CITY OF COLUMBIA
TENNESSEE

AGENDA

The Columbia Planning Commission Development Review Committee will meet on Tuesday, June 13, 2023 at 10:00 AM in Conference Room A, basement level, City Hall,, to consider the following:

I. Items for Additional Review

1. 23-0145 - Request from Adam Crunk for Preliminary PUD Master Plan approval for Honey Farm Townhomes consisting of 197 units off Honey Farm Way.

Documents:

1. 23-0145_PUD Master Plan_Combined_0522
2. 23-0145_Landscape Plans_Combined_0522
3. 23-0145_C1.3 TREE CANOPY EXHIBIT_0522
4. 23-0145_Honey Farms 4-B Elevation_5-22-23
5. 23-0145_Response to Comments_0522
6. 23-0145_DRC Comments_0509
7. 23-0145_PUD Plan_4-17-2023
8. 23-0145_Checklist_4-17-2023
9. 23-0145_Legal Description_4-17-2023
10. 23-0145_Owner Statement_4-17-2023
11. 23-0145_TIS Letter of Commitment_4-17-2023
12. 23-0145_Sewer Capacity_4-17-2023
13. 23-0145_Water Availability Letter_4-17-2023
14. 23-0145_Application_4-17-2023

II. Items For Review

1. 23-0198 - Request from Eric McNeely for Access Management Exception at 2408 Greens Mill Road.

Documents:

1. ALTA Survey_0331
2. Exhibit_0522
3. General Affidavit_0522
4. Appeal Letter_0522
5. Application_0522

2. 23-0210/23-0211 - Request from Allen O'Leary for Preliminary and Final plat approval for 3 lots at 462 Mooresville Pike.

Documents:

1. Final Plat_0522
2. Preliminary Plat_0522
3. Hydrant Flow Acknowledgement Email_0522
4. Submittal Letter_Final Plat_0522
5. Submittal Letter_Preliminary Plat_0522
6. Application_Final Plat_0522
7. Application_Preliminary Plat_0522

3. 23-0201 - Request from Travis Bonar for Preliminary Plat approval of McClure Farms Phases 1-4 consisting of 431 lots at 2504 Nashville Highway.

Documents:

1. Preliminary Plat_0522
2. Response to Comments_0519
3. DRC Comments_0118
4. Commitment Letter_0519
5. Traffic Impact Study_04162021
6. CPWS - Water Availability Letter_0307
7. Checklist_0522
8. Submittal Letter_0522
9. Application_0522

4. 23-0193 - Request from M2 Group LLC for Site Development Plan approval of Mackenzie Place consisting of 34 units at 220 Theta Pike.

Documents:

1. Site Plan_0522
2. Building Elevations_0522

3. Comment Response Letter_0522
4. Floor Plans_0522
5. Landscape Plan_0522
6. TIS_Review Memo_06102022
7. Traffic Study_05182022
8. Drainage Report_0518
9. Cul-de-sac Justification Letter_0320
10. Site Distance Letter_0511
11. Infiltration Testing Letter_0302
12. Power Availability Letter_0110
13. Sewer Availability Letter_12282022
14. Water Availability Letter_0519
15. Description of Proposed Project_0522
16. Checklist_0522
17. Application_0522

5. 23-0170 - Request from PR Vesper LLC for Final Plat with surety approval of Vesper Court consisting of 16 lots off Sunset Avenue.

Documents:

1. Final Plat_12192022
2. PRELIMINARY Plat_12192022
3. Site Design Plan Revision_08162021
4. Development Agreement_0522
5. Hydraulic Calculations_05052022
6. Water Availability Letter_0512
7. CPWS - Vesper Court- Utility Approval Letter_06012022
8. Power Availability Letter_04202022
9. Wastewater Will Serve Letter_0517
10. Surety_05032022
11. LOC Renewal Notice_0118
12. Application_0505

6. 23-0202 - Request from T-Square Engineering for Final Plat approval with surety for Summit at Carter's Stations Phase 2 consisting of 32 lots off Wellwind Road.

Documents:

1. Summit Phase 2 Final Plat_0522
2. Hydrant Flow Analysis_11012022
3. Stormwater Maintenance Agreement_0510
4. Subdivision Development Agreement_0510

5. Application_0510

7. 23-0203 - Request from T-Square Engineering for Final Plat approval with surety for Independence at Carter's Station Phase 6.4 consisting of 25 lots off Sadie Street.

Documents:

1. Independence 6.4 Final Plat_0517
2. Stormwater Maintenance Agreement_0511
3. CPWS Hydrant Flow Analysis_07122022
4. Subdivision Development Agreement_0511
5. Application_0511

8. 23-0205 - Request from T-Square Engineering for final plat approval with surety for Homestead South consisting of 18 lots off Holiday Lane.

Documents:

1. Homestead South Final Plat_0522
2. Stormwater Management_0511
3. Subdivision Development Agreement_0511
4. CPWS Hydrant Analysis_04012022
5. Application_0511

9. 23-0209 - Request from T-Square Engineering for Final Plat approval with surety for Independence at Carter's Station Section 3.4 consisting of 29 lots off Lively Street.

Documents:

1. Independence 3.4 Final Plat_0522
2. Development Agreement_0511
3. Stormwater Maintenance Description_0508
4. Stormwater Maintenance Agreement_0511
5. CPWS Hydrant Flow Analysis_07122022
6. Surety Calculation_07202022
7. Application_0511

HONEY FARM TOWNHOMES

2248 NASHVILLE HIGHWAY, COLUMBIA, TN 38401

PRELIMINARY MASTER DEVELOPMENT PLAN

GENERAL INFORMATION

DEVELOPER

NAME:
ADDRESS:
Contact:
Phone:

OWNER

NAME: EMG HONEY FARM, LLC, A TENNESSEE LIMITED LIABILITY COMPANY
ADDRESS: P.O. BOX 1715 SPRING HILL, TN 37174
CONTACT: DREW SMITH,
DREW.SMITH@EQUITASMG.COM
Phone: 469-585-7913

CIVIL ENGINEER

Crunk Engineering LLC
7112 Crossroads Boulevard, Suite 201
Brentwood, TN 37027
Contact: Adam Crunk, PE
Phone: 615.873.1795
Email: adam@crunkeng.com



LOCATION MAP
NOT TO SCALE

Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	OVERALL SITE LAYOUT PLAN
C1.1	SITE LAYOUT PLAN
C1.2	SITE LAYOUT PLAN
C1.3	TREE CANOPY EXHIBIT
C2.0	OVERALL GRADING DRAINAGE & UTILITY PLAN
C2.1	GRADING DRAINAGE & UTILITY PLAN
C2.2	GRADING DRAINAGE & UTILITY PLAN
C3.0	SITE IMPERVIOUS AREA DISTRIBUTION
C4.0	BUILDING LAYOUT EXHIBIT
L1.0	OVERALL LANDSCAPE PLAN
L1.1	LANDSCAPE PLAN
L1.2	LANDSCAPE PLAN
L2.0	LANDSCAPE DETAILS

EXCEPTIONS REQUESTING:

- DEVELOPMENT IN LANDSCAPE BUFFER. LANDSCAPE BUFFER ADJUSTMENT
- MAIL KIOSK LAYOUT
- BLOCK PERIMETER WITH ALLEYS
- GENERAL CIRCULATION THROUGH ALLEYS
- TREE SAVE AREA INTERSECTING WITH OVERHEAD TRANSMISSION LINES

SITE DATA TABLE

PROJECT: HONEY FARM TOWNHOMES
ADDRESS: NASHVILLE HWY 2248
PARCEL ID: 051 05800 000
SITE ACREAGE: 25.87 AC
EXISTING ZONING: PUD-R
PROPOSED ZONING: PUD-R
PROPOSED USE: TOWNHOMES

PROPOSED LOTS:

SHALLOWFORD 1A -	37
SHALLOWFORD 1B -	26
MCCALLIE -	128
SHALLOWFORD 2 -	2
TOTAL =	193

BUILDING HEIGHT:	35 FT
LOT WIDTH:	18 FT MIN/180FT MAX
FRONT YARD:	
PRIMARY:	35 FT
SECONDARY:	15 FT
SIDE SETBACK:	10 FT MIN/24 FT MAX
ATTACHED TOWNHOMES:	0 FT
REAR SETBACK:	10 FT MIN
REQUIRED CIVIC USE SPACE:	5% OF TOTAL AREA 1.29 AC
PROVIDED CIVIC USE SPACE:	5.3% 1.38 AC

CIVIC SPACE LIST:

PLAYGROUND -	0.07 AC
PLAYGROUND -	0.06 AC
GREEN -	0.50 AC
GARDEN -	0.23 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.05 AC
POCKET PARK -	0.02 AC
POCKET PARK -	0.21 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.03 AC
TOTAL:	1.34 AC

REQUIRED PARKING:

DWELLING UNITS:	384 SPACES
CIVIC SPACE:	14 SPACES
ACCESSIBLE:	1 PER 50 REQ. SPACES, 8 SPACES
TOTAL=	398 SPACES, 8 ACCESSIBLE

PROPOSED ON STREET PARKING:

ROAD A -	17, 7 ACCESSIBLE
ROAD B -	16
ROAD C -	41
ROAD D -	98
ALLEY A -	2
ALLEY B -	1 ACCESSIBLE
TOTAL =	174 SPACES, 8 ACCESSIBLE SPACES

PROPOSED OFF STREET PARKING:

GARAGE PARKING -	386
DRIVEWAY PARKING -	24 (LOTS 1, 10, 63, 64, 65, 173-179)
TOTAL =	410 SPACES

TOTAL PROPOSED PARKING:

ON STREET -	174, 8 ACCESSIBLE
OFF STREET -	410
TOTAL =	584 SPACES, 8 ACCESSIBLE SPACES

NOTE:

1. SITE LIGHTING TO BE PROVIDED IN ACCORDANCE WITH PRIVATE LIGHTING STANDARDS AT TABLE 4.3.17.B OF THE COLUMBIA ZONING ORDINANCE AT SITE CONSTRUCTION PLAN REVIEW.

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

ENGINEERING CRUNK

NEAL WILSON CRUNK
REGISTERED
AGRICULTURE
5/22/23
NUMBER
134180
STATE OF TENNESSEE

HONEY FARM TOWNHOMES
COLUMBIA, TN

REVISIONS	
No.	DATE

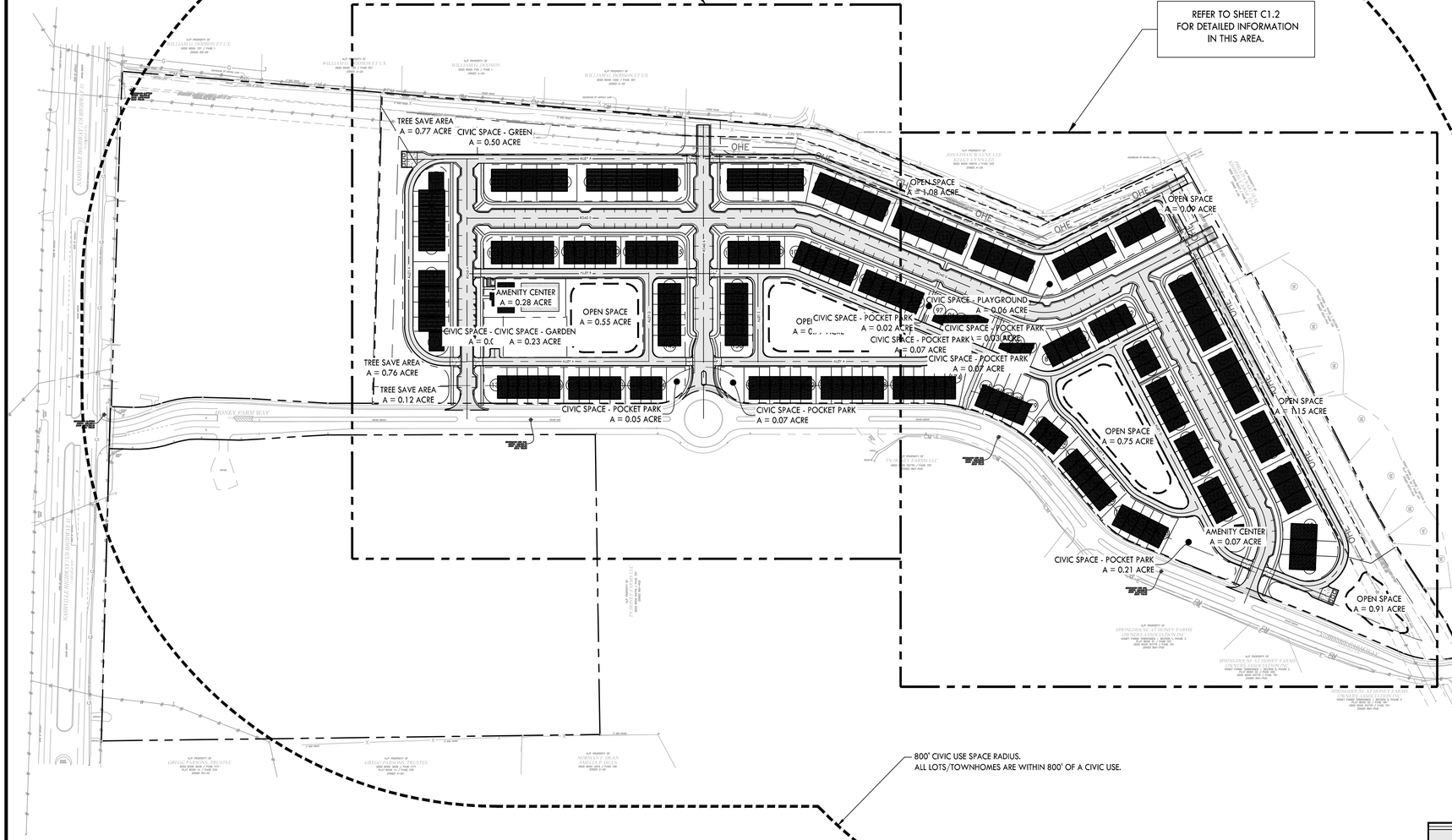
5/22/2023 22135

C0.0
COVER SHEET

Drawing Path: p:\2022\22135 - honey farm townhomes\Design\construction\preliminary pud\C0.0-COV.dwg

REFER TO SHEET C1.1
FOR DETAILED INFORMATION
IN THIS AREA.

REFER TO SHEET C1.2
FOR DETAILED INFORMATION
IN THIS AREA.



0 60 120 240
GRAPHIC SCALE

800' CIVIC USE SPACE RADIUS.
ALL LOTS/TOWNHOMES ARE WITHIN 800' OF A CIVIC USE.

SITE DATA TABLE

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ADDRESS: NASHVILLE HWY 2248
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PROPOSED ZONING: PUD-R
PROPOSED USE: TOWNHOMES

PROPOSED LOTS:	
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SHALLOWFORD 1B -	26
MCCALLIE -	128
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TOTAL =	193
BUILDING HEIGHT:	35 FT
LOT WIDTH:	18 FT MIN/180FT MAX
FRONT YARD:	
PRIMARY:	35 FT
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SIDE SETBACK:	10 FT MIN/24 FT MAX
ATTACHED TOWNHOMES:	0 FT
REAR SETBACK:	10 FT MIN
REQUIRED CIVIC USE SPACE:	5% OF TOTAL AREA 1.29 AC
PROVIDED CIVIC USE SPACE:	5.3% 1.38 AC
CIVIC SPACE LIST:	
PLAYGROUND -	0.07 AC
PLAYGROUND -	0.06 AC
GREEN -	0.50 AC
GARDEN -	0.23 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.05 AC
POCKET PARK -	0.02 AC
POCKET PARK -	0.21 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.07 AC
POCKET PARK -	0.03 AC
TOTAL:	1.34 AC
REQUIRED PARKING:	
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CIVIC SPACE:	14 SPACES
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NOTE:

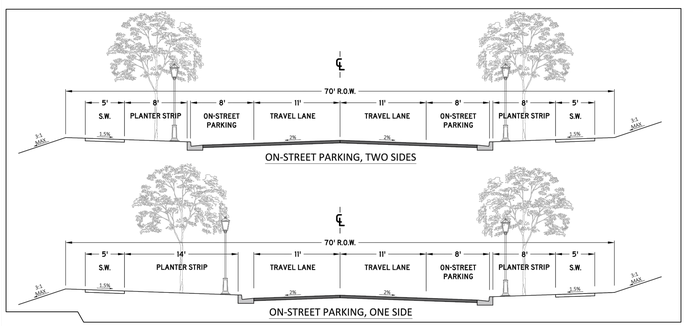
1. SITE LIGHTING TO BE PROVIDED IN ACCORDANCE WITH PRIVATE LIGHTING STANDARDS AT TABLE 4.3.17.B OF THE COLUMBIA ZONING ORDINANCE AT SITE CONSTRUCTION PLAN REVIEW.

NOTE:

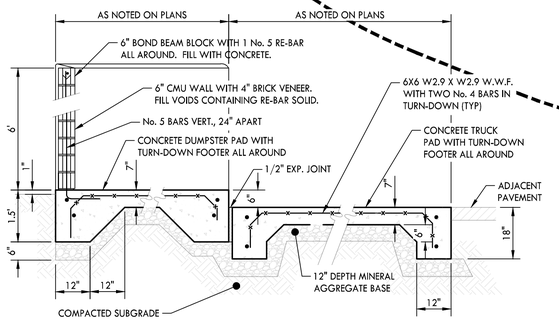
1. FUTURE REMOVAL OF TREES DEPICTED ON THE PLAN WILL REQUIRE APPROVAL BY PLANNING COMMISSION

FLOOD HAZARD NOTE:

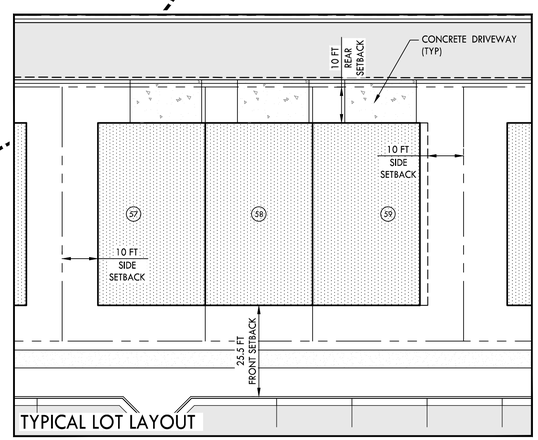
1. THE SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO PANEL NO. 47119C0180E OF THE F.E.M.A. FLOOD INSURANCE RATE MAPS FOR MAURY COUNTY, TENNESSEE, DATED 4/15/2007



ROADWAY CROSS SECTION
NOT TO SCALE



DUMPSTER ENCLOSURE
NOT TO SCALE



TYPICAL LOT LAYOUT

CRUNK ENGINEERING LLC
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SUITE 201
BRENTWOOD, TN 37027
(615) 873-1795
WWW.CRUNKENG.COM

ENGINEERING CRUNK

DANIEL WILSON CRUNK
REGISTERED
AGRICULTURE
No. 134180
AMERICA
STATE OF TENNESSEE
5/22/23

HONEY FARM TOWNHOMES

COLUMBIA, TN

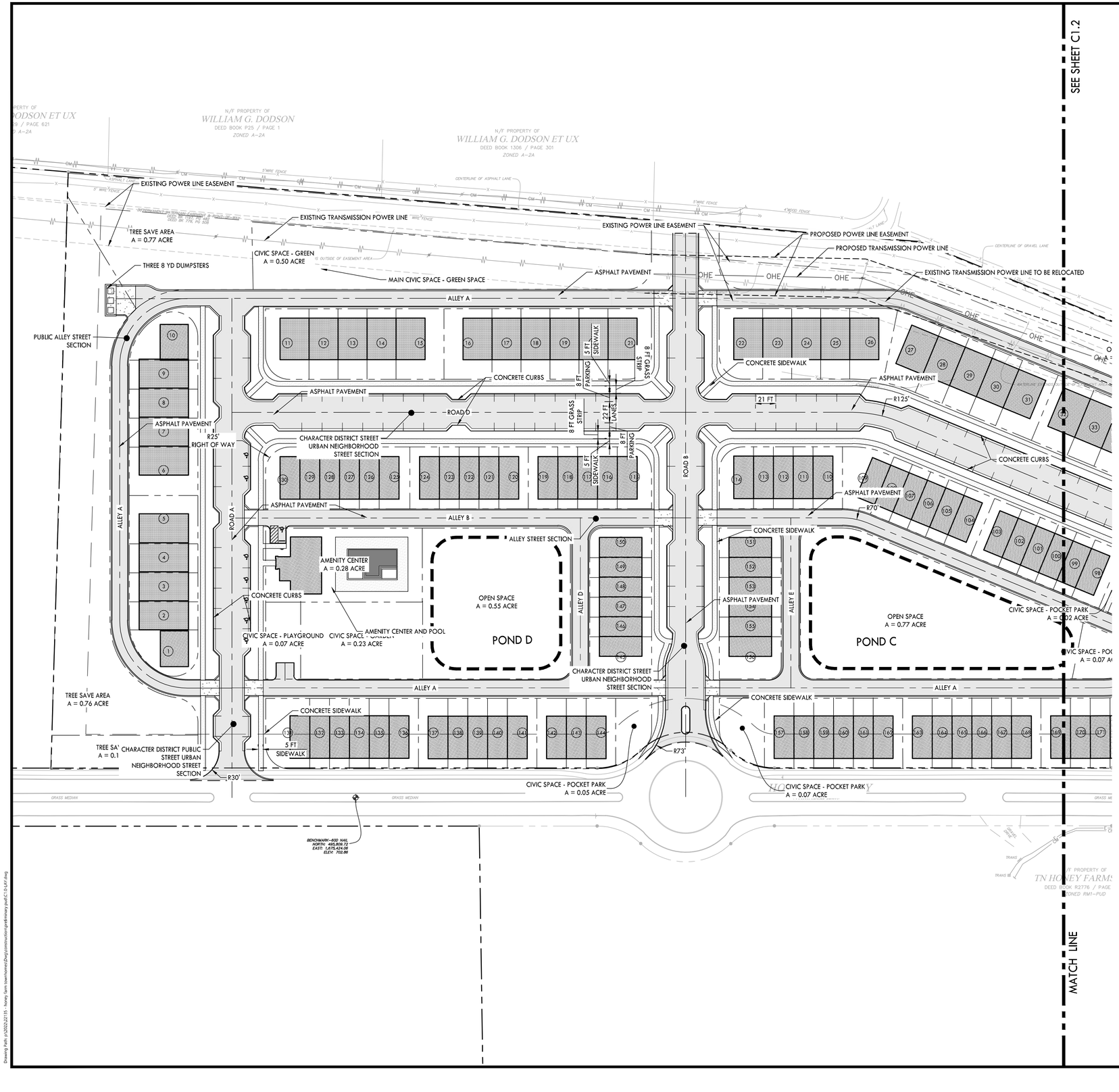
REVISIONS	
No.	DATE

5/22/2023 22135

C1.0

OVERALL SITE LAYOUT PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary.pwd C1.0_ENV.dwg



PROPOSED LAYOUT LEGEND

- PROPOSED BUILDING
- HEAVY DUTY ASPHALT PAVEMENT
- LIGHT DUTY ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- PROPERTY LINE
- EDGE OF NEW PAVEMENT

0 10 20 30 40 50 100
GRAPHIC SCALE

CRUNK ENGINEERING LLC
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SUITE 201
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HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS

No.	DATE

5/22/2023 22135

C1.1

SITE LAYOUT PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary.pwf\C1.0-LAY.dwg

PROPOSED LAYOUT LEGEND

- PROPOSED BUILDING
- HEAVY DUTY ASPHALT PAVEMENT
- LIGHT DUTY ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- PROPERTY LINE
- EDGE OF NEW PAVEMENT

SEE SHEET C1.1

MATCH LINE

N/F PROPERTY OF
JONATHAN WAYNE LEE
KELLY LYNN LEE
DEED BOOK R2670 / PAGE 235
ZONED A-2A

N/F PROPERTY OF
PHILLIP CRAIG TEAL
KIMBERLY ANNE TEAL
DEED BOOK 4037 / PAGE 22
ZONED A-2A

N/F PROPERTY OF
TN HONEY FARMS LLC
DEED BOOK R2776 / PAGE 757
ZONED RM1-PUD

N/F PROPERTY OF
SPRINGHOUSE AT HONEY FARMS
OWNERS ASSOCIATION INC
HONEY FARMS TOWNHOMES - SECTION 1, PHASE 2
PLAT BOOK 21 / PAGE 157
DEED BOOK R2776 / PAGE 751
ZONED RM1-PUD

N/F PROPERTY OF
SPRINGHOUSE AT HONEY FARMS
OWNERS ASSOCIATION INC
HONEY FARMS TOWNHOMES - SECTION 2, PHASE 2
PLAT BOOK 22 / PAGE 452
DEED BOOK R2776 / PAGE 751
ZONED RM1-PUD

OPEN SPACE
A = 1.08 ACRE

ALLEY STREET SECTION

ASPHALT PAVEMENT
OPEN SPACE
A = 0.09 ACRE

EXISTING POWER LINE EASEMENT

EXISTING TRANSMISSION
POWER LINE TO BE RELOCATED

CONCRETE SIDEWALK

PROPOSED POWER LINE EASEMENT

ROAD D

CONCRETE CURB AND GUTTER

ASPHALT PAVEMENT

CIVIC SPACE - PLAYGROUND
A = 0.06 ACRE

CONCRETE CURB AND GUTTER

PROPOSED TRANSMISSION POWER LINE

R125'

CIVIC SPACE - POCKET PARK
A = 0.02 ACRE

POND C

CHARACTER DISTRICT STREET
URBAN NEIGHBORHOOD
STREET SECTION

ALLEY B

CIVIC SPACE - POCKET PARK
A = 0.07 ACRE

18.4 FT
LANE
CURB

R70'

CIVIC SPACE - POCKET PARK
A = 0.07 ACRE

1 FT
CURB

R70'

ROAD C

CHARACTER DISTRICT PUBLIC
STREET URBAN
NEIGHBORHOOD STREET
SECTION

12 FT
LANE

OPEN SPACE
A = 1.15 ACRE

8 FT
PARKING

5 FT
SIDEWALK

8 FT
GRASS STRIP

22 FT
LANES

8 FT
GRASS STRIP

5 FT
SIDEWALK

8 FT
PARKING

12 FT
LANE

8 FT

PUBLIC ALLEY STREET
SECTION

OPEN SPACE
A = 0.75 ACRE

POND B

ALLEY G

ALLEY F

BENCHMARK--600 NAIL
NORTH: 495,245.68
EAST: 1,679,105.50
ELEV: 711.10

CONCRETE SIDEWALK

ASPHALT PAVEMENT

AMENITY CENTER
A = 0.07 ACRE

R125'

CIVIC SPACE - POCKET PARK
A = 0.21 ACRE

R70'

R30'

BENCHMARK--602 NAIL
NORTH: 494,960.15
EAST: 1,679,277.50
ELEV: 712.52

R70'

POND A

OPEN SPACE
A = 0.91 ACRE

EXISTING TRANSMISSION POWER LINE

THREE 8 YD DUMPSTERS

EXISTING POWER LINE EASEMENT

HONEY FARM WAY
(VARIABLE R/W)

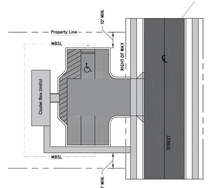
HONEY FARM - PHASE 1, SECTION 2
PLAT BOOK 20 PAGE 107
ZONED RD10-OVLD

HONEY FARM - PHASE 1, SECTION 3
PLAT BOOK 21 PAGE 100
ZONED RD10-OVLD

NOTES:

FOR 75 OR LESS CBU'S AT A SINGLE LOCATION:
1. CLUSTER BOX UNITS (CBU'S) SHALL MEET USPS STANDARDS
2. CBU'S MAY BE LOCATED WITHIN THE RIGHT OF WAY
3. CBU'S SHALL NOT ENCROACH UPON THE ROADWAY OR SIDEWALK.
4. CBU'S SHALL NOT BE PLACED ALONG MINOR LOCAL ROADWAYS OR, WHERE NONE EXIST, THE PLACEMENT ALONG COLLECTOR AND ARTERIAL ROADWAYS, FOLLOW THE STANDARDS BELOW. "FOR MORE THAN 75 CBU'S AT A SINGLE LOCATION"

FOR MORE THAN 75 CBU'S AT A SINGLE LOCATION
1. CBU'S SHALL MEET USPS STANDARDS
2. CBU'S SHALL BE LOCATED OUTSIDE OF THE RIGHT OF WAY WITHIN A COMMON OR OPEN SPACE LOT
3. CBU'S SHALL NOT BE PLACED WITHIN ANY EASEMENTS
4. CBU'S SHALL BE CONSIDERED AN ACCESSORY USE AND CONSIDERED A PRINCIPLE STRUCTURE AND SHALL ADHERE TO BUILDING SETBACKS
5. ADA ACCESSIBLE WALKWAYS TO MEET ZONING CODE AND ACCESS MANAGEMENT
6. PARKING SHALL BE PROVIDED WITH A MINIMUM OF 2 PARKING STALLS PLUS 1.5 STALL PER 25 MAIL UNITS OR PORTION THEREOF ABOVE THE FIRST 25 MAIL UNITS, WITH A MAXIMUM OF TWICE THE MINIMUM
7. PARKING AND SIDEWALKS SHALL HAVE A 10 FT. MINIMUM BUFFER FROM ANY PROPERTY LINE
8. PARKING SHALL ADHERE TO LAYOUT AND INTERIOR LANDSCAPING REQUIREMENTS PER THE ZONING CODE
9. PARKING SHALL NOT BE DESIGNATED AS SHORT TERM PARKING AND CANNOT BE CONSIDERED REQUIRED PARKING FOR ANOTHER USE
10. ADEQUATE STOPS OR CURBING SHALL BE PROVIDED FOR ALL PARKING STALLS
11. ADEQUATE LIGHTING SHALL BE PROVIDED.
12. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

STANDARD DETAILS

MAIL CLUSTER BOX UNITS

(MTS)

DATE 6/9/2022

MD-03

MAIL CLUSTER BOX UNITS
NOT TO SCALE

0 10 20 30 40 50 100
GRAPHIC SCALE

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

ENGINEERING CRUNK

TENNESSEE LICENSED PROFESSIONAL ENGINEER
RUSSELL WILSON CRUNK
REGISTERED
AGRICULTURE
5/22/23
AMERICA
NO. 114180
STATE OF TENNESSEE

HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS

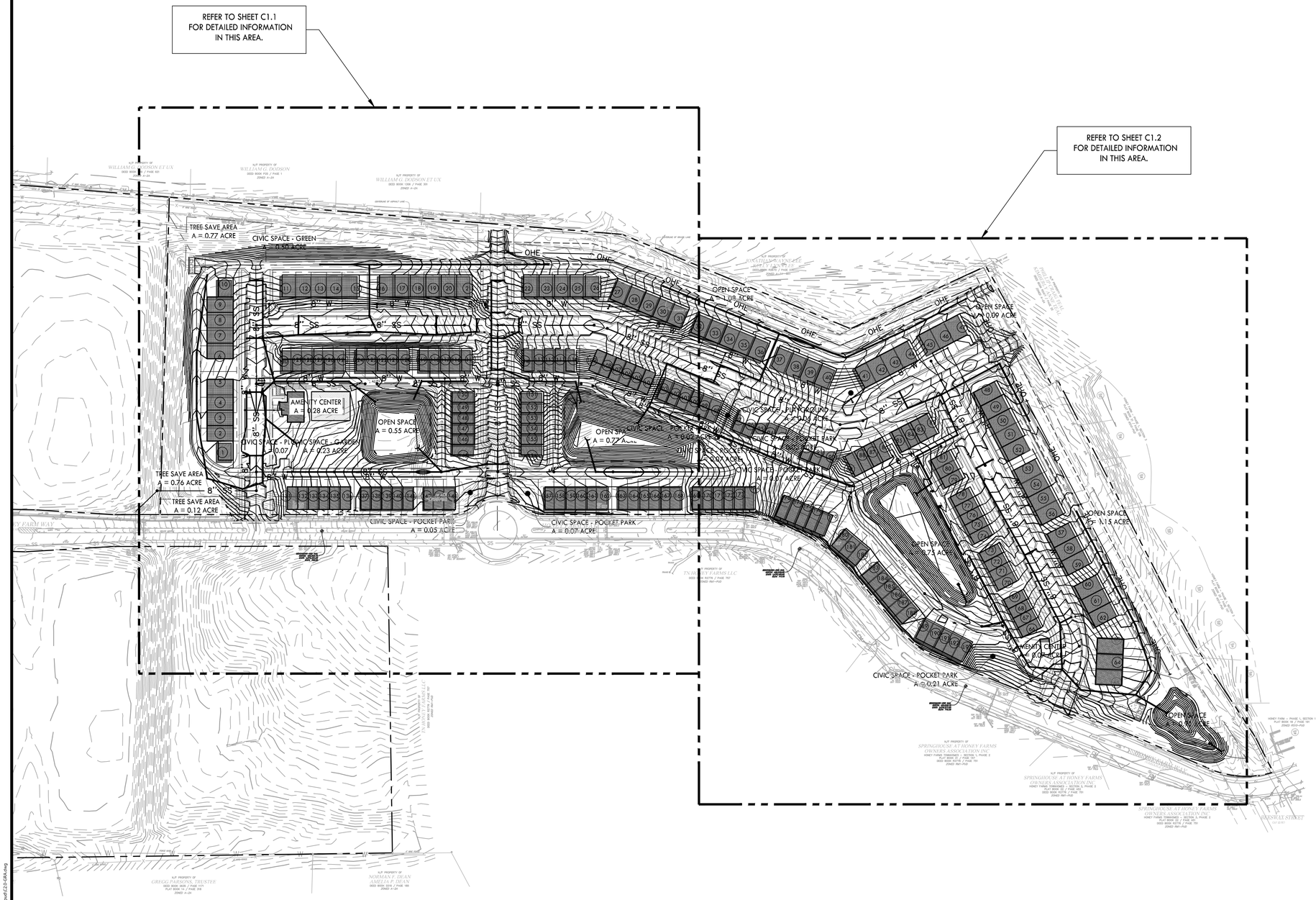
No.	DATE

5/22/2023 22135

C1.2

SITE LAYOUT PLAN

Drawing Path: z:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary pset\C1.0-LAY.dwg



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HONEY FARM TOWNHOMES

COLUMBIA, TN

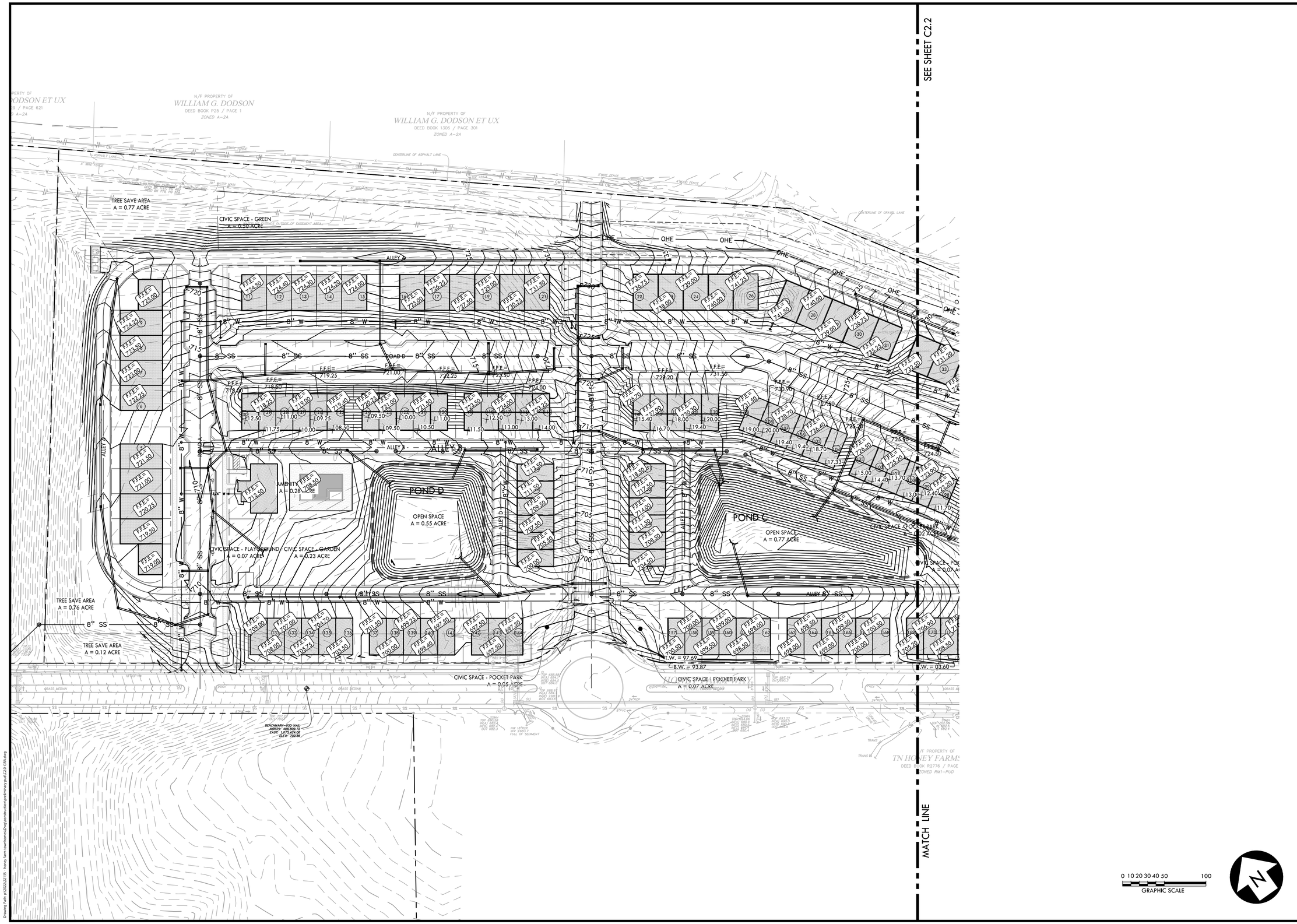
REVISIONS	
No.	DATE

5/22/2023 22135

C2.0

OVERALL GRADING DRAINAGE & UTILITY PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary pud\C2.0-GRA.dwg



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STATE OF TENNESSEE
5/22/23

HONEY FARM TOWNHOMES

COLUMBIA, TN

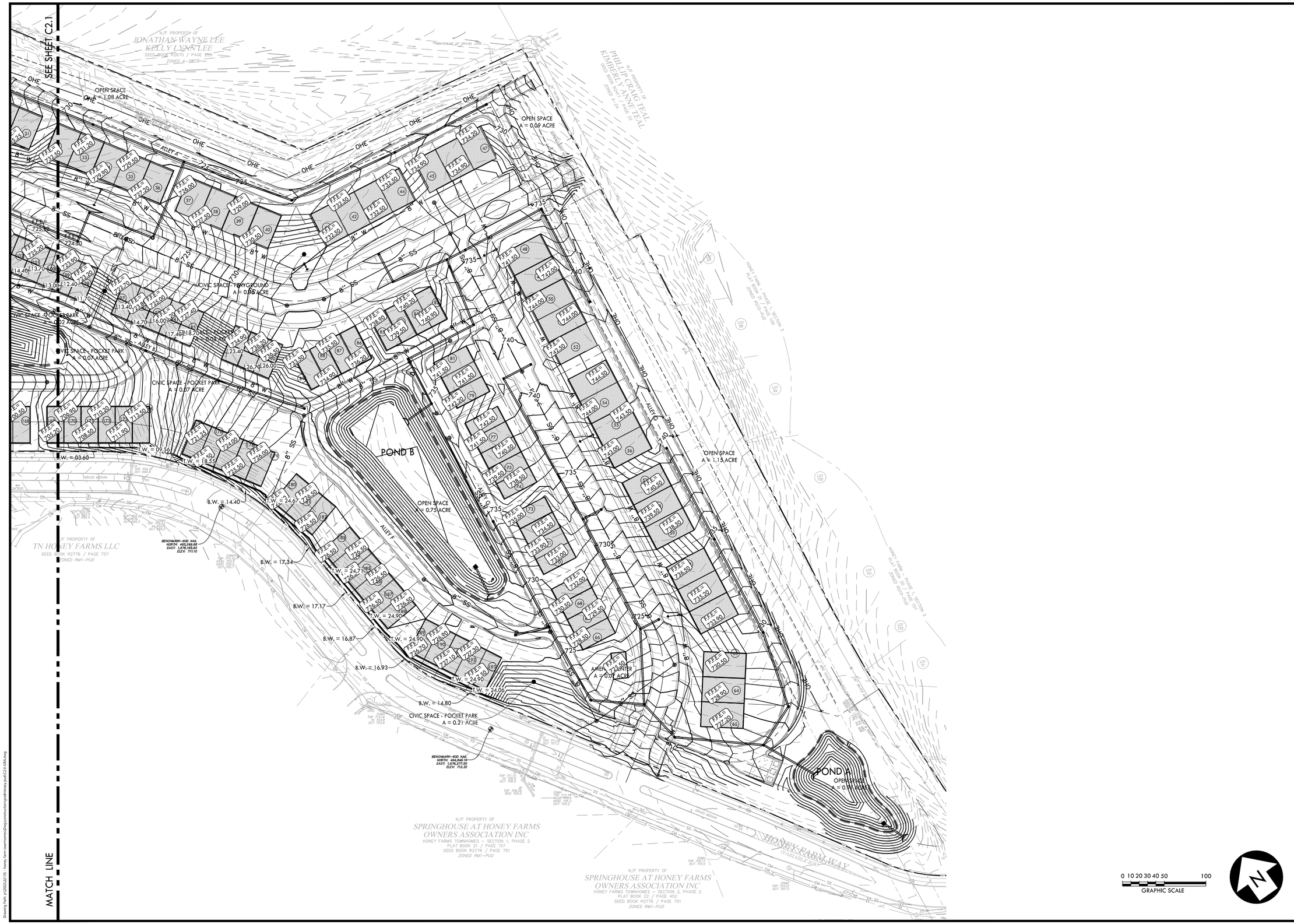
REVISIONS	
No.	DATE

5/22/2023 22135

C2.1

GRADING
DRAINAGE & UTILITY
PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary pud\C2.0-GRA.dwg



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HONEY FARM TOWNHOMES

COLUMBIA, TN

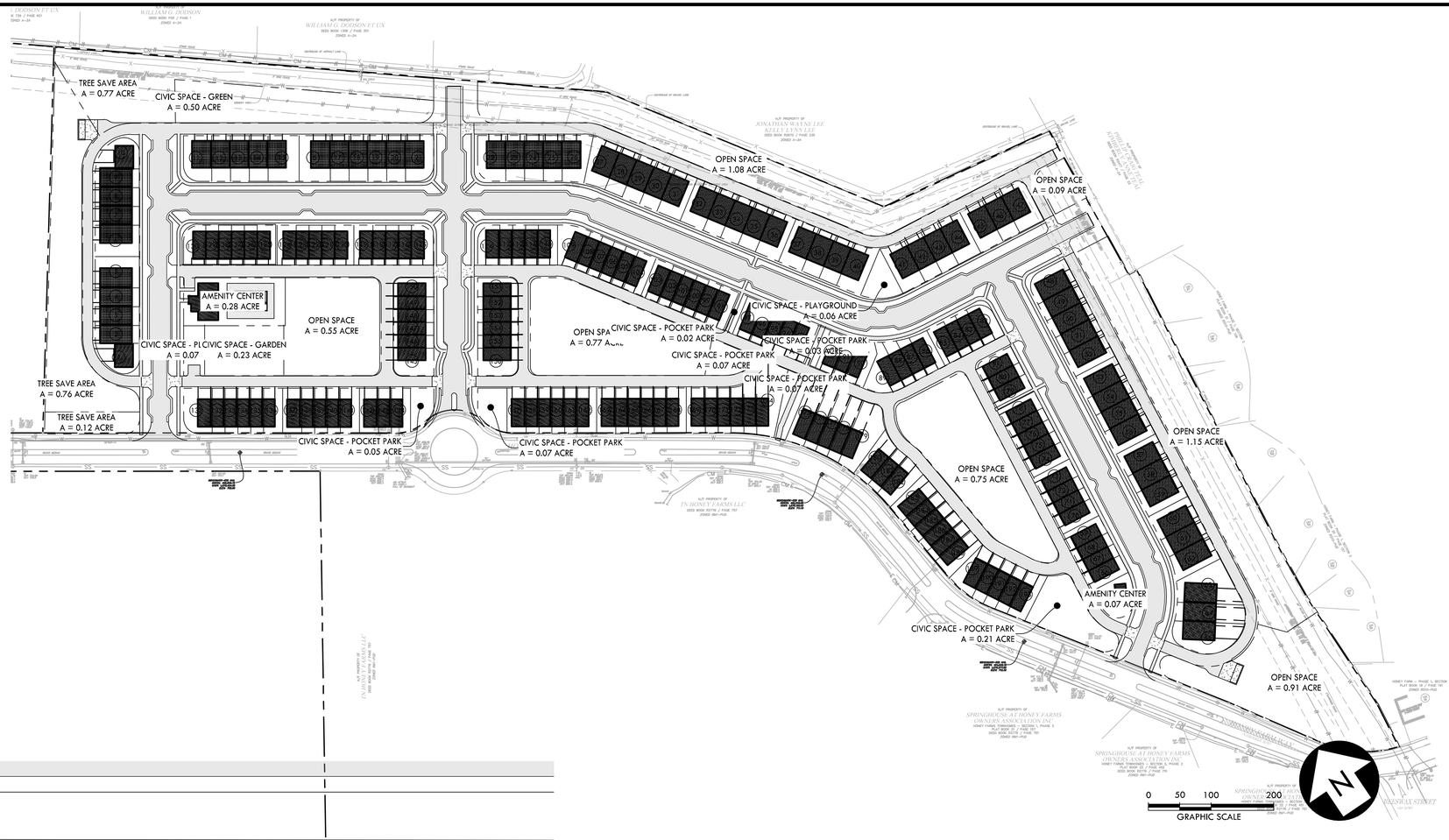
REVISIONS	
No.	DATE

5/22/2023 22135

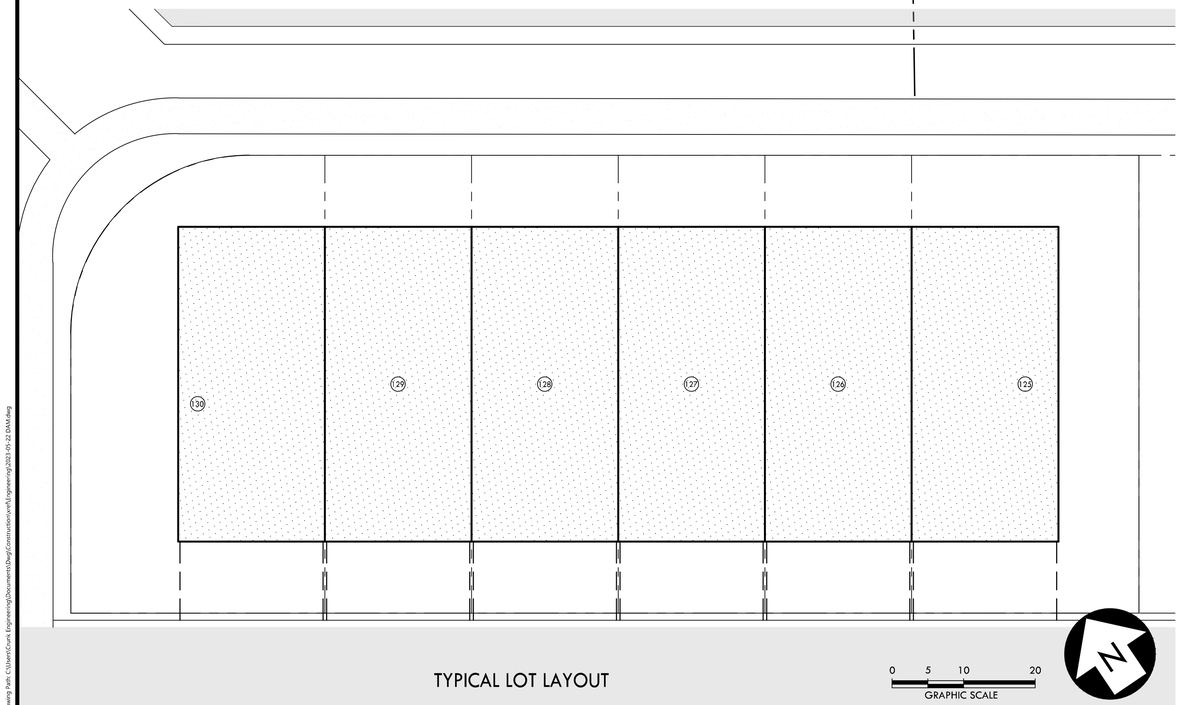
C2.2

GRADING DRAINAGE & UTILITY PLAN

OVERALL SITE AREA	
TOTAL AREA:	1,126,724.44 SF / 25.866 AC
PERVIOUS AREA:	589,826.64 SF / 13.60 AC
IMPERVIOUS AREA:	534516.8 SF / 12.27 AC
SIDEWALK AREA:	32,627.3 SF / 0.75 AC
ROAD AREA:	236,974.5 SF / 5.44 AC
DRIVEWAYS:	57,017 SF / 1.31 AC
TOWNHOMES:	207,898 SF / 4.77 AC
IMPERVIOUS AREA RATIO:	12.27/25.866 = 47.4% IMPERVIOUS



TYPICAL LOT AREA	
TOTAL AREA:	9,418 SF / 0.216 AC
PERVIOUS AREA:	2,806 SF / 0.064 AC
IMPERVIOUS AREA:	6,612 SF / 0.151 AC
DRIVEWAYS:	1,200 SF / 0.03 AC
TOWNHOMES:	5,412 SF / 0.124 AC
IMPERVIOUS AREA RATIO:	6,612/9,418 = 70.2% IMPERVIOUS



TYPICAL LOT LAYOUT

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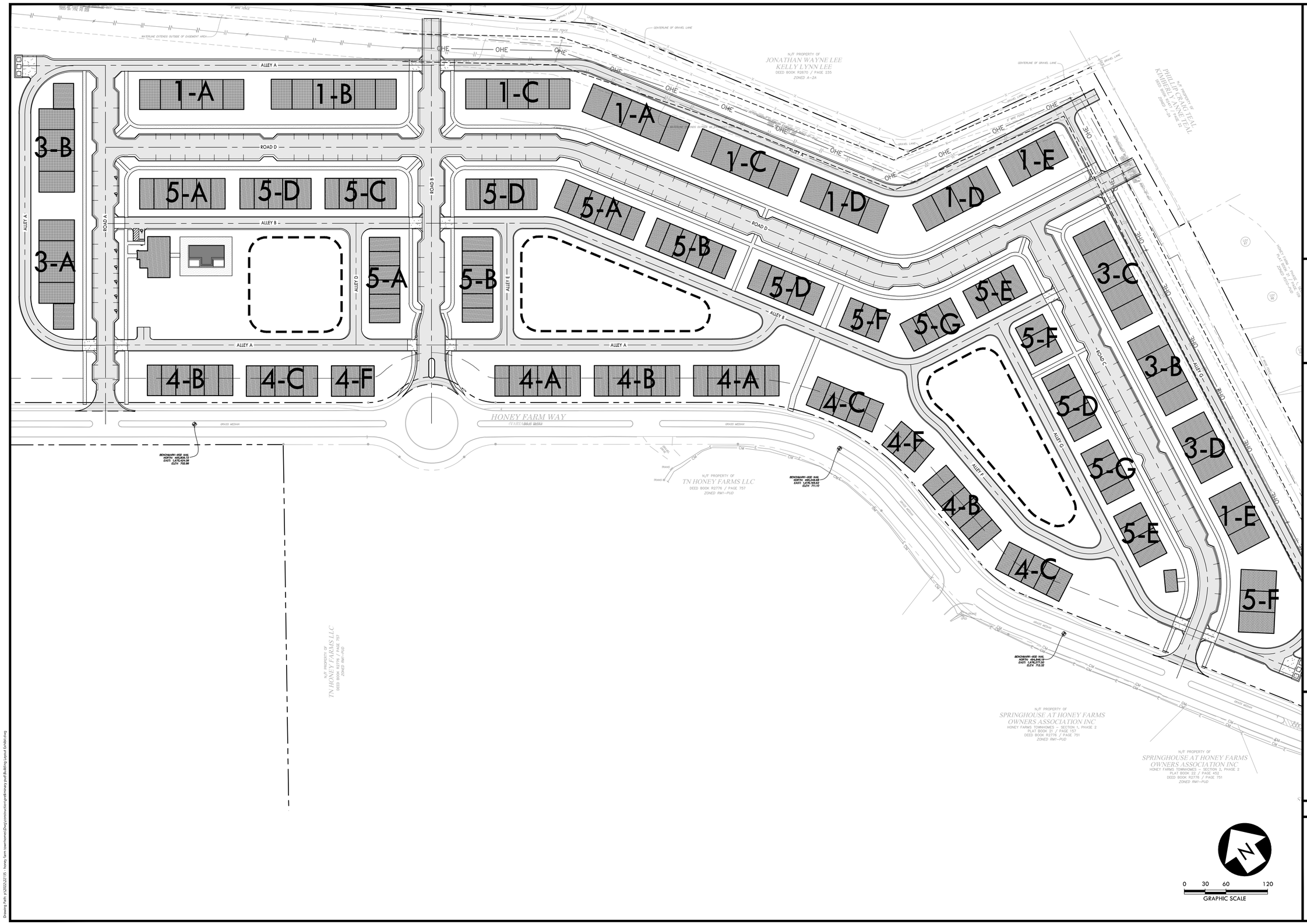
C3.0

SITE IMPERVIOUS AREA DISTRIBUTION

Drawing Path: C:\Users\Crunk Engineering\Documents\Projects\Construction\work\Engineering\2023-05-22 DAM.dwg



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ENGINEERING CRUNK

RACHEL WILSON CRUNK
REGISTERED
AGRICULTURE
5/22/23
NUMBER
114180
STATE OF TENNESSEE

HONEY FARM TOWNHOMES

COLUMBIA, TN

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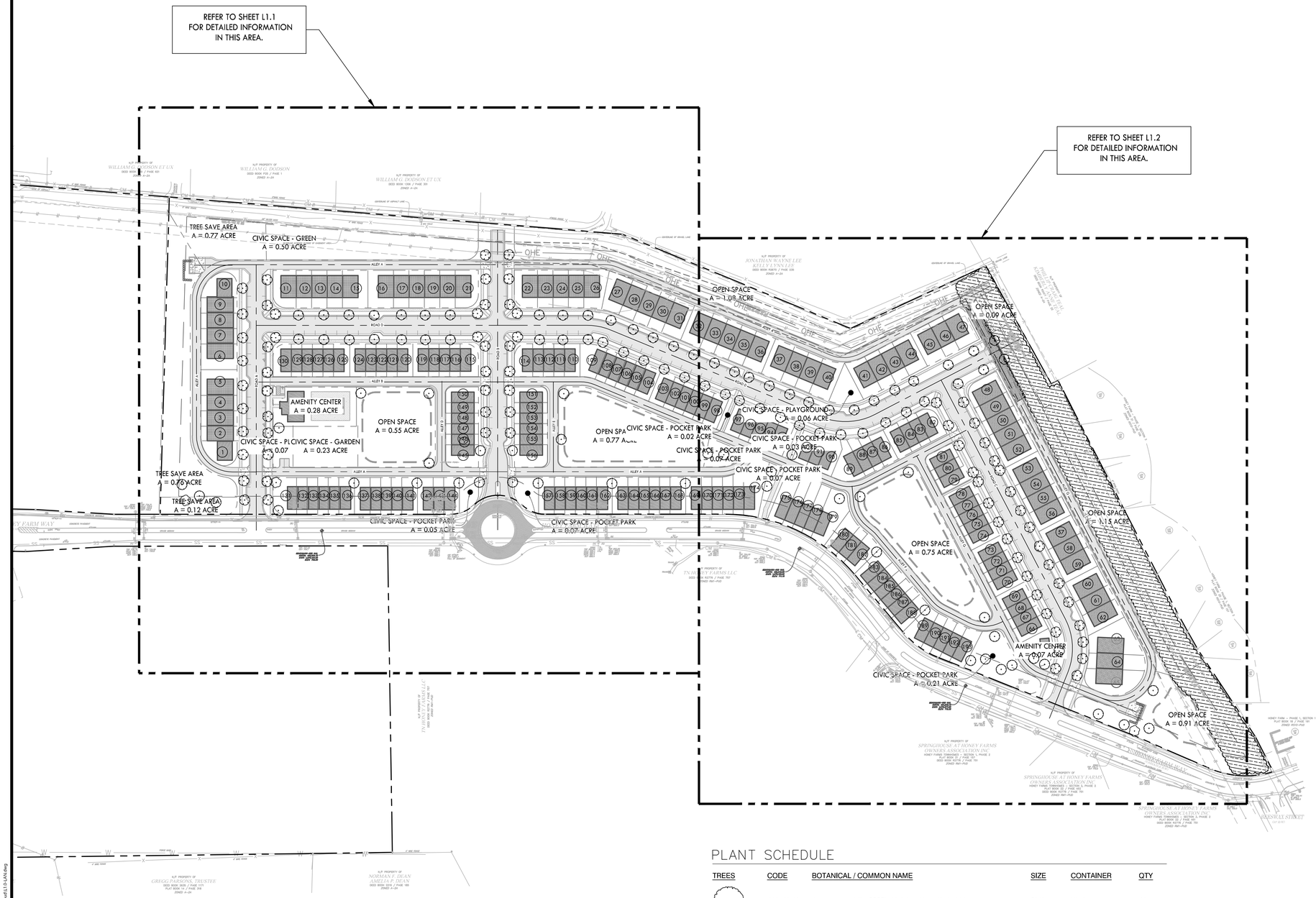
No.	DATE

5/22/2023 22135

C4.0

BUILDING LAYOUT EXHIBIT

Drawing Path: p:\2022\22135 - honey farm townhomes\Design\construction\preliminary plat\Building Layout Exhibit.dwg



PLANT SCHEDULE

TREES	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
	ACE GLO	Acer rubrum 'PNI 0268' / October Glory® Red Maple	2" Cal.	B&B	41
	QUE ALB	Quercus alba / White Oak	2.5" Cal.	B&B	5
	ULM ALL	Ulmus parvifolia 'Allee' / Allee® Lacebark Elm	2" Cal.	B&B	73
	ZEL VIL	Zelkova serrata 'Village Green' / Village Green Japanese Zelkova	2" Cal.	B&B	59

SHRUBS	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
	BUX SEM	Buxus sempervirens / Common Boxwood	3 gal.	Pot	38

0 50 100 200
GRAPHIC SCALE

811
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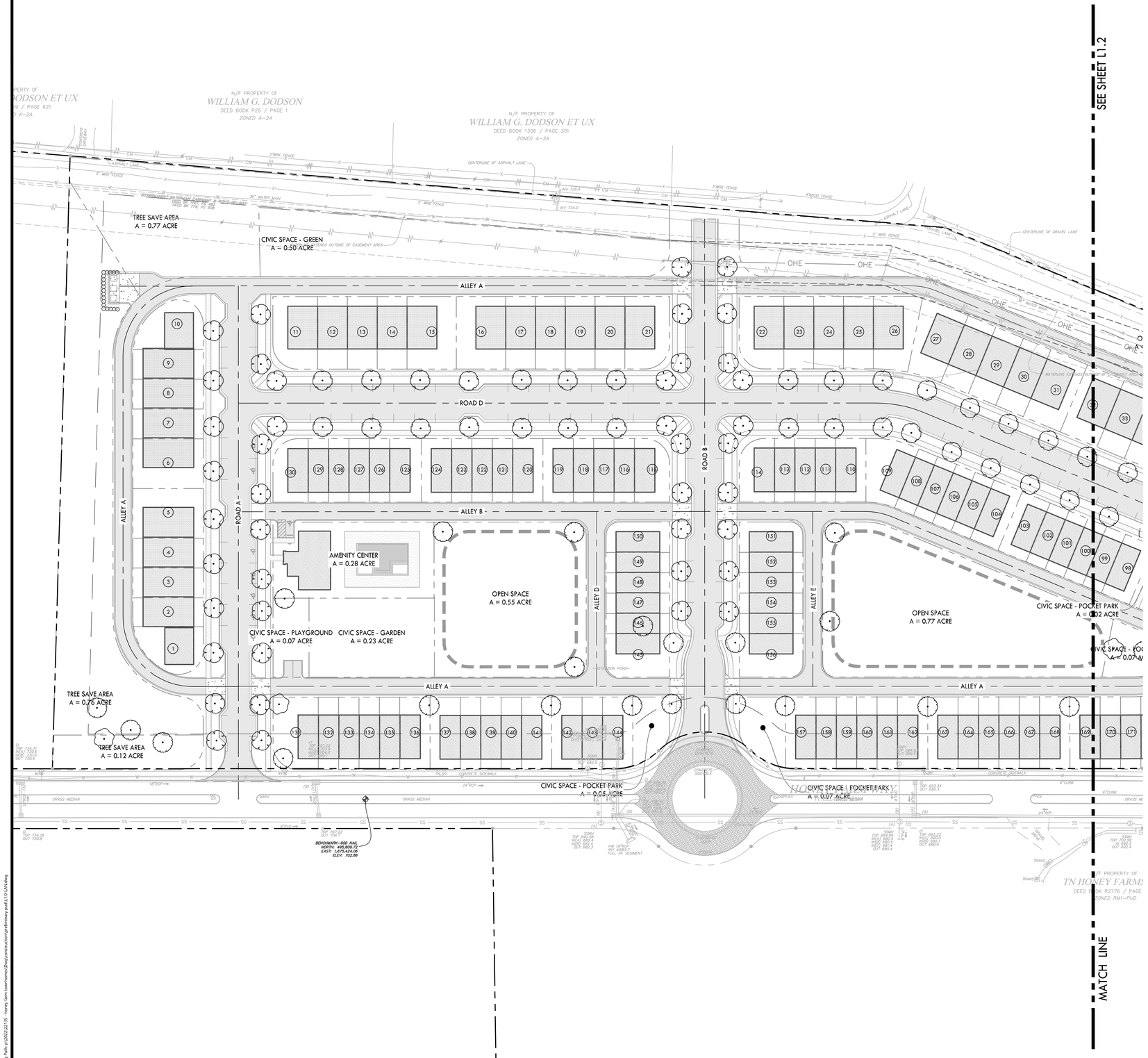
L1.0

OVERALL LANDSCAPE PLAN



NOTES:
1. REFER TO SHEET L2.0 FOR ADDITIONAL NOTES AND DETAILS
2. REFER TO SHEET L1.0 FOR PLANT LIST

0 10 20 30 40 50 100
GRAPHIC SCALE

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BRADLEY M. LEWIS
AGRICULTURE
COMMERCE
TENNESSEE No. 767
LANDSCAPE ARCHITECT
2/19/23

HONEY FARM TOWNHOMES

COLUMBIA, TN

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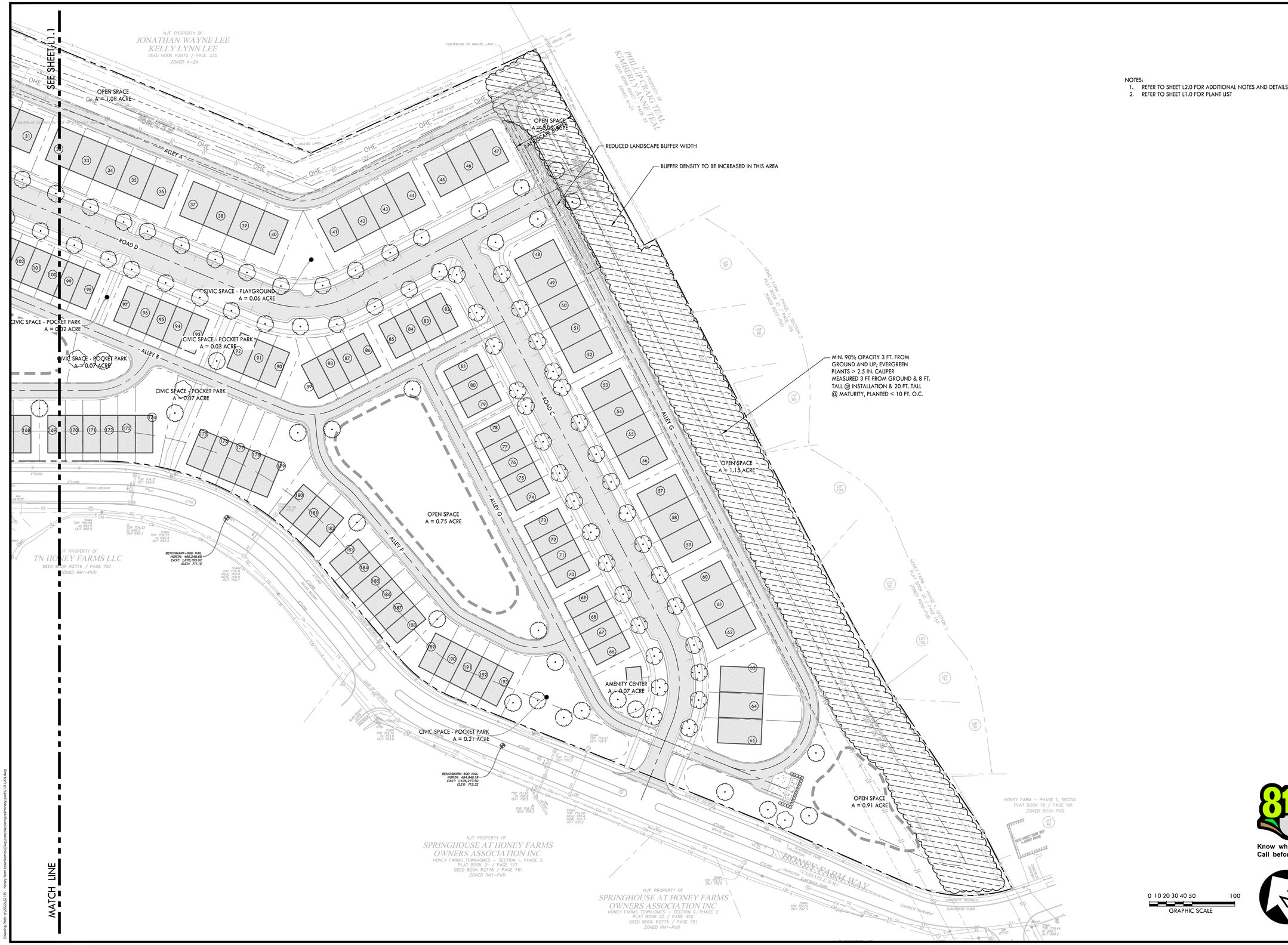
5/22/2023 22135

L1.1

LANDSCAPE PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary pud\L1.0-LAN.dwg



NOTES:
1. REFER TO SHEET L2.0 FOR ADDITIONAL NOTES AND DETAILS
2. REFER TO SHEET L1.0 FOR PLANT LIST

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No.	DATE

5/22/2023 22135

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L1.2

LANDSCAPE PLAN

LANDSCAPE NOTES:

SITE PREP

1. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES AND TAKE PRECAUTIONS TO PREVENT DAMAGE TO THESE UTILITIES.
2. THE LANDSCAPE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANIES AND SHALL BE RESPONSIBLE FOR ALL DAMAGES TO UTILITIES.
3. PLANT MATERIALS AND STUMPS INDICATED FOR REMOVAL SHALL BE REMOVED AND DISPOSED OFF-SITE BY THE CONTRACTOR. BACKFILL HOLES WITH QUALITY TOPSOIL FREE OF ROOTS AND ROCKS. SEE TOPSOIL SPECIFICATION.
4. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINE GRADING OF ALL PLANTING AREAS.
5. ALL CONTRACTORS APPLYING CHEMICALS ON SITE SHALL SUBMIT COPIES OF CERTIFICATION(S) AND LICENSES TO THE LANDSCAPE ARCHITECT.
6. PLANTING BEDS SHALL BE CLEARED OF GRASS AND WEEDS PRIOR TO INSTALLATION OF PLANTS.
7. SOD ALL AREAS DISTURBED BY CONSTRUCTION AND NOT DESIGNATED AS GROUND COVER AREAS.

TOPSOIL

1. ALL PLANTED AREAS TO HAVE A MINIMUM OF 6" OF QUALITY TOPSOIL.
2. ALL COMPACTED AREAS TO BE AERATED AND AMENDED AS NEEDED.
3. TOPSOIL IS TO BE NATURAL, FERTILE, FRIABLE, PRODUCTIVE SOIL, NEITHER EXCESSIVELY ACID NOR ALKALINE, AND FREE FROM TOXIC SUBSTANCES, STONES WEEDS, CLAY, CLODS, ROOTS, CINDERS, DEBRIS, AND CONSTRUCTION MATERIAL.

PLANTING

1. ALL PLANTING BEDS OR MULCH BEDS SHALL BE FREE OF WEEDS PRIOR TO THE INSTALLATION OF MULCH..
2. THE OPTIMUM TIME OF PLANTING IS FROM OCTOBER 1 TO APRIL 1. SCHEDULING FOR PLANTING AT OTHER TIMES MUST BE APPROVED IN WRITING BY THE LANDSCAPE ARCHITECT.
3. UPON SECURING PLANT MATERIAL AND BEFORE INSTALLATION, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT FOR A PRE-INSTALLATION INSPECTION IN ORDER TO VERIFY ALL PLANT MATERIAL MEETS SPECIFICATIONS. TREES OF SAME SPECIES ARE TO BE MATCHED IN GROWTH CHARACTER AND UNIFORMITY.
4. PLANTS SHALL BE ORIENTED FOR BEST APPEARANCE AND VERTICAL. ALL NON-BIODEGRADABLE ROOT CONTAINERS SHALL BE REMOVED.
5. AFTER PLANTING, TREE BRANCHES SHALL BE SELECTIVELY TRIMMED BY 25%, MAINTAINING NATURAL SHAPE. ALL DEAD AND BROKEN BRANCHES IN TREES AND SHRUBS SHALL ALSO BE PRUNED. REMOVE TAGS, TWINE, OR OTHER NON-BIODEGRADABLE MATERIAL.
6. WATERING: ALL TREES AND SHRUBS SHALL BE THOROUGHLY WATERED WITHIN ONE HOUR OF INSTALLATION.

PLANT MATERIALS

1. THE LANDSCAPE CONTRACTORS SHALL VERIFY ALL MATERIAL QUANTITIES. IN THE EVENT OF A DISCREPANCY, THE QUANTITIES SHOWN ON THE PLAN WILL TAKE PRECEDENCE.
2. ALL PLANT MATERIALS TO BE NURSERY GROWN AND TO COMPLY WITH THE AMERICAN STANDARDS FOR NURSERY STOCK: ANSI - LATEST EDITION FOR SIZE AND QUALITY.
3. ONLY GRADE "A" TYPE PLANTS WILL BE ACCEPTED. PLANTS THAT ARE INFERIOR OR DAMAGED WILL NOT BE ACCEPTED.
4. THE PLANTS DELIVERED TO THE PROJECT SITE SHALL BE PLANTED AS SOON AS SITE CONDITIONS PERMIT. TAKE CARE IN SCHEDULING PLANT DELIVERIES AND THE SIZE OF DELIVERIES SO THAT LONG PERIODS OF STORAGE ARE AVOIDED. ADEQUATELY PROTECT PLANTS PLACED IN TEMPORARY STORAGE FROM THE SUN AND WIND; WATER PLANTS SO AS TO MAINTAIN THEIR APPEARANCE AND HEALTH. PLANTS THAT HAVE NOT BEEN PROPERLY MAINTAINED DURING TEMPORARY STORAGE MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
5. ALL TREES SHALL BE FIRST QUALITY REPRESENTATIVES OF THEIR SPECIES AND SHALL MEET ALL REQUIREMENTS OTHERWISE STIPULATED. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT PLANTED MATERIAL IN THE FIELD, AT THE GROWING SITE OR ON THE JOB SITE.

MULCHING

1. ALL PLANTING BEDS OR MULCH BEDS SHALL HAVE WEEDS REMOVED PRIOR TO THE INSTALLATION OF MULCH.
2. ALL PLANTING BEDS SHALL HAVE A MINIMUM OF 3" DEPTH OF AGED SHREDDED HARDWOOD BARK MULCH OR A MINIMUM OF 4" DEEP PINE STRAW MULCH.
3. CONTRACTORS SHALL PROVIDE SMOOTH, NEATLY TRENCHED (3 INCH DEEP) BED EDGES.
4. MULCH SHALL NOT CONTACT OUTER BARK AT BASE OF TREES. PULL BACK MULCH 3-4" FROM TRUNK.

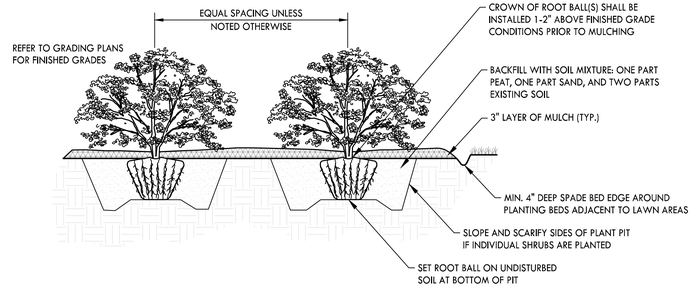
PLANT MAINTENANCE

1. THE LANDSCAPE CONTRACTOR SHALL PROVIDE OWNER WITH WRITTEN INSTRUCTIONS ON THE PROPER CARE OF ALL SPECIFIED PLANT MATERIALS PRIOR TO FINAL PAYMENT.
2. CONTRACTOR TO WARRANTY ALL MATERIAL FOR 2 YEARS AFTER DATE OF FINAL ACCEPTANCE.
3. ALL UNHEALTHY OR DEAD PLANT MATERIAL SHALL BE REPLACED WITHIN ONE YEAR, OR BY THE NEXT PLANTING PERIOD, WHICHEVER COMES FIRST. OTHER DEFECTIVE PLANT MATERIAL SHALL BE REPLACED OR REPAIRED WITHIN THREE (3) MONTHS.

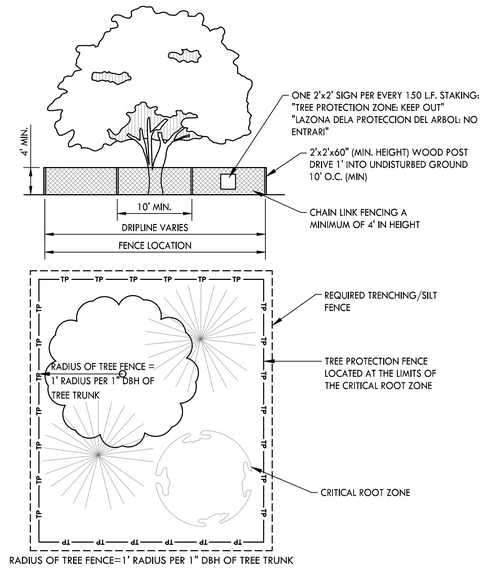
TREE PROTECTION

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM CONSTRUCTION DAMAGE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT EXISTING TREES THAT ARE TO REMAIN. NO HEAVY EQUIPMENT OR MATERIALS SHALL BE PERMITTED TO OPERATE OR BE STORED WITHIN THE DRIP LINES OF THE TREES, OUTSIDE THE LIMIT OF GRADING.
3. TREE PROTECTION STEPS:
   - A) INSTALL TREE PROTECTION FENCING IN ACCORDANCE WITH METRO CODE 17.24.110 "PROTECTION OF TREES DURING DEVELOPMENT ACTIVITIES".
   - B) PLACE FENCE POST AND FENCING AT TREE DRIP LINE OR 10' FROM TRUNK, WHICHEVER IS GREATER.
   - C) POST SHALL NOT BE SPACED MORE THAN 10' APART.
   - D) POST TEMPORARY SIGNS - TREE ROOT PROTECTION ZONE.
4. FENCING AND SIGNS SHALL REMAIN IN PLACE UNTIL THE SITE HAS BEEN INSPECTED BY URBAN FORESTER FOR USE AND OCCUPANCY PERMIT.

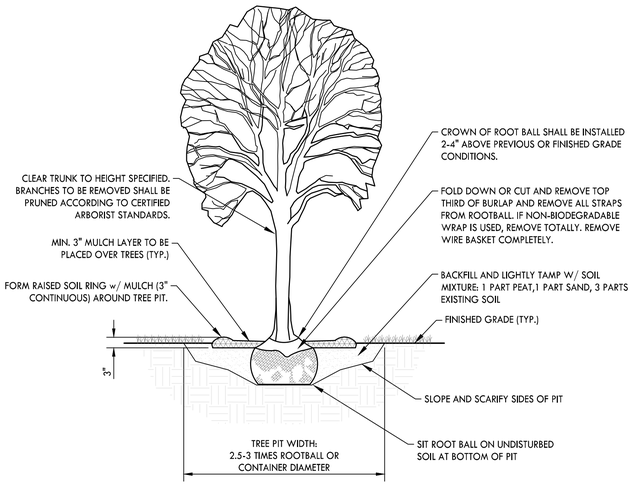
NOTES:
1. WHERE SHRUBS APPEAR IN BED AREA, 3" OF MULCH SHALL BE SPREAD OVER THE ENTIRE AREA WITHIN THE BED AS INDICATED ON THE PLANS.
2. DO NOT PRUNE SHRUBS BEFORE ACCEPTANCE.
3. CAREFULLY REMOVE CONTAINER FROM ROOT BALL USED FOR SHRUB(S). ANY BROKEN OR CRUMBLING ROOT BALL(S) WILL BE REJECTED.
4. IF SHRUB IS B&B, REMOVE BURLAP FROM TOP $\frac{1}{3}$ OF ROOT BALL OR COMPLETELY REMOVE BURLAP IF SOILS ARE POORLY DRAINED.
5. SCARIFY ROOTBALL IF ROOT BOUND IN CONTAINER PER HORTICULTURE STANDARDS.



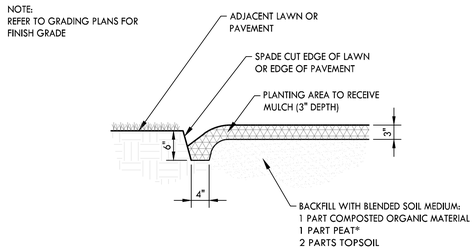
1 SHRUB PLANTING
NOT TO SCALE



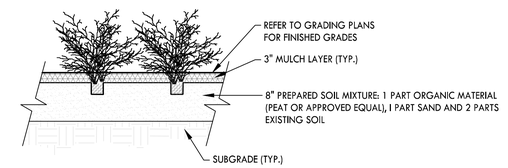
4 TREE PROTECTION
NOT TO SCALE



2 DECIDUOUS TREE PLANTING
NOT TO SCALE



5 SPADE BED EDGE
NOT TO SCALE



3 GROUNDCOVER PLANTING
NOT TO SCALE

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ENGINEERING CRUNK

ROBERT M. LEE — TENNESSEE — AGRICULTURE — AMERICA — LANDSCAPE ARCHITECT — 2/1/1982

HONEY FARM TOWNHOMES

COLUMBIA, TN

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No.	DATE

5/22/2023 22135

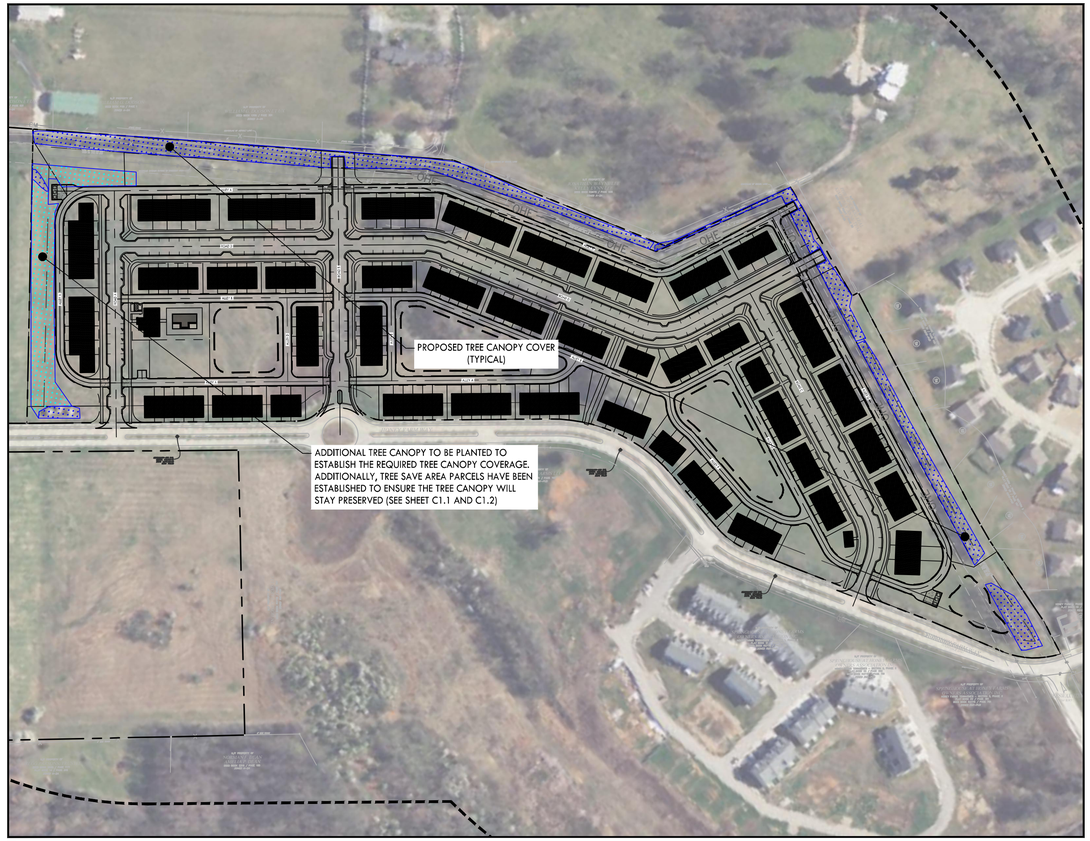
L2.0

LANDSCAPE DETAILS

Drawing Path: z:\2022\22135 - honey farm townhomes\Design\construction\pre&finalplans\ pref L1.0 LAN.dwg



EXISTING TREE CANOPY EXHIBIT



PROPOSED TREE CANOPY EXHIBIT

0 50 100 150 300
GRAPHIC SCALE

TREE CANOPY REQUIREMENTS:

TOTAL SITE AREA:	25.87 AC
EXISTING TREE CANOPY:	5.18 AC
PERCENTAGE OF TOTAL SITE AREA:	20.0%
REQUIRED TREE CANOPY PERCENTAGE TO REMAIN:	48.0%
	2.49 AC
EXISTING TREE CANOPY TO REMAIN:	1.63 AC
TREE CANOPY TO BE PLANTED:	0.86 AC
TOTAL PROPOSED TREE CANOPY:	2.50 AC
	48.3%

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REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 114180
STATE OF TENNESSEE
5/22/23

HONEY FARM TOWNHOMES

COLUMBIA, TN

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5/22/2023 22135

C1.3

TREE CANOPY EXHIBIT

4-B



123'-0"

ELEV D
DOOR STYLE 1
4 / 4 WINDOW GRID
COLOR SCHEME 16

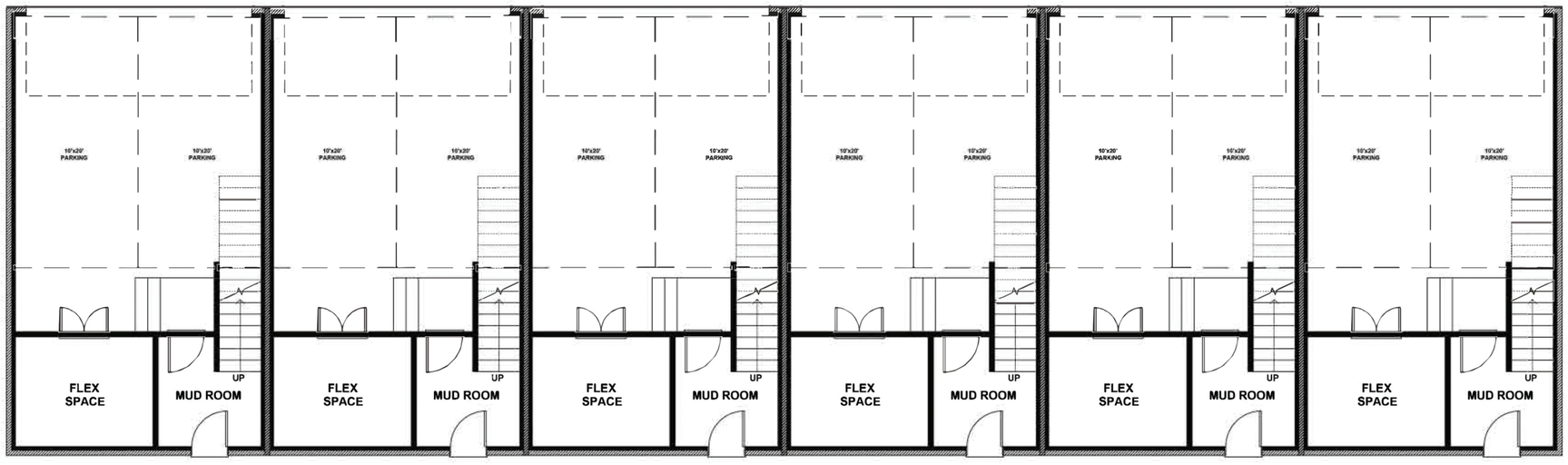
ELEV E
DOOR STYLE 3
4 / CLEAR WINDOW GRID
COLOR SCHEME 24

ELEV G
DOOR STYLE 4
CLEAR / CLEAR WINDOW GRID
COLOR SCHEME 1

ELEV B
DOOR STYLE 5
9W / CLR WINDOW GRID
COLOR SCHEME 15

ELEV C
DOOR STYLE 1
9 / 9 WINDOW GRID
COLOR SCHEME 19

ELEV H
DOOR STYLE 2
4 / CLEAR WINDOW GRID
COLOR SCHEME 17



May 21, 2023

City of Columbia
Technical Review Committee
700 N Garden Street
Columbia, TN 38401

RE: Item No 23-0145
HONEY FARM TOWNHOMES COLUMBIA TENNESSEE

Below are our responses to comments received on TUESDAY, MAY 9, 2023. We believe we have satisfied all comments, but if you have additional concerns or questions, please do not hesitate to contact us. Our responses are as follows:

COMMENTS:

Engineering

1. Subject to Construction Plan Approval and TIS

Response: Noted.

