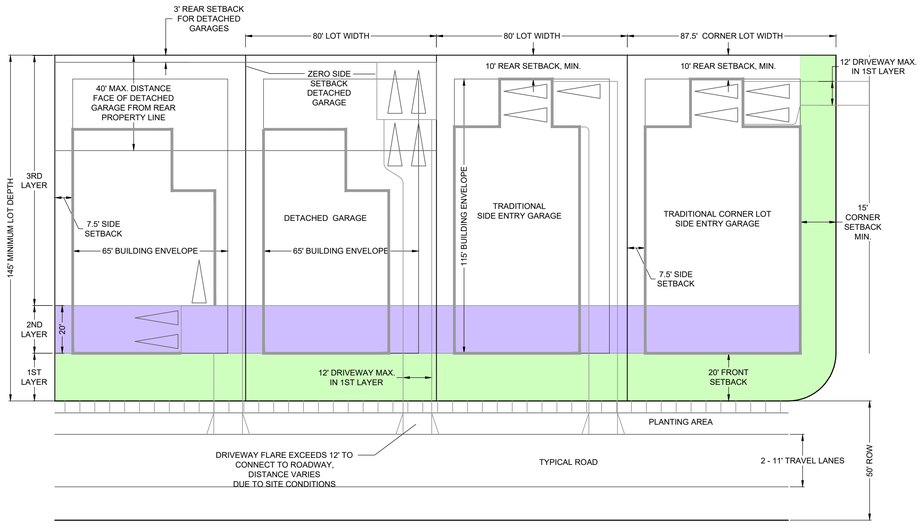
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



4 C2.6 COURTYARD HOME LOT DIAGRAM N.T.S

PRIMARY RESIDENTIAL LARGE LOT SINGLE-FAMILY HOMES
TYPICAL LOT DIMENSIONS 80' MIN. X 145'

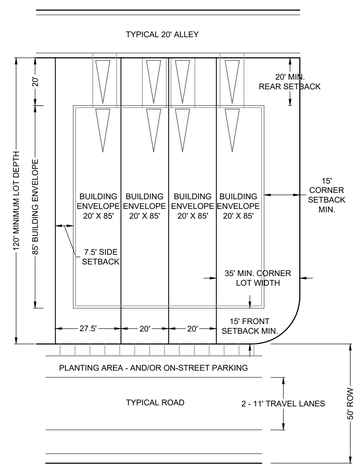
SETBACKS:	MODIFICATION REQUESTS:
FRONT: 20' MIN.	REDUCTION IN SIDE SETBACK FROM 10' TO 7.5'
SIDE : 7.5' MIN.	GARAGE LOCATED IN 2ND LAYER
CORNER: 15' MIN.	DOUBLE CAR GARAGE DOORS ALLOWED; MAXIMUM WIDTH 16'
REAR: 10' MIN.	DRIVEWAY TO BE 12' WIDE IN FIRST LAYER



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

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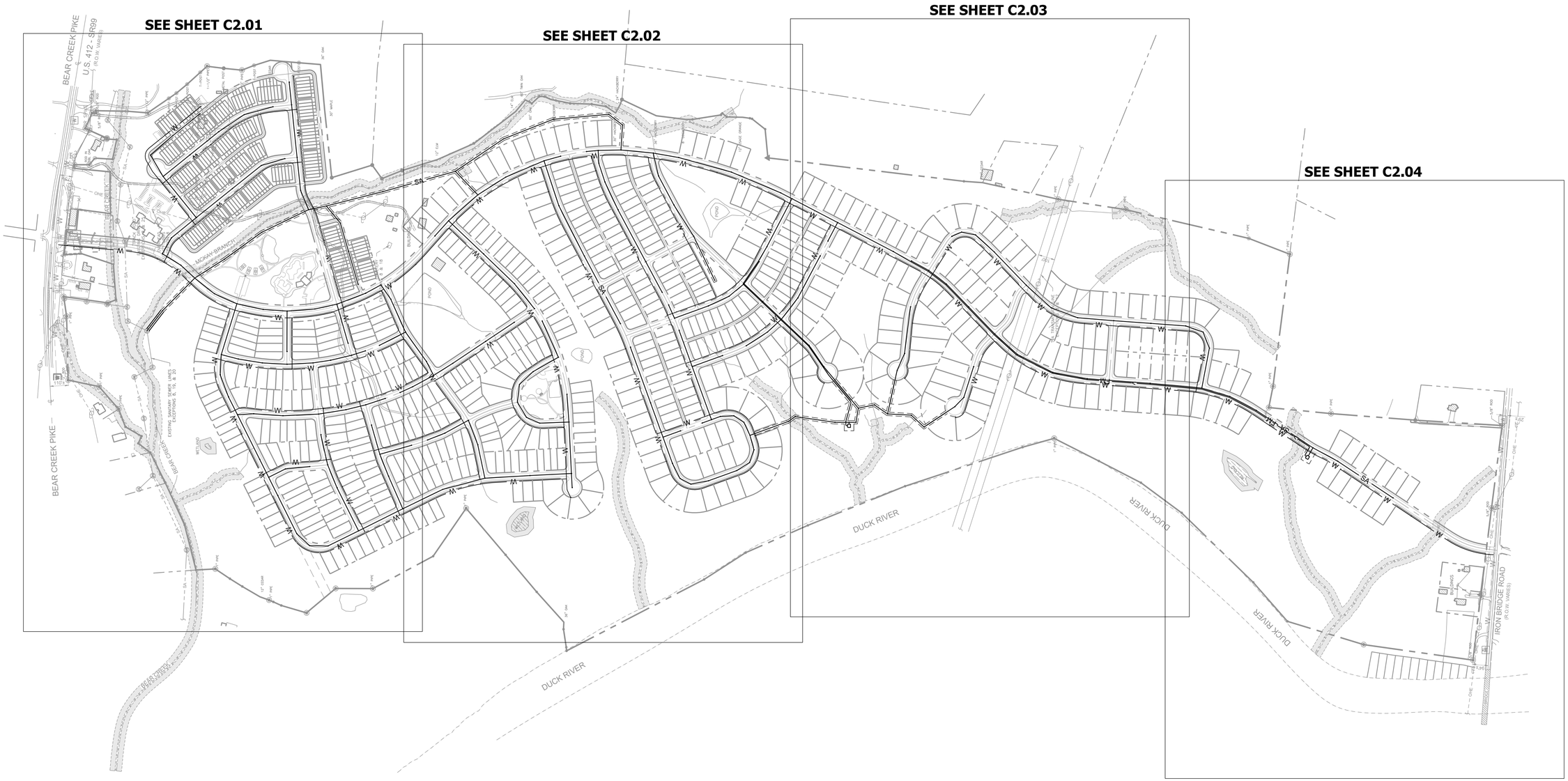
GREGORY C. GAMBLE — TENNESSEE REGISTERED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
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LOT DIAGRAMS