2. Provide roadway cross section(s) detail

Response: Roadway cross sections have been included in the submittal.

3. Label streets as public or private, or provide note to that effect.

Response: Note indicating the streets being public can be seen on C1.1 and C1.2.

4. Engineering recommends alignment of Alley A and Alley C at intersections with Road A.

Response: Alley A and Alley C have been aligned and are now a continuous Alley A.

5. All roadway geometry to meet requirements as outlined in the ESS

Response: Roadway geometry meets the ESS requirements.

Planning

6. Playground in the entrance and off roundabout, would recommend a more appropriate place

Response: Playground location has been moved to be close to the amenity center, and pool area.

Alley G in the buffer.... PUD exception request?

Response: A PUD exception request is being requested to accommodate Alley G in the buffer.

7. Provide typical playground facilities and amenity center at road C?

Response: Amenity center at road C will be a central mail kiosk, see detail on sheet C1.2. Typical playground facilities are to be determined.

8. Water availability letter expired in January 2023. We should not have accepted this application at submittal. Please provide an updated letter at resubmittal.

Response: Updated water availability letter has been requested on May 12, 2023.

9. The Design Review Team has made a recommendation on facades for proposed townhome buildings. The Design Review Team has asked Planning Commission and Council to clarify the scope of design review for structures in residential PUDs. Staff's current interpretation of the Ordinance is that the Design Review team may evaluate and recommend a pattern book of the overall development. The applicant may subsequently return to Design Review for each phase of development with revisions and more detailed designs which conform to the overall aesthetic pattern of the Master Plan as approved by Planning Commission.

Response: Noted.

10. Please provide pattern book elevations recommended by the Design Review Team. Please include explanatory cover sheet that relates buildings depicted in the previous iteration of this Master plan to the new layout.

Response: Building layout exhibit has been included in this submittal.

11. The amenity center building was included in the initial submittal to the Design Review Team but was not the subject of extensive discussion. Any subsequent change in design will require additional review by the Design Review Team.

Response: Noted.

12. Please confirm whether the 0.07 ac amenity center a mail kiosk. If so, please provide detail of space conforming to ESS detail MD-03.

Response: The 0.07 ac amenity center is a mail kiosk. The mail kiosk detail can been found on sheet C1.2.

13. Amenity space may not count as Civic Space unless identified as one of the eight types in §5.3 of the Zoning Ordinance.

Response: Noted. Additional civic space has been included to meet the 5% civic space requirement.

14. Please identify the "Main Civic Space," which must be Green, Square, or Plaza type (§ 5.3.3; p. 335).

Response: Main civic space, green space, identified on sheet C1.1

15. Please add parking calculations to the Site Data Table indicating the total number of parking spaces provided on-street and off-street. Indicate that on-street spaces are available adjacent to the frontage line on the same side of the Thoroughfare or Internal dive as the Lot or Building Site they serve (see § 4.3.12.B.3). As presented the Master Plan requires a minimum of 394 spaces for dwelling units; 14 for Civic Space; and 1:200 recreational facilities).

Response: Parking calculations have been included in the site data table. The on street and off street parking has been indicated in the table.

16. Please indicate location of parking for amenity center.

Response: Amenity center parking can be seen in the updated site layout.

17. Please add note to Site Data Table referencing the private lighting standards at Table 4.3.17.B (p. 297) of the Zoning Ordinance with note acknowledging that exterior lighting plans may be required as appropriate at site construction plan review/building permit (§ 8.5.6.G.4.p).

Response: Private lighting standards note has been added to the site data table.

18. Please revise setbacks in Site Data Table to reflect zero side setback for attached townhomes.

Response: Setbacks have been revised to reflect zero side setbacks

19. Please provide typical building layout depicting location and setbacks of in-line and end unit, driveway locations, and other relevant information.

Response: typical building layout has been included on sheet C1.0

20. Please provide calculation of impervious coverage for site as a whole as well as typical lot or building site by type (i.e., each group of attached Townhouse units, each amenity structure, etc).

Response: Site impervious area distribution sheet , C3.0, has been added to the submittal.

21. Block permitter may not exceed 2,000 feet (Table 4.3.1-K, p. 157; Table 5.2.2.D, p. 308). Alleys are not Throughfares and may not be used to circumscribe blocks (See definitions in § 9.3).

Response: An exemption is being requested for the block perimeter with alleys instead of throughfares.

22. Alleys as depicted in the network of Alley B, C, F, and G provide general circulation rather than secondary access and therefore do not conform to the definition of Alley at § 9.3 (p.480).

Response: An exemption is being requested for the secondary access roads.

23. Dumpster location on sheet C1.2 must be screened from frontage (Table 4.3.1-k, p. 164). Please show method of screening conforming to Table 4.3.1-k (p.167) & 4.3.11 (references back to PUD-R table). (Refuse and Recycling)

Response: Method of screening has been included in the Landscape sheets

24. Please provide dumpster enclosure detail (fully enclosed on 3 sides and enclosed on the 4th side with self-closing gate) See ESS detail MD-01, Table 4.3.1-k and §4.3.15 of the Zoning Ordinance. (Refuse and Recycling)

Response: Dumpster enclosure detail can be seen on sheet C1.0.

25. Please add note to Site Development Plan acknowledging requirement at 4.3.16.C.1 (p. 290) of the Zoning Ordinance that future removal of trees depicted on the plan will require approval by Planning Commission.

Response: Note indicating that future removal of trees will require approval by the Planning Commission can be seen on sheet C1.0.

26. A portion of the tree save area appears to be within a power line easement with existing overhead transmission lines. Please revise.

Response: All proposed tree save area has been moved to be outside of the existing and proposed power line easement.

27. Confirm that private plantings listed on sheet L1.0 conform to Table 4.3.16.D-1 (p. 290-291) or the TVA publication "Native Plants of the Tennessee Valley." Revise as necessary.

Response: Will comply.

Fire

28. There are a couple units near pond A that cannot be reached within 150' of hose pull.

Response: All buildings are now within 150' from the nearest hydrant. This is through the new configuration of the units near pond A.

Building

29. No comment.

Response: Noted.

Police

30. No comments provided.

Response: Noted

ATT

31. Plan to serve.

Response: Noted.

Maury County Highway Dept.

32. No comment.

Response: Noted.

Columbia Power

33. Columbia Power System has an existing power line near your proposed residential development. We are willing to serve this residential 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.

Response: Noted.

34. *Unfortunately, due to current supply chain challenges, no timeframe can be guaranteed regarding the availability of meters of transformers appropriate for your development.

Response: Noted.

Columbia Water

35. "A water availability letter was issued on 9-15-22, it is now expired. For the project to move forward the availability letter must be current. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Any off-site improvements stated in the water availability letter are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

Response: A new water availability letter was requested on 5/16/2023.

Public Works

36. No Comment – Honey Farm Townhomes will utilize private trashcan service.

Response: Two groups of three 8 yd dumpsters have been added to the site in the Northwestern and Southeastern corners of the site based on the recommendation of 6 8 yd dumpsters made by public works on Tuesday January 10, 2023.

Maury County E911

37. Contact Maury County 911 for street name request and approvals. Contact information: cgideon@maury911.org

Response: Noted.

Atmos Energy

38. No comment.

Response: Noted.

Maury County Schools

39. Battle Creek Elementary, Battle Creek Middle, Spring Hill High School. See Attached capacity Numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Response: Noted.

Duck River Electric Membership Corp

40. No comment provided.

Response: Noted.

We believe that all comments have been addressed. If you have any questions or need additional information, please do not hesitate to contact me at adam@crunkeng.com or 615-873-1795.

Sincerely,

Adam Crunk, PE
Crunk Engineering LLC

DEVELOPMENT REVEW COMMITTEE MEETING
Tuesday, May 9, 2023

ITEM NO.
23-0145

DESCRIPTION: Request from Adam Crunk for Preliminary PUD master plan approval of Honey Farm Townhomes being a portion of Tax Map 51 Parcel 58 off Honey Farm Way and consisting of 197 lots.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. Subject to Construction Plan Approval and TIS
2. Provide roadway cross section(s) detail
3. Label streets as public or private, or provide note to that effect.
4. Engineering recommends alignment of Alley A and Alley C at intersections with Road A.
5. All roadway geometry to meet requirements as outlined in the ESS

Planning

6. Playground in the entrance and off roundabout, would recommend a more appropriate place
7. Alley G in the buffer.... PUD exception request?
8. Provide typical playground facilities and amenity center at road C?
9. Water availability letter expired in January 2023. We should not have accepted this application at submittal. Please provide an updated letter at resubmittal.
10. The Design Review Team has made a recommendation on facades for proposed townhome buildings. The Design Review Team has asked Planning Commission and Council to clarify the scope of design review for structures in residential PUDs. Staff's current interpretation of the Ordinance is that the Design Review team may evaluate and recommend a pattern book of the overall development. The applicant may subsequently return to Design Review for each phase of development with revisions and more detailed designs which conform to the overall aesthetic pattern of the Master Plan as approved by Planning Commission.
11. Please provide pattern book elevations recommended by the Design Review Team. Please include explanatory cover sheet that relates buildings depicted in the previous iteration of this Master plan to the new layout.
12. The amenity center building was included in the initial submittal to the Design Review Team but was not the subject of extensive discussion. Any subsequent change in design will require additional review by the Design Review Team.

13. Please confirm whether the 0.07 ac amenity center a mail kiosk. If so, please provide detail of space conforming to ESS detail MD-03.
14. Amenity space may not count as Civic Space unless identified as one of the eight types in §5.3 of the Zoning Ordinance.
15. Please identify the "Main Civic Space," which must be Green, Square, or Plaza type (§ 5.3.3; p. 335).
16. Please add parking calculations to the Site Data Table indicating the total number of parking spaces provided on-street and off-street. Indicate that on-street spaces are available adjacent to the frontage line on the same side of the Thoroughfare or Internal dive as the Lot or Building Site they serve (see § 4.3.12.B.3). As presented the Master Plan requires a minimum of 394 spaces for dwelling units; 14 for Civic Space; and 1:200 recreational facilities).
17. Please indicate location of parking for amenity center.
18. Please add note to Site Data Table referencing the private lighting standards at Table 4.3.17.B (p. 297) of the Zoning Ordinance with note acknowledging that exterior lighting plans may be required as appropriate at site construction plan review/building permit (§ 8.5.6.G.4.p).
19. Please revise setbacks in Site Data Table to reflect zero side setback for attached townhomes.
20. Please provide typical building layout depicting location and setbacks of in-line and end unit, driveway locations, and other relevant information.
21. Please provide calculation of impervious coverage for site as a whole as well as typical lot or building site by type (i.e., each group of attached Townhouse units, each amenity structure, etc).
22. Block permitter may not exceed 2,000 feet (Table 4.3.1-K, p. 157; Table 5.2.2.D, p. 308). Alleys are not Throughfares and may not be used to circumscribe blocks (See definitions in § 9.3).
23. Alleys as depicted in the network of Alley B, C, F, and G provide general circulation rather than secondary access and therefore do not conform to the definition of Alley at § 9.3 (p.480).
24. Dumpster location on sheet C1.2 must be screened from frontage (Table 4.3.1-k, p. 164). Please show method of screening conforming to Table 4.3.1-k (p.167) & 4.3.11 (references back to PUD-R table). *(Refuse and Recycling)*
25. Please provide dumpster enclosure detail (fully enclosed on 3 sides and enclosed on the 4th side with self-closing gate) See ESS detail MD-01, Table 4.3.1-k and §4.3.15 of the Zoning Ordinance. *(Refuse and Recycling)*
26. Please add note to Site Development Plan acknowledging requirement at 4.3.16.C.1 (p. 290) of the Zoning Ordinance that future removal of trees depicted on the plan will require approval by Planning Commission.
27. A portion of the tree save area appears to be within a power line easement with existing overhead transmission lines. Please revise.
28. Confirm that private plantings listed on sheet L1.0 conform to Table 4.3.16.D-1 (p. 290-291) or the TVA publication "Native Plants of the Tennessee Valley." Revise as necessary.

Fire

29. There are a couple units near pond A that cannot be reached within 150' of hose pull

Building

30. No comments.

Police

31. No comments provided.

ATT

32. Plan to serve.

Maury County Highway Dept.

33. No comment.

Columbia Power

34. Columbia Power System has an existing power line near your proposed residential development. We are willing to serve this residential 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.
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Public Works

37. No Comment - Honey Farm Townhomes will utilize private trashcan service.

Maury County E911

38. Contact Maury County 911 for street name requests. Cgideon@maury911.0rg

Atmos Energy

39. No comment provided.

Maury County Schools

40. Battle Creek Elementary, Battle Creek Middle, Spring Hill High School. See Attached capacity Numbers. The development combined with current neighborhoods and additional approved developments in these zones may require either new construction or realignment of school zones to accommodate new students.

Duck River Electric Membership Corp

41. No comments provided.

ATTACHMENTS: Preliminary PUD Master Plan

NOTE: All submittals shall be compliant with City standards prior to Planning Commission review. Items that are not adhering to the regulations and/or comments for that request will not be forwarded to the next agenda until such items are amended.

HONEY FARM TOWNHOMES

2248 NASHVILLE HIGHWAY, COLUMBIA, TN 38401

PRELIMINARY MASTER DEVELOPMENT PLAN

GENERAL INFORMATION

DEVELOPER

NAME:
ADDRESS:
Contact:
Phone:

OWNER

NAME: EMG HONEY FARM, LLC, A TENNESSEE LIMITED LIABILITY COMPANY
ADDRESS: P.O. BOX 1715 SPRING HILL, TN 37174
CONTACT: DREW SMITH,
DREW.SMITH@EQUITASMG.COM
Phone: 469-585-7913

CIVIL ENGINEER

Crunk Engineering LLC
7112 Crossroads Boulevard, Suite 201
Brentwood, TN 37027
Contact: Adam Crunk, PE
Phone: 615.873.1795
Email: adam@crunkeng.com



LOCATION MAP
NOT TO SCALE

Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	OVERALL SITE LAYOUT PLAN
C1.1	SITE LAYOUT PLAN
C1.2	SITE LAYOUT PLAN
C2.0	OVERALL GRADING, DRAINAGE, AND UTILITY PLAN
C2.1	GRADING, DRAINAGE, AND UTILITY PLAN
C2.2	GRADING, DRAINGAGE, AND UTILITY PLAN
L1.0	LANDSCAPE PLAN

SITE DATA TABLE

PROJECT: HONEY FARM TOWNHOMES
ADDRESS: NASHVILLE HWY 2248
PARCEL ID: 051 05800 000
SITE ACREAGE: 25.87 AC
EXISTING ZONING: PUD-R
PROPOSED ZONING: PUD-R
PROPOSED USE: TOWNHOMES

PROPOSED LOTS:	
SHALLOWFORD 1A -	37
SHALLOWFORD 1B -	27
MCCALLIE -	130
SHALLOWFORD 2 -	3
TOTAL =	197
BUILDING HEIGHT:	35 FT
LOT WIDTH:'	18 FT MIN/180FT MAX
FRONT YARD:	
PRIMARY:	35 FT
SECONDARY:	15 FT
SIDE SETBACK:	10 FT MIN/24 FT MAX
REAR SETBACK:	10 FT MIN
REQUIRED CIVIC USE SPACE:	5% OF TOTAL AREA 1.29 AC
PROVIDED CIVIC USE SPACE:	5.6% 1.48 AC

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

ENGINEERING CRUNK

NEAL WILSON CRUNK
REGISTERED
AGRICULTURE
4/17/23
NO. 134100
FARMER
STATE OF TENNESSEE

HONEY FARM TOWNHOMES
COLUMBIA, TN

REVISIONS		
No.	DATE	

4/17/23 22135

C0.0
COVER SHEET

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary plat\C0.0 - COV.dwg

REFER TO SHEET C1.1
FOR DETAILED INFORMATION
IN THIS AREA.

REFER TO SHEET C1.2
FOR DETAILED INFORMATION
IN THIS AREA.

TREE SAVE AREA
A = 0.81 ACRE

CIVIC SPACE - GARDEN
A = 0.46 ACRE

OPEN SPACE
A = 1.06 ACRE

OPEN SPACE
A = 0.09 ACRE

TREE SAVE AREA
A = 0.70 ACRE

AMENITY CENTER
A = 0.28 ACRE

OPEN SPACE
A = 0.84 ACRE

CIVIC SPACE - PLAYGROUND
A = 0.06 ACRE

OPEN SPACE
A = 0.84 ACRE
CIVIC SPACE - POCKET PARK
A = 0.02 ACRE

TREE SAVE AREA
A = 0.12 ACRE

HONEY FARM WAY

CIVIC SPACE - PLAYGROUND
A = 0.05 ACRE

CIVIC SPACE - POCKET PARK
A = 0.07 ACRE

OPEN SPACE
A = 0.75 ACRE

OPEN SPACE
A = 1.15 ACRE

AMENITY CENTER
A = 0.07 ACRE

CIVIC SPACE - POCKET PARK
A = 0.21 ACRE

OPEN SPACE
A = 0.91 ACRE

800' CIVIC USE SPACE RADIUS.
ALL LOTS/TOWNHOMES ARE WITHIN 800' OF A CIVIC USE.

0 60 120 240
GRAPHIC SCALE

SITE DATA TABLE

PROJECT: HONEY FARM TOWNHOMES
ADDRESS: NASHVILLE HWY 2248
PARCEL ID: 051 05800 000
SITE ACREAGE: 25.87 AC
EXISTING ZONING: PUD-R
PROPOSED ZONING: PUD-R
PROPOSED USE: TOWNHOMES

PROPOSED LOTS:	
SHALLOWFORD 1A -	37
SHALLOWFORD 1B -	27
MCCALLIE -	130
SHALLOWFORD 2 -	3
TOTAL =	197
BUILDING HEIGHT:	35 FT
LOT WIDTH: MAX	18 FT MIN/180FT
FRONT YARD:	
PRIMARY:	35 FT
SECONDARY:	15 FT
SIDE SETBACK: MAX	10 FT MIN/24 FT
REAR SETBACK:	10 FT MIN
REQUIRED CIVIC USE SPACE: TOTAL AREA	5% OF 1.29 AC
PROVIDED CIVIC USE SPACE:	5.6% 1.48 AC
CIVIC SPACE LIST:	
	PLAYGROUND - 0.05 AC
	PLAYGROUND - 0.06 AC
	GARDEN - 0.5 AC
	POCKET PARK - 0.07 AC
	POCKET PARK - 0.02 AC
	POCKET PARK - 0.21 AC
	POCKET PARK - 0.17 AC
	AMENITY CENTER - 0.1 AC
	AMENITY CENTER - 0.30 AC
	TOTAL: 1.48 AC

FLOOD HAZARD NOTE:

1. THE SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING O PANEL NO. 47119C0180E OF THE F.E.M.A. FLOOD INSURANCE RATE MAPS FOR MAURY COUNTY, TENNESSEE, DATED 4/15/2007

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WWW.CRUNKENG.COM

ENGINEERING CRUNK

TENNESSEE LICENSED LANDSCAPE ARCHITECT
REGISTERED
JAMES WILL SCOTT CRUNK
AGRICULTURE
No. 334100
4/17/23
STATE OF TENNESSEE

HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS

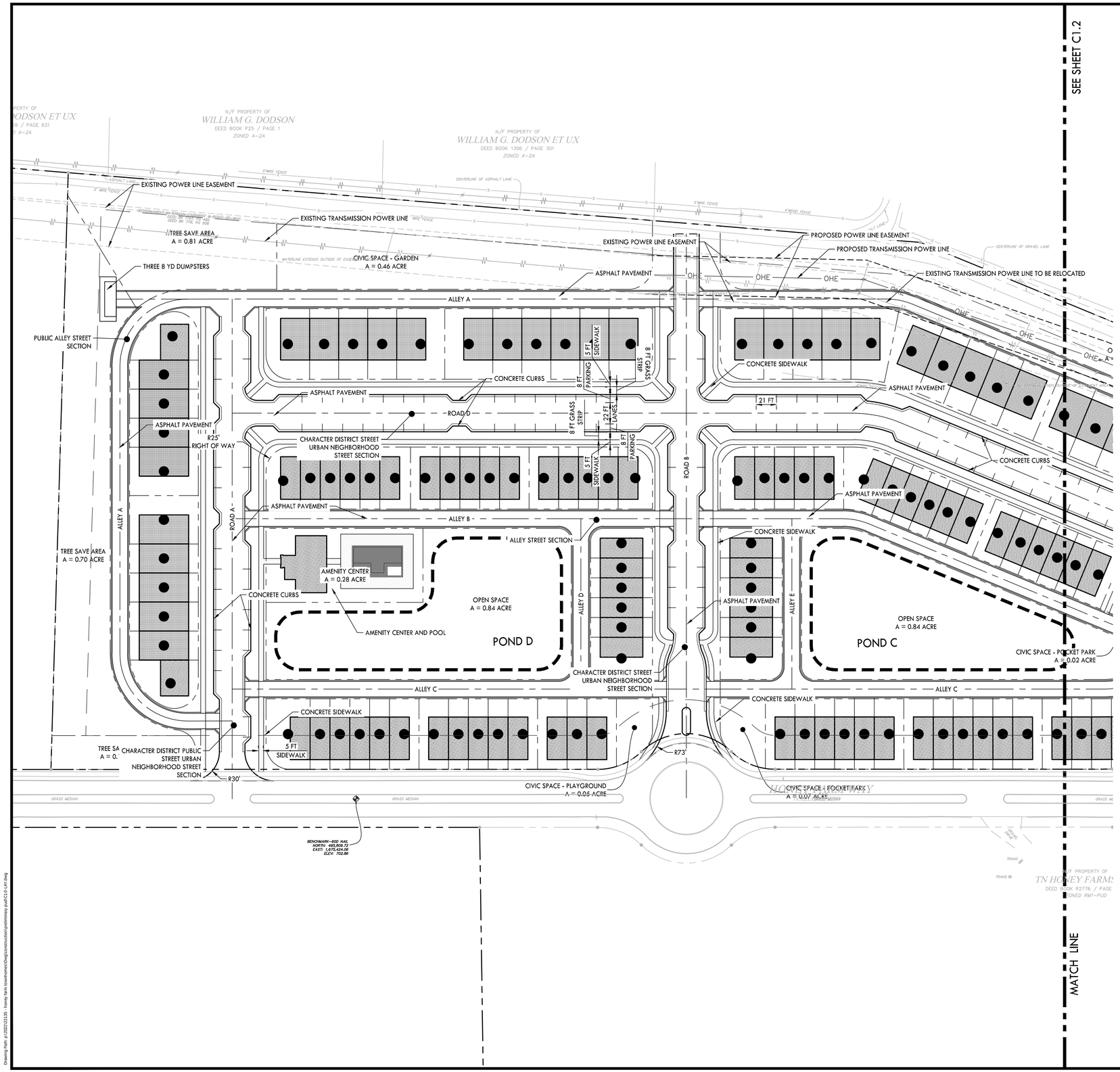
No.	DATE

4/17/23 22135

C1.0

OVERALL SITE LAYOUT PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary plat\C1.0 LAY.dwg



PROPOSED LAYOUT LEGEND

- PROPOSED BUILDING
- HEAVY DUTY ASPHALT PAVEMENT
- LIGHT DUTY ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- PROPERTY LINE
- EDGE OF NEW PAVEMENT

0 10 20 30 40 50 100
GRAPHIC SCALE

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ENGINEERING CRUNK

DANIEL WILSON CRUNK
REGISTERED
AGRICULTURE
4/17/23
AMERICA
No. 134,180
STATE OF TENNESSEE

HONEY FARM TOWNHOMES

COLUMBIA, TN

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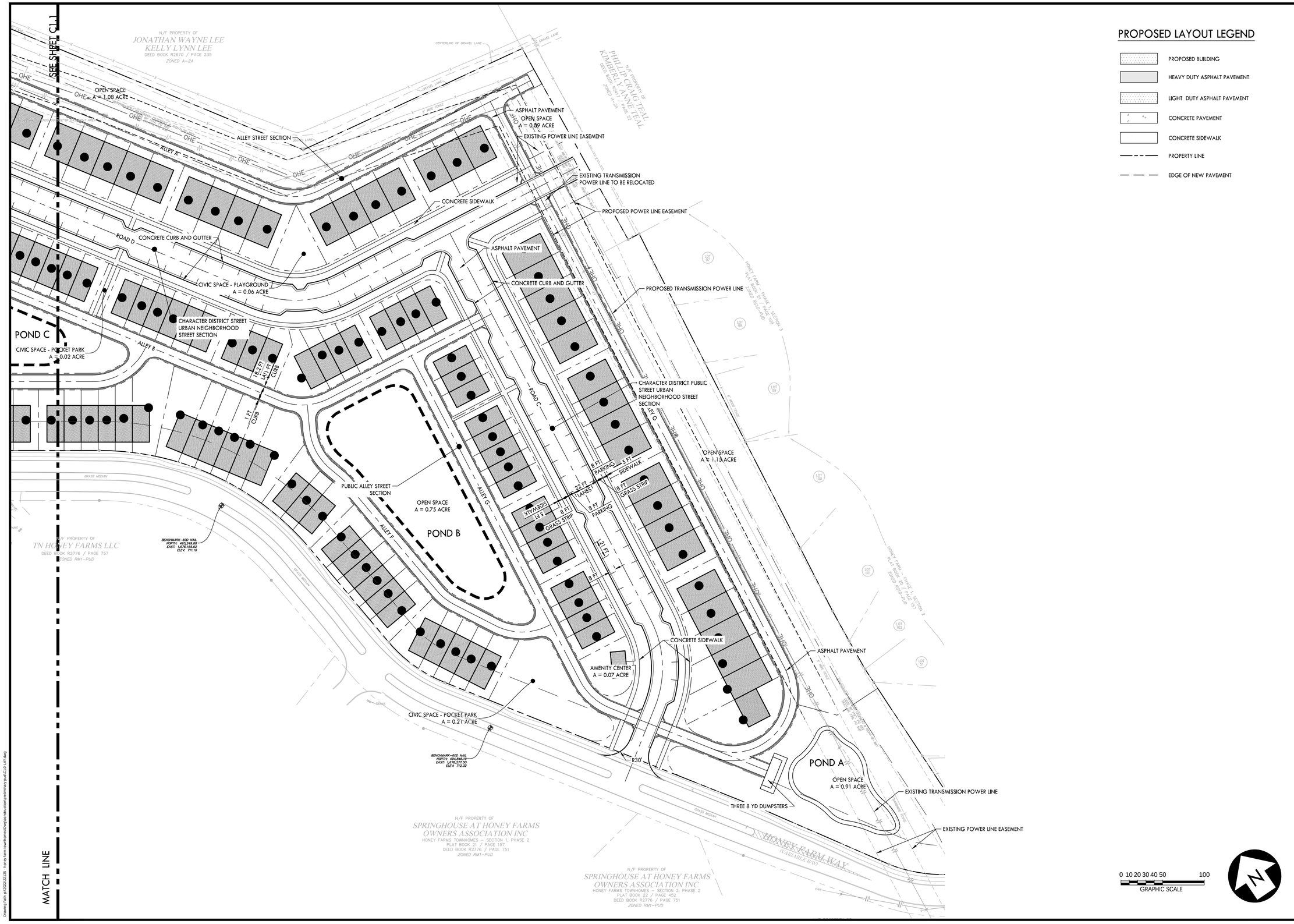
No.	DATE

4/17/23 22135

C1.1

SITE LAYOUT PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary plat\C1.0 LAY.dwg



PROPOSED LAYOUT LEGEND

- PROPOSED BUILDING
- HEAVY DUTY ASPHALT PAVEMENT
- LIGHT DUTY ASPHALT PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- PROPERTY LINE
- EDGE OF NEW PAVEMENT

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HONEY FARM TOWNHOMES

COLUMBIA, TN

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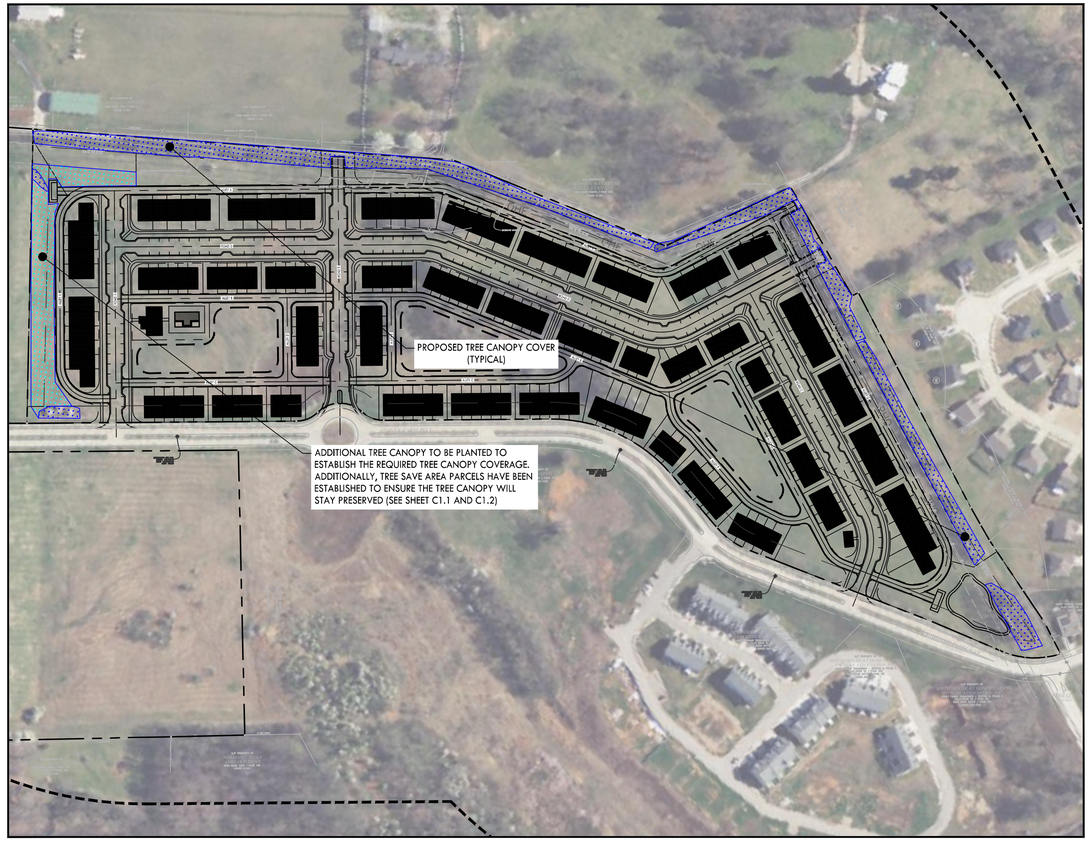
4/17/23 22135

C1.2

SITE LAYOUT PLAN



EXISTING TREE CANOPY EXHIBIT



PROPOSED TREE CANOPY EXHIBIT

0 50 100 150 300
GRAPHIC SCALE

TREE CANOPY REQUIREMENTS:

TOTAL SITE AREA:	25.87 AC
EXISTING TREE CANOPY:	5.18 AC
PERCENTAGE OF TOTAL SITE AREA:	20.0%
REQUIRED TREE CANOPY PERCENTAGE TO REMAIN:	48.0%
	2.49 AC
EXISTING TREE CANOPY TO REMAIN:	1.63 AC
TREE CANOPY TO BE PLANTED:	0.86 AC
TOTAL PROPOSED TREE CANOPY:	2.50 AC
	48.3%

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HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS

No.	DATE

4/17/23 22135

C1.3

TREE CANOPY EXHIBIT

REFER TO SHEET C2.1
FOR DETAILED INFORMATION
IN THIS AREA.

REFER TO SHEET C2.2
FOR DETAILED INFORMATION
IN THIS AREA.

TREE SAVE AREA
A = 0.81 ACRE

CIVIC SPACE - GARDEN
A = 0.40 ACRE

TREE SAVE AREA
A = 0.70 ACRE

AMENITY CENTER
A = 0.28 ACRE

OPEN SPACE
A = 0.84 ACRE

OPEN SPACE
A = 0.84 ACRE

CIVIC SPACE - POCKET PARK
A = 0.16 ACRE

OPEN-SPACE
A = 1.08 ACRE

OPEN SPACE
A = 0.09 ACRE

CIVIC SPACE | PLAYGROUND
A = 0.16 ACRE

OPEN SPACE
A = 1.15 ACRE

OPEN SPACE
A = 0.75 ACRE

AMENITY CENTER
A = 0.02 ACRE

CIVIC SPACE - POCKET PARK
A = 0.21 ACRE

OPEN SPACE
A = 0.91 ACRE

TREE SAVE AREA
A = 0.12 ACRE

CIVIC SPACE - PLAYGROUND
A = 0.05 ACRE

CIVIC SPACE - POCKET PARK
A = 0.07 ACRE

ROAD D

ALLEY A

ALLEY B

ALLEY C

OHE

N/F PROPERTY OF
WILLIAM G. DODSON ET UX
DEED BOOK 729 / PAGE 621
ZONED A-2A

N/F PROPERTY OF
WILLIAM G. DODSON
DEED BOOK 925 / PAGE 1
ZONED A-2A

N/F PROPERTY OF
WILLIAM G. DODSON ET UX
DEED BOOK 1308 / PAGE 301
ZONED A-2A

N/F PROPERTY OF
JONATHAN WAYNE LEE
MARY LYNN LEE
DEED BOOK 2019 / PAGE 3887
ZONED RS10-PUD

N/F PROPERTY OF
TN HONEY FARMS LLC
DEED BOOK R2778 / PAGE 757
ZONED RM1-PUD

N/F PROPERTY OF
HONEY FARMS LLC
DEED BOOK R2778 / PAGE 757
ZONED RM1-PUD

N/F PROPERTY OF
GREGG PARSONS, TRUSTEE
DEED BOOK 2835 / PAGE 1171
PLAT BOOK 14 / PAGE 318
ZONED A-2A

N/F PROPERTY OF
NORMAN F. DEAN
AMELIA P. DEAN
DEED BOOK 2218 / PAGE 185
ZONED A-2A

N/F PROPERTY OF
SPRINGHOUSE AT HONEY FARMS
OWNERS ASSOCIATION INC
HONEY FARMS TOWNHOMES – SECTION 1, PHASE 2
PLAT BOOK 22 / PAGE 452
DEED BOOK R2778 / PAGE 791
ZONED RM1-PUD

N/F PROPERTY OF
SPRINGHOUSE AT HONEY FARMS
OWNERS ASSOCIATION INC
HONEY FARMS TOWNHOMES – SECTION 3, PHASE 3
PLAT BOOK 22 / PAGE 452
DEED BOOK R2778 / PAGE 791
ZONED RM1-PUD

HONEY FARM – PHASE 1, SECTION 1
PLAT BOOK 18 / PAGE 191
ZONED RS10-PUD

REESWAY STREET

0 60 120 240
GRAPHIC SCALE

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary.dwg\C2.0_GRA.dwg

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HONEY FARM TOWNHOMES

COLUMBIA, TN

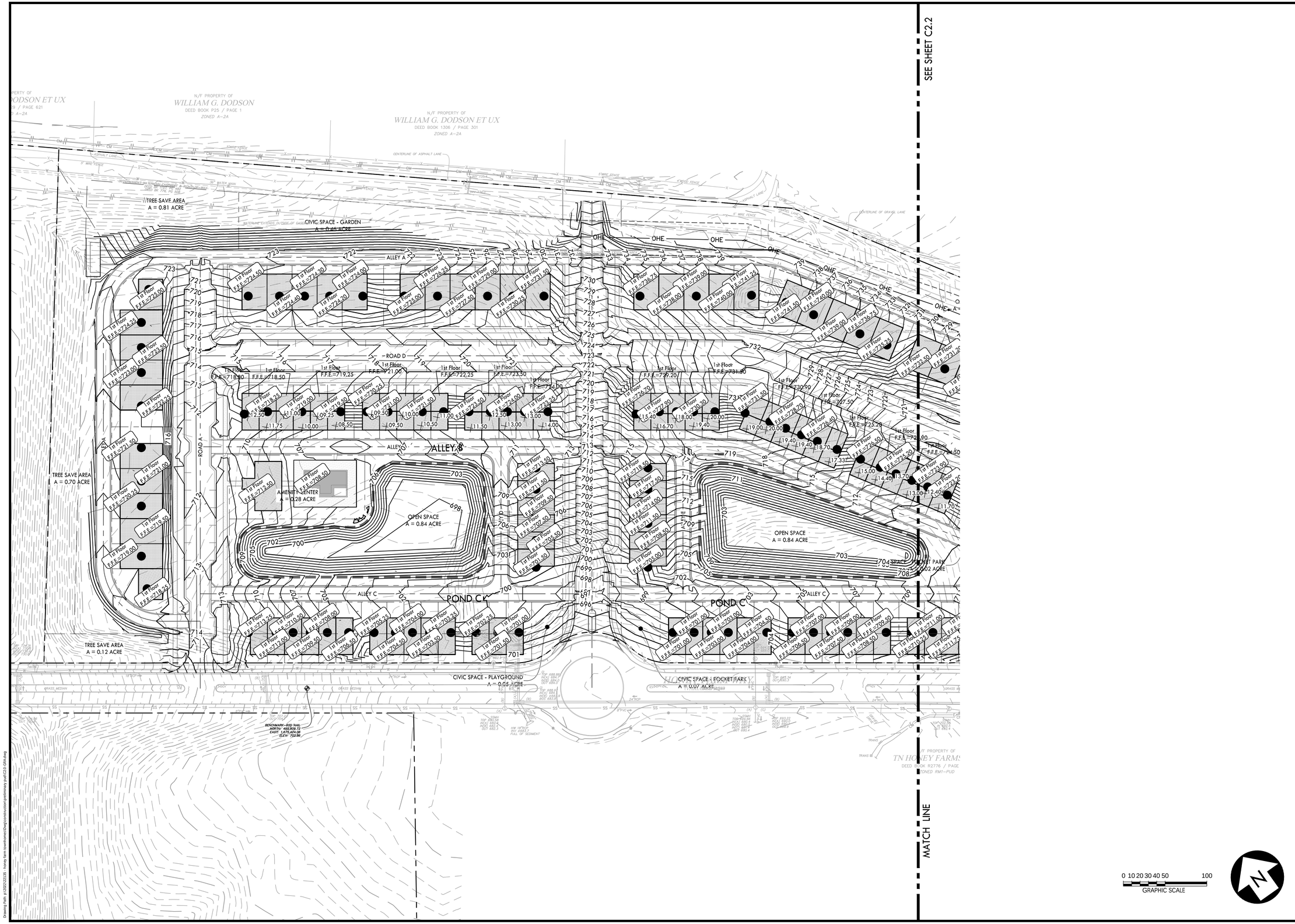
REVISIONS

No.	DATE

4/17/23 22135

C2.0

OVERALL GRADING DRAINAGE & UTILITY PLAN



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HONEY FARM TOWNHOMES

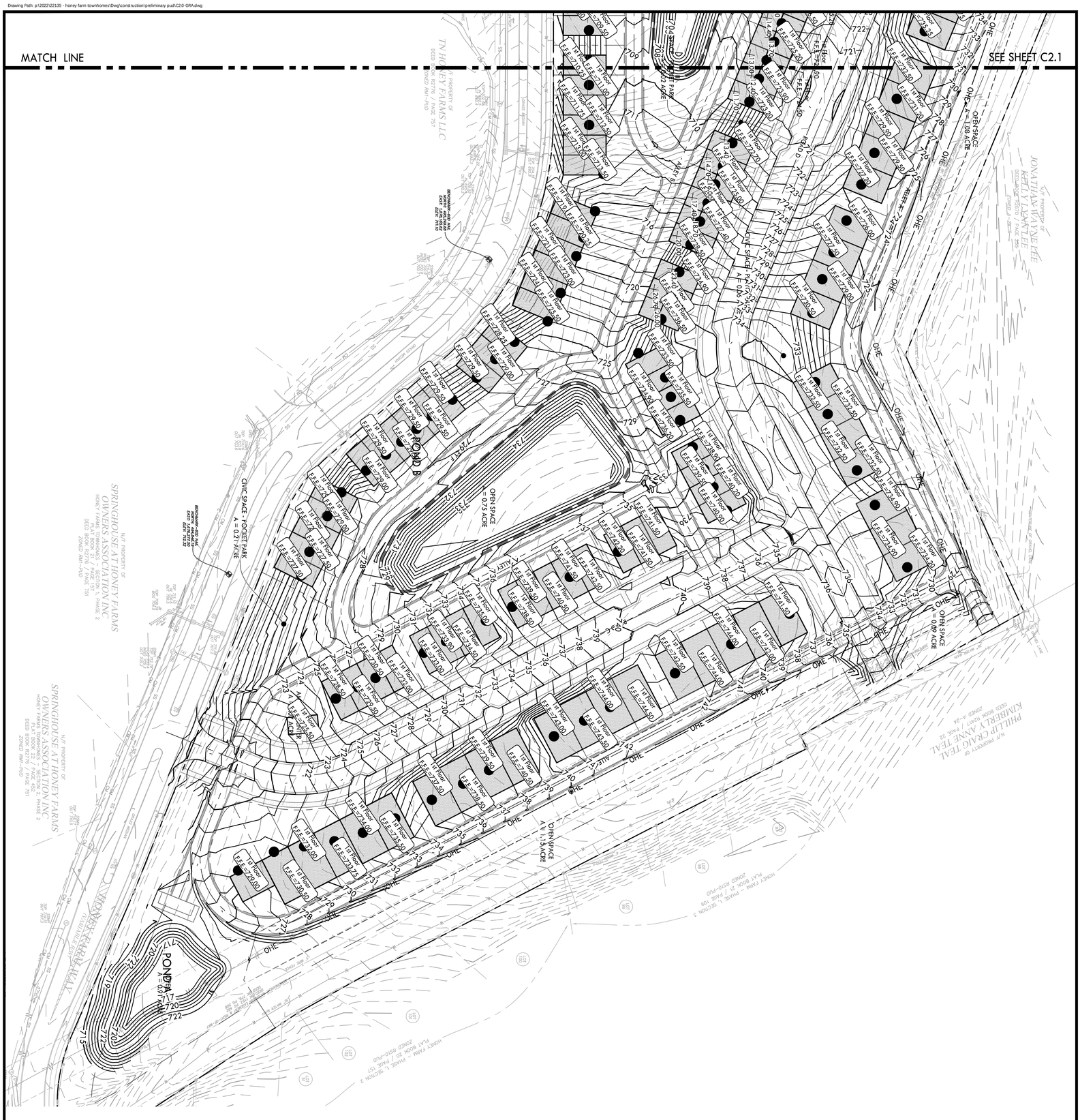
COLUMBIA, TN

REVISIONS	
No.	DATE

4/17/23 22135

C2.1

GRADING DRAINAGE & UTILITY PLAN



C2.2	GRADING DRAINAGE & UTILITY PLAN
4/17/23	
22135	

REVISIONS	
No.	DATE

HONEY FARM TOWNHOMES

COLUMBIA, TN

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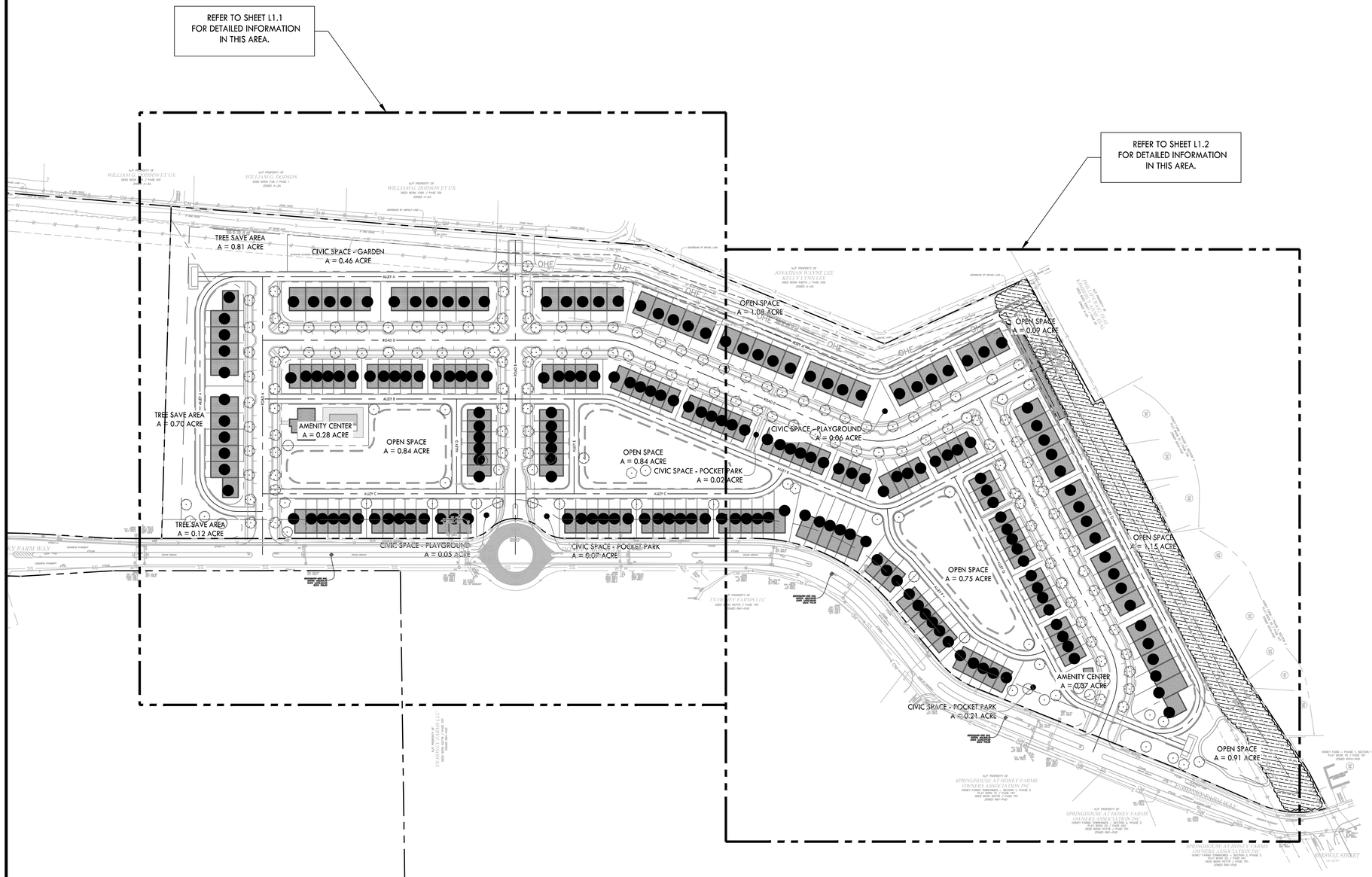


PLANT SCHEDULE

TREES	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
	ACE GLO	Acer rubrum 'PNI 0268' / October Glory® Red Maple	2" Cal.	B&B	41
	QUE ALB	Quercus alba / White Oak	2.5" Cal.	B&B	5
	ULM ALL	Ulmus parvifolia 'Allee' / Allee® Lacebark Elm	2" Cal.	B&B	73
	ZEL VIL	Zelkova serrata 'Village Green' / Village Green Japanese Zelkova	2" Cal.	B&B	59

0 50 100 200
GRAPHIC SCALE

Know what's below.
Call before you dig.

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

CRUNK ENGINEERING

ROBERT M. LEE
REGISTERED
AGRICULTURE
TENNESSEE
LANDSCAPE ARCHITECT
2/1/1982

HONEY FARM TOWNHOMES

COLUMBIA, TN

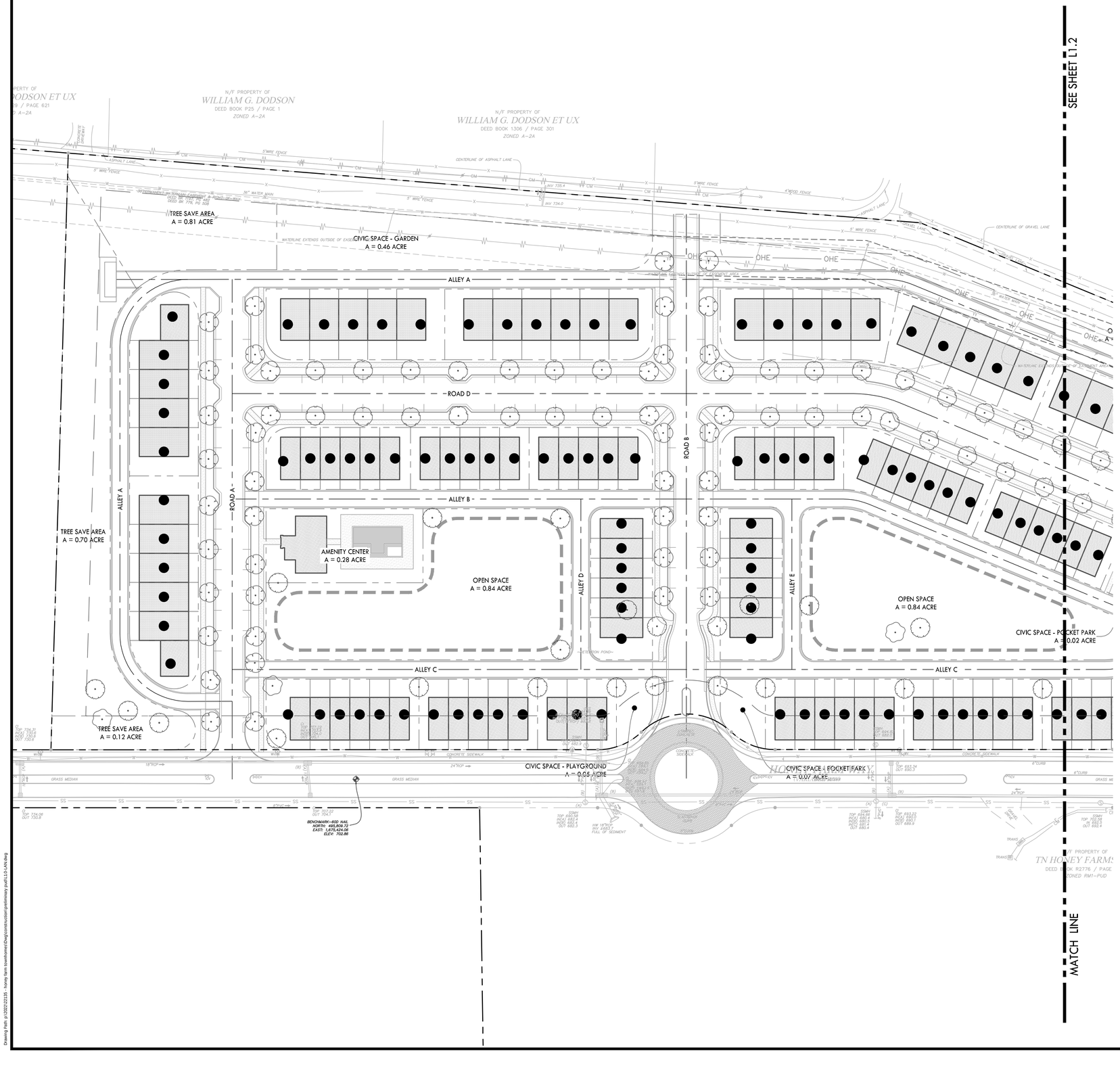
REVISIONS	
No.	DATE

4/17/23 22135

L1.0

OVERALL
LANDSCAPE PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction plan\misc\ py\L1.0_LAN.dwg



NOTES:
1. REFER TO SHEET L2.0 FOR ADDITIONAL NOTES AND DETAILS
2. REFER TO SHEET L1.0 FOR PLANT LIST

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WWW.CRUNKENG.COM

ENGINEERING CRUNK

ROBERT M. LEE
REGISTERED
AGRICULTURE
2/1/2023
AMERICA
TENNESSEE
LANDSCAPE ARCHITECT

HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS	
No.	DATE

4/17/23 22135

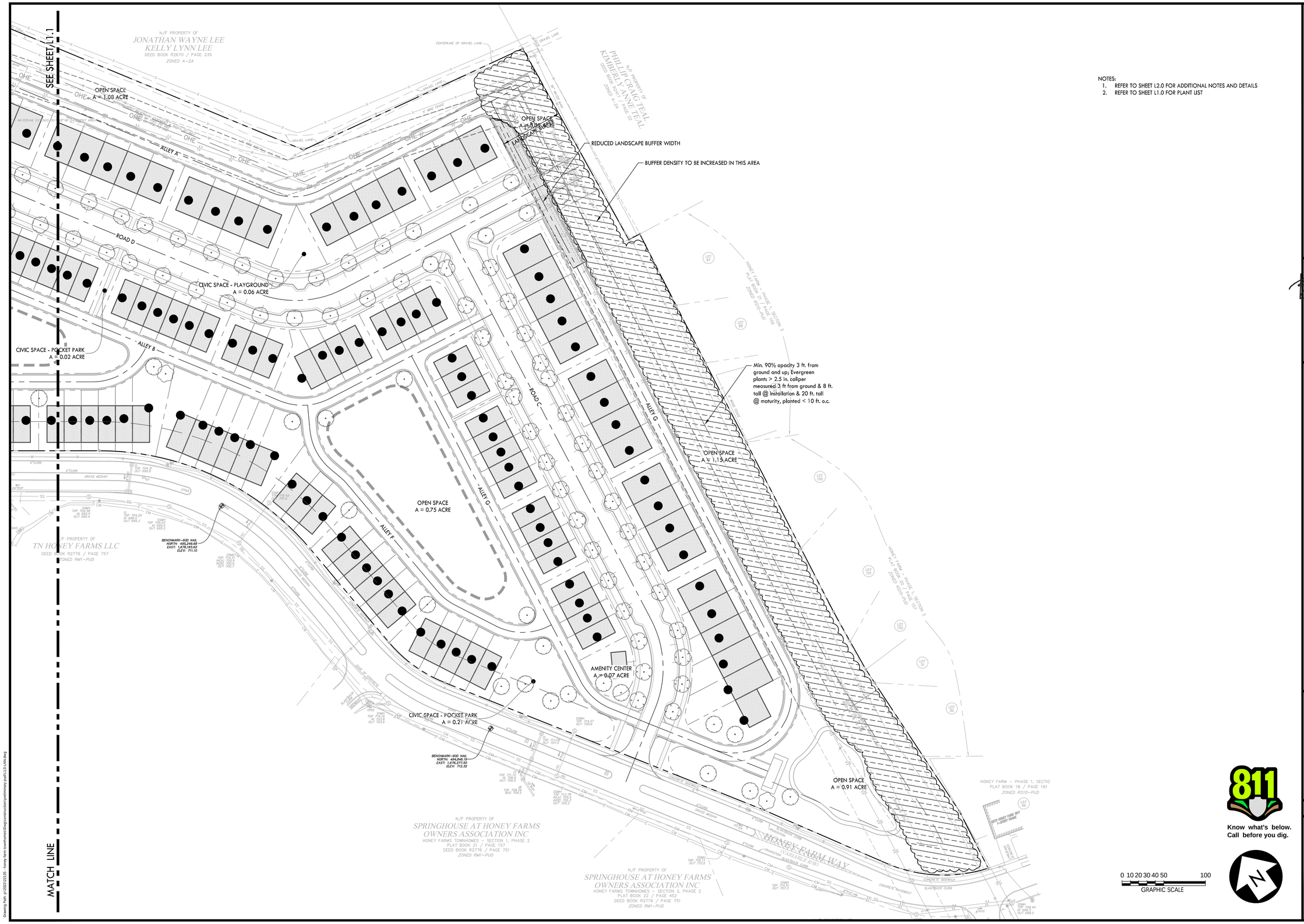
L1.1

LANDSCAPE PLAN

811 Know what's below. Call before you dig.

0 10 20 30 40 50 100
GRAPHIC SCALE

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary plat\L1.0-LAN.dwg



NOTES:
1. REFER TO SHEET L2.0 FOR ADDITIONAL NOTES AND DETAILS
2. REFER TO SHEET L1.0 FOR PLANT LIST

811
Know what's below.
Call before you dig.

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

BRADLEY M. LEWIS
REGISTERED
AGRICULTURE
COMMERCE
TENNESSEE No. 767
LANDSCAPE ARCHITECT
2/19/22

HONEY FARM TOWNHOMES

COLUMBIA, TN

REVISIONS	
No.	DATE

4/17/23 22135

L1.2

LANDSCAPE PLAN

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary pud\L1.0-LAN.dwg

LANDSCAPE NOTES:

SITE PREP

1. THE LANDSCAPE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES AND TAKE PRECAUTIONS TO PREVENT DAMAGE TO THESE UTILITIES.
2. THE LANDSCAPE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANIES AND SHALL BE RESPONSIBLE FOR ALL DAMAGES TO UTILITIES.
3. PLANT MATERIALS AND STUMPS INDICATED FOR REMOVAL SHALL BE REMOVED AND DISPOSED OFF-SITE BY THE CONTRACTOR. BACKFILL HOLES WITH QUALITY TOPSOIL FREE OF ROOTS AND ROCKS. SEE TOPSOIL SPECIFICATION.
4. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINE GRADING OF ALL PLANTING AREAS.
5. ALL CONTRACTORS APPLYING CHEMICALS ON SITE SHALL SUBMIT COPIES OF CERTIFICATION(S) AND LICENSES TO THE LANDSCAPE ARCHITECT.
6. PLANTING BEDS SHALL BE CLEARED OF GRASS AND WEEDS PRIOR TO INSTALLATION OF PLANTS.
7. SOD ALL AREAS DISTURBED BY CONSTRUCTION AND NOT DESIGNATED AS GROUND COVER AREAS.

TOPSOIL

1. ALL PLANTED AREAS TO HAVE A MINIMUM OF 6" OF QUALITY TOPSOIL.
2. ALL COMPACTED AREAS TO BE AERATED AND AMENDED AS NEEDED.
3. TOPSOIL IS TO BE NATURAL, FERTILE, FRIABLE, PRODUCTIVE SOIL, NEITHER EXCESSIVELY ACID NOR ALKALINE, AND FREE FROM TOXIC SUBSTANCES, STONES WEEDS, CLAY, CLODS, ROOTS, CINDERS, DEBRIS, AND CONSTRUCTION MATERIAL.

PLANTING

1. ALL PLANTING BEDS OR MULCH BEDS SHALL BE FREE OF WEEDS PRIOR TO THE INSTALLATION OF MULCH..
2. THE OPTIMUM TIME OF PLANTING IS FROM OCTOBER 1 TO APRIL 1. SCHEDULING FOR PLANTING AT OTHER TIMES MUST BE APPROVED IN WRITING BY THE LANDSCAPE ARCHITECT.
3. UPON SECURING PLANT MATERIAL AND BEFORE INSTALLATION, THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT FOR A PRE-INSTALLATION INSPECTION IN ORDER TO VERIFY ALL PLANT MATERIAL MEETS SPECIFICATIONS. TREES OF SAME SPECIES ARE TO BE MATCHED IN GROWTH CHARACTER AND UNIFORMITY.
4. PLANTS SHALL BE ORIENTED FOR BEST APPEARANCE AND VERTICAL. ALL NON-BIODEGRADABLE ROOT CONTAINERS SHALL BE REMOVED.
5. AFTER PLANTING, TREE BRANCHES SHALL BE SELECTIVELY TRIMMED BY 25%, MAINTAINING NATURAL SHAPE. ALL DEAD AND BROKEN BRANCHES IN TREES AND SHRUBS SHALL ALSO BE PRUNED. REMOVE TAGS, TWINE, OR OTHER NON-BIODEGRADABLE MATERIAL.
6. WATERING: ALL TREES AND SHRUBS SHALL BE THOROUGHLY WATERED WITHIN ONE HOUR OF INSTALLATION.

PLANT MATERIALS

1. THE LANDSCAPE CONTRACTORS SHALL VERIFY ALL MATERIAL QUANTITIES. IN THE EVENT OF A DISCREPANCY, THE QUANTITIES SHOWN ON THE PLAN WILL TAKE PRECEDENCE.
2. ALL PLANT MATERIALS TO BE NURSERY GROWN AND TO COMPLY WITH THE AMERICAN STANDARDS FOR NURSERY STOCK: ANSI - LATEST EDITION FOR SIZE AND QUALITY.
3. ONLY GRADE "A" TYPE PLANTS WILL BE ACCEPTED. PLANTS THAT ARE INFERIOR OR DAMAGED WILL NOT BE ACCEPTED.
4. THE PLANTS DELIVERED TO THE PROJECT SITE SHALL BE PLANTED AS SOON AS SITE CONDITIONS PERMIT. TAKE CARE IN SCHEDULING PLANT DELIVERIES AND THE SIZE OF DELIVERIES SO THAT LONG PERIODS OF STORAGE ARE AVOIDED. ADEQUATELY PROTECT PLANTS PLACED IN TEMPORARY STORAGE FROM THE SUN AND WIND; WATER PLANTS SO AS TO MAINTAIN THEIR APPEARANCE AND HEALTH. PLANTS THAT HAVE NOT BEEN PROPERLY MAINTAINED DURING TEMPORARY STORAGE MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
5. ALL TREES SHALL BE FIRST QUALITY REPRESENTATIVES OF THEIR SPECIES AND SHALL MEET ALL REQUIREMENTS OTHERWISE STIPULATED. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT PLANTED MATERIAL IN THE FIELD, AT THE GROWING SITE OR ON THE JOB SITE.

MULCHING

1. ALL PLANTING BEDS OR MULCH BEDS SHALL HAVE WEEDS REMOVED PRIOR TO THE INSTALLATION OF MULCH.
2. ALL PLANTING BEDS SHALL HAVE A MINIMUM OF 3" DEPTH OF AGED SHREDDED HARDWOOD BARK MULCH OR A MINIMUM OF 4" DEEP PINE STRAW MULCH.
3. CONTRACTORS SHALL PROVIDE SMOOTH, NEATLY TRENCHED (3 INCH DEEP) BED EDGES.
4. MULCH SHALL NOT CONTACT OUTER BARK AT BASE OF TREES. PULL BACK MULCH 3-4" FROM TRUNK.

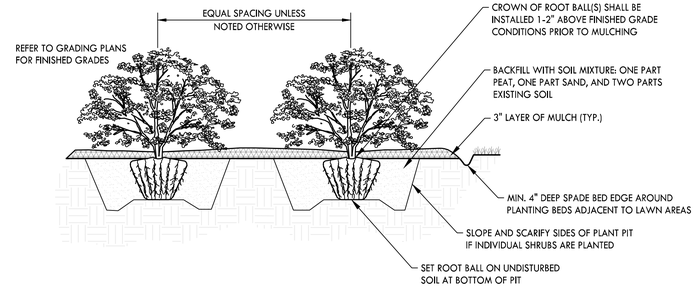
PLANT MAINTENANCE

1. THE LANDSCAPE CONTRACTOR SHALL PROVIDE OWNER WITH WRITTEN INSTRUCTIONS ON THE PROPER CARE OF ALL SPECIFIED PLANT MATERIALS PRIOR TO FINAL PAYMENT.
2. CONTRACTOR TO WARRANTY ALL MATERIAL FOR 2 YEARS AFTER DATE OF FINAL ACCEPTANCE.
3. ALL UNHEALTHY OR DEAD PLANT MATERIAL SHALL BE REPLACED WITHIN ONE YEAR, OR BY THE NEXT PLANTING PERIOD, WHICHEVER COMES FIRST. OTHER DEFECTIVE PLANT MATERIAL SHALL BE REPLACED OR REPAIRED WITHIN THREE (3) MONTHS.

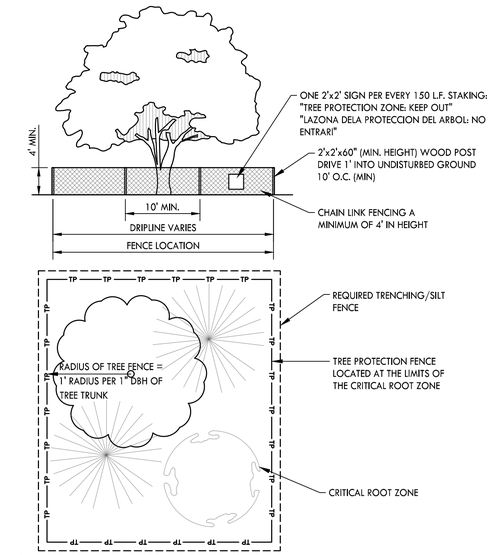
TREE PROTECTION

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED FROM CONSTRUCTION DAMAGE.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO PROTECT EXISTING TREES THAT ARE TO REMAIN. NO HEAVY EQUIPMENT OR MATERIALS SHALL BE PERMITTED TO OPERATE OR BE STORED WITHIN THE DRIP LINES OF THE TREES, OUTSIDE THE LIMIT OF GRADING.
3. TREE PROTECTION STEPS:
   - A) INSTALL TREE PROTECTION FENCING IN ACCORDANCE WITH METRO CODE 17.24.110 "PROTECTION OF TREES DURING DEVELOPMENT ACTIVITIES".
   - B) PLACE FENCE POST AND FENCING AT TREE DRIP LINE OR 10' FROM TRUNK, WHICHEVER IS GREATER.
   - C) POST SHALL NOT BE SPACED MORE THAN 10' APART.
   - D) POST TEMPORARY SIGNS - TREE ROOT PROTECTION ZONE.
4. FENCING AND SIGNS SHALL REMAIN IN PLACE UNTIL THE SITE HAS BEEN INSPECTED BY URBAN FORESTER FOR USE AND OCCUPANCY PERMIT.

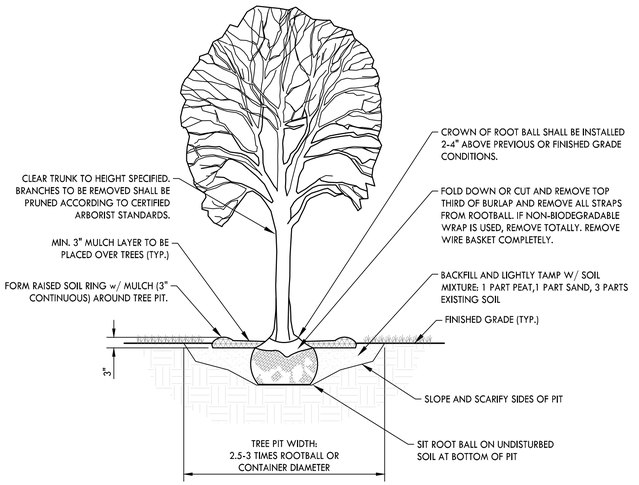
NOTES:
1. WHERE SHRUBS APPEAR IN BED AREA, 3" OF MULCH SHALL BE SPREAD OVER THE ENTIRE AREA WITHIN THE BED AS INDICATED ON THE PLANS.
2. DO NOT PRUNE SHRUBS BEFORE ACCEPTANCE.
3. CAREFULLY REMOVE CONTAINER FROM ROOT BALL USED FOR SHRUB(S). ANY BROKEN OR CRUMBLING ROOT BALL(S) WILL BE REJECTED.
4. IF SHRUB IS B&B, REMOVE BURLAP FROM TOP $\frac{1}{3}$ OF ROOT BALL OR COMPLETELY REMOVE BURLAP IF SOILS ARE POORLY DRAINED.
5. SCARIFY ROOTBALL IF ROOT BOUND IN CONTAINER PER HORTICULTURE STANDARDS.



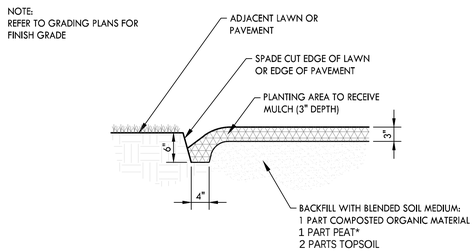
1 SHRUB PLANTING
NOT TO SCALE



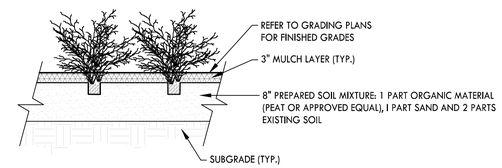
4 TREE PROTECTION
NOT TO SCALE



2 DECIDUOUS TREE PLANTING
NOT TO SCALE



5 SPADE BED EDGE
NOT TO SCALE



3 GROUNDCOVER PLANTING
NOT TO SCALE

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ENGINEERING CRUNK

BRADLEY M. LOWRY
REGISTERED
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LANDSCAPE ARCHITECT
2/1/1982

HONEY FARM TOWNHOMES

COLUMBIA, TN

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L2.0

LANDSCAPE DETAILS

Drawing Path: p:\2022\22135 - honey farm townhomes\Dwg\construction\preliminary plat\L2.0 LAN.dwg

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: HONEY FARM TOWNHOMES

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

General

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

Lots and Land-Use

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

Structures

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

CITY OF COLUMBIA TENNESSEE

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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.
- ❑ The location and size of all common open space, parkland dedications, and dedications and reservations of land for public uses.
- ■ Any amenity features and structures for private or public benefit.
- ❑ Location, dimension, and materials of fences and walls
- ■ Tree Canopy retention

Utilities

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

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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

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:

Print Name	Signature	Date

Property Line Description

Honey Farm Residential Tract

Maury County, Tennessee

All that tract or parcel of land lying and being in the Third Civil District of Maury County, Tennessee, and being more particularly described as follows:

COMMENCING at a 1/2-inch rebar found at the intersection of the southeasterly right-of-way line of Nashville Highway (variable right-of-way) with the northeasterly right-of-way line of Honey Farm Way (variable right-of-way); Thence along said northeasterly right-of-way line of Honey Farm Way South 53 degrees 26 minutes 48 seconds East for a distance of 44.38 feet to a 1/2-inch rebar found; Thence along the arc of a curve to the left an arc length of 55.71 feet, said curve having a radius of 160.00 feet and being subtended by a chord of 55.43 feet bearing South 63 degrees 22 minutes 30 seconds East to a 1/2-inch rebar found; Thence along the arc of a curve to the right an arc length of 83.46 feet, said curve having a radius of 240.00 feet and being subtended by a chord of 83.04 feet bearing South 63 degrees 11 minutes 32 seconds East to a 1/2-inch rebar found; Thence South 53 degrees 39 minutes 04 seconds East for a distance of 95.90 feet to a 5/8-inch rebar set; Thence South 51 degrees 43 minutes 09 seconds East for a distance of 152.63 feet to a nail set; Thence South 55 degrees 07 minutes 01 seconds East for a distance of 89.78 feet to a 5/8-inch rebar set, said point being the **TRUE POINT OF BEGINNING**; Thence departing said right-of-way line North 36 degrees 32 minutes 46 seconds East for a distance of 616.84 feet to a nail set in the center of a paved lane; Thence with the centerline of said lane South 50 degrees 26 minutes 06 seconds East for a distance of 883.23 feet to a 1/2-inch rebar found to the center of a gravel lane; Thence with the centerline of said lane South 32 degrees 39 minutes 21 seconds East for a distance of 479.97 feet to a 1/2-inch rebar found; Thence South 79 degrees 57 minutes 38 seconds East for a distance of 289.61 feet to a 1/2-inch rebar found; Thence departing said lane South 05 degrees 52 minutes 43 seconds West for a distance of 262.24 feet to a 1/2-inch rebar found; Thence South 82 degrees 33 minutes 59 seconds East for a distance of 14.84 feet to a 5/8-inch rebar set; Thence South 07 degrees 54 minutes 24 seconds West, a distance of 96.17 feet to a 1/2-inch rebar found; Thence South 07 degrees 48 minutes 35 seconds West, a distance of 77.44 feet to a 1/2-inch rebar found; Thence South 07 degrees 42 minutes 38 seconds West for a distance of 107.03 feet to a 1/2-inch rebar found; Thence South 07 degrees 37 minutes 27 seconds West for a distance of 143.40 feet to a 1/2-inch rebar found; Thence South 07 degrees 42 minutes 47 seconds West for a distance of 84.92 feet to a 1/2-inch rebar found; Thence South 05 degrees 44 minutes 16 seconds West for a distance of 41.21 feet to a 1/2-inch rebar found; Thence South 05 degrees 30 minutes 25 seconds West for a distance of 38.38 feet to a 1/2-inch rebar found; Thence South 01 degrees 38 minutes 24 seconds West for a distance of 19.09 feet to a 1/2-inch rebar found; Thence South 01 degrees 27 minutes 54 seconds West for a distance of 105.85 feet to a 5/8-inch rebar set; Thence South 01 degrees 44 minutes 21 seconds West, a distance of 79.62 feet to a 5/8-inch rebar set; Thence South 07 degrees 52 minutes 42 seconds West, a distance of 75.86 feet to a 1/2-inch rebar found on the northeasterly right-of-way line of Honey Farm Way; Thence continuing with said right-of-

way line along the arc of a curve to the right an arc length of 31.03 feet, with a radius of 175.00 feet, being subtended by a chord bearing of North 67 degrees 31 minutes 58 seconds West, for a distance of 30.99 feet to a 1/2-inch rebar found; Thence along the arc of a curve to the right an arc length of 89.74 feet, with a radius of 175.00 feet, being subtended by a chord bearing of North 47 degrees 59 minutes 16 seconds West, for a distance of 88.76 feet to a 1/2-inch rebar found; Thence North 31 degrees 37 minutes 15 seconds West, a distance of 166.27 feet to a 5/8-inch rebar set; Thence North 33 degrees 22 minutes 49 seconds West, a distance of 409.64 feet to a 1/2-inch rebar found; Thence along a curve to the right having an arc length of 83.44 feet, with a radius of 170.00 feet, being subtended by a chord bearing of North 19 degrees 16 minutes 18 seconds West, for a distance of 82.60 feet to a 1/2-inch rebar found; Thence North 05 degrees 12 minutes 29 seconds West, a distance of 147.31 feet to a 5/8-inch rebar set; Thence along a curve to the left having an arc length of 287.52 feet, with a radius of 330.00 feet, being subtended by a chord bearing of North 30 degrees 10 minutes 23 seconds West, for a distance of 278.51 feet to a 1/2-inch rebar found; Thence North 55 degrees 08 minutes 10 seconds West for a distance of 348.87 feet to a 1/2-inch rebar found; Thence along the arc of a curve to the right an arc length of 49.90 feet, said curve having a radius of 65.00 feet and being subtended by a chord of 48.69 feet bearing North 33 degrees 10 minutes 56 seconds West to a 1/2-inch rebar found; Thence along the arc of a curve to the left an arc length of 102.73 feet, said curve having a radius of 67.00 feet and being subtended by a chord of 92.96 feet bearing North 55 degrees 10 minutes 25 seconds West to a 1/2-inch rebar found; Thence along the arc of a curve to the right an arc length of 49.83 feet, said curve having a radius of 65.00 feet and being subtended by a chord of 48.62 feet bearing North 77 degrees 07 minutes 31 seconds West to a 1/2-inch rebar found; Thence North 55 degrees 07 minutes 01 seconds West for a distance of 564.95 feet to a 5/8-inch rebar set, said point being the **TRUE POINT OF BEGINNING**.

Said tract of land contains 25.867 Acres

DocuSign Envelope ID: 564AA523-24D2-4BFD-A0C1-7288E301C315

STATEMENT TO ACCOMPANY PUD APPLICATION

The undersigned, Charles Raines and the Estate of J.D. Eatherly ("**Owners**"), are the fee simple owners of certain property located at 2248 Nashville Highway, Columbia, Maury County, Tennessee, known as tax parcel no. 051 058.00 (the "**Property**"). By their signatures below, Owners concur with the application to amend the Planned Unit Development affecting the Property.

Owners have entered into a purchase agreement with Equitas Management Group, LLC ("**Purchaser**") regarding Property, and by its signature below, Purchaser also concurs with the application to amend the Planned Unit Development affecting the Property.

OWNERS:

DocuSigned by:
EE7D350B4FB1405...
Charles Raines

DocuSigned by:
199BBE6595DC433...
Sandra Cantrell, Executor of the Estate of J.D. Eatherly

PURCHASER:

Equitas Management Group, LLC

By: DocuSigned by:
Drew Smith
B2FFACD5161E458...
Drew Smith
Senior Vice President

Equitas

September 15, 2022

Mr. Paul Keltner
Director of Development Services
City of Columbia
700 N Garden Street
Columbia, TN 38401

RE: Honey Farm PUD
2248 Nashville Highway

Dear Mr. Keltner:

As requested by the Development Services staff of the City of Columbia, the letter confirms our commitment to the City of Columbia to pay for the design and installation of a traffic signal and all required turn lanes and road modifications associated with the traffic signal at the intersection of Nashville Highway and Honey Farm Way.

The installation of the traffic signal will be completed prior to the completion of Phase II of the Honey Farm townhome development.

Sincerely,

Drew Smith
Senior Vice President

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

16 September 2022

Drew Smith
Equitas Management Group
5525 N MacArthur Blvd, Suite 400
Irving, TX 75038

RE: Honey Farms Parcel ID 051 058.00

Drew,

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

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

CPWS

September 15, 2022

Ms. Bridgette Ganter
Bowman
950 North Point Pkwy Suite 200
Alpharetta, GA 30005
Sent via email: bganter@bowman.com

RE: Water Availability Letter
Honey Comb Farm Townhomes – 250 Units
Nashville Hwy @ Honey Farm Way
Tax Map 51, Parcel 58
Columbia, Maury, TN

Dear Ms. Ganter:

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, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 250 townhome units. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,500 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:

- Domestic waterline connections will be made to the existing 12-inch water main located on Honey Farm Way.
- Minimum size 8-inch water mains will be required throughout the development.

CPWS

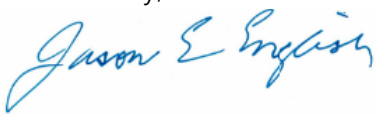
All of the above requirements are to be constructed and paid for by the Applicant and dedicated to CPWS once complete up to and including the meter. No construction of CPWS infrastructure shall be initiated until final construction plans have been approved by TDEC and all parties have fully executed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

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

- Present the attached fire hydrant curve for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide construction drawings for all public water infrastructure for the proposed development in both CAD and PDF format for CPWS review.
- When applicant has resolved all comments provided by CPWS for the construction drawings, CPWS will provide an approval letter and flow calculations to support TDEC approval of the construction drawings.
- Applicant then submits drawings to TDEC for approval. Upon approval by TDEC, applicant may schedule a pre-construction meeting with CPWS. 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 Mr. Jonathan Hardin or myself at 615-934-7499 or jason.english@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



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

cc: Jonathan Hardin, CPWS
File 22-085

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	2248 Nashville Highway, Columbia, TN 38401		
	TAX MAP: 051	GROUP:	PARCEL: 051 05800 000
SUMMARY OF NATURE OF REQUEST AND WORK	PUD Plan for development of 3 story townhomes with accompanying infrastructure improvements such as road work, amenities, and utility work.		

DATE OF PRE-APPLICATION CONFERENCE	12-07-2022	*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) Honey Farm Residential Townhomes ■ Total Number of Lots 1 Lot ■ Total acreage Gross Acreage - 25.87 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	Adam Crunk	PHONE	615-873-1795
ADDRESS	7112 Crossroads BLVD Suite 201 Brentwood, TN 37027	EMAIL	adam@crunkeng.com

PROPERTY OWNER NAME	EMG HONEY FARM, LLC, a Tennessee limited liability company	PHONE	469-585-7913
ADDRESS	6148 Lee Highway, Suite 300, Chattanooga, TN 37421	EMAIL	drew.smith@equitasmg.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.

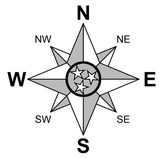
Adam Crunk		04-13-2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
EMG HONEY FARM, LLC, a Tennessee limited liability company		4.13.2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

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	



GPS SURVEY DATA INFORMATION:

- TYPE OF GPS SURVEY: RTK
- POSITIONAL ACCURACY: 0.05 FEET
- DATUM/EPOCH: NAD83 (2011) EPOCH 2010.00
- PUBLISHED/FIXED CONTROL USED: TGRN
- GEOID MODEL: GEOID 18
- COMBINED GRID SCALE FACTOR: 0.99992291
- UNITS: US SURVEY FEET (GRID)

FIDELITY NATIONAL TITLE INSURANCE COMPANY
TITLE POLICY NO: 2730600-213573236
POLICY DATE: FEBRUARY 26, 2018 AT 2:45 PM
LAST REVISED DATE: N/A
SCHEDULE B EXCEPTIONS

4.) ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCES AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND.

- NO ENCROACHMENTS WERE FOUND DURING THE COURSE OF FIELD SURVEY. A GAP BETWEEN THE EXISTING PROPERTY BOUNDARY AND PLAN RIGHT-OF-WAY LOCATION FOR NASHVILLE HIGHWAY IS SHOWN HEREON.

5.) EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS.

- NONE OBSERVED DURING THE COURSE OF FIELD SURVEY.

10.) ALL MATTERS SHOWN ON SURVEY OF JOHN E. CLEGHORN, TN RLS#1440, DATED DECEMBER 13, 2017, JOB NO. 2017-076; CLEGHORN LAND SURVEYING, LLC, P.O. BOX 216, LAWRENCEBURG, TN 38464.

- THE SURVEYOR WAS NOT PROVIDED A COPY OF THIS SURVEY.

LEGAL DESCRIPTION (PER TITLE INSURANCE POLICY)

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF MAURY, STATE OF TENNESSEE, AND IS DESCRIBED AS FOLLOWS:

A TRACT OF LAND IN THE THIRD CIVIL DISTRICT OF MAURY COUNTY IN THE CITY OF COLUMBIA, TENNESSEE, LYING ON THE EAST SIDE OF NASHVILLE HIGHWAY, STATE ROUTE 6 OR U.S. HIGHWAY 31 AND ON THE SOUTH SIDE OF GREENS MILL ROAD AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS

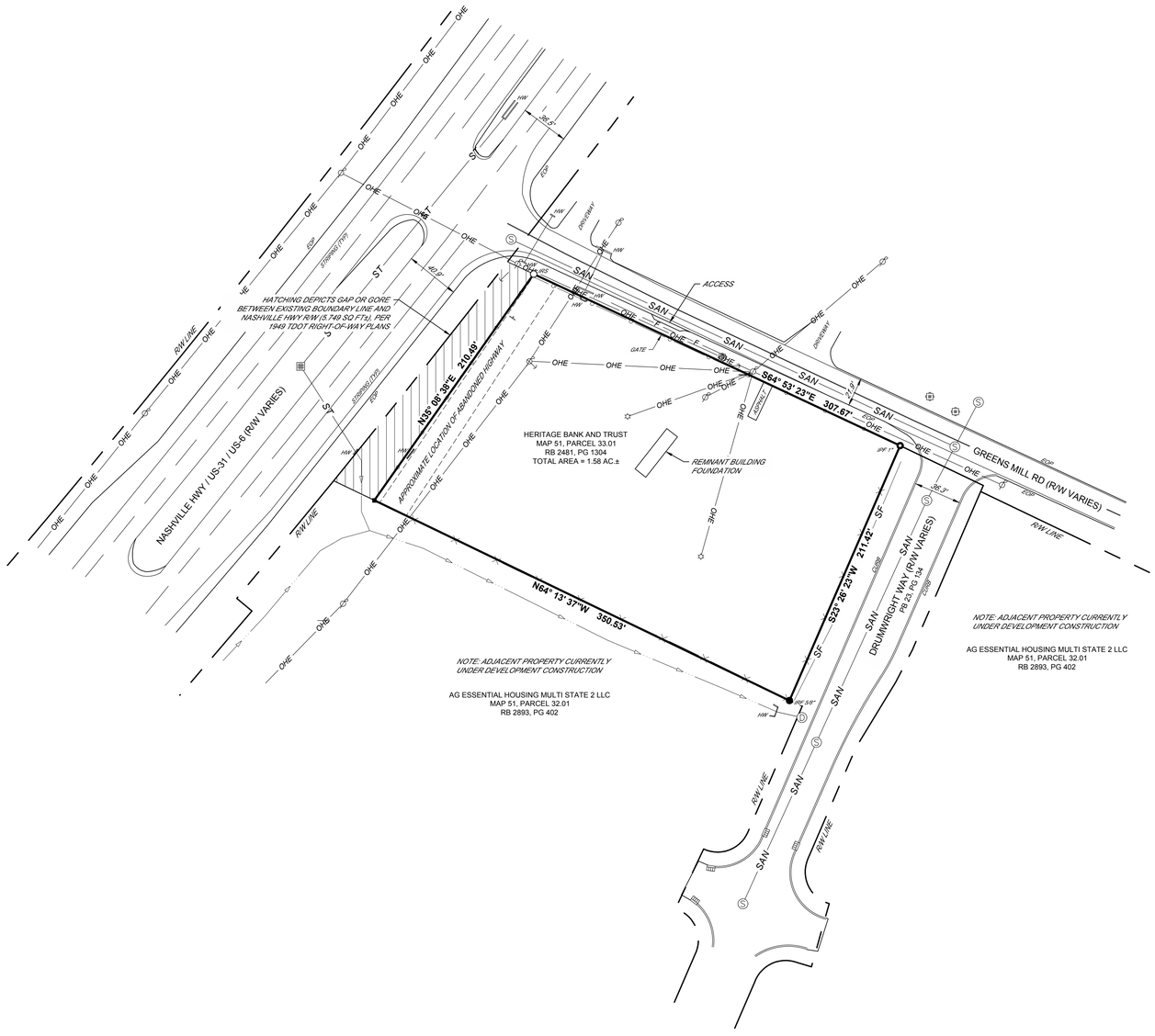
BEGINNING AT AN IRON ROD SET AT THE INTERSECTION OF THE EAST RIGHT-OF-WAY LINE OF NASHVILLE HIGHWAY AND ON THE SOUTH RIGHT-OF-WAY LINE OF GREENS MILL ROAD (40' R.O.W.); THENCE, WITH THE SOUTH RIGHT-OF-WAY LINE OF GREENS MILL ROAD S 64°51'37" E A DISTANCE OF 307.67' TO AN EXISTING IRON PIPE; THENCE, WITH A FENCE, THE NORTHERLY BOUNDARY LINE OF THE PROPERTY OF KURT DRUMRIG HT AND KIM DRUMRIGHT AS RECORDED IN DEED BOOK R2232, PAGE 489, R.O.M.C., TENNESSEE S23°28'09" W A DISTANCE OF 211.42' TO AN EXISTING IRON ROD; THENCE, N 64°11'51" W A DISTANCE OF 350 53 TO A WOOD POST; THENCE, WITH THE EAST RIGHT-OF-WAY LINE OF NASHVILLE HIGHWAY N 35°10'25" E A DISTANCE OF 210.49' TO THE POINT OF BEGINNING AND CONTAINING 68908.7 SQUARE FEET OR 1.58 ACRES, MORE OR LESS, ACCORDING TO A SURVEY BY CLEGHORN LAND SURVEYING, LLC DATED DECEMBER 13, 2017, JOB NO 2017-076.

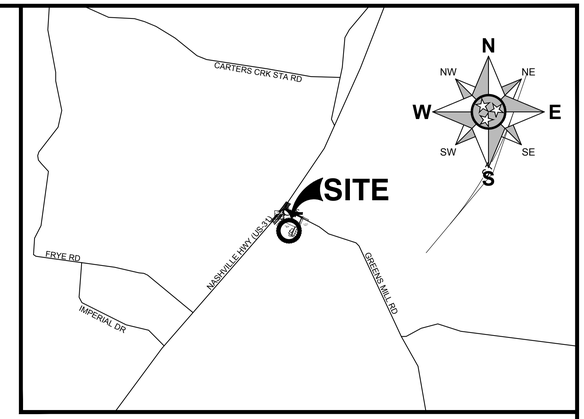
BEING THE SAME PROPERTY CONVEYED TO JERALD SCHOEBERL JR. AND WIFE, EDITH GRACE SCHOEBERL, BY GENERAL WARRAN TY DEED FROM MICHAEL B. D OD SON AND DIANNE D. SH RODER (SAME PERSON AS DIANE D. SHROE DER), OF RECORD IN BOOK R1516, PAGE 900, REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE, DATED JANUARY 05, 2001 AND RECORDED ON JANUARY 05, 2001. JERALD SCHOEBERL, JR. DIED ON MARCH 25, 2006, LEAVING HIS WIFE, EDITH GRACE SCHOEBERL, AS SOLE OWNER OF THE ABOVE DESCRIBED PROPERTY AS THE SURVIVING TENANT BY THE ENTIRETY.

NEW SOURCE OF TITLE: BEING THE SAME PROPERTY CONVEYED TO HERITAGE BANK & TRUST, BY WARRANTY DEED OF RECORD IN BOOK R2481, PAGE 1304, REGISTER'S OFFICE OF MAURY COUNTY, TENNESSEE.

GENERAL NOTES:

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MARCH 07, 2023.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD, TOGETHER WITH AN OWNERS TITLE INSURANCE POLICY (POLICY NUMBER 2730600-213573236), ISSUED BY FIDELITY NATIONAL TITLE INSURANCE COMPANY, DATED FEBRUARY 26, 2018.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP", 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. 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.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 180 OF 440, MAP NUMBER 47119C0180E, EFFECTIVE APRIL 16, 2007.
9. A CURRENT ZONING REPORT WAS NOT PROVIDED TO THE SURVEYOR.
10. THE PROPERTY SHOWN HEREON IS THE SAME PROPERTY AS REFERENCED IN THE TITLE POLICY, FROM WHICH THIS SURVEY IS BASED.
11. THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK, ON THE SUBJECT PROPERTY. HOWEVER, THE ADJACENT PROPERTY IS CURRENTLY UNDER CONSTRUCTION FOR A RESIDENTIAL DEVELOPMENT.





VICINITY MAP
N.T.S.

LEGEND:

- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- EXISTING EASEMENT
- EXISTING FARM FENCE
- EXISTING CHAIN-LINK FENCE
- SF — EXISTING SILT FENCE
- SAN — EXISTING SANITARY SEWER LINE
- F — F — EXISTING FIBER OPTIC LINE
- OHE — EXISTING OVERHEAD ELECTRIC
- EXISTING DITCH FLOW LINE
- IRON REBAR FOUND (IRF)
- IRON PIPE FOUND (IPF)
- IRON REBAR SET W/CAP (IRS)
- FENCE POST FOUND
- SIGN
- LIGHT STANDARD
- STORM MANHOLE
- CURB INLET
- INLET SQUARE
- SANITARY MANHOLE
- WATER METER
- POWER POLE
- GUY WIRE
- EOP — EDGE OF PAVEMENT
- HW — HEADWALL



SURVEYOR'S CERTIFICATE

TO: HERITAGE BANK AND TRUST;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE AND THE 2021 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, 6(a), 8, 11(a), 13, 16, 17, AND 18 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON MARCH 7, 2023.

DATE OF PLAT OR MAP: MARCH 31, 2023

50 0 50 100
GRAPHIC SCALE

REVISION #	DATE	DESCRIPTION

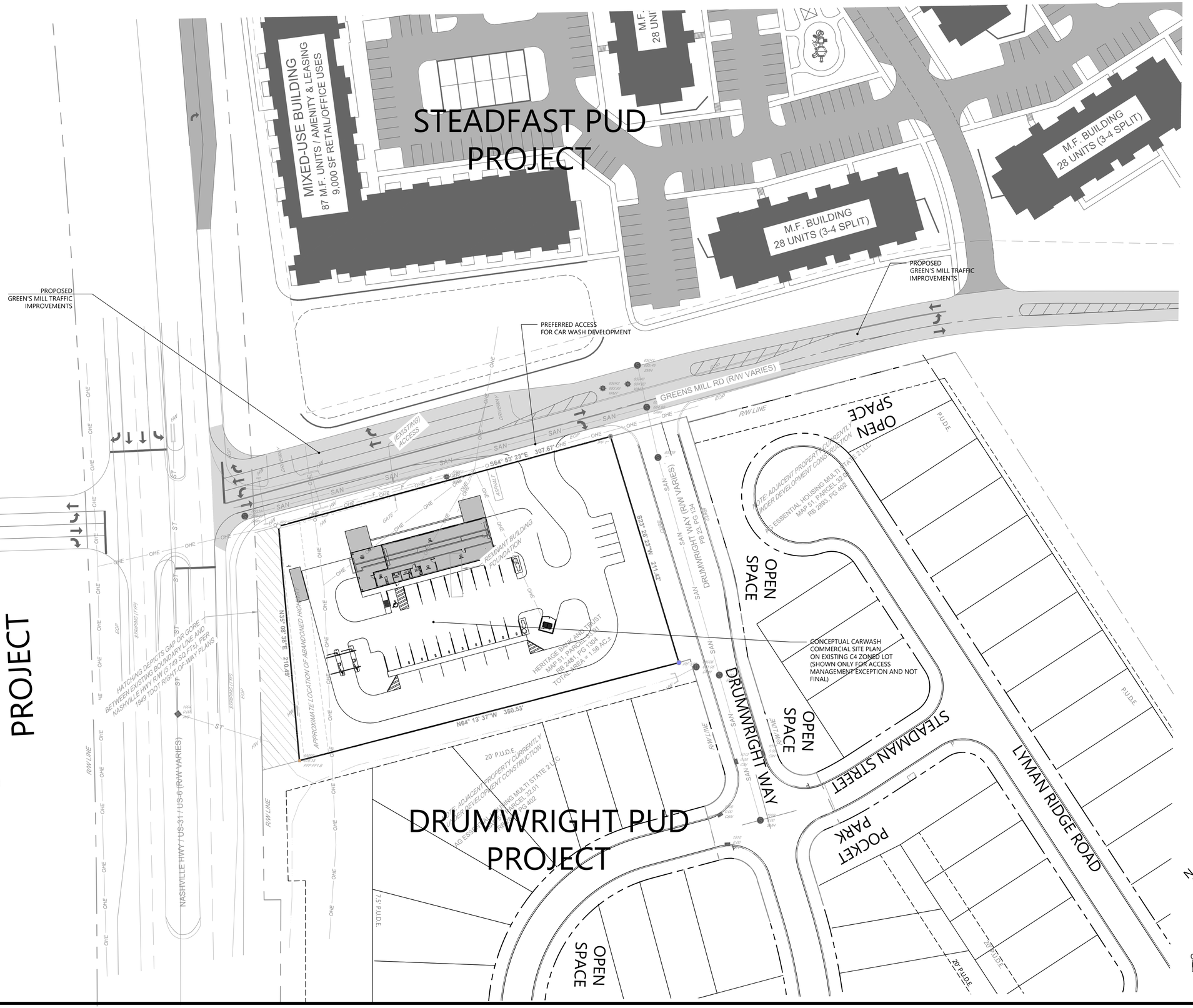
ALTA/NSPS LAND TITLE SURVEY
MAP 51, PARCEL 33.01
2408 NASHVILLE HWY
CITY OF COLUMBIA
3RD CIVIL DISTRICT
MAURY COUNTY, TENNESSEE

DATE :	**APRIL 31, 2023**	**DRAWN BY :**	**SVH**
PROJECT NUMBER :	**23-018**	**CHECKED BY :**	**SVH**

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
M2GROUPLLC.COM

SHEET NUMBER: SV-01

23-018_2408 OLD NASHVILLE HWY DWG / Wednesday, April 5, 2023 12:06:50 PM



McNeely Civil Engineering, LLC
254 Belgian Road
Nolensville, TN 37135

Permit-Seal:

Client/Project:

HERITAGE BANK AND TRUST AND CARWASH PARTNERS

2408 NASHVILLE HWY
HERITAGE BANK AND TRUST PROPERTY

Revisions:

Item:	Date:

Project No. : MCE 230001

Designed By:

Drawn By:

Checked By: E. MCNEELY

Date:

Scale:

Title:

ACCESS MANAGEMENT EXEPTION EXHIBIT

Drawing No.

C1.0

GENERAL AFFIDAVIT

State of Tennessee
County of Maury

I, Craig Harris, personally appeared before the Undersigned Notary Public, and under affirmation make the following statement(s):

Regarding my letter dated May 17th, 2023, to the City of Columbia, 2408 Nashville Highway- Appeal City Engineer Decision for Access Management Exception Request Tax Map 51; Parcel 33.01.

This affidavit is to affirm that the information provided in the Access Management Exception Request is true and correct.

Dated this 17th day of May 2023

Date this: 17th Day of May, Year 2023
State of Tennessee, Maury County

EVP

Craig ~~Harris~~
Executive Vice President
Heritage Bank and Trust

Subscribed and sworn to before me this: 17 day of May, Year 2023, by Craig Harris, known to me to be the above named signator, who personally appeared before me and acknowledged that the forgoing instrument was freely and voluntarily executed for the uses and purposes and on behalf of the person therein mentioned.

Notary Public My commission expires 11/29/2026

TRACY RINKS
STATE OF TENNESSEE
NOTARY PUBLIC
MAURY COUNTY

RECEIVED
MAY 22 2023
23-0198

City of Columbia Tennessee
Attn: Glenn Harper
700 North Garden Street
Columbia, TN 38401

May 17, 2023

RE: 2408 Nashville Highway-Appeal City Engineer Decision for Access Management Exception Request
Tax Map 51; Parcel 33.01

Dear Mr. Harper,

Upon receipt of your email on May 11th, 2023, denying the request for access management exception, Heritage Bank and Trust desires to appeal the City's decision and requests to appear before the City of Columbia, Tennessee Planning Commission on July 12th, 2023, to ask for an appeal. An application to appear before the planning commission will be submitted on Monday, May 22nd, 2023.

Heritage Bank and Trust desires to contract with a potential buyer for the vacant lot located at the corner of Green's Mill Road and Nashville Hwy. The vacant lot currently has an existing curb cut for access directly onto Green's Mill Road. We desire to keep the existing access for future commercial development and the flexibility of future placement of access that would allow a commercial development to be planned under the new City of Columbia zoning regulations.

The Drumwright PUD development is currently under construction with a new road named Drumwright Way that ties directly to Green's Mill Road. We would prefer our ingress/egress to our property be provided directly to Green's Mill Road as it exists today rather than utilize the Drumwright Way as the principal access to our property.

The sketch plan being submitted with this application shows a layout of a future carwash. The carwash developers are reviewing this property for commercial development that provides access to Green's Mill Road. The sketch plan shows the placement of future buildings and parking areas. The placement of the principal access in the concept plan is the best option for the carwash development and the future improvements being proposed at Green's Mill Road that are tied to the ongoing Drumwright PUD development, Preserve at Drumwright development, Safe Harbor Green's Mill PUD development, Citizens House development and Steadfast PUD project.

The Heritage Bank and Trust purchased this property prior to the adoption of the current access management ordinance and has always valued the ability to access the property directly from Green's Mill Road as it exists today.

We are asking the City of Columbia Planning Commission to consider appealing the City Engineer's denial of the access management exception request as we are currently working with a potential buyer for a commercial development on this property.

Thank you for your consideration of this request.

Sincerely,

EVP

Craig Harris, EVP
Heritage Bank and Trust

GENERAL AFFIDAVIT

State of Tennessee
County of Maury

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Mary P
Notary Public

My commission expires 11/29/2026

TRACY RINKS
STATE OF TENNESSEE
NOTARY PUBLIC
MAURY COUNTY

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	Eric McNeely	PHONE	615-335-3172
ADDRESS	254 Belgian Road Nolensville, TN 37135	EMAIL	eric@mcneelycivil.com

PROPERTY OWNER NAME	Heritage Bank and Trust	PHONE	
ADDRESS	217 S. James Campbell Boulevard Columbia, TN 38401	EMAIL	

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

APPLICANT NAME	APPLICANT SIGNATURE	DATE

PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE
Heritage Bank & Trust	EVP	5/17/2023

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
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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	2408 NASHVILLE HWY Columbia, TN 38401		
	TAX MAP: 51	GROUP:	PARCEL: 33.01
SUMMARY OF NATURE OF REQUEST AND WORK	REQUEST FOR APPEAL TO CITY OF COLUMBIA'S DECISION TO DENY EXCEPTION TO THE CITY OF COLUMBIA'S ACCESS MANAGEMENT ORDINANCE TO RETAIN ACCESS FROM GREEN'S MILL ROAD TO SERVE COMMERCIAL DEVELOPMENT LOT		

DATE OF PRE-APPLICATION CONFERENCE	3-8-2023	*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: ACCESS MANAGEMENT EXCEPTION **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 _____

Rev. 4/14/2022

CITY OF COLUMBIA TENNESSEE

DEVELOPMENT SERVICES
700 NORTH GARDEN STREET
COLUMBIA, TN 38401
PHONE: (931) 560-1560
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PLANNING COMMISSION
PROJECT DEVELOPMENT APPLICATION

SUBMITTAL REQUIREMENTS

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Fold hard copy submittals larger than 8½"x11"

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NAME	Eric McNeely	PHONE	615-335-3172
ADDRESS	254 Belgian Road Nolensville, TN 37135	EMAIL	eric@mcneelycivil.com

PROPERTY OWNER NAME	Heritage Bank and Trust	PHONE	
ADDRESS	217 S. James Campbell Boulevard 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.

McNeely Civil Engineering — APPLICANT NAME

E. M. [signature] — APPLICANT SIGNATURE

5.17.2023 — DATE

Heritage Bank & Trust — PROPERTY OWNER NAME

[signature] EVP — PROPERTY OWNER SIGNATURE

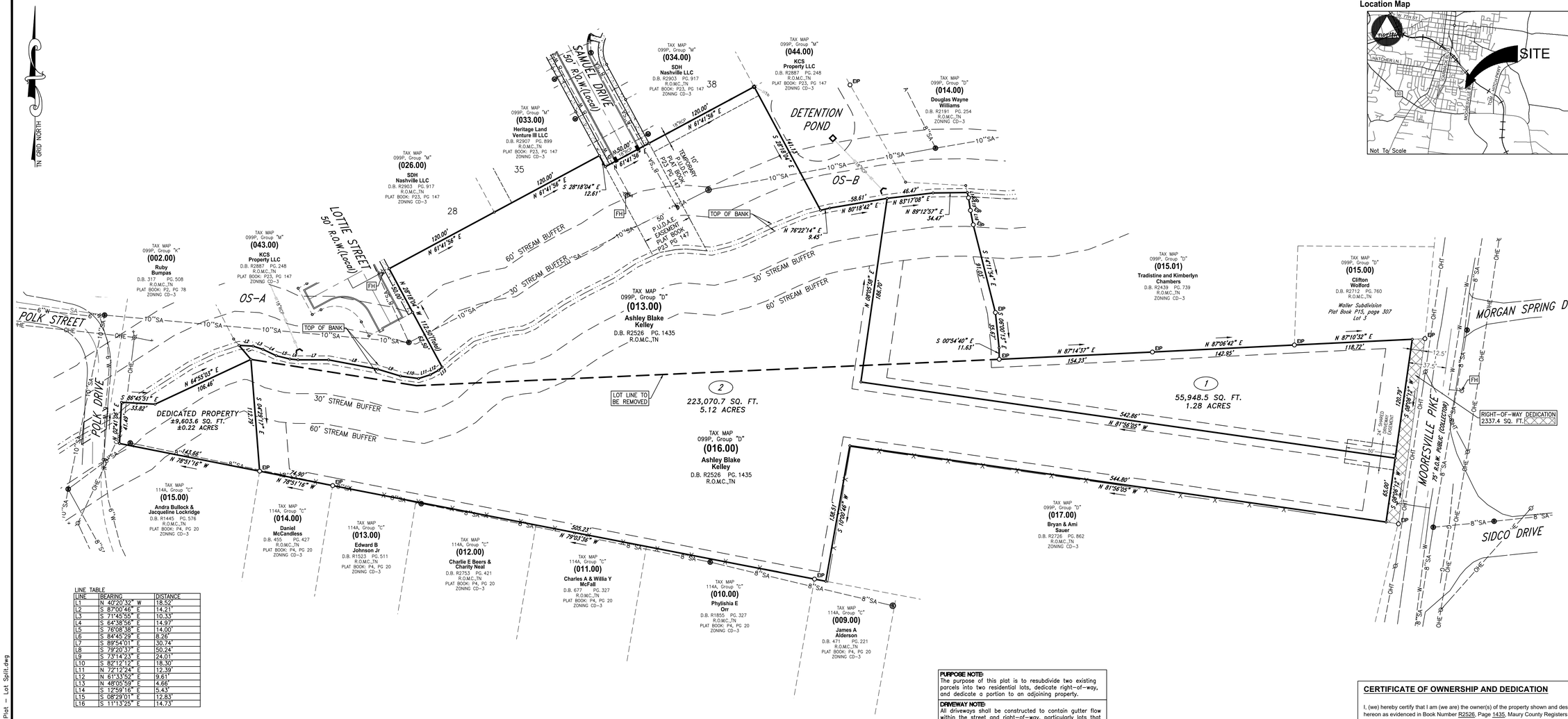
5/17/2023 — DATE

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	



LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 40°20'32" W	18.52'
L2	S 87°00'46" E	14.21'
L3	S 71°45'55" E	10.33'
L4	S 64°38'56" E	14.97'
L5	S 76°08'38" E	14.00'
L6	S 84°45'29" E	8.26'
L7	S 89°54'01" E	30.74'
L8	S 79°20'37" E	50.24'
L9	S 73°14'23" E	24.01'
L10	S 82°12'12" E	18.30'
L11	N 72°12'24" E	12.39'
L12	N 61°33'52" E	9.61'
L13	N 48°05'59" E	4.66'
L14	S 12°59'16" E	5.43'
L15	S 08°29'01" E	12.83'
L16	S 11°13'25" E	14.73'

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. 099P, Group 'D' Parcel No. 013.00 & 016.00, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: N/A
9. Deed reference: Book R2526, Page 1435
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. 47119C0285E, 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. There exists a Public Utility and Drainage Easement 10' in width along the front & rear and 5' in width along the side property lines.

Legend

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

PURPOSE NOTE:
The purpose of this plat is to resubdivide two existing parcels into two residential lots, dedicate right-of-way, and dedicate a portion to an adjoining property.

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.

PARCEL NUMBER:
TAX MAP 099P, Group 'D', PARCEL 013.00 & 16.00

DEED BOOK:
R2526, PAGE 1435

PARCEL ADDRESS:
MOORESVILLE PIKE
COLUMBIA, TENNESSEE 38401

EXISTING ZONING:
CD-3

BUILDING SETBACKS:
FRONT – 25'
SIDE – 8'
REAR – 25'

ACREAGE OF PARCEL:
±6.68 ACRES

PROPERTY OWNER:
ASHLEY BLAKE KELLEY
3147 CARRINGTON LANE
COLUMBIA, TN 38401

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 R2526, Page 1435, 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 _____ Ashley Blake Kelley

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 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 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 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

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Baker Creek Place, 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

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.

5/22/23 _____ Allen B. O'Leary TN RLS #1987
Date Allen B. O'Leary Number

ALLEN B. O'LEARY REGISTERED LAND SURVEYOR AGRICULTURE STATE OF 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

Client
BLAKE KELLEY
3147 CARRINGTON LANE
COLUMBIA, TN 38401

FINAL PLAT
462 MOORESVILLE PIKE, LOTS 1 & 2
COLUMBIA, TN

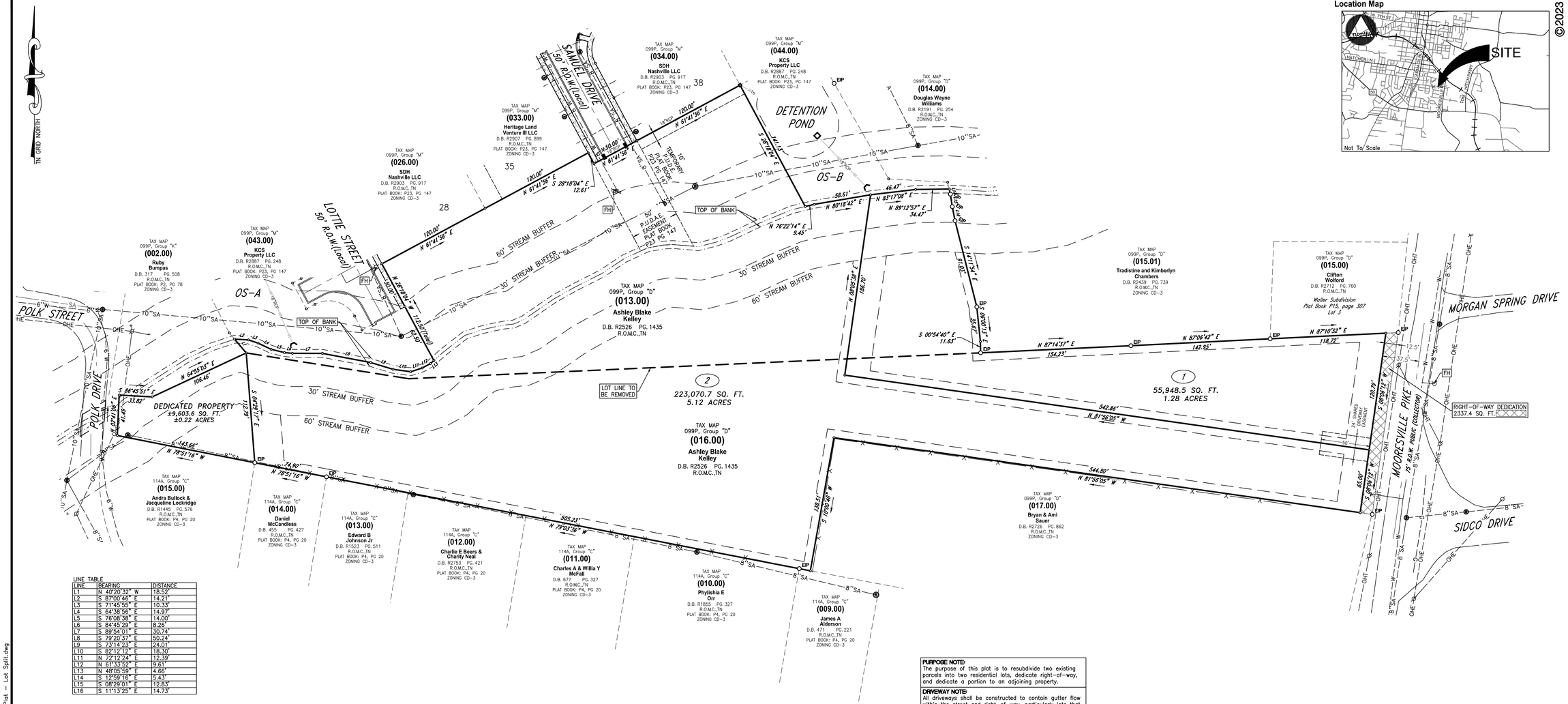
DATE	REVISIONS

Drawn: EB
Checked: AO
Approved: AO
Date: 05-22-2023

Job. no. 18588
Scale: Vertical: 1"=50' Horizontal:

1 of 1

FILE:J:\WES_Engineers_Surveyors 2018\18588 - Mooresville Pike - Blake Kelly\Dwg\Survey\01 - Final Plats\18588 - Final Plat - Lot Split.dwg



©2023

Location Map

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 40°20'32" W	18.52'
L2	S 87°00'46" E	14.21'
L3	S 71°45'55" E	10.33'
L4	S 64°38'56" E	14.97'
L5	S 76°08'38" E	14.00'
L6	S 84°45'29" E	8.26'
L7	S 89°54'01" E	30.74'
L8	S 79°20'37" E	50.24'
L9	S 73°14'23" E	24.01'
L10	S 82°12'12" E	18.30'
L11	N 72°12'24" E	12.39'
L12	N 61°33'52" E	9.61'
L13	N 48°05'59" E	4.66'
L14	S 12°59'16" E	5.43'
L15	S 08°29'01" E	12.83'
L16	S 11°13'25" E	14.73'

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.
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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.
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18. There exists a Public Utility and Drainage Easement 10' in width along the front & rear and 5' in width along the side property lines.

Legend

- EIP Iron Rod Found
- IPS Iron Rod Set
- I.P.F. Iron Pipe Found
- AXLE Axle Found
- ECM 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

PURPOSE NOTE:
The purpose of this plat is to resubdivide two existing parcels into two residential lots, dedicate right-of-way, and dedicate a portion to an adjoining property.

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.

PARCEL NUMBER:
TAX MAP 099P, Group 'D', PARCEL 013.00 & 16.00

DEED BOOK:
R2526, PAGE 1435

PARCEL ADDRESS:
MOORESVILLE PIKE
COLUMBIA, TENNESSEE 38401

EXISTING ZONING:
CD-3

BUILDING SETBACKS:
FRONT – 25'
SIDE – 8'
REAR – 25'

ACREAGE OF PARCEL:
±6.68 ACRES

PROPERTY OWNER:
ASHLEY BLAKE KELLEY
3147 CARRINGTON LANE
COLUMBIA, TN 38401

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

ALLEN B. OLEAR
REGISTERED LAND SURVEYOR
AGRICULTURE
STATE OF TENNESSEE
TENNESSEE NO. 1987

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

ENGINEERS & SURVEYORS

Client
BLAKE KELLEY
3147 CARRINGTON LANE
COLUMBIA, TN 38401

PRELIMINARY PLAT

462 MOORESVILLE PIKE, LOTS 1 & 2
COLUMBIA, TN

REVISIONS	DATE

Drawn: EB
Checked: AO
Approved: AO
Date: 05-22-2023

Job. no. 18588
Scale: Vertical: 1"=50' Horizontal:

1 of 1

FILE: I:\WES_Engineers_Surveyors 2018\18588 - Mooresville Pike - Blake Kelly\Dwg\Survey\01 - Final Plats\18588 - Final Plat - Lot Split.dwg

Erik Bakke

From: Kevin McCarthy <kmccarthy@columbiatn.com>
Sent: Thursday, May 4, 2023 12:50 PM
To: Gerald Vick; Brad Massey
Cc: Mike Harris; Allen O'Leary; Blake Kelley
Subject: RE: Hydrant Analysis - Blake Kelly Property - Mooresville Pike

Gerald,

After speaking with Mike and Mr. Kelly today, I was persuaded that I was being overly rigid on this application requirement. Mike sent me an email today which can serve as "acknowledgement from water… utility providers that the proposed development may be adequately served with existing infrastructure." Brad has already confirmed in a previous email that there is adequate flow for fire protection. In this circumstance that correspondence is sufficient for purposes of submitting a complete application.

Thanks!

Kevin C. McCarthy, AICP
City Planner

From: Kevin McCarthy
Sent: Tuesday, May 2, 2023 11:24 AM
To: 'Gerald Vick' <gerald@wesengineers.com>; Brad Massey <bmassey@columbiatn.com>
Cc: Mike Harris <mike.harris@inflodesign.com>; Allen O'Leary <allen@wesengineers.com>; Blake Kelley <blakekelley@charter.net>
Subject: RE: Hydrant Analysis - Blake Kelly Property - Mooresville Pike

Gerald,

Please go ahead and request the letter from Inflo. If you are unable to get it in time for the submittal deadline we can discuss alternative informal confirmation limited to this unusual circumstance where the applicant is proposing to reduce the total number of potential dwelling units.

Thanks!

Kevin C. McCarthy, AICP
City Planner

From: Gerald Vick <gerald@wesengineers.com>
Sent: Tuesday, May 2, 2023 11:16 AM
To: Brad Massey <bmassey@columbiatn.com>; Kevin McCarthy <kmccarthy@columbiatn.com>
Cc: Mike Harris <mike.harris@inflodesign.com>; Allen O'Leary <allen@wesengineers.com>; Blake Kelley <blakekelley@charter.net>
Subject: [External Email] - RE: Hydrant Analysis - Blake Kelly Property - Mooresville Pike

Kevin,

I wanted to follow up with you again to see if you had a chance to consider this, I need to know so that we can request the letter if this information and correspondence is not acceptable for the submittal.

Thank you,

Gerald

Gerald W. Vick, PE
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
O: 931.388.2329
F: 931.548.2013
gerald@wesengineers.com

From: Brad Massey <bmassey@columbiatn.com>
Sent: Wednesday, April 26, 2023 2:10 PM
To: Gerald Vick <gerald@wesengineers.com>; Kevin McCarthy <kmccarthy@columbiatn.com>
Cc: Mike Harris <mike.harris@inflodesign.com>; Allen O'Leary <allen@wesengineers.com>; Blake Kelley <blakekelley@charter.net>
Subject: RE: Hydrant Analysis

Kevin, this easily meets them being able to build and not have to sprinkle the homes.
Thank you

Brad Massey
Fire Marshal
Columbia Fire & Rescue

bmassey@columbiatn.com
931-560-1740
931-626-1236
700 North Garden Street
Columbia, TN 38401
Columbiatn.com

From: Gerald Vick <gerald@wesengineers.com>
Sent: Wednesday, April 26, 2023 1:38 PM
To: Kevin McCarthy <kmccarthy@columbiatn.com>
Cc: Brad Massey <bmassey@columbiatn.com>; Mike Harris <mike.harris@inflodesign.com>; Allen O'Leary <allen@wesengineers.com>; Blake Kelley <blakekelley@charter.net>
Subject: [External Email] - FW: Hydrant Analysis

Kevin,

This is Inflodesign / CPWS stance on the water availability for Blake Kelley's project on Mooresville Pike. Are you good with moving forward with this as proof that water is available in order for you to accept the Preliminary and Final Plat Submission?

Thank you,

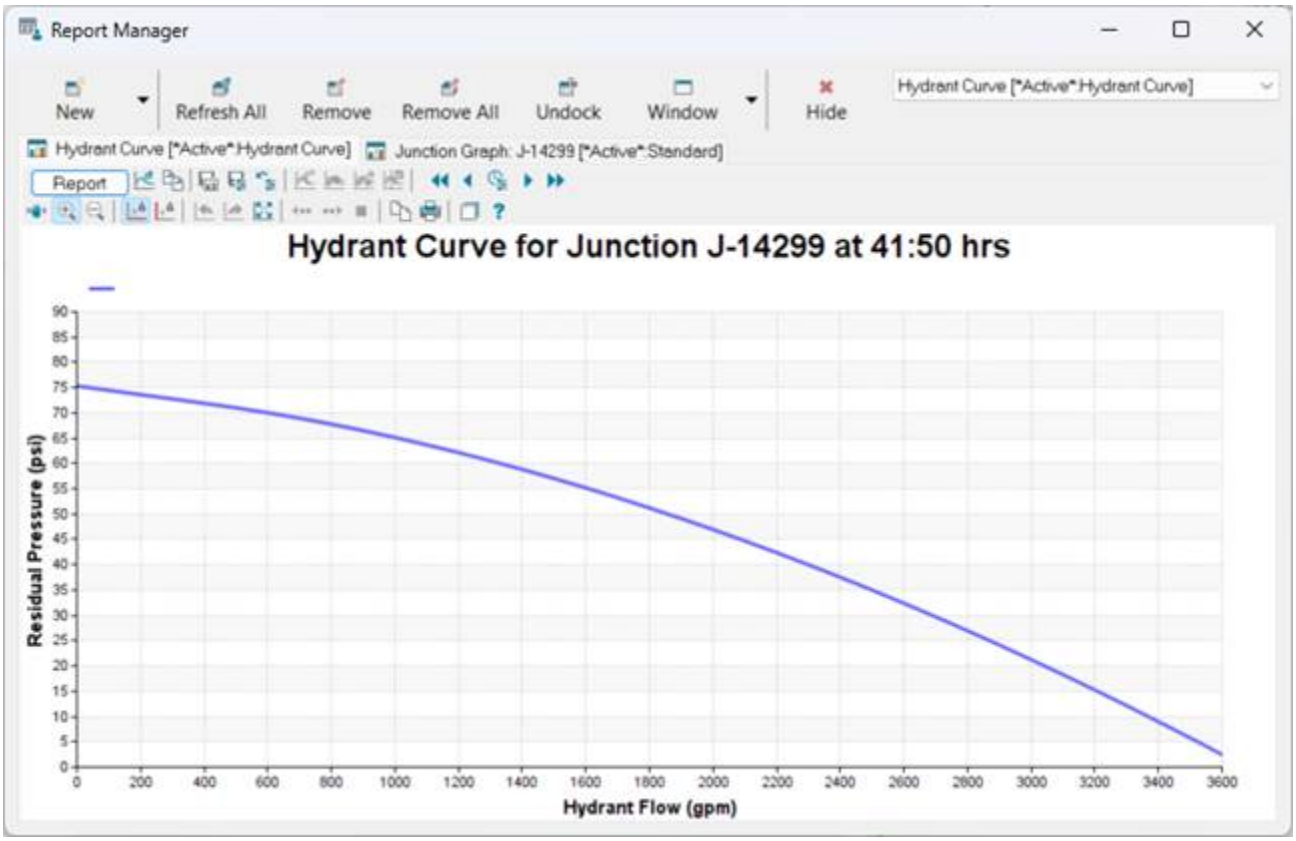
Gerald

Gerald W. Vick, PE
WES Engineers & Surveyors
2486 Nashville Hwy
Columbia, TN 38401
O: 931.388.2329
F: 931.548.2013
gerald@wesengineers.com

From: Mike Harris <mike.harris@inflodesign.com>
Sent: Wednesday, April 26, 2023 1:33 PM
To: Brad Massey <bmassey@columbiatn.com>
Cc: Gerald Vick <gerald@wesengineers.com>
Subject: FW: Hydrant Analysis

See hydrant flow analysis on Mooresville Pike we discussed this morning. Water flow is not an issue at this location, theoretically if the hydrant could flow this much, even at 20 psi residual, we could get 3000 gpm at this location. If you are okay with it, I suggest saving this analysis in the file or have Gerald upload it to the project file and not require a water availability letter.

From: Eric King <eric.king@inflodesign.com>
Sent: Wednesday, April 26, 2023 11:38 AM
To: Mike Harris <mike.harris@inflodesign.com>
Subject: RE: Hydrant Analysis



Eric King, PE (TN)
Inflo Design Group, LLC

From: Mike Harris <mike.harris@inflodesign.com>
Sent: Wednesday, April 26, 2023 11:13 AM
To: Eric King <eric.king@inflodesign.com>
Subject: Hydrant Analysis

Eric, can you run a quick hydrant analysis on the hydrant on the attached screenshot? Thank you!

Mike Harris, PE
Inflo Design Group, LLC
615-306-5208

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

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May 22, 2023

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

RE: Project Name: 462 Mooresville Pike, Lots 1 & 2, Final Plat
City of Columbia Planning Commission Submittal

On behalf of Ashley Blake Kelley, the owner of these 2 proposed single family lots, **WES Engineers & Surveyors** would like to submit this Final Plat to the City of Columbia Planning Commission 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

May 22, 2023

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

RE: **Project Name: 462 Mooresville Pike, Lots 1 & 2, Preliminary Plat**
City of Columbia Planning Commission Submittal

On behalf of Ashley Blake Kelley, the owner of these 2 proposed single family lots, **WES Engineers & Surveyors** would like to submit this Preliminary Plat to the City of Columbia Planning Commission 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	462 Mooresville Pike, Columbia, TN		
	TAX MAP: 099P	GROUP: D	PARCEL: 013.00/016.00
SUMMARY OF NATURE OF REQUEST AND WORK	Request for Final Plat approval that is resubdividing 2 existing parcels into 2 residential lots, dedicating right of way, and dedicating a portion to adjoining property.		

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) 462 MOORESVILLE PIKE, LOTS 1 & 2 ☑ Total Number of Lots 2 ☑ Total acreage ±6.68

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	Ashley Blake Kelley	PHONE	931-446-0909
ADDRESS	3147 Carrington Lane Columbia, TN 38401	EMAIL	blakekelley@charter.net

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 O'Leary		5/14/23
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Ashley B. Kelley		5/15/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

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

BOARD ACTION	

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)*

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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) 462 MOORESVILLE PIKE, LOTS 1 & 2 ☑ Total Number of Lots 2 ☑ Total acreage ±6.68

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	Ashley Blake Kelley	PHONE	931-446-0909
ADDRESS	3147 Carrington Lane Columbia, TN 38401	EMAIL	blakekelley@charter.net

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 B O'Leary	Allen O'Leary	5/19/23
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Ashley B. Kelley		5/19/2023
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	

PRELIMINARY PLAT - PHASE 1 - 4

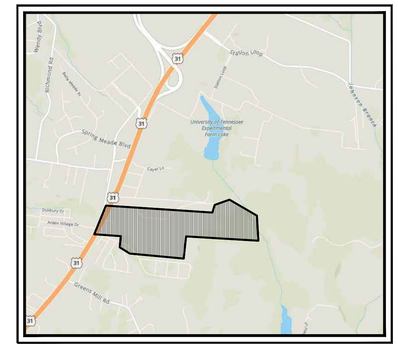
FOR

McCLURE FARMS

2504 NASHVILLE HWY

COLUMBIA, MAURY COUNTY, #38401

95.29-ACRE SITE
ISSUED 5-18-2023
W&A PROJECT # 220047



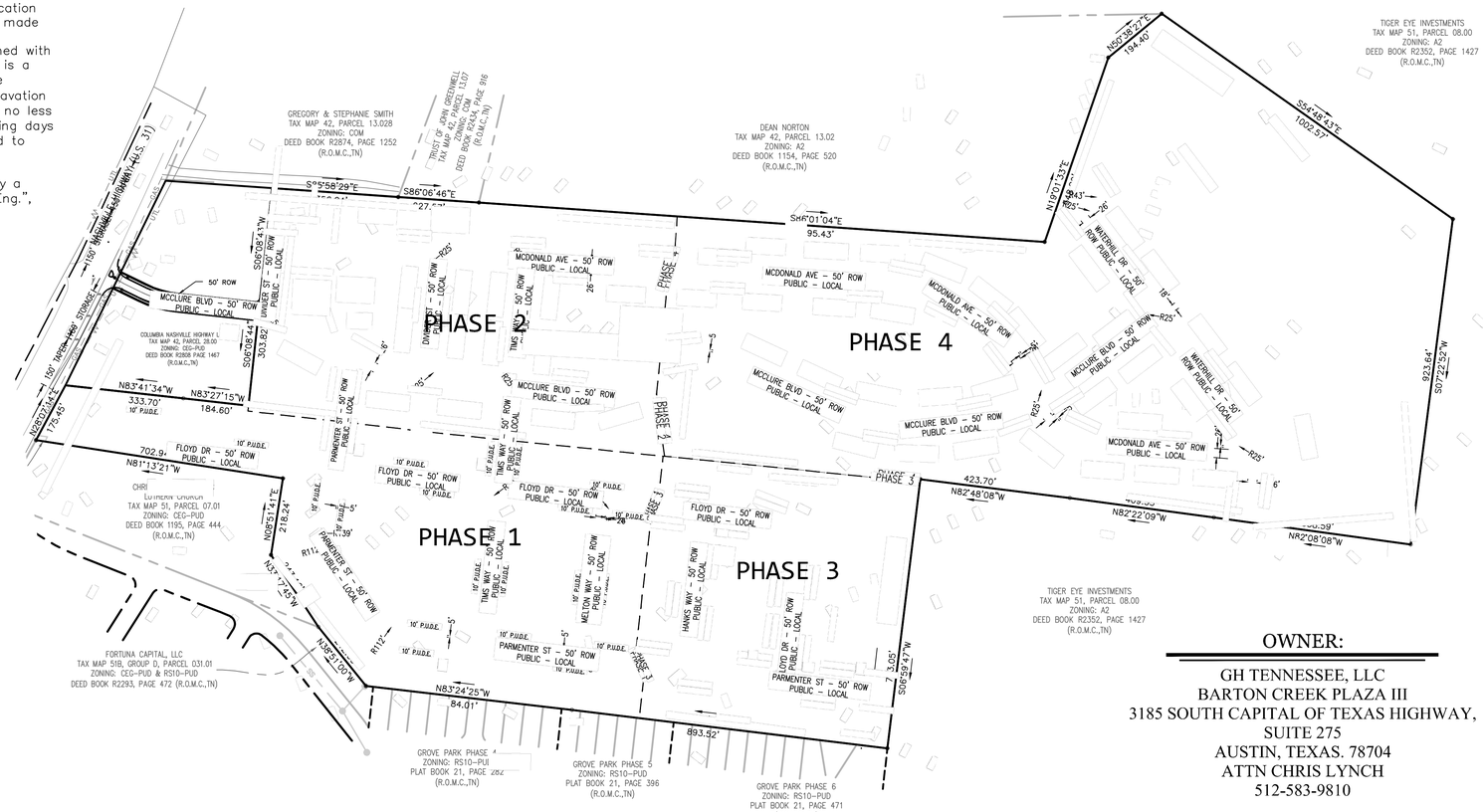
VICINITY MAP
SCALE: NTS

N
W E
S

SCALE 1" = 200' 0 100 200 400

NOTES:

1. The purpose of this preliminary plat is to create 116 lots and 314 Town-Home Units.
2. Property is identified as a portion of parcel 6.00 on Maury County, Tennessee Property Map: 51 in the civil district. Property is located in the city of Columbia and accessed from Nashville Highway.
3. Subject properties are currently zoned RS6-PUD per the City of Columbia GIS Mapping.
4. All distances shown are in feet and decimals thereof.
5. This property is NOT located in an area designated as a "Special Flood Hazard Area" as per the Federal Emergency Management Agency "National Flood Insurance Program" Rate Map No. 47119C0180E. (Zone X), (Map Revised APRIL 16, 2007).
6. This surveyor has not physically located the underground utilities. Above grade and underground utilities shown were taken from visible appurtenances at the site; public records and/or maps prepared by others. Special attention has been taken to indicate the approximate nature of the utilities, shown hereon. The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities are in the exact location indicated. Therefore, reliance upon the type, size, and location of utilities shown must be done so with this circumstance considered. Detailed verification of existence, location, and depth should also be made prior to any decision relative thereto is made. Availability and cost of service should be confirmed with the appropriate utility company. In Tennessee, it is a requirement per "The Underground Utility Damage Prevention Act" that anyone who engages in excavation must notify all known underground utility owners no less than three (3), nor no more than ten (10) working days prior to the date of their intent to excavate and to avoid any possible hazard or conflict.
8. All property corners that were set are marked by a 1/2" Rebar with a yellow cap that reads "W&A Eng.", unless otherwise noted.



Sheet List Table	
Sheet Number	Sheet Title
1	COVER
2	EXISTING CONDITIONS
3	OVERALL LAYOUT
4	PLAT – PHASE 1
5	PLAT – PHASE 2
6	PLAT – PHASE 3
7	PLAT – PHASE 4
8	PLAT – PHASE 4
9	UTILITY – PHASE 1
10	UTILITY – PHASE 2
11	UTILITY – PHASE 3
12	UTILITY – PHASE 4
13	GRADING – PHASE 1
14	GRADING – PHASE 2
15	GRADING – PHASE 3
16	GRADING – PHASE 4
17	SLOPE ANALYSIS
18	DETAIL SHEET

PHASING TIMELINE:
PHASE 1: AUGUST 2023 – AUGUST 2024
PHASE 2: AUGUST 2025 – FEBRUARY 2025
PHASE 3: AUGUST 2025 – MAY 2026
PHASE 4: AUGUST 2025 – MAY 2027

EXISTING TREE CANOPY: 23.15 ACRES
TREE CANOPY RETAINED: 6.98 ACRES

CURRENT SCHOOL ZONES:
- BATTLE CREEK ELEMENTARY SCHOOL
- BATTLE CREEK MIDDLE SCHOOL
- SPRING HILL HIGH SCHOOL

1) NO RESIDENCE IS GUARANTEED ZONE TO A SPECIFIC SCHOOL.
2) ALL ZONES ARE SUBJECT TO CHANGE YEARLY.

ALL CONNECTIONS TO EXISTING COUNTY ROADS AND ROW ARE SUBJECT TO THE APPLICABLE PERMITS, FEES, APPROVALS, AND STANDARDS/SPECIFICATIONS SET FORTH BY THE MAURY COUNTY HIGHWAY DEPARTMENT.

OWNER:

GH TENNESSEE, LLC
BARTON CREEK PLAZA III
3185 SOUTH CAPITAL OF TEXAS HIGHWAY,
SUITE 275
AUSTIN, TEXAS. 78704
ATTN CHRIS LYNCH
512-583-9810

ENGINEER:

W & A ENGINEERING
4101 CHARLOTTE AVE. E215
NASHVILLE, TN. 37209
ATTN: TRAVIS BONAR, PE
615-610-1023

DEVELOPER:

GH TENNESSEE, LLC
BARTON CREEK PLAZA III
3185 SOUTH CAPITAL OF TEXAS HIGHWAY,
SUITE 275
AUSTIN, TEXAS. 78704
ATTN CHRIS LYNCH
512-583-9810

SURVEYOR:

W & A ENGINEERING
4101 CHARLOTTE AVE. E215
NASHVILLE, TN. 37209
ATTN: ADAM BLEDSOE, PLS
615-610-1023

THIS PROPOSED PRELIMINARY PLAT FOR PHASE 1. SUPERCEDES THE PRELIMINARY PLAT (22-0107) APPROVED BY PLANNING COMMISSION IN JULY 2022.

W&A Engineering
CIVIL ENGINEERING · LANDSCAPE ARCHITECTURE
TRAFFIC ENGINEERING · SURVEYING
ECONOMIC DEVELOPMENT
4101 CHARLOTTE AVE. SUITE E215
Nashville, TN 37209
P: (615) 610-1023
waengineering.com

ALL DRAWINGS SHALL REMAIN THE PROPERTY OF W&A ENGINEERING. THESE INSTRUMENTS OF SERVICE ARE TO BE USED SOLELY FOR THIS SPECIFIC PROJECT. W&A ENGINEERING SHALL RETAIN ALL LEGAL RIGHTS TO THE USE OF THE INSTRUMENTS OF SERVICE AND SHALL RETAIN FULL PROTECTION UNDER UNITED STATES COPYRIGHT LAW.

PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT
	–
	–
–	–
–	–
–	–
–	–
–	–
–	–
–	–
–	–

DATE: 5/18/2023

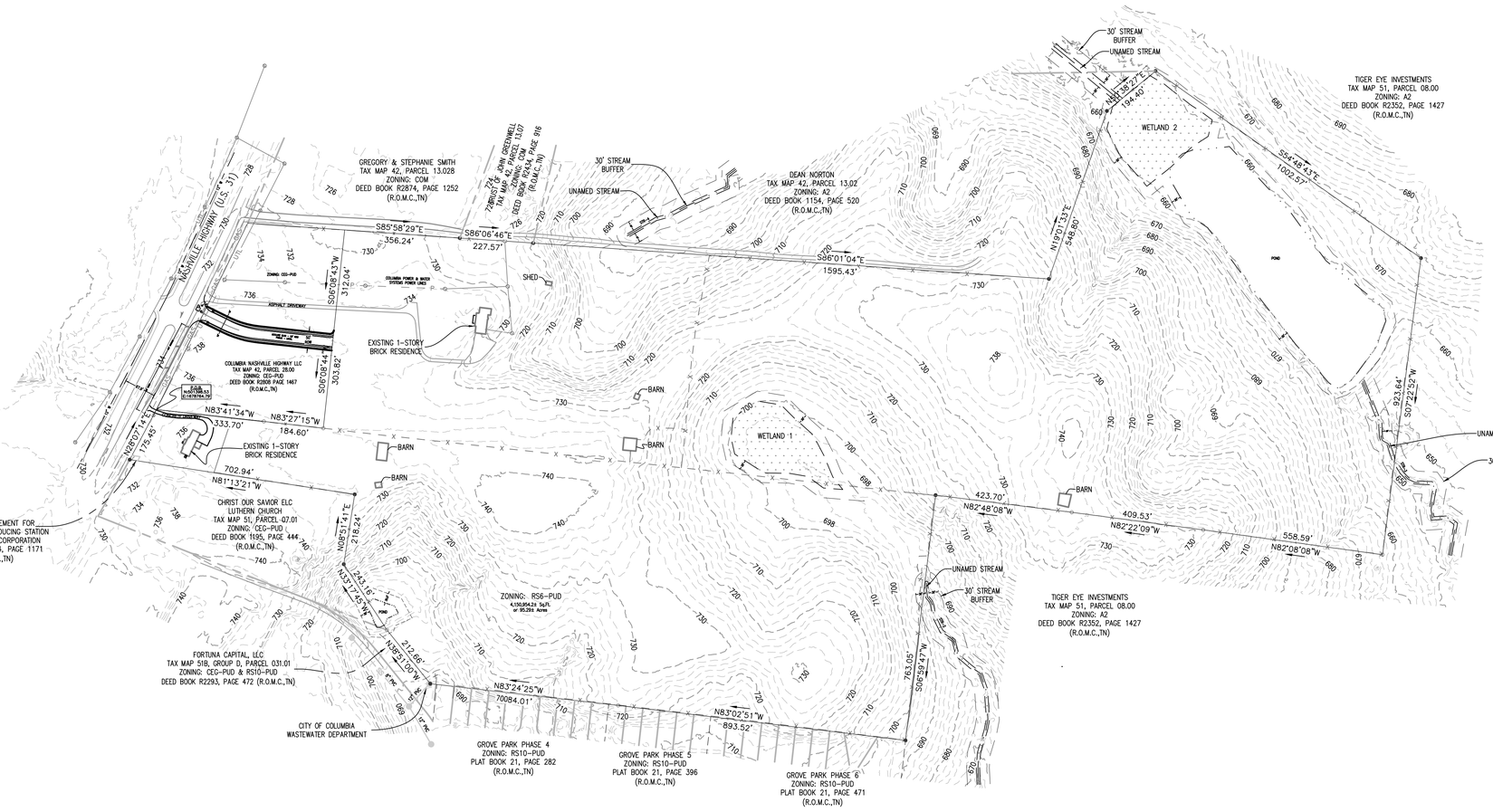
ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
TENNESSEE NO. 2009
5/18/2023

W&A PROJECT #: 220047

COVER

SHEET 1 OF 18

X:\Projects\2022\220047- McClure Farms\Design\Construction\PLAT\2-Sheets - CAD\PP - PHASE 1 - 220047.dwg 5-22-23 08:43:06 AM jhogan



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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVI
STATE OF TENNESSEE
DEPARTMENT OF AGRICULTURE
COMMERCE
TENNESSEE NO. 3099
5/18/2023

W&A PROJECT #: 220047

EXISTING CONDITIONS

SHEET 2 OF 18

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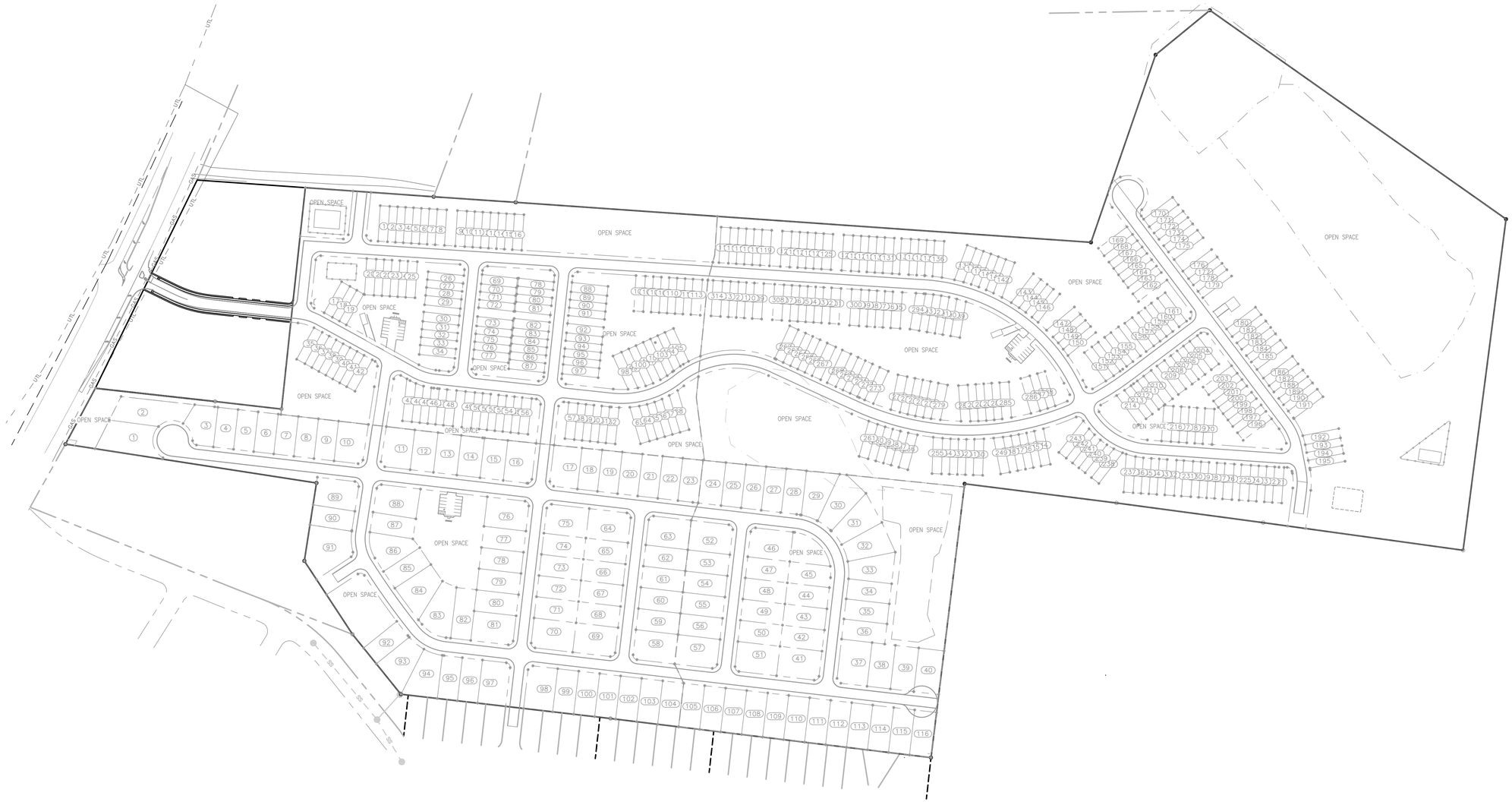

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVII
STATE OF TENNESSEE
DEPARTMENT OF AGRICULTURE
COMMERCE
TENNESSEE NO. 2009
5/18/2023

W&A PROJECT #: 220047

PHASE 1 - 4

OVERALL LAYOUT

SHEET 3 OF 18

X:\Projects\2022\220047- McClure Farms\Design\Construction\PLAT\2-Sheets - CAD PP - SLOPE - 220047.dwg 5-18-23 11:14:45 AM dpenn

ALL CONNECTIONS TO EXISTING COUNTY ROADS AND ROW ARE SUBJECT TO THE APPLICABLE PERMITS, FEES, APPROVALS, AND STANDARDS/SPECIFICATIONS SET FORTH BY THE MAURY COUNTY HIGHWAY DEPARTMENT.

THIS PROPOSED PRELIMINARY PLAT FOR PHASE 1. SUPERCEDES THE PRELIMINARY PLAT (22-0107) APPROVED BY PLANNING COMMISSION IN JULY 2022.

N

W E

S

SCALE 1" = 60'

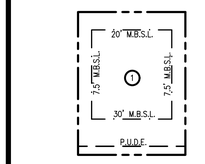
30 60 120

SURVEY LEGEND

P.O.B. - POINT OF BEGINNING
PROPERTY CORNER FOUND
PROPERTY CORNER SET
SSMH (SANITARY SEWER MANHOLE)
UTILITY POLE

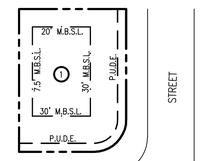
PROPERTY LINE
EASEMENT
BUILDING SETBACK
BUFFER

INTERIOR LOT (TYP.)



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

CORNER LOT (TYP.)



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

PHASE 2

PHASE 3

COLUMBIA NASHVILLE HIGHWAY LLC
TAX MAP 42, PARCEL 28.00
ZONING: CEG-PUD
DEED BOOK R2808 PAGE 1467
(R.O.M.C., TN)

OPEN SPACE

POND

FUTURE CONNECTION

MCCLURE BLVD - 50' ROW PUBLIC - LOCAL

FLOYD DR - 50' ROW PUBLIC - LOCAL

PARMENTER ST - 50' ROW PUBLIC - LOCAL

TIMS WAY - 50' ROW PUBLIC - LOCAL

MEDTON WAY - 50' ROW PUBLIC - LOCAL

NASHVILLE HIGHWAY (U.S. 31) - 150' STORAGE

150' STORAGE

150' RIPER

Open Space Table		
Open Space	Area (acre)	Area (sq.ft)
1	0.46	20048.90
1	0.98	42576.52
1	0.47	20496.15

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
1	0.29	12787.72'
2	0.30	13074.98'
3	0.18	7975.32'
4	0.14	6194.81'
5	0.14	6197.03'
6	0.14	6199.25'
7	0.14	6201.47'
8	0.14	6203.69'
9	0.14	6205.91'
10	0.21	8930.45'
11	0.21	8993.64'
12	0.16	7171.23'
13	0.16	7174.55'
14	0.16	7159.77'
15	0.17	7190.55'
16	0.20	8763.60'
17	0.20	8845.43'
18	0.15	6422.99'
19	0.15	6465.92'
20	0.15	6508.85'
21	0.15	6551.78'
22	0.15	6594.72'
23	0.15	6701.01'
58	0.22	9563.08'
59	0.16	6903.00'
60	0.16	6903.00'
61	0.16	6903.00'
62	0.16	6903.00'
63	0.22	9563.13'
64	0.22	9563.10'
65	0.16	6903.00'
66	0.16	6903.00'
67	0.16	6903.00'
68	0.16	6903.00'
69	0.22	9563.10'

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
70	0.22	9563.07'
71	0.16	6903.00'
72	0.16	6903.00'
73	0.16	6903.00'
74	0.16	6903.00'
75	0.22	9563.13'
76	0.22	9563.24'
77	0.16	6903.00'
78	0.16	6903.00'
79	0.16	6903.00'
80	0.16	6903.00'
81	0.22	9563.13'
82	0.18	7896.00'
83	0.23	10151.72'
84	0.23	9803.15'
85	0.15	6699.59'
86	0.20	8891.08'
87	0.15	6720.00'
88	0.22	9685.30'
89	0.21	9278.88'
90	0.15	6552.01'
91	0.32	14076.40'
92	0.15	6565.64'
93	0.23	9874.77'
94	0.22	9697.60'
95	0.15	6720.92'
96	0.15	6721.17'
97	0.22	9391.35'
98	0.22	9692.70'
99	0.16	7023.07'
100	0.16	7023.48'
101	0.16	7024.55'
102	0.16	7040.37'
103	0.16	7062.24'
104	0.16	7084.12'

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C1	N08°05'11"W	100.89'	55.00
C2	N83°02'16"E	74.05'	55.00
C3	S28°54'10"E	56.61'	55.00
C4	S41°24'51"E	17.59'	12.00
C5	N52°43'26"E	18.37'	12.00
C6	N37°16'34"W	19.33'	12.00
C7	N08°24'44"E	2.35'	150.00
C8	N03°08'44"W	58.16'	150.00
C9	N21°13'30"E	14.86'	12.00
C10	N78°05'26"W	20.51'	13.00
C11	N35°04'59"W	155.34'	2025.00
C12	N37°59'25"W	50.15'	2025.00
C13	N39°49'03"W	5.85'	150.00
C14	N50°57'37"W	52.49'	150.00
C15	N71°17'13"W	53.94'	150.00
C16	N8Z°30'03"W	4.78'	150.00
C17	N38°24'27"W	18.85'	12.00
C18	S51°35'33"W	18.85'	12.00
C19	S38°24'27"E	18.85'	12.00
C20	S51°35'33"W	18.85'	12.00
C21	N38°24'27"W	18.85'	12.00
C22	N51°35'33"E	18.85'	12.00
C23	S61°03'24"E	78.04'	100.00
C24	S38°28'30"E	15.49'	1975.00
C25	S36°39'50"E	109.38'	1975.00
C26	S34°15'53"E	56.01'	1975.00
C27	S3Z°48'46"E	44.10'	1975.00
C28	S11°39'21"E	71.62'	100.00
C29	S51°43'58"W	17.97'	12.01
C30	S37°16'34"E	19.33'	12.00
C31	N51°35'33"E	18.85'	12.00
C33	N38°24'27"W	18.83'	11.97
C34	N51°35'33"E	18.85'	12.00
C35	S38°24'27"E	18.85'	12.00
C36	S51°35'33"W	18.85'	12.00

W&A Engineering

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
No. XVI
AGRICULTURE
SURVEYOR
TENNESSEE NO. 2009
5/18/2023

W&A PROJECT #: 220047

PHASE 1

PRELIMINARY PLAT

SHEET 4 OF 18

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Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
1	0.06	2560.77'
2	0.05	2163.33'
3	0.05	2163.33'
4	0.05	2163.33'
5	0.05	2163.33'
6	0.05	2163.33'
7	0.05	2163.33'
8	0.06	2560.77'
9	0.06	2560.77'
10	0.05	2163.33'
11	0.05	2163.33'
12	0.05	2163.33'
13	0.05	2163.33'
14	0.05	2163.33'
15	0.05	2163.33'
16	0.06	2560.77'
17	0.06	2561.60'
18	0.05	2157.75'
19	0.05	2151.99'
20	0.06	2603.35'
21	0.05	2199.31'
22	0.05	2199.31'
23	0.05	2199.31'
24	0.05	2199.31'
25	0.06	2603.35'
26	0.05	2185.33'
27	0.05	2185.33'
28	0.05	2185.33'
29	0.06	2586.81'

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
30	0.06	2586.81'
31	0.05	2185.33'
32	0.05	2185.33'
33	0.05	2185.33'
34	0.06	2586.81'
35	0.06	2586.77'
36	0.05	2185.33'
37	0.05	2185.33'
38	0.05	2185.33'
39	0.05	2185.33'
40	0.05	2185.33'
41	0.05	2185.33'
42	0.06	2586.81'
43	0.07	2905.18'
44	0.05	2289.11'
45	0.05	2207.95'
46	0.05	2185.65'
47	0.05	2185.35'
48	0.06	2586.82'
49	0.06	2586.82'
50	0.05	2185.34'
51	0.05	2185.34'
52	0.05	2185.34'
53	0.05	2185.34'
54	0.05	2185.34'
55	0.05	2185.33'
56	0.06	2586.81'
57	0.06	2612.85'
58	0.05	2207.33'

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
59	0.05	2207.33'
60	0.05	2207.33'
61	0.05	2207.33'
62	0.06	2619.05'
63	0.06	2678.24'
64	0.05	2203.40'
65	0.05	2190.71'
66	0.05	2216.85'
67	0.05	2282.32'
68	0.07	2842.14'
69	0.06	2560.77'
70	0.05	2163.33'
71	0.05	2163.33'
72	0.05	2163.33'
73	0.06	2560.77'
74	0.05	2163.33'
75	0.05	2163.33'
76	0.05	2163.33'
77	0.06	2560.77'
78	0.05	2163.33'
79	0.05	2163.33'
80	0.05	2163.33'
81	0.06	2560.77'
82	0.06	2560.77'
83	0.05	2163.33'
84	0.05	2163.33'
85	0.05	2163.33'
86	0.05	2163.33'
87	0.06	2560.77'

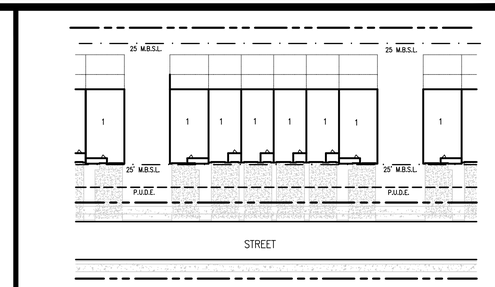
Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
88	0.06	2612.85'
89	0.05	2207.33'
90	0.05	2207.33'
91	0.05	2207.33'
92	0.06	2612.85'
93	0.05	2207.33'
94	0.05	2207.33'
95	0.05	2207.33'
96	0.05	2207.33'
97	0.06	2612.85'
98	0.06	2738.73'
99	0.06	2440.57'
100	0.06	2503.69'
101	0.06	2518.85'
102	0.06	2486.48'
103	0.06	2405.74'
104	0.05	2300.01'
105	0.06	2631.06'
106	0.06	2560.77'
107	0.05	2163.33'
108	0.05	2163.33'
109	0.05	2163.33'
110	0.05	2163.33'
111	0.05	2163.33'
112	0.05	2163.33'
113	0.06	2560.77'

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C1	N73°14'28"W	46.31'	125.00
C2	N61°54'29"W	3.14'	125.00
C3	N26°09'49"W	15.89'	13.00
C4	N63°50'11"E	24.95'	13.00
C5	S64°06'21"E	17.82'	175.00
C6	S70°43'29"E	22.61'	175.00
C7	S78°02'56"E	22.13'	175.00
C8	S82°47'21"E	6.83'	175.00
C9	S38°39'14"E	20.54'	13.00
C10	S51°20'46"W	20.31'	13.00
C11	N86°10'14"W	21.73'	275.00
C12	S88°28'00"W	29.75'	275.00
C13	S82°37'16"W	26.36'	275.00
C14	S77°34'37"W	22.05'	275.00
C15	S72°59'13"W	22.01'	275.00
C16	S68°23'30"W	22.10'	275.00
C17	S63°45'40"W	22.35'	275.00
C18	S58°37'16"W	26.99'	275.00
C19	S53°36'22"W	21.15'	275.00
C20	S57°29'17"W	47.79'	225.00
C21	N66°08'49"E	35.99'	275.00
C22	N60°41'30"E	16.38'	275.00
C23	N57°57'49"E	9.81'	275.00

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C24	N54°36'24"E	22.41'	275.00
C25	N51°50'14"E	4.17'	275.00
C26	N53°44'15"E	18.34'	225.00
C27	N58°53'37"E	22.16'	225.00
C28	N64°31'03"E	22.01'	225.00
C29	N75°47'26"E	22.37'	225.00
C30	N82°06'00"E	27.19'	225.00
C31	S89°10'22"E	41.36'	225.00
C32	S38°52'50"E	20.43'	13.00
C33	N51°07'10"E	20.41'	13.00
C34	S38°51'27"E	20.44'	13.00
C35	N51°08'33"E	20.40'	13.00
C36	S72°32'51"E	49.56'	125.00
C37	S65°54'02"E	28.79'	175.00
C38	S32°14'01"E	17.42'	13.00
C39	S49°52'31"W	19.84'	13.00
C40	N49°52'30"E	19.84'	13.00
C41	S40°07'30"E	21.00'	13.00
C42	N40°06'07"W	21.01'	13.00
C43	S49°53'53"W	19.83'	13.00
C44	N40°07'29"W	21.00'	13.00
C45	S49°52'31"W	19.84'	13.00
C58	N70°07'53"E	22.08'	225.00

Open Space Table		
Open Space	Area (acre)	Area (sq.ft)
1	0.85	36929.32
1	0.41	17763.22
1	1.11	48220.86
1	2.05	89483.09
1	0.66	28788.39
1	1.23	53535.02
1	0.40	17221.99
1	0.43	18940.27

SITE DATA	
PHASE 2	
Lots	113
Open Space	310,882.16 sq ft
	7.137 ac



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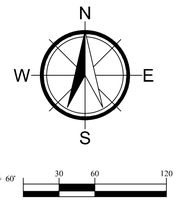
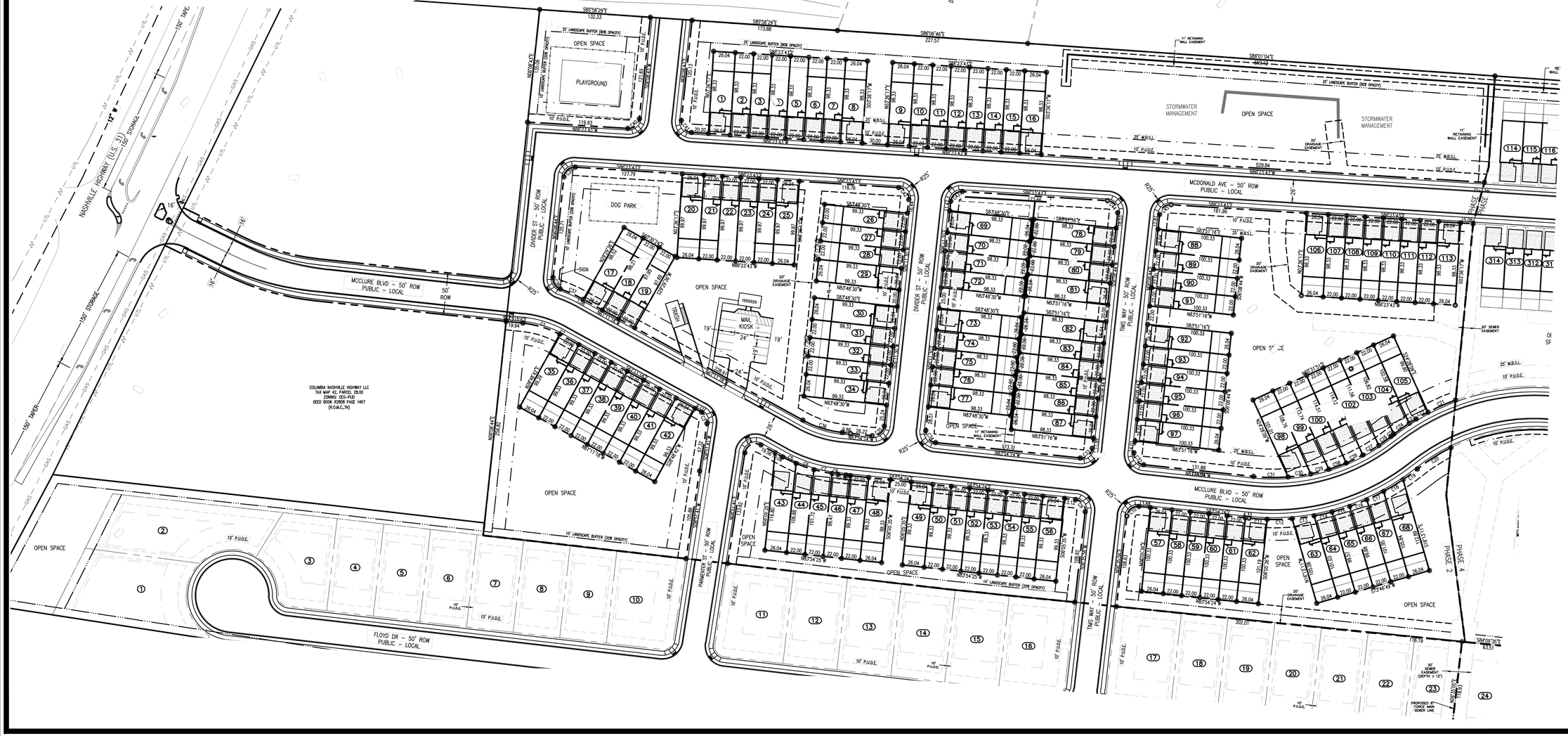
SCALE: NTS



SCALE 1" = 60' 30 60 120

SURVEY LEGEND
- P.O.B. – POINT OF BEGINNING
- PROPERTY CORNER FOUND
- PROPERTY CORNER SET
- SSMH (SANITARY SEWER MANHOLE)
- UTILITY POLE
- PROPERTY LINE
- EASEMENT
- BUILDING SETBACK
- BUFFER
- PROP. MAJ CONTOURS
- EX. MAJ CONTOURS
- STORM SYSTEM
- SANITARY SEWER — SS —
- WATER LINE



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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEESE
REGISTERED LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE NO. 30693
5/18/2023

W&A PROJECT #: 220047

PHASE 2

PRELIMINARY PLAT

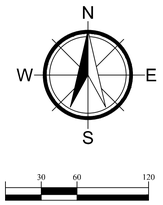
SHEET 5 OF 18

X:\Projects\2022\220047- McClure Farms\Design\Construction\PLAT\2-Sheets - CAD\PP - PHASE 2 - 220047.dwg, 5-22-23 10:46:10 AM, jogan

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
24	0.17	7578.23'
25	0.15	6726.70'
26	0.16	6767.51'
27	0.16	6808.32'
28	0.16	6851.71'
29	0.21	9052.34'
30	0.23	9976.49'
31	0.21	9055.04'
32	0.21	8945.98'
33	0.19	8404.72'
34	0.15	6720.33'
35	0.15	6720.46'
36	0.15	6720.62'
37	0.24	10297.25'
38	0.18	7897.50'
39	0.18	7897.50'
40	0.20	8515.10'
41	0.22	9563.13'
42	0.16	6903.00'
43	0.16	6903.00'
44	0.16	6903.00'
45	0.16	6858.44'
46	0.22	9563.13'
47	0.16	6903.00'
48	0.16	6903.00'
49	0.16	6903.00'
50	0.16	6903.00'
51	0.22	9563.07'
52	0.22	9563.14'
53	0.16	6903.00'
54	0.16	6903.00'
55	0.16	6903.00'
56	0.16	6903.00'
57	0.22	9563.11'
105	0.16	7106.00'
106	0.16	7127.87'
107	0.16	7149.75'
108	0.16	7171.62'
109	0.17	7193.50'
110	0.17	7215.38'
111	0.17	7237.25'
112	0.17	7259.13'
113	0.17	7281.00'
114	0.17	7302.88'
115	0.17	7324.76'
116	0.17	7583.56'

Open Space Table		
Open Space	Area (acre)	Area (sq.ft)
1	2.05	89273.33
1	0.16	6896.90

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C37	N38°24'27"W	18.86'	11.99
C38	N51°35'33"E	18.85'	12.00
C39	S51°35'33"W	18.85'	12.00
C40	S38°24'27"E	18.85'	12.00
C41	N51°35'33"E	18.85'	12.00
C42	N01°22'07"W	31.43'	113.00
C43	N46°22'30"W	146.10'	113.00
C44	S81°37'14"E	10.20'	300.19
C45	S79°29'43"E	2.88'	159.62
C46	S70°42'27"E	46.09'	159.62
C47	S62°50'49"E	2.16'	151.29
C48	S54°03'33"E	44.25'	151.29
C49	S45°47'48"E	2.95'	163.00
C50	S37°00'32"E	47.05'	163.00
C51	S19°57'10"E	50.00'	163.00
C52	S02°43'44"E	48.00'	163.00
C53	S06°09'12"W	2.54'	163.00
C54	S38°24'27"E	18.85'	12.00



SURVEY LEGEND

- P.O.B. – POINT OF BEGINNING
- PROPERTY CORNER FOUND
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- SSMH (SANITARY SEWER MANHOLE)
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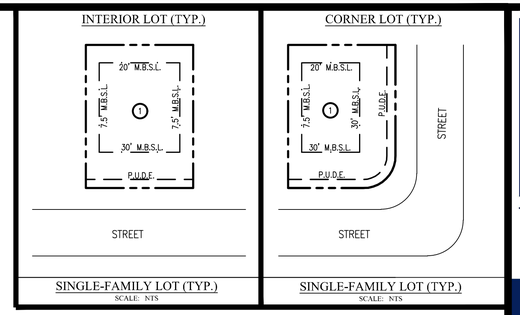
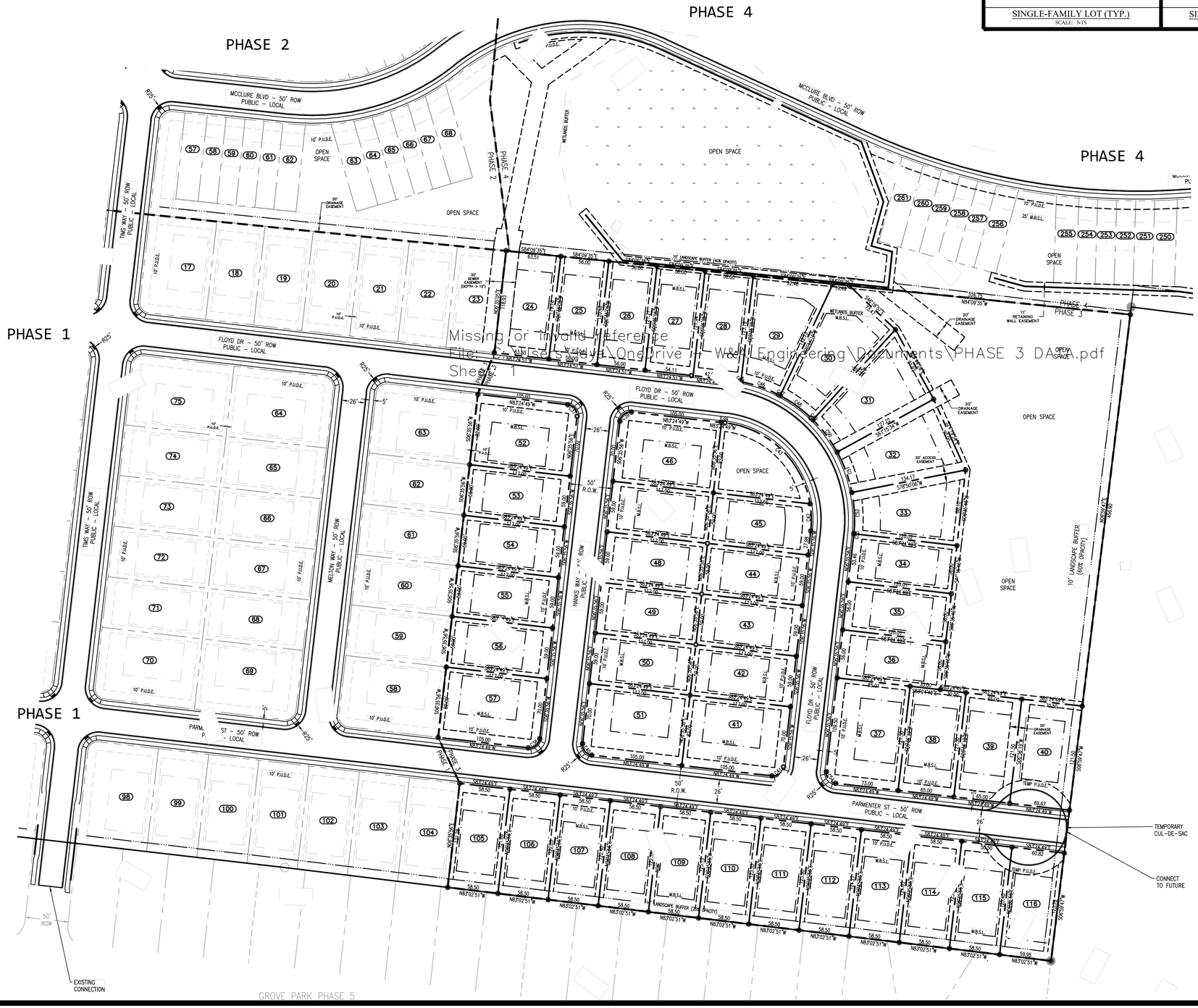
- EX. MAJ CONTOURS
- STORM SYSTEM
- SANITARY SEWER — SS —
- WATER LINE





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Sheet: 1

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT
	-
	-
	-
	-
	-
	-
	-
	-
	-
	-