SHEET C2.6



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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

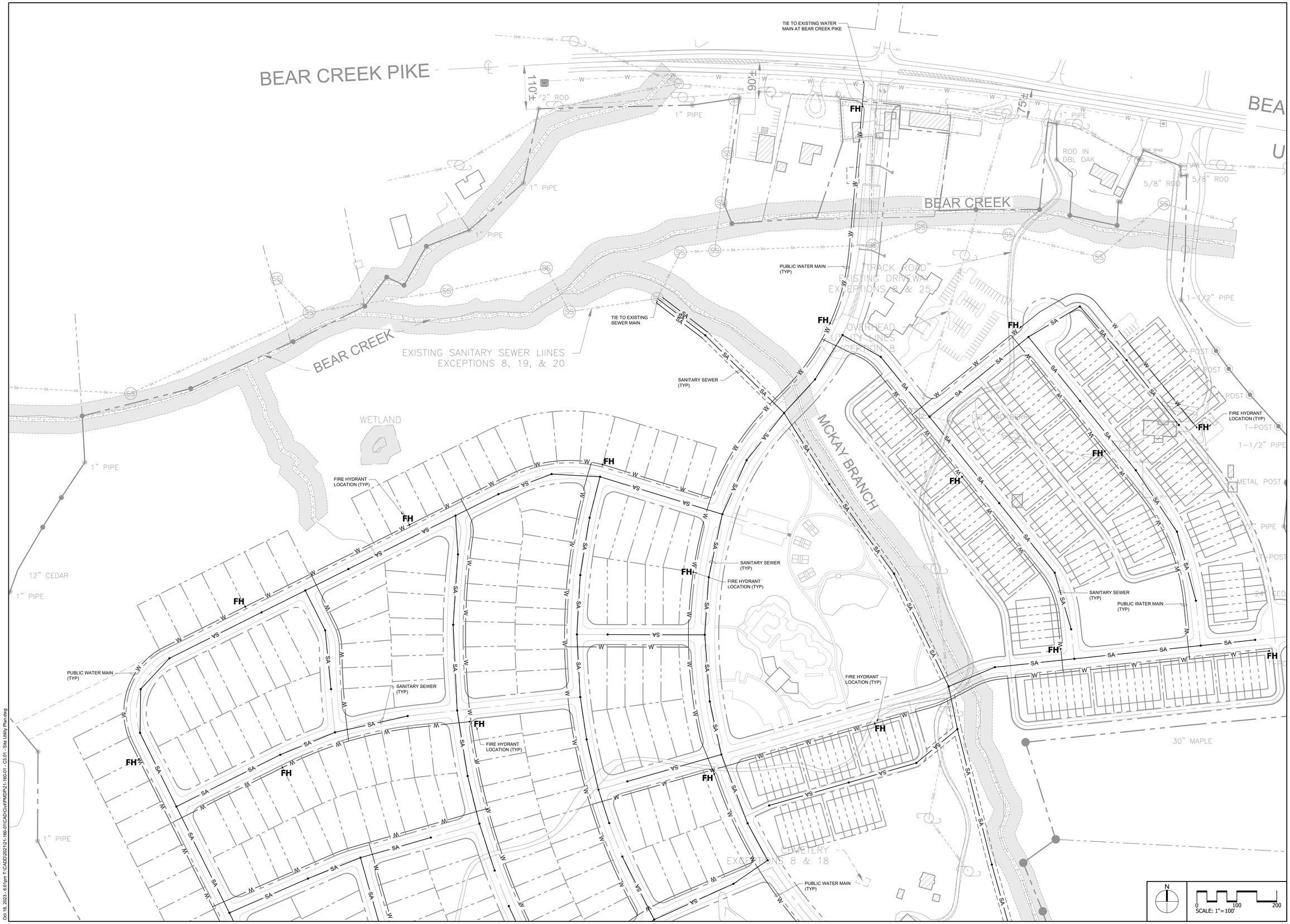
C3.00

PROJECT NO.: 21-160-01

N

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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



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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1	Initial Submittal	10/16/23

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SITE UTILITY PLAN

C3.01
PROJECT NO.: 21-160-01



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1	Initial Submittal	10/16/23

DRAWN BY: TWG
CHECKED BY: TWG

SITE UTILITY PLAN

C3.02

PROJECT NO.: 21-160-01

N

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SCALE: 1"= 100'