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 2099
5/18/2023

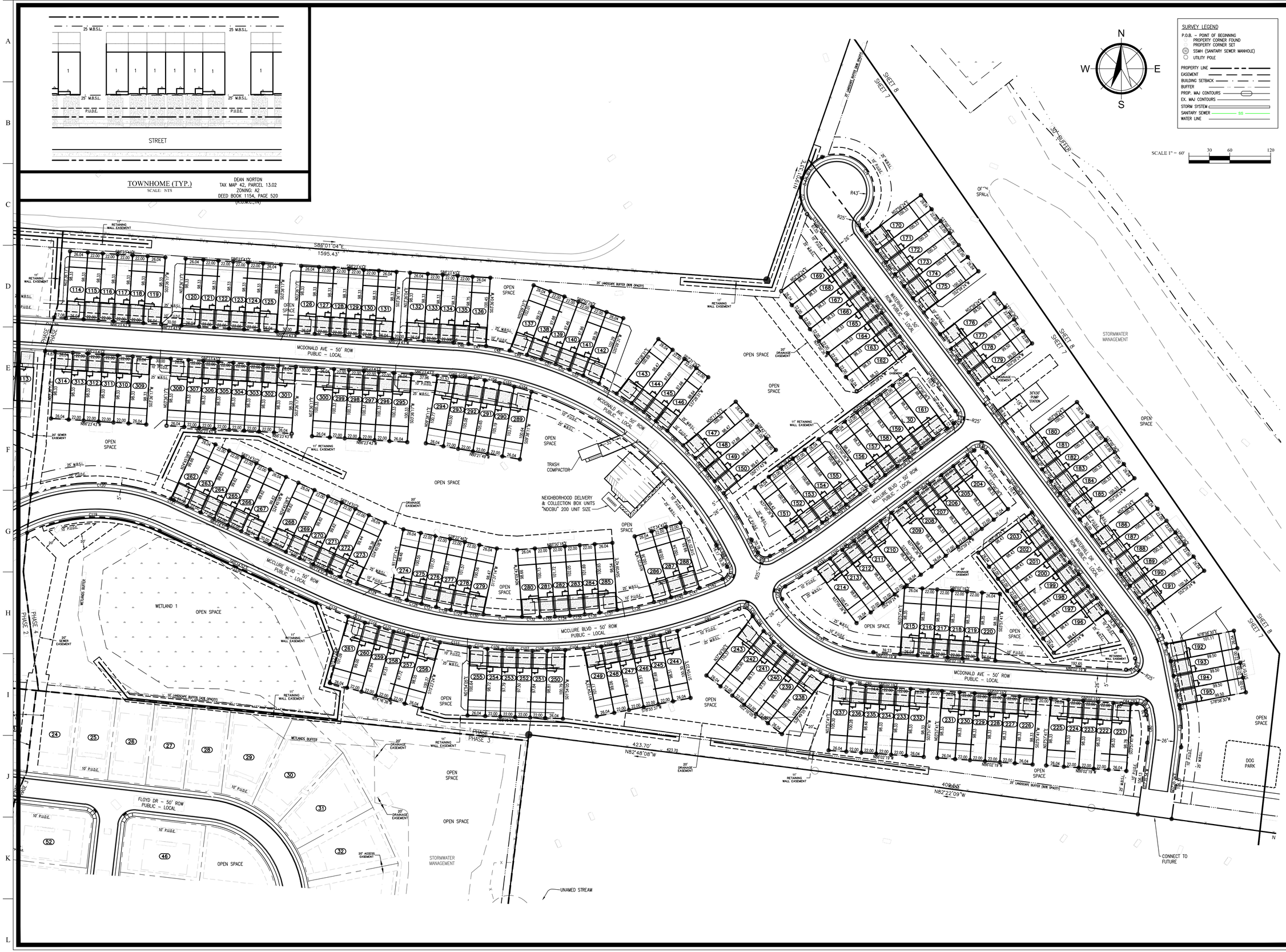
W&A PROJECT #: 220047

PHASE 3

PRELIMINARY PLAT

SHEET 6 OF 18

X:\Projects\2022\220047- McClure Farms\Design\Construction\PLATS\Sheets - CADPP - PHASE 3 - 220047.dwg 5-22-23 09:29:53 AM jlogan



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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS

2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 3099
5/18/2023

W&A PROJECT #: 220047

PHASE 4

PRELIMINARY PLAT

SHEET 7 OF 18

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Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
114	0.06	2560.77'
115	0.05	2163.33'
116	0.05	2163.33'
117	0.05	2163.33'
118	0.05	2163.33'
119	0.06	2560.77'
120	0.06	2560.77'
121	0.05	2163.33'
122	0.05	2163.33'
123	0.05	2163.33'
124	0.05	2163.33'
125	0.06	2560.77'
126	0.06	2560.77'
127	0.05	2163.33'
128	0.05	2163.33'
129	0.05	2163.33'
130	0.05	2163.33'
131	0.06	2560.77'
132	0.06	2560.77'
133	0.05	2163.33'
134	0.05	2163.33'
135	0.05	2166.29'
136	0.06	2590.97'
137	0.06	2617.36'
138	0.05	2166.36'
139	0.05	2147.01'
140	0.05	2147.97'
141	0.05	2169.24'
142	0.06	2623.28'
143	0.06	2590.32'
144	0.05	2155.05'
145	0.05	2146.18'
146	0.05	2157.61'
147	0.06	2586.13'
148	0.05	2158.12'
149	0.05	2155.28'
150	0.05	2172.74'
151	0.06	2585.85'
152	0.05	2208.36'
153	0.05	2214.87'
154	0.05	2215.03'
155	0.06	2621.96'
156	0.06	2560.77'
157	0.05	2163.33'
158	0.05	2163.33'
159	0.05	2163.33'
160	0.05	2163.33'
161	0.06	2560.77'
162	0.06	2560.77'
163	0.05	2163.33'
164	0.05	2163.33'
165	0.05	2163.33'
166	0.05	2163.33'
167	0.05	2163.33'
168	0.05	2163.33'
169	0.06	2560.77'
170	0.06	2612.85'
171	0.05	2207.33'
172	0.05	2207.33'
173	0.05	2207.33'
174	0.05	2207.33'
175	0.06	2612.85'
176	0.06	2591.15'
177	0.05	2189.00'
178	0.05	2189.00'
179	0.05	2189.00'
180	0.06	2612.85'
181	0.05	2207.33'
182	0.05	2207.33'
183	0.05	2207.33'
184	0.05	2207.33'
185	0.06	2612.85'
186	0.06	2612.50'
187	0.05	2207.04'
188	0.05	2207.04'
189	0.05	2207.04'
190	0.05	2207.04'
191	0.06	2612.52'
192	0.06	2603.82'
193	0.05	2189.00'
194	0.05	2189.00'
195	0.05	2189.00'
196	0.06	2563.28'
197	0.05	2165.46'
198	0.05	2165.46'

Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
199	0.05	2165.46'
200	0.05	2165.46'
201	0.05	2165.46'
202	0.05	2165.46'
203	0.06	2563.28'
204	0.06	2560.77'
205	0.05	2163.33'
206	0.05	2163.33'
207	0.05	2163.33'
208	0.05	2163.33'
209	0.06	2560.77'
210	0.06	2560.77'
211	0.05	2163.33'
212	0.05	2163.50'
213	0.05	2169.73'
214	0.06	2594.95'
215	0.06	2561.32'
216	0.05	2163.80'
217	0.05	2163.80'
218	0.05	2163.80'
219	0.05	2163.80'
220	0.06	2561.32'
221	0.06	2562.91'
222	0.05	2163.33'
223	0.05	2163.33'
224	0.05	2163.33'
225	0.06	2560.77'
226	0.06	2560.77'
227	0.05	2163.33'
228	0.05	2163.33'
229	0.05	2163.33'
230	0.05	2163.33'
231	0.06	2560.77'
232	0.06	2560.77'
233	0.05	2163.33'
234	0.05	2163.33'
235	0.05	2163.65'
236	0.05	2182.14'
237	0.06	2669.95'
238	0.06	2702.47'
239	0.05	2186.19'
240	0.05	2149.22'
241	0.05	2159.80'
242	0.05	2218.25'
243	0.06	2769.56'
244	0.06	2586.66'
245	0.05	2157.07'
246	0.05	2146.13'
247	0.05	2149.14'
248	0.05	2166.09'
249	0.06	2605.14'
250	0.06	2597.08'
251	0.05	2162.03'
252	0.05	2147.58'
253	0.05	2147.07'
254	0.05	2160.51'
255	0.06	2593.98'
256	0.06	2588.24'
257	0.05	2157.81'
258	0.05	2146.33'
259	0.05	2148.79'
260	0.05	2165.20'
261	0.06	2603.38'
262	0.06	2594.36'
263	0.05	2191.67'
264	0.05	2191.67'
265	0.05	2191.67'
266	0.05	2191.67'
267	0.06	2594.30'
268	0.06	2594.30'
269	0.05	2191.67'
270	0.05	2191.67'
271	0.05	2191.67'
272	0.05	2190.70'
273	0.06	2577.84'
274	0.06	2593.33'
275	0.05	2224.54'
276	0.05	2239.51'
277	0.05	2239.56'
278	0.05	2224.68'
279	0.06	2593.63'
280	0.06	2598.25'
281	0.05	2228.19'
282	0.05	2242.71'
283	0.05	2242.30'

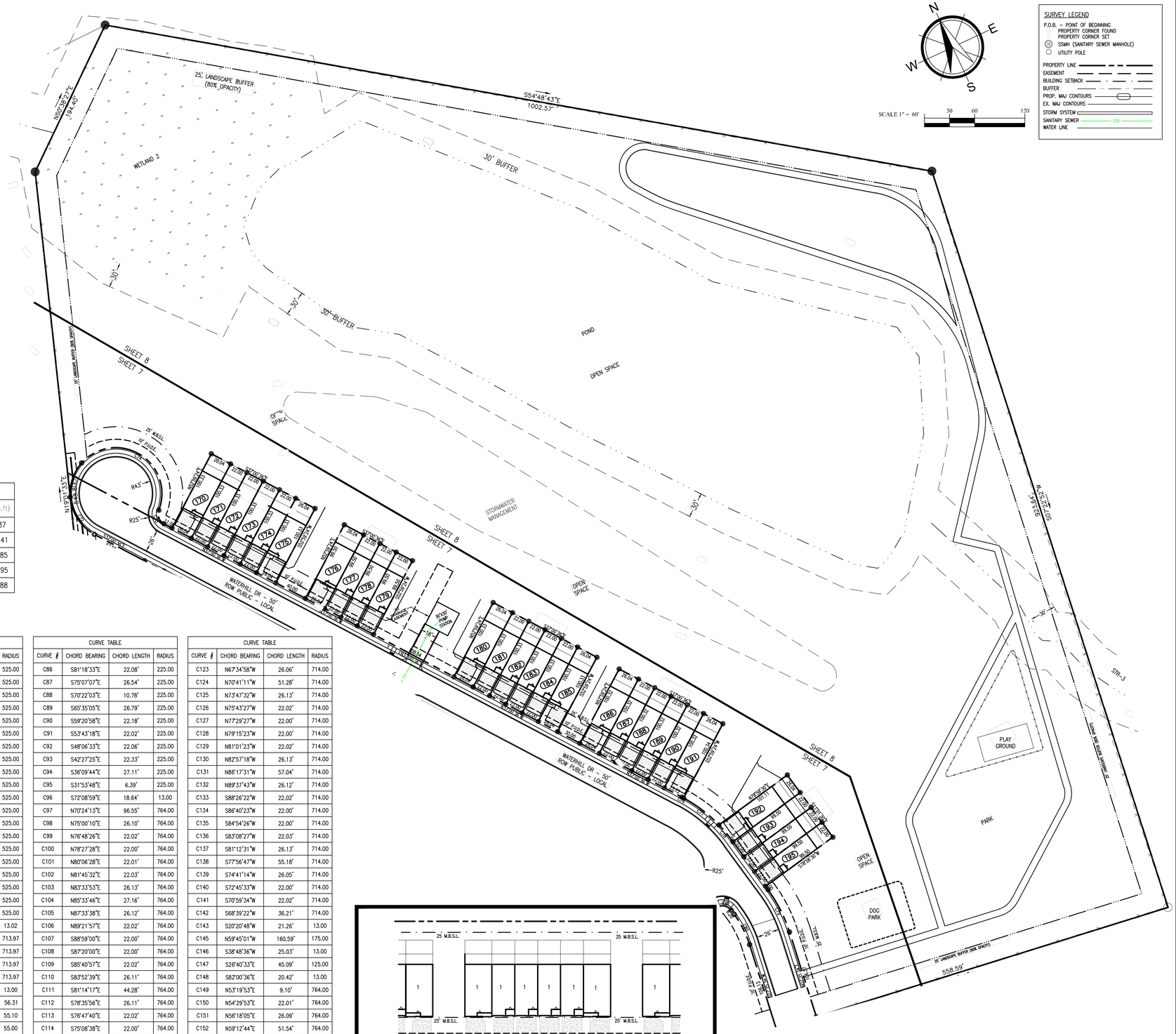
Lot Area Table		
Lot #	Area (acre)	Area (sq.ft)
284	0.05	2226.97'
285	0.06	2595.75'
286	0.06	2622.05'
287	0.05	2216.69'
288	0.05	2202.31'
289	0.06	2663.98'
290	0.05	2299.83'
291	0.05	2321.05'
292	0.05	2319.88'
293	0.05	2296.30'
294	0.06	2660.12'
295	0.06	2612.85'
296	0.05	2207.33'
297	0.05	2207.33'
298	0.05	2207.33'
299	0.05	2207.33'
300	0.06	2612.85'
301	0.06	2560.77'
302	0.05	2163.33'
303	0.05	2163.33'
304	0.05	2163.33'
305	0.05	2163.33'
306	0.05	2163.33'
307	0.05	2163.33'
308	0.06	2560.77'
309	0.06	2560.77'
310	0.05	2163.33'
311	0.05	2163.33'
312	0.05	2163.33'
313	0.05	2163.33'
314	0.06	2560.77'

Open Space Table		
Open Space	Area (acre)	Area (sq.ft)
1	0.83	36161.37
1	3.08	134142.41
1	4.30	187499.85
1	19.49	849146.95
1	2.75	119611.88

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C46	N85°14'50"W	21.04'	525.00
C47	N82°40'29"W	26.10'	525.00
C48	N79°19'19"W	35.34'	525.00
C49	N75°57'51"W	26.19'	525.00
C50	N73°19'56"W	22.04'	525.00
C51	N70°55'43"W	22.01'	525.00
C52	N68°31'37"W	22.01'	525.00
C53	N66°07'22"W	22.05'	525.00
C54	N63°29'23"W	26.21'	525.00
C55	N60°26'40"W	29.60'	525.00
C56	N57°24'11"W	26.14'	525.00
C57	N54°46'30"W	22.02'	525.00
C58	N52°22'23"W	22.00'	525.00
C59	N49°58'14"W	22.02'	525.00
C60	N47°01'50"W	31.86'	525.00
C61	N43°52'03"W	26.11'	525.00
C62	N41°14'29"W	22.01'	525.00
C63	N38°50'23"W	22.00'	525.00
C64	N36°26'12"W	22.04'	525.00
C65	N30°52'19"W	79.94'	525.00
C66	N74°07'09"W	20.40'	13.02
C67	S59°16'21"W	42.75'	713.97
C68	S56°30'37"W	26.09'	713.97
C69	S54°34'49"W	22.01'	713.97
C70	S53°20'36"W	8.81'	713.97
C71	S07°59'24"W	20.42'	13.00
C72	S09°19'11"E	52.32'	56.31
C73	S43°30'05"W	44.20'	55.10
C74	N33°24'34"W	152.90'	55.00
C75	N04°36'43"E	18.89'	13.00
C76	N36°37'50"W	2.32'	175.00
C77	N27°31'31"W	53.30'	175.00
C78	N14°54'44"W	23.75'	175.00
C79	N01°42'58"W	56.86'	175.00
C80	S01°42'58"E	40.62'	125.00
C81	S51°25'52"E	18.34'	13.00
C85	S85°04'47"E	7.53'	225.00

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C86	S81°18'33"E	22.08'	225.00
C87	S75°07'07"E	26.54'	225.00
C88	S70°22'03"E	10.78'	225.00
C89	S65°35'05"E	26.79'	225.00
C90	S59°20'58"E	22.18'	225.00
C91	S53°43'18"E	22.02'	225.00
C92	S48°06'33"E	22.06'	225.00
C93	S42°27'25"E	22.33'	225.00
C94	S36°09'44"E	27.11'	225.00
C95	S31°53'48"E	6.39'	225.00
C96	S72°08'59"E	18.64'	13.00
C97	N70°24'13"E	96.55'	764.00
C98	N75°00'10"E	26.10'	764.00
C99	N76°48'26"E	22.02'	764.00
C100	N78°27'28"E	22.00'	764.00
C101	N80°06'28"E	22.01'	764.00
C102	N81°45'32"E	22.03'	764.00
C103	N83°33'53"E	26.13'	764.00
C104	N85°33'46"E	27.16'	764.00
C105	N87°33'38"E	26.12'	764.00
C106	N89°21'57"E	22.02'	764.00
C107	S88°59'00"E	22.00'	764.00
C108	S87°20'00"E	22.00'	764.00
C109	S85°40'57"E	22.02'	764.00
C110	S83°52'39"E	26.11'	764.00
C111	S81°14'17"E	44.28'	764.00
C112	S78°35'56"E	26.11'	764.00
C113	S76°47'40"E	22.02'	764.00
C114	S75°08'38"E	22.00'	764.00
C115	S73°29'37"E	22.00'	764.00
C116	S71°50'34"E	22.03'	764.00
C117	S70°02'13"E	26.13'	764.00
C118	S67°09'09"E	50.80'	764.00
C119	N89°09'46"E	200.98'	225.00
C120	N88°08'27"W	210.83'	275.00
C121	N65°42'46"W	4.46'	275.00
C122	N65°53'33"W	16.07'	714.00

CURVE TABLE			
CURVE #	CHORD BEARING	CHORD LENGTH	RADIUS
C123	N67°34'58"W	26.06'	714.00
C124	N70°41'11"W	51.28'	714.00
C125	N73°47'32"W	26.13'	714.00
C126	N75°43'27"W	22.02'	714.00
C127	N77°29'27"W	22.00'	714.00
C128	N79°15'23"W	22.00'	714.00
C129	N81°01'23"W	22.02'	714.00
C130	N82°57'18"W	26.13'	714.00
C131	N86°17'31"W	57.04'	714.00
C132	N89°37'43"W	26.12'	714.00
C133	S88°26'22"W	22.02'	714.00
C134	S86°40'23"W	22.00'	714.00
C135	S84°54'26"W	22.00'	714.00
C136	S83°08'27"W	22.03'	714.00
C137	S81°12'31"W	26.13'	714.00
C138	S77°56'47"W	55.18'	714.00
C139	S74°41'14"W	26.05'	714.00
C140	S72°45'33"W	22.00'	714.00
C141	S70°59'34"W	22.02'	714.00
C142	S68°39'22"W	36.21'	714.00
C143	S20°20'48"W	21.26'	13.00
C145	N59°45'01"W	160.59'	175.00
C146	S38°48'36"W	25.03'	13.00
C147	S26°40'33"E	45.09'	125.00
C148	S82°00'36"E	20.42'	13.00
C149	N53°19'53"E	9.10'	764.00
C150	N54°29'53"E	22.01'	764.00
C151	N56°18'05"E	26.09'	764.00
C152	N59°12'44"E	51.54'	764.00
C153	S50°17'57"E	361.39'	476.11
C154	S73°37'20"E	26.23'	476.11
C155	S76°31'38"E	22.05'	476.11
C156	S79°10'41"E	22.01'	476.11
C157	S81°49'36"E	22.01'	476.11
C159	S84°28'42"E	22.06'	476.11
C160	S86°04'59"E	4.61'	476.11



TOWNHOME (TYP.)
SCALE: NTS

SURVEY LEGEND
P.O.B. = POINT OF BEGINNING
PROPERTY CORNER FOUND
PROPERTY CORNER SET
SSMH (SANITARY SEWER MANHOLE)
UTILITY POLE
PROPERTY LINE
EASEMENT
BUILDING SETBACK
BUFFER
PROP. MAJ CONTOURS
EX. MAJ CONTOURS
STORM SYSTEM
SANITARY SEWER
WATER LINE

SCALE 1" = 60' 30 60 120

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEESE
REGISTERED LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE NO. 3093
5/18/2023

W&A PROJECT #: 220047

PHASE 4

PRELIMINARY PLAT

SHEET 8 OF 18

X:\Projects\2022\220047 - McClure Farms\Design\Construction\PLAT\2-Sheets - CAD\PP - PHASE 4 - 220047.dwg, 5-23-23 09:50:15 AM, jhogan

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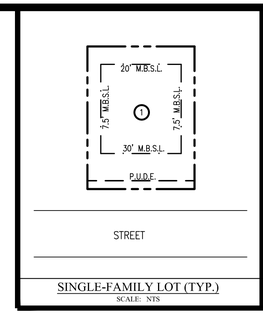
N
W E
S

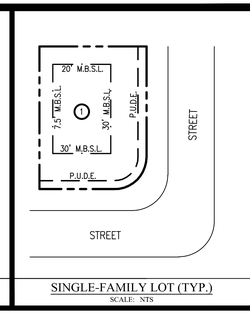
SCALE 1" = 60'
30 60 120

SURVEY LEGEND

- P.O.B. – POINT OF BEGINNING
- PROPERTY CORNER FOUND
- PROPERTY CORNER SET
- SSMH (SANITARY SEWER MANHOLE)
- UTILITY POLE
- PROPERTY LINE
- EASEMENT
- BUILDING SETBACK
- BUFFER
- PROP. MAJ CONTOURS (710)
- EX. MAJ CONTOURS
- STORM SYSTEM
- SANITARY SEWER (SS)
- WATER LINE (W)



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

THIS PROPOSED PRELIMINARY PLAT FOR PHASE 1. SUPERCEDES THE PRELIMINARY PLAT (22-0107) APPROVED BY PLANNING COMMISSION IN JULY 2022.

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE NO. 3099
5/18/2023

W&A PROJECT #: 220047

PHASE 1

UTILITIES

SHEET 9 OF 18

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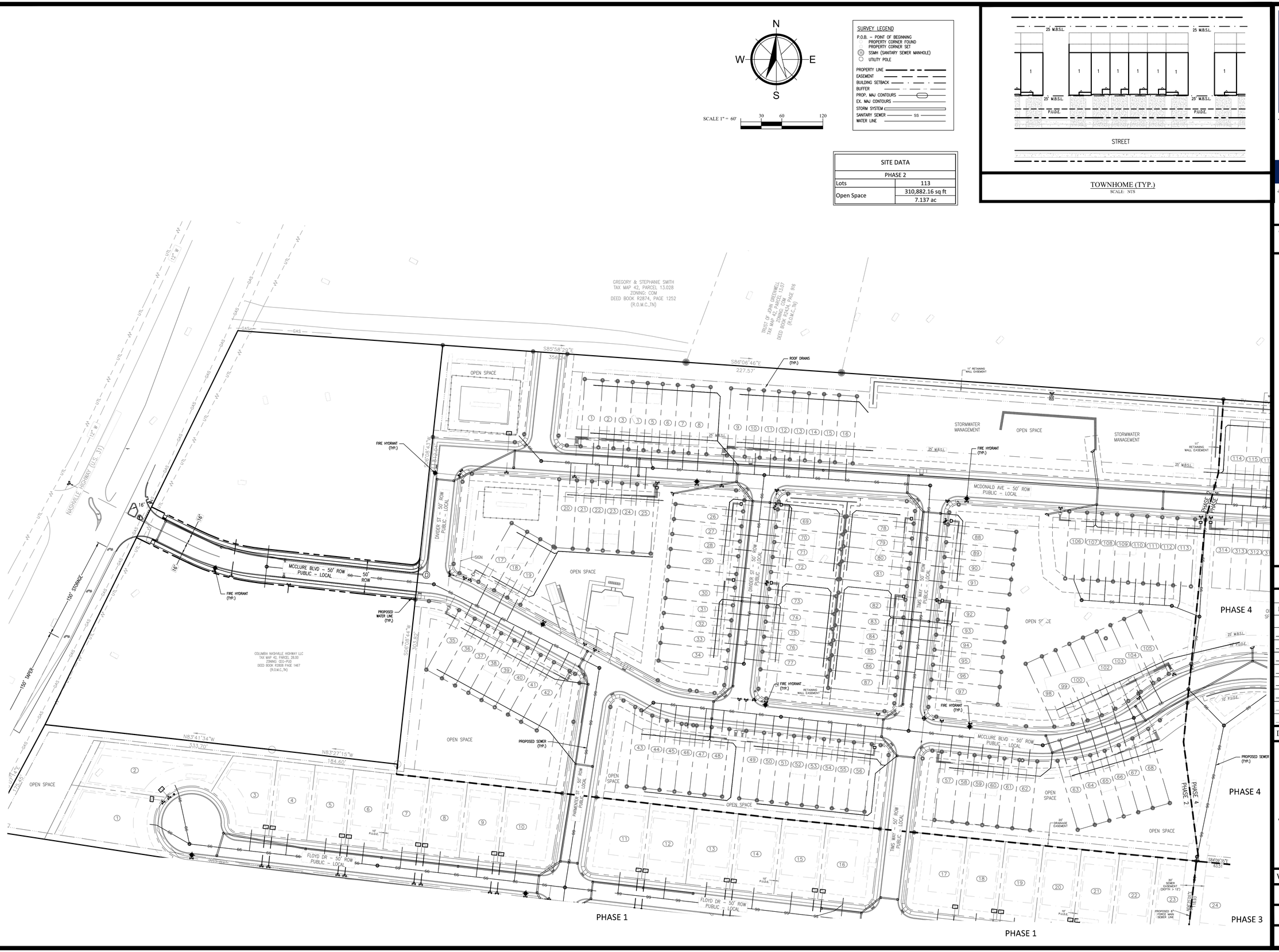

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
LICENSED LAND SURVEYOR
No. 2109
AGRICULTURE
COMMERCE
TENNESSEE
5/18/2023

W&A PROJECT #: 220047

PHASE 2

UTILITIES

SHEET 10 OF 18

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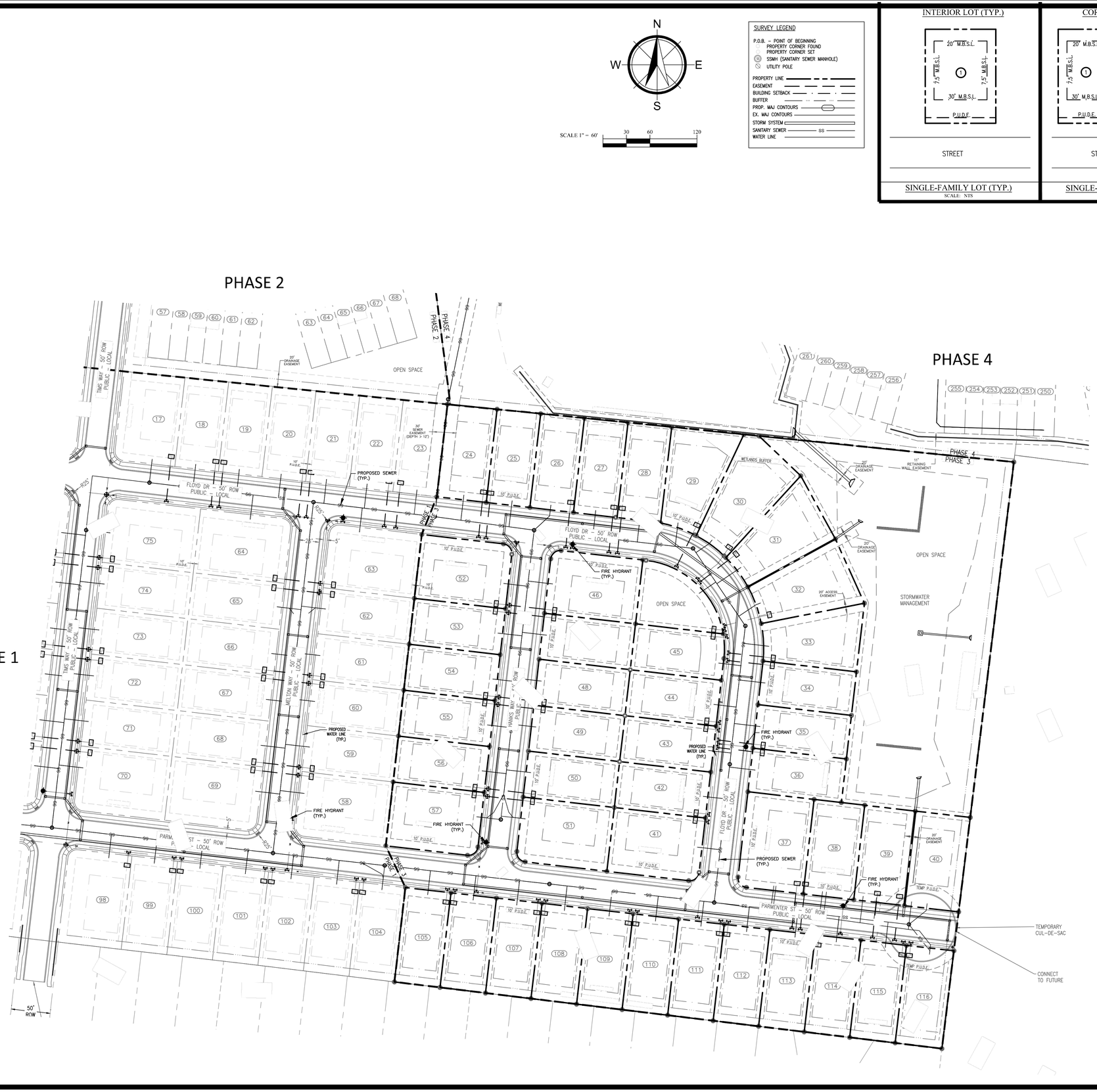

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
AGRICULTURE
TENNESSEE NO. 2009
5/18/2023

W&A PROJECT #: 220047

PHASE 3

UTILITIES

SHEET 11 OF 18

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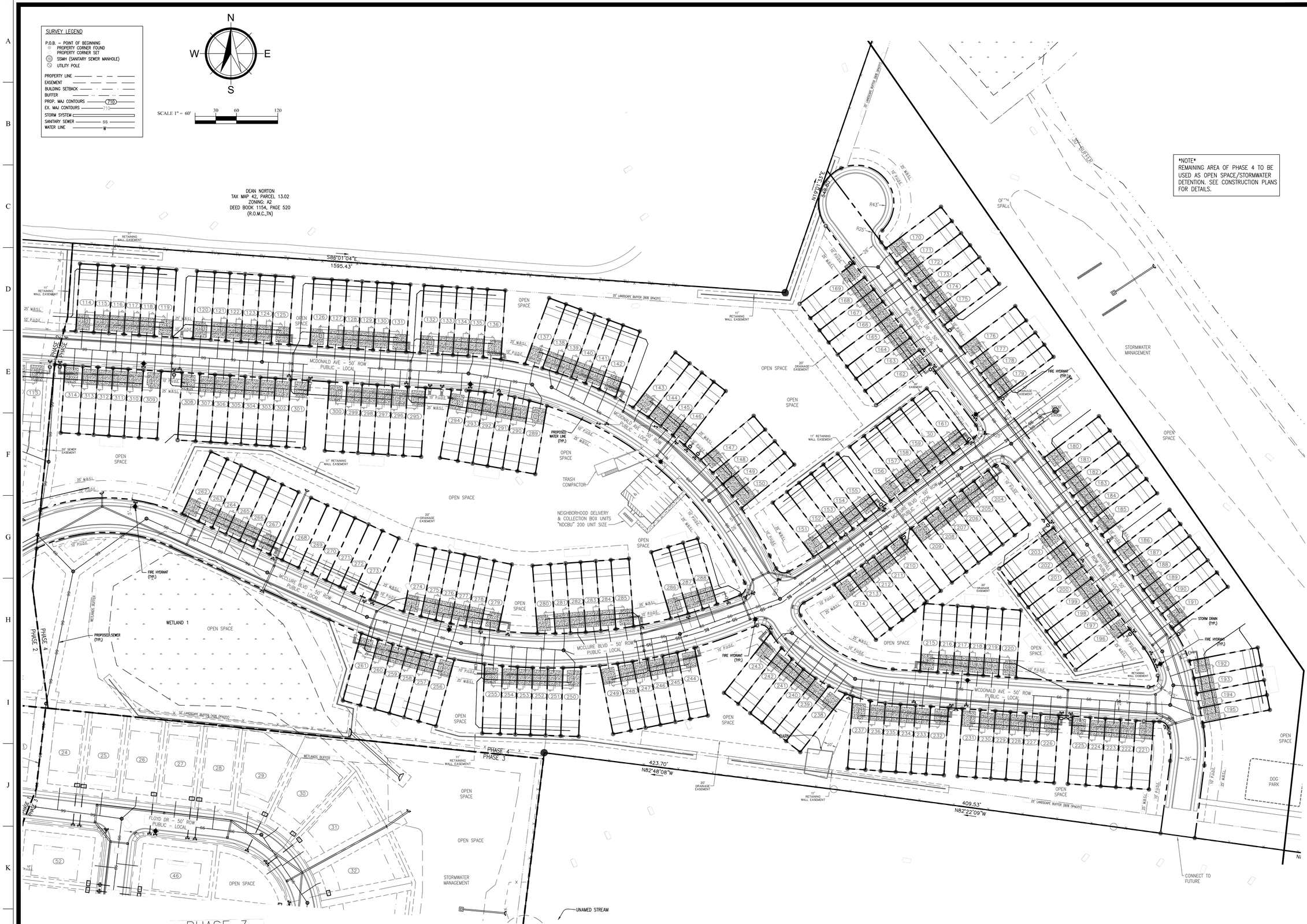

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLESOE
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
ENGINEERING
COMMERCE
TENNESSEE NO. 3093
5/18/2023

W&A PROJECT #: 220047

PHASE 4

UTILITIES

SHEET 12 OF 18

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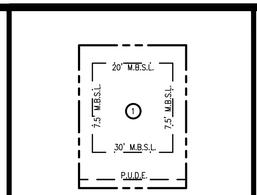
SCALE 1" = 60'
30 60 120

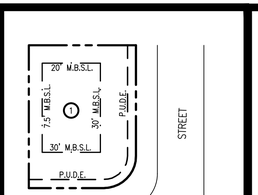
SURVEY LEGEND

P.O.B. – POINT OF BEGINNING
PROPERTY CORNER FOUND
PROPERTY CORNER SET
SSMH (SANITARY SEWER MANHOLE)
UTILITY POLE

PROPERTY LINE
EASEMENT
BUILDING SETBACK
BUFFER
PROP. MAJ CONTOURS (710)
EX. MAJ CONTOURS (710)
STORM SYSTEM
SANITARY SEWER SS
WATER LINE W



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

THIS PROPOSED PRELIMINARY PLAT FOR PHASE 1. SUPERCEDES THE PRELIMINARY PLAT (22–0107) APPROVED BY PLANNING COMMISSION IN JULY 2022.

PHASE 2

PHASE 2

PHASE 3

PHASE 3

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

Know what's below. Call before you dig. 811

REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 3009
5/18/2023

W&A PROJECT #: 220047

PHASE 1

GRADING

SHEET 13 OF 18

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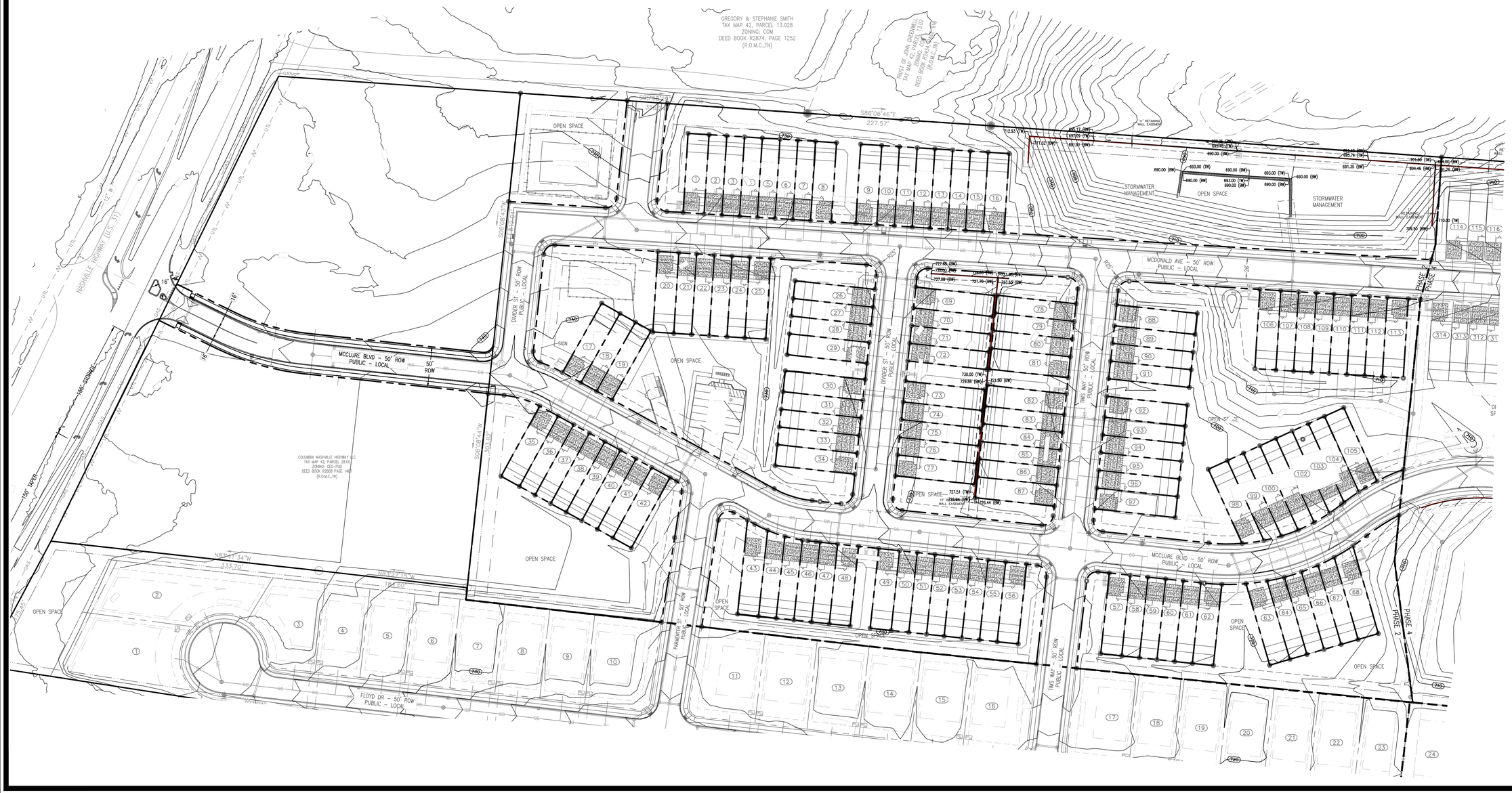

N

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S

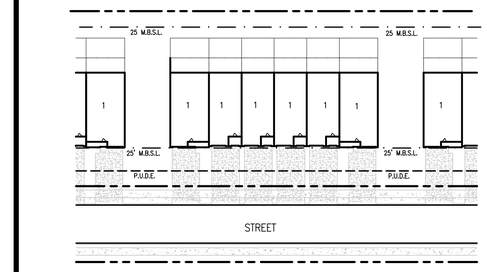
SCALE 1" = 60'

30 60 120

SURVEY LEGEND

- P.O.B. – POINT OF BEGINNING
- PROPERTY CORNER FOUND
- PROPERTY CORNER SET
- SSMH (SANITARY SEWER MANHOLE)
- UTILITY POLE
- PROPERTY LINE
- EASEMENT
- BUILDING SETBACK
- BUFFER
- PROP. MAJ CONTOURS
- EX. MAJ CONTOURS
- STORM SYSTEM
- SANITARY SEWER — SS
- WATER LINE

SITE DATA	
PHASE 2	
Lots	113
Open Space	310,882.16 sq ft
	7.137 ac



TOWNHOME (TYP.)
SCALE: NTS

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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REVISIONS

DATE	COMMENT

DATE: 5/18/2023

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REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
TENNESSEE NO. 3029
5/18/2023

W&A PROJECT #: 220047

PHASE 2

GRADING

SHEET 14 OF 18

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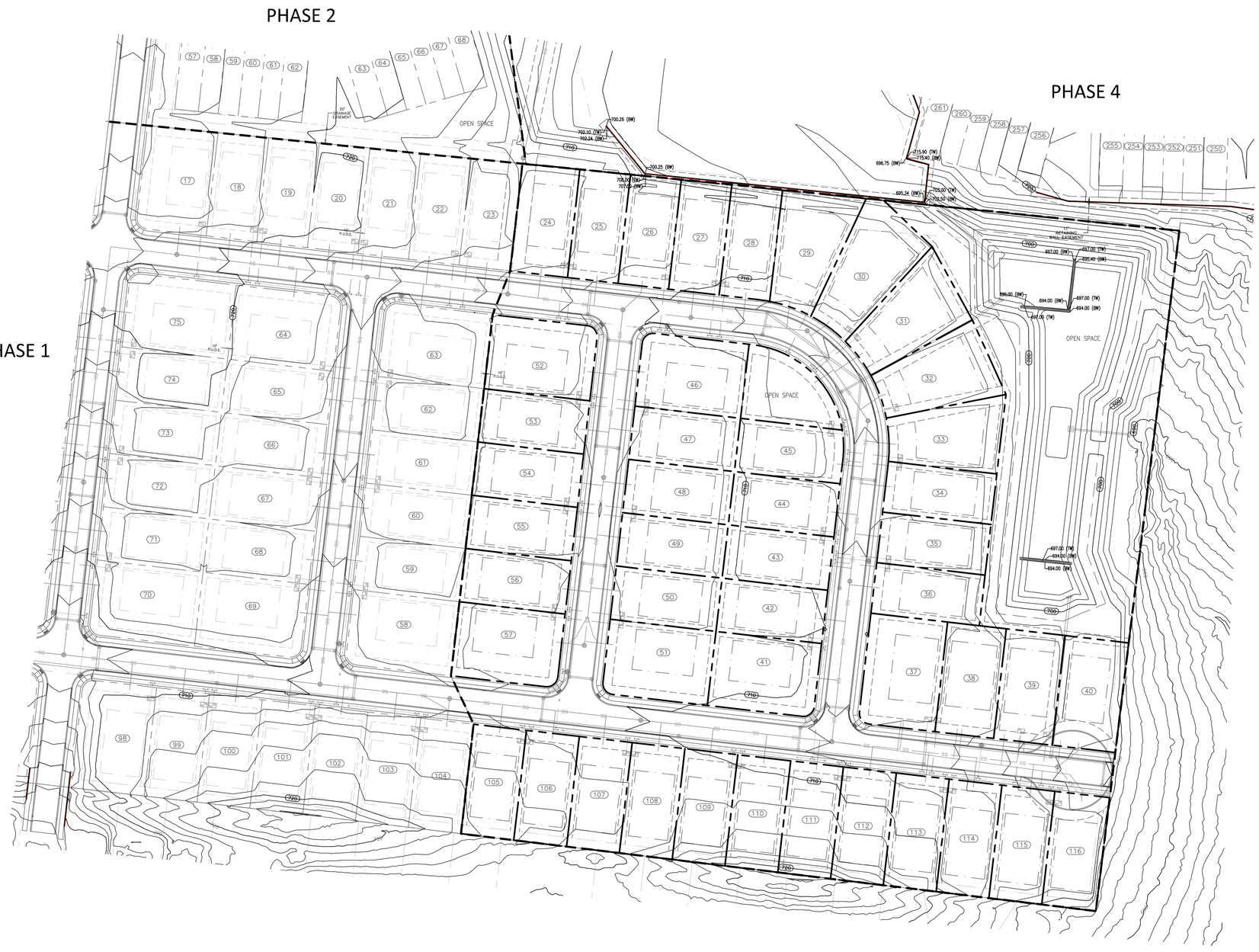

N
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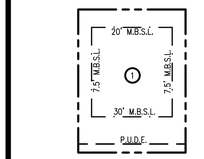
S

SCALE 1" = 60' 30 60 120

SURVEY LEGEND

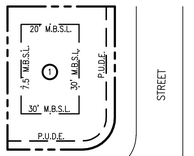
P.O.B. – POINT OF BEGINNING
PROPERTY CORNER FOUND
PROPERTY CORNER SET
SSMH (SANITARY SEWER MANHOLE)
UTILITY POLE
PROPERTY LINE
EASEMENT
BUILDING SETBACK
BUFFER
PROP. MAJ CONTOURS
EX. MAJ CONTOURS
STORM SYSTEM
SANITARY SEWER SS
WATER LINE

INTERIOR LOT (TYP.)



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

CORNER LOT (TYP.)



SINGLE-FAMILY LOT (TYP.)
SCALE: NTS

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PRELIMINARY PLAT
PHASE 1 - 4
MCCLURE FARMS
2504 NASHVILLE HIGHWAY - 95.29 AC
COLUMBIA, MAURY COUNTY, TN. 38401

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REVISIONS

DATE	COMMENT

DATE: 5/18/2023

ADAM C. BLEDSOE
REGISTERED LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 3099
5/18/2023

W&A PROJECT #: 220047

PHASE 3

GRADING

SHEET 15 OF 18

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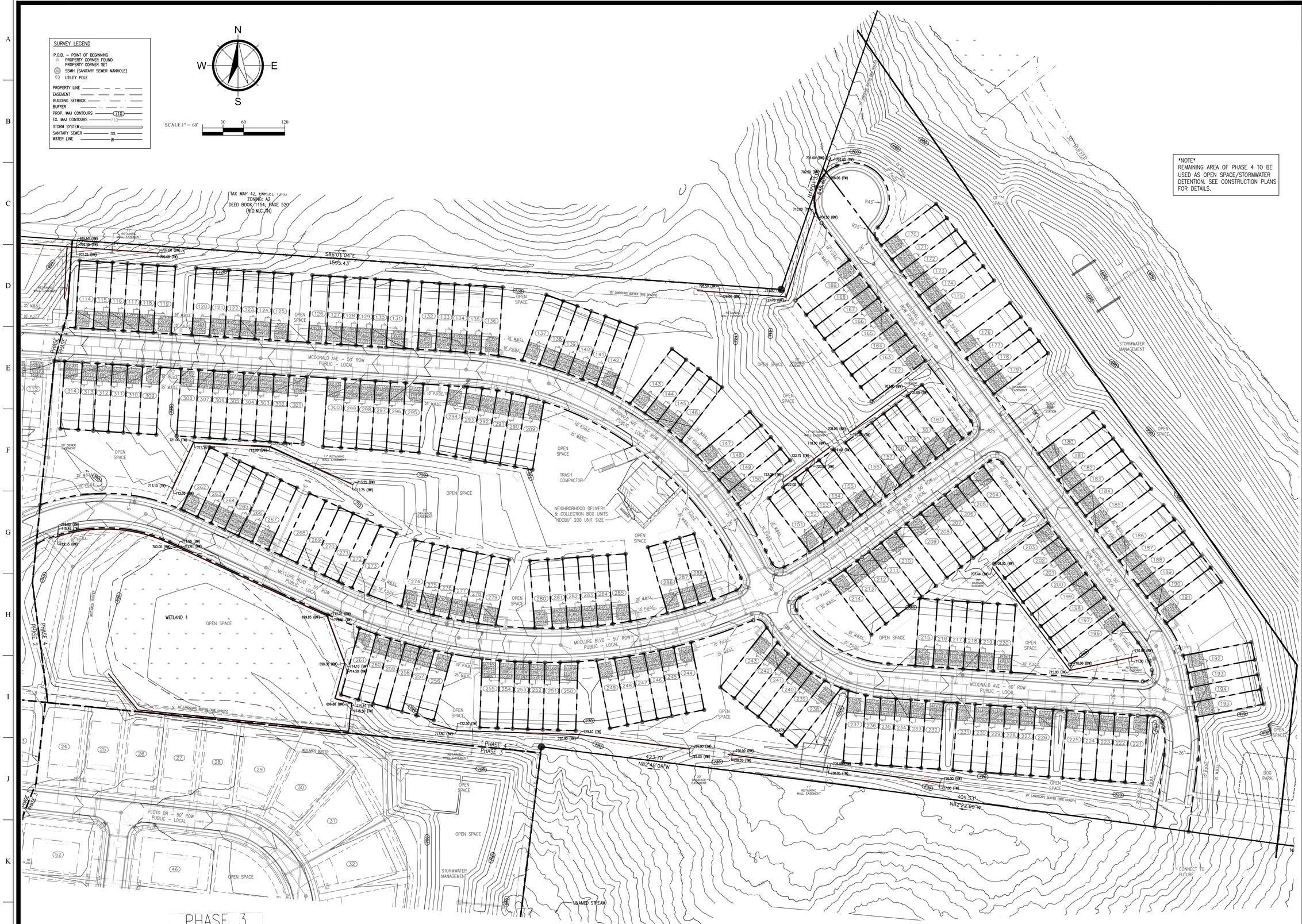

NOTE
REMAINING AREA OF PHASE 4 TO BE USED AS OPEN SPACE/STORMWATER DETENTION. SEE CONSTRUCTION PLANS FOR DETAILS.

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PHASE 4

GRADING

SHEET 16 OF 18

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TENNESSEE NO. 2009
5/18/2023

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EXISTING SLOPE ANALYSIS

SHEET 17 OF 18

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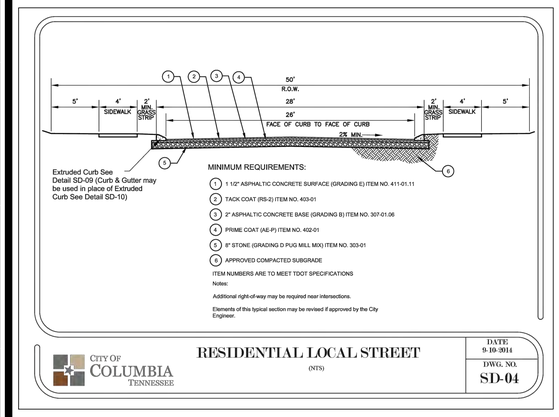

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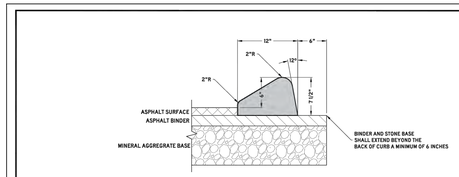

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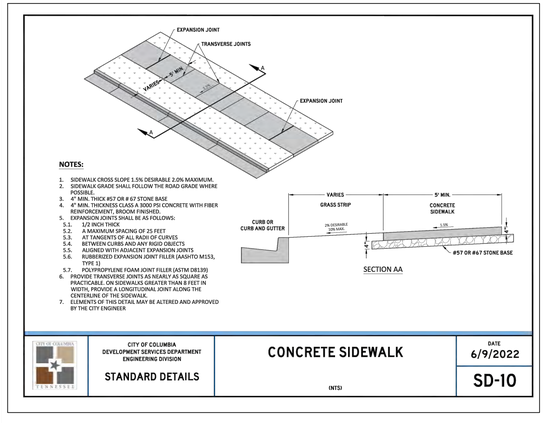
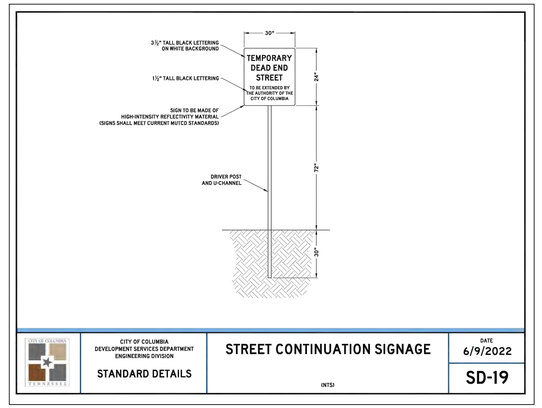


CONCRETE SIDEWALK



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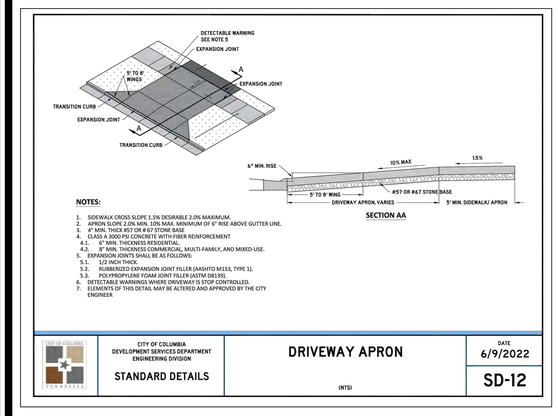

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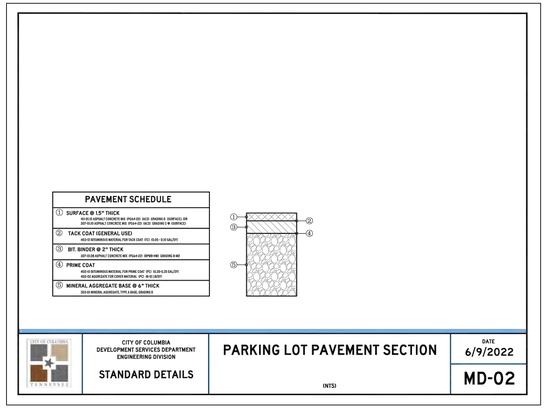

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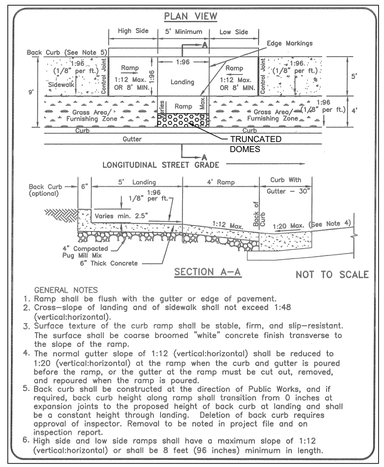

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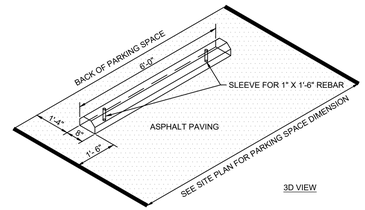

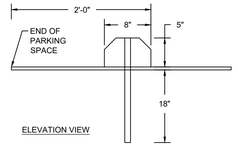

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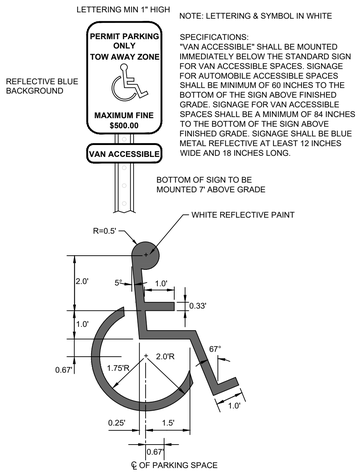
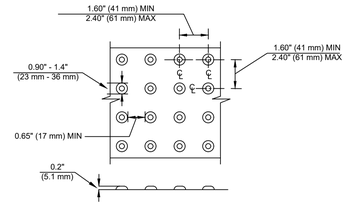
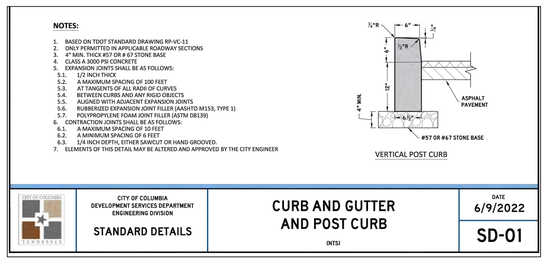


HANDICAP PARKING SIGN AND PAINTED SYMBOL



TRUNCATED DOMES



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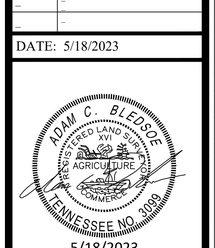

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PHASE 1 - 4

DETAILS

SHEET 18 OF 18

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McClure Farms – Preliminary Plat Phases 1-4

With this submittal of the preliminary plats for phases 1-4, please note the following updates and consideration given based upon previous feedback for the project on 4/3/2023.

1. Sanitary Sewer: Adjustment to sanitary sewer to provide a maximum depth of twenty (20) feet from bottom of pipe. The deepest portion would run along segments A-C and A-E beneath Parmenter Street as shown on sheets C511 and C512. Additionally, a single lift station is deployed for the entirety of the project, most specifically in phase 4 of this project per the original Master PUD.
2. Retaining walls: A majority of retaining walls have been removed with the re-designed site grading. All retaining walls are eight (8) feet or less with the noted exceptions listed below:
    a. Wall for Pond 2.1 – exceeds eight (8) feet and set back from landscape buffer – see sheet C302. Additionally, the wall for Pond 2.1 has been relocated outside of the boundary of the wetland feature, Pond-1, to reduce environmental impacts.
3. ROW Walls: Preliminarily approved by City Engineering. The city will provide details for wall construction.
4. Nashville Highway improvements –
    a. Left turn/J-turn lanes and dividing line added and entrance has been shifted. See sheets C207, C208, and C601
    b. Right turn lane radius improvement has been added at Grove Park – See sheets C207, C208, and C601
    c. Right-of-way through commercial parcel to be platted – submitted 5/19
    d. Commitment letter has been added to reflect updates
5. All four (4) Preliminary Plats for residential development and the commercial plat (revised for ROW access) are submitted for review under this cycle.
6. Plans have been divided into phase sheets to expedite reviewing process. Phases 1 and 2 can be found on sheets ending in 00, 01, and 02.

City of Columbia, TN Development Review Committee

Reference: McClure Farms, Comments No. 01

Technical Review Comments dated January 11, 2023 for the above referenced project.

ITEM NO.
22-0319

DESCRIPTION: Preliminary Plat Phases (1_4). All associated roads, utilities, storm water, etc.

RECOMMENDATION: For final recommendation please see staff report.

COMMENTS:

Engineering

1. Subject to Construction Plan approval and TIS requirements

2. Remove verbage stating "if feasible" regarding traffic improvements on the commitment letter and figure.

3. Add roadway cross section(s)

4. Provide preliminary grading.

5. Provide overall site layout sheet

6. Paramenter St Culdesac shall be located within a Public Utility Drainage and Access Easement (PUDAE)."Culdesac to be removed and driveways and appurtenances extended upon future roadway connection." Adjust drain location to be in future curb line.

7. Provide T.O.W. and B.O.W. elevations for all retaining walls.

8. Waterhill Drive culdesac: project the right-of-way to the adjoining property line to allow for future road extension. Provide note "Culdesac to be removed and appurtenances extended upon future roadway connection."

9. Remove certificates on Preliminary Plat cover sheets.

10. Provide 16 ft. lanes at Nashville Hwy access where divided. Provide right-of-way where roadway section widens. Provide detail showing proposed improvements and MSC apartments improvements to verify alignments.

11. Show curb ramp locations and stop bars for any stop-controlled intersections.

12. Phase 3: provide access easement to stormwater pond.

13. Label Force Mains on utility sheets with distinguishing annotation from gravity sewer mains.

14. Retaining wall between Phase 3 and Phase 4 shall be offset from property line

15. Connection to Nashville Hwy (through Phase 2) is required with Phase 1.

Planning

16. Pump station, lot 83, building setbacks?

17. Setbacks are not matching the master plan.

18. Landscape opacity between Single Family and Townhome has 40% on master plan, plat is showing 20%

19. Landscape opacity south of McDonald Ave is 80%

20. Townhome setback is min. 25'

21. Please indicate that the proposed Preliminary Plat for Ph. 1 supersedes the Preliminary Plat (22-0107) approved by Planning Commission in July 2022.

22. Please confirm exact size of Ph. 1. There is a minor discrepancy (0.19 ac) between the description on the PH 1 cover sheet and previous approvals. Discrepancy appears to be limited to notes on open space.

23. On Ph 2 Preliminary Plat, the landscape buffer along the boundary of Ph 1 is listed as 25' wide with a 20% opacity. On the Final Master Plan, this buffer is 10' wide with a 20% opacity.

24. Location of pump station in Ph. 3 does not conform to PUD Final Master Plan approved by planning commission.

25. Dimensions and location of lots 84 and 93 in Ph. 3 (lots 39 and 40 in PUD Master Plan) do not appear to conform to the Master Plan. Ph. 3 Preliminary Plat appears to relocate access and PUDE to eastern boundary of the property. These and other changes may require a revision of the Master Plan. Under 1.3.2.C of the zoning Ordinance, the PUD revision would require conformity with the standards of current ordinance.

26. As a condition of Final Master Plan approval (July 13, 2022) Planning Commission required a 0.60 opacity buffer along the western boundary of lots 1 and 2 in Ph. 1. Submitted Preliminary Plat shows a buffer opacity of 0.20. Please revise.

Public Works

27. No comment on single family lots. Phase 2 114 townhomes - will need at least three (3) 8 yd. dumpsters serviced 3x/week or trash compactor. Phase 4: 201 townhomes - will need at least five (5) 8 yd dumpsters serviced 3x/week or trash compactor. ***Are those trash compactors in the phase 2 & 4 prelim plats?

Building

28. No comments.

Police

29. No comments provided.

Maury County Schools

30. Current Zones: Battle Creek Elementary School, Battle Creek Middle School, Spring Hill High School. 1) No residence is guaranteed zone to a specific school. 2) All zones are subject to change yearly.

Fire

31. Check with CPWS to see if updated water availability letter is needed

32. Do roads between Phase 2 and 4 deadend, if so, if they are over 150ft they will need a temporary turnaround during construction

Columbia Power

33. Columbia Power System has an existing power line near your proposed residential development. We are willing to serve this residential 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.

Wastewater

34. Columbia Wastewater has no concerns until further review after plan submittal.

Maury County E911

35. Contact Maury County 911, to request approval for subdivision and street names. Cgideon@maury911.org

Columbia Water

36. "The project is within Columbia Power and Water's service area and a Water Availability was previously issued, but is now expired. A review of the availability should be requested and if there have been changes that impact capacity requirements a new application and associated documents will be required. The availability of capacity to serve is based on a determination by the Fire Marshal of fire flow requirements and the information submitted on the Water Service Availability Request application. Should adequate facilities not currently exist the study will determine any off-site improvements necessary to serve the development. Off-site

improvements are the responsibility of the developer/owner. All water system improvements are subject to the preparation and approval of detailed construction plans prepared in accordance with CPWS and Tennessee Department of Environment and Conservation requirements."

An availability letter has been requested from CPWS. This will be provided once received.

Atmos Energy

37. Gas is available contact Bradie Armstrong @ 615-485-6377.

Duck River Electric Membership Corp

38. No comments provided.

Collier Engineering Company, inc. on behalf of Maury County Highway Department.

39. Any future county roadway and ROW connections, impacts, and annexations are subject to further evaluation by the Maury County Highway Department. Applicant shall add the following note to the Preliminary Plat.

    "All connections to existing county roads and ROW are subject to the applicable permits, fees, approvals, and standards/ specifications set forth by the Maury County Highway Department."

Brightland HOMES

May 19, 2023

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

Re: McClure Farms Development
Traffic Improvements

Glenn,

As part of the ongoing review by Columbia Development Services of the proposed McClure Farms Development, a traffic impact study (TIS) was conducted and approved by the City. The McClure Farms Development consists of 315 PUD units and 116 single family lots.

Several traffic improvements were recommended by the TIS. The developer Brightland Homes of Tennessee, LLC (formerly GH Tennessee, LLC.) is providing commitment to the installation of certain traffic improvements related to the McClure Farms Development and are as follows.

1. **Nashville Highway (US-31) and Old Highway 31/Site Access 1**
   The developer will construct site access 1 along Nashville Highway with a left-in/right-in/right-out configuration to be aligned with Old Highway 31 with one (1) inbound lane and one (1) outbound lane operating under a stop condition according to MUTCD, AASHTO, TDOT, and City of Columbia standards. Additionally, the developer will construct one (1) exclusive right-turn lane on the northbound approach of Nashville Highway (US-31) and one (1) exclusive left-turn lane on the southbound approach of Nashville highway (US-31) at its intersection with Old Highway 31/ Site Access 1. Both the left and right turn lanes shall provide 300 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards. The developer proposed this work to be completed during Phase 1, prior to the completion of Phase 2 final plat.

2. **Nashville Highway (US-31) and Arden Village Drive/Grove Park Way**
   The developer will interconnect and optimize the existing and proposed traffic signals along Nashville highway (US-31), as well as improving the radius and right turn lane conditions for northbound traffic at Grove Park Way. The developer proposes this work to be completed during Phase 1, prior to the completion of the Phase 2 Final Plat.

Barton Creek Plaza III | 3815 South Capital of Texas Highway, Suite 210 | Austin, Texas 78704 | p. 512.330.9366 | f. 512.330.9755
brightlandhomes.com

3. Persimmon Street and Site Access 2

The developer will construct Site Access 2 along Persimmon street. Consisting of one (1) inbound lane and one (1) outbound lane operating under a stop condition according to MUTCD, AASHTO, TDOT, and City of Columbia standards. The developer proposes this work to be completed during Phase 1, prior to the completion of Phase 2 final plat.

4. Nashville Highway (US-31) and Spring Meade Boulevard

The developer will interconnect and optimize the existing and proposed traffic signals along Nashville highway (US-31). The developer proposes to purchase the required components during Phase 1, and prior to the completion of the Phase 4 Final Plat these will be installed by the City of Columbia.

5. Nashville Highway (US-31) and Greens Mill Road

The developer will interconnect and optimize the existing and proposed traffic signals along Nashville highway (US-31). The developer proposes to purchase the required components during Phase 1, and prior to the completion of the Phase 4 Final Plat these will be installed by the City of Columbia.

6. Nashville Highway (US-31) and Hidden Creek Way

The developer will interconnect and optimize the existing and proposed traffic signals along Nashville highway (US-31). The developer proposes to purchase the required components during Phase 1, and prior to the completion of the Phase 4 Final Plat these will be installed by the City of Columbia.

The developer proposes to purchase all recommended equipment necessary for these improvements as outlined below.

Loop Detectors

EDI LMD 222	(6 total)

CCTV Cameras

Axis 6075E	(3 total)

Applied Information Unit

AI500-085-02	(1 total)

Linux Upgrade to Controller

2070-1C CPU	(2 total)
2070-E+ IO	(2 total)

Back plates for Eagle Signals Mast Arm Mount

3 section back plate w/ reflective tape (8 total)
4 section back plate w/ reflective tape (2 total)

Conflict Monitor

EDI 2010 ECL-IP

If you have any questions or need additional information, please feel free to contact Travis Bonar at tbonar@waengineering.com or 615-610-1023.

Sincerely,

BRIGHTLAND HOMES OF TENNESSEE, LLC,
a Delaware limited liability company

By: Brightland Homes, Ltd.,
a Texas limited partnership, sole Member

By: Brightland Homes I, Inc.,
a Texas corporation, General Partner

By:_____
Chris Lynch,
President of Land Operations

TRAFFIC IMPACT STUDY

2504 Nashville Highway
Mixed-Use Development

2504 & 2524 Nashville Highway
Columbia, TN

T2-Eng.com

T-SQUARE ENGINEERING

TRAFFIC IMPACT STUDY

2504 Nashville Highway Mixed-Use Development
2504 & 2524 Nashville Highway
Columbia, TN

Prepared for:

W&A Engineering

807 2nd Avenue South
Nashville, TN 37210

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www.T2-eng.com

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Franklin, TN 37064
615.678.8212

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Certification

I certify that this Traffic Impact Study has been prepared by me and under my immediate supervision and that I have the experience and training in the field of traffic and transportation engineering.



4/16/21

Blake A. Turner, P.E.
T-Square Engineering, Inc.
Principal – Vice President

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Introduction

The purpose of this study is to analyze the traffic impacts on the surrounding roadway network associated with the proposed 2504 Nashville Highway Mixed-Use Development along Nashville Highway in Columbia, TN. The proposed mixed-use development will consist of approximately 147 single-family homes, approximately 471 multi-family (low-rise) housing units, a coffee shop with drive-through of approximately 3,725 SF, a shopping center of approximately 3,500 SF, and a day care center of approximately 13,000 SF.

As shown on the Location Map and Preliminary Site Plan on Figures 1 and 2, respectively, the proposed development is located along the east side of Nashville Highway in Columbia, TN. The development is proposing two (2) site access points: one (1) site access with a left-in/right-in/right-out configuration on the east side of Nashville Highway to be aligned with the intersection of Nashville Highway and Old Highway 31 and one (1) site access to be connected to the existing stub-out located along Persimmon Street, east of Grove Park Way within the Grove Park Subdivision. The surrounding area is predominantly residential.

This study analyzes the existing and projected traffic operations of the roadway networks and intersections surrounding the proposed development. To evaluate the projected traffic operations, existing traffic volumes were grown (background traffic volumes) to a 2023 design year based on average traffic growth rates and combined with the generated traffic volumes from nearby background developments and estimated trips generated from the proposed development. Lastly, improvement recommendations were presented to alleviate the anticipated traffic volumes' effect on the existing roadway network near the site.

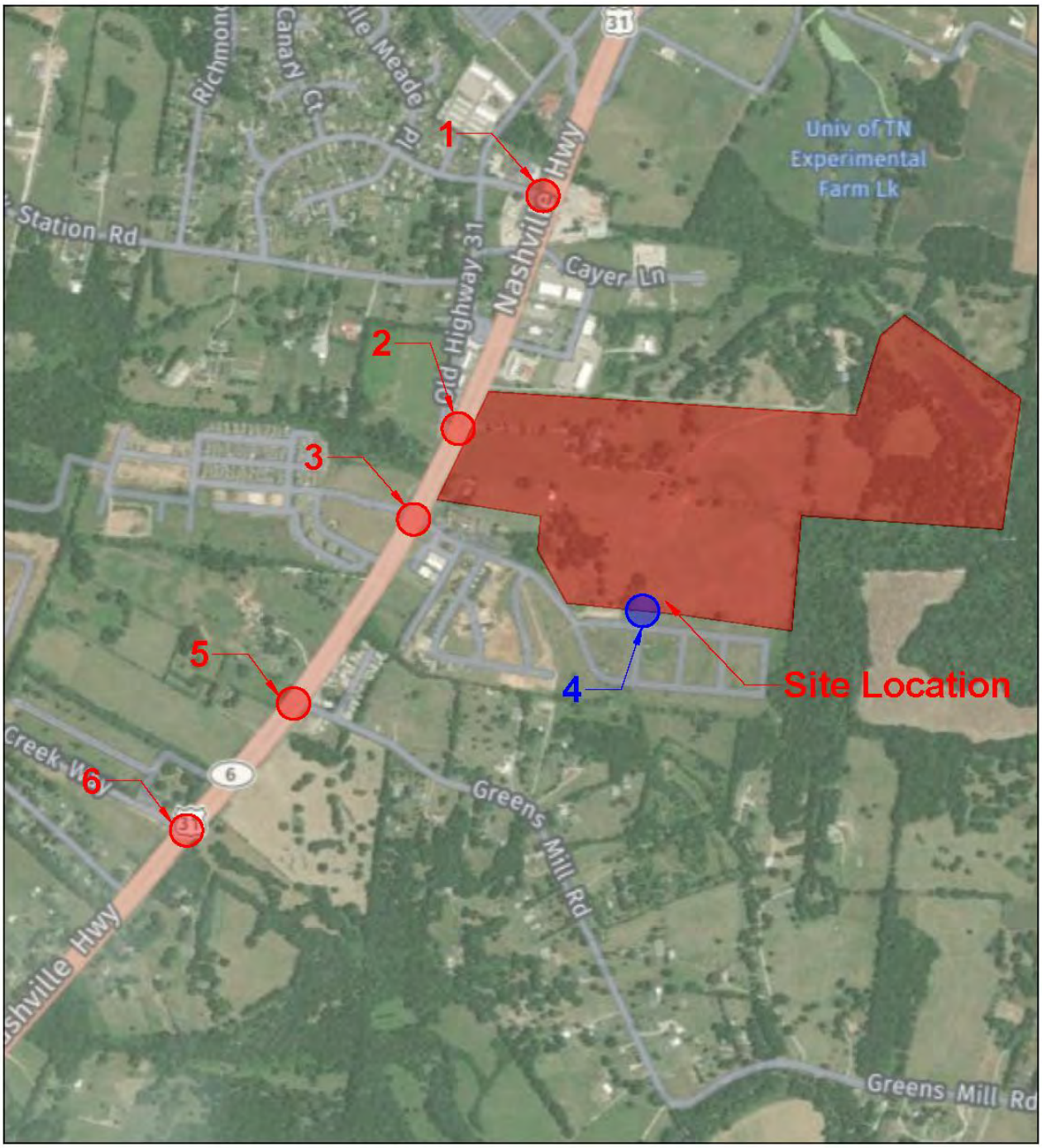


Figure 1
Location Map

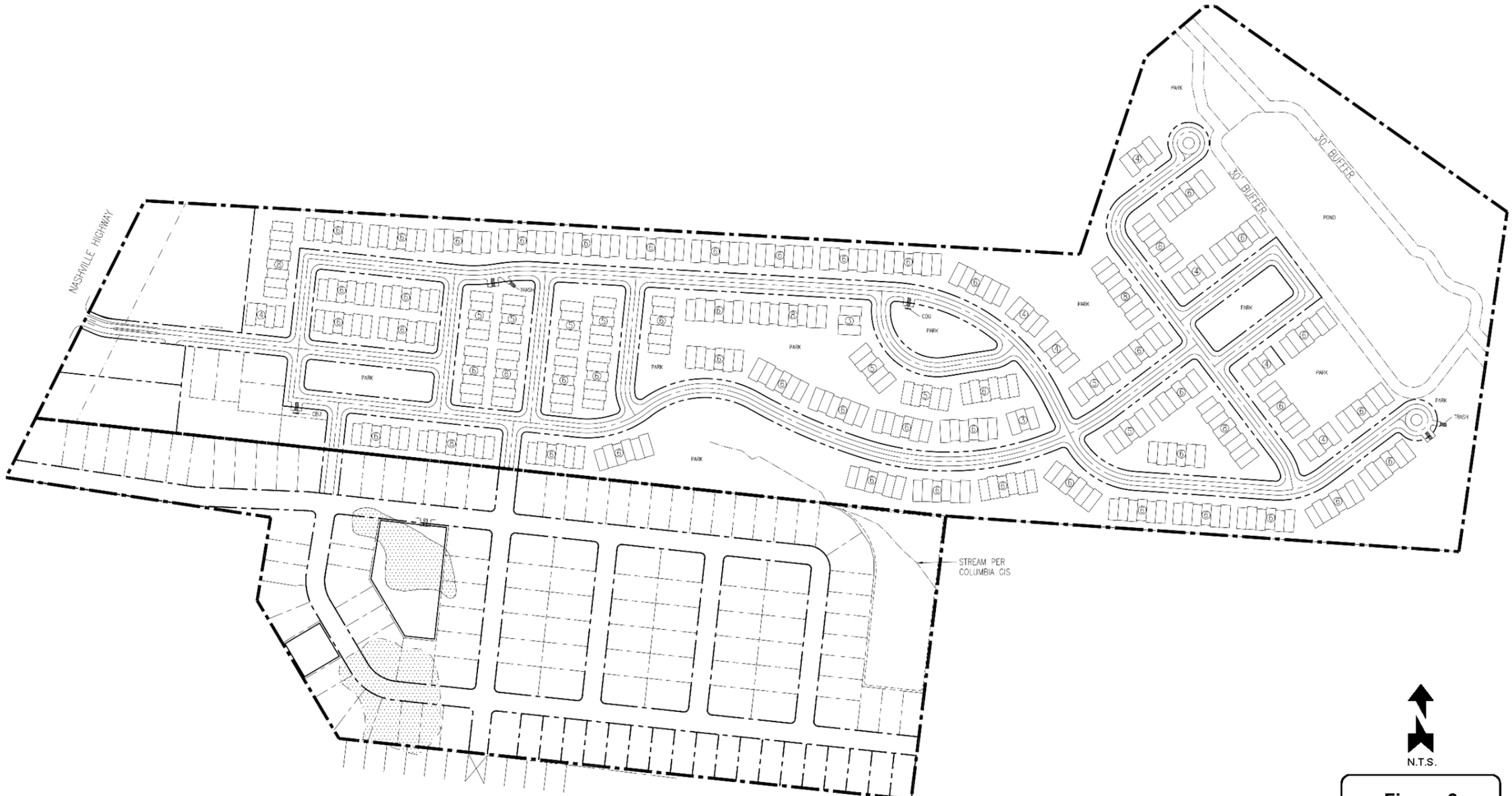


Figure 2
Preliminary Site Plan

Existing Study Area

Existing Roadway Network

The existing roadway network surrounding the proposed 2504 Nashville Highway Mixed-Use Development includes Nashville Highway (US-31), Spring Meade Boulevard, Old Highway 31N, Arden Village Drive, Grove Park Way, Greens Mill Road, and Hidden Creek Way. Below is a description of each roadway serving the proposed development:

Nashville Highway (US-31)

Nashville Highway (US-31) is functionally classified by the City of Columbia as an arterial roadway. Nashville Highway (US-31) is oriented in a north-south direction and provides a connection from the City of Columbia to the south and the City of Spring Hill to the north. Near the project site, Nashville Highway (US-31) is a four (4) lane divided roadway with two (2) twelve (12) foot travel lanes in each direction (northbound and southbound) and eight (8) foot shoulders. The posted speed limit along Nashville Highway (US-31) is 55 MPH.



Looking south along Nashville Highway (US-31)

Spring Meade Boulevard

Spring Meade Boulevard is not functionally classified by the City of Columbia, and therefore classified as a local roadway for this study. Near the project site, Spring Meade Boulevard is oriented in an east-west direction and provides a connection between Carters Creek Station Road to the west and Nashville Highway (US-31) to the east. Near the project site, Spring Meade Boulevard is a two (2) lane roadway with one (1) twelve (12) foot travel lane in each direction (eastbound and westbound) in each direction. Curb and gutter exist on either side of Spring Meade Boulevard. There is no posted speed limit along Spring Meade Boulevard. The assumed speed limit is 25 MPH.



Looking west along Spring Meade Boulevard

Old Highway 31N

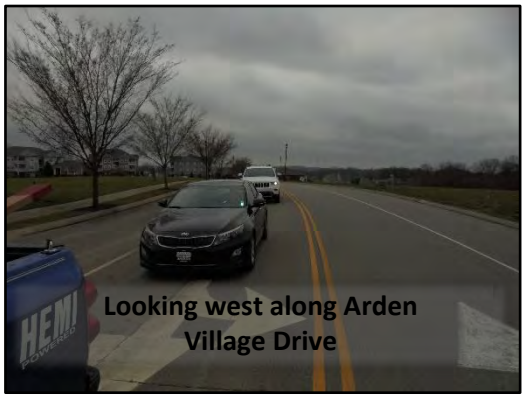
Old Highway 31N is not functionally classified by the City of Columbia, and therefore classified as a local roadway for this study. Near the project site, Old Highway 31N is oriented in a north-south direction and provides a connection to Spring Hill High School to the north and Nashville Highway (US-31) to the south. Near the project site, Old Highway 31N is a two (2) lane roadway with one (1) ten (10) foot travel lane in each direction (northbound and southbound) and two (2) foot shoulders. The posted speed limit along Old Highway 31 ranges from 25 to 35 MPH.



Looking east along Old Highway 31N

Arden Village Drive

Arden Village Drive is not functionally classified by the City of Columbia, and therefore classified as a local roadway for this study. Near the project site, Arden Village Drive is oriented in an east-west direction and provides a connection from Nashville Highway (US-31) to the east and the proposed site to the west. Near the project site, Arden Village Drive is a two (2) lane roadway with one (1) twelve (12) foot travel lane in each direction (eastbound and westbound). Curb and gutter exist on either side of Arden Village Drive. There is no posted speed limit along Arden Village Drive. The assumed speed limit is 25 MPH.



Looking west along Arden Village Drive

Grove Park Way

Grove Park Way is not functionally classified by the City of Columbia, and therefore classified as a local roadway for this study. Near the project site, Grove Park Way is oriented in an east-west direction and provides a connection from Nashville Highway (US-31) to the west and terminates to the east. Near the project site, Grove Park Way is a two (2) lane roadway with one (1) twelve (12) foot travel lane in each direction (eastbound and westbound). Curb and gutter exist on either side of Grove Park Way. There is no posted speed limit along Grove Park Way. The assumed speed limit is 25 MPH.



Looking east along Grove Park Way

Greens Mill Road

Greens Mill Road is functionally classified by the City of Columbia as a collector roadway. Near the project site, Greens Mill Road is oriented in an east-west direction and provides a connection from Nashville Highway (US-31) to the west and Kedron Road to the east. Near the project site, Greens Mill Road is a two (2) lane roadway with one (1) ten (10) foot travel lane in each direction (eastbound and westbound) and two (2) foot shoulders. The posted speed limit along Greens Mill Road is 45 MPH.



Looking east along Greens Mill Road

Hidden Creek Way

Hidden Creek Way is not functionally classified by the City of Columbia, and therefore classified as a local roadway for this study. Near the project site, Hidden Creek Way is oriented in an east-west direction and provides a connection from Nashville Highway (US-31) to the east and the proposed site to the west. Near the project site, Hidden Creek Way is a two (2) lane roadway with one (1) twelve (12) foot travel lane in each direction (eastbound and westbound). Curb and gutter exist on either side of Hidden Creek Way. No shoulders exist along Hidden Creek Way. There is no posted speed limit along Hidden Creek Way. The assumed speed is 25 MPH.



Looking west along Hidden Creek Way

Existing Intersections

This study analyzed five (5) existing intersections within the vicinity of the project site. The intersections analyzed are listed below with a brief description of each, and Figure 3 shows the existing lane geometry at the intersections.

Nashville Highway (US-31) and Spring Meade Boulevard

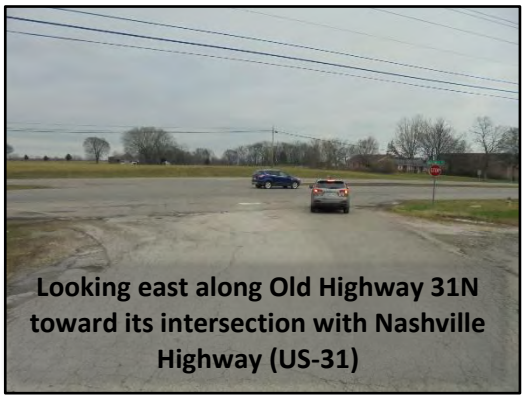
The existing intersection of Nashville Highway (US-31) and Spring Meade Boulevard is a signalized intersection with four (4) approaches. The northbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 250 feet of storage, one (1) exclusive lane for through movements, and one (1) shared lane for through and right-turn movements. The southbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 220 feet of storage, one (1) exclusive lane for through movements, and one (1) shared lane for through and right-turn movements. The eastbound approach of Spring Meade Boulevard has one (1) exclusive lane for left-turn movements with approximately 400 feet of storage and one (1) shared lane for through and right-turn movements. The westbound approach Driveway has one (1) shared lane for left-turn, through, and right-turn movements.



Looking north along Nashville Highway (US-31) toward its intersection with Spring Meade Boulevard

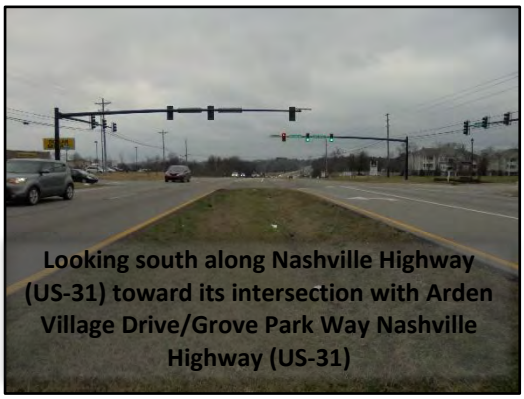
Nashville Highway (US-31) and Old Highway 31N

The existing intersection of Nashville Highway (US-31) and Old Highway 31N is an unsignalized intersection with three (3) approaches. The northbound approach of Nashville Highway (US-31) has one (1) shared lane for left-turn and through movements and one (1) exclusive lane for through movements operating under a free flow condition. The southbound approach of Nashville Highway (US-31) has one (1) exclusive lane for through movements and one (1) shared lane for through and right-turn movements operating under a free flow condition. The eastbound approach of Old Highway 31N has one (1) shared lane for left-turn and right-turn movements operating under a stop condition.