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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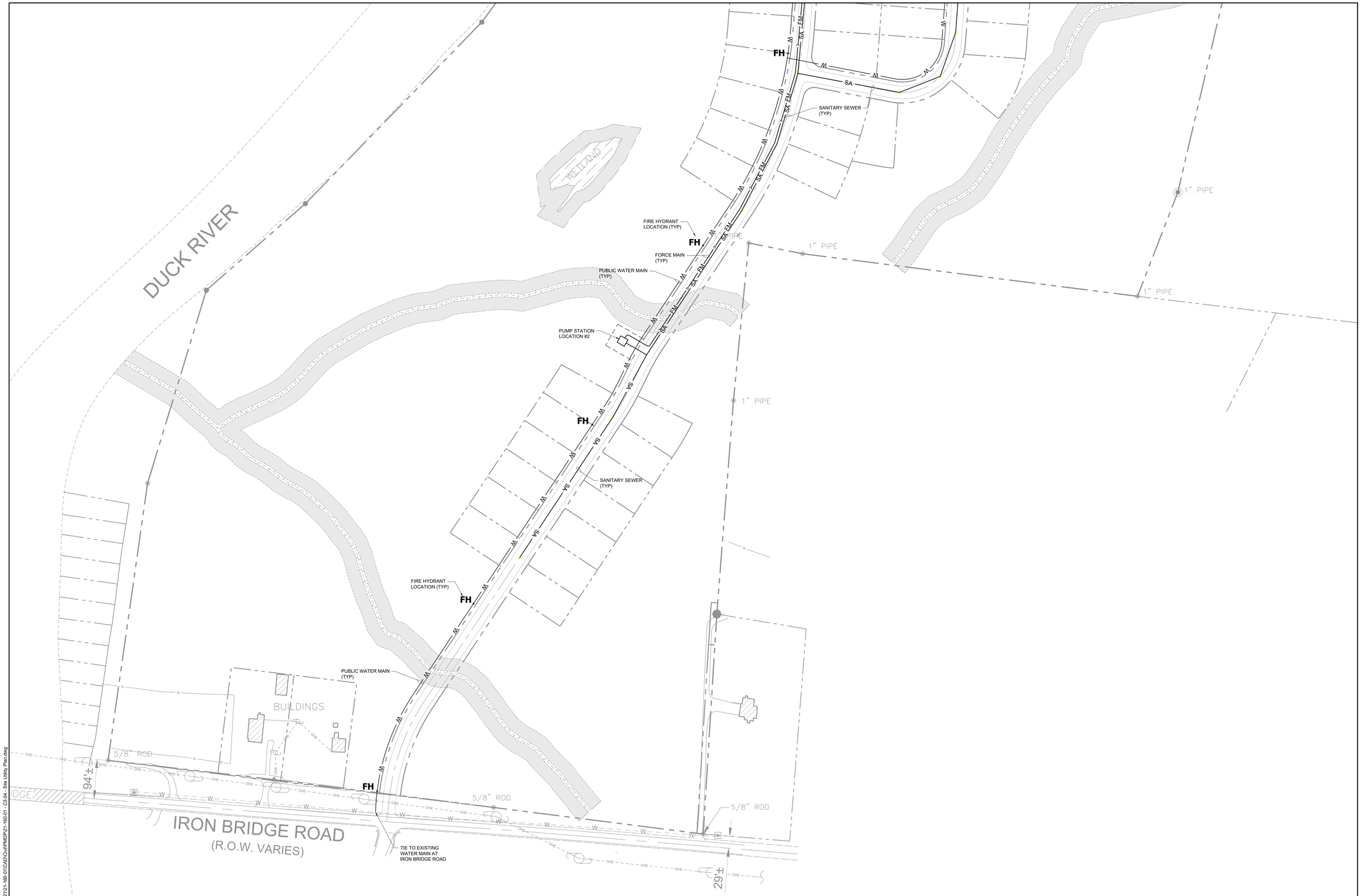
DRAWN BY: TWG
CHECKED BY: TWG

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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SEAL



COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:
INITIAL SUBMITTAL

ISSUE DATE: 10/16/2023

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Rev.	Description	Date
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SITE UTILITY PLAN

N

0 100 200
SCALE: 1"= 100'

C3.04
PROJECT NO.: 21-160-01

Oct 18, 2023 - 6:01pm T:\CADD\2021\21-160-01\CAD\Civil\PMDP\21-160-01 - C3.04 - Site Utility Plan.dwg



N

0 300 600
SCALE: 1"= 300'

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csdgtn.com

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COLUMBIA BLUFFS
PMDP
Bear Creek Pike
Columbia, Maury County, Tennessee

ISSUE SET:

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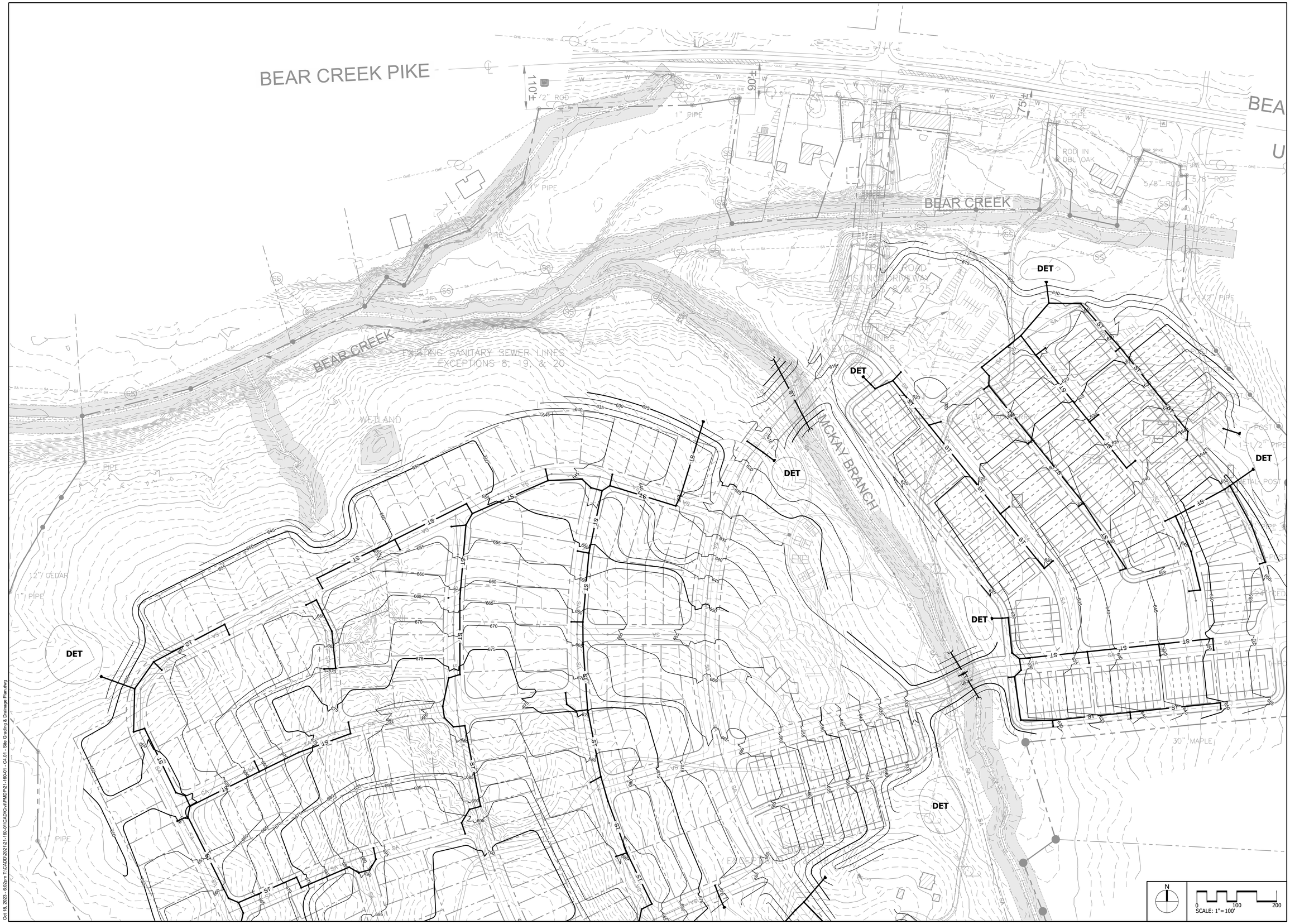
DRAWN BY: TWG
CHECKED BY: TWG