Looking east along Old Highway 31N toward its intersection with Nashville Highway (US-31)

Nashville Highway (US-31) and Arden Village Drive/Grove Park Way



Looking south along Nashville Highway (US-31) toward its intersection with Arden Village Drive/Grove Park Way Nashville Highway (US-31)

The existing intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way is a signalized intersection with four (4) approaches. The northbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 330 feet of storage, two (2) exclusive lanes for through movements, and one (1) exclusive lane for right-turn movements with approximately 125 feet of storage. The southbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 330 feet of storage, two (2) exclusive lanes for through movements, and one (1) exclusive lane for right-turn movements with approximately 125 feet of storage. The eastbound approach of Arden Village Drive has one (1) shared lane for left-turn and through movements and one (1) exclusive lane for right-turn movements with approximately 150 feet of storage. The westbound approach of Grove Park Way has one (1) shared lane for left-turn and through movements and one (1) exclusive lane for right-turn movements with approximately 100 feet of storage.

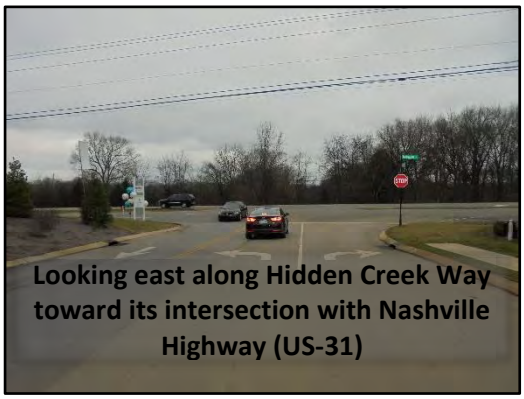
Nashville Highway (US-31) and Greens Mill Road



Looking west along Greens Mill Road toward its intersection with Nashville Highway (US-31)

The existing intersection of Greens Mill Road and Nashville Highway (US-31) is an unsignalized intersection with three (3) approaches. The northbound approach of Nashville Highway (US-31) has one (1) exclusive lane for through movements and one (1) shared lane for through and right-turn movements operating under a free flow condition. The southbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 480 feet of storage and two (2) exclusive lanes for through movements operating under a free flow condition. The westbound approach of Greens Mill Road has one (1) shared lane for left-turn and right-turn movements operating under a stop condition.

Nashville Highway (US-31) and Hidden Creek Way



Looking east along Hidden Creek Way toward its intersection with Nashville Highway (US-31)

The existing intersection of Hidden Creek Way and Nashville Highway (US-31) is an unsignalized intersection with three (3) approaches. The northbound approach of Nashville Highway (US-31) has one (1) exclusive lane for left-turn movements with approximately 260 feet of storage and two (2) exclusive lanes for through movements operating under a free flow condition. The southbound approach of Nashville Highway (US-31) has two (2) exclusive lanes for through movements and one (1) exclusive lane for right-turn movements with approximately 270 feet of storage operating under a free flow condition. The eastbound approach of Hidden Creek Way has one (1) exclusive lane for left-turn movements and one (1) exclusive lane for right-turn movements operating under a stop condition.

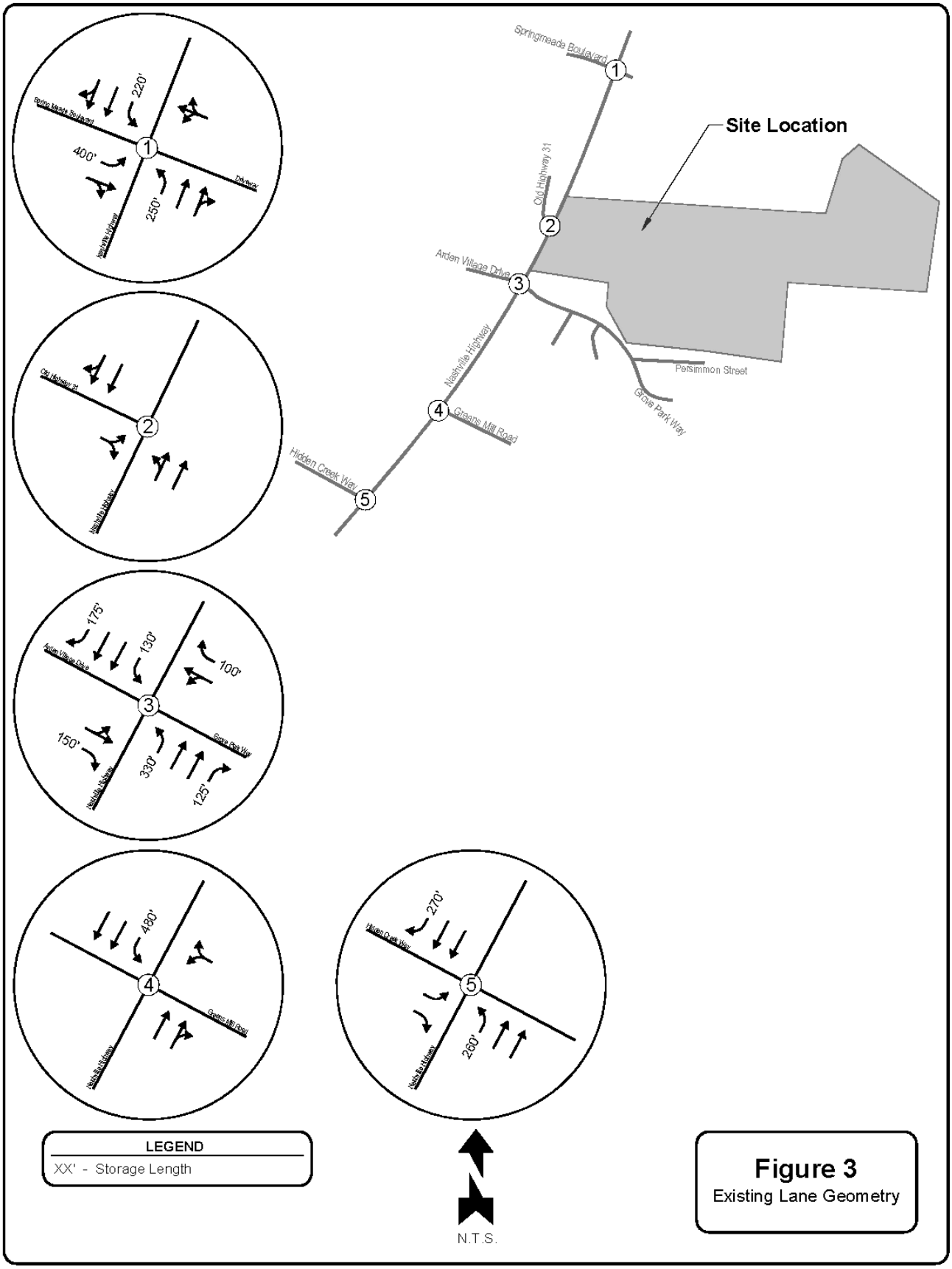


Figure 3
Existing Lane Geometry

Existing Traffic Volumes

To establish existing traffic volumes within the study area (as requested and provided by the City of Columbia), T-Square Engineering utilized the turning movement counts conducted by RG Phillips Consulting as part of the MSC Apartments Traffic Impact Study (TIS) in March 2020 for the following intersections:

- Nashville Highway (US-31) & Spring Meade Boulevard
- Nashville Highway (US-31) & Old Highway 31
- Nashville Highway (US-31) & Arden Village Drive/Grove Park Way

To establish existing (2021) traffic volumes, it should be noted that the traffic count volumes for the above intersections were grown for one (1) year by a factor 3.76% determined by the calculated average growth rate within the surrounding area, shown within Figure 5 below.

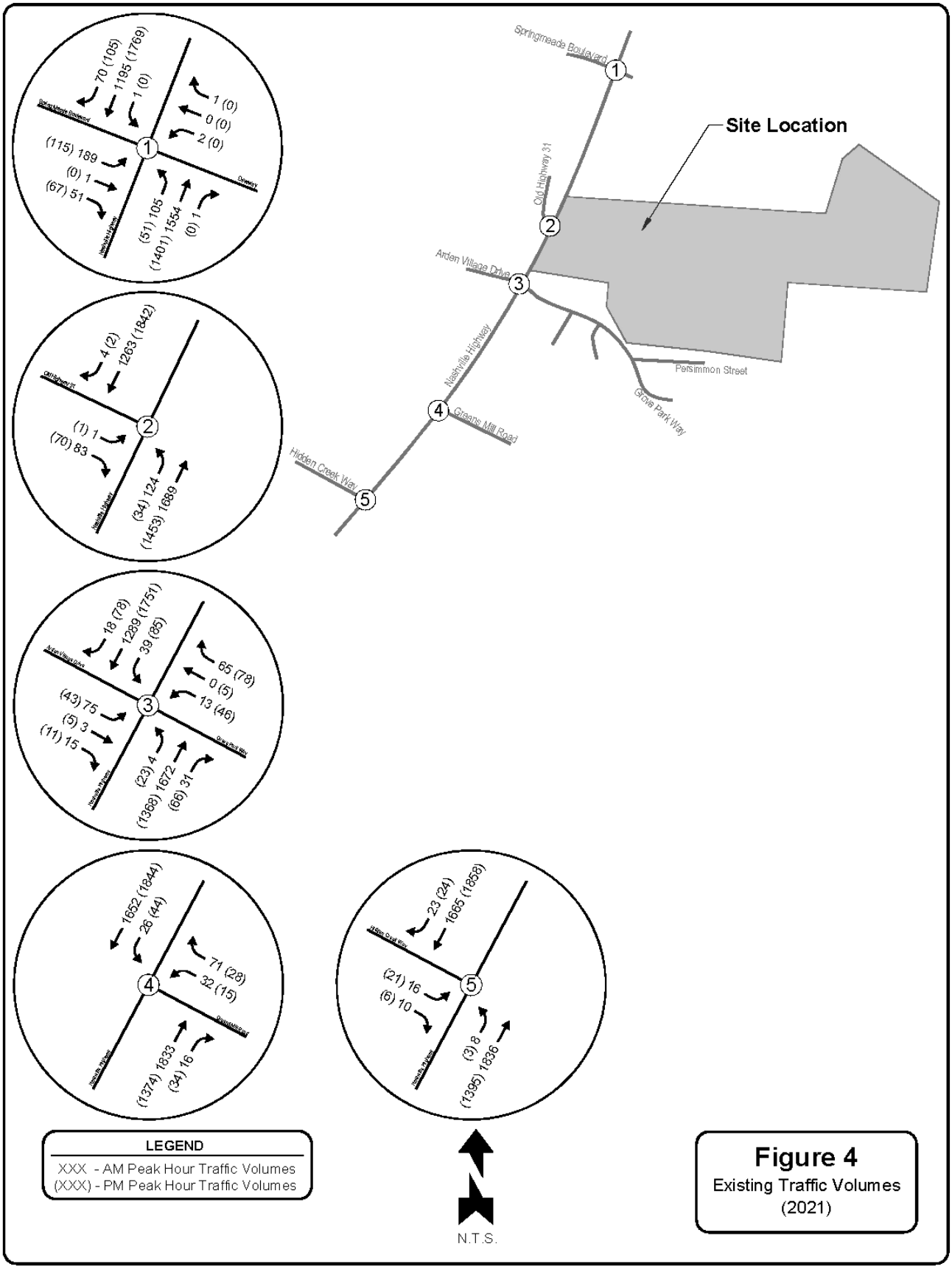
In addition, as requested by the City of Columbia, T-Square Engineering utilized the turning movement counts conducted by T-Square Engineering as part of the Carters Station Master Plan Traffic Impact Study (TIS) in May 2019 for the following intersections:

- Nashville Highway (US-31) & Greens Mill Road
- Nashville Highway (US-31) & Hidden Creek Way

To establish existing (2021) traffic volumes, it should be noted that the traffic count volumes at for the above intersections were grown for two (2) years by a factor 3.76% determined by the calculated average growth rate within the surrounding area, shown within Figure 5 below.

In addition, T-Square Engineering also conducted turning movement counts at the intersection of Grove Park Way and Persimmon Street on a typical weekday in January 2021 while schools were in session. The turning movement count was conducted over a total of twelve (12) hours from 6:00 AM – 6:00 PM.

For this analysis, the AM and PM peak hour traffic volumes were established and determined to occur between 7:15 AM – 8:15 AM and 4:45 PM – 5:45 PM, respectively. Figure 4 shows the existing peak hour totals at the study intersections for the AM and PM peak hour periods. Appendix A contains the original peak hour turning movement counts and the adjusted peak hour turning movement counts.


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
70 (105)
1195 (1769)
1 (0)
1 (0)
0 (0)
2 (0)
(115) 189
(0) 1
(67) 51
(51) 105
(1401) 1554
(0) 1
4 (2)
1263 (1842)
(1) 1
(70) 83
(34) 124
(1453) 1689
18 (78)
1289 (1751)
39 (85)
65 (78)
0 (5)
13 (46)
(43) 75
(5) 3
(11) 15
(23) 4
(1368) 1672
(66) 31
1652 (1844)
26 (44)
71 (28)
32 (15)
(1374) 1633
(34) 16
23 (24)
1665 (1858)
(21) 16
(6) 10
(3) 8
(1395) 1836
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure 4
Existing Traffic Volumes
(2021)

Existing Capacity Analysis

To evaluate the existing traffic operations at the study intersections within the vicinity of the project site, AM and PM peak hour capacity analyses were performed per the calculations outlined in the Highway Capacity Manual[1](HCM). Levels of service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement. An LOS is a qualitative measure or grade used to distinguish how traffic is serviced at an intersection or along a roadway. The range of LOS is A to F, with A being the highest and F the lowest. The 95th percentile queue is the queue length (in vehicles) that has only a five (5) percent probability of being exceeded during the analysis period. The 95th percentile queue is not typical of what an average driver would experience, and driver experiences would be better characterized by the mean queue length. The table below details each LOS for signalized and unsignalized intersections, as specified within the HCM.

Table 1. Level of Service (LOS) Details

Level of Service*	Average Control Delay (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50
Source: HCM 2010, Exhibits 18-4 and 19-1		

To determine the effectiveness of traffic operations within the study area a minimum LOS or baseline needs to be established. Any LOS below the established baseline will be considered unsatisfactory. LOS C is generally acceptable for typical roadway function while LOS D is typically considered to be the minimum acceptable LOS. According to the City of Columbia's *Transportation Master Plan (2018)*, "In urban areas, LOS D is typically considered to be the minimum acceptable level of service." The following conditions shall be considered unsatisfactory for the purposes of this study:

1. Overall intersections with an LOS E or F.
2. Individual traffic movements with an LOS E or F.

The existing intersections within the study area were analyzed with existing traffic volumes under existing roadway conditions/geometries. It should be noted that existing traffic signal timings were utilized at the intersections of Nashville Highway (US-31) and Spring Meade Boulevard and Nashville Highway (US-31) and Arden Village Drive/Grove Park Way for this analysis. The existing capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for both signalized and unsignalized intersections. Appendix C contains the detailed capacity analyses results.

[1] Transportation Research Board (TRB). Highway Capacity Manual, 5th Edition (2010). Washington, DC: 2010

Table 2. Existing Capacity Analyses

Study Intersection	Control	Approach	2021 Existing Conditions					
			AM Peak Hour			PM Peak Hour		
			LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1. **Nashville Highway (US-31) and Spring Meade Boulevard**	Signal	NB Left	D	39.2	105	F	82.6	83
		NB Thru	B	14.6	175	A	4.4	126
		NB Thru/Right	B	14.5	193	A	0.0	135
		SB Left	F	112.4	9	A	0.0	0
		SB Thru	B	16.1	253	B	13.8	334
		SB Thru/Right	B	16.1	260	B	14.2	355
		EB Left	C	29.0	161	E	65.4	159
		EB Thru/Right	C	24.7	50	E	64.0	103
		WB Left	C	25.3	0	A	0.0	0
		WB Thru/Right	C	23.5	9	A	0.0	0
		Overall	**B**	**17.0**	--	**B**	**13.8**	--
2. **Nashville Highway (US-31) and Old Highway 31N**	TWSC	NB Left	B	15.0	50	C	19.7	25
		EB Left/Right	C	20.6	50	D	26.8	50
3. **Nashville Highway (US-31) and Arden Village Drive/Grove Park Way**	Signal	NB Left	E	65.6	8	F	81.8	48
		NB Thru	C	20.2	365	B	17.1	373
		NB Right	A	8.7	111	A	9.7	89
		SB Left	E	75.6	63	F	93.7	153
		SB Thru	B	15.0	313	B	18.6	584
		SB Right	A	8.5	92	A	8.0	170
		EB Left/Thru	E	74.8	152	F	87.5	89
		EB Right	E	62.9	36	E	75.4	29
		WB Left/Thru	E	63.2	63	E	74.4	103
		WB Right	E	78.2	88	F	85.7	86
		Overall	**C**	**21.5**	--	**C**	**23.2**	--
4. **Nashville Highway (US-31) and Greens Mill Road**	TWSC	SB Left	C	19.2	25	B	14.4	25
		WB Left/Right	F	78.3	125	D	25.7	25
5. **Nashville Highway (US-31) and Hidden Creek Way**	TWSC	NB Left	C	16.3	25	C	18.4	0
		EB Left	E	48.4	25	F	65.0	25
		EB Right	C	18.4	25	C	20.6	25

The following assessments are based on the results of the Existing Capacity Analyses as shown in Table 2:

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement currently operates at LOS F during the PM peak hour period. The southbound left-turn movement currently operates at LOS F during the AM peak hour period. The eastbound left-turn movement currently operates at a LOS E during the PM peak hour. The eastbound shared through/right-turn movement currently operates at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS B during both the AM and PM peak hours, with existing traffic volumes.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The southbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound shared left-turn/through movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound right-turn movement currently operates at LOS E during both the AM and PM peak hour periods. The westbound shared left-turn/through movement currently operates at LOS E during both the AM and PM peak hour periods. The westbound right-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively.
    - The overall intersection will operate at LOS C during both the AM and PM peak hours, respectively, with existing traffic volumes.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the westbound shared left-turn/right-turn movement currently operates at LOS F during the AM peak hour period.
- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the eastbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively.
- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with existing traffic volumes.

Background Traffic Volumes

To account for traffic growth within the vicinity of the project site prior to the completion of the proposed 2504 Nashville Highway Mixed-Use Development, background traffic volumes were established. Average annual daily traffic (AADT) volumes were obtained from Tennessee Department of Transportation (TDOT) count stations, and an average growth trend per year was established. This growth trend was used as a multiplication factor to grow the existing traffic volumes to the 2022 design year (development completion). Figure 5 displays the locations of the TDOT Count Stations within the surrounding area.

As shown in Figure 5, the average yearly percent change in traffic over a six (6) year period from 2013 - 2018 was 3.76%. However, to conform to the recently conducted traffic impact studies within the area, the existing traffic volumes as shown on Figure 4 were grown by +2.00% per year for two (2) years. Figure D1 in Appendix D shows the background peak hour totals at the study intersections for the AM and PM peak hour periods.

To account for the additional traffic growth within the vicinity of the project site, the generated traffic volumes from previously conducted Traffic Studies near the project site were added to the grown background traffic volumes. These developments are listed below as outlined within the Greens Mill Master Plan Traffic Impact Study conducted by KCI Technologies.

- Grove Park (Single-Family Residential)
- Homestead (Single-Family Residential)
- Villages at Carters Station (Single-Family Residential)
- Drumright Property (Single-Family and Multifamily Residential)
- Arden Village (Retail Space)
- MSC Apartments (Multifamily Residential)
- The Ridge at Carters Village (Single Family Residential)
- Greens Mill Development (Single Family Residential)

The total generated background development volumes can be found on Figure D2 in Appendix D. The generated traffic volumes from each development above are shown on Figures D3-D11 in Appendix D. The background traffic volumes as shown in Figure D1 were added to the total generated background development volumes as shown in Figure D2, resulting in the total combined background peak hour traffic volumes for the study intersections, as shown on Figure 6.



TDOT Count Station:	Maury 000091		Maury 000019		Average % Growth
Year	AADT	% Change	AADT	% Change	
2018	36,823	--	1,251	--	--
2017	35,063	5.02%	1,202	4.08%	4.55%
2016	33,930	4.26%	1,131	5.31%	4.76%
2015	34,875	1.86%	1,195	1.56%	1.71%
2014	34,235	1.89%	1,072	4.17%	3.03%
2013	30,975	3.78%	973	5.71%	4.75%
Average % Change	**3.36%**		**4.17%**		**3.76%**
				Applied % Growth*	**2.00%***

*Applied Growth matches Background Growth utilized within the MSC Apartments Traffic Impact Study (May 2020)

N.T.S.

Figure 5
TDOT Count Locations & Background Traffic Growth Trends

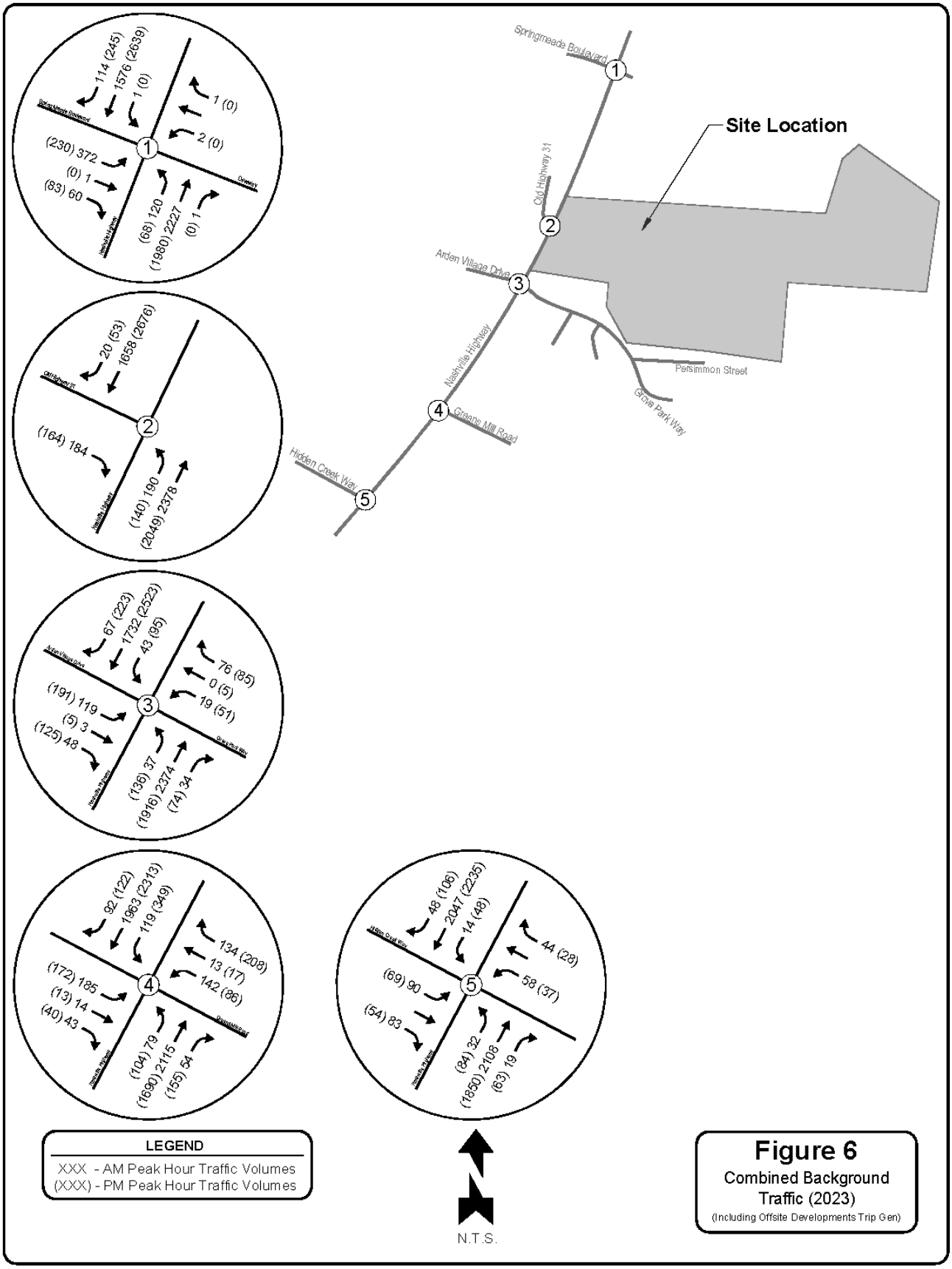


Figure 6
Combined Background Traffic (2023)
(Including Offsite Developments Trip Gen)

Background Capacity Analyses

To evaluate the background traffic operations at the study intersections within the vicinity of the project site, the AM and PM peak hour capacity analyses were performed based on calculations outlined in the Highway Capacity Manual (HCM). Levels of service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement.

The previously conducted Traffic Studies for the background developments resulted in multiple recommended roadway improvements to study intersections. These recommended improvements will be utilized as part of the background roadway conditions and have been included in the background capacity analyses. The improvements are listed below by intersection. Figure 7 shows a summary of the off-site improvements from previously conducted traffic studies for background developments.

Nashville Highway (US-31) and Spring Meade Boulevard

- Configure the eastbound approach to include one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) exclusive right-turn lane (Ridge at Carters Station)

Nashville Highway (US-31) and Old Highway 31N

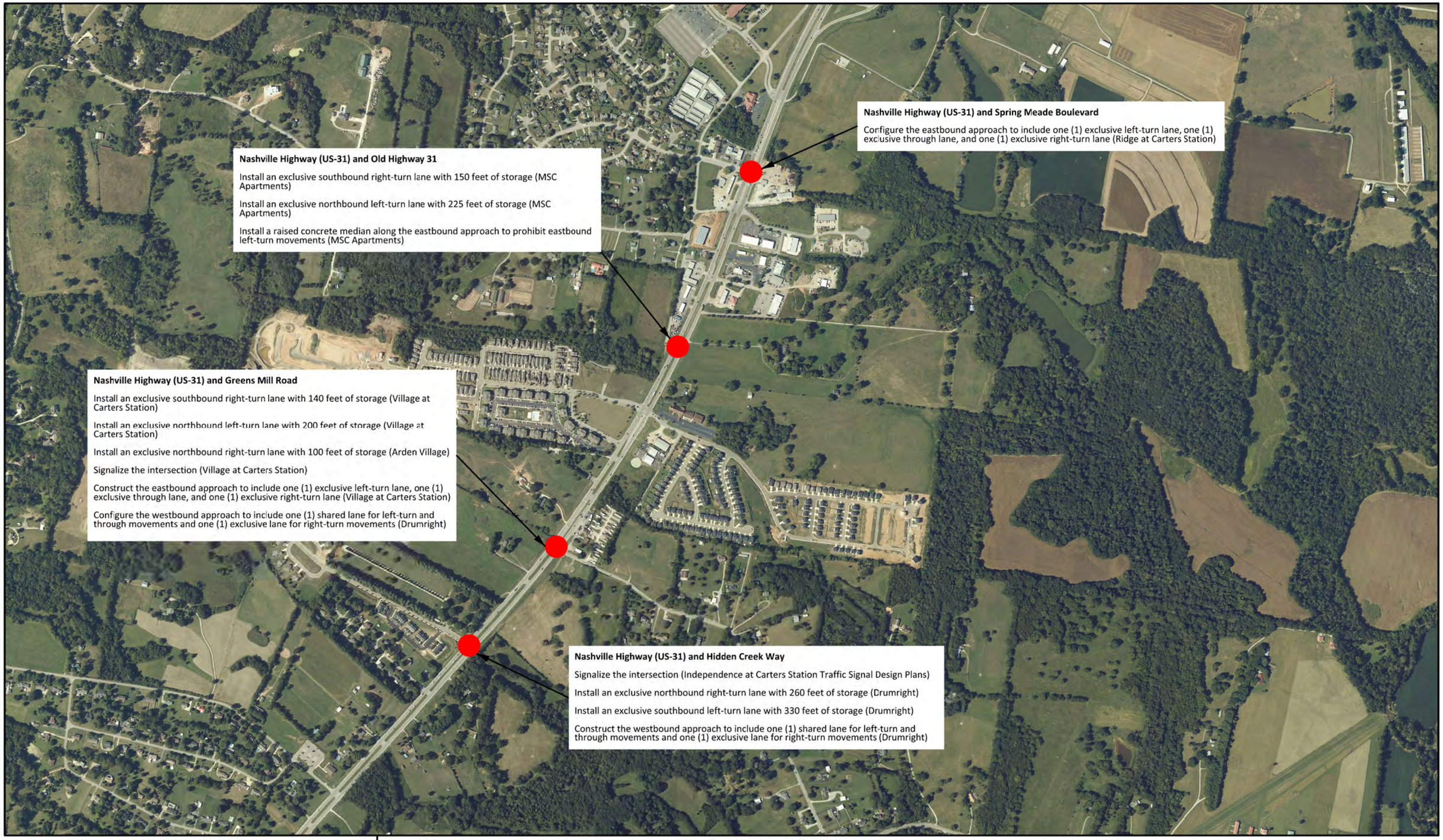
- Install an exclusive southbound right-turn lane with 150 feet of storage (MSC Apartments)
- Install an exclusive northbound left-turn lane with 225 feet of storage (MSC Apartments)
- Install a raised concrete median along the eastbound approach to prohibit eastbound left-turn movements (MSC Apartments)

Nashville Highway (US-31) and Greens Mill Road

- Install an exclusive southbound right-turn lane with 140 feet of storage (Village at Carters Station)
- Install an exclusive northbound left-turn lane with 200 feet of storage (Village at Carters Station)
- Install an exclusive northbound right-turn lane with 100 feet of storage (Arden Village)
- Signalize the intersection (Village at Carters Station)
- Construct the eastbound approach to include one (1) exclusive left-turn lane, one (1) exclusive through lane, and one (1) exclusive right-turn lane (Village at Carters Station)
- Configure the westbound approach to include one (1) shared lane for left-turn and through movements and one (1) exclusive lane for right-turn movements (Drumright)

Nashville Highway (US-31) and Hidden Creek Way

- Signalize the intersection (Independence at Carters Station Traffic Signal Design Plans)
- Install an exclusive northbound right-turn lane with 260 feet of storage (Drumright)
- Install an exclusive southbound left-turn lane with 330 feet of storage (Drumright)
- Construct the westbound approach to include one (1) shared lane for left-turn and through movements and one (1) exclusive lane for right-turn movements (Drumright)



T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

Figure 7 - Off-Site Improvements for Background Developments

2504 Nashville Highway Mixed-Use Development • Columbia, TN • Approximate Scale: 1" = 800'

Prepared by T-Square Engineering, Inc.

1329 West Main Street • Franklin, TN 37064 • www.T2-Eng.com

800' 400' 0' 800'

1 inch = 800 feet

The intersections were analyzed based on background roadway conditions and lane geometries as outlined in the Background Traffic Volumes section above. It should be noted that existing traffic signal timings were utilized at the intersections of Nashville Highway (US-31) and Spring Meade Boulevard and Nashville Highway (US-31) and Arden Village Drive/Grove Park Way for this analysis. However, optimized traffic signal timings were utilized at the intersections of Nashville Highway (US-31) and Greens Mill Road and Nashville Highway (US-31) and Hidden Creek Way for this analysis. The background capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for both signalized and unsignalized intersections. Appendix C contains the detailed capacity analyses results.

Table 3. Background Capacity Analyses

	Study Intersection	Control	Approach	2023 Background Conditions					
				AM Peak Hour			PM Peak Hour		
				LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1.	**Nashville Highway (US-31) and Spring Meade Boulevard**	Signal	NB Left	E	58.6	176	E	66.0	90
			NB Thru	F	109.9	330	B	12.8	292
			NB Thru/Right	F	109.5	353	A	0.0	323
			SB Left	F	139.8	0	A	0.0	0
			SB Thru	F	73.7	1067	F	187.3	2500+
			SB Thru/Right	F	79.6	1066	F	204.6	2500+
			EB Left	E	61.2	303	D	49.6	215
			EB Thru	C	29.1	11	A	0.0	0
			EB Right	C	30.5	62	D	43.5	93
			WB Left	C	29.1	0	A	0.0	0
			WB Thru/Right	C	29.1	23	A	0.0	0
			Overall	**F**	**90.7**	**--**	**F**	**116.4**	**--**
2.	**Nashville Highway (US-31) and Old Highway 31N**	TWSC	NB Left	D	32.1	100	F	253.7	275
			EB Right	E	44.1	125	F	328.8	325
3.	**Nashville Highway (US-31) and Arden Village Drive/Grove Park Way**	Signal	NB Left	D	50.4	343	F	97.3	541
			NB Thru	F	209.0	1499	F	89.8	1314
			NB Right	B	12.0	214	B	16.5	242
			SB Left	D	51.9	154	F	83.4	176
			SB Thru	F	51.6	489	F	275.3	557
			SB Right	B	12.3	217	C	20.7	364
			EB Left/Thru	D	50.7	137	F	82.3	248
			EB Right	D	43.7	71	E	61.7	123
			WB Left/Thru	D	44.9	43	E	65.8	121
			WB Right	E	55.8	96	E	75.9	112
			Overall	**F**	**132.7**	**--**	**F**	**170.9**	**--**
4.	**Nashville Highway (US-31) and Greens Mill Road**	Signal	NB Left	D	52.4	368	F	117.5	339
			NB Thru	F	58.8	1076	D	48.6	1121
			NB Right	B	10.4	221	B	17.5	267
			SB Left	F	166.0	372	F	111.8	262
			SB Thru	D	37.7	641	F	63.4	608
			SB Right	B	10.7	225	A	8.6	192
			EB Left	F	258.1	338	F	245.3	431
			EB Thru	D	45.2	127	D	50.3	651
			EB Right	D	46.4	60	D	51.5	60
			WB Left/Thru	D	53.4	213	E	55.5	207
			WB Right	D	50.4	184	F	90.2	215
			Overall	**E**	**58.4**	**--**	**E**	**67.0**	**--**
5.	**Nashville Highway (US-31) and Hidden Creek Way**	Signal	NB Left	C	31.0	282	E	60.7	493
			NB Thru	C	29.9	2500+	B	17.7	2500+
			NB Right	A	6.5	249	A	6.8	463
			SB Left	C	30.0	27	C	21.6	44
			SB Thru	C	28.8	313	D	41.9	296
			SB Right	A	7.2	14	A	7.3	16
			EB Left/Thru	F	401.1	139	F	308.0	104
			EB Right	D	45.3	115	D	50.4	78
			WB Left/Thru	F	189.1	87	F	102.4	70
			WB Right	D	43.6	80	D	49.2	82
			Overall	**D**	**39.0**	--	**D**	**35.6**	--

The following assessments are based on the results of the Background Capacity Analyses as shown in Table 3:

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement will operate at LOS E during both the AM and PM peak hour periods. The northbound through movement will operate at LOS F during the AM peak hour period. The northbound through/right-turn movement will operate at LOS F during the AM peak hour period. the southbound left-turn movement will operate at LOS F during the AM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through/right-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at a LOS E during the AM peak hour.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, with background traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Old Highway 31, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The eastbound right-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS F during the PM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound shared left-turn/through movement will operate at LOS F during the PM peak hour period. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E during the PM peak hour period. The westbound right-turn movement will operate at LOS E during both the AM and PM peak hour periods.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, respectively, with background traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The northbound through movement will operate at LOS F during the AM peak hour period. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through movement will operate at LOS F during the PM peak hour period. The eastbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The westbound shared left-turn/through movement will operate at LOS E during the PM peak hour period. The westbound right turn movement will operate at LOS F during the PM peak hour period.
    - The overall intersection will operate at LOS E during both the AM and PM peak hours, respectively, with background traffic volumes and optimized signal timings.

- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the northbound left-turn movement will operate at LOS E during the PM peak hour period. The eastbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The westbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods.
    - The overall intersection will operate at LOS D during both the AM and PM peak hours, respectively, with background traffic volumes and optimized signal timings.
- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with background traffic volumes.

Impacts

Traffic Generation

Trips were generated to establish projected traffic volumes for the proposed 2504 Nashville Highway Mixed-Use Development. Daily and peak hour trips were generated by formulas presented in the Trip Generation Manual[2] based on the land uses proposed by the development. As previously stated, the proposed development will consist of approximately 147 single-family homes, approximately 471 multi-family (low-rise) housing units, a coffee shop with drive-through of approximately 3,725 SF, a shopping center of approximately 3,500 SF, and a day care center of approximately 13,000 SF.

Internal Trips

As described in the *Trip Generation Handbook*, developments containing multiple land uses will commonly have internal trips, or trips from land use to land use without leaving the development site. Based on the NCHRP Report 684, "Enhancing Internal Trip Capture Estimation for Mixed-Use Developments," and assumptions made by T-Square Engineering for this study, an estimated 9% internal capture rate was calculated for daily and PM peak hour trips.

Pass-By Trips

Studies have shown that new retail and restaurant developments generate relatively low "new" traffic. Traffic entering or exiting the new development are considered pass-by or captured trips. Pass-by or captured trips are vehicles that would have already been on the roadway regardless of the new development being constructed. The *Trip Generation Handbook* provides typical weekday pass-by percentages for various land uses based on the size of each land use. Based on the *Trip Generation Handbook* and assumptions made by T-Square Engineering for this study, 20% and 50% pass-by was used for the shopping center and coffee shop land uses, respectively.

The Table below provides a summary of the internal, pass-by and new trips generated for the proposed development.

[2] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2020

Table 4. 2504 Nashville Highway Mixed-Use Development Trip Generation Summary

Land Use (ITE Code)	Size	Generated Traffic Volumes[3]				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Single-Family Housing (210)	147 DU	1,482	27	82	93	54
Internal Trips		133	0	0	8	5
External Trips (Raw – Internal)		1,349	27	82	85	49
Pass-By Trips		0	0	0	0	0
New Trips (External – Pass-By)		**1,349**	**27**	**82**	**85**	**49**
Multi-Family (Low-Rise) Housing (220)	471 DU	3,520	48	160	148	87
Internal Trips		317	0	0	13	8
External Trips		3,203	48	160	135	79
Pass-By Trips		0	0	0	0	0
New Trips		**3,203**	**48**	**160**	**135**	**79**
Coffee/Donut Shop w/ Drive Thru (937)	3,725 SF	3,060	169	163	81	81
Internal Trips		275	0	0	7	7
External Trips		2,785	169	163	74	74
Pass-By Trips (50%)		1,393	85	82	37	37
New Trips		**1,392**	**84**	**81**	**37**	**37**
Shopping Center (820)	3,500 SF	615	95	58	22	24
Internal Trips		55	0	0	2	2
External Trips		560	95	58	20	22
Pass-By Trips (20%)		112	19	12	4	4
New Trips		**448**	**76**	**46**	**16**	**18**
Day Care Center (565)	13,000 SF	619	76	67	68	77
Internal Trips		56	0	0	6	7
External Trips		563	76	67	62	70
Pass-By Trips		0	0	0	0	0
New Trips		**563**	**76**	**67**	**62**	**70**
TOTAL GENERATED TRIPS		9,296	415	530	412	323
TOTAL GENERATED INTERNAL TRIPS		836	0	0	36	29
TOTAL GENERATED EXTERNAL TRIPS		8,460	415	530	376	294
TOTAL GENERATED PASS-BY TRIPS		**1,505**	**104**	**94**	**41**	**41**
TOTAL GENERATED NEW TRIPS		**6,955**	**311**	**436**	**335**	**253**

[3] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2020

Projected Traffic Distribution and Assignments

For the purposes of this study, the estimated directional distributions shown on Figures 8A and 8B were made for the proposed development's primary and pass-by generated trips, respectively. These directional distributions were established based on the following:

- Conducted hourly turning movement counts.
- Existing land use characteristics.
- Existing roadway network.
- Existing lane geometry of surrounding intersections.
- The developments proposed access location.
- Locations of populations centers within the surrounding area.
- Comments provided by the City of Columbia's Traffic Engineer.

Figure D12 in Appendix D shows the primary generated trips which were assigned to the existing roadway network per the distributions shown on Figure 8A. Figure D13 in Appendix D shows the pass-by generated trips which were assigned to the existing roadway network per the distributions shown on Figure 8B. Figure 9 shows the total (primary and pass-by) generated trips which were assigned to the roadway network. The generated peak hour traffic volumes (primary and pass-by) as shown on Figure 9 were added to the combined background volumes as shown on Figure 6, resulting in the total projected peak hour traffic volumes as shown on Figure 10.

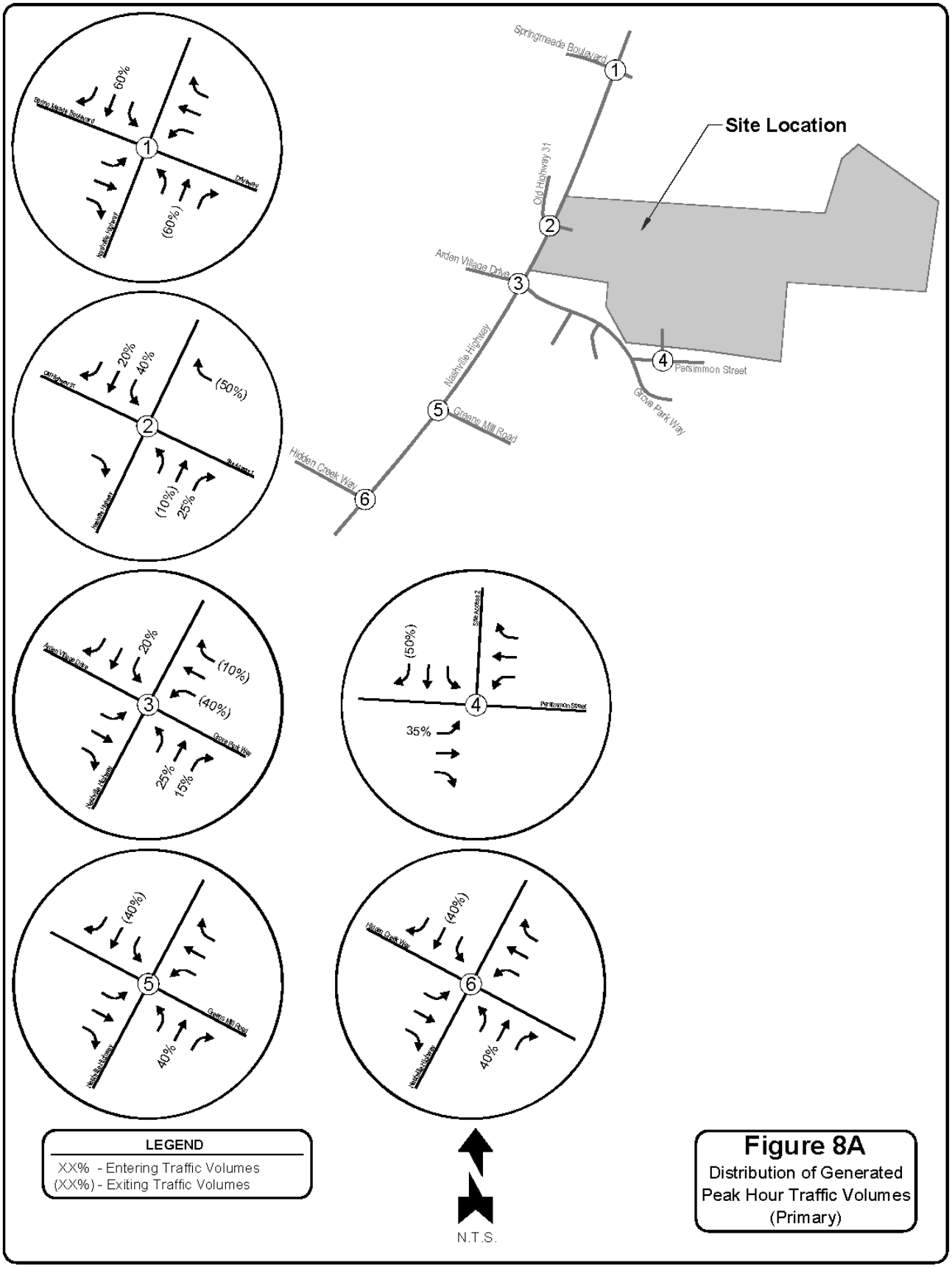


Figure 8A
Distribution of Generated Peak Hour Traffic Volumes (Primary)

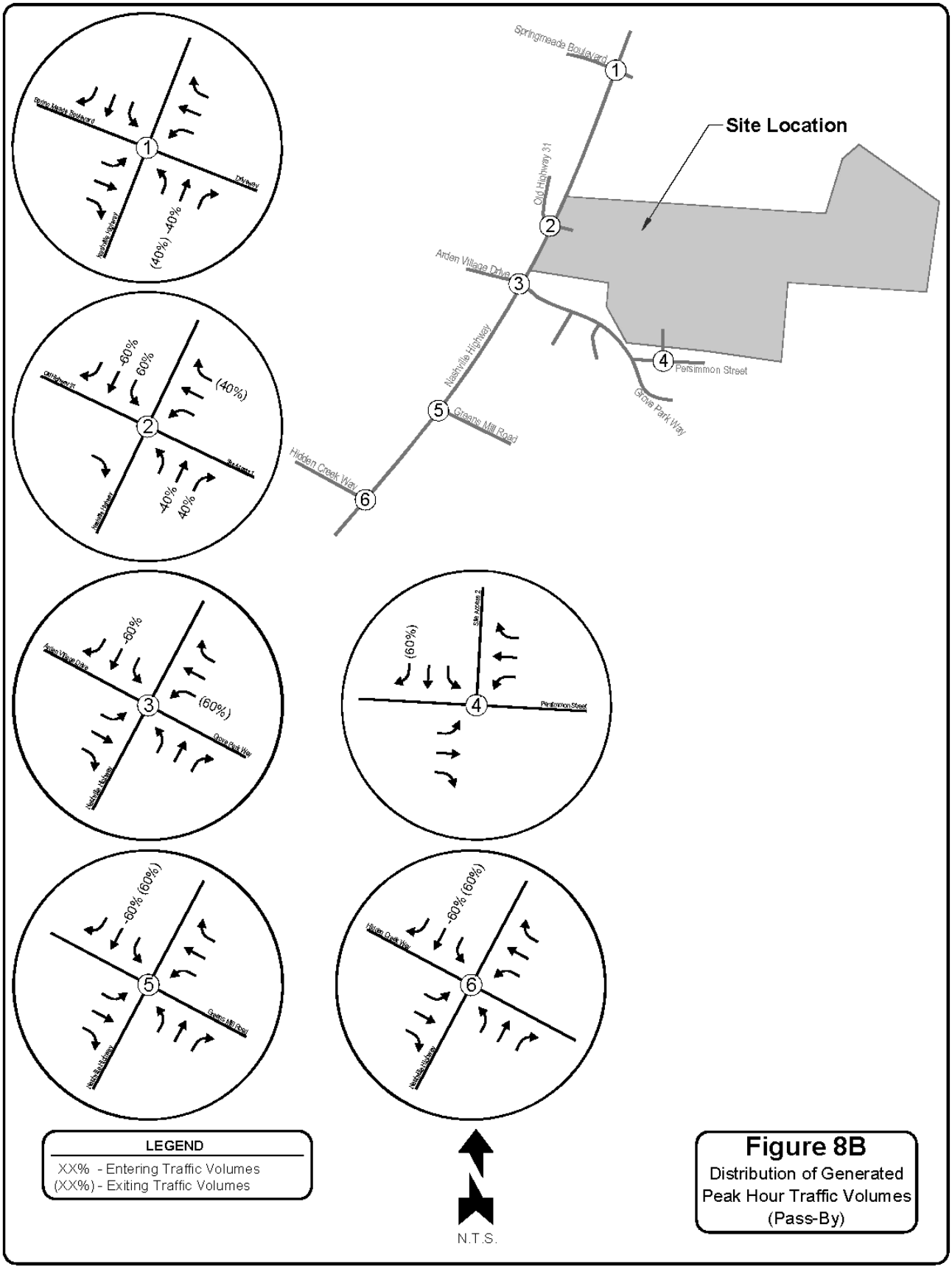


Figure 8B
Distribution of Generated Peak Hour Traffic Volumes (Pass-By)

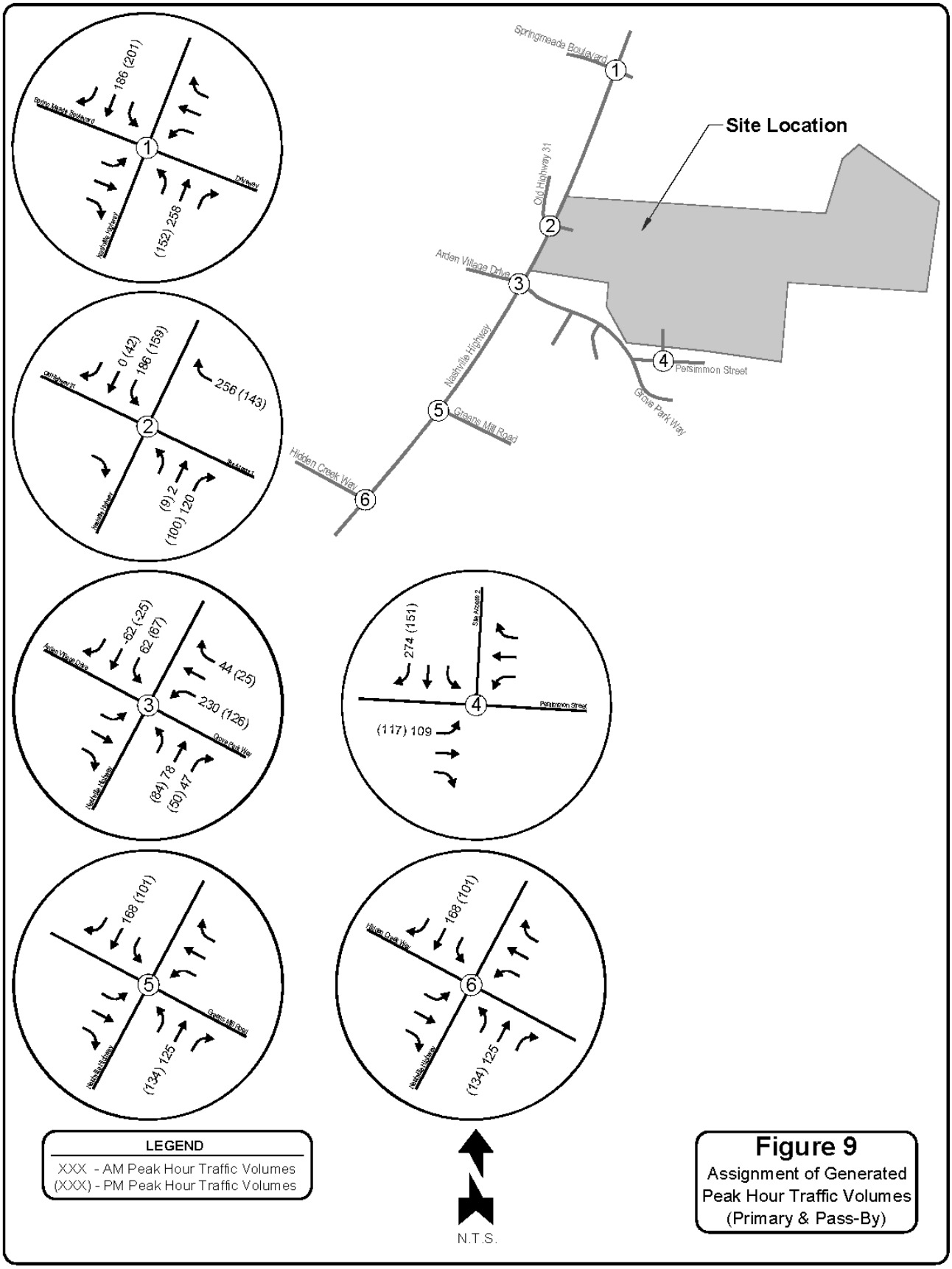
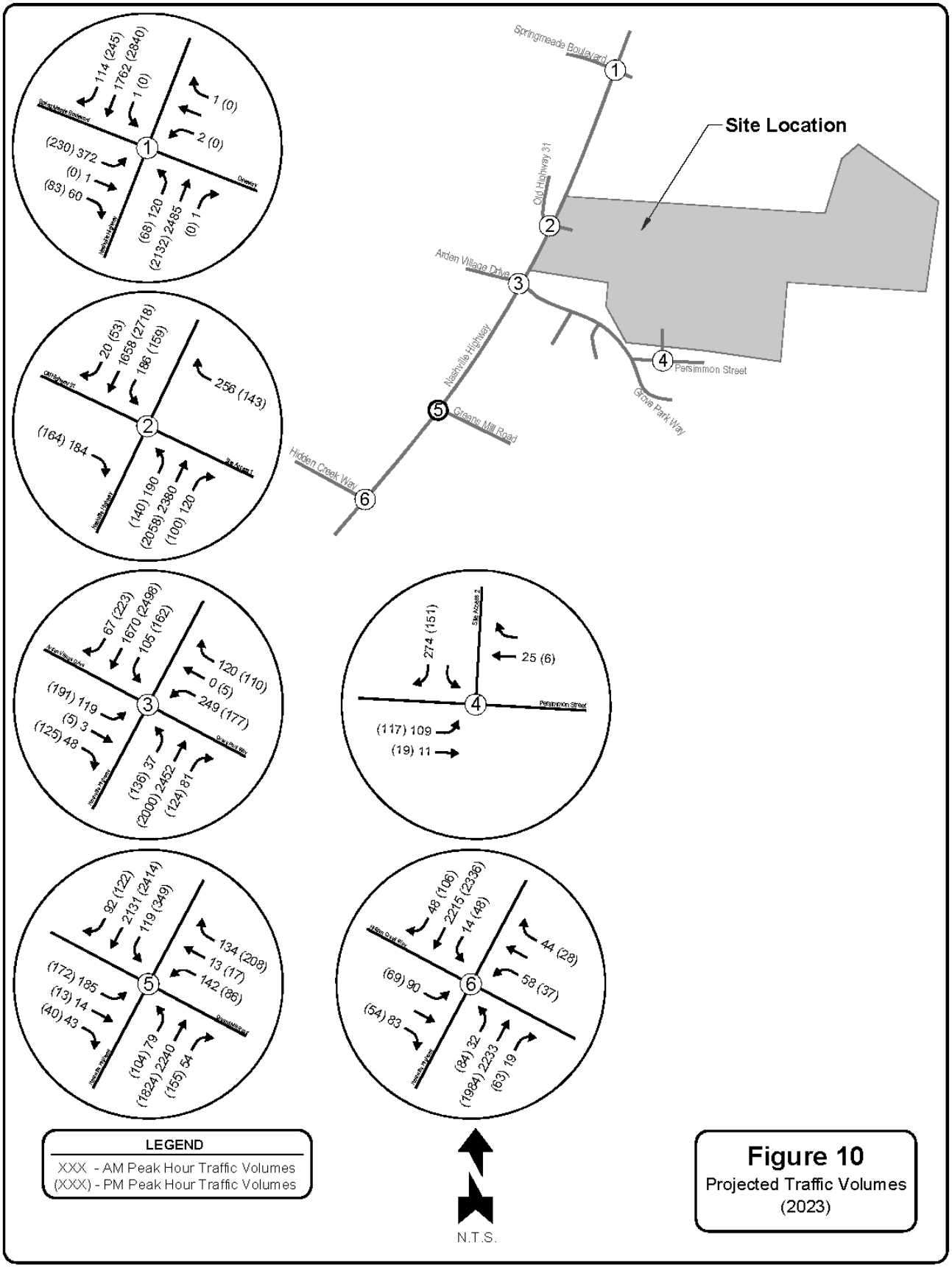


Figure 9
Assignment of Generated Peak Hour Traffic Volumes (Primary & Pass-By)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
1
2
3
4
5
6
114 (245)
1762 (2840)
1 (0)
1 (0)
2 (0)
(230) 372
(0) 1
(83) 60
(68) 120
(2132) 2465
(0) 1
20 (53)
1658 (2718)
186 (159)
256 (143)
(164) 184
(140) 190
(2058) 2380
(100) 120
67 (223)
1670 (2498)
105 (162)
120 (110)
0 (5)
249 (177)
(191) 119
(5) 3
(125) 48
(136) 37
(2000) 2452
(124) 81
274 (151)
25 (6)
(117) 109
(19) 11
92 (122)
2131 (2414)
119 (349)
134 (208)
13 (17)
142 (86)
(172) 185
(13) 14
(40) 43
(104) 79
(1824) 2240
(155) 54
48 (106)
2215 (2336)
14 (48)
44 (28)
58 (37)
(69) 90
(54) 83
(84) 32
(1984) 2233
(63) 19
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure 10
Projected Traffic Volumes
(2023)

Projected Capacity Analysis

To evaluate the projected traffic operations at the study intersections within the vicinity of the project site, AM and PM peak hour capacity analyses were performed. The capacity analyses include the total projected traffic volumes generated from the proposed development in addition to background traffic volumes. Levels-of-service (LOS), corresponding average delays, and 95th percentile queues were calculated for each turning movement. The intersections were analyzed based on background roadway conditions and lane geometries as outlined previously with projected traffic volumes.

The intersections were analyzed based on background roadway conditions and lane geometries as outlined in the Background Traffic Volumes section above. It should be noted that existing traffic signal timings were utilized at the intersections of Nashville Highway (US-31) and Spring Meade Boulevard and Nashville Highway (US-31) and Arden Village Drive/Grove Park Way for this analysis. However, optimized traffic signal timings were utilized at the intersections of Nashville Highway (US-31) and Greens Mill Road and Nashville Highway (US-31) and Hidden Creek Way for this analysis. The projected capacity analyses were conducted using *Synchro/SimTraffic* software by Trafficware for both signalized and unsignalized intersections. Appendix C contains the detailed capacity analyses results.

Table 5. Projected Capacity Analyses

Study Intersection	Control	Approach	2023 Projected Conditions					
			AM Peak Hour			PM Peak Hour		
			LOS	Delay (s)	Queue (ft)	LOS	Delay (s)	Queue (ft)
1. **Nashville Highway (US-31) and Spring Meade Boulevard**	Signal	NB Left	E	58.6	116	E	66.0	100
		NB Thru	F	167.1	303	B	16.2	222
		NB Thru/Right	F	166.8	303	A	0.0	238
		SB Left	F	139.8	0	A	0.0	0
		SB Thru	F	115.1	2500+	F	229.1	2500+
		SB Thru/Right	F	124.6	2500+	F	246.6	2500+
		EB Left	E	61.2	320	D	49.6	263
		EB Thru	C	29.1	0	A	0.0	0
		EB Right	C	30.5	68	D	43.5	103
		WB Left	C	29.1	0	A	0.0	0
		WB Right	C	29.1	12	A	0.0	0
		Overall	**F**	**136.6**	--	**F**	**140.9**	--
2. **Nashville Highway (US-31) and Old Highway 31N**	TWSC	NB Left	D	32.1	100	F	279.6	275
		SB Left	F	263.2	325	F	74.2	175
		EB Right	E	44.1	125	F	352.8	325
		WB Right	F	500.0+	575	F	81.5	150
3. **Nashville Highway (US-31) and Arden Village Drive/Grove Park Way**	Signal	NB Left	E	63.0	305	F	114.6	555
		NB Thru	F	367.6	1417	F	178.0	1402
		NB Right	C	20.6	162	C	23.2	185
		SB Left	E	67.9	257	F	164.3	239
		SB Thru	F	80.4	524	F	321.3	608
		SB Right	B	17.7	193	C	25.2	336
		EB Left/Thru	E	61.4	112	F	91.2	520
		EB Right	D	52.6	53	E	67.1	124
		WB Left/Thru	E	70.9	349	F	88.5	284
		WB Right	D	46.5	213	E	66.0	204
		Overall	**F**	**218.4**	--	**F**	**218.7**	--
4. **Persimmon Street and Site Access 2**	TWSC	SB L/T/R	A	9.8	50	A	9.0	25
		EB Left	A	7.5	25	A	7.4	25
5. **Nashville Highway (US-31) and Greens Mill Road**	Signal	NB Left	E	63.2	405	F	148.8	402
		NB Thru	F	73.7	1081	F	57.0	1079
		NB Right	A	9.9	269	B	16.9	288
		SB Left	F	166.7	239	F	151.9	267
		SB Thru	F	53.8	537	F	72.7	318
		SB Right	B	10.1	207	A	8.5	34
		EB Left	F	323.5	356	F	281.5	387
		EB Thru	D	46.4	939	D	54.4	1159
		EB Right	D	47.7	83	E	55.7	64
		WB Left/Thru	E	55.4	257	E	60.2	513
		WB Right	D	51.9	212	E	98.9	341
		Overall	**E**	**73.2**	--	**E**	**78.1**	--
6. **Nashville Highway (US-31) and Hidden Creek Way**	Signal	NB Left	D	37.4	398	F	92.8	501
		NB Thru	C	33.2	2500+	B	17.3	2500+
		NB Right	A	6.0	281	A	6.0	524
		SB Left	D	36.2	30	C	25.7	32
		SB Thru	D	36.4	398	D	37.4	233
		SB Right	A	6.6	12	A	6.4	7
		EB Left/Thru	F	468.3	203	F	410.0	151
		EB Right	D	51.3	120	E	61.0	71
		WB Left/Thru	F	225.9	84	F	147.4	69
		WB Right	D	49.3	138	E	59.4	76
		Overall	**D**	**45.2**	--	**D**	**35.4**	--

The following assessments are based on the results of the Projected Capacity Analyses as shown in Table 5:

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement will operate at LOS E during both the AM and PM peak hour periods. The northbound through movement will operate at LOS F during the AM peak hour period. The northbound through/right-turn movement will operate at LOS F during the AM peak hour period. The southbound left-turn movement will operate at LOS F during the AM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound shared through/right-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at a LOS E during the AM peak hour.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, with projected traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Old Highway 31, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The westbound right-turn movement will operate at LOS F during both the AM and PM peak hour periods.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound shared left-turn/through movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E and F during the AM and PM peak hour periods. The westbound right-turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, respectively, with projected traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the northbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E during both the

AM and PM peak hour periods. The westbound right turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS E during both the AM and PM peak hours, with projected traffic volumes and optimized signal timings.
- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The eastbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The westbound right-turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS D during both the AM and PM peak hours, respectively, with projected traffic volumes and optimized signal timings.
- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with projected traffic volumes.

Intersection Assessments (Projected Conditions)

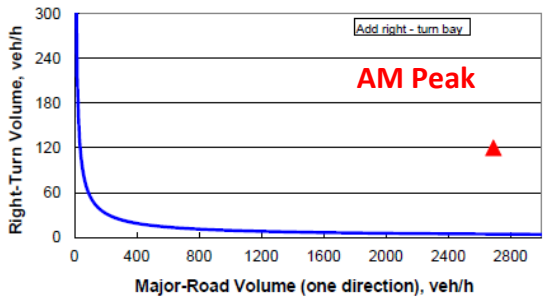
Engineering assessments were performed on the intersections within the study area to identify underlying inefficiencies and solutions to alleviate any concerns associated with intersection geometries and traffic volumes along the roadway network.

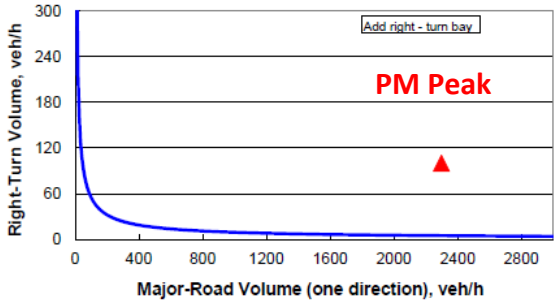
Major Road Approach Geometry Warrants - Projected

Major-road approach left-turn lane warrants were performed based on Figures 2-5 and 2-6 in the *NCHRP Report 457 – Evaluating Intersection Improvements: An Engineering Study Guide*[4] and projected traffic volumes.

Table 6. Major-Road Approach Geometry, NBR Nashville Highway (US-31) at Old Highway 31/SA1

Variable	AM Peak	PM Peak
Major-road speed, mph:	55	55
Major-road volume (one direction), veh/h:	2690	2298
Major-road right-turn volume, veh/h:	120	100
Limiting right-turn volume, veh/h:	4	5
Right-turn bay warranted:	**YES**	**YES**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		



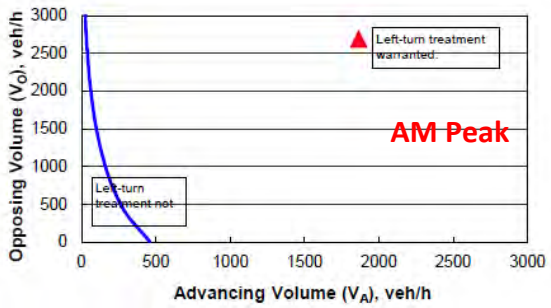


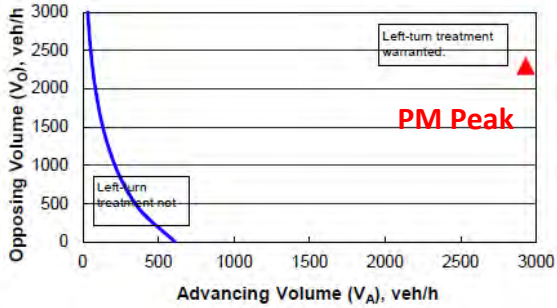
As shown in Table 6 and the corresponding graphs, it was determined that a northbound right-turn lane is warranted along Nashville Highway at its intersection with Old Highway 31/Site Access 1 during both peak hour periods with projected traffic volumes.

[4] Transportation Research Board (TRB). Evaluating Intersection Improvements: An Engineering Study Guide. Washington, DC: 2001

Table 7. Major-Road Approach Geometry, SBL Nashville Highway at Old Highway 31/SA1

Variable	AM Peak	PM Peak
85th percentile speed, mph:	55	55
Percent of left-turns in advancing volume (V_A), %:	10%	5%
Advancing volume (V_A), veh/h:	1864	2930
Opposing volume (V_O), veh/h:	2690	2298
Limiting advancing volume (V_A), veh/h:	32	62
Left-turn bay warranted:	**YES**	**YES**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		





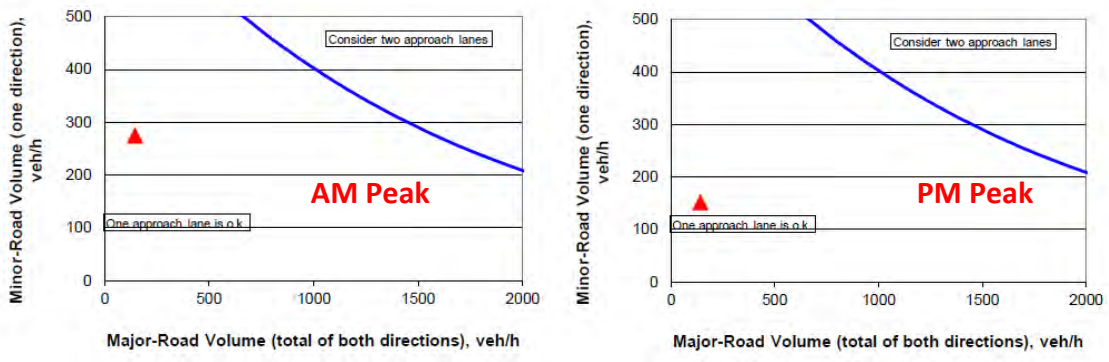
As shown in Table 7 and the corresponding graphs, it was determined that a southbound left-turn lane is warranted along Nashville Highway (US-31) at its intersection with Old Highway 31/Site Access 1 during both peak hour periods with projected traffic volumes.

Minor Road Approach Geometry Warrants – Projected

Minor-road approach geometric warrants were performed based on Figure 2-4 in the *NCHRP Report 457 – Evaluating Intersection Improvements: An Engineering Study Guide*[5]. The results of the warrants are shown below.

Table 8. Minor-Road Approach Geometry, SBR Site Access 2 at Persimmon Street

Variable	AM Peak	PM Peak
Major-road volume (total both directions), veh/h:	145	142
Percentage of right-turns on minor road, %:	100%	100%
Minor-road volume (one direction), veh/h:	274	151
Limiting minor-road volume (one direction), veh/h:	697	698
Right-turn bay warranted:	**One (1) approach lane is sufficient**	**One (1) approach lane is sufficient**
Source: *NCHRP Report 457: Evaluating Intersection Improvements: An Engineering Study Guide*		



As shown in Table 8 and the corresponding graphs, it was determined that one (1) shared lane for left-turn, through, and right-turn movements on the southbound approach Site Access 2 at its intersection with Persimmon Street is sufficient with projected traffic volumes.

[5] Transportation Research Board (TRB). Evaluating Intersection Improvements: An Engineering Study Guide. Washington, DC: 2001

Conclusions

Existing Conditions

Intersection Capacity Analyses

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement currently operates at LOS F during the PM peak hour period. The southbound left-turn movement currently operates at LOS F during the AM peak hour period. The eastbound left-turn movement currently operates at a LOS E during the PM peak hour. The eastbound shared through/right-turn movement currently operates at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS B during both the AM and PM peak hours, with existing traffic volumes.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The southbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound shared left-turn/through movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound right-turn movement currently operates at LOS E during both the AM and PM peak hour periods. The westbound shared left-turn/through movement currently operates at LOS E during both the AM and PM peak hour periods. The westbound right-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively.
    - The overall intersection will operate at LOS C during both the AM and PM peak hours, respectively, with existing traffic volumes.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the westbound shared left-turn/right-turn movement currently operates at LOS F during the AM peak hour period.
- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the eastbound left-turn movement currently operates at LOS E and F during the AM and PM peak hour periods, respectively.
- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with existing traffic volumes.

Background Conditions

Intersection Capacity Analyses

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement will operate at LOS E during both the AM and PM peak hour periods. The northbound through movement will operate at LOS F during the AM peak hour period. The northbound through/right-turn movement will operate at

LOS F during the AM peak hour period. the southbound left-turn movement will operate at LOS F during the AM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through/right-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at a LOS E during the AM peak hour.

    - The overall intersection will operate at LOS F during both the AM and PM peak hours, with background traffic volumes and existing signal timings.

- At the intersection of Nashville Highway (US-31) and Old Highway 31, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The eastbound right-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS F during the PM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound shared left-turn/through movement will operate at LOS F during the PM peak hour period. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E during the PM peak hour period. The westbound right-turn movement will operate at LOS E during both the AM and PM peak hour periods.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, respectively, with background traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The northbound through movement will operate at LOS F during the AM peak hour period. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through movement will operate at LOS F during the PM peak hour period. The eastbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The westbound shared left-turn/through movement will operate at LOS E during the PM peak hour period. The westbound right turn movement will operate at LOS F during the PM peak hour period.
    - The overall intersection will operate at LOS E during both the AM and PM peak hours, respectively, with background traffic volumes and optimized signal timings.

- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the northbound left-turn movement will operate at LOS E during the PM peak hour period. The eastbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The westbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods.
    - The overall intersection will operate at LOS D during both the AM and PM peak hours, respectively, with background traffic volumes and optimized signal timings.

- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with background traffic volumes.

Projected Conditions

Intersection Capacity Analyses

- At the intersection of Nashville Highway (US-31) and Springmeade Boulevard/Private Drive, the northbound left-turn movement will operate at LOS E during both the AM and PM peak hour periods. The northbound through movement will operate at LOS F during the AM peak hour period. The northbound through/right-turn movement will operate at LOS F during the AM peak hour period. The southbound left-turn movement will operate at LOS F during the AM peak hour period. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound shared through/right-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at a LOS E during the AM peak hour.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, with projected traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Old Highway 31, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The westbound right-turn movement will operate at LOS F during both the AM and PM peak hour periods.
- At the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way, the northbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The southbound through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound shared left-turn/through movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E and F during the AM and PM peak hour periods. The westbound right-turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS F during both the AM and PM peak hours, respectively, with projected traffic volumes and existing signal timings.
- At the intersection of Nashville Highway (US-31) and Greens Mill Road, the northbound left-turn movement will operate at LOS E and F during the AM and PM peak hour periods, respectively. The northbound through movement will operate at LOS F during both the AM and PM peak hour periods. The southbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The southbound through movement

will operate at LOS F during both the AM and PM peak hour periods. The eastbound left-turn movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS E during both the AM and PM peak hour periods. The westbound right turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS E during both the AM and PM peak hours, with projected traffic volumes and optimized signal timings.
- At the intersection of Nashville Highway (US-31) and Hidden Creek Way, the northbound left-turn movement will operate at LOS F during the PM peak hour period. The eastbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The eastbound right-turn movement will operate at LOS E during the PM peak hour period. The westbound shared left-turn/through movement will operate at LOS F during both the AM and PM peak hour periods. The westbound right-turn movement will operate at LOS E during the PM peak hour period.
    - The overall intersection will operate at LOS D during both the AM and PM peak hours, respectively, with projected traffic volumes and optimized signal timings.
- All other critical movements to the study intersections surrounding the proposed development currently operate at a minimum of LOS D during the AM and PM peak hours of operation with projected traffic volumes.

Queue Length Analyses

- Based on the capacity analyses and existing/proposed turn lane lengths at the study intersections, the following turn lanes should be extended to manage the queue lengths for these movements based on projected traffic volumes. The proposed lane extensions are solely related to the turn lane movements directly impacted by construction of the development.
    - If feasible, extend the storage length of the southbound left-turn lane at the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way from 130 feet to approximately 300 feet.
    - If feasible, extend the storage length of the northbound right-turn lane at the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way from 125 feet to approximately 200 feet.
    - If feasible, extend the storage length of the westbound right-turn lane at the intersection of Nashville Highway (US-31) and Arden Village Drive/Grove Park Way from 100 feet to approximately 250 feet.

Turn Lane Analyses

- It was determined that the northbound approach of Nashville Highway (US-31) at its intersection with Old Highway 31/Site Access 1 will warrant one (1) exclusive lane for right-turning movements with projected traffic volumes.
- It was determined that the southbound approach of Nashville Highway (US-31) at its intersection with Old Highway 31/Site Access 1 will warrant one (1) exclusive lane for left-turning movements with projected traffic volumes.
- It was determined that the southbound approach of Site Access 2 at its intersection with Persimmon Street will be sufficient with one (1) shared lane for left-turn/through/right-turn movements with projected traffic volumes.

Recommendations

Based on the analyses within this study, and a review of the proposed development's access plan, the recommendations below have been presented to be implemented as part of the proposed 2504 Nashville Highway Mixed-Use Development in Columbia, TN. These recommendations will be constructed in addition to the various improvements at the study intersections outlined in previously conducted traffic studies within the area. Figure 11 shows a summary of the recommended improvements for this development.

Improvement Recommendations for the 2504 Nashville Highway Mixed-Use Development

Nashville Highway (US-31) and Spring Meade Boulevard

- Interconnect and optimize the existing and proposed traffic signals along Nashville Highway (US-31) within the study area to operate as a coordinated system.

Nashville Highway (US-31) and Old Highway 31/Site Access 1

- Construct Site Access 1 along Nashville Highway with a left-in/right-in/right-out configuration to be aligned with Old Highway 31 with one (1) inbound lane and one (1) outbound lane operating under a stop condition according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- Construct one (1) exclusive right-turn lane on the northbound approach of Nashville Highway (US-31) at its intersection with Old Highway 31/Site Access 1. The right-turn lane shall provide a minimum of 300 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- Construct one (1) exclusive left-turn lane on the southbound approach of Nashville Highway (US-31) at its intersection with Old Highway 31/Site Access 1. The left-turn lane shall provide a minimum of 300 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards.

Nashville Highway (US-31) and Arden Village Drive/Grove Park Way

- Interconnect and optimize the existing and proposed traffic signals along Nashville Highway (US-31) within the study area to operate as a coordinated system.
- If feasible, extend the existing right-turn lane on the northbound approach of Nashville Highway (US-31) at its intersection with Arden Village Drive/Grove Park Way. The right-turn lane shall be extended to a minimum of 300 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- If feasible, extend the existing left-turn lane on the southbound approach of Nashville Highway (US-31) at its intersection with Arden Village Drive/Grove Park Way. The left-turn lane shall be extended to a minimum of 200 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards.
- If feasible, extend the existing right-turn lane on the westbound approach of Grove Park Way at its intersection with Nashville Highway (US-31). The right-turn lane shall be

extended to a minimum of 250 feet of storage and taper lengths according to MUTCD, AASHTO, TDOT, and City of Columbia standards.

Persimmon Street and Site Access 2

- Construct Site Access 2 along Persimmon Street via the existing stub-out with one (1) inbound lane and one (1) outbound lane operating under a stop condition according to MUTCD, AASHTO, TDOT, and City of Columbia standards.

Nashville Highway (US-31) and Greens Mill Road

- Interconnect and optimize the existing and proposed traffic signals along Nashville Highway (US-31) within the study area to operate as a coordinated system.

Nashville Highway (US-31) and Hidden Creek Way

- Interconnect and optimize the existing and proposed traffic signals along Nashville Highway (US-31) within the study area to operate as a coordinated system.

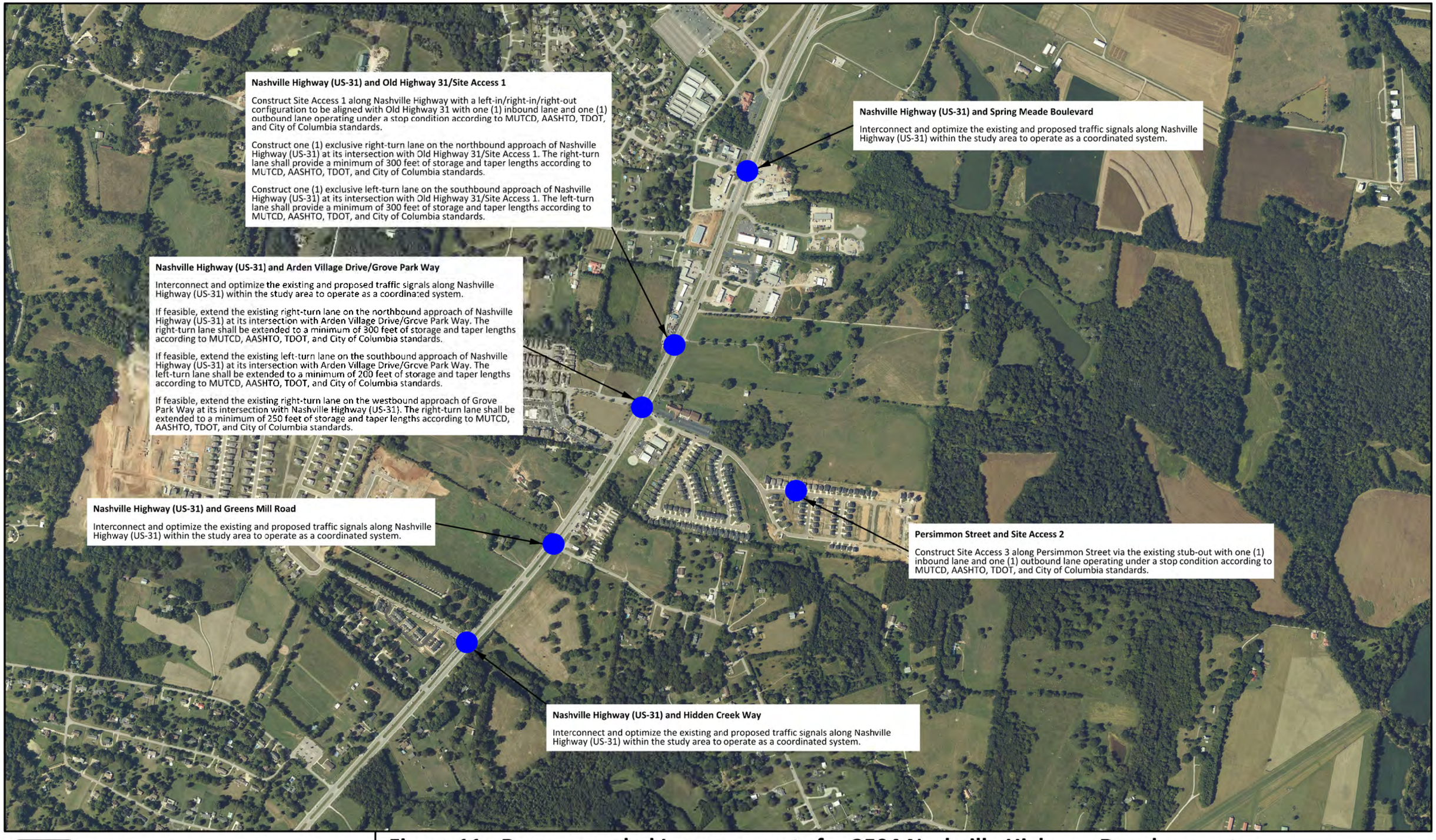


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Figure 11 - Recommended Improvements for 2504 Nashville Highway Development

2504 Nashville Highway Mixed-Use Development ● Columbia, TN ● Approximate Scale: 1" = 800'

Prepared by T-Square Engineering, Inc.