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

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Landscape Architecture

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10-16-23

COLUMBIA BLUFFS

PMDP

Bear Creek Pike
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SITE GRADING & DRAINAGE PLAN

C4.01

PROJECT NO.: 21-160-01



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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

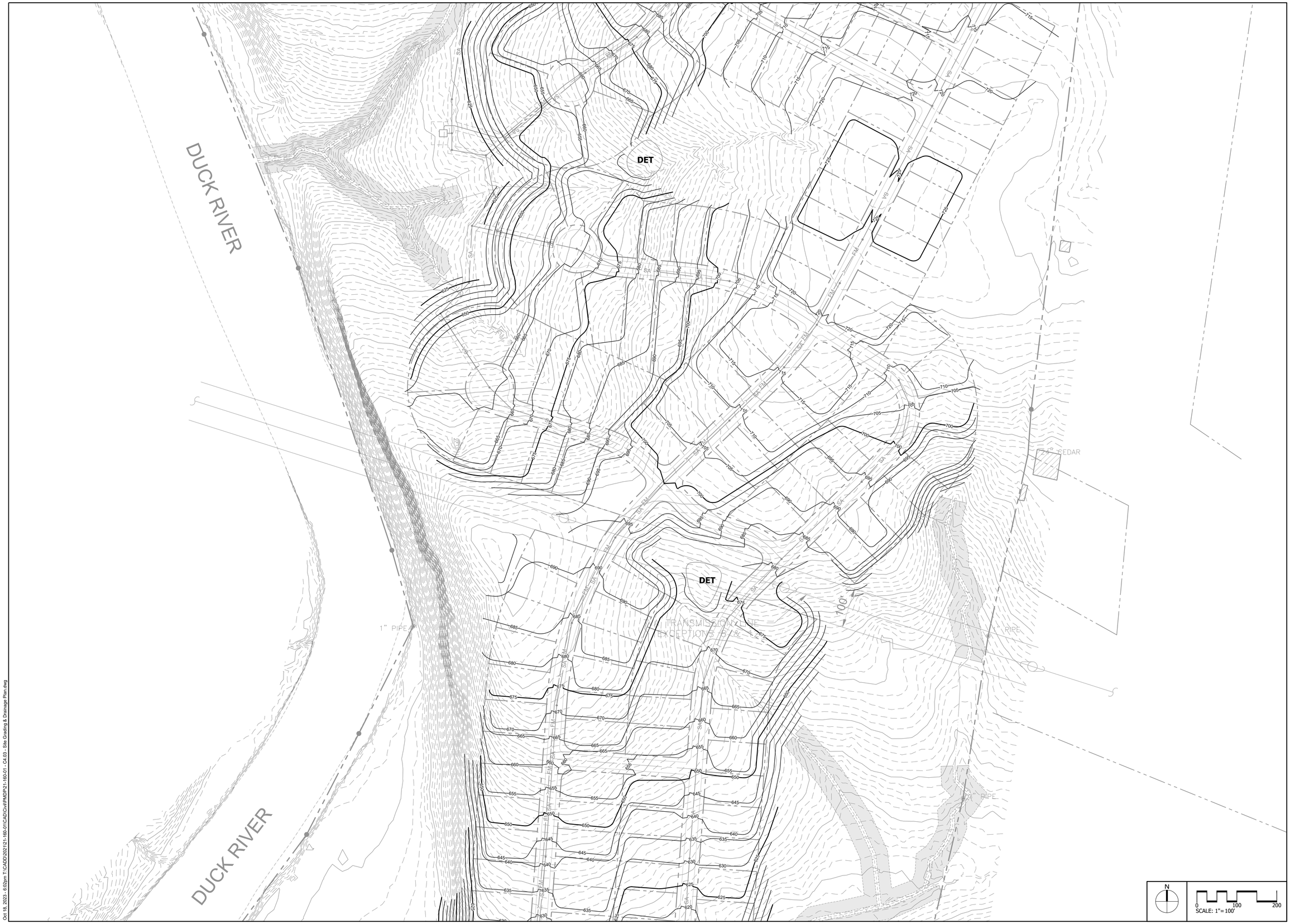
DRAWN BY: TWG
CHECKED BY: TWG

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 - C4.02 - Site Grading & Drainage Plan.dwg



N

0 100 200
SCALE: 1"= 100'

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:

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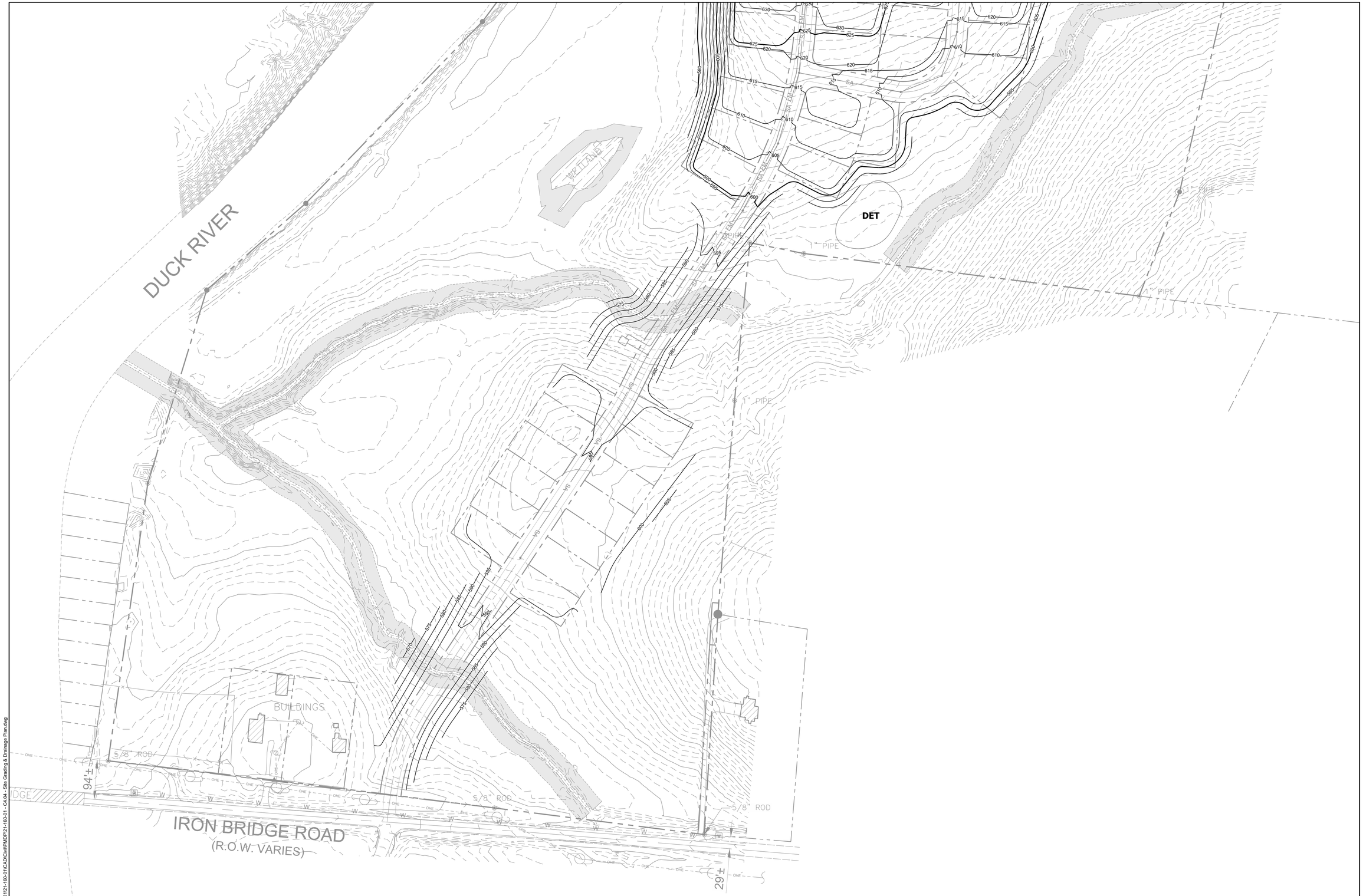
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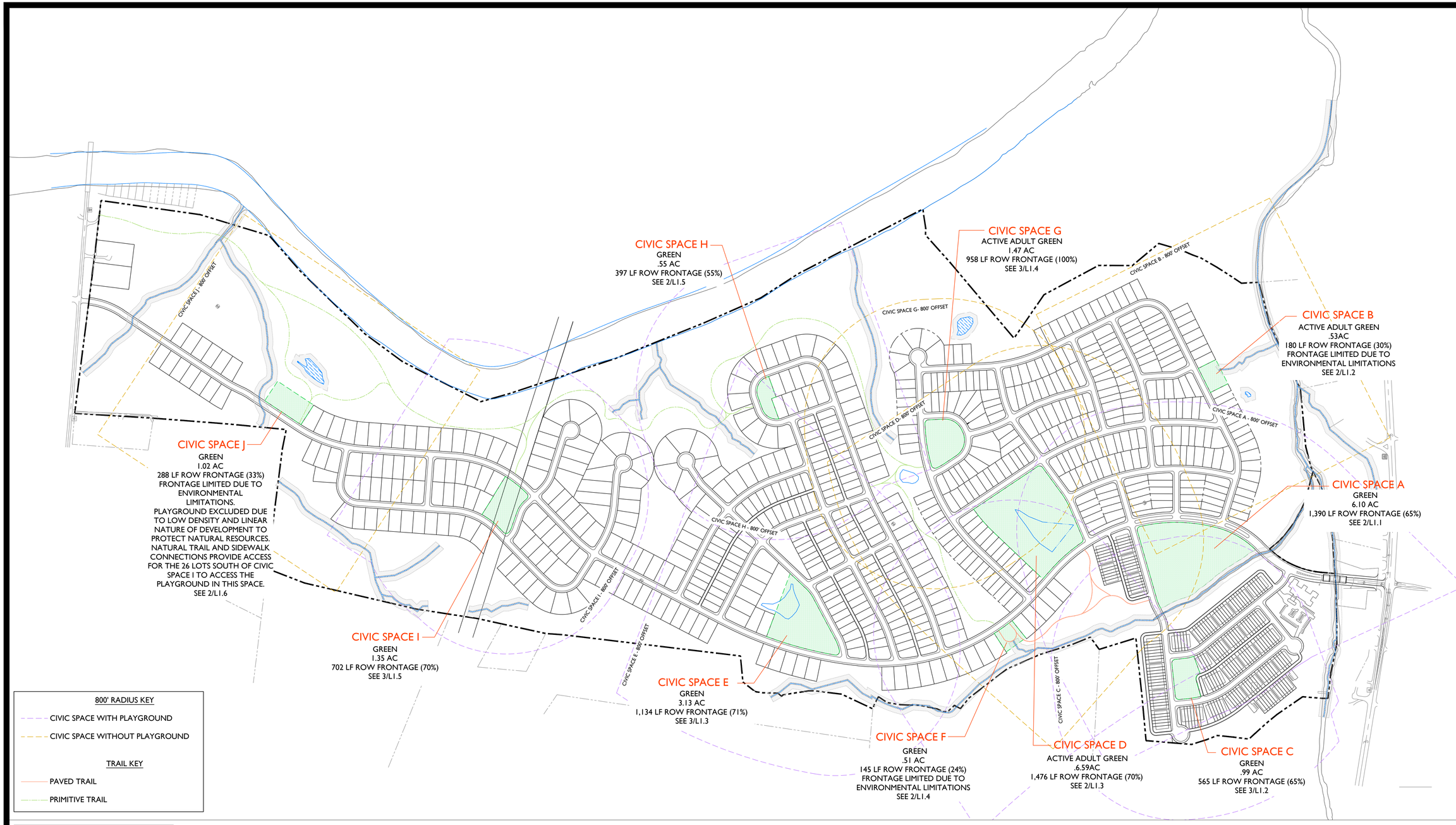
SITE GRADING & DRAINAGE PLAN

C4.03

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


DUCK RIVER
WETLAND
DET
1" PIPE
1" PIPE
1" PIPE
1" PIPE
SA
SA
SA
SA
SA
SA
WS
WS
WS



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
△
△
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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
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

COLUMBIA BLUFFS
PUD-R PRELIMINARY MASTER DEVELOPMENT PLAN & ANNEXATION REQUEST
400 Bear Creek Parkway, Columbia, Tennessee

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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

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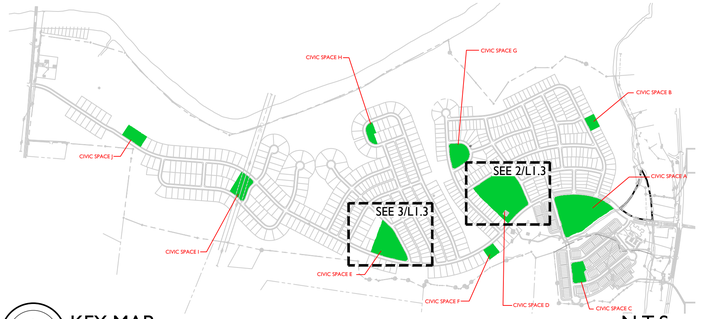
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OVERALL CIVIC SPACE PLAN

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.

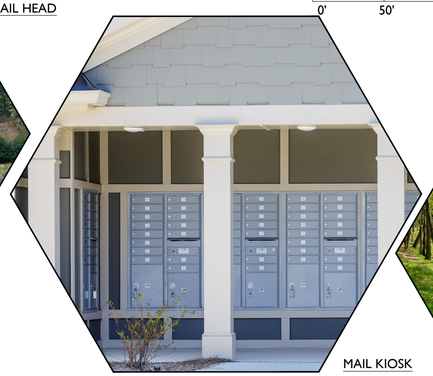
0' 50' 100'



POND



TRAIL HEAD

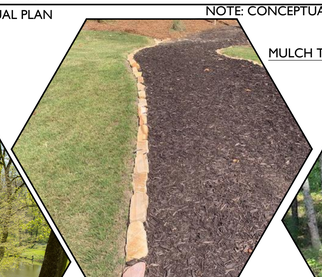


MAIL KIOSK

3 / L1.3 CIVIC SPACE - E
CONCEPTUAL PLAN

NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

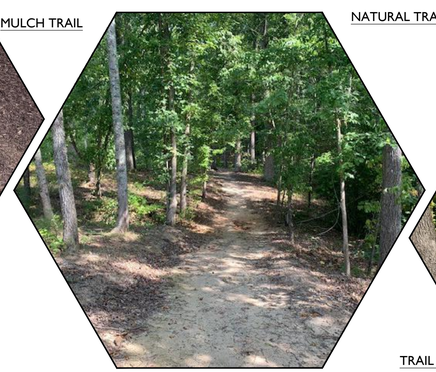
0' 30' 60'



MULCH TRAIL



NATURAL POND



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

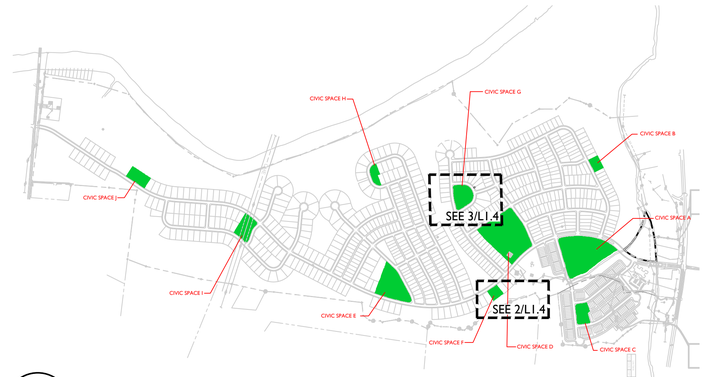
Date: October 16, 2023

Revision Date
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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