1329 West Main Street ● Franklin, TN 37064 ● www.T2-Eng.com

800' 400' 0' 800'

1 inch = 800 feet

APPENDIX

APPENDIX A – DETAILED TURNING MOVEMENT COUNTS AND SIGNAL TIMINGS

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 1
Intersection: US-31 (NASHVILLE HIGHWAY) & SPRING MEADE BOULEV

Southbound: US-31 (Nashville Highway)
Westbound: Driveway
Northbound: US-31 (Nashville Highway)
Eastbound: Spring Meade Boulevard

Lat/Long: 35.711906, -86.973619

Count Date: 3/10/2020

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

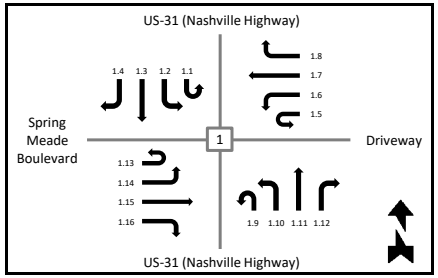
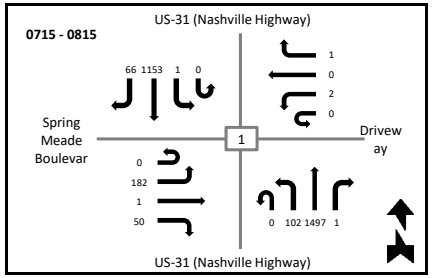


Figure 2 - AM Peak Hour TMC



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	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Driveway						US-31 (Nashville Highway)						Spring Meade Boulevard					
Time	U-Turn 1.1	Left 1.2	Thru 1.3	Right 1.4	Peds X-Walk	App Total	U-Turn 1.5	Left 1.6	Thru 1.7	Right 1.8	Peds X-Walk	App Total	U-Turn 1.9	Left 1.10	Thru 1.11	Right 1.12	Peds X-Walk	App Total	U-Turn 1.13	Left 1.14	Thru 1.15	Right 1.16	Peds X-Walk	App Total
0630 - 0645	0	0	285	11	0	296	0	0	0	0	0	0	0	12	299	0	0	311	0	21	0	22	0	43
0645 - 0700	0	0	214	15	0	229	0	0	0	0	0	0	0	13	360	1	0	374	0	20	0	10	0	30
0700 - 0715	0	0	230	10	0	240	0	1	0	0	0	1	0	18	313	0	0	331	0	43	0	12	0	55
0715 - 0730	0	0	276	21	0	297	0	0	0	0	0	0	0	39	399	0	0	438	0	49	0	12	0	61
0730 - 0745	0	0	325	14	0	339	0	1	0	0	0	1	0	31	363	1	0	395	0	64	0	20	0	84
0745 - 0800	0	0	276	15	0	291	0	0	0	0	0	0	0	21	419	0	0	440	0	40	0	13	0	53
0800 - 0815	0	1	276	16	0	293	0	1	0	1	0	2	0	11	316	0	0	327	0	29	1	5	0	35
0815 - 0830	0	0	255	15	0	270	0	0	0	0	0	0	0	4	356	0	0	360	0	29	0	5	0	34
Grand Total	**0**	**1**	**2137**	**117**	**0**	**2255**	**0**	**3**	**0**	**1**	**0**	**4**	**0**	**149**	**2825**	**2**	**0**	**2976**	**0**	**295**	**1**	**99**	**0**	**395**
Peak Hour Total																								
0715 - 0815	**0**	**1**	**1153**	**66**	**0**	**1220**	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**102**	**1497**	**1**	**0**	**1600**	**0**	**182**	**1**	**50**	**0**	**233**
App %	0.00%	0.04%	94.77%	5.19%			0.00%	75.00%	0.00%	25.00%			0.00%	5.01%	94.93%	0.07%			0.00%	74.68%	0.25%	25.06%		
Int %	0.00%	0.02%	37.96%	2.08%		40.05%	0.00%	0.05%	0.00%	0.02%		0.07%	0.00%	2.65%	50.18%	0.04%		52.86%	0.00%	5.24%	0.02%	1.76%		7.02%
Cars Total	0	1	2137	117			0	3	0	1			0	149	2825	2			0	295	1	99		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 1
Intersection: US-31 (NASHVILLE HIGHWAY) & SPRING MEADE BOULEVAR

Southbound: US-31 (Nashville Highway)
Westbound: Driveway
Northbound: US-31 (Nashville Highway)
Eastbound: Spring Meade Boulevard

Lat/Long: 35.711906, -86.973619

Count Date: 3/10/2020

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

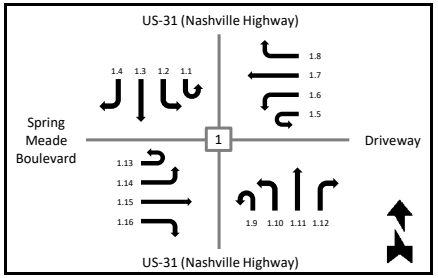
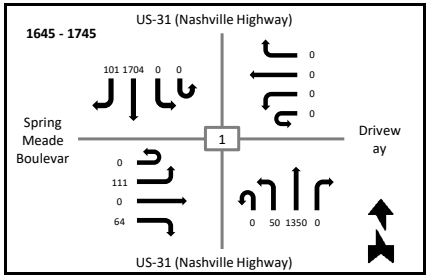


Figure 2 - PM Peak Hour TMC



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	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Driveway						US-31 (Nashville Highway)						Spring Meade Boulevard					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	1.1	1.2	1.3	1.4	X-Walk	Total	1.5	1.6	1.7	1.8	X-Walk	Total	1.9	1.10	1.11	1.12	X-Walk	Total	1.13	1.14	1.15	1.16	X-Walk	Total
1600 - 1615	0	0	384	24	0	408	0	2	0	0	0	2	0	7	297	0	0	304	0	24	0	17	0	41
1615 - 1630	0	0	423	24	0	447	0	0	0	0	0	0	0	13	325	0	0	338	0	30	0	10	0	40
1630 - 1645	0	0	446	23	0	469	0	0	0	0	0	0	0	6	290	0	0	296	0	27	0	18	0	45
1645 - 1700	0	0	392	26	0	418	0	0	0	0	0	0	0	9	334	0	0	343	0	39	0	19	0	58
1700 - 1715	0	0	455	26	0	481	0	0	0	0	0	0	0	13	319	0	0	332	0	26	0	19	0	45
1715 - 1730	0	0	417	23	0	440	0	0	0	0	0	0	0	20	340	0	0	360	0	23	0	14	0	37
1730 - 1745	0	0	440	26	0	466	0	0	0	0	0	0	0	8	357	0	0	365	0	23	0	12	0	35
1745 - 1800	0	0	388	31	0	419	0	0	0	0	0	0	0	6	264	0	0	270	0	27	0	15	0	42
Grand Total	**0**	**0**	**3345**	**203**	**0**	**3548**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**82**	**2526**	**0**	**0**	**2608**	**0**	**219**	**0**	**124**	**0**	**343**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1704**	**101**	**0**	**1805**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**50**	**1350**	**0**	**0**	**1400**	**0**	**111**	**0**	**64**	**0**	**175**
App %	0.00%	0.00%	94.28%	5.72%			0.00%	100.00%	0.00%	0.00%			0.00%	3.14%	96.86%	0.00%			0.00%	63.85%	0.00%	36.15%		
Int %	0.00%	0.00%	51.45%	3.12%		54.58%	0.00%	0.03%	0.00%	0.00%		0.03%	0.00%	1.26%	38.86%	0.00%		40.12%	0.00%	3.37%	0.00%	1.91%		5.28%
Cars Total	0	0	3345	203			0	2	0	0			0	82	2526	0			0	219	0	124		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 2
Intersection: NASHVILLE HIGHWAY & OLD HIGHWAY 31

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Old Highway 31

Lat/Long: 35.707620, -86.975748

Count Date: 3/10/2020

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

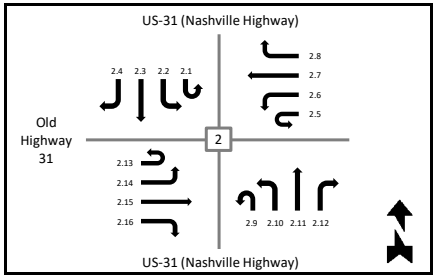
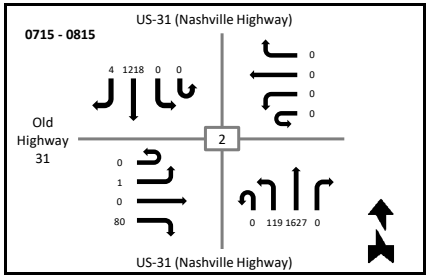


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Old Highway 31					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
0630 - 0645	0	0	316	0	0	316	0	0	0	0	0	0	0	16	315	0	0	331	0	0	0	21	0	21
0645 - 0700	0	0	242	0	0	242	0	0	0	0	0	0	0	26	358	0	0	384	0	0	0	11	0	11
0700 - 0715	0	0	246	0	0	246	0	0	0	0	0	0	0	41	385	0	0	426	0	0	0	8	0	8
0715 - 0730	0	0	303	0	0	303	0	0	0	0	0	0	0	37	453	0	0	490	0	0	0	20	0	20
0730 - 0745	0	0	351	2	0	353	0	0	0	0	0	0	0	50	439	0	0	489	0	1	0	26	0	27
0745 - 0800	0	0	286	1	0	287	0	0	0	0	0	0	0	17	398	0	0	415	0	0	0	28	0	28
0800 - 0815	0	0	278	1	0	279	0	0	0	0	0	0	0	15	337	0	0	352	0	0	0	6	0	6
0815 - 0830	0	0	258	0	0	258	0	0	0	0	0	0	0	15	381	0	0	396	0	1	0	11	0	12
Grand Total	**0**	**0**	**2280**	**4**	**0**	**2284**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**217**	**3066**	**0**	**0**	**3283**	**0**	**2**	**0**	**131**	**0**	**133**
Peak Hour Total																								
0715 - 0815	**0**	**0**	**1218**	**4**	**0**	**1222**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**119**	**1627**	**0**	**0**	**1746**	**0**	**1**	**0**	**80**	**0**	**81**
App %	0.00%	0.00%	99.82%	0.18%			0.00%	0.00%	0.00%	0.00%			0.00%	6.61%	93.39%	0.00%			0.00%	1.50%	0.00%	98.50%		
Int %	0.00%	0.00%	40.00%	0.07%		40.07%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	3.81%	53.79%	0.00%		57.60%	0.00%	0.04%	0.00%	2.30%		2.33%
Cars Total	0	0	2280	4			0	0	0	0			0	217	3066	0			0	2	0	131		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 2
Intersection: NASHVILLE HIGHWAY & OLD HIGHWAY 31

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Old Highway 31

Lat/Long: 35.707620, -86.975748

Count Date: 3/10/2020

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

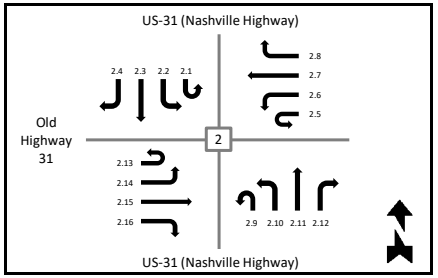
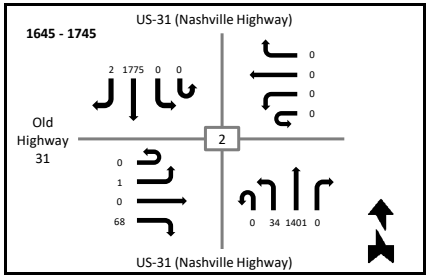


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Old Highway 31					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
1600 - 1615	0	0	435	1	0	436	0	0	0	0	0	0	0	4	304	0	0	308	0	1	0	18	0	19
1615 - 1630	0	0	431	2	0	433	0	0	0	0	0	0	0	8	351	0	0	359	0	0	0	20	0	20
1630 - 1645	0	0	444	0	0	444	0	0	0	0	0	0	0	12	292	0	0	304	0	0	0	21	0	21
1645 - 1700	0	0	442	0	0	442	0	0	0	0	0	0	0	10	356	0	0	366	0	0	0	24	0	24
1700 - 1715	0	0	436	0	0	436	0	0	0	0	0	0	0	13	302	0	0	315	0	0	0	20	0	20
1715 - 1730	0	0	451	1	0	452	0	0	0	0	0	0	0	6	378	0	0	384	0	0	0	13	0	13
1730 - 1745	0	0	446	1	0	447	0	0	0	0	0	0	0	5	365	0	0	370	0	1	0	11	0	12
1745 - 1800	0	0	406	0	0	406	0	0	0	0	0	0	0	7	286	0	0	293	0	0	0	13	0	13
Grand Total	**0**	**0**	**3491**	**5**	**0**	**3496**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**65**	**2634**	**0**	**0**	**2699**	**0**	**2**	**0**	**140**	**0**	**142**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1775**	**2**	**0**	**1777**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**1401**	**0**	**0**	**1435**	**0**	**1**	**0**	**68**	**0**	**69**
App %	0.00%	0.00%	99.86%	0.14%			0.00%	0.00%	0.00%	0.00%			0.00%	2.41%	97.59%	0.00%			0.00%	1.41%	0.00%	98.59%		
Int %	0.00%	0.00%	55.09%	0.08%		55.17%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	1.03%	41.57%	0.00%		42.59%	0.00%	0.03%	0.00%	2.21%		2.24%
Cars Total	0	0	3491	5			0	0	0	0			0	65	2634	0			0	2	0	140		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**100.00%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**100.00%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 3
Intersection: US-31 (NASHVILLE HIGHWAY) & ARDEN VILLAGE DRIVE/GR(

Southbound: US-31 (Nashville Highway)
Westbound: Grove Park Way
Northbound: US-31 (Nashville Highway)
Eastbound: Arden Village Drive

Lat/Long: 35.706079, -86.976717

Count Date: 3/10/2020

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

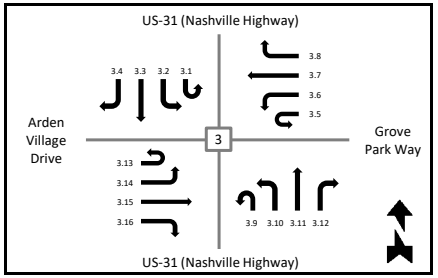
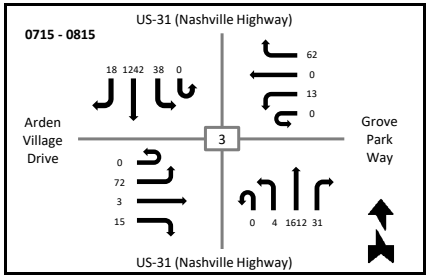


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Grove Park Way						US-31 (Nashville Highway)						Arden Village Drive					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	3.1	3.2	3.3	3.4	X-Walk	Total	3.5	3.6	3.7	3.8	X-Walk	Total	3.9	3.10	3.11	3.12	X-Walk	Total	3.13	3.14	3.15	3.16	X-Walk	Total
0630 - 0645	0	2	334	1	0	337	0	2	0	9	0	11	0	1	309	1	0	311	0	13	0	4	0	17
0645 - 0700	0	1	250	2	0	253	0	3	0	11	0	14	0	0	359	4	0	363	0	14	0	0	0	14
0700 - 0715	0	3	247	4	0	254	0	5	0	10	0	15	0	1	398	2	0	401	0	18	0	3	0	21
0715 - 0730	0	6	314	3	0	323	0	1	0	13	0	14	0	0	456	10	0	466	0	21	1	4	0	26
0730 - 0745	0	5	368	4	0	377	0	4	0	16	0	20	0	2	460	8	0	470	0	13	1	4	0	18
0745 - 0800	0	12	298	4	0	314	0	1	0	16	0	17	0	1	378	3	0	382	0	21	1	5	0	27
0800 - 0815	0	15	262	7	0	284	0	7	0	17	0	24	0	1	318	10	0	329	0	17	0	2	0	19
0815 - 0830	0	11	255	3	0	269	0	5	1	19	0	25	0	6	357	17	0	380	0	20	0	2	0	22
Grand Total	**0**	**55**	**2328**	**28**	**0**	**2411**	**0**	**28**	**1**	**111**	**0**	**140**	**0**	**12**	**3035**	**55**	**0**	**3102**	**0**	**137**	**3**	**24**	**0**	**164**
Peak Hour Total																								
0715 - 0815	**0**	**38**	**1242**	**18**	**0**	**1298**	**0**	**13**	**0**	**62**	**0**	**75**	**0**	**4**	**1612**	**31**	**0**	**1647**	**0**	**72**	**3**	**15**	**0**	**90**
App %	0.00%	2.28%	96.56%	1.16%			0.00%	20.00%	0.71%	79.29%			0.00%	0.39%	97.84%	1.77%			0.00%	83.54%	1.83%	14.63%		
Int %	0.00%	0.95%	40.02%	0.48%		41.45%	0.00%	0.48%	0.02%	1.91%		2.41%	0.00%	0.21%	52.17%	0.95%		53.33%	0.00%	2.36%	0.05%	0.41%		2.82%
Cars Total	0	55	2328	28			0	28	1	111			0	12	3035	55			0	137	3	24		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 3
Intersection: US-31 (NASHVILLE HIGHWAY) & ARDEN VILLAGE DRIVE/GR(

Southbound: US-31 (Nashville Highway)
Westbound: Grove Park Way
Northbound: US-31 (Nashville Highway)
Eastbound: Arden Village Drive

Lat/Long: 35.706079, -86.976717

Count Date: 3/10/2020

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

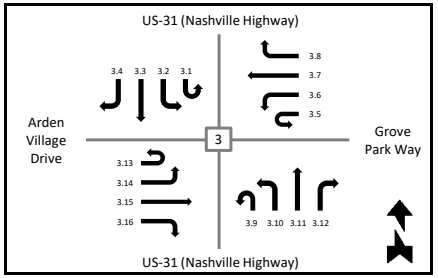
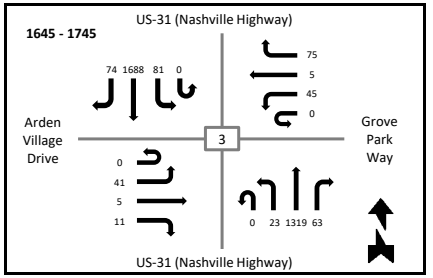


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Grove Park Way						US-31 (Nashville Highway)						Arden Village Drive					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	3.1	3.2	3.3	3.4	X-Walk	Total	3.5	3.6	3.7	3.8	X-Walk	Total	3.9	3.10	3.11	3.12	X-Walk	Total	3.13	3.14	3.15	3.16	X-Walk	Total
1600 - 1615	0	16	426	11	0	453	0	3	2	15	0	20	0	1	282	11	0	294	0	11	1	3	0	15
1615 - 1630	0	10	419	22	0	451	0	4	2	11	0	17	0	4	341	11	0	356	0	7	0	5	0	12
1630 - 1645	0	16	429	20	0	465	0	9	3	11	0	23	0	7	282	7	0	296	0	11	0	2	0	13
1645 - 1700	0	18	432	16	0	466	0	9	1	12	0	22	0	6	347	11	0	364	0	7	1	2	0	10
1700 - 1715	0	25	415	16	0	456	0	11	1	24	0	36	0	8	276	20	0	304	0	15	1	5	0	21
1715 - 1730	0	17	430	17	0	464	0	17	2	20	0	39	0	4	359	17	0	380	0	5	1	1	0	7
1730 - 1745	0	21	411	25	0	457	0	8	1	19	0	28	0	5	337	15	0	357	0	14	2	3	0	19
1745 - 1800	0	17	387	15	0	419	0	9	1	18	0	28	0	5	271	9	0	285	0	4	2	1	0	7
Grand Total	**0**	**140**	**3349**	**142**	**0**	**3631**	**0**	**70**	**13**	**130**	**0**	**213**	**0**	**40**	**2495**	**101**	**0**	**2636**	**0**	**74**	**8**	**22**	**0**	**104**
Peak Hour Total																								
1645 - 1745	**0**	**81**	**1688**	**74**	**0**	**1843**	**0**	**45**	**5**	**75**	**0**	**125**	**0**	**23**	**1319**	**63**	**0**	**1405**	**0**	**41**	**5**	**11**	**0**	**57**
App %	0.00%	3.86%	92.23%	3.91%			0.00%	32.86%	6.10%	61.03%			0.00%	1.52%	94.65%	3.83%			0.00%	71.15%	7.69%	21.15%		
Int %	0.00%	2.13%	50.87%	2.16%		55.15%	0.00%	1.06%	0.20%	1.97%		3.24%	0.00%	0.61%	37.89%	1.53%		40.04%	0.00%	1.12%	0.12%	0.33%		1.58%
Cars Total	0	140	3349	142			0	70	13	130			0	40	2495	101			0	74	8	22		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 4
Intersection: US-31 (NASHVILLE HIGHWAY) & GREENS MILL ROAD

Southbound: US-31 (Nashville Highway)
Westbound: Greens Mill Road
Northbound: US-31 (Nashville Highway)
Eastbound:

Lat/Long: 35.702686, -86.979380

Count Date: 1/15/2019

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

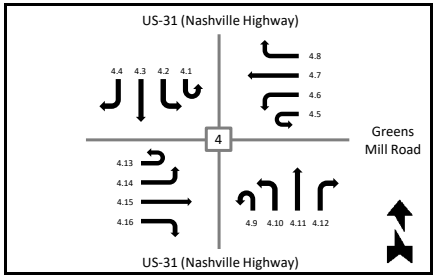
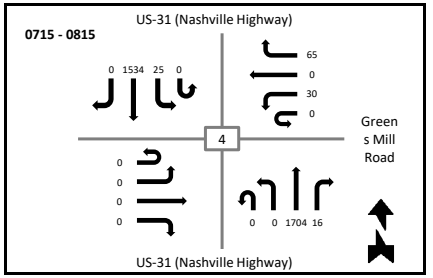


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Greens Mill Road						US-31 (Nashville Highway)											
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
0600 - 0615	0	3	183	0	0	186	0	3	0	3	0	6	0	0	327	3	0	330	0	0	0	0	0	0
0615 - 0630	0	3	448	0	0	451	0	2	0	8	0	10	0	0	306	1	0	307	0	0	0	0	0	0
0630 - 0645	0	4	328	0	0	332	0	3	0	2	0	5	0	0	368	4	0	372	0	0	0	0	0	0
0645 - 0700	0	2	266	0	0	268	0	7	0	16	0	23	0	0	382	1	0	383	0	0	0	0	0	0
0700 - 0715	0	4	283	0	0	287	0	6	0	25	0	31	0	0	378	1	0	379	0	0	0	0	0	0
0715 - 0730	0	4	362	0	0	366	0	10	0	25	0	35	0	0	462	6	0	468	0	0	0	0	0	0
0730 - 0745	0	11	450	0	0	461	0	9	0	21	0	30	0	0	459	3	0	462	0	0	0	0	0	0
0745 - 0800	0	6	439	0	0	445	0	6	0	12	0	18	0	0	398	4	0	402	0	0	0	0	0	0
0800 - 0815	0	4	283	0	0	287	0	5	0	7	0	12	0	0	385	3	0	388	0	0	0	0	0	0
0815 - 0830	0	6	224	0	0	230	0	6	0	6	0	12	0	0	363	5	0	368	0	0	0	0	0	0
0830 - 0845	0	3	248	0	0	251	0	6	0	11	0	17	0	0	295	6	0	301	0	0	0	0	0	0
0845 - 0900	0	6	246	0	0	252	0	3	0	7	0	10	0	0	274	2	0	276	0	0	0	0	0	0
Grand Total	**0**	**56**	**3760**	**0**	**0**	**3816**	**0**	**66**	**0**	**143**	**0**	**209**	**0**	**0**	**4397**	**39**	**0**	**4436**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
0715 - 0815	**0**	**25**	**1534**	**0**	**0**	**1559**	**0**	**30**	**0**	**65**	**0**	**95**	**0**	**0**	**1704**	**16**	**0**	**1720**	**0**	**0**	**0**	**0**	**0**	**0**
App %	0.00%	1.47%	98.53%	0.00%			0.00%	31.58%	0.00%	68.42%			0.00%	0.00%	99.12%	0.88%			0.00%	0.00%	0.00%	0.00%		
Int %	0.00%	0.66%	44.44%	0.00%		45.10%	0.00%	0.78%	0.00%	1.69%		2.47%	0.00%	0.00%	51.97%	0.46%		52.43%	0.00%	0.00%	0.00%	0.00%		0.00%
Cars Total	0	56	3570	0			0	66	0	140			0	0	4223	37			0	0	0	0		
Heavy Total	0	0	190	0			0	0	0	3			0	0	174	2			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**94.95%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**97.90%**			**0.00%**	**0.00%**	**96.04%**	**94.87%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**5.05%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**2.10%**			**0.00%**	**0.00%**	**3.96%**	**5.13%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 4
Intersection: US-31 (NASHVILLE HIGHWAY) & GREENS MILL ROAD

Southbound: US-31 (Nashville Highway)
Westbound: Greens Mill Road
Northbound: US-31 (Nashville Highway)
Eastbound:

Lat/Long: 35.702686, -86.979380

Count Date: 1/15/2019

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

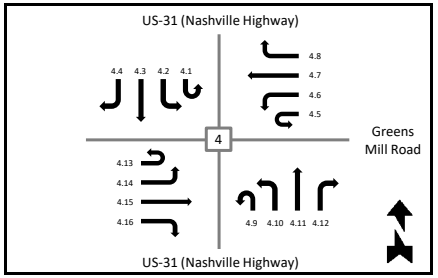
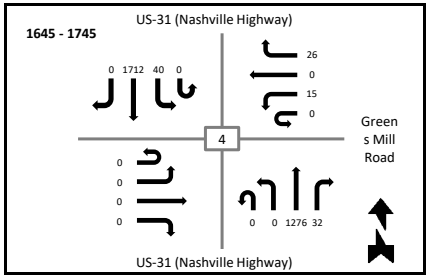


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Greens Mill Road						US-31 (Nashville Highway)											
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
1500 - 1515	0	27	424	0	0	451	0	5	0	4	0	9	0	0	256	6	0	262	0	0	0	0	0	0
1515 - 1530	0	12	408	0	0	420	0	2	0	6	0	8	0	0	347	8	0	355	0	0	0	0	0	0
1530 - 1545	0	12	480	0	0	492	0	2	0	10	0	12	0	0	326	4	0	330	0	0	0	0	0	0
1545 - 1600	0	13	424	0	0	437	0	7	0	9	0	16	0	0	346	6	0	352	0	0	0	0	0	0
1600 - 1615	0	7	370	0	0	377	0	5	0	8	0	13	0	0	271	10	0	281	0	0	0	0	0	0
1615 - 1630	0	15	439	0	0	454	0	8	0	6	0	14	0	0	314	8	0	322	0	0	0	0	0	0
1630 - 1645	0	14	455	0	0	469	0	6	0	10	0	16	0	0	353	9	0	362	0	0	0	0	0	0
1645 - 1700	0	13	453	0	0	466	0	2	0	9	0	11	0	0	320	6	0	326	0	0	0	0	0	0
1700 - 1715	0	10	427	0	0	437	0	6	0	8	0	14	0	0	325	10	0	335	0	0	0	0	0	0
1715 - 1730	0	10	416	0	0	426	0	5	0	6	0	11	0	0	319	6	0	325	0	0	0	0	0	0
1730 - 1745	0	7	416	0	0	423	0	2	0	3	0	5	0	0	312	10	0	322	0	0	0	0	0	0
1745 - 1800	0	1	371	0	0	372	0	3	0	5	0	8	0	0	284	2	0	286	0	0	0	0	0	0
Grand Total	**0**	**141**	**5083**	**0**	**0**	**5224**	**0**	**53**	**0**	**84**	**0**	**137**	**0**	**0**	**3773**	**85**	**0**	**3858**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
1645 - 1745	**0**	**40**	**1712**	**0**	**0**	**1752**	**0**	**15**	**0**	**26**	**0**	**41**	**0**	**0**	**1276**	**32**	**0**	**1308**	**0**	**0**	**0**	**0**	**0**	**0**
App %	0.00%	2.70%	97.30%	0.00%			0.00%	38.69%	0.00%	61.31%			0.00%	0.00%	97.80%	2.20%			0.00%	0.00%	0.00%	0.00%		
Int %	0.00%	1.53%	55.14%	0.00%		56.67%	0.00%	0.57%	0.00%	0.91%		1.49%	0.00%	0.00%	40.93%	0.92%		41.85%	0.00%	0.00%	0.00%	0.00%		0.00%
Cars Total	0	140	4953	0			0	51	0	83			0	0	3648	82			0	0	0	0		
Heavy Total	0	1	130	0			0	2	0	1			0	0	125	3			0	0	0	0		
% Cars	**0.00%**	**99.29%**	**97.44%**	**0.00%**			**0.00%**	**96.23%**	**0.00%**	**98.81%**			**0.00%**	**0.00%**	**96.69%**	**96.47%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**0.71%**	**2.56%**	**0.00%**			**0.00%**	**3.77%**	**0.00%**	**1.19%**			**0.00%**	**0.00%**	**3.31%**	**3.53%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 5
Intersection: US-31 (NASHVILLE HIGHWAY) & HIDDEN CREEK WAY

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Hidden Creek Way

Lat/Long: 35.700319, -86.981818

Count Date: 1/15/2019

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

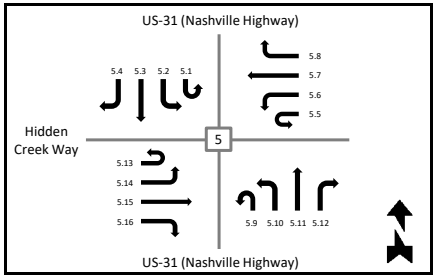
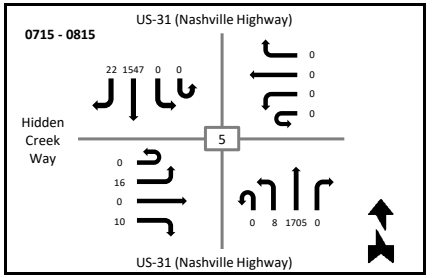


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Hidden Creek Way					
Time	U-Turn 5.1	Left 5.2	Thru 5.3	Right 5.4	Peds X-Walk	App Total	U-Turn 5.5	Left 5.6	Thru 5.7	Right 5.8	Peds X-Walk	App Total	U-Turn 5.9	Left 5.10	Thru 5.11	Right 5.12	Peds X-Walk	App Total	U-Turn 5.13	Left 5.14	Thru 5.15	Right 5.16	Peds X-Walk	App Total
0600 - 0615	0	0	196	2	0	198	0	0	0	0	0	0	0	0	346	0	0	346	0	5	0	0	0	5
0615 - 0630	0	0	440	1	0	441	0	0	0	0	0	0	0	2	294	0	0	296	0	4	0	1	0	5
0630 - 0645	0	0	344	5	0	349	0	0	0	0	0	0	1	1	377	0	0	379	0	7	0	1	0	8
0645 - 0700	0	0	249	4	0	253	0	0	0	0	0	0	0	4	388	0	0	392	0	1	0	3	0	4
0700 - 0715	0	0	295	4	0	299	0	0	0	0	0	0	0	2	366	0	0	368	0	6	0	3	0	9
0715 - 0730	0	0	378	6	0	384	0	0	0	0	0	0	0	3	493	0	0	496	0	3	0	3	0	6
0730 - 0745	0	0	460	5	0	465	0	0	0	0	0	0	0	1	437	0	0	438	0	5	0	2	0	7
0745 - 0800	0	0	419	8	0	427	0	0	0	0	0	0	0	2	400	0	0	402	0	5	0	3	0	8
0800 - 0815	0	0	290	3	0	293	0	0	0	0	0	0	0	2	375	0	0	377	0	3	0	2	0	5
0815 - 0830	0	0	227	6	0	233	0	0	0	0	0	0	0	1	363	0	0	364	0	4	0	0	0	4
0830 - 0845	0	0	249	5	0	254	0	0	0	0	0	0	0	3	298	0	0	301	0	5	0	2	0	7
0845 - 0900	0	0	246	4	0	250	0	0	0	0	0	0	0	0	262	0	0	262	0	8	0	1	0	9
Grand Total	**0**	**0**	**3793**	**53**	**0**	**3846**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**21**	**4399**	**0**	**0**	**4421**	**0**	**56**	**0**	**21**	**0**	**77**
Peak Hour Total																								
0715 - 0815	**0**	**0**	**1547**	**22**	**0**	**1569**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**1705**	**0**	**0**	**1713**	**0**	**16**	**0**	**10**	**0**	**26**
App %	0.00%	0.00%	98.62%	1.38%			0.00%	0.00%	0.00%	0.00%			0.02%	0.48%	99.50%	0.00%			0.00%	72.73%	0.00%	27.27%		
Int %	0.00%	0.00%	45.46%	0.64%		46.09%	0.00%	0.00%	0.00%	0.00%		0.00%	0.01%	0.25%	52.72%	0.00%		52.98%	0.00%	0.67%	0.00%	0.25%		0.92%
Cars Total	0	0	3610	49			0	0	0	0			1	20	4208	0			0	55	0	19		
Heavy Total	0	0	183	4			0	0	0	0			0	1	191	0			0	1	0	2		
% Cars	**0.00%**	**0.00%**	**95.18%**	**92.45%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**100.00%**	**95.24%**	**95.66%**	**0.00%**			**0.00%**	**98.21%**	**0.00%**	**90.48%**		
% Heavy	**0.00%**	**0.00%**	**4.82%**	**7.55%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**4.76%**	**4.34%**	**0.00%**			**0.00%**	**1.79%**	**0.00%**	**9.52%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 5
Intersection: US-31 (NASHVILLE HIGHWAY) & HIDDEN CREEK WAY

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Hidden Creek Way

Lat/Long: 35.700319, -86.981818

Count Date: 1/15/2019

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

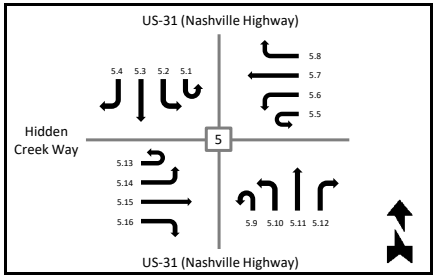
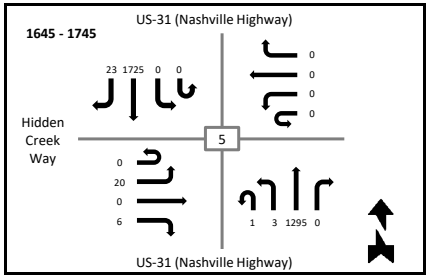


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Hidden Creek Way					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	5.1	5.2	5.3	5.4	X-Walk	Total	5.5	5.6	5.7	5.8	X-Walk	Total	5.9	5.10	5.11	5.12	X-Walk	Total	5.13	5.14	5.15	5.16	X-Walk	Total
1500 - 1515	0	0	414	11	0	425	0	0	0	0	0	0	0	2	277	0	0	279	0	3	0	5	0	8
1515 - 1530	0	0	391	4	0	395	0	0	0	0	0	0	0	0	331	0	0	331	0	5	0	2	0	7
1530 - 1545	0	0	463	6	0	469	0	0	0	0	0	0	0	0	329	0	0	329	0	2	0	0	0	2
1545 - 1600	0	0	438	1	0	439	0	0	0	0	0	0	1	3	348	0	0	352	0	5	0	1	0	6
1600 - 1615	0	0	385	5	0	390	0	0	0	0	0	0	0	1	273	0	0	274	0	5	0	3	0	8
1615 - 1630	0	0	444	4	0	448	0	0	0	0	0	0	0	0	323	0	0	323	0	5	0	1	0	6
1630 - 1645	0	0	449	6	0	455	0	0	0	0	0	0	0	3	361	0	0	364	0	3	0	0	0	3
1645 - 1700	0	0	465	6	0	471	0	0	0	0	0	0	0	1	323	0	0	324	0	7	0	0	0	7
1700 - 1715	0	0	425	7	0	432	0	0	0	0	0	0	1	1	325	0	0	327	0	6	0	0	0	6
1715 - 1730	0	0	425	5	0	430	0	0	0	0	0	0	0	0	327	0	0	327	0	3	0	4	0	7
1730 - 1745	0	0	410	5	0	415	0	0	0	0	0	0	0	1	320	0	0	321	0	4	0	2	0	6
1745 - 1800	0	0	362	6	0	368	0	0	0	0	0	0	1	2	267	0	0	270	0	5	0	1	0	6
Grand Total	**0**	**0**	**5071**	**66**	**0**	**5137**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**14**	**3804**	**0**	**0**	**3821**	**0**	**53**	**0**	**19**	**0**	**72**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1725**	**23**	**0**	**1748**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**1295**	**0**	**0**	**1299**	**0**	**20**	**0**	**6**	**0**	**26**
App %	0.00%	0.00%	98.72%	1.28%			0.00%	0.00%	0.00%	0.00%			0.08%	0.37%	99.56%	0.00%			0.00%	73.61%	0.00%	26.39%		
Int %	0.00%	0.00%	56.16%	0.73%		56.89%	0.00%	0.00%	0.00%	0.00%		0.00%	0.03%	0.16%	42.13%	0.00%		42.31%	0.00%	0.59%	0.00%	0.21%		0.80%
Cars Total	0	0	4935	61			0	0	0	0			3	14	3680	0			0	48	0	17		
Heavy Total	0	0	136	5			0	0	0	0			0	0	124	0			0	5	0	2		
% Cars	**0.00%**	**0.00%**	**97.32%**	**92.42%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**100.00%**	**100.00%**	**96.74%**	**0.00%**			**0.00%**	**90.57%**	**0.00%**	**89.47%**		
% Heavy	**0.00%**	**0.00%**	**2.68%**	**7.58%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**3.26%**	**0.00%**			**0.00%**	**9.43%**	**0.00%**	**10.53%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 1
Intersection: US-31 (NASHVILLE HIGHWAY) & SPRING MEADE BOULEV

Southbound: US-31 (Nashville Highway)
Westbound: Driveway
Northbound: US-31 (Nashville Highway)
Eastbound: Spring Meade Boulevard

Lat/Long: 35.711906, -86.973619

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

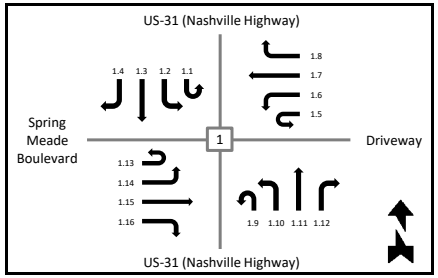
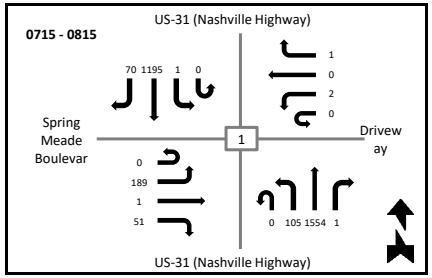


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Driveway						US-31 (Nashville Highway)						Spring Meade Boulevard					
Time	U-Turn 1.1	Left 1.2	Thru 1.3	Right 1.4	Peds X-Walk	App Total	U-Turn 1.5	Left 1.6	Thru 1.7	Right 1.8	Peds X-Walk	App Total	U-Turn 1.9	Left 1.10	Thru 1.11	Right 1.12	Peds X-Walk	App Total	U-Turn 1.13	Left 1.14	Thru 1.15	Right 1.16	Peds X-Walk	App Total
0630 - 0645	0	0	296	11	0	307	0	0	0	0	0	0	0	12	310	0	0	322	0	22	0	23	0	45
0645 - 0700	0	0	222	16	0	238	0	0	0	0	0	0	0	13	374	1	0	388	0	21	0	10	0	31
0700 - 0715	0	0	239	10	0	249	0	1	0	0	0	1	0	19	325	0	0	344	0	45	0	12	0	57
0715 - 0730	0	0	286	22	0	308	0	0	0	0	0	0	0	40	414	0	0	454	0	51	0	12	0	63
0730 - 0745	0	0	337	15	0	352	0	1	0	0	0	1	0	32	377	1	0	410	0	66	0	21	0	87
0745 - 0800	0	0	286	16	0	302	0	0	0	0	0	0	0	22	435	0	0	457	0	42	0	13	0	55
0800 - 0815	0	1	286	17	0	304	0	1	0	1	0	2	0	11	328	0	0	339	0	30	1	5	0	36
0815 - 0830	0	0	265	16	0	281	0	0	0	0	0	0	0	4	369	0	0	373	0	30	0	5	0	35
Grand Total	**0**	**1**	**2217**	**123**	**0**	**2341**	**0**	**3**	**0**	**1**	**0**	**4**	**0**	**153**	**2932**	**2**	**0**	**3087**	**0**	**307**	**1**	**101**	**0**	**409**
Peak Hour Total																								
0715 - 0815	**0**	**1**	**1195**	**70**	**0**	**1266**	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**105**	**1554**	**1**	**0**	**1660**	**0**	**189**	**1**	**51**	**0**	**241**
App %	0.00%	0.04%	94.70%	5.25%			0.00%	75.00%	0.00%	25.00%			0.00%	4.96%	94.98%	0.06%			0.00%	75.06%	0.24%	24.69%		
Int %	0.00%	0.02%	37.96%	2.11%		40.08%	0.00%	0.05%	0.00%	0.02%		0.07%	0.00%	2.62%	50.20%	0.03%		52.85%	0.00%	5.26%	0.02%	1.73%		7.00%
Cars Total	0	1	2137	117			0	3	0	1			0	149	2825	2			0	295	1	99		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**100.00%**	**96.39%**	**95.12%**			**0.00%**	**100.00%**	**0.00%**	**100.00%**			**0.00%**	**97.39%**	**96.35%**	**100.00%**			**0.00%**	**96.09%**	**100.00%**	**98.02%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 1
Intersection: US-31 (NASHVILLE HIGHWAY) & SPRING MEADE BOULEVAR

Southbound: US-31 (Nashville Highway)
Westbound: Driveway
Northbound: US-31 (Nashville Highway)
Eastbound: Spring Meade Boulevard

Lat/Long: 35.711906, -86.973619

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

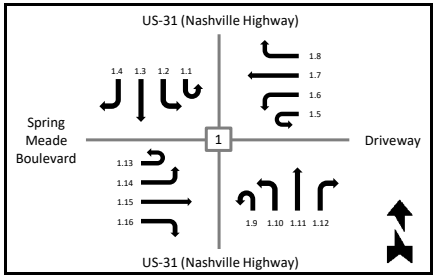
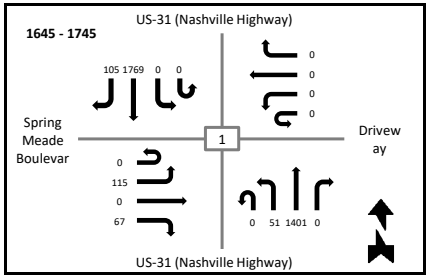


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Driveway						US-31 (Nashville Highway)						Spring Meade Boulevard					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	1.1	1.2	1.3	1.4	X-Walk	Total	1.5	1.6	1.7	1.8	X-Walk	Total	1.9	1.10	1.11	1.12	X-Walk	Total	1.13	1.14	1.15	1.16	X-Walk	Total
1600 - 1615	0	0	398	25	0	423	0	2	0	0	0	2	0	7	308	0	0	315	0	25	0	18	0	43
1615 - 1630	0	0	439	25	0	464	0	0	0	0	0	0	0	13	337	0	0	350	0	31	0	10	0	41
1630 - 1645	0	0	463	24	0	487	0	0	0	0	0	0	0	6	301	0	0	307	0	28	0	19	0	47
1645 - 1700	0	0	407	27	0	434	0	0	0	0	0	0	0	9	347	0	0	356	0	40	0	20	0	60
1700 - 1715	0	0	472	27	0	499	0	0	0	0	0	0	0	13	331	0	0	344	0	27	0	20	0	47
1715 - 1730	0	0	433	24	0	457	0	0	0	0	0	0	0	21	353	0	0	374	0	24	0	15	0	39
1730 - 1745	0	0	457	27	0	484	0	0	0	0	0	0	0	8	370	0	0	378	0	24	0	12	0	36
1745 - 1800	0	0	403	32	0	435	0	0	0	0	0	0	0	6	274	0	0	280	0	28	0	16	0	44
Grand Total	**0**	**0**	**3472**	**211**	**0**	**3683**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**83**	**2621**	**0**	**0**	**2704**	**0**	**227**	**0**	**130**	**0**	**357**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1769**	**105**	**0**	**1874**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**51**	**1401**	**0**	**0**	**1452**	**0**	**115**	**0**	**67**	**0**	**182**
App %	0.00%	0.00%	94.27%	5.73%			0.00%	100.00%	0.00%	0.00%			0.00%	3.07%	96.93%	0.00%			0.00%	63.59%	0.00%	36.41%		
Int %	0.00%	0.00%	51.47%	3.13%		54.60%	0.00%	0.03%	0.00%	0.00%		0.03%	0.00%	1.23%	38.85%	0.00%		40.08%	0.00%	3.36%	0.00%	1.93%		5.29%
Cars Total	0	0	3345	203			0	2	0	0			0	82	2526	0			0	219	0	124		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**96.34%**	**96.21%**			**0.00%**	**100.00%**	**0.00%**	**0.00%**			**0.00%**	**98.80%**	**96.38%**	**0.00%**			**0.00%**	**96.48%**	**0.00%**	**95.38%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 2
Intersection: NASHVILLE HIGHWAY & OLD HIGHWAY 31

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Old Highway 31

Lat/Long: 35.707620, -86.975748

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

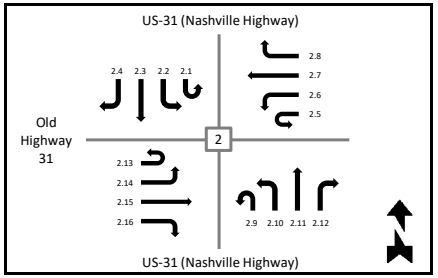
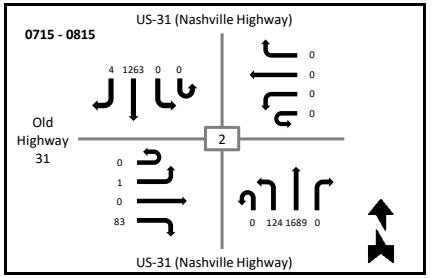


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Old Highway 31					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
0630 - 0645	0	0	328	0	0	328	0	0	0	0	0	0	0	17	327	0	0	344	0	0	0	22	0	22
0645 - 0700	0	0	251	0	0	251	0	0	0	0	0	0	0	27	371	0	0	398	0	0	0	11	0	11
0700 - 0715	0	0	255	0	0	255	0	0	0	0	0	0	0	43	399	0	0	442	0	0	0	8	0	8
0715 - 0730	0	0	314	0	0	314	0	0	0	0	0	0	0	38	470	0	0	508	0	0	0	21	0	21
0730 - 0745	0	0	364	2	0	366	0	0	0	0	0	0	0	52	456	0	0	508	0	1	0	27	0	28
0745 - 0800	0	0	297	1	0	298	0	0	0	0	0	0	0	18	413	0	0	431	0	0	0	29	0	29
0800 - 0815	0	0	288	1	0	289	0	0	0	0	0	0	0	16	350	0	0	366	0	0	0	6	0	6
0815 - 0830	0	0	268	0	0	268	0	0	0	0	0	0	0	16	395	0	0	411	0	1	0	11	0	12
Grand Total	**0**	**0**	**2365**	**4**	**0**	**2369**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**227**	**3181**	**0**	**0**	**3408**	**0**	**2**	**0**	**135**	**0**	**137**
Peak Hour Total																								
0715 - 0815	**0**	**0**	**1263**	**4**	**0**	**1267**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**124**	**1689**	**0**	**0**	**1813**	**0**	**1**	**0**	**83**	**0**	**84**
App %	0.00%	0.00%	99.83%	0.17%			0.00%	0.00%	0.00%	0.00%			0.00%	6.66%	93.34%	0.00%			0.00%	1.46%	0.00%	98.54%		
Int %	0.00%	0.00%	39.99%	0.07%		40.06%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	3.84%	53.79%	0.00%		57.63%	0.00%	0.03%	0.00%	2.28%		2.32%
Cars Total	0	0	2280	4			0	0	0	0			0	217	3066	0			0	2	0	131		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**96.41%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**95.59%**	**96.38%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**97.04%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 2
Intersection: NASHVILLE HIGHWAY & OLD HIGHWAY 31

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Old Highway 31

Lat/Long: 35.707620, -86.975748

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

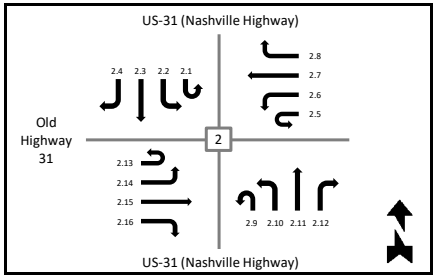
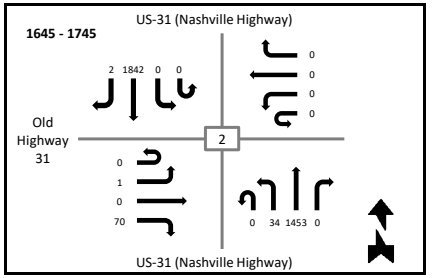


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Old Highway 31					
Time	U-Turn 2.1	Left 2.2	Thru 2.3	Right 2.4	Peds X-Walk	App Total	U-Turn 2.5	Left 2.6	Thru 2.7	Right 2.8	Peds X-Walk	App Total	U-Turn 2.9	Left 2.10	Thru 2.11	Right 2.12	Peds X-Walk	App Total	U-Turn 2.13	Left 2.14	Thru 2.15	Right 2.16	Peds X-Walk	App Total
1600 - 1615	0	0	451	1	0	452	0	0	0	0	0	0	0	4	315	0	0	319	0	1	0	19	0	20
1615 - 1630	0	0	447	2	0	449	0	0	0	0	0	0	0	8	364	0	0	372	0	0	0	21	0	21
1630 - 1645	0	0	461	0	0	461	0	0	0	0	0	0	0	12	303	0	0	315	0	0	0	22	0	22
1645 - 1700	0	0	459	0	0	459	0	0	0	0	0	0	0	10	369	0	0	379	0	0	0	25	0	25
1700 - 1715	0	0	452	0	0	452	0	0	0	0	0	0	0	13	313	0	0	326	0	0	0	21	0	21
1715 - 1730	0	0	468	1	0	469	0	0	0	0	0	0	0	6	392	0	0	398	0	0	0	13	0	13
1730 - 1745	0	0	463	1	0	464	0	0	0	0	0	0	0	5	379	0	0	384	0	1	0	11	0	12
1745 - 1800	0	0	421	0	0	421	0	0	0	0	0	0	0	7	297	0	0	304	0	0	0	13	0	13
Grand Total	**0**	**0**	**3622**	**5**	**0**	**3627**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**65**	**2732**	**0**	**0**	**2797**	**0**	**2**	**0**	**145**	**0**	**147**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1842**	**2**	**0**	**1844**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**34**	**1453**	**0**	**0**	**1487**	**0**	**1**	**0**	**70**	**0**	**71**
App %	0.00%	0.00%	99.86%	0.14%			0.00%	0.00%	0.00%	0.00%			0.00%	2.32%	97.68%	0.00%			0.00%	1.36%	0.00%	98.64%		
Int %	0.00%	0.00%	55.12%	0.08%		55.20%	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.99%	41.58%	0.00%		42.57%	0.00%	0.03%	0.00%	2.21%		2.24%
Cars Total	0	0	3491	5			0	0	0	0			0	65	2634	0			0	2	0	140		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**0.00%**	**96.38%**	**100.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**100.00%**	**96.41%**	**0.00%**			**0.00%**	**100.00%**	**0.00%**	**96.55%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 3
Intersection: US-31 (NASHVILLE HIGHWAY) & ARDEN VILLAGE DRIVE/GR(

Southbound: US-31 (Nashville Highway)
Westbound: Grove Park Way
Northbound: US-31 (Nashville Highway)
Eastbound: Arden Village Drive

Lat/Long: 35.706079, -86.976717

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

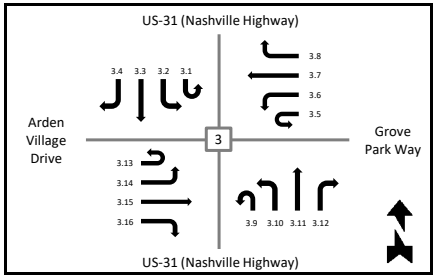
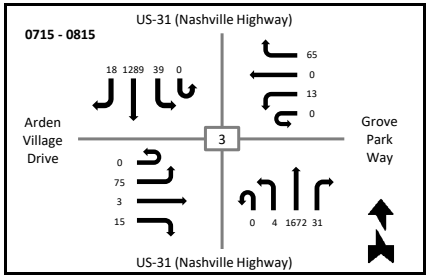


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Grove Park Way						US-31 (Nashville Highway)						Arden Village Drive					
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App
Time	3.1	3.2	3.3	3.4	X-Walk	Total	3.5	3.6	3.7	3.8	X-Walk	Total	3.9	3.10	3.11	3.12	X-Walk	Total	3.13	3.14	3.15	3.16	X-Walk	Total
0630 - 0645	0	2	347	1	0	350	0	2	0	9	0	11	0	1	321	1	0	323	0	13	0	4	0	17
0645 - 0700	0	1	259	2	0	262	0	3	0	11	0	14	0	0	372	4	0	376	0	15	0	0	0	15
0700 - 0715	0	3	256	4	0	263	0	5	0	10	0	15	0	1	413	2	0	416	0	19	0	3	0	22
0715 - 0730	0	6	326	3	0	335	0	1	0	13	0	14	0	0	473	10	0	483	0	22	1	4	0	27
0730 - 0745	0	5	382	4	0	391	0	4	0	17	0	21	0	2	477	8	0	487	0	13	1	4	0	18
0745 - 0800	0	12	309	4	0	325	0	1	0	17	0	18	0	1	392	3	0	396	0	22	1	5	0	28
0800 - 0815	0	16	272	7	0	295	0	7	0	18	0	25	0	1	330	10	0	341	0	18	0	2	0	20
0815 - 0830	0	11	265	3	0	279	0	5	1	20	0	26	0	6	370	18	0	394	0	21	0	2	0	23
Grand Total	**0**	**56**	**2416**	**28**	**0**	**2500**	**0**	**28**	**1**	**115**	**0**	**144**	**0**	**12**	**3148**	**56**	**0**	**3216**	**0**	**143**	**3**	**24**	**0**	**170**
Peak Hour Total																								
0715 - 0815	**0**	**39**	**1289**	**18**	**0**	**1346**	**0**	**13**	**0**	**65**	**0**	**78**	**0**	**4**	**1672**	**31**	**0**	**1707**	**0**	**75**	**3**	**15**	**0**	**93**
App %	0.00%	2.24%	96.64%	1.12%			0.00%	19.44%	0.69%	79.86%			0.00%	0.37%	97.89%	1.74%			0.00%	84.12%	1.76%	14.12%		
Int %	0.00%	0.93%	40.07%	0.46%		41.46%	0.00%	0.46%	0.02%	1.91%		2.39%	0.00%	0.20%	52.21%	0.93%		53.33%	0.00%	2.37%	0.05%	0.40%		2.82%
Cars Total	0	55	2328	28			0	28	1	111			0	12	3035	55			0	137	3	24		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**98.21%**	**96.36%**	**100.00%**			**0.00%**	**100.00%**	**100.00%**	**96.52%**			**0.00%**	**100.00%**	**96.41%**	**98.21%**			**0.00%**	**95.80%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 3
Intersection: US-31 (NASHVILLE HIGHWAY) & ARDEN VILLAGE DRIVE/GR(

Southbound: US-31 (Nashville Highway)
Westbound: Grove Park Way
Northbound: US-31 (Nashville Highway)
Eastbound: Arden Village Drive

Lat/Long: 35.706079, -86.976717

Count Date: 3/10/2020 --> Grown to 2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

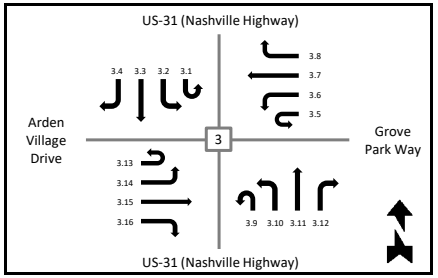
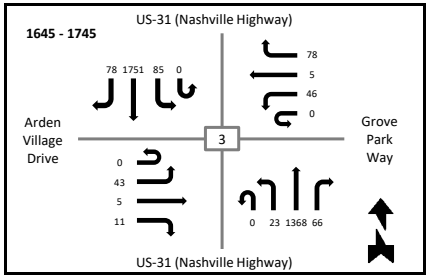


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Grove Park Way						US-31 (Nashville Highway)						Arden Village Drive					
Time	U-Turn 3.1	Left 3.2	Thru 3.3	Right 3.4	Peds X-Walk	App Total	U-Turn 3.5	Left 3.6	Thru 3.7	Right 3.8	Peds X-Walk	App Total	U-Turn 3.9	Left 3.10	Thru 3.11	Right 3.12	Peds X-Walk	App Total	U-Turn 3.13	Left 3.14	Thru 3.15	Right 3.16	Peds X-Walk	App Total
1600 - 1615	0	17	442	11	0	470	0	3	2	16	0	21	0	1	293	11	0	305	0	11	1	3	0	15
1615 - 1630	0	10	435	23	0	468	0	4	2	11	0	17	0	4	354	11	0	369	0	7	0	5	0	12
1630 - 1645	0	17	445	21	0	483	0	9	3	11	0	23	0	7	293	7	0	307	0	11	0	2	0	13
1645 - 1700	0	19	448	17	0	484	0	9	1	12	0	22	0	6	360	11	0	377	0	7	1	2	0	10
1700 - 1715	0	26	431	17	0	474	0	11	1	25	0	37	0	8	286	21	0	315	0	16	1	5	0	22
1715 - 1730	0	18	446	18	0	482	0	18	2	21	0	41	0	4	372	18	0	394	0	5	1	1	0	7
1730 - 1745	0	22	426	26	0	474	0	8	1	20	0	29	0	5	350	16	0	371	0	15	2	3	0	20
1745 - 1800	0	18	402	16	0	436	0	9	1	19	0	29	0	5	281	9	0	295	0	4	2	1	0	7
Grand Total	**0**	**147**	**3475**	**149**	**0**	**3771**	**0**	**71**	**13**	**135**	**0**	**219**	**0**	**40**	**2589**	**104**	**0**	**2733**	**0**	**76**	**8**	**22**	**0**	**106**
Peak Hour Total																								
1645 - 1745	**0**	**85**	**1751**	**78**	**0**	**1914**	**0**	**46**	**5**	**78**	**0**	**129**	**0**	**23**	**1368**	**66**	**0**	**1457**	**0**	**43**	**5**	**11**	**0**	**59**
App %	0.00%	3.90%	92.15%	3.95%			0.00%	32.42%	5.94%	61.64%			0.00%	1.46%	94.73%	3.81%			0.00%	71.70%	7.55%	20.75%		
Int %	0.00%	2.15%	50.89%	2.18%		55.22%	0.00%	1.04%	0.19%	1.98%		3.21%	0.00%	0.59%	37.91%	1.52%		40.02%	0.00%	1.11%	0.12%	0.32%		1.55%
Cars Total	0	140	3349	142			0	70	13	130			0	40	2495	101			0	74	8	22		
Heavy Total	0	0	0	0			0	0	0	0			0	0	0	0			0	0	0	0		
% Cars	**0.00%**	**95.24%**	**96.37%**	**95.30%**			**0.00%**	**98.59%**	**100.00%**	**96.30%**			**0.00%**	**100.00%**	**96.37%**	**97.12%**			**0.00%**	**97.37%**	**100.00%**	**100.00%**		
% Heavy	**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 4
Intersection: US-31 (NASHVILLE HIGHWAY) & GREENS MILL ROAD

Southbound: US-31 (Nashville Highway)
Westbound: Greens Mill Road
Northbound: US-31 (Nashville Highway)
Eastbound:

Lat/Long: 35.702686, -86.979380

Count Date: 1/15/2019 --> Grown to 2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

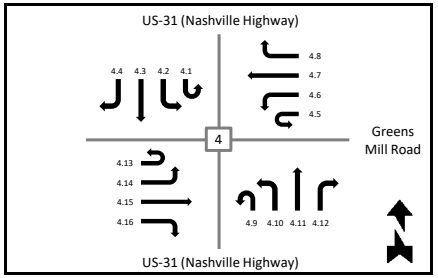
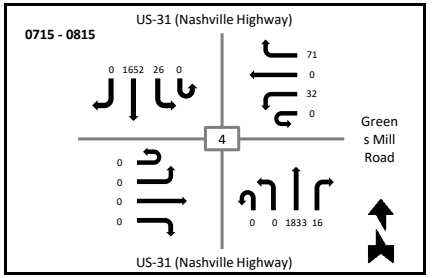


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Greens Mill Road						US-31 (Nashville Highway)											
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
0600 - 0615	0	3	197	0	0	200	0	3	0	3	0	6	0	0	352	3	0	355	0	0	0	0	0	0
0615 - 0630	0	3	482	0	0	485	0	2	0	9	0	11	0	0	329	1	0	330	0	0	0	0	0	0
0630 - 0645	0	4	353	0	0	357	0	3	0	2	0	5	0	0	396	4	0	400	0	0	0	0	0	0
0645 - 0700	0	2	286	0	0	288	0	8	0	17	0	25	0	0	411	1	0	412	0	0	0	0	0	0
0700 - 0715	0	4	305	0	0	309	0	6	0	27	0	33	0	0	407	1	0	408	0	0	0	0	0	0
0715 - 0730	0	4	390	0	0	394	0	11	0	27	0	38	0	0	497	6	0	503	0	0	0	0	0	0
0730 - 0745	0	12	484	0	0	496	0	10	0	23	0	33	0	0	494	3	0	497	0	0	0	0	0	0
0745 - 0800	0	6	473	0	0	479	0	6	0	13	0	19	0	0	428	4	0	432	0	0	0	0	0	0
0800 - 0815	0	4	305	0	0	309	0	5	0	8	0	13	0	0	414	3	0	417	0	0	0	0	0	0
0815 - 0830	0	6	241	0	0	247	0	6	0	6	0	12	0	0	391	5	0	396	0	0	0	0	0	0
0830 - 0845	0	3	267	0	0	270	0	6	0	12	0	18	0	0	318	6	0	324	0	0	0	0	0	0
0845 - 0900	0	6	265	0	0	271	0	3	0	8	0	11	0	0	295	2	0	297	0	0	0	0	0	0
Grand Total	**0**	**57**	**4048**	**0**	**0**	**4105**	**0**	**69**	**0**	**155**	**0**	**224**	**0**	**0**	**4732**	**39**	**0**	**4771**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
0715 - 0815	**0**	**26**	**1652**	**0**	**0**	**1678**	**0**	**32**	**0**	**71**	**0**	**103**	**0**	**0**	**1833**	**16**	**0**	**1849**	**0**	**0**	**0**	**0**	**0**	**0**
App %	0.00%	1.39%	98.61%	0.00%			0.00%	30.80%	0.00%	69.20%			0.00%	0.00%	99.18%	0.82%			0.00%	0.00%	0.00%	0.00%		
Int %	0.00%	0.63%	44.48%	0.00%		45.11%	0.00%	0.76%	0.00%	1.70%		2.46%	0.00%	0.00%	52.00%	0.43%		52.43%	0.00%	0.00%	0.00%	0.00%		0.00%
Cars Total	0	56	3570	0			0	66	0	140			0	0	4223	37			0	0	0	0		
Heavy Total	0	0	190	0			0	0	0	3			0	0	174	2			0	0	0	0		
% Cars	**0.00%**	**98.25%**	**88.19%**	**0.00%**			**0.00%**	**95.65%**	**0.00%**	**90.32%**			**0.00%**	**0.00%**	**89.24%**	**94.87%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**4.69%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**1.94%**			**0.00%**	**0.00%**	**3.68%**	**5.13%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 4
Intersection: US-31 (NASHVILLE HIGHWAY) & GREENS MILL ROAD

Southbound: US-31 (Nashville Highway)
Westbound: Greens Mill Road
Northbound: US-31 (Nashville Highway)
Eastbound:

Lat/Long: 35.702686, -86.979380

Count Date: 1/15/2019 --> Grown to 2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

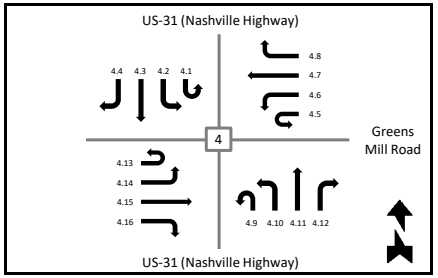
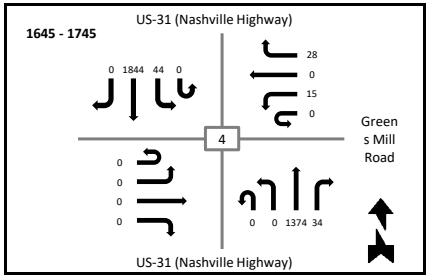


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)						Greens Mill Road						US-31 (Nashville Highway)											
Time	U-Turn 4.1	Left 4.2	Thru 4.3	Right 4.4	Peds X-Walk	App Total	U-Turn 4.5	Left 4.6	Thru 4.7	Right 4.8	Peds X-Walk	App Total	U-Turn 4.9	Left 4.10	Thru 4.11	Right 4.12	Peds X-Walk	App Total	U-Turn 4.13	Left 4.14	Thru 4.15	Right 4.16	Peds X-Walk	App Total
1500 - 1515	0	29	456	0	0	485	0	5	0	4	0	9	0	0	276	6	0	282	0	0	0	0	0	0
1515 - 1530	0	13	439	0	0	452	0	2	0	6	0	8	0	0	374	9	0	383	0	0	0	0	0	0
1530 - 1545	0	13	517	0	0	530	0	2	0	11	0	13	0	0	351	4	0	355	0	0	0	0	0	0
1545 - 1600	0	14	456	0	0	470	0	8	0	10	0	18	0	0	373	6	0	379	0	0	0	0	0	0
1600 - 1615	0	8	398	0	0	406	0	5	0	9	0	14	0	0	292	11	0	303	0	0	0	0	0	0
1615 - 1630	0	16	473	0	0	489	0	9	0	6	0	15	0	0	338	9	0	347	0	0	0	0	0	0
1630 - 1645	0	15	490	0	0	505	0	6	0	11	0	17	0	0	380	10	0	390	0	0	0	0	0	0
1645 - 1700	0	14	488	0	0	502	0	2	0	10	0	12	0	0	345	6	0	351	0	0	0	0	0	0
1700 - 1715	0	11	460	0	0	471	0	6	0	9	0	15	0	0	350	11	0	361	0	0	0	0	0	0
1715 - 1730	0	11	448	0	0	459	0	5	0	6	0	11	0	0	343	6	0	349	0	0	0	0	0	0
1730 - 1745	0	8	448	0	0	456	0	2	0	3	0	5	0	0	336	11	0	347	0	0	0	0	0	0
1745 - 1800	0	1	399	0	0	400	0	3	0	5	0	8	0	0	306	2	0	308	0	0	0	0	0	0
Grand Total	**0**	**153**	**5472**	**0**	**0**	**5625**	**0**	**55**	**0**	**90**	**0**	**145**	**0**	**0**	**4064**	**91**	**0**	**4155**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
1645 - 1745	**0**	**44**	**1844**	**0**	**0**	**1888**	**0**	**15**	**0**	**28**	**0**	**43**	**0**	**0**	**1374**	**34**	**0**	**1408**	**0**	**0**	**0**	**0**	**0**	**0**
App %	0.00%	2.72%	97.28%	0.00%			0.00%	37.93%	0.00%	62.07%			0.00%	0.00%	97.81%	2.19%			0.00%	0.00%	0.00%	0.00%		
Int %	0.00%	1.54%	55.13%	0.00%		56.68%	0.00%	0.55%	0.00%	0.91%		1.46%	0.00%	0.00%	40.95%	0.92%		41.86%	0.00%	0.00%	0.00%	0.00%		0.00%
Cars Total	0	140	4953	0			0	51	0	83			0	0	3648	82			0	0	0	0		
Heavy Total	0	1	130	0			0	2	0	1			0	0	125	3			0	0	0	0		
% Cars	**0.00%**	**91.50%**	**90.52%**	**0.00%**			**0.00%**	**92.73%**	**0.00%**	**92.22%**			**0.00%**	**0.00%**	**89.76%**	**90.11%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**0.65%**	**2.38%**	**0.00%**			**0.00%**	**3.64%**	**0.00%**	**1.11%**			**0.00%**	**0.00%**	**3.08%**	**3.30%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 5
Intersection: US-31 (NASHVILLE HIGHWAY) & HIDDEN CREEK WAY

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Hidden Creek Way

Lat/Long: 35.700319, -86.981818

Count Date: 1/15/2019 --> Grown to 2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

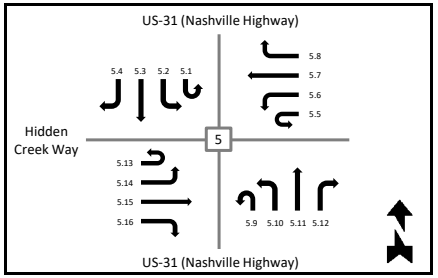
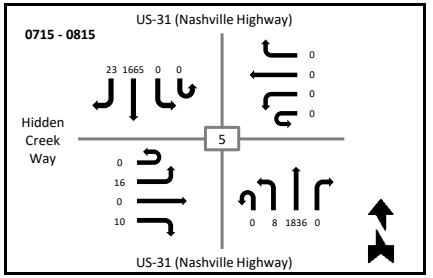


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Hidden Creek Way					
Time	U-Turn 5.1	Left 5.2	Thru 5.3	Right 5.4	Peds X-Walk	App Total	U-Turn 5.5	Left 5.6	Thru 5.7	Right 5.8	Peds X-Walk	App Total	U-Turn 5.9	Left 5.10	Thru 5.11	Right 5.12	Peds X-Walk	App Total	U-Turn 5.13	Left 5.14	Thru 5.15	Right 5.16	Peds X-Walk	App Total
0600 - 0615	0	0	211	2	0	213	0	0	0	0	0	0	0	0	373	0	0	373	0	5	0	0	0	5
0615 - 0630	0	0	474	1	0	475	0	0	0	0	0	0	0	2	317	0	0	319	0	4	0	1	0	5
0630 - 0645	0	0	370	5	0	375	0	0	0	0	0	0	1	1	406	0	0	408	0	8	0	1	0	9
0645 - 0700	0	0	268	4	0	272	0	0	0	0	0	0	0	4	418	0	0	422	0	1	0	3	0	4
0700 - 0715	0	0	318	4	0	322	0	0	0	0	0	0	0	2	394	0	0	396	0	6	0	3	0	9
0715 - 0730	0	0	407	6	0	413	0	0	0	0	0	0	0	3	531	0	0	534	0	3	0	3	0	6
0730 - 0745	0	0	495	5	0	500	0	0	0	0	0	0	0	1	470	0	0	471	0	5	0	2	0	7
0745 - 0800	0	0	451	9	0	460	0	0	0	0	0	0	0	2	431	0	0	433	0	5	0	3	0	8
0800 - 0815	0	0	312	3	0	315	0	0	0	0	0	0	0	2	404	0	0	406	0	3	0	2	0	5
0815 - 0830	0	0	244	6	0	250	0	0	0	0	0	0	0	1	391	0	0	392	0	4	0	0	0	4
0830 - 0845	0	0	268	5	0	273	0	0	0	0	0	0	0	3	321	0	0	324	0	5	0	2	0	7
0845 - 0900	0	0	265	4	0	269	0	0	0	0	0	0	0	0	282	0	0	282	0	9	0	1	0	10
Grand Total	**0**	**0**	**4083**	**54**	**0**	**4137**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**21**	**4738**	**0**	**0**	**4760**	**0**	**58**	**0**	**21**	**0**	**79**
Peak Hour Total																								
0715 - 0815	**0**	**0**	**1665**	**23**	**0**	**1688**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**1836**	**0**	**0**	**1844**	**0**	**16**	**0**	**10**	**0**	**26**
App %	0.00%	0.00%	98.69%	1.31%			0.00%	0.00%	0.00%	0.00%			0.02%	0.44%	99.54%	0.00%			0.00%	73.42%	0.00%	26.58%		
Int %	0.00%	0.00%	45.49%	0.60%		46.09%	0.00%	0.00%	0.00%	0.00%		0.00%	0.01%	0.23%	52.79%	0.00%		53.03%	0.00%	0.65%	0.00%	0.23%		0.88%
Cars Total	0	0	3610	49			0	0	0	0			1	20	4208	0			0	55	0	19		
Heavy Total	0	0	183	4			0	0	0	0			0	1	191	0			0	1	0	2		
% Cars	**0.00%**	**0.00%**	**88.42%**	**90.74%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**100.00%**	**95.24%**	**88.81%**	**0.00%**			**0.00%**	**94.83%**	**0.00%**	**90.48%**		
% Heavy	**0.00%**	**0.00%**	**4.48%**	**7.41%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**4.76%**	**4.03%**	**0.00%**			**0.00%**	**1.72%**	**0.00%**	**9.52%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 5
Intersection #: 5
Intersection: US-31 (NASHVILLE HIGHWAY) & HIDDEN CREEK WAY

Southbound: US-31 (Nashville Highway)
Westbound:
Northbound: US-31 (Nashville Highway)
Eastbound: Hidden Creek Way

Lat/Long: 35.700319, -86.981818

Count Date: 1/15/2019 --> Grown to 2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

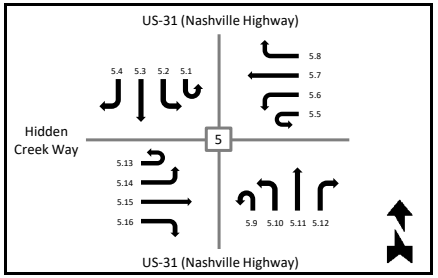
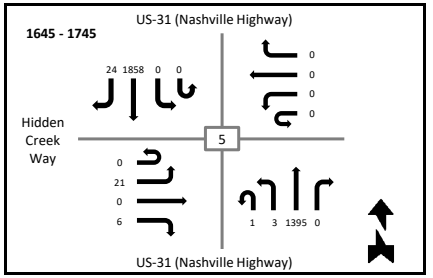


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	US-31 (Nashville Highway)												US-31 (Nashville Highway)						Hidden Creek Way					
Time	U-Turn 5.1	Left 5.2	Thru 5.3	Right 5.4	Peds X-Walk	App Total	U-Turn 5.5	Left 5.6	Thru 5.7	Right 5.8	Peds X-Walk	App Total	U-Turn 5.9	Left 5.10	Thru 5.11	Right 5.12	Peds X-Walk	App Total	U-Turn 5.13	Left 5.14	Thru 5.15	Right 5.16	Peds X-Walk	App Total
1500 - 1515	0	0	446	12	0	458	0	0	0	0	0	0	0	2	298	0	0	300	0	3	0	5	0	8
1515 - 1530	0	0	421	4	0	425	0	0	0	0	0	0	0	0	356	0	0	356	0	5	0	2	0	7
1530 - 1545	0	0	498	6	0	504	0	0	0	0	0	0	0	0	354	0	0	354	0	2	0	0	0	2
1545 - 1600	0	0	472	1	0	473	0	0	0	0	0	0	1	3	375	0	0	379	0	5	0	1	0	6
1600 - 1615	0	0	414	5	0	419	0	0	0	0	0	0	0	1	294	0	0	295	0	5	0	3	0	8
1615 - 1630	0	0	478	4	0	482	0	0	0	0	0	0	0	0	348	0	0	348	0	5	0	1	0	6
1630 - 1645	0	0	483	6	0	489	0	0	0	0	0	0	0	3	389	0	0	392	0	3	0	0	0	3
1645 - 1700	0	0	501	6	0	507	0	0	0	0	0	0	0	1	348	0	0	349	0	8	0	0	0	8
1700 - 1715	0	0	458	8	0	466	0	0	0	0	0	0	1	1	350	0	0	352	0	6	0	0	0	6
1715 - 1730	0	0	458	5	0	463	0	0	0	0	0	0	0	0	352	0	0	352	0	3	0	4	0	7
1730 - 1745	0	0	441	5	0	446	0	0	0	0	0	0	0	1	345	0	0	346	0	4	0	2	0	6
1745 - 1800	0	0	390	6	0	396	0	0	0	0	0	0	1	2	287	0	0	290	0	5	0	1	0	6
Grand Total	**0**	**0**	**5460**	**68**	**0**	**5528**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**14**	**4096**	**0**	**0**	**4113**	**0**	**54**	**0**	**19**	**0**	**73**
Peak Hour Total																								
1645 - 1745	**0**	**0**	**1858**	**24**	**0**	**1882**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**1395**	**0**	**0**	**1399**	**0**	**21**	**0**	**6**	**0**	**27**
App %	0.00%	0.00%	98.77%	1.23%			0.00%	0.00%	0.00%	0.00%			0.07%	0.34%	99.59%	0.00%			0.00%	73.97%	0.00%	26.03%		
Int %	0.00%	0.00%	56.21%	0.70%		56.91%	0.00%	0.00%	0.00%	0.00%		0.00%	0.03%	0.14%	42.17%	0.00%		42.34%	0.00%	0.56%	0.00%	0.20%		0.75%
Cars Total	0	0	4935	61			0	0	0	0			3	14	3680	0			0	48	0	17		
Heavy Total	0	0	136	5			0	0	0	0			0	0	124	0			0	5	0	2		
% Cars	**0.00%**	**0.00%**	**90.38%**	**89.71%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**100.00%**	**100.00%**	**89.84%**	**0.00%**			**0.00%**	**88.89%**	**0.00%**	**89.47%**		
% Heavy	**0.00%**	**0.00%**	**2.49%**	**7.35%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**3.03%**	**0.00%**			**0.00%**	**9.26%**	**0.00%**	**10.53%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 7
Intersection #: 7
Intersection: GROVE PARK WAY & PERSIMMON STREET

Southbound: Grove Park Way
Westbound: Persimmon Street
Northbound: Grove Park Way
Eastbound:

Lat/Long: 35.70401755633158, -86.97303814253952

Count Date: 1/20/2021

Time Period: 0600 - 0900 (Weekday AM Peak)

Figure 1 - Turning Movement Designation

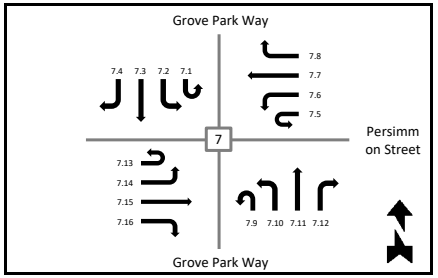
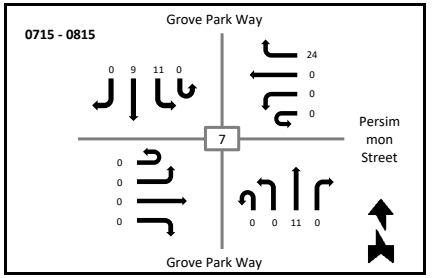


Figure 2 - AM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Grove Park Way						Persimmon Street						Grove Park Way											
Time	U-Turn 7.1	Left 7.2	Thru 7.3	Right 7.4	Peds X-Walk	App Total	U-Turn 7.5	Left 7.6	Thru 7.7	Right 7.8	Peds X-Walk	App Total	U-Turn 7.9	Left 7.10	Thru 7.11	Right 7.12	Peds X-Walk	App Total	U-Turn 7.13	Left 7.14	Thru 7.15	Right 7.16	Peds X-Walk	App Total
0600 - 0615	0	0	1	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0
0615 - 0630	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0
0630 - 0645	0	0	0	0	0	0	0	0	0	8	0	8	0	0	3	0	0	3	0	0	0	0	0	0
0645 - 0700	0	2	0	0	0	2	0	0	0	4	0	4	0	0	4	0	0	4	0	0	0	0	0	0
0700 - 0715	0	3	0	0	0	3	0	0	0	4	0	4	0	0	5	0	0	5	0	0	0	0	0	0
0715 - 0730	0	1	1	0	0	2	0	0	0	3	0	3	0	0	6	0	0	6	0	0	0	0	0	0
0730 - 0745	0	3	3	0	0	6	0	0	0	5	0	5	0	0	2	0	0	2	0	0	0	0	0	0
0745 - 0800	0	2	1	0	0	3	0	0	0	9	0	9	0	0	2	0	0	2	0	0	0	0	0	0
0800 - 0815	0	5	4	0	0	9	0	0	0	7	0	7	0	0	1	0	0	1	0	0	0	0	0	0
0815 - 0830	0	2	2	0	0	4	0	0	0	2	0	2	0	0	6	0	0	6	0	0	0	0	0	0
0830 - 0845	0	2	1	0	0	3	0	0	0	4	0	4	0	0	2	0	0	2	0	0	0	0	0	0
0845 - 0900	0	1	0	0	0	1	0	0	0	3	0	3	0	0	1	0	0	1	0	0	0	0	0	0
Grand Total	**0**	**21**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**56**	**0**	**56**	**0**	**0**	**33**	**0**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
0715 - 0815	**0**	**11**	**9**	**0**	**0**	**20**	**0**	**0**	**0**	**24**	**0**	**24**	**0**	**0**	**11**	**0**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**
App %	0.00%	0.00%	0.00%	0.00%			0.00%	0.00%	0.00%	100.00%			0.00%	0.00%	100.00%	0.00%			0.00%	0.00%	0.00%	0.00%		
Int %	0.00%	0.00%	0.00%	0.00%		0.00%	0.00%	1.90%	54.29%	0.00%		56.19%	0.00%	1.90%	0.00%	0.00%		1.90%	0.00%	0.00%	40.00%	1.90%		41.90%
Cars Total	0	20	12	0			0	0	0	54			0	0	32	0			0	0	0	0		
Heavy Total	0	1	1	0			0	0	0	2			0	0	1	0			0	0	0	0		
% Cars	**0.00%**	**95.24%**	**92.31%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**96.43%**			**0.00%**	**0.00%**	**96.97%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**4.76%**	**7.69%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**3.57%**			**0.00%**	**0.00%**	**3.03%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

Location: Maury County (Columbia)
Count Type: Classified Turning Movement Count (TMC)

Count Sites: 7
Intersection #: 7
Intersection: GROVE PARK WAY & PERSIMMON STREET

Southbound: Grove Park Way
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Eastbound:

Lat/Long: 35.70401755633158, -86.97303814253952

Count Date: 1/20/2021

Time Period: 1500 - 1800 (Weekday PM Peak)

Figure 1 - Turning Movement Designation

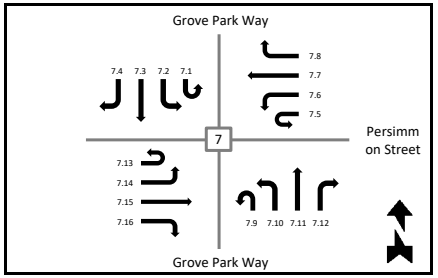
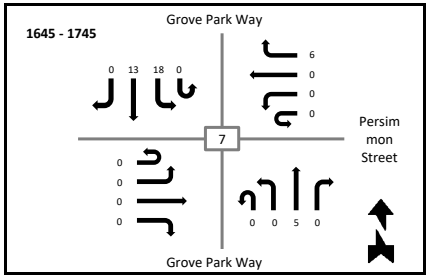


Figure 2 - PM Peak Hour TMC



T-SQUARE ENGINEERING

	Southbound						Westbound						Northbound						Eastbound					
	Grove Park Way						Persimmon Street						Grove Park Way											
Time	U-Turn 7.1	Left 7.2	Thru 7.3	Right 7.4	Peds X-Walk	App Total	U-Turn 7.5	Left 7.6	Thru 7.7	Right 7.8	Peds X-Walk	App Total	U-Turn 7.9	Left 7.10	Thru 7.11	Right 7.12	Peds X-Walk	App Total	U-Turn 7.13	Left 7.14	Thru 7.15	Right 7.16	Peds X-Walk	App Total
1500 - 1515	2	9	4	0	0	15	0	0	0	2	0	2	0	0	1	0	0	1	0	0	0	0	0	0
1515 - 1530	0	5	2	0	0	7	0	0	0	3	0	3	0	0	3	0	0	3	0	0	0	0	0	0
1530 - 1545	0	2	3	0	0	5	0	0	0	2	0	2	0	0	1	0	0	1	0	0	0	0	0	0
1545 - 1600	0	4	8	0	0	12	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0
1600 - 1615	0	7	5	0	0	12	0	0	0	1	0	1	0	0	4	0	0	4	0	0	0	0	0	0
1615 - 1630	0	0	2	0	0	2	0	0	0	4	0	4	0	0	1	0	1	1	0	0	0	0	0	0
1630 - 1645	0	4	2	0	0	6	0	0	0	4	0	4	0	0	2	0	0	2	0	0	0	0	0	0
1645 - 1700	0	6	4	0	0	10	0	0	0	2	0	2	0	0	2	0	0	2	0	0	0	0	0	0
1700 - 1715	0	3	3	0	0	6	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
1715 - 1730	0	6	3	0	0	9	0	0	0	2	0	2	0	0	2	0	0	2	0	0	0	0	0	0
1730 - 1745	0	3	3	0	0	6	0	0	0	2	0	2	0	0	0	0	1	0	0	0	0	0	0	0
1745 - 1800	0	9	1	0	0	10	0	0	0	1	0	1	0	0	2	0	0	2	0	0	0	0	0	0
Grand Total	**2**	**58**	**40**	**0**	**0**	**100**	**0**	**0**	**0**	**27**	**0**	**27**	**0**	**0**	**19**	**0**	**2**	**19**	**0**	**0**	**0**	**0**	**0**	**0**
Peak Hour Total																								
1645 - 1745	**0**	**18**	**13**	**0**	**0**	**31**	**0**	**0**	**0**	**6**	**0**	**6**	**0**	**0**	**5**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**
App %	2.00%	58.00%	40.00%	0.00%			0.00%	0.00%	0.00%	100.00%			0.00%	0.00%	100.00%	0.00%			0.00%	0.00%	0.00%	0.00%		
Int %	1.37%	39.73%	27.40%	0.00%		68.49%	0.00%	0.00%	0.00%	18.49%		18.49%	0.00%	0.00%	13.01%	0.00%		13.01%	0.00%	0.00%	0.00%	0.00%		0.00%
Cars Total	2	58	37	0			0	0	0	25			0	0	19	0			0	0	0	0		
Heavy Total	0	0	3	0			0	0	0	2			0	0	0	0			0	0	0	0		
% Cars	**100.00%**	**100.00%**	**92.50%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**92.59%**			**0.00%**	**0.00%**	**100.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		
% Heavy	**0.00%**	**0.00%**	**7.50%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**7.41%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**			**0.00%**	**0.00%**	**0.00%**	**0.00%**		