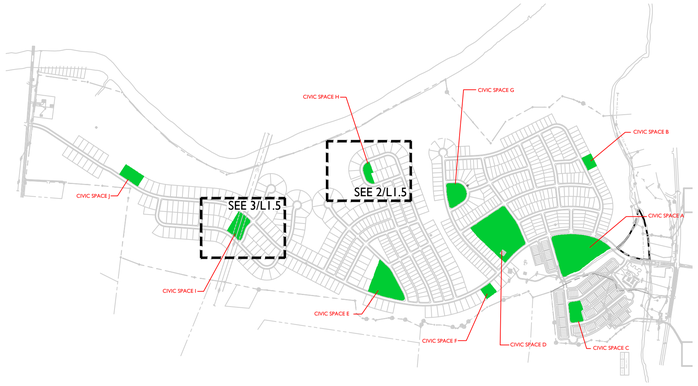
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OVERALL CIVIC SPACE PLAN

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 LICENSED LANDSCAPE ARCHITECT

Date: October 16, 2023

Revision Date
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OVERALL CIVIC SPACE PLAN

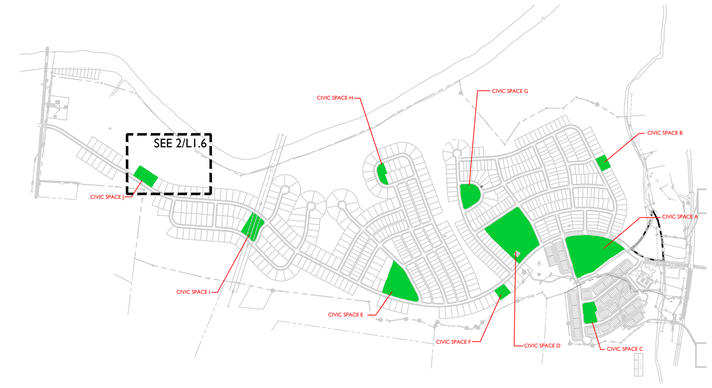
SHEET LI.5



2 L1.6 CIVIC SPACE - J

CONCEPTUAL PLAN NOTE: CONCEPTUAL PLANS AND CHARACTER IMAGES TO DISPLAY DESIGN INTENT.

0' 100' 200'



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

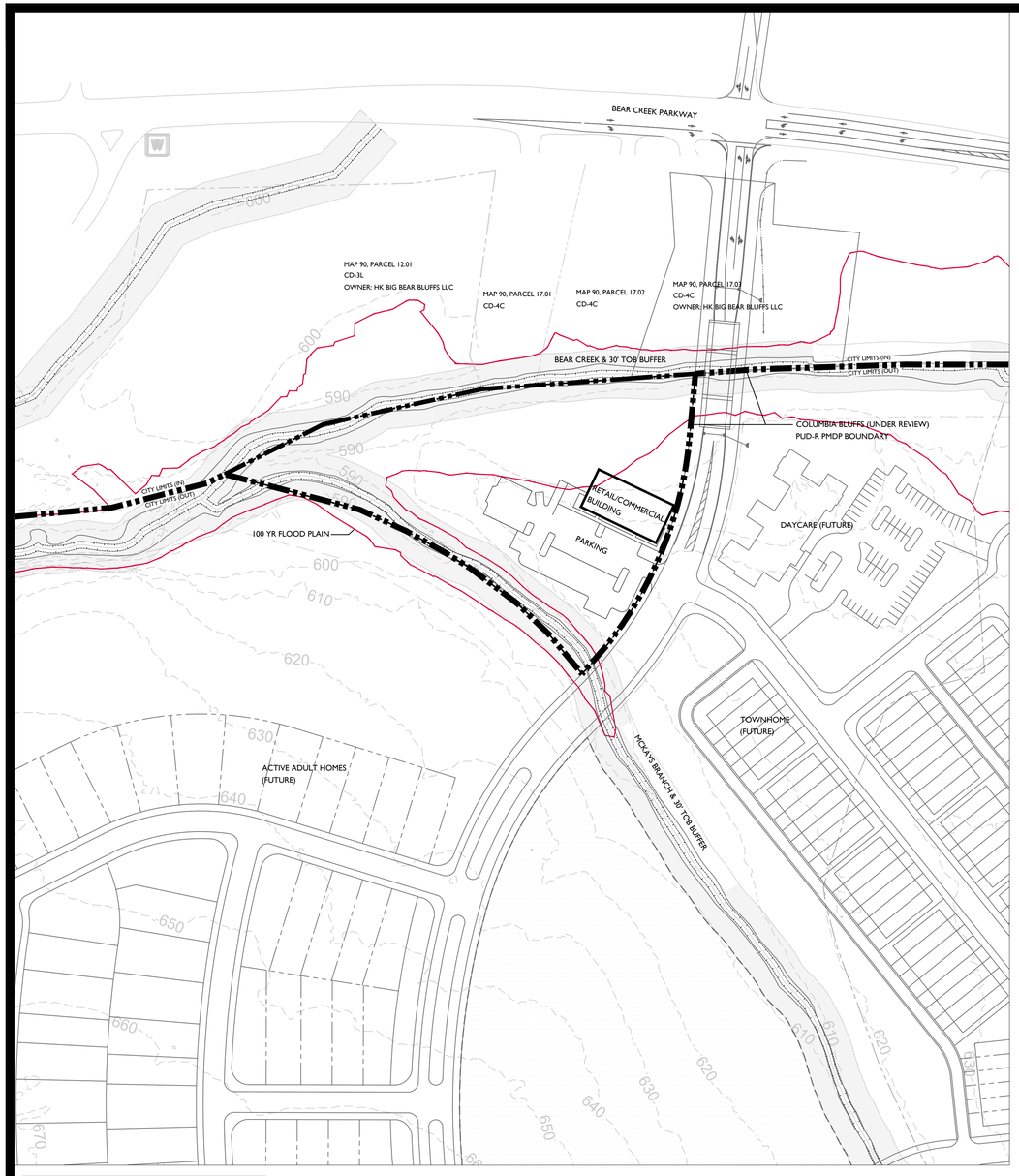
GREGORY C. GAMBLE TENNESSEE REGISTERED LANDSCAPE ARCHITECT

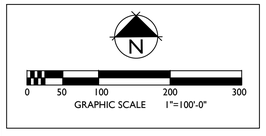
Date: October 16, 2023

Revision	Date
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OVERALL CIVIC SPACE PLAN

SHEET L1.6





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;

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 45°49'08" W, 65.41 FEET TO A POINT;

N 53°12'54" W, 86.37 FEET TO A POINT;

N 58°09'42" W, 42.46 FEET TO A POINT;

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;

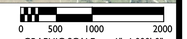
THENCE, ALONG BEAR CREEK, THE FOLLOWING 2 CALLS:

N 63°11'05" E, 159.96 FEET TO A POINT;

N 77°31'07" 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.



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.
Response: The small commercial parcel will be a destination for nearby residents and is proposed along a new/proposed road into the Columbia Bluffs development. Sidewalk connections will link this commercial area to this residential development.

GAMBLE DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND LANDSCAPE ARCHITECTURE

PORTION OF 400 BEAR CREEK PARKWAY ANNEXATION, REZONING REQUEST & CONCEPTUAL DEVELOPMENT PLAN

Columbia, Tennessee

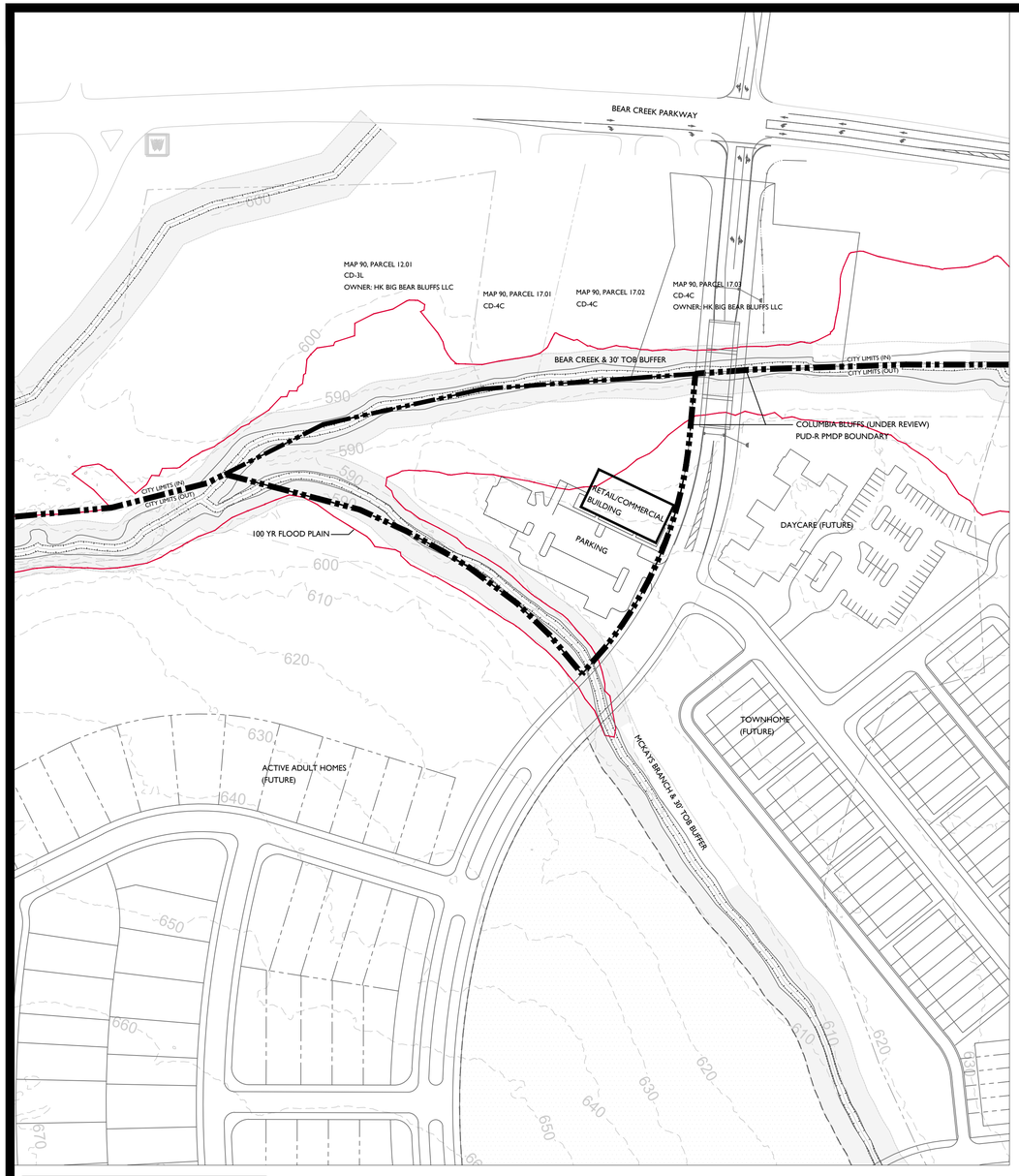
GREGORY C. GAMBLE — TENNESSEE — REGISTERED LANDSCAPE ARCHITECT — 328

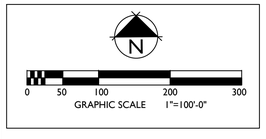
Date: OCTOBER 16, 2023

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.
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
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A PORTION OF MAP 90, PARCEL 12.01
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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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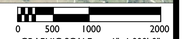
THENCE, ALONG BEAR CREEK, THE FOLLOWING 2 CALLS:

N 63°11'05" E, 159.96 FEET TO A POINT;

N 77°31'07" 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.



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.
Response: The small commercial parcel will be a destination for nearby residents and is proposed along a new/proposed road into the Columbia Bluffs development. Sidewalk connections will link this commercial area to this residential development.

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

Date: OCTOBER 16, 2023

Revision Date
△
△
△

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

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 (R2878, 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°01'16" 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 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:

N 39°46'13" W, 73.31 FEET TO A POINT;

N 45°49'08" W, 65.41 FEET TO A POINT;

N 53°12'54" W, 86.37 FEET TO A POINT;

N 58°09'42" W, 42.46 FEET TO A POINT;

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	