TR

Sepac 3.34g Timings Data

Location:	Nashville Hwy
and	Arden Village

TS #	28
Date:	9-2-20

key 3-1 Vehicle times

Phase	1	2	3	4	5	6	7	8
min green	5	25	7	7	5	25	10	15
pass/10	20	50	30	30	20	50	40	50
max # 1	20	100	30	30	20	60	25	35
max # 2	30	80	30	50	30	80	30	50
yellow/10	45	45	45	45	45	45	40	40
red/10	15	30	20	20	15	30	10	10

key 3-2 Density Times

Phase	1	2	3	4	5	6	7	8
aini/10								
max int								
Tb4								
carsb4								
Time to								
Min gap								

key 3-3 Pedestrian Times

Phase	1	2	3	4	5	6	7	8
Walk		7		7		7		7
Ped clear		8		8		8		8
fl wk								
ext pcl								
act riw								
		1 = yes 0 = no						

key 3-7 Sequence control

phase	1	2	3	4	5	6	7	8
ph. Omit								
ph. Yell								
Codes	0		01-08 # - phase					
	none		phase is omitted by # on					
	none phase yellow is omitted by # yellow							

key 3-5 V.& P. recalls

Phases	1	2	3	4	5	6	7	8
veh.recall		2				2		
ped recall								
delay								

Codes		0		1		2		3		4
		none		Inactive		red		yellow		gree
		none		to na 1		to na II		to both		
		none		1 call		minimum		maximum		soft
		none		1 call		ped		na		na+

key 3-6 N. lock & misc

Phase	1	2	3	4	5	6	7	8
non lock	1	0	1	1	1	0	0	0
2 entry								
lc pass								
con. Ser.								
no sgap								
		1 = yes 0 = no						

key 3-4 Init. Na response

phase	1	2	3	4	5	6	7	8
initial	1	4	1	1	1	4	0	0
na resp		1		2		1		2

Codes	0	1	2	3	4
Init	none	inact	red	yel	grn
na resp	none	to 1	to 2	both	

key 4-4

OVL TRAILING GREENS, YELLOWS AND REDS

	GREEN	YELLOW	RED
OLA	0	40	20
OLB	0	40	20
OLC	0	40	20
OLD	0	40	20

key 3-8-1	Det. Controls											key 3-8-2							
detector	1	2	3	4	5	6	7	8				9	10	11	12	13	14	15	16
assign phase	1	0	2	2	2	2	2	0				3	0	4	4	4	4	4	0
oper mode																			
switch																			

key 3-8-1	Det. Timings "Change From Controls to Timings"	key 3-8-2
extend time		
delay time		

key 3-8-3	Det. Controls											key 3-8-4							
detector	17	18	19	20	21	22	23	24				25	26	27	28	29	30	31	32
assign phase	1	3	5	0	6	6	6	6				6	0	0	0	7	0	8	8
oper mode																			
switch																			

key 3-8- 3	Det. Timings "Change From Controls to Timings"	key 3-8-4
extend time		
delay time		

codes	0		1		2		3		4
	norm veh		norm ped		one call		st bar a		st bar b
	none								
	none								

key3-8-9	Ped. Dets.							
Ped Det Control	1	2	3	4	5	6	7	8
Assigned phase	1	2	3	4	0	6	0	8
Operation Mode	1	1	1	1	0	1	0	1
Switch Phase								

Mode	0-veh	1-ped	2-0ne	3-sba
	4-sbb	5-ppl	6-ppt	7-and

Startup & misc.		key 4-1
Startup time	0	time in sec.
Startup state	0	0-fl 1-red
red rev/10	40	time in tenths
auto ped clear	0	o-no 1- yes
Stop t reset	0	0-no 1-yes
Alt. sequence	0	0-18
I'NAT'L SEQ	0	0-no 1-yes

Coordination data and set up	key 5-1						
Coord. Setup		0	1	2	3	4	5
Oper	0	fre	aut	man			
mode	0	prm	yld	pyl	pom	som	fac
max	2	inh	mx1	mx2			
corr	0	dwl	ndw	swy	sw+	sw2	
ofst	0	beg	end of green				
frce	0	pln cycle time					
mx dwell	0						
yield period	0						

key 4-3	Overlap Standard use up/down to swtich between overlaps
	0-no 1-yes

Overlap A

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap B

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap C

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap D

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

key 5-3	Input Dial1 split1 Phase Param. Level 2							
Phase	1	2	3	4	5	6	7	8
Time								
Mode								
mode:	0-actuated 1-coord ph 2-min rec 3-max rec 4-ped rec 5-mx+p 6-ph omit 7-dual coord phase							

key 5-3	Input Dial 2 split 1 phase Param. Level 2							
Phase	1	2	3	4	5	6	7	8
Time								
Mode								
Mode:	0-actuatec 1-coord ph 2-min rec 3-max rec 4-ped rec 5-mx+p rec 6-ph omit 7-dual coord phase							

key 5-3						
Input Dial1 Split 1 Param. Level 1						
offset	time	alt	patn	r2	r3	r4
#	sec	seq	mode	lag	lag	lag
1						
2						
3						
mode 0-6 nrm/prm/yld/pyl/pom/som/fac						

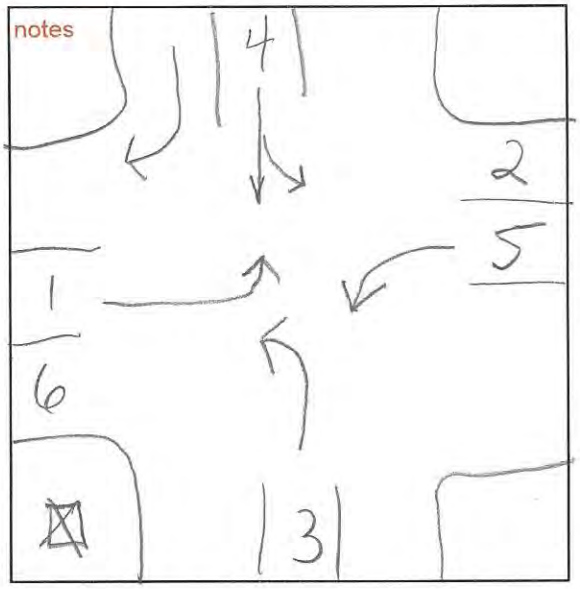
key 5-3	Input Dial 2 split 1 Param. Level 1						
Offset	time	alt	patn	r2	r3	r4
#	sec	seq	mode	lag	lag	lag
1						
2						
3						

key 6-2	Time And Date Settings

BEG-DST-END
3 2 & 11 1

CYC ZERO	24

notes



Traffic Events

key 6-3-E	DD	HH	MM	DL	SP	OF
	2	15				
	2	18	30			
	3	15				
	3	18	30			
	4	15				
	4	18	30			
	5	15				
	5	18	30			
	6	15				
	6	18	30			

Max -2

2 6

2 6

2 6

2 6

2 6

TR

Sepac 3.34g Timings Data

Location:	Nashville Hwy
and	Spring meade

TS #	27
Date:	9-2-20

key 3-1 Vehicle times

Phase	1	2	3	4	5	6	7	8
min green	5	25	7	5	5	25	10	15
pass/10	15	40	30	20	15	40	40	50
max # 1	25	60	20	35	20	60	25	35
max # 2	30	80	30	50	30	80	30	50
yellow/10	40	40	40	40	40	40	40	40
red/10	10	30	10	10	10	30	10	10

key 3-2 Density Times

Phase	1	2	3	4	5	6	7	8
aini/10								
max int								
Tb4								
carsb4								
Time to								
Min gap								

key 3-3 Pedestrian Times

Phase	1	2	3	4	5	6	7	8
Walk		7		7		7		7
Ped clear		8		8		8		8
fl wk								
ext pcl								
act riw								
		1 = yes 0 = no						

key 3-7 Sequence control

phase	1	2	3	4	5	6	7	8
ph. Omit								
ph. Yell								
Codes	0		01-08 # - phase					
	none		phase is omitted by # on					
	none phase yellow is omitted by # yellow							

key 3-5 V.& P. recalls

Phases	1	2	3	4	5	6	7	8
veh.recall		2				2		
ped recall								
delay								

Codes	0	1	2	3	4
	none	Inactive	red	yellow	gree
	none	to na 1	to na II	to both	
	none	1 call	minimum	maximum	soft
	none	1 call	ped	na	na+

key 3-6 N. lock & misc

Phase	1	2	3	4	5	6	7	8
non lock	1	0	1	1	1	0	0	0
2 entry								
lc pass								
con. Ser.								
no sgap								
		1 = yes 0 = no						

key 3-4 Init. Na response

phase	1	2	3	4	5	6	7	8
initial	1	4	1	1	1	4	0	0
na resp		1		1		1		

Codes	0	1	2	3	4
Init	none	inact	red	yel	grn
na resp	none	to 1	to 2	both	

key 4-4 OVL TRAILING GREENS, YELLOWS AND REDS

	GREEN	YELLOW	RED
OLA	0	40	20
OLB	0	40	20
OLC	0	40	20
OLD	0	40	20

key 3-8-1	Det. Controls											key 3-8-2							
detector	1	2	3	4	5	6	7	8				9	10	11	12	13	14	15	16
assign phase	1	0	2	2	2	2	2	0				3	0	4	4	4	4	4	0
oper mode																			
switch																			

key 3-8-1	Det. Timings "Change From Controls to Timings"	key 3-8-2
extend time		
delay time	0	0

key 3-8-3	Det. Controls											key 3-8-4							
detector	17	18	19	20	21	22	23	24				25	26	27	28	29	30	31	32
assign phase	1	3	5	0	6	6	6	6				6	0	0	0	7	0	8	8
oper mode																			
switch																			

key 3-8- 3	Det. Timings "Change From Controls to Timings"	key 3-8-4
extend time		
delay time	0	0

codes	0	1	2	3	4
	norm veh	norm ped	one call	st bar a	st bar b
	none				
	none				

key3-8-9	Ped. Dets.							
Ped Det Control	1	2	3	4	5	6	7	8
Assigned phase	1	2	3	4	0	6	0	8
Operation Mode	1	1	1	1	0	1	0	1
Switch Phase								

Mode	0-veh	1-ped	2-0ne	3-sba
	4-sbb	5-ppl	6-ppt	7-and

Startup & misc.		key 4-1
Startup time	0	time in sec.
Startup state	0	0-fl 1-red
red rev/10	40	time in tenths
auto ped clear	0	o-no 1- yes
Stop t reset	0	0-no 1-yes
Alt. sequence	0	0-18
I'NAT'L SEQ	0	0-no 1-yes

Coordination data and set up		key 5-1						
Coord. Setup		0	1	2	3	4	5	
Oper	0	fre	aut	man				
mode	0	prm	yld	pyl	pom	som	fac	
max	2	inh	mx1	mx2				
corr	0	dwl	ndw	swy	sw+	sw2		
ofst	0	beg	end of green					
frce	0	pln cycle time						
mx dwell	0							
yield period	0							

key 4-3	Overlap Standard use up/down to swtich between overlaps
	0-no 1-yes

Overlap A

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap B

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap C

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

Overlap D

OVL Phase																			
PHS/CHN	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
OVL CHN																			

key 5-3	Input Dial1 split1 Phase Param. Level 2							
Phase	1	2	3	4	5	6	7	8
Time								
Mode								
mode:	0-actuated 1-coord ph 2-min rec 3-max rec 4-ped rec 5-mx+p 6-ph omit 7-dual coord phase							

key 5-3	Input Dial 2 split 1 phase Param. Level 2							
Phase	1	2	3	4	5	6	7	8
Time								
Mode								
Mode:	0-actuatec 1-coord ph 2-min rec 3-max rec 4-ped rec 5-mx+p rec 6-ph omit 7-dual coord phase							

key 5-3						
Input Dial1 Split 1 Param. Level 1						
offset	time	alt	patn	r2	r3	r4
#	sec	seq	mode	lag	lag	lag
1						
2						
3						
mode 0-6 nrm/prm/yld/pyl/pom/som/fac						

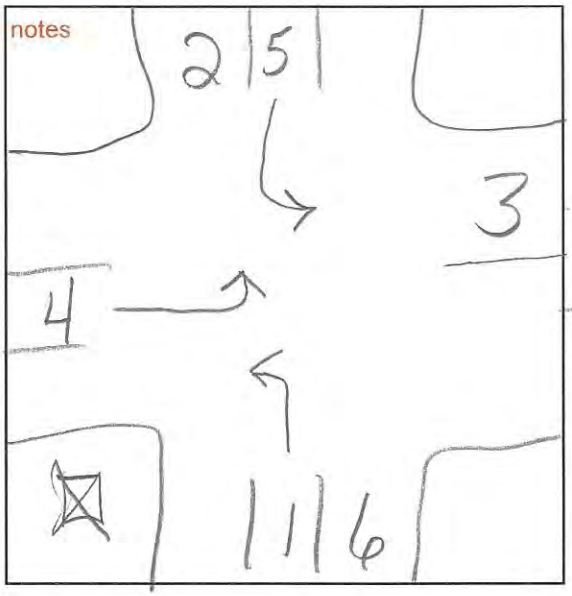
key 5-3						
Input Dial 2 split 1 Param. Level 1						
Offset	time	alt	patn	r2	r3	r4
#	sec	seq	mode	lag	lag	lag
1						
2						
3						

key 6-2	Time And Date Settings

BEG-DST-END
3 2 & 11 1

CYC ZERO	24

notes



Max-2

key 6-3-E	Traffic Events						
	DD	HH	MM	DL	SP	OF	
	2	15					2 6
	2	18	30				
	3	15					2 6
	3	18	30				
	4	15					2 6
	4	18	30				
	5	15					2 6
	5	18	30				
	6	15					2 6
	6	18	30				

APPENDIX B – DETAILED TRIP GENERATION CALCULATIONS

1329 West Main Street
Franklin, TN 37064
615.678.8212

www.T2-Eng.com

TRIP GENERATION

Project:	2504 Nashville Highway Master Development – Columbia, TN
ITE Land Use:	Single-Family Housing, Multi-Family Housing (Low-Rise), Coffee/Donut Shop with Drive-Thru, Shopping Center, and Day Care Center
ITE Code:	210, 220, 937, 820, & 565
Trip Ends vs:	**ITE 210** – 147 DU; **ITE 220** – 471 DU; **ITE 937** – 3,725 SF; **ITE 820** – 3,500 SF and **ITE 565** – 13,000 SF
Daily Equation:	Weekday – Varies by Land Use
AM Equation:	Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 AM – Varies by Land Use
PM Equation:	Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM – Varies by Land Use

Total Site Generated Traffic (Includes Internal and Pass-By Trips)

Land Use	Size	Generated Traffic Volumes				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Single-Family Housing (210)	147 DU	1,482	27	82	93	54
Multi-Family Housing (Low-Rise) (220)	471 DU	3,520	48	160	148	87
Coffee/Donut Shop with Drive-Thru (937)	3,725 SF	3,060	169	163	81	81
Shopping Center (820)	3,500 SF	615	95	58	22	24
Day Care Center (565)	13,000 SF	619	76	67	68	77
TOTAL		**9,296**	**415**	**530**	**412**	**323**

New Site Generated Traffic (Excludes Internal and Pass-By Trips)

Land Use	Size	Generated Traffic Volumes				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Single-Family Housing (210)	147 DU	1,349	27	82	85	49
Multi-Family Housing (Low-Rise) (220)	471 DU	3,203	48	160	135	79
Coffee/Donut Shop with Drive-Thru (937)	3,725 SF	1,392	84	81	37	37
Shopping Center (820)	3,500 SF	448	76	46	16	18
Day Care Center (565)	13,000 SF	563	76	67	62	70
TOTAL		**6,955**	**311**	**436**	**335**	**253**

Internal and Pass-By Trip Calculations

Internal Trips

As described in the *Trip Generation Handbook*, developments containing multiple land uses will commonly have internal trips, or trips from land use to land use without leaving the development site. Based on the NCHRP Report 684, "Enhancing Internal Trip Capture Estimation for Mixed-Use Developments," and assumptions made by T-Square Engineering for this study, an estimated **9% internal capture rate** was calculated for daily and PM peak hour trips.

Pass-By Trips

Studies have shown that new retail and restaurant developments generate relatively low "new" traffic. Traffic entering or exiting the new development are considered pass-by or captured trips. Pass-by or captured trips are vehicles that would have already been on the roadway regardless of the new development being constructed. The *Trip Generation Handbook* provides typical weekday pass-by percentages for various land uses based on the size of each land use. Based on the *Trip Generation Handbook* and assumptions made by T-Square Engineering for this study, **20% and 50% pass-by** were used for the shopping center and coffee shop land uses, respectively. The Table below provides a summary of the internal, pass-by and new trips generated for the proposed development.

Internal and Pass-By Trips

Land Use (ITE Code)	Size	Generated Traffic Volumes[1]				
		Daily	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
Single-Family Housing (210)	147 DU	1,482	27	82	93	54
Internal Trips		133	0	0	8	5
External Trips (Raw – Internal)		1,349	27	82	85	49
Pass-By Trips		0	0	0	0	0
New Trips (External – Pass-By)		**1,349**	**27**	**82**	**85**	**49**
Multi-Family (Low-Rise) Housing (220)	471 DU	3,520	48	160	148	87
Internal Trips		317	0	0	13	8
External Trips		3,203	48	160	135	79
Pass-By Trips		0	0	0	0	0
New Trips		**3,203**	**48**	**160**	**135**	**79**
Coffee/Donut Shop w/ Drive Thru (937)	3,725 SF	3,060	169	163	81	81
Internal Trips		275	0	0	7	7
External Trips		2,785	169	163	74	74
Pass-By Trips (50%)		1,393	85	82	37	37
New Trips		**1,392**	**84**	**81**	**37**	**37**
Shopping Center (820)	3,500 SF	615	95	58	22	24
Internal Trips		55	0	0	2	2
External Trips		560	95	58	20	22
Pass-By Trips (20%)		112	19	12	4	4
New Trips		**448**	**76**	**46**	**16**	**18**
Day Care Center (565)	13,000 SF	619	76	67	68	77
Internal Trips		56	0	0	6	7
External Trips		563	76	67	62	70
Pass-By Trips		0	0	0	0	0
New Trips		**563**	**76**	**67**	**62**	**70**
TOTAL GENERATED TRIPS		**9,296**	**415**	**530**	**412**	**323**
TOTAL GENERATED INTERNAL TRIPS		**836**	**0**	**0**	**36**	**29**
TOTAL GENERATED EXTERNAL TRIPS		**8,460**	**415**	**530**	**376**	**294**
TOTAL GENERATED PASS-BY TRIPS		**1,505**	**104**	**94**	**41**	**41**
TOTAL GENERATED NEW TRIPS		**6,955**	**311**	**436**	**335**	**253**

[1] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2020

TRIP GENERATION CALCULATIONS

Single-Family Homes (210) – 147 Dwelling Units

Time Period	Formula[2]	Calculation[2]	Trips
Daily	$Ln(T) = 0.92Ln(X) + 2.71$	$Ln(T) = 0.92Ln(147) + 2.71$	1,482
AM Peak (Total)	$T = 0.71(X) + 4.80$	$T = 0.71(147) + 4.80$	109
AM Peak (Entering)	$T = 0.25(Total\ AM\ Trips)$	$T = 0.25(109)$	27
AM Peak (Exiting)	$T = 0.75(Total\ AM\ Trips)$	$T = 0.75(109)$	82
PM Peak (Total)	$Ln(T) = 0.96Ln(X) + 0.20$	$Ln(T) = 0.96Ln(147) + 0.20$	147
PM Peak (Entering)	$T = 0.63(Total\ PM\ Trips)$	$T = 0.63(147)$	93
PM Peak (Exiting)	$T = 0.37(Total\ PM\ Trips)$	$T = 0.37(147)$	54

Multi-Family (Low-Rise) Homes (220) – 471 Dwelling Units

Time Period	Formula	Calculation[2]	Trips
Daily	$T = 7.56(X) - 40.86$	$T = 7.56(471) - 40.86$	3,520
AM Peak (Total)	$Ln(T) = 0.95Ln(X) - 0.51$	$Ln(T) = 0.95Ln(471) - 0.51$	208
AM Peak (Entering)	$T = 0.23(Total\ AM\ Trips)$	$T = 0.23(208)$	48
AM Peak (Exiting)	$T = 0.77(Total\ AM\ Trips)$	$T = 0.77(208)$	160
PM Peak (Total)	$Ln(T) = 0.89Ln(X) - 0.02$	$Ln(T) = 0.89Ln(471) - 0.02$	235
PM Peak (Entering)	$T = 0.63(Total\ PM\ Trips)$	$T = 0.63(235)$	148
PM Peak (Exiting)	$T = 0.37(Total\ PM\ Trips)$	$T = 0.37(235)$	87

[2] Institute of Transportation Engineers (ITE). Trip Generation Manual, 10th Edition. Washington, DC: ITE, 2020

Coffee/Donut Shop with Drive-Thru (937) – 3,725 SF

Time Period	Formula	Calculation[2]	Trips
Daily	$T = 820.38(X)$	$T = 820.38(3.73)$	3,060
AM Peak (Total)	$T = 88.99(X)$	$T = 88.99(3.73)$	332
AM Peak (Entering)	$T = 0.51(Total\ AM\ Trips)$	$T = 0.51(332)$	169
AM Peak (Exiting)	$T = 0.49(Total\ AM\ Trips)$	$T = 0.49(332)$	163
PM Peak (Total)	$T = 43.38(X)$	$T = 43.38(3.73)$	162
PM Peak (Entering)	$T = 0.50(Total\ PM\ Trips)$	$T = 0.50(162)$	81
PM Peak (Exiting)	$T = 0.50(Total\ PM\ Trips)$	$T = 0.50(162)$	81

Day Care Center (565) – 13,000 SF

Time Period	Formula	Calculation	Trips
Daily	$T = 47.62(X)$	$T = 47.62(13)$	619
AM Peak (Total)	$T = 11.00(X)$	$T = 11.00(13)$	143
AM Peak (Entering)	$T = 0.53(Total\ AM\ Trips)$	$T = 0.53(143)$	76
AM Peak (Exiting)	$T = 0.47(Total\ AM\ Trips)$	$T = 0.47(143)$	67
PM Peak (Total)	$T = 11.12(X)$	$T = 11.12(13)$	145
PM Peak (Entering)	$T = 0.47(Total\ PM\ Trips)$	$T = 0.47(145)$	68
PM Peak (Exiting)	$T = 0.53(Total\ PM\ Trips)$	$T = 0.53(145)$	77

Shopping Center (820) – 3,500 SF

Time Period	Formula	Calculation	Trips
Daily	$Ln(T) = 0.68Ln(X) + 5.57$	$Ln(T) = 0.68Ln(3.5) + 5.57$	615
AM Peak (Total)	$T = 0.50(X) + 151.78$	$T = 0.50(3.5) + 151.78$	153
AM Peak (Entering)	$T = 0.62(Total\ AM\ Trips)$	$T = 0.62(153)$	95
AM Peak (Exiting)	$T = 0.38(Total\ AM\ Trips)$	$T = 0.38(153)$	58
PM Peak (Total)	$Ln(T) = 0.74Ln(X) + 2.89$	$Ln(T) = 0.74Ln(3.5) + 2.89$	46
PM Peak (Entering)	$T = 0.48(Total\ PM\ Trips)$	$T = 0.48(46)$	22
PM Peak (Exiting)	$T = 0.52(Total\ PM\ Trips)$	$T = 0.52(46)$	24

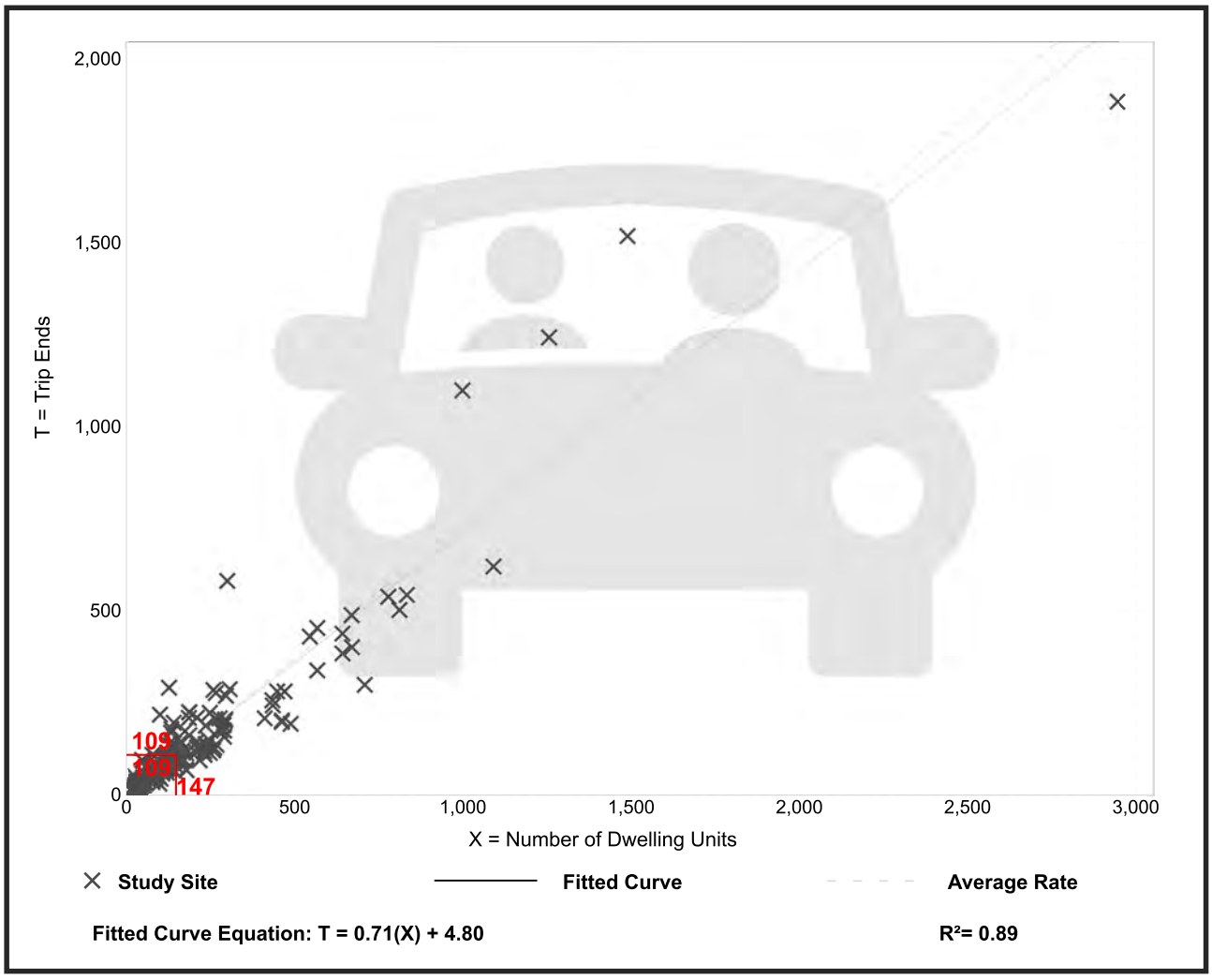
Single-Family Detached Housing
(210)

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: 173
Avg. Num. of Dwelling Units: 219
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



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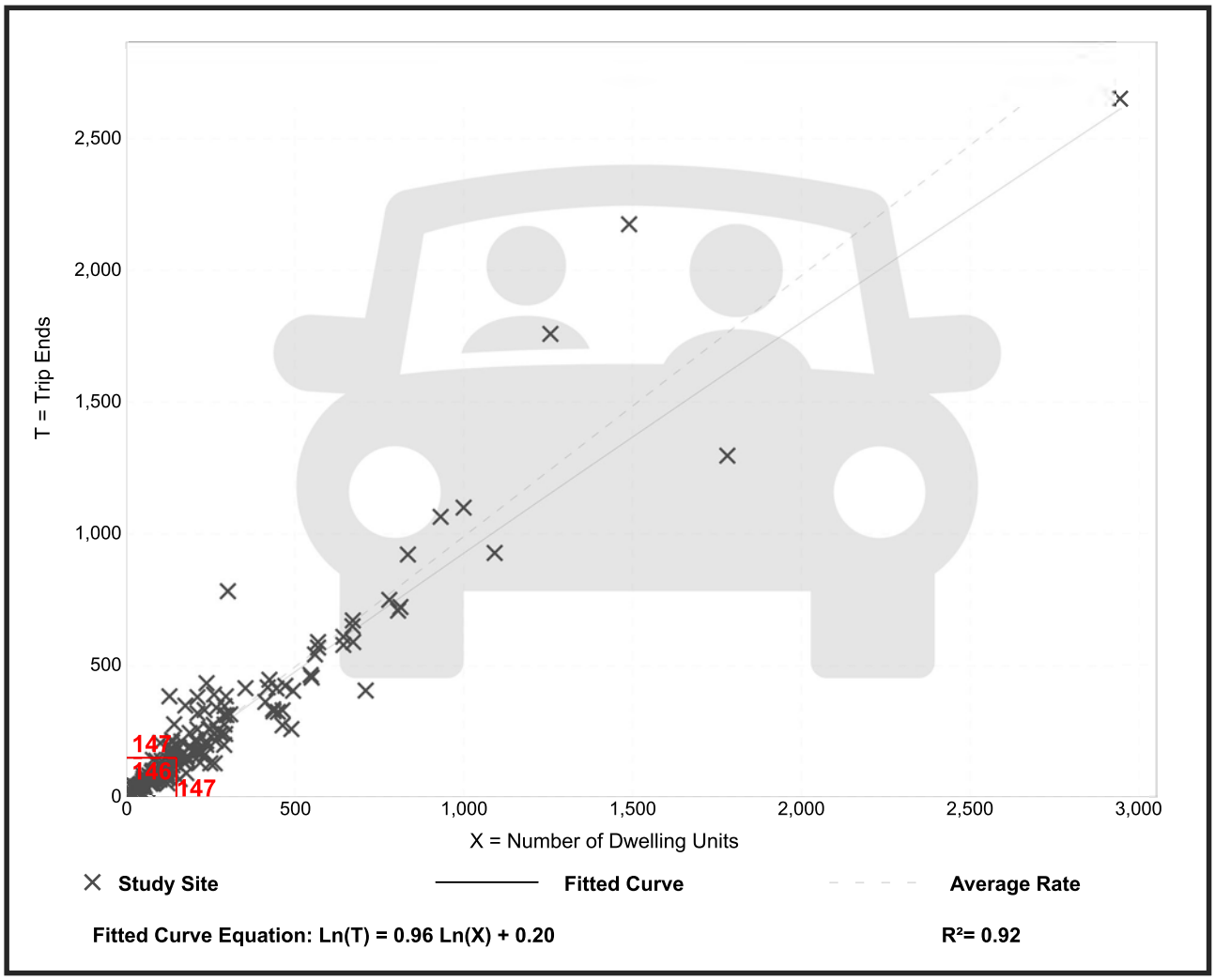
Single-Family Detached Housing
(210)

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: 190
Avg. Num. of Dwelling Units: 242
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



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Single-Family Detached Housing
(210)

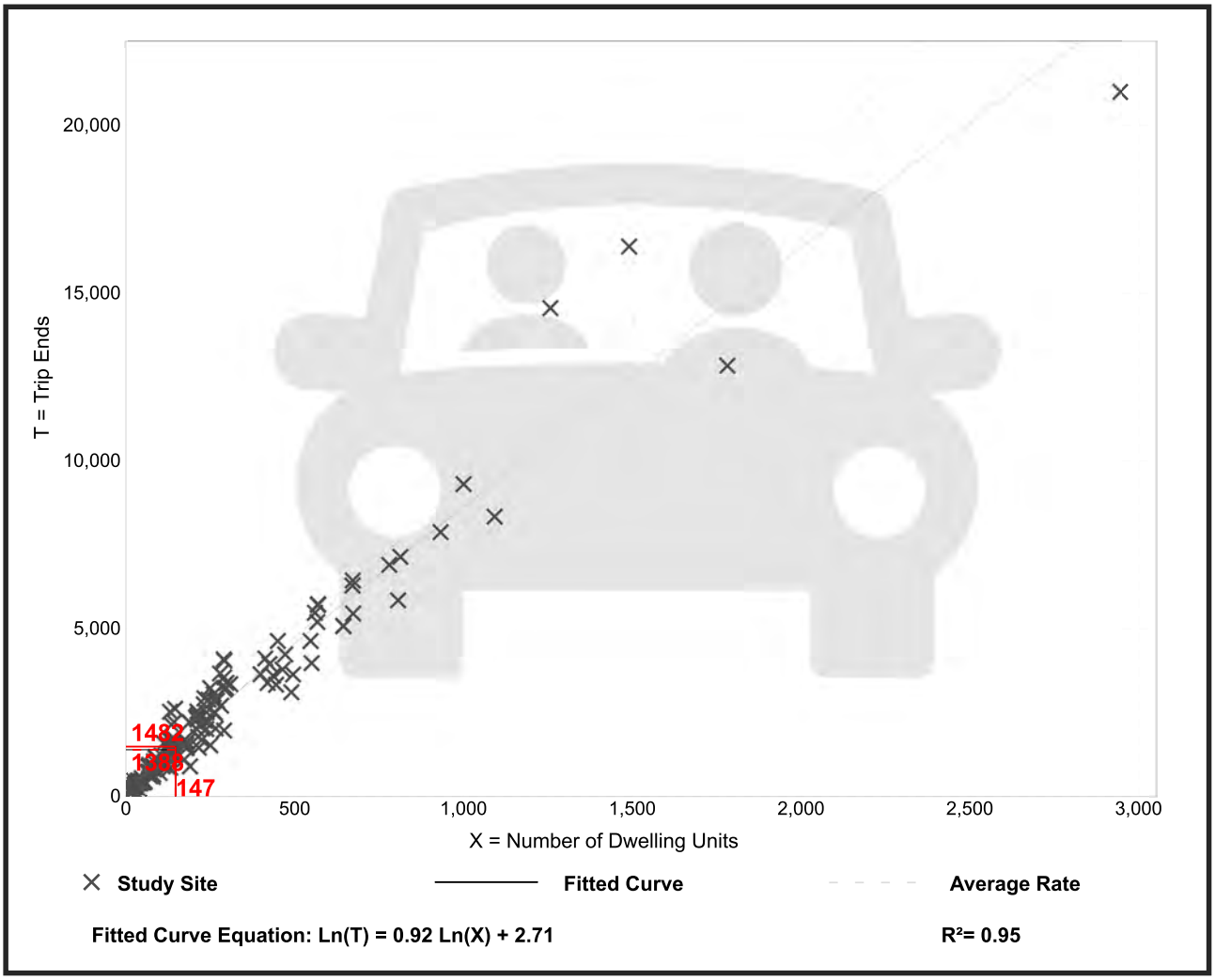
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



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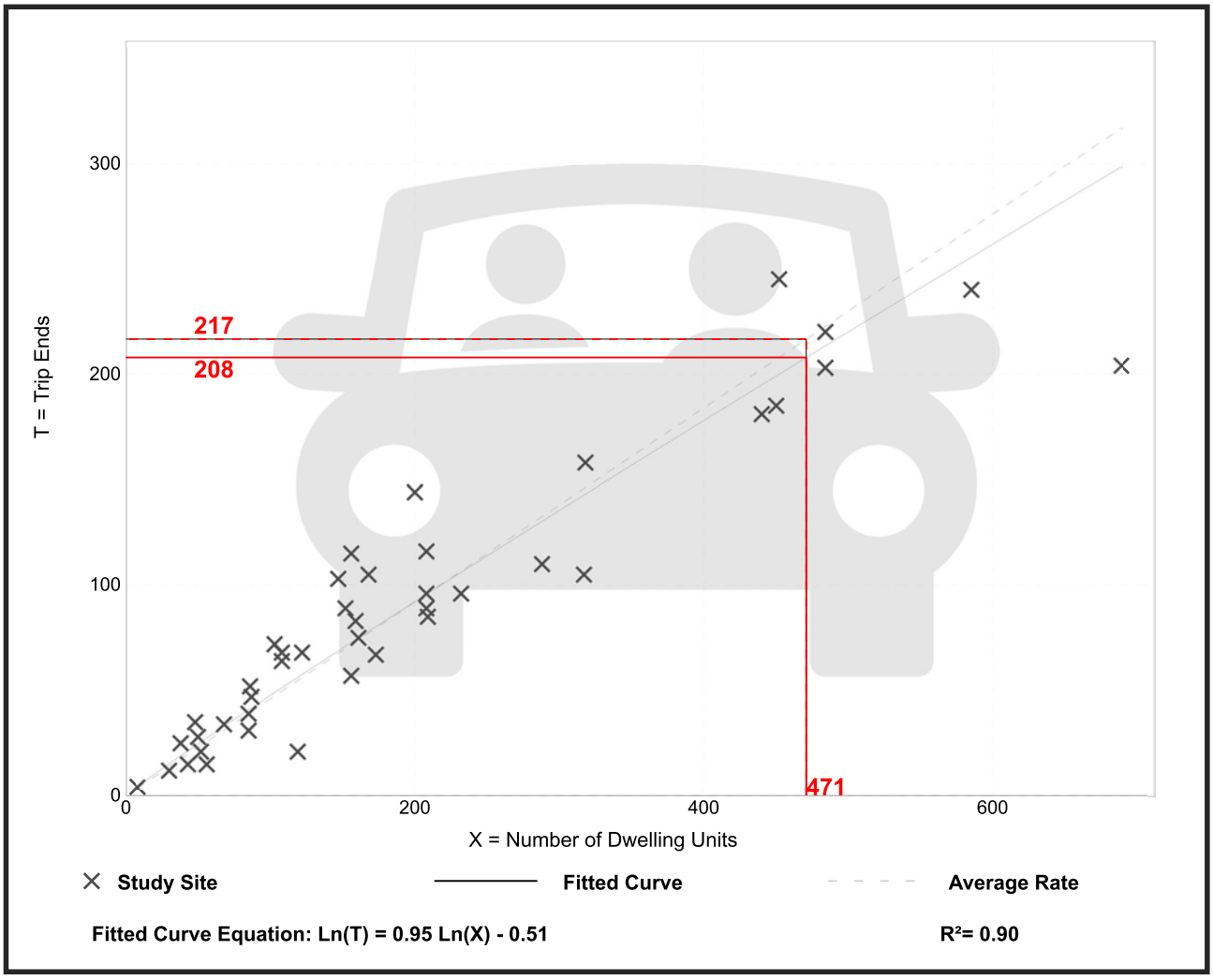
Multifamily Housing (Low-Rise)
(220)

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: 42
Avg. Num. of Dwelling Units: 199
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



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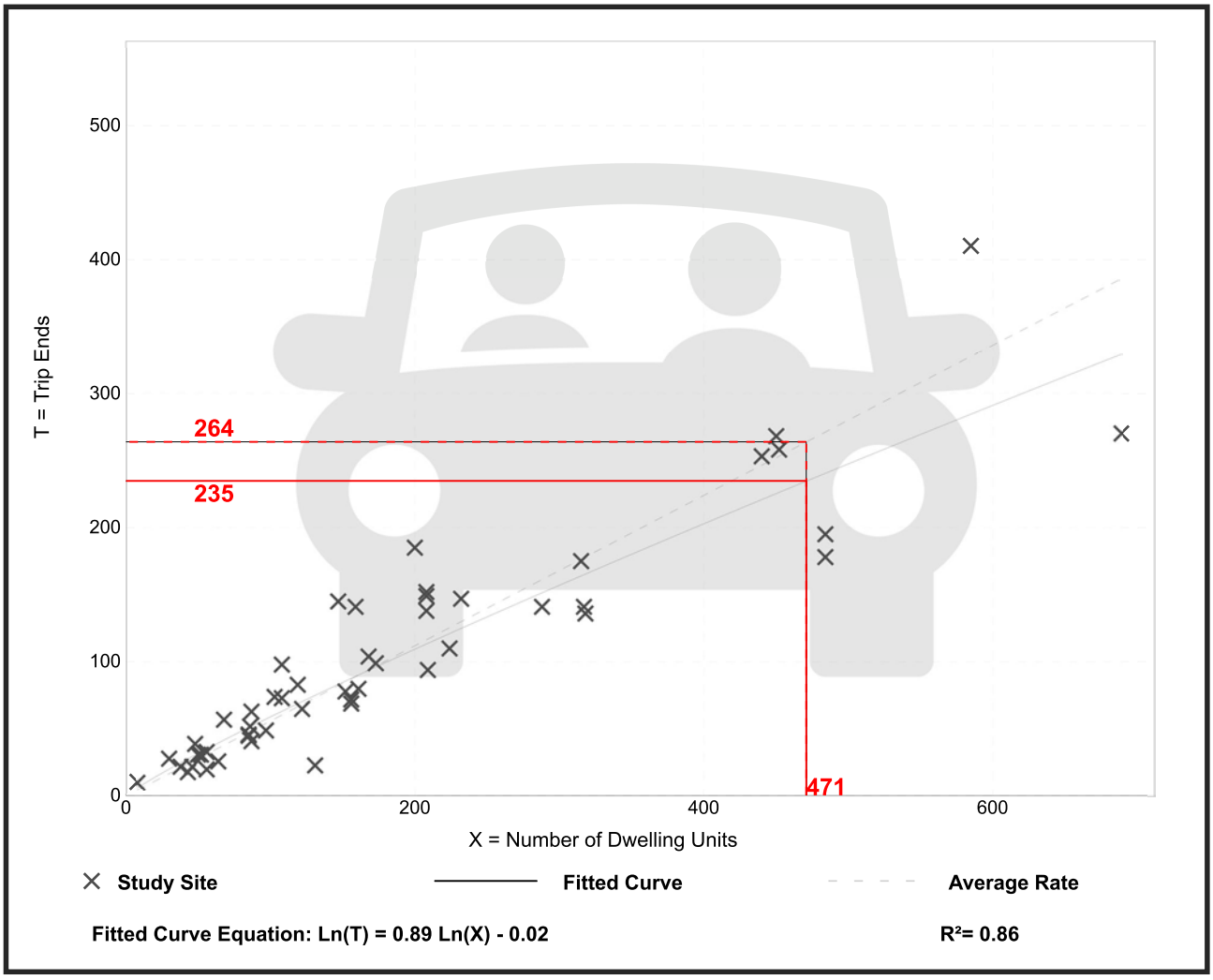
Multifamily Housing (Low-Rise)
(220)

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: 50
Avg. Num. of Dwelling Units: 187
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



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Multifamily Housing (Low-Rise)
(220)

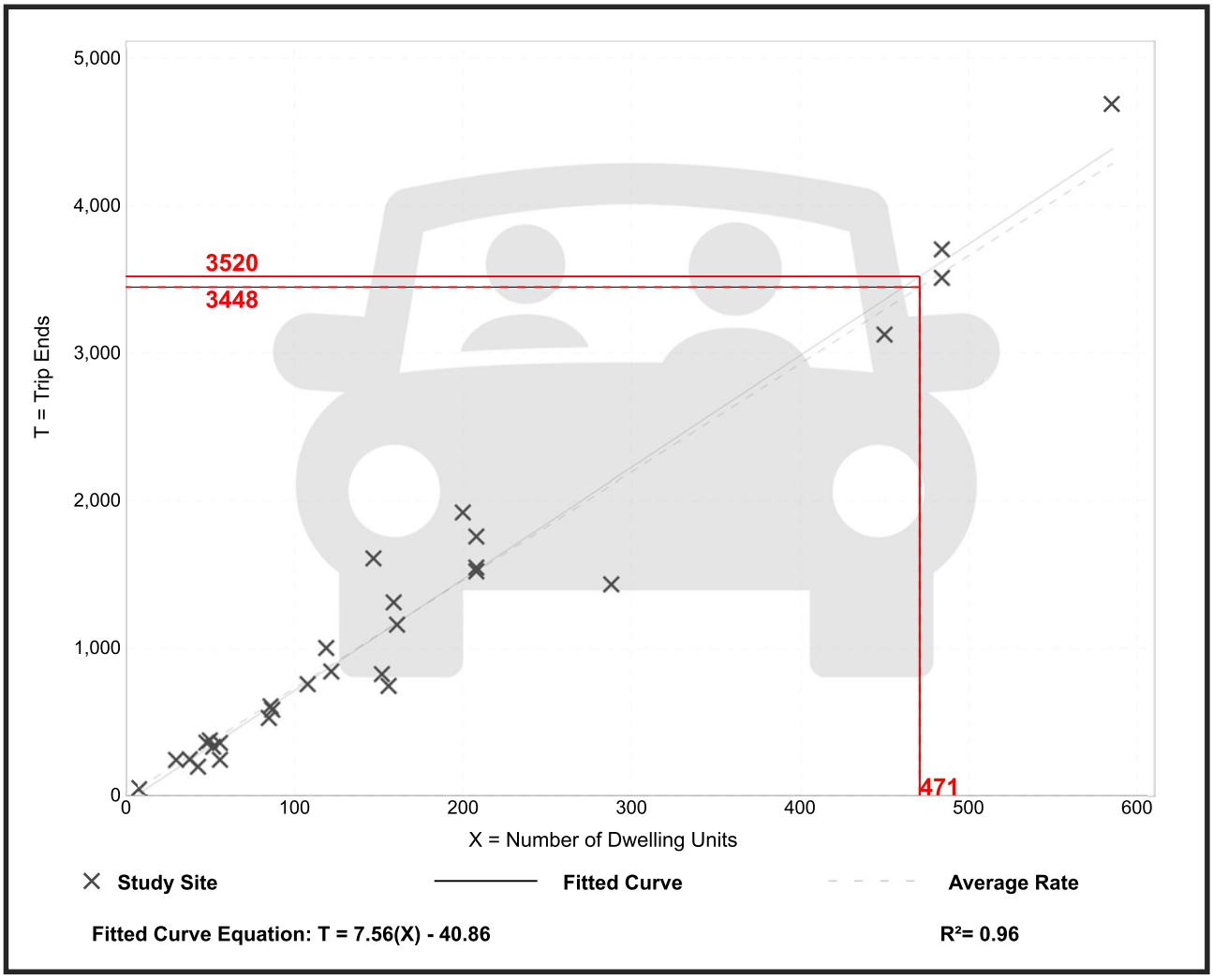
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 29
Avg. Num. of Dwelling Units: 168
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
7.32	4.45 - 10.97	1.31

Data Plot and Equation



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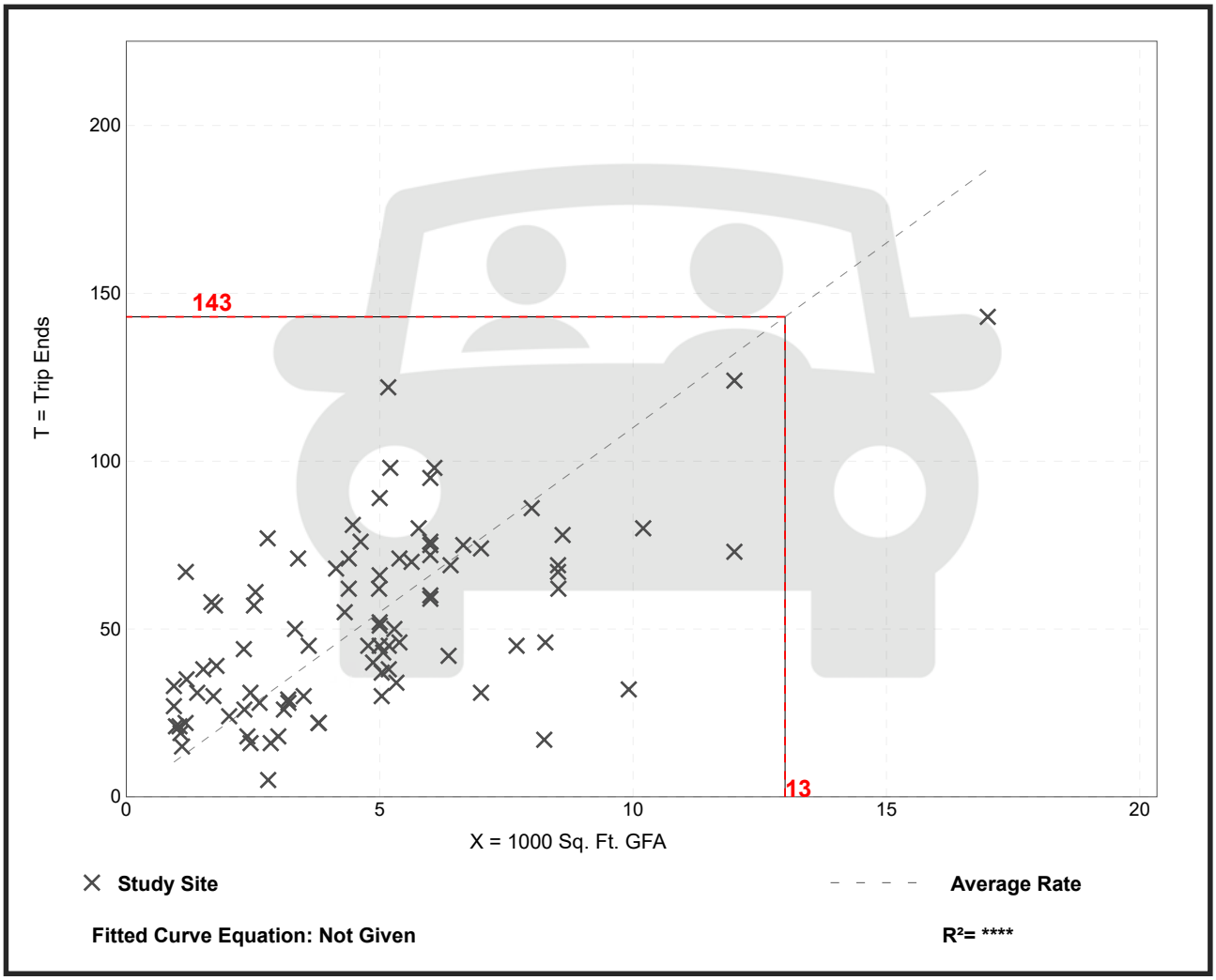
Day Care Center
(565)

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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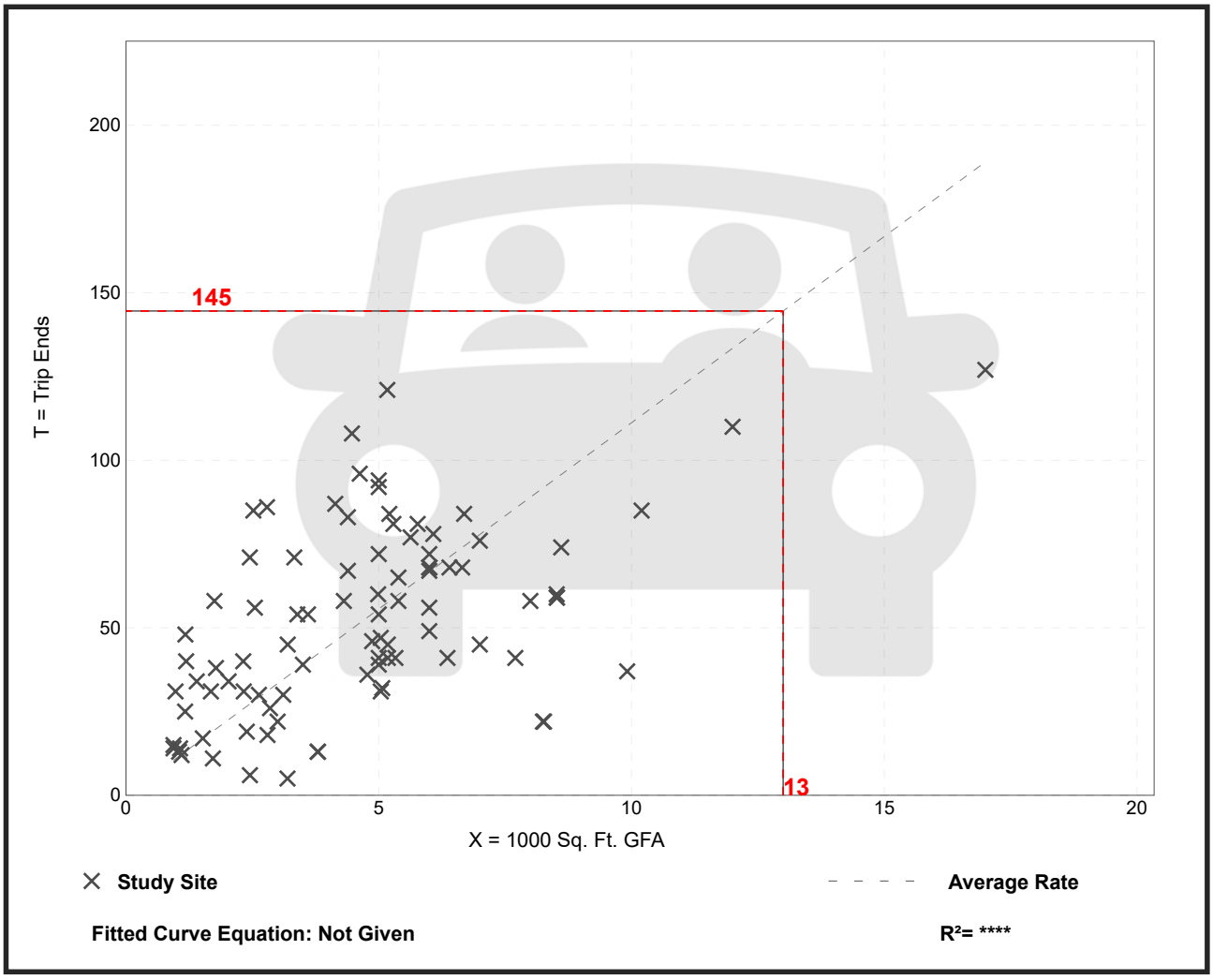
Day Care Center
(565)

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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Day Care Center
(565)

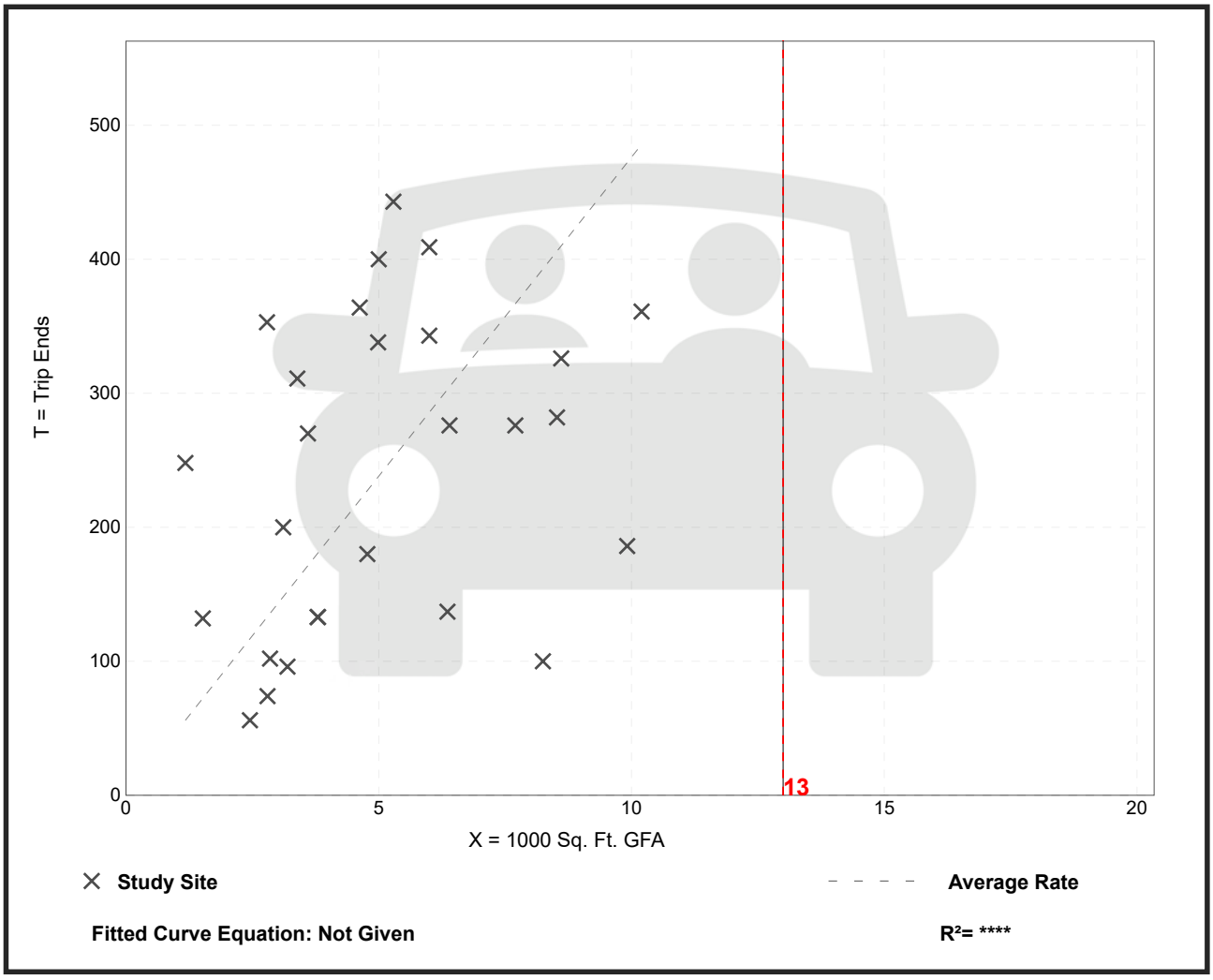
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

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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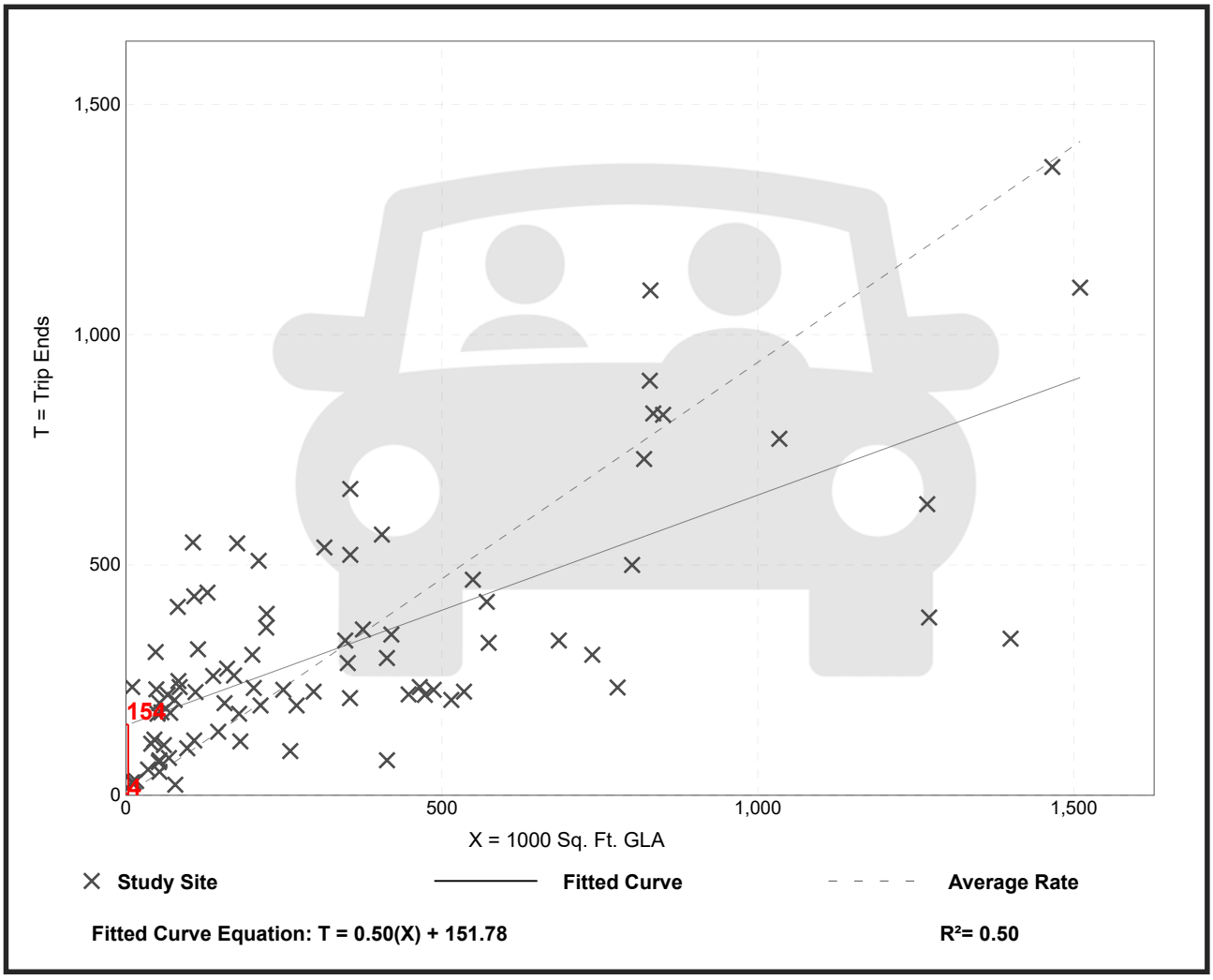
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
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: 84
Avg. 1000 Sq. Ft. GLA: 351
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



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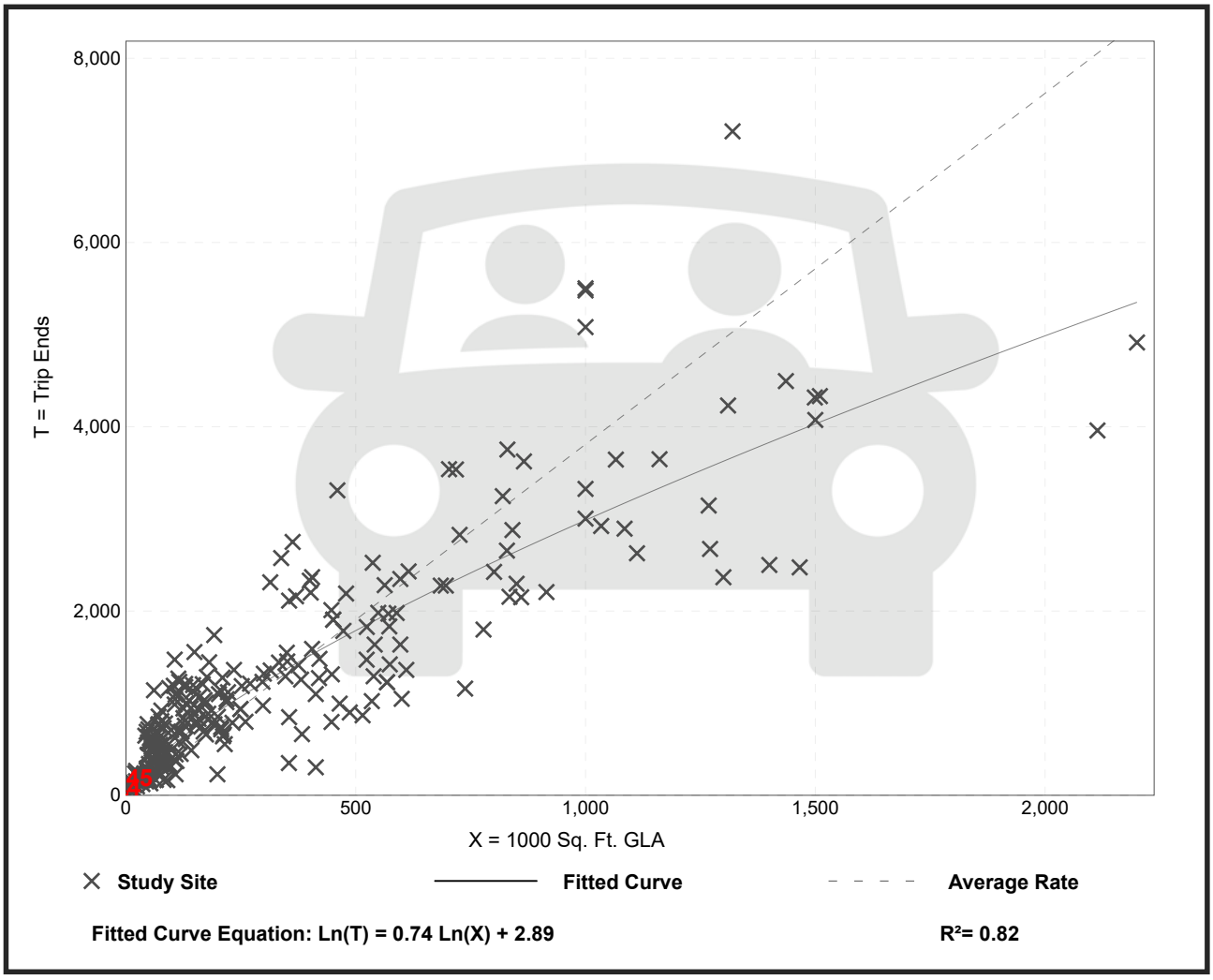
Shopping Center
(820)

Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
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: 261
Avg. 1000 Sq. Ft. GLA: 327
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



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Shopping Center
(820)

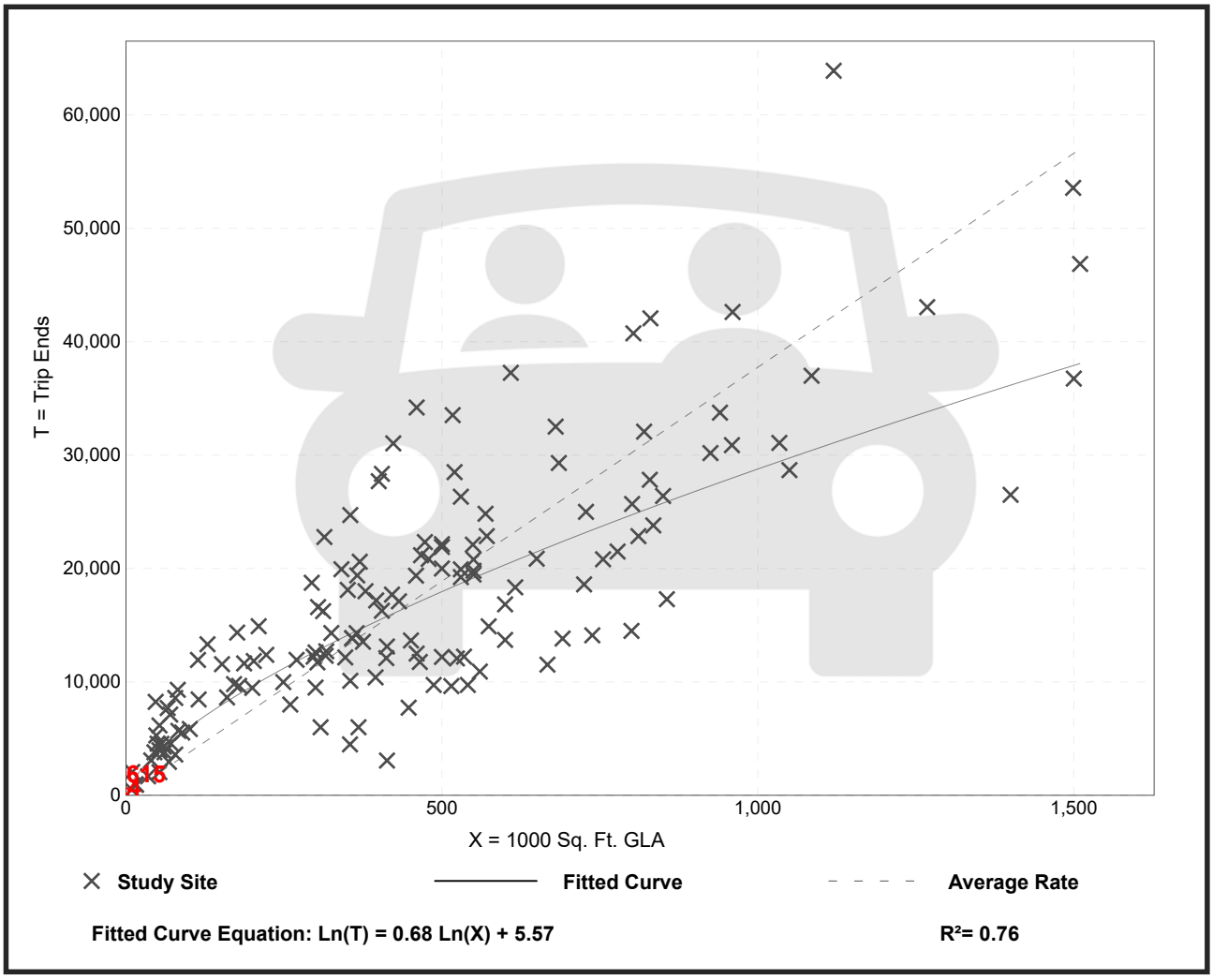
Vehicle Trip Ends vs: **1000 Sq. Ft. GLA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 147
Avg. 1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



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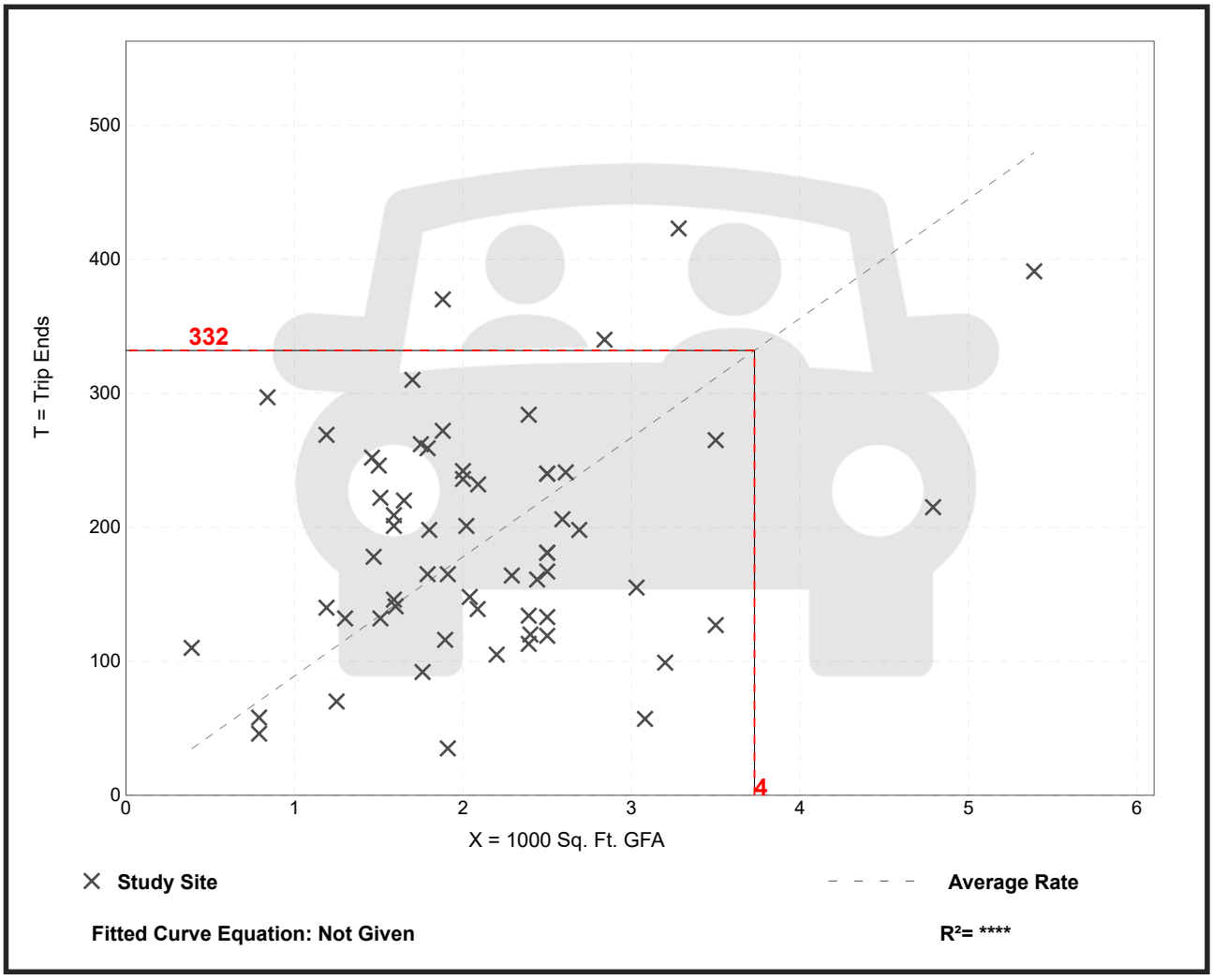
Coffee/Donut Shop with Drive-Through Window
(937)

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: 61
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
88.99	18.32 - 353.57	48.19

Data Plot and Equation



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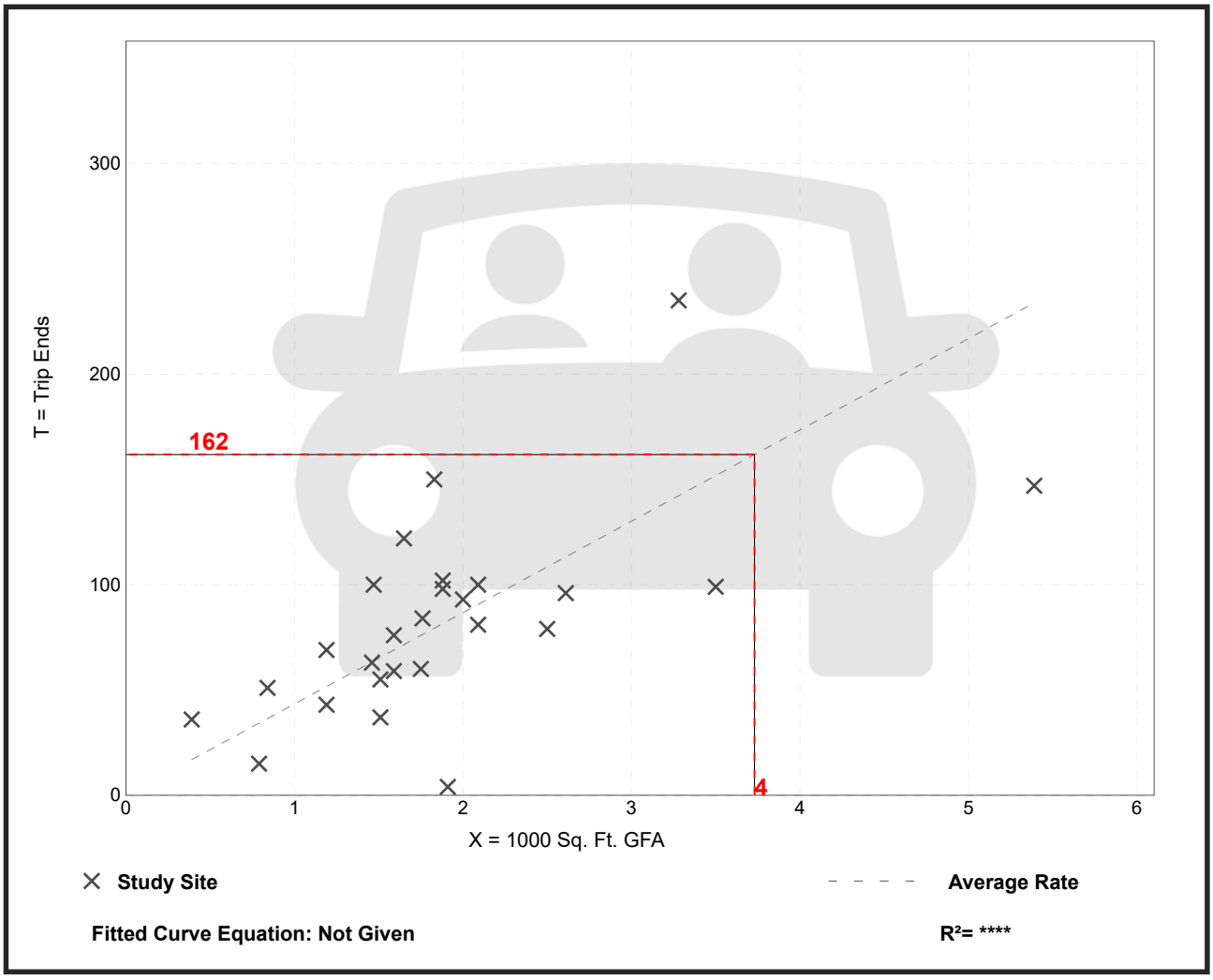
Coffee/Donut Shop with Drive-Through Window
(937)

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: 26
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.38	2.09 - 92.31	18.88

Data Plot and Equation



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Coffee/Donut Shop with Drive-Through Window
(937)

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

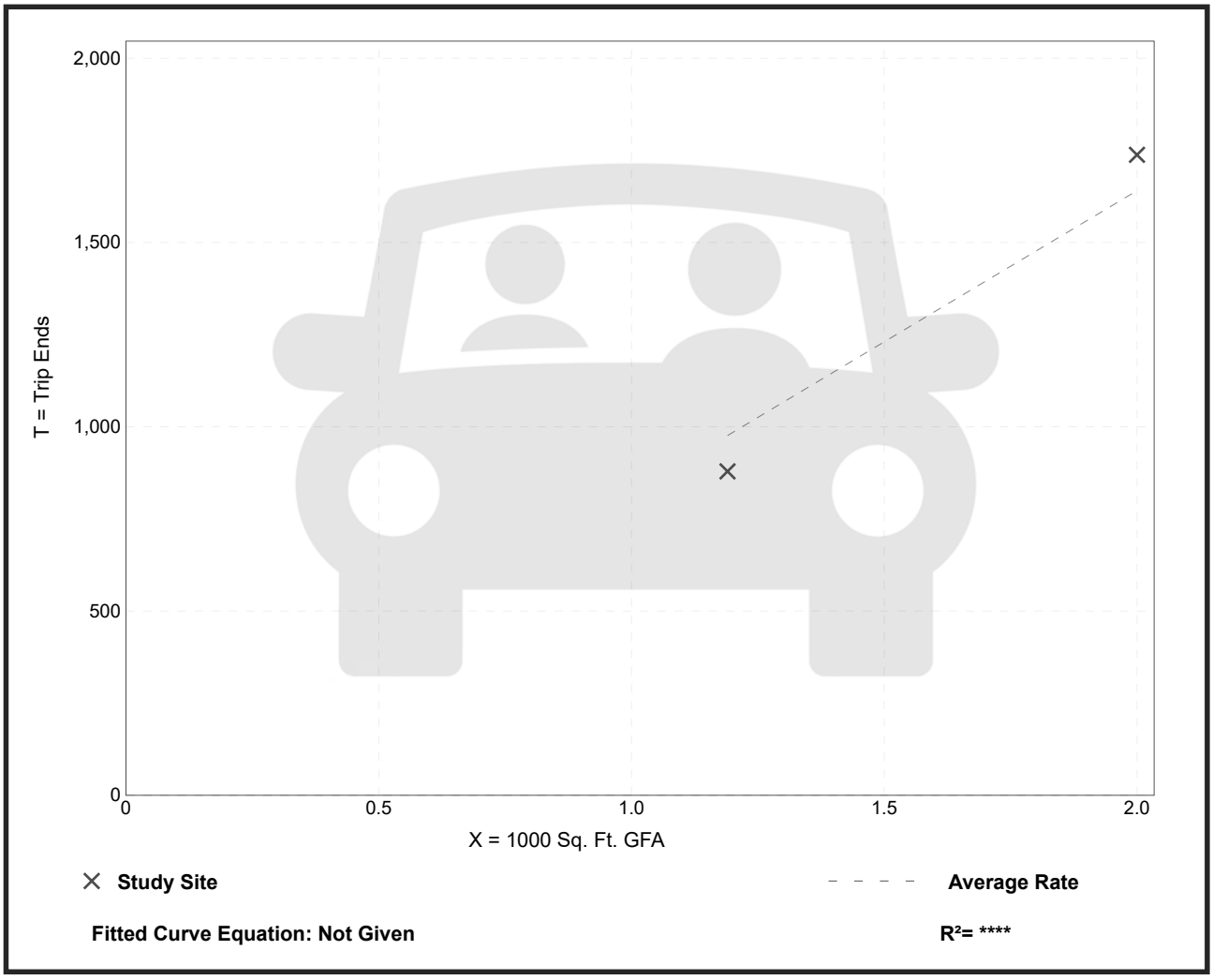
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
820.38	738.66 - 869.00	*

Data Plot and Equation

Caution – Small Sample Size



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APPENDIX C – CAPACITY ANALYSES

EXISTING CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	1	51	2	0	1	105	1554	1	1	1195	70
Future Volume (veh/h)	189	1	51	2	0	1	105	1554	1	1	1195	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	205	1	55	2	0	1	114	1689	1	1	1299	76
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	5	280	304	0	285	149	2089	1	3	1676	98
Arrive On Green	0.18	0.18	0.18	0.18	0.00	0.18	0.08	0.58	0.58	0.00	0.49	0.49
Sat Flow, veh/h	1410	28	1559	1342	0	1583	1774	3630	2	1774	3399	199
Grp Volume(v), veh/h	205	0	56	2	0	1	114	823	867	1	675	700
Grp Sat Flow(s),veh/h/ln	1410	0	1588	1342	0	1583	1774	1770	1862	1774	1770	1828
Q Serve(g_s), s	9.8	0.0	2.1	0.1	0.0	0.0	4.4	25.8	25.8	0.0	21.9	22.0
Cycle Q Clear(g_c), s	9.8	0.0	2.1	2.2	0.0	0.0	4.4	25.8	25.8	0.0	21.9	22.0
Prop In Lane	1.00		0.98	1.00		1.00	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	356	0	285	304	0	285	149	1019	1072	3	872	901
V/C Ratio(X)	0.58	0.00	0.20	0.01	0.00	0.00	0.77	0.81	0.81	0.39	0.77	0.78
Avail Cap(c_a), veh/h	708	0	681	639	0	680	508	1342	1412	508	1342	1386
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	0.0	24.4	25.3	0.0	23.5	31.3	11.8	11.8	34.9	14.5	14.6
Incr Delay (d2), s/veh	1.5	0.0	0.3	0.0	0.0	0.0	7.9	2.8	2.7	77.5	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.9	0.0	0.0	0.0	2.5	13.2	13.8	0.1	10.9	11.3
LnGrp Delay(d),s/veh	29.0	0.0	24.7	25.3	0.0	23.5	39.2	14.6	14.5	112.4	16.1	16.1
LnGrp LOS	C		C	C		C	D	B	B	F	B	B
Approach Vol, veh/h		261			3			1804			1376	
Approach Delay, s/veh		28.1			24.7			16.1			16.1	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	47.2		17.6	10.9	41.5		17.6
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	53.0		30.0	20.0	53.0		30.0
Max Q Clear Time (g_c+I1), s	2.0	27.8		11.8	6.4	24.0		4.2
Green Ext Time (p_c), s	0.0	12.4		0.8	0.2	9.6		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		17.0
HCM 2010 LOS		B

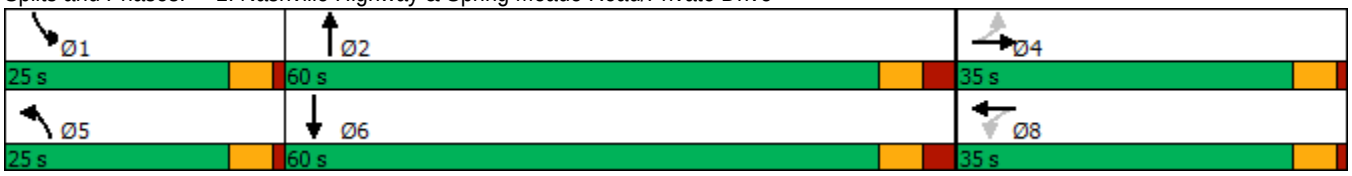
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	180	53	28	155	209	235	29	333	330
Average Queue (ft)	106	25	1	56	95	109	1	152	157
95th Queue (ft)	161	50	9	105	175	193	9	253	260
Link Distance (ft)	417	417	233		1664	1664		1260	1260
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				255			220		
Storage Blk Time (%)								2	
Queuing Penalty (veh)								0	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	189	1	2	0	105	1554	1	1195
Future Volume (vph)	189	1	2	0	105	1554	1	1195
Turn Type	Perm	NA	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8					
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	7.0	7.0	5.0	25.0	5.0	25.0
Minimum Split (s)	23.0	23.0	12.0	12.0	10.0	32.0	10.0	32.0
Total Split (s)	35.0	35.0	35.0	35.0	25.0	60.0	25.0	60.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	20.8%	50.0%	20.8%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	19.6	19.6	19.6	19.6	11.9	61.7	5.8	46.5
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.12	0.65	0.06	0.49
v/c Ratio	0.71	0.15	0.01	0.00	0.52	0.74	0.01	0.80
Control Delay	50.6	10.6	32.5	0.0	50.7	15.8	51.0	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	10.6	32.5	0.0	50.7	15.8	51.0	26.4
LOS	D	B	C	A	D	B	D	C
Approach Delay		42.0		21.7		18.0		26.5
Approach LOS		D		C		B		C

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 95.4	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 78.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	83	124	1689	1263	4
Future Vol, veh/h	1	83	124	1689	1263	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	90	135	1836	1373	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2563	689	1377	0	-	0
Stage 1	1375	-	-	-	-	-
Stage 2	1188	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	21	388	494	-	-	-
Stage 1	200	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	21	388	494	-	-	-
Mov Cap-2 Maneuver	21	-	-	-	-	-
Stage 1	200	-	-	-	-	-
Stage 2	252	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.6	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	494	-	321	-	-
HCM Lane V/C Ratio	0.273	-	0.284	-	-
HCM Control Delay (s)	15	0	20.6	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	1.1	-	1.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	3	15	13	0	65	4	1672	31	39	1289	18
Future Volume (veh/h)	75	3	15	13	0	65	4	1672	31	39	1289	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	82	3	16	14	0	71	4	1817	34	42	1401	20
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	4	99	102	0	91	63	2309	1033	67	2317	1036
Arrive On Green	0.06	0.06	0.06	0.06	0.00	0.06	0.04	0.65	0.65	0.04	0.65	0.65
Sat Flow, veh/h	1714	63	1583	1774	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	85	0	16	14	0	71	4	1817	34	42	1401	20
Grp Sat Flow(s),veh/h/ln	1777	0	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	6.6	0.0	1.3	1.0	0.0	6.2	0.3	51.3	1.1	3.3	31.7	0.6
Cycle Q Clear(g_c), s	6.6	0.0	1.3	1.0	0.0	6.2	0.3	51.3	1.1	3.3	31.7	0.6
Prop In Lane	0.96		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	0	99	102	0	91	63	2309	1033	67	2317	1036
V/C Ratio(X)	0.76	0.00	0.16	0.14	0.00	0.78	0.06	0.79	0.03	0.63	0.60	0.02
Avail Cap(c_a), veh/h	298	0	266	298	0	266	177	2309	1033	177	2317	1036
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.6	0.0	62.1	62.6	0.0	65.1	65.2	17.4	8.6	66.4	13.8	8.5
Incr Delay (d2), s/veh	10.2	0.0	0.8	0.6	0.0	13.1	0.4	2.8	0.1	9.2	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.6	0.5	0.0	3.1	0.2	25.9	0.5	1.8	15.8	0.3
LnGrp Delay(d),s/veh	74.8	0.0	62.9	63.2	0.0	78.2	65.6	20.2	8.7	75.6	15.0	8.5
LnGrp LOS	E		E	E		E	E	C	A	E	B	A
Approach Vol, veh/h		101			85			1855			1463	
Approach Delay, s/veh		72.9			75.7			20.1			16.7	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.3	98.8		15.3	11.0	99.1		14.6
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	52.5		23.5	14.0	52.5		23.5
Max Q Clear Time (g_c+I1), s	5.3	53.3		8.6	2.3	33.7		8.2
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	9.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	216	47	153	143	21	424	446	229	79	367	404	275
Average Queue (ft)	72	12	14	43	1	203	207	17	32	78	147	11
95th Queue (ft)	152	36	63	88	8	354	365	111	63	229	313	92
Link Distance (ft)	574	574	457			1402	1402			532	532	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)				2		1	14			1	4	
Queuing Penalty (veh)				0		0	4			1	1	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	3	15	0	65	4	1672	31	39	1289	18
Future Volume (vph)	3	15	0	65	4	1672	31	39	1289	18
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	60.0	60.0	20.0	60.0	60.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	14.3%	42.9%	42.9%	14.3%	42.9%	42.9%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	12.0	12.0	7.3	7.3	5.9	90.4	90.4	8.7	100.3	100.3
Actuated g/C Ratio	0.09	0.09	0.05	0.05	0.04	0.65	0.65	0.06	0.72	0.72
v/c Ratio	0.56	0.06	0.15	0.34	0.05	0.80	0.03	0.38	0.55	0.02
Control Delay	74.6	0.5	66.8	4.4	65.5	24.5	0.1	72.1	12.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.6	0.5	66.8	4.4	65.5	24.5	0.1	72.1	12.3	0.0
LOS	E	A	E	A	E	C	A	E	B	A
Approach Delay	62.9		14.7			24.2			13.8	
Approach LOS	E		B			C			B	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 3.5 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 75.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	3	0	35	12	0
Future Vol, veh/h	20	3	0	35	12	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	22	3	0	38	13	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	25	0	62	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	38	-
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	-	-	1589	-	944	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1589	-	944	1052
Mov Cap-2 Maneuver	-	-	-	-	944	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	984	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	944	-	-	1589	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	71	1833	16	26	1652
Future Vol, veh/h	32	71	1833	16	26	1652
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	2	-	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	35	77	1992	17	28	1796

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2955	1005	0	0	2009	0
Stage 1	2001	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 11	240	-	-	281	-
Stage 1	91	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 10	240	-	-	281	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	91	-	-	-	-	-
Stage 2	302	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	78.3	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	150	281	-
HCM Lane V/C Ratio	-	-	0.746	0.101	-
HCM Control Delay (s)	-	-	78.3	19.2	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	4.5	0.3	-

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	10	8	1836	1665	23
Future Vol, veh/h	16	10	8	1836	1665	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	260	-	-	265
Veh in Median Storage, #	2	-	-	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	17	11	9	1996	1810	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2826	905	1835	0	-	0
Stage 1	1810	-	-	-	-	-
Stage 2	1016	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 14	279	328	-	-	-
Stage 1	116	-	-	-	-	-
Stage 2	310	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 14	279	328	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	113	-	-	-	-	-
Stage 2	310	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36.9	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	328	-	100	279	-	-
HCM Lane V/C Ratio	0.027	-	0.174	0.039	-	-
HCM Control Delay (s)	16.3	-	48.4	18.4	-	-
HCM Lane LOS	C	-	E	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	0.1	-	-

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)	115	0	67	0	0	0	51	1401	0	0	1769	105
Future Volume (veh/h)	115	0	67	0	0	0	51	1401	0	0	1769	105
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	125	0	73	0	0	0	55	1523	0	0	1923	114
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	0	140	51	164	0	71	2923	0	1	2549	150
Arrive On Green	0.09	0.00	0.09	0.00	0.00	0.00	0.04	0.83	0.00	0.00	0.75	0.75
Sat Flow, veh/h	1774	0	1583	1322	1863	0	1774	3632	0	1774	3398	199
Grp Volume(v), veh/h	125	0	73	0	0	0	55	1523	0	0	992	1045
Grp Sat Flow(s),veh/h/ln	1774	0	1583	1322	1863	0	1774	1770	0	1774	1770	1828
Q Serve(g_s), s	9.7	0.0	6.2	0.0	0.0	0.0	4.3	18.4	0.0	0.0	44.7	46.7
Cycle Q Clear(g_c), s	9.7	0.0	6.2	0.0	0.0	0.0	4.3	18.4	0.0	0.0	44.7	46.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	208	0	140	51	164	0	71	2923	0	1	1327	1371
V/C Ratio(X)	0.60	0.00	0.52	0.00	0.00	0.00	0.77	0.52	0.00	0.00	0.75	0.76
Avail Cap(c_a), veh/h	432	0	339	218	399	0	253	2923	0	253	1327	1371
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	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	62.6	0.0	61.0	0.0	0.0	0.0	66.6	3.7	0.0	0.0	9.9	10.2
Incr Delay (d2), s/veh	2.8	0.0	3.0	0.0	0.0	0.0	16.0	0.7	0.0	0.0	3.9	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(50%),veh/ln	4.9	0.0	2.8	0.0	0.0	0.0	2.4	9.2	0.0	0.0	22.9	24.8
LnGrp Delay(d),s/veh	65.4	0.0	64.0	0.0	0.0	0.0	82.6	4.4	0.0	0.0	13.8	14.2
LnGrp LOS	E		E				F	A			B	B
Approach Vol, veh/h		198			0			1578			2037	
Approach Delay, s/veh		64.9			0.0			7.1			14.0	
Approach LOS		E						A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	122.6		17.4	10.6	112.0		17.4
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	73.0		30.0	20.0	73.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	20.4		11.7	6.3	48.7		0.0
Green Ext Time (p_c), s	0.0	14.8		0.7	0.1	16.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

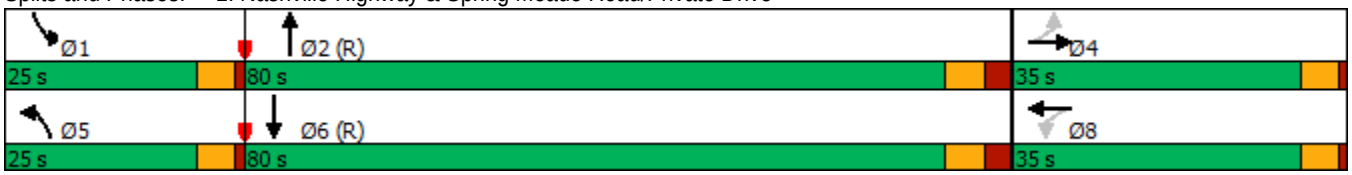
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	TR	T	TR
Maximum Queue (ft)	181	182	90	158	178	386	400
Average Queue (ft)	96	42	35	49	67	183	201
95th Queue (ft)	159	103	83	126	138	334	355
Link Distance (ft)	417	417		1664	1664	1260	1260
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			255				
Storage Blk Time (%)						5	
Queuing Penalty (veh)						0	

Lane Group	EBL	EBT	NBL	NBT	SBT	Ø1	Ø8
Lane Configurations							
Traffic Volume (vph)	115	0	51	1401	1769		
Future Volume (vph)	115	0	51	1401	1769		
Turn Type	Perm	NA	Prot	NA	NA		
Protected Phases		4	5	2	6	1	8
Permitted Phases	4						
Detector Phase	4	4	5	2	6		
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	25.0	25.0	5.0	7.0
Minimum Split (s)	23.0	23.0	10.0	32.0	32.0	10.0	12.0
Total Split (s)	35.0	35.0	25.0	80.0	80.0	25.0	35.0
Total Split (%)	25.0%	25.0%	17.9%	57.1%	57.1%	18%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	3.0	3.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.0	5.0	5.0	7.0	7.0		
Lead/Lag			Lead	Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	C-Min	C-Min	None	None
Act Effct Green (s)	17.7	17.7	9.7	110.3	97.8		
Actuated g/C Ratio	0.13	0.13	0.07	0.79	0.70		
v/c Ratio	0.70	0.18	0.45	0.55	0.83		
Control Delay	78.4	1.0	73.2	6.9	21.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	78.4	1.0	73.2	6.9	21.4		
LOS	E	A	E	A	C		
Approach Delay		49.8		9.2	21.4		
Approach LOS		D		A	C		

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 129.5 (93%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	70	34	1453	1842	2
Future Vol, veh/h	1	70	34	1453	1842	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	76	37	1579	2002	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2867	1002	2004	0	-	0
Stage 1	2003	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	13	241	282	-	-	-
Stage 1	90	-	-	-	-	-
Stage 2	373	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0	241	282	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	373	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.8	9.6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	282	-	241	-	-
HCM Lane V/C Ratio	0.131	-	0.32	-	-
HCM Control Delay (s)	19.7	9.4	26.8	-	-
HCM Lane LOS	C	A	D	-	-
HCM 95th %tile Q(veh)	0.4	-	1.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	5	11	46	5	78	23	1368	66	85	1751	78
Future Volume (veh/h)	43	5	11	46	5	78	23	1368	66	85	1751	78
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	47	5	12	50	5	85	25	1487	72	92	1903	85
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	7	65	110	11	107	55	2341	1047	114	2457	1099
Arrive On Green	0.04	0.04	0.04	0.07	0.07	0.07	0.03	0.66	0.66	0.06	0.69	0.69
Sat Flow, veh/h	1611	171	1583	1620	162	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	52	0	12	55	0	85	25	1487	72	92	1903	85
Grp Sat Flow(s),veh/h/ln	1782	0	1583	1782	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	4.6	0.0	1.2	4.8	0.0	8.5	2.2	39.3	2.6	8.2	56.9	2.8
Cycle Q Clear(g_c), s	4.6	0.0	1.2	4.8	0.0	8.5	2.2	39.3	2.6	8.2	56.9	2.8
Prop In Lane	0.90		1.00	0.91		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	73	0	65	121	0	107	55	2341	1047	114	2457	1099
V/C Ratio(X)	0.71	0.00	0.18	0.46	0.00	0.79	0.45	0.64	0.07	0.81	0.77	0.08
Avail Cap(c_a), veh/h	262	0	233	262	0	233	155	2341	1047	155	2457	1099
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.8	0.0	74.1	71.7	0.0	73.5	76.2	15.8	9.6	73.9	16.2	7.9
Incr Delay (d2), s/veh	11.8	0.0	1.3	2.7	0.0	12.2	5.6	1.3	0.1	19.8	2.5	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(50%),veh/ln	2.5	0.0	0.5	2.4	0.0	4.1	1.2	19.4	1.2	4.6	28.3	1.2
LnGrp Delay(d),s/veh	87.5	0.0	75.4	74.4	0.0	85.7	81.8	17.1	9.7	93.7	18.6	8.0
LnGrp LOS	F		E	E		F	F	B	A	F	B	A
Approach Vol, veh/h		64			140			1584			2080	
Approach Delay, s/veh		85.3			81.3			17.8			21.5	
Approach LOS		F			F			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.2	113.3		13.1	11.0	118.6		17.3
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	72.5		23.5	14.0	72.5		23.5
Max Q Clear Time (g_c+I1), s	10.2	41.3		6.6	4.2	58.9		10.5
Green Ext Time (p_c), s	0.1	12.6		0.2	0.0	10.1		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

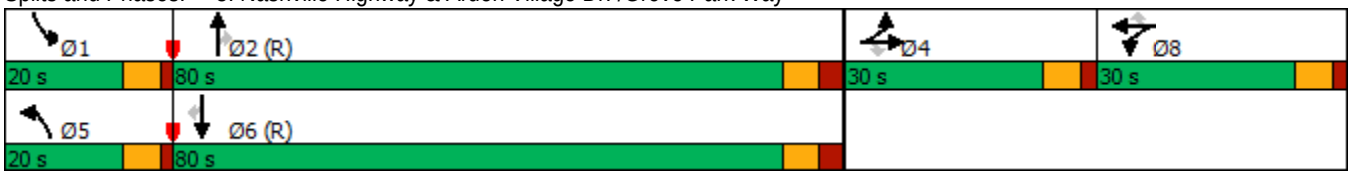
Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	97	28	152	114	68	408	407	229	224	536	536	275
Average Queue (ft)	43	8	43	43	18	212	217	18	87	258	317	37
95th Queue (ft)	89	29	103	86	48	359	373	89	153	526	584	170
Link Distance (ft)	574	574	457			1402	1402			532	532	
Upstream Blk Time (%)										0	0	
Queuing Penalty (veh)										1	3	
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)			3	0		1	17		7	9	15	
Queuing Penalty (veh)			2	0		0	11		62	7	12	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	11	5	78	23	1368	66	85	1751	78
Future Volume (vph)	5	11	5	78	23	1368	66	85	1751	78
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	80.0	80.0	20.0	80.0	80.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	12.5%	50.0%	50.0%	12.5%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	10.2	10.2	10.4	10.4	7.8	102.0	102.0	13.6	112.6	112.6
Actuated g/C Ratio	0.06	0.06	0.06	0.06	0.05	0.64	0.64	0.08	0.70	0.70
v/c Ratio	0.46	0.06	0.47	0.40	0.29	0.66	0.07	0.61	0.76	0.07
Control Delay	84.5	0.5	84.8	9.6	81.4	22.2	0.8	87.2	21.3	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	0.5	84.8	9.6	81.4	22.2	0.8	87.2	21.3	1.1
LOS	F	A	F	A	F	C	A	F	C	A
Approach Delay	68.8		39.1			22.1			23.4	
Approach LOS	E		D			C			C	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 160	
Offset: 3.5 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 140	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 78.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	31	6	0	11	8	0
Future Vol, veh/h	31	6	0	11	8	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	34	7	0	12	9	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	41	0	50	38
Stage 1	-	-	-	-	38	-
Stage 2	-	-	-	-	12	-
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	-	-	1568	-	959	1034
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1568	-	959	1034
Mov Cap-2 Maneuver	-	-	-	-	959	-
Stage 1	-	-	-	-	984	-
Stage 2	-	-	-	-	1011	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	959	-	-	1568	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s)	8.8	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	28	1374	34	44	1844
Future Vol, veh/h	15	28	1374	34	44	1844
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	2	-	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	16	30	1493	37	48	2004

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2610	765	0	0	1530	0
Stage 1	1512	-	-	-	-	-
Stage 2	1098	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	20	346	-	-	431	-
Stage 1	169	-	-	-	-	-
Stage 2	281	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	18	346	-	-	431	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	250	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.7	0	0.3
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	220	431	-
HCM Lane V/C Ratio	-	-	0.212	0.111	-
HCM Control Delay (s)	-	-	25.7	14.4	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.4	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	6	3	1395	1858	24
Future Vol, veh/h	21	6	3	1395	1858	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	260	-	-	265
Veh in Median Storage, #	2	-	-	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	23	7	3	1516	2020	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2784	1010	2046	0	-	0
Stage 1	2020	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 15	238	271	-	-	-
Stage 1	89	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 15	238	271	-	-	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	88	-	-	-	-	-
Stage 2	420	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	55.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	271	-	82	238	-	-
HCM Lane V/C Ratio	0.012	-	0.278	0.027	-	-
HCM Control Delay (s)	18.4	-	65	20.6	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0	-	1	0.1	-	-

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

BACKGROUND CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	1	60	2	0	1	120	2227	1	1	1576	114
Future Volume (veh/h)	372	1	60	2	0	1	120	2227	1	1	1576	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	404	1	65	2	0	1	130	2421	1	1	1713	124
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	508	432	428	0	432	160	2073	1	2	1615	116
Arrive On Green	0.27	0.27	0.27	0.27	0.00	0.27	0.09	0.57	0.57	0.00	0.48	0.48
Sat Flow, veh/h	1410	1863	1583	1330	0	1583	1774	3631	1	1774	3350	240
Grp Volume(v), veh/h	404	1	65	2	0	1	130	1180	1242	1	897	940
Grp Sat Flow(s),veh/h/ln	1410	1863	1583	1330	0	1583	1774	1770	1862	1774	1770	1820
Q Serve(g_s), s	29.9	0.0	3.4	0.1	0.0	0.1	7.9	62.8	62.8	0.1	53.0	53.0
Cycle Q Clear(g_c), s	30.0	0.0	3.4	0.2	0.0	0.1	7.9	62.8	62.8	0.1	53.0	53.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.13
Lane Grp Cap(c), veh/h	450	508	432	428	0	432	160	1010	1063	2	853	878
V/C Ratio(X)	0.90	0.00	0.15	0.00	0.00	0.00	0.81	1.17	1.17	0.41	1.05	1.07
Avail Cap(c_a), veh/h	450	508	432	428	0	432	323	1010	1063	323	853	878
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	29.1	30.3	29.1	0.0	29.1	49.1	23.6	23.6	54.8	28.5	28.5
Incr Delay (d2), s/veh	20.5	0.0	0.2	0.0	0.0	0.0	9.5	86.3	85.9	85.0	45.2	51.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	0.0	1.5	0.0	0.0	0.0	4.3	54.5	57.3	0.1	36.6	39.0
LnGrp Delay(d),s/veh	61.2	29.1	30.5	29.1	0.0	29.1	58.6	109.9	109.5	139.8	73.7	79.6
LnGrp LOS	E	C	C	C		C	E	F	F	F	F	F
Approach Vol, veh/h		470			3			2552			1838	
Approach Delay, s/veh		56.9			29.1			107.1			76.7	
Approach LOS		E			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	69.8		35.0	14.9	60.0		35.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	53.0		30.0	20.0	53.0		30.0
Max Q Clear Time (g_c+I1), s	2.1	64.8		32.0	9.9	55.0		2.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.2	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	90.7
HCM 2010 LOS	F

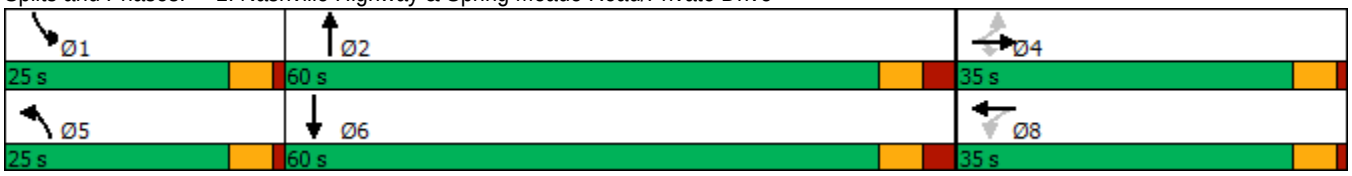
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	TR	L	T	TR	T	TR
Maximum Queue (ft)	311	30	76	52	354	377	382	1086	1075
Average Queue (ft)	212	1	30	4	72	218	235	635	641
95th Queue (ft)	303	11	62	23	176	330	353	1067	1066
Link Distance (ft)	416	416	416	233		1658	1658	2647	2647
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)					255				
Storage Blk Time (%)						2		43	
Queuing Penalty (veh)						3		0	

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	372	1	60	2	0	120	2227	1	1576
Future Volume (vph)	372	1	60	2	0	120	2227	1	1576
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	7.0	7.0	5.0	25.0	5.0	25.0
Minimum Split (s)	23.0	23.0	23.0	12.0	12.0	10.0	32.0	10.0	32.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	60.0	25.0	60.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	20.8%	50.0%	20.8%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	13.6	69.5	5.6	53.1
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.12	0.61	0.05	0.47
v/c Ratio	1.09	0.00	0.14	0.01	0.00	0.62	1.12	0.01	1.12
Control Delay	112.2	33.0	5.5	33.0	0.0	60.3	83.8	54.0	92.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	33.0	5.5	33.0	0.0	60.3	83.8	54.0	92.9
LOS	F	C	A	C	A	E	F	D	F
Approach Delay		97.3			22.0		82.6		92.9
Approach LOS		F			C		F		F

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 113.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 87.9	Intersection LOS: F
Intersection Capacity Utilization 107.2%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	184	190	2378	1658	20
Future Vol, veh/h	0	184	190	2378	1658	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	225	-	-	150
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	200	207	2585	1802	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	901	1824	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	281	332	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	281	332	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	44.1	2.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	332	-	281	-	-
HCM Lane V/C Ratio	0.622	-	0.712	-	-
HCM Control Delay (s)	32.1	-	44.1	-	-
HCM Lane LOS	D	-	E	-	-
HCM 95th %tile Q(veh)	3.9	-	5	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	3	48	19	0	76	37	2374	34	43	1732	67
Future Volume (veh/h)	119	3	48	19	0	76	37	2374	34	43	1732	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	129	3	52	21	0	83	40	2580	37	47	1883	73
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	4	156	124	0	111	88	1839	823	88	1839	823
Arrive On Green	0.10	0.10	0.10	0.07	0.00	0.07	0.05	0.52	0.52	0.05	0.52	0.52
Sat Flow, veh/h	1736	40	1583	1774	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	132	0	52	21	0	83	40	2580	37	47	1883	73
Grp Sat Flow(s),veh/h/ln	1776	0	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	7.3	0.0	3.1	1.1	0.0	5.2	2.2	52.5	1.2	2.6	52.5	2.3
Cycle Q Clear(g_c), s	7.3	0.0	3.1	1.1	0.0	5.2	2.2	52.5	1.2	2.6	52.5	2.3
Prop In Lane	0.98		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	175	0	156	124	0	111	88	1839	823	88	1839	823
V/C Ratio(X)	0.75	0.00	0.33	0.17	0.00	0.75	0.46	1.40	0.04	0.54	1.02	0.09
Avail Cap(c_a), veh/h	413	0	368	413	0	368	246	1839	823	246	1839	823
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	0.0	42.4	44.2	0.0	46.1	46.7	24.3	11.9	46.9	24.3	12.2
Incr Delay (d2), s/veh	6.4	0.0	1.2	0.6	0.0	9.7	3.7	184.7	0.0	5.0	27.3	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(50%),veh/ln	3.9	0.0	1.4	0.6	0.0	2.6	1.2	72.7	0.5	1.4	32.5	1.0
LnGrp Delay(d),s/veh	50.7	0.0	43.7	44.9	0.0	55.8	50.4	209.0	12.0	51.9	51.6	12.3
LnGrp LOS	D		D	D		E	D	F	B	D	F	B
Approach Vol, veh/h		184			104			2657			2003	
Approach Delay, s/veh		48.7			53.6			203.9			50.2	
Approach LOS		D			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	60.0		16.5	11.0	60.0		13.6
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	52.5		23.5	14.0	52.5		23.5
Max Q Clear Time (g_c+I1), s	4.6	54.5		9.3	4.2	54.5		7.2
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		132.7	
HCM 2010 LOS		F	

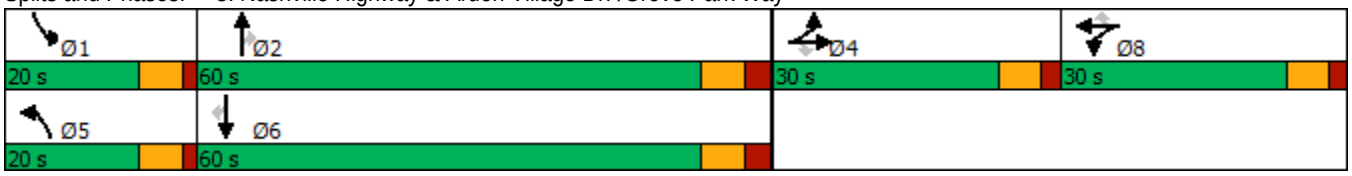
Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	150	124	52	125	429	1396	1425	230	225	521	527	275
Average Queue (ft)	73	21	13	52	94	1273	1279	60	52	278	296	57
95th Queue (ft)	137	71	43	96	343	1499	1482	214	154	476	489	217
Link Distance (ft)	1451	1451	457			1377	1377			527	527	
Upstream Blk Time (%)						2	2			0	0	
Queuing Penalty (veh)						23	27			1	1	
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)				1		45	44			26	25	
Queuing Penalty (veh)				0		17	15			11	17	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	3	48	0	76	37	2374	34	43	1732	67
Future Volume (vph)	3	48	0	76	37	2374	34	43	1732	67
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	60.0	60.0	20.0	60.0	60.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	14.3%	42.9%	42.9%	14.3%	42.9%	42.9%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	13.2	13.2	7.6	7.6	8.0	53.9	53.9	8.3	56.8	56.8
Actuated g/C Ratio	0.13	0.13	0.07	0.07	0.08	0.52	0.52	0.08	0.55	0.55
v/c Ratio	0.58	0.16	0.16	0.35	0.29	1.40	0.04	0.33	0.97	0.08
Control Delay	55.5	1.1	52.8	5.9	54.7	207.5	0.1	55.1	40.6	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	1.1	52.8	5.9	54.7	207.5	0.1	55.1	40.6	0.6
LOS	E	A	D	A	D	F	A	E	D	A
Approach Delay	40.1		15.4			202.3			39.5	
Approach LOS	D		B			F			D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 103.3	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.40	
Intersection Signal Delay: 126.5	Intersection LOS: F
Intersection Capacity Utilization 95.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	7	0	36	26	0
Future Vol, veh/h	21	7	0	36	26	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	23	8	0	39	28	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	31	0	66	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	39	-
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	-	-	1582	-	939	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	983	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1582	-	939	1048
Mov Cap-2 Maneuver	-	-	-	-	939	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	939	-	-	1582	-
HCM Lane V/C Ratio	0.03	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	14	43	142	13	134	79	2115	54	119	1963	92
Future Volume (veh/h)	185	14	43	142	13	134	79	2115	54	119	1963	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	201	15	47	154	14	146	86	2299	59	129	2134	100
Adj No. of Lanes	1	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	373	317	292	22	317	121	2199	984	115	2204	986
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.03	0.62	0.62	0.04	0.62	0.62
Sat Flow, veh/h	1221	1863	1583	1212	110	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	201	15	47	168	0	146	86	2299	59	129	2134	100
Grp Sat Flow(s),veh/h/ln	1221	1863	1583	1323	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	11.3	0.9	3.4	15.8	0.0	11.4	2.5	87.0	2.1	5.0	80.2	3.6
Cycle Q Clear(g_c), s	28.0	0.9	3.4	16.7	0.0	11.4	2.5	87.0	2.1	5.0	80.2	3.6
Prop In Lane	1.00		1.00	0.92		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	373	317	314	0	317	121	2199	984	115	2204	986
V/C Ratio(X)	1.34	0.04	0.15	0.54	0.00	0.46	0.71	1.05	0.06	1.12	0.97	0.10
Avail Cap(c_a), veh/h	150	373	317	328	0	334	123	2199	984	115	2204	986
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.3	45.2	46.2	51.9	0.0	49.4	35.4	26.5	10.4	44.9	25.1	10.6
Incr Delay (d2), s/veh	191.8	0.0	0.2	1.5	0.0	1.0	17.0	32.3	0.0	121.2	12.6	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(50%),veh/ln	13.8	0.5	1.5	6.1	0.0	5.1	2.6	52.0	0.9	8.3	42.7	1.6
LnGrp Delay(d),s/veh	258.1	45.2	46.4	53.4	0.0	50.4	52.4	58.8	10.4	166.0	37.7	10.7
LnGrp LOS	F	D	D	D		D	D	F	B	F	D	B
Approach Vol, veh/h		263			314			2444			2363	
Approach Delay, s/veh		208.1			52.0			57.4			43.6	
Approach LOS		F			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	94.5		34.5	10.8	94.7		34.5
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		* 6.5
Max Green Setting (Gmax), s	5.0	87.0		28.0	5.0	87.0		* 30
Max Q Clear Time (g_c+I1), s	7.0	89.0		30.0	4.5	82.2		18.7
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	4.3		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	58.4
HCM 2010 LOS	E

Notes

Intersection: 5: Nashville Highway & Green Mills

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	346	355	72	230	206	300	1077	1079	200	579	644	711
Average Queue (ft)	195	23	25	139	110	151	1062	1062	66	111	373	389
95th Queue (ft)	338	127	60	213	184	368	1075	1076	221	372	616	641
Link Distance (ft)		1732	1732	3856			1056	1056			1377	1377
Upstream Blk Time (%)							15	17				
Queuing Penalty (veh)							170	189				
Storage Bay Dist (ft)	250				220	200			100	480		
Storage Blk Time (%)	12			0	0		59	62			4	22
Queuing Penalty (veh)	2			0	0		46	34			5	21

Intersection: 5: Nashville Highway & Green Mills

Movement	SB
Directions Served	R
Maximum Queue (ft)	240
Average Queue (ft)	63
95th Queue (ft)	225
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	14	43	142	13	134	79	2115	54	119	1963	92
Future Volume (vph)	185	14	43	142	13	134	79	2115	54	119	1963	92
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	24.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	34.5	34.5	34.5	34.5	34.5	34.5	11.0	94.5	94.5	11.0	94.5	94.5
Total Split (%)	24.6%	24.6%	24.6%	24.6%	24.6%	24.6%	7.9%	67.5%	67.5%	7.9%	67.5%	67.5%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	28.0	28.0	28.0		29.5	29.5	93.5	87.0	87.0	93.5	87.0	87.0
Actuated g/C Ratio	0.20	0.20	0.20		0.21	0.21	0.67	0.62	0.62	0.67	0.62	0.62
v/c Ratio	1.07	0.04	0.12		0.59	0.37	0.74	1.05	0.06	1.10	0.97	0.10
Control Delay	139.0	45.7	2.6		59.1	24.1	54.8	59.1	1.5	141.7	39.0	3.8
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.0	45.7	2.6		59.1	24.1	54.8	59.1	1.5	141.7	39.0	3.8
LOS	F	D	A		E	C	D	E	A	F	D	A
Approach Delay		109.3			42.8			57.5			43.1	
Approach LOS		F			D			E			D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 52.9	Intersection LOS: D
Intersection Capacity Utilization 98.6%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Nashville Highway & Green Mills



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1	83	58	1	44	32	2108	19	14	2047	48
Future Volume (veh/h)	90	1	83	58	1	44	32	2108	19	14	2047	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	1	90	63	1	48	35	2291	21	15	2225	52
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	61	0	248	61	1	248	125	2370	1060	100	2326	1041
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.03	0.67	0.67	0.02	0.66	0.66
Sat Flow, veh/h	0	2	1583	0	3	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	99	0	90	64	0	48	35	2291	21	15	2225	52
Grp Sat Flow(s),veh/h/ln	2	0	1583	3	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	6.0	0.0	0.0	3.1	0.7	71.5	0.5	0.3	68.4	1.4
Cycle Q Clear(g_c), s	18.5	0.0	6.0	18.5	0.0	3.1	0.7	71.5	0.5	0.3	68.4	1.4
Prop In Lane	0.99		1.00	0.98		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	0	248	61	0	248	125	2370	1060	100	2326	1041
V/C Ratio(X)	1.62	0.00	0.36	1.05	0.00	0.19	0.28	0.97	0.02	0.15	0.96	0.05
Avail Cap(c_a), veh/h	61	0	248	61	0	248	149	2370	1060	146	2356	1054
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	0.0	44.4	58.8	0.0	43.2	29.8	18.2	6.5	29.3	18.6	7.2
Incr Delay (d2), s/veh	342.3	0.0	0.9	129.1	0.0	0.4	1.2	11.7	0.0	0.7	10.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	2.7	4.2	0.0	1.4	0.8	38.2	0.2	0.3	36.4	0.6
LnGrp Delay(d),s/veh	401.1	0.0	45.3	189.1	0.0	43.6	31.0	29.9	6.5	30.0	28.8	7.2
LnGrp LOS	F		D	F		D	C	C	A	C	C	A
Approach Vol, veh/h		189			112			2347			2292	
Approach Delay, s/veh		231.7			126.7			29.7			28.4	
Approach LOS		F			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.9	86.5		23.5	9.4	85.0		23.5
Change Period (Y+Rc), s	6.0	7.5		* 5	6.0	7.5		5.0
Max Green Setting (Gmax), s	5.0	78.5		* 19	5.0	78.5		18.0
Max Q Clear Time (g_c+I1), s	2.3	73.5		20.5	2.7	70.4		20.5
Green Ext Time (p_c), s	0.0	4.6		0.0	0.0	7.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.0
HCM 2010 LOS	D

Notes

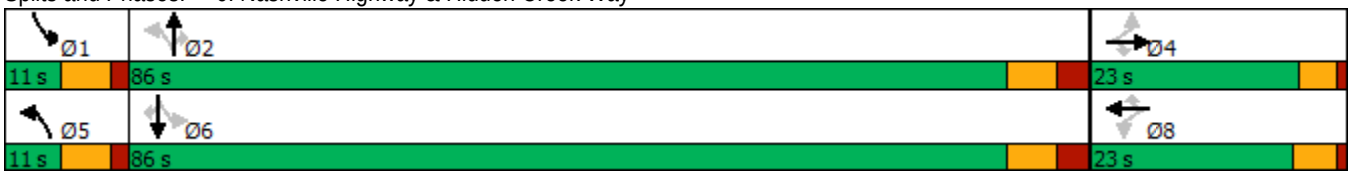
Intersection: 6: Nashville Highway & Hidden Creek Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	164	136	96	117	360	4958	4969	360	41	288	392	32
Average Queue (ft)	70	58	40	35	63	4927	4934	49	8	163	169	3
95th Queue (ft)	139	115	87	80	282	4945	4958	249	27	291	313	14
Link Distance (ft)	2047	2047	2206	2206		4906	4906			1056	1056	
Upstream Blk Time (%)						96	93					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (ft)					260			260	330			265
Storage Blk Time (%)						67	66				1	
Queuing Penalty (veh)						22	13				0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	1	83	58	1	44	32	2108	19	14	2047	48
Future Volume (vph)	90	1	83	58	1	44	32	2108	19	14	2047	48
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	15.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	22.5	22.5	22.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	11.0	86.0	86.0	11.0	86.0	86.0
Total Split (%)	19.2%	19.2%	19.2%	19.2%	19.2%	19.2%	9.2%	71.7%	71.7%	9.2%	71.7%	71.7%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)		16.4	16.4		15.9	15.9	85.1	81.7	81.7	84.0	79.6	79.6
Actuated g/C Ratio		0.14	0.14		0.14	0.14	0.74	0.71	0.71	0.73	0.70	0.70
v/c Ratio		0.54	0.29		0.41	0.16	0.25	0.91	0.02	0.11	0.90	0.05
Control Delay		58.4	10.8		54.8	1.5	8.1	21.2	0.1	5.1	22.3	0.9
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		58.4	10.8		54.8	1.5	8.1	21.2	0.1	5.1	22.3	0.9
LOS		E	B		D	A	A	C	A	A	C	A
Approach Delay		35.8			32.0			20.9			21.7	
Approach LOS		D			C			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 114.4	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 22.1	Intersection LOS: C
Intersection Capacity Utilization 90.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Nashville Highway & Hidden Creek Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	0	83	0	0	0	68	1980	0	0	2639	245
Future Volume (veh/h)	230	0	83	0	0	0	68	1980	0	0	2639	245
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	250	0	90	0	0	0	74	2152	0	0	2868	266
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	302	257	63	302	0	96	2596	0	2	2086	190
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.05	0.73	0.00	0.00	0.64	0.64
Sat Flow, veh/h	1774	1863	1583	1301	1863	0	1774	3632	0	1774	3280	300
Grp Volume(v), veh/h	250	0	90	0	0	0	74	2152	0	0	1527	1607
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1301	1863	0	1774	1770	0	1774	1770	1810
Q Serve(g_s), s	15.8	0.0	5.8	0.0	0.0	0.0	4.7	47.5	0.0	0.0	73.0	73.0
Cycle Q Clear(g_c), s	15.8	0.0	5.8	0.0	0.0	0.0	4.7	47.5	0.0	0.0	73.0	73.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.17
Lane Grp Cap(c), veh/h	350	302	257	63	302	0	96	2596	0	2	1125	1151
V/C Ratio(X)	0.71	0.00	0.35	0.00	0.00	0.00	0.77	0.83	0.00	0.00	1.36	1.40
Avail Cap(c_a), veh/h	526	487	414	192	487	0	309	2596	0	309	1125	1151
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	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	42.7	0.0	0.0	0.0	53.6	10.4	0.0	0.0	20.9	20.9
Incr Delay (d2), s/veh	2.7	0.0	0.8	0.0	0.0	0.0	12.4	2.4	0.0	0.0	166.4	183.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	2.6	0.0	0.0	0.0	2.7	23.6	0.0	0.0	87.3	94.9
LnGrp Delay(d),s/veh	49.6	0.0	43.5	0.0	0.0	0.0	66.0	12.8	0.0	0.0	187.3	204.6
LnGrp LOS	D		D				E	B			F	F
Approach Vol, veh/h		340			0			2226			3134	
Approach Delay, s/veh		48.0			0.0			14.6			196.2	
Approach LOS		D						B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	91.2		23.6	11.2	80.0		23.6
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	73.0		30.0	20.0	73.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	49.5		17.8	6.7	75.0		0.0
Green Ext Time (p_c), s	0.0	17.0		0.8	0.1	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		116.4
HCM 2010 LOS		F

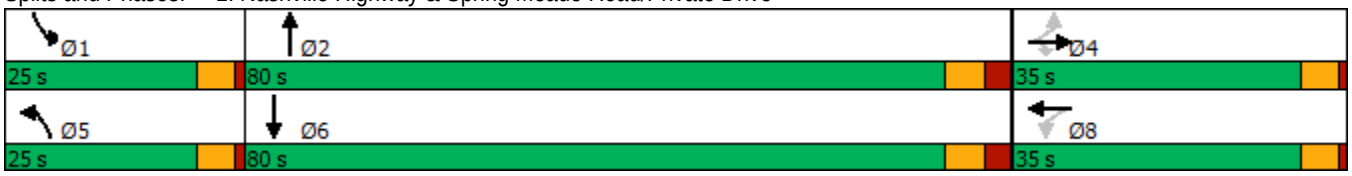
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	TR	T	TR
Maximum Queue (ft)	267	114	100	296	329	2710	2710
Average Queue (ft)	138	49	45	156	175	2675	2672
95th Queue (ft)	215	93	90	292	323	2702	2695
Link Distance (ft)	416	416		1658	1658	2647	2647
Upstream Blk Time (%)						67	75
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)			255				
Storage Blk Time (%)				1		39	
Queuing Penalty (veh)				1		0	

Lane Group	EBL	EBR	NBL	NBT	SBT	Ø1	Ø8
Lane Configurations							
Traffic Volume (vph)	230	83	68	1980	2639		
Future Volume (vph)	230	83	68	1980	2639		
Turn Type	Perm	Perm	Prot	NA	NA		
Protected Phases			5	2	6	1	8
Permitted Phases	4	4					
Detector Phase	4	4	5	2	6		
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	25.0	25.0	5.0	7.0
Minimum Split (s)	23.0	23.0	10.0	32.0	32.0	10.0	12.0
Total Split (s)	35.0	35.0	25.0	80.0	80.0	25.0	35.0
Total Split (%)	25.0%	25.0%	17.9%	57.1%	57.1%	18%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	3.0	3.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.0	5.0	5.0	7.0	7.0		
Lead/Lag			Lead	Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Min	Min	None	None
Act Effct Green (s)	25.9	25.9	10.6	86.6	73.7		
Actuated g/C Ratio	0.21	0.21	0.09	0.69	0.59		
v/c Ratio	0.85	0.17	0.49	0.88	1.51		
Control Delay	74.4	0.7	67.8	20.8	258.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	74.4	0.7	67.8	20.8	258.4		
LOS	E	A	E	C	F		
Approach Delay				22.3	258.4		
Approach LOS				C	F		

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 124.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.51	
Intersection Signal Delay: 154.1	Intersection LOS: F
Intersection Capacity Utilization 103.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	17.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	164	140	2049	2676	53
Future Vol, veh/h	0	164	140	2049	2676	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	225	-	-	150
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	178	152	2227	2909	58

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	1455	2967	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	4.14	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	0	~ 119	~ 117	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	~ 119	~ 117	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 328.8	16.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	~ 117	-	119	-	-
HCM Lane V/C Ratio	1.301	-	1.498	-	-
HCM Control Delay (s)	253.7	-	$ 328.8	-	-
HCM Lane LOS	F	-	F	-	-
HCM 95th %tile Q(veh)	10.1	-	12.7	-	-

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 (veh/h)	191	5	125	51	5	85	136	1916	74	95	2523	223
Future Volume (veh/h)	191	5	125	51	5	85	136	1916	74	95	2523	223
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	208	5	136	55	5	92	148	2083	80	103	2742	242
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	6	217	121	11	117	171	1883	842	127	1796	803
Arrive On Green	0.14	0.14	0.14	0.07	0.07	0.07	0.10	0.53	0.53	0.07	0.51	0.51
Sat Flow, veh/h	1734	42	1583	1633	148	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	213	0	136	60	0	92	148	2083	80	103	2742	242
Grp Sat Flow(s),veh/h/ln	1776	0	1583	1781	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	16.8	0.0	11.6	4.6	0.0	8.2	11.8	76.0	3.6	8.2	72.5	12.7
Cycle Q Clear(g_c), s	16.8	0.0	11.6	4.6	0.0	8.2	11.8	76.0	3.6	8.2	72.5	12.7
Prop In Lane	0.98		1.00	0.92		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	243	0	217	132	0	117	171	1883	842	127	1796	803
V/C Ratio(X)	0.88	0.00	0.63	0.45	0.00	0.78	0.87	1.11	0.09	0.81	1.53	0.30
Avail Cap(c_a), veh/h	292	0	260	293	0	260	174	1883	842	174	1796	803
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.5	0.0	58.2	63.4	0.0	65.0	63.7	33.4	16.5	65.4	35.2	20.5
Incr Delay (d2), s/veh	21.8	0.0	3.4	2.4	0.0	10.8	33.6	56.3	0.0	18.0	240.1	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(50%),veh/ln	9.8	0.0	5.3	2.4	0.0	3.9	7.4	51.6	1.6	4.6	95.3	5.6
LnGrp Delay(d),s/veh	82.3	0.0	61.7	65.8	0.0	75.9	97.3	89.8	16.5	83.4	275.3	20.7
LnGrp LOS	F		E	E		E	F	F	B	F	F	C
Approach Vol, veh/h		349			152			2311			3087	
Approach Delay, s/veh		74.2			71.9			87.7			248.9	
Approach LOS		E			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.2	83.5		26.1	19.8	80.0		17.1
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	72.5		23.5	14.0	72.5		23.5
Max Q Clear Time (g_c+I1), s	10.2	78.0		18.8	13.8	74.5		10.2
Green Ext Time (p_c), s	0.1	0.0		0.7	0.0	0.0		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		170.9
HCM 2010 LOS		F

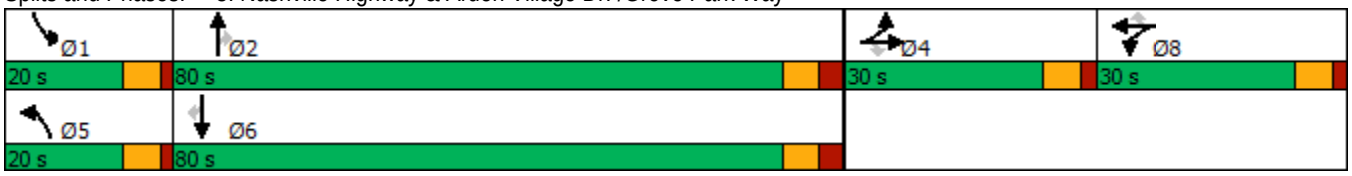
Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	256	148	191	158	430	1366	1352	230	224	556	572	275
Average Queue (ft)	163	65	57	54	290	1058	1074	72	74	535	538	159
95th Queue (ft)	248	123	121	112	541	1312	1314	242	176	548	557	364
Link Distance (ft)	1451	1451	457			1377	1377			527	527	
Upstream Blk Time (%)						0				25	27	
Queuing Penalty (veh)						0				359	380	
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)			3	3		42	44		3	47	46	
Queuing Penalty (veh)			3	2		58	33		44	44	103	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	125	5	85	136	1916	74	95	2523	223
Future Volume (vph)	5	125	5	85	136	1916	74	95	2523	223
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	80.0	80.0	20.0	80.0	80.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	12.5%	50.0%	50.0%	12.5%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	21.2	21.2	10.4	10.4	14.0	74.1	74.1	12.5	72.6	72.6
Actuated g/C Ratio	0.15	0.15	0.07	0.07	0.10	0.51	0.51	0.09	0.50	0.50
v/c Ratio	0.82	0.39	0.47	0.42	0.87	1.15	0.09	0.68	1.55	0.29
Control Delay	84.5	11.8	77.5	10.8	105.3	107.5	1.6	86.9	277.0	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	11.8	77.5	10.8	105.3	107.5	1.6	86.9	277.0	12.7
LOS	F	B	E	B	F	F	A	F	F	B
Approach Delay	56.2		37.2			103.7			249.9	
Approach LOS	E		D			F			F	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 144.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.55	
Intersection Signal Delay: 175.7	Intersection LOS: F
Intersection Capacity Utilization 111.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	18	0	11	15	0
Future Vol, veh/h	32	18	0	11	15	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	35	20	0	12	16	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	57	45
Stage 1	-	-	-	-	45	-
Stage 2	-	-	-	-	12	-
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	-	-	1550	-	950	1025
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	950	1025
Mov Cap-2 Maneuver	-	-	-	-	950	-
Stage 1	-	-	-	-	977	-
Stage 2	-	-	-	-	1011	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	950	-	-	1550	-
HCM Lane V/C Ratio	0.017	-	-	-	-
HCM Control Delay (s)	8.9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	13	40	86	17	208	104	1690	155	349	2313	122
Future Volume (veh/h)	172	13	40	86	17	208	104	1690	155	349	2313	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	187	14	43	93	18	226	113	1837	168	379	2514	133
Adj No. of Lanes	1	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	143	291	248	224	39	248	115	1873	838	360	2353	1053
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.04	0.53	0.53	0.17	0.66	0.66
Sat Flow, veh/h	1131	1863	1583	1129	251	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	187	14	43	111	0	226	113	1837	168	379	2514	133
Grp Sat Flow(s),veh/h/ln	1131	1863	1583	1380	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	11.4	0.9	3.3	9.7	0.0	19.7	4.8	71.1	7.8	24.0	93.1	4.3
Cycle Q Clear(g_c), s	21.9	0.9	3.3	10.5	0.0	19.7	4.8	71.1	7.8	24.0	93.1	4.3
Prop In Lane	1.00		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	291	248	263	0	248	115	1873	838	360	2353	1053
V/C Ratio(X)	1.31	0.05	0.17	0.42	0.00	0.91	0.98	0.98	0.20	1.05	1.07	0.13
Avail Cap(c_a), veh/h	143	291	248	278	0	265	115	1873	838	360	2353	1053
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.4	50.2	51.2	54.4	0.0	58.1	38.6	32.3	17.4	49.9	23.5	8.6
Incr Delay (d2), s/veh	178.9	0.1	0.3	1.1	0.0	32.1	78.9	16.4	0.1	61.9	39.9	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(50%),veh/ln	12.6	0.5	1.5	4.0	0.0	10.8	6.9	39.0	3.4	20.1	58.2	1.9
LnGrp Delay(d),s/veh	245.3	50.3	51.5	55.5	0.0	90.2	117.5	48.6	17.5	111.8	63.4	8.6
LnGrp LOS	F	D	D	E		F	F	D	B	F	F	A
Approach Vol, veh/h		244			337			2118			3026	
Approach Delay, s/veh		199.9			78.8			49.8			67.0	
Approach LOS		F			E			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.0	81.6		28.4	11.0	100.6		28.4
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		* 6.5
Max Green Setting (Gmax), s	24.0	74.1		21.9	5.0	93.1		* 23
Max Q Clear Time (g_c+I1), s	26.0	73.1		23.9	6.8	95.1		21.7
Green Ext Time (p_c), s	0.0	0.9		0.0	0.0	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	67.0
HCM 2010 LOS	E

Notes

Intersection: 5: Nashville Highway & Green Mills

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	350	636	70	344	286	300	1078	1068	200	347	1339	465
Average Queue (ft)	273	225	28	85	116	147	1042	1042	122	165	221	193
95th Queue (ft)	431	651	60	207	215	339	1121	1112	267	262	608	378
Link Distance (ft)		1732	1732	3856			1056	1056			1377	1377
Upstream Blk Time (%)							8	8				
Queuing Penalty (veh)							75	79				
Storage Bay Dist (ft)	250				220	200			100	480		
Storage Blk Time (%)	54			0	3		48	50				13
Queuing Penalty (veh)	7			1	3		50	77				16

Intersection: 5: Nashville Highway & Green Mills

Movement	SB
Directions Served	R
Maximum Queue (ft)	240
Average Queue (ft)	51
95th Queue (ft)	192
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	13	40	86	17	208	104	1690	155	349	2313	122
Future Volume (vph)	172	13	40	86	17	208	104	1690	155	349	2313	122
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	24.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	28.4	28.4	28.4	28.4	28.4	28.4	11.0	81.6	81.6	30.0	100.6	100.6
Total Split (%)	20.3%	20.3%	20.3%	20.3%	20.3%	20.3%	7.9%	58.3%	58.3%	21.4%	71.9%	71.9%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	21.9	21.9	21.9		23.4	23.4	80.6	74.1	74.1	105.6	93.1	93.1
Actuated g/C Ratio	0.16	0.16	0.16		0.17	0.17	0.58	0.53	0.53	0.75	0.66	0.66
v/c Ratio	1.07	0.05	0.12		0.48	0.50	0.97	0.98	0.19	1.06	1.07	0.12
Control Delay	142.2	50.8	0.7		60.4	11.0	107.2	49.1	5.8	107.4	64.1	4.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.2	50.8	0.7		60.4	11.0	107.2	49.1	5.8	107.4	64.1	4.2
LOS	F	D	A		E	B	F	D	A	F	E	A
Approach Delay		112.0			27.3			48.7			66.9	
Approach LOS		F			C			D			E	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Natural Cycle: 140	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 59.8	Intersection LOS: E
Intersection Capacity Utilization 102.6%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 5: Nashville Highway & Green Mills



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	0	54	37	0	28	84	1850	63	48	2235	106
Future Volume (veh/h)	69	0	54	37	0	28	84	1850	63	48	2235	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	75	0	59	40	0	30	91	2011	68	52	2429	115
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	0	225	55	0	225	121	2419	1082	166	2404	1075
Arrive On Green	0.14	0.00	0.14	0.14	0.00	0.14	0.04	0.68	0.68	0.03	0.68	0.68
Sat Flow, veh/h	0	0	1583	0	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	75	0	59	40	0	30	91	2011	68	52	2429	115
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	4.3	0.0	0.0	2.2	2.5	54.3	1.9	1.1	88.5	3.3
Cycle Q Clear(g_c), s	18.5	0.0	4.3	18.5	0.0	2.2	2.5	54.3	1.9	1.1	88.5	3.3
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	55	0	225	55	0	225	121	2419	1082	166	2404	1075
V/C Ratio(X)	1.36	0.00	0.26	0.72	0.00	0.13	0.75	0.83	0.06	0.31	1.01	0.11
Avail Cap(c_a), veh/h	55	0	225	55	0	225	123	2419	1082	176	2404	1075
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.2	0.0	49.8	65.2	0.0	48.9	38.4	15.1	6.8	20.6	20.9	7.2
Incr Delay (d2), s/veh	242.8	0.0	0.6	37.3	0.0	0.3	22.3	2.6	0.0	1.1	21.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	1.9	2.0	0.0	1.0	4.0	27.1	0.8	1.1	49.7	1.5
LnGrp Delay(d),s/veh	308.0	0.0	50.4	102.4	0.0	49.2	60.7	17.7	6.8	21.6	41.9	7.3
LnGrp LOS	F		D	F		D	E	B	A	C	F	A
Approach Vol, veh/h		134			70			2170			2596	
Approach Delay, s/veh		194.6			79.6			19.2			40.0	
Approach LOS		F			E			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	96.6		23.5	10.8	96.0		23.5
Change Period (Y+Rc), s	6.0	7.5		* 5	6.0	7.5		5.0
Max Green Setting (Gmax), s	5.0	88.5		* 19	5.0	88.5		18.0
Max Q Clear Time (g_c+I1), s	3.1	56.3		20.5	4.5	90.5		20.5
Green Ext Time (p_c), s	0.0	19.8		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.6
HCM 2010 LOS	D

Notes

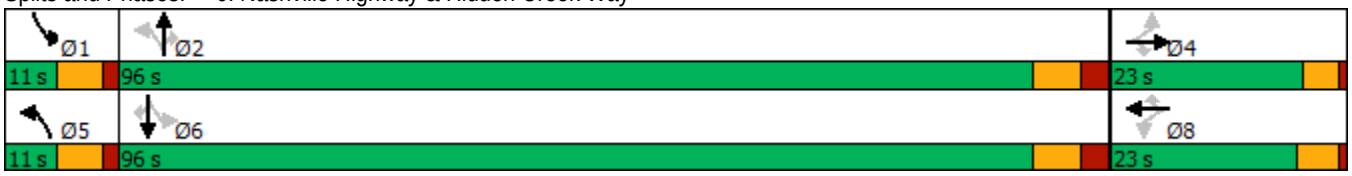
Intersection: 6: Nashville Highway & Hidden Creek Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	114	94	92	128	360	2525	2509	360	58	305	347	35
Average Queue (ft)	59	40	29	32	229	1406	1393	170	17	121	134	5
95th Queue (ft)	104	78	70	82	493	2595	2573	463	44	277	296	16
Link Distance (ft)	2047	2047	2206	2206		4906	4906			1056	1056	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					260			260	330			265
Storage Blk Time (%)						51	53				1	
Queuing Penalty (veh)						43	34				1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	0	54	37	0	28	84	1850	63	48	2235	106
Future Volume (vph)	69	0	54	37	0	28	84	1850	63	48	2235	106
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	15.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	22.5	22.5	22.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	11.0	96.0	96.0	11.0	96.0	96.0
Total Split (%)	17.7%	17.7%	17.7%	17.7%	17.7%	17.7%	8.5%	73.8%	73.8%	8.5%	73.8%	73.8%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)		16.0	16.0		15.5	15.5	96.2	90.7	90.7	95.0	88.5	88.5
Actuated g/C Ratio		0.13	0.13		0.12	0.12	0.75	0.71	0.71	0.75	0.69	0.69
v/c Ratio		0.44	0.21		0.26	0.11	0.72	0.80	0.06	0.39	0.99	0.10
Control Delay		60.4	5.6		55.4	0.9	50.2	16.2	1.7	15.2	35.1	2.2
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay		60.4	5.6		55.4	0.9	50.2	16.2	1.7	15.2	35.6	2.2
LOS		E	A		E	A	D	B	A	B	D	A
Approach Delay		36.3			32.0			17.1			33.7	
Approach LOS		D			C			B			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 127.5	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 92.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 6: Nashville Highway & Hidden Creek Way



PROJECTED CAPACITY ANALYSES

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	1	60	2	0	1	120	2485	1	1	1762	114
Future Volume (veh/h)	372	1	60	2	0	1	120	2485	1	1	1762	114
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	404	1	65	2	0	1	130	2701	1	1	1915	124
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	450	508	432	428	0	432	160	2073	1	2	1629	104
Arrive On Green	0.27	0.27	0.27	0.27	0.00	0.27	0.09	0.57	0.57	0.00	0.48	0.48
Sat Flow, veh/h	1410	1863	1583	1330	0	1583	1774	3631	1	1774	3378	216
Grp Volume(v), veh/h	404	1	65	2	0	1	130	1316	1386	1	993	1046
Grp Sat Flow(s),veh/h/ln	1410	1863	1583	1330	0	1583	1774	1770	1863	1774	1770	1825
Q Serve(g_s), s	29.9	0.0	3.4	0.1	0.0	0.1	7.9	62.8	62.8	0.1	53.0	53.0
Cycle Q Clear(g_c), s	30.0	0.0	3.4	0.2	0.0	0.1	7.9	62.8	62.8	0.1	53.0	53.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		0.12
Lane Grp Cap(c), veh/h	450	508	432	428	0	432	160	1010	1064	2	853	880
V/C Ratio(X)	0.90	0.00	0.15	0.00	0.00	0.00	0.81	1.30	1.30	0.41	1.16	1.19
Avail Cap(c_a), veh/h	450	508	432	428	0	432	323	1010	1064	323	853	880
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	29.1	30.3	29.1	0.0	29.1	49.1	23.6	23.6	54.8	28.5	28.5
Incr Delay (d2), s/veh	20.5	0.0	0.2	0.0	0.0	0.0	9.5	143.5	143.2	85.0	86.6	96.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	0.0	1.5	0.0	0.0	0.0	4.3	70.6	74.2	0.1	46.4	50.1
LnGrp Delay(d),s/veh	61.2	29.1	30.5	29.1	0.0	29.1	58.6	167.1	166.8	139.8	115.1	124.6
LnGrp LOS	E	C	C	C		C	E	F	F	F	F	F
Approach Vol, veh/h		470			3			2832			2040	
Approach Delay, s/veh		56.9			29.1			162.0			120.0	
Approach LOS		E			C			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	69.8		35.0	14.9	60.0		35.0
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	53.0		30.0	20.0	53.0		30.0
Max Q Clear Time (g_c+I1), s	2.1	64.8		32.0	9.9	55.0		2.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.2	0.0		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		136.6
HCM 2010 LOS		F

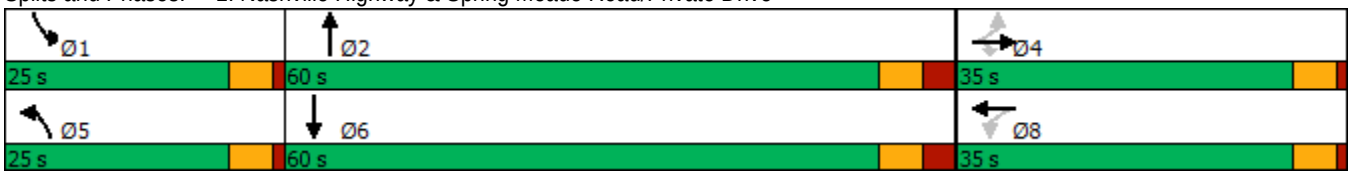
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	TR	L	T	TR	T	TR
Maximum Queue (ft)	334	96	30	109	343	332	2699	2699
Average Queue (ft)	216	30	2	65	161	169	2290	2293
95th Queue (ft)	320	68	12	116	303	303	3197	3193
Link Distance (ft)	416	416	233		1656	1656	2647	2647
Upstream Blk Time (%)							51	49
Queuing Penalty (veh)							0	0
Storage Bay Dist (ft)				255				
Storage Blk Time (%)					2		53	
Queuing Penalty (veh)					2		1	

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	372	1	60	2	0	120	2485	1	1762
Future Volume (vph)	372	1	60	2	0	120	2485	1	1762
Turn Type	Perm	NA	Perm	Perm	NA	Prot	NA	Prot	NA
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	7.0	7.0	5.0	25.0	5.0	25.0
Minimum Split (s)	23.0	23.0	23.0	12.0	12.0	10.0	32.0	10.0	32.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	25.0	60.0	25.0	60.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	20.8%	50.0%	20.8%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	3.0	1.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	7.0	5.0	7.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)	30.0	30.0	30.0	30.0	30.0	13.6	69.5	5.6	53.1
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26	0.12	0.61	0.05	0.47
v/c Ratio	1.09	0.00	0.14	0.01	0.00	0.62	1.25	0.01	1.24
Control Delay	112.2	33.0	5.5	33.0	0.0	60.3	139.5	54.0	143.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	33.0	5.5	33.0	0.0	60.3	139.5	54.0	143.7
LOS	F	C	A	C	A	E	F	D	F
Approach Delay		97.3			22.0		135.8		143.7
Approach LOS		F			C		F		F

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 113.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 135.4	Intersection LOS: F
Intersection Capacity Utilization 114.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	75.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	184	0	0	256	190	2380	120	186	1658	20
Future Vol, veh/h	0	0	184	0	0	256	190	2380	120	186	1658	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	200	0	0	278	207	2587	130	202	1802	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	901	-	-	1359	1824	0	0	2717	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	281	0	0	~ 139	332	-	-	~ 147	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	281	-	-	~ 139	332	-	-	~ 147	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.1	$ 528.6	2.3	121.9
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	332	-	-	281	139	~ 147	-	-
HCM Lane V/C Ratio	0.622	-	-	0.712	2.002	1.375	-	-
HCM Control Delay (s)	32.1	-	-	44.1	$ 528.6	263.2	107.5	-
HCM Lane LOS	D	-	-	E	F	F	F	-
HCM 95th %tile Q(veh)	3.9	-	-	5	22.1	12.8	-	-

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 (veh/h)	119	3	48	249	0	120	37	2452	81	105	1670	67
Future Volume (veh/h)	119	3	48	249	0	120	37	2452	81	105	1670	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	129	3	52	271	0	130	40	2665	88	114	1815	73
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	4	150	305	0	272	73	1536	687	143	1675	749
Arrive On Green	0.09	0.09	0.09	0.17	0.00	0.17	0.04	0.43	0.43	0.08	0.47	0.47
Sat Flow, veh/h	1736	40	1583	1774	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	132	0	52	271	0	130	40	2665	88	114	1815	73
Grp Sat Flow(s),veh/h/ln	1776	0	1583	1774	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	8.8	0.0	3.7	18.1	0.0	9.0	2.7	52.5	4.0	7.6	57.2	3.1
Cycle Q Clear(g_c), s	8.8	0.0	3.7	18.1	0.0	9.0	2.7	52.5	4.0	7.6	57.2	3.1
Prop In Lane	0.98		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	168	0	150	305	0	272	73	1536	687	143	1675	749
V/C Ratio(X)	0.79	0.00	0.35	0.89	0.00	0.48	0.55	1.73	0.13	0.80	1.08	0.10
Avail Cap(c_a), veh/h	345	0	308	345	0	308	205	1536	687	205	1675	749
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	51.2	49.0	0.0	45.2	56.9	34.2	20.5	54.7	31.9	17.6
Incr Delay (d2), s/veh	7.8	0.0	1.4	21.9	0.0	1.3	6.2	333.3	0.1	13.3	48.6	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(50%),veh/ln	4.7	0.0	1.7	10.7	0.0	4.0	1.4	96.7	1.8	4.3	39.2	1.3
LnGrp Delay(d),s/veh	61.4	0.0	52.6	70.9	0.0	46.5	63.0	367.6	20.6	67.9	80.4	17.7
LnGrp LOS	E		D	E		D	E	F	C	E	F	B
Approach Vol, veh/h		184			401			2793			2002	
Approach Delay, s/veh		58.9			63.0			352.3			77.4	
Approach LOS		E			E			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.7	60.0		18.0	11.0	64.7		27.3
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	52.5		23.5	14.0	52.5		23.5
Max Q Clear Time (g_c+I1), s	9.6	54.5		10.8	4.7	59.2		20.1
Green Ext Time (p_c), s	0.1	0.0		0.7	0.0	0.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	218.4
HCM 2010 LOS	F

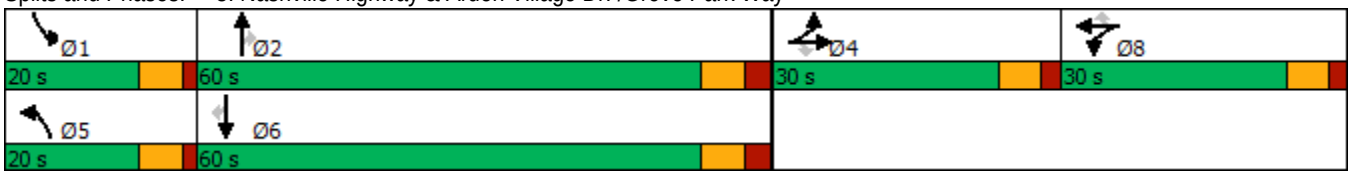
Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	128	64	401	200	430	1433	1421	230	225	519	531	274
Average Queue (ft)	68	24	212	101	74	1383	1380	36	129	334	351	48
95th Queue (ft)	112	53	349	213	305	1416	1417	162	257	497	524	193
Link Distance (ft)	1451	1451				1377	1377			527	527	
Upstream Blk Time (%)						13	14			0	0	
Queuing Penalty (veh)						164	179			0	3	
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)			43	4		58	57		3	29	26	
Queuing Penalty (veh)			52	9		21	46		27	30	18	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	3	48	0	120	37	2452	81	105	1670	67
Future Volume (vph)	3	48	0	120	37	2452	81	105	1670	67
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	60.0	60.0	20.0	60.0	60.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	14.3%	42.9%	42.9%	14.3%	42.9%	42.9%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	14.9	14.9	22.5	22.5	8.4	52.7	52.7	12.3	59.2	59.2
Actuated g/C Ratio	0.12	0.12	0.17	0.17	0.07	0.41	0.41	0.10	0.46	0.46
v/c Ratio	0.65	0.17	0.88	0.34	0.35	1.84	0.12	0.68	1.12	0.09
Control Delay	69.9	1.3	80.7	10.1	67.7	408.4	1.8	77.8	96.1	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.9	1.3	80.7	10.1	67.7	408.4	1.8	77.8	96.1	0.5
LOS	E	A	F	B	E	F	A	E	F	A
Approach Delay	50.5		57.8			390.8			91.6	
Approach LOS	D		E			F			F	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 129	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.84	
Intersection Signal Delay: 243.0	Intersection LOS: F
Intersection Capacity Utilization 110.7%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	109	11	25	0	0	274
Future Vol, veh/h	109	11	25	0	0	274
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	118	12	27	0	0	298

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	27	0	-	0	275	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	248	-
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	1587	-	-	-	715	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	793	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1587	-	-	-	661	1048
Mov Cap-2 Maneuver	-	-	-	-	661	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	793	-

Approach	EB	WB	SB
HCM Control Delay, s	6.8	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1587	-	-	-	1048
HCM Lane V/C Ratio	0.075	-	-	-	0.284
HCM Control Delay (s)	7.5	0	-	-	9.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	14	43	142	13	134	79	2240	54	119	2131	92
Future Volume (veh/h)	185	14	43	142	13	134	79	2240	54	119	2131	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	201	15	47	154	14	146	86	2435	59	129	2316	100
Adj No. of Lanes	1	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	135	353	300	278	21	300	113	2237	1001	115	2242	1003
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.03	0.63	0.63	0.04	0.63	0.63
Sat Flow, veh/h	1221	1863	1583	1210	110	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	201	15	47	168	0	146	86	2435	59	129	2316	100
Grp Sat Flow(s),veh/h/ln	1221	1863	1583	1320	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	9.5	0.9	3.5	16.0	0.0	11.5	2.6	88.5	2.0	5.0	88.7	3.5
Cycle Q Clear(g_c), s	26.5	0.9	3.5	17.0	0.0	11.5	2.6	88.5	2.0	5.0	88.7	3.5
Prop In Lane	1.00		1.00	0.92		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	135	353	300	299	0	300	113	2237	1001	115	2242	1003
V/C Ratio(X)	1.49	0.04	0.16	0.56	0.00	0.49	0.76	1.09	0.06	1.12	1.03	0.10
Avail Cap(c_a), veh/h	135	353	300	314	0	317	115	2237	1001	115	2242	1003
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.0	46.4	47.4	53.3	0.0	50.7	37.8	25.8	9.8	45.5	25.7	10.0
Incr Delay (d2), s/veh	256.4	0.0	0.2	2.1	0.0	1.2	25.4	48.0	0.0	121.2	28.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.8	0.5	1.5	6.2	0.0	5.1	4.1	57.8	0.9	8.3	51.7	1.5
LnGrp Delay(d),s/veh	323.5	46.4	47.7	55.4	0.0	51.9	63.2	73.7	9.9	166.7	53.8	10.1
LnGrp LOS	F	D	D	E		D	E	F	A	F	F	B
Approach Vol, veh/h		263			314			2580			2545	
Approach Delay, s/veh		258.4			53.8			71.9			57.8	
Approach LOS		F			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	96.0		33.0	10.8	96.2		33.0
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		* 6.5
Max Green Setting (Gmax), s	5.0	88.5		26.5	5.0	88.5		* 28
Max Q Clear Time (g_c+I1), s	7.0	90.5		28.5	4.6	90.7		19.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	73.2
HCM 2010 LOS	E

Notes

Intersection: 6: Nashville Highway & Green Mills

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	350	1003	133	353	252	300	1086	1088	200	579	628	614
Average Queue (ft)	348	628	29	135	109	181	1067	1066	106	76	310	311
95th Queue (ft)	356	939	83	257	212	405	1081	1080	269	239	536	537
Link Distance (ft)		1732	1732	3856			1056	1056			1377	1377
Upstream Blk Time (%)							29	28				
Queuing Penalty (veh)							344	328				
Storage Bay Dist (ft)	250				220	200			100	480		
Storage Blk Time (%)	95			3	3		74	78			2	18
Queuing Penalty (veh)	13			4	5		59	42			3	17

Intersection: 6: Nashville Highway & Green Mills

Movement	SB
Directions Served	R
Maximum Queue (ft)	240
Average Queue (ft)	54
95th Queue (ft)	207
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	185	14	43	142	13	134	79	2240	54	119	2131	92
Future Volume (vph)	185	14	43	142	13	134	79	2240	54	119	2131	92
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	24.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	33.0	33.0	33.0	33.0	33.0	33.0	11.0	96.0	96.0	11.0	96.0	96.0
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	7.9%	68.6%	68.6%	7.9%	68.6%	68.6%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	26.5	26.5	26.5		28.0	28.0	95.0	88.5	88.5	95.0	88.5	88.5
Actuated g/C Ratio	0.19	0.19	0.19		0.20	0.20	0.68	0.63	0.63	0.68	0.63	0.63
v/c Ratio	1.16	0.04	0.13		0.62	0.38	0.74	1.09	0.06	1.10	1.04	0.10
Control Delay	167.6	46.9	2.7		62.0	25.0	55.2	74.2	1.4	142.1	54.8	3.6
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0
Total Delay	167.6	46.9	2.7		62.0	25.0	55.2	75.7	1.4	142.1	54.8	3.6
LOS	F	D	A		E	C	E	E	A	F	D	A
Approach Delay		131.2			44.8			73.3			57.3	
Approach LOS		F			D			E			E	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 67.2	Intersection LOS: E
Intersection Capacity Utilization 102.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 6: Nashville Highway & Green Mills



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	0	83	58	0	44	32	2233	19	14	2215	48
Future Volume (veh/h)	90	0	83	58	0	44	32	2233	19	14	2215	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	0	90	63	0	48	35	2427	21	15	2408	52
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	0	227	56	0	227	107	2468	1104	89	2427	1086
Arrive On Green	0.14	0.00	0.14	0.14	0.00	0.14	0.03	0.70	0.70	0.02	0.69	0.69
Sat Flow, veh/h	0	0	1583	0	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	98	0	90	63	0	48	35	2427	21	15	2408	52
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	6.7	0.0	0.0	3.5	0.7	85.3	0.5	0.3	86.4	1.4
Cycle Q Clear(g_c), s	18.5	0.0	6.7	18.5	0.0	3.5	0.7	85.3	0.5	0.3	86.4	1.4
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	56	0	227	56	0	227	107	2468	1104	89	2427	1086
V/C Ratio(X)	1.76	0.00	0.40	1.13	0.00	0.21	0.33	0.98	0.02	0.17	0.99	0.05
Avail Cap(c_a), veh/h	56	0	227	56	0	227	127	2468	1104	130	2427	1086
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.5	0.0	50.2	64.5	0.0	48.8	35.7	18.8	6.0	35.3	20.0	6.6
Incr Delay (d2), s/veh	403.7	0.0	1.1	160.4	0.0	0.5	1.8	14.4	0.0	0.9	16.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.0	3.0	4.5	0.0	1.5	0.9	46.1	0.2	0.4	47.0	0.6
LnGrp Delay(d),s/veh	468.3	0.0	51.3	225.9	0.0	49.3	37.4	33.2	6.0	36.2	36.4	6.6
LnGrp LOS	F		D	F		D	D	C	A	D	D	A
Approach Vol, veh/h		188			111			2483			2475	
Approach Delay, s/veh		268.7			149.6			33.1			35.8	
Approach LOS		F			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	97.5		23.5	9.6	96.0		23.5
Change Period (Y+Rc), s	6.0	7.5		* 5	6.0	7.5		5.0
Max Green Setting (Gmax), s	5.0	88.5		* 19	5.0	88.5		18.0
Max Q Clear Time (g_c+I1), s	2.3	87.3		20.5	2.7	88.4		20.5
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	0.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	45.2
HCM 2010 LOS	D

Notes

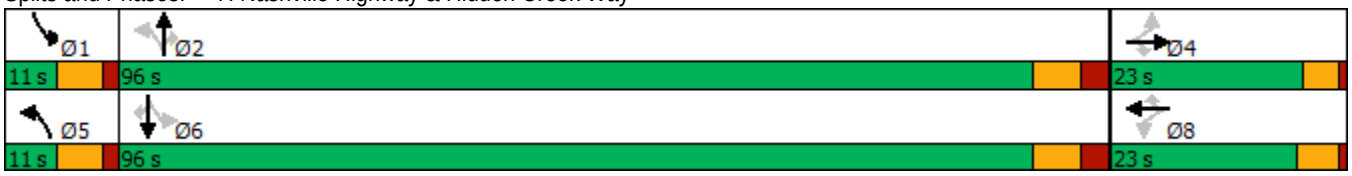
Intersection: 7: Nashville Highway & Hidden Creek Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	243	138	75	180	359	4958	4945	360	82	409	467	30
Average Queue (ft)	102	64	44	53	123	4929	4925	60	5	195	210	2
95th Queue (ft)	203	120	84	138	398	4948	4940	281	30	382	398	12
Link Distance (ft)	2047	2047	2206	2206		4906	4906			1056	1056	
Upstream Blk Time (%)						99	99					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (ft)					260			260	330			265
Storage Blk Time (%)						83	86			1	3	
Queuing Penalty (veh)						27	16			0	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	0	83	58	0	44	32	2233	19	14	2215	48
Future Volume (vph)	90	0	83	58	0	44	32	2233	19	14	2215	48
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	15.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	22.5	22.5	22.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	11.0	96.0	96.0	11.0	96.0	96.0
Total Split (%)	17.7%	17.7%	17.7%	17.7%	17.7%	17.7%	8.5%	73.8%	73.8%	8.5%	73.8%	73.8%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)		16.4	16.4		15.9	15.9	95.0	91.6	91.6	93.9	89.5	89.5
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.76	0.74	0.74	0.76	0.72	0.72
v/c Ratio		0.56	0.32		0.43	0.17	0.27	0.93	0.02	0.12	0.95	0.04
Control Delay		64.3	13.6		61.1	2.8	8.9	22.9	0.1	5.1	26.0	1.1
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Total Delay		64.3	13.6		61.1	2.8	8.9	22.9	0.1	5.1	26.2	1.1
LOS		E	B		E	A	A	C	A	A	C	A
Approach Delay		40.0			35.9			22.6			25.6	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 124.3	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 24.9	Intersection LOS: C
Intersection Capacity Utilization 93.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 7: Nashville Highway & Hidden Creek Way



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	0	83	0	0	0	68	2132	0	0	2840	245
Future Volume (veh/h)	230	0	83	0	0	0	68	2132	0	0	2840	245
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	250	0	90	0	0	0	74	2317	0	0	3087	266
Adj No. of Lanes	1	1	1	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	302	257	63	302	0	96	2596	0	2	2100	178
Arrive On Green	0.16	0.00	0.16	0.00	0.00	0.00	0.05	0.73	0.00	0.00	0.64	0.64
Sat Flow, veh/h	1774	1863	1583	1301	1863	0	1774	3632	0	1774	3302	281
Grp Volume(v), veh/h	250	0	90	0	0	0	74	2317	0	0	1634	1719
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1301	1863	0	1774	1770	0	1774	1770	1813
Q Serve(g_s), s	15.8	0.0	5.8	0.0	0.0	0.0	4.7	58.0	0.0	0.0	73.0	73.0
Cycle Q Clear(g_c), s	15.8	0.0	5.8	0.0	0.0	0.0	4.7	58.0	0.0	0.0	73.0	73.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	350	302	257	63	302	0	96	2596	0	2	1125	1153
V/C Ratio(X)	0.71	0.00	0.35	0.00	0.00	0.00	0.77	0.89	0.00	0.00	1.45	1.49
Avail Cap(c_a), veh/h	526	487	414	192	487	0	309	2596	0	309	1125	1153
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	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	42.7	0.0	0.0	0.0	53.6	11.8	0.0	0.0	20.9	20.9
Incr Delay (d2), s/veh	2.7	0.0	0.8	0.0	0.0	0.0	12.4	4.4	0.0	0.0	208.2	225.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.0	2.6	0.0	0.0	0.0	2.7	29.6	0.0	0.0	100.4	108.5
LnGrp Delay(d),s/veh	49.6	0.0	43.5	0.0	0.0	0.0	66.0	16.2	0.0	0.0	229.1	246.6
LnGrp LOS	D		D				E	B			F	F
Approach Vol, veh/h		340			0			2391			3353	
Approach Delay, s/veh		48.0			0.0			17.8			238.1	
Approach LOS		D						B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	91.2		23.6	11.2	80.0		23.6
Change Period (Y+Rc), s	5.0	7.0		5.0	5.0	7.0		5.0
Max Green Setting (Gmax), s	20.0	73.0		30.0	20.0	73.0		30.0
Max Q Clear Time (g_c+I1), s	0.0	60.0		17.8	6.7	75.0		0.0
Green Ext Time (p_c), s	0.0	11.1		0.8	0.1	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	140.9
HCM 2010 LOS	F

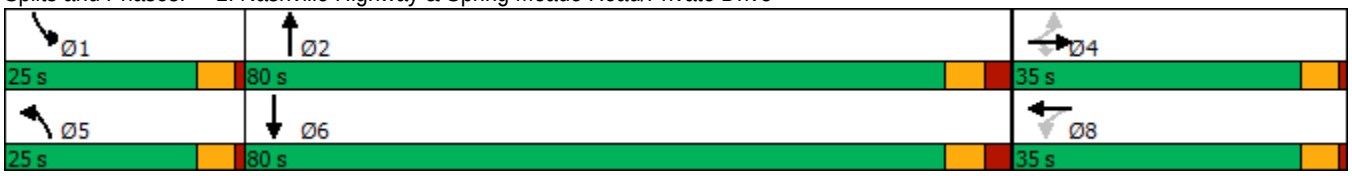
Intersection: 1: Nashville Highway & Spring Meade Road/Private Drive

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	R	L	T	TR	T	TR
Maximum Queue (ft)	263	132	109	251	275	2710	2710
Average Queue (ft)	176	56	43	122	132	2672	2675
95th Queue (ft)	263	103	100	222	238	2695	2697
Link Distance (ft)	416	416		1656	1656	2647	2647
Upstream Blk Time (%)						85	86
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)			255				
Storage Blk Time (%)				0		51	
Queuing Penalty (veh)				0		0	

Lane Group	EBL	EBR	NBL	NBT	SBT	Ø1	Ø8
Lane Configurations							
Traffic Volume (vph)	230	83	68	2132	2840		
Future Volume (vph)	230	83	68	2132	2840		
Turn Type	Perm	Perm	Prot	NA	NA		
Protected Phases			5	2	6	1	8
Permitted Phases	4	4					
Detector Phase	4	4	5	2	6		
Switch Phase							
Minimum Initial (s)	5.0	5.0	5.0	25.0	25.0	5.0	7.0
Minimum Split (s)	23.0	23.0	10.0	32.0	32.0	10.0	12.0
Total Split (s)	35.0	35.0	25.0	80.0	80.0	25.0	35.0
Total Split (%)	25.0%	25.0%	17.9%	57.1%	57.1%	18%	25%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	3.0	3.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.0	5.0	5.0	7.0	7.0		
Lead/Lag			Lead	Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Min	Min	None	None
Act Effct Green (s)	25.9	25.9	10.6	86.6	73.7		
Actuated g/C Ratio	0.21	0.21	0.09	0.69	0.59		
v/c Ratio	0.85	0.17	0.49	0.94	1.62		
Control Delay	74.4	0.7	67.8	27.0	304.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	74.4	0.7	67.8	27.0	304.3		
LOS	E	A	E	C	F		
Approach Delay				28.3	304.3		
Approach LOS				C	F		

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 124.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.62	
Intersection Signal Delay: 181.9	Intersection LOS: F
Intersection Capacity Utilization 109.0%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Nashville Highway & Spring Meade Road/Private Drive



Intersection	
Int Delay, s/veh	21.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	164	0	0	143	140	2058	100	159	2718	53
Future Vol, veh/h	0	0	164	0	0	143	140	2058	100	159	2718	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	225	-	-	-	-	150
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	178	0	0	155	152	2237	109	173	2954	58

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1477	-	-	1173	3012	0	0	2346	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	0	0	~ 115	0	0	185	~ 112	-	-	207	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	~ 115	-	-	185	~ 112	-	-	207	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 352.8	81.5	17	4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	~ 112	-	-	115	185	207	-	-
HCM Lane V/C Ratio	1.359	-	-	1.55	0.84	0.835	-	-
HCM Control Delay (s)	279.6	-	-	$ 352.8	81.5	74.2	0	-
HCM Lane LOS	F	-	-	F	F	F	A	-
HCM 95th %tile Q(veh)	10.5	-	-	13	6	6.2	-	-

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)	191	5	125	177	5	110	136	2000	124	162	2498	223
Future Volume (veh/h)	191	5	125	177	5	110	136	2000	124	162	2498	223
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	208	5	136	192	5	120	148	2174	135	176	2715	242
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	6	213	219	6	200	162	1678	750	162	1678	750
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.09	0.47	0.47	0.09	0.47	0.47
Sat Flow, veh/h	1734	42	1583	1731	45	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	213	0	136	197	0	120	148	2174	135	176	2715	242
Grp Sat Flow(s),veh/h/ln	1776	0	1583	1776	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	18.0	0.0	12.4	16.7	0.0	11.0	12.6	72.5	7.5	14.0	72.5	14.5
Cycle Q Clear(g_c), s	18.0	0.0	12.4	16.7	0.0	11.0	12.6	72.5	7.5	14.0	72.5	14.5
Prop In Lane	0.98		1.00	0.97		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	239	0	213	225	0	200	162	1678	750	162	1678	750
V/C Ratio(X)	0.89	0.00	0.64	0.88	0.00	0.60	0.91	1.30	0.18	1.08	1.62	0.32
Avail Cap(c_a), veh/h	273	0	243	273	0	243	162	1678	750	162	1678	750
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.1	0.0	62.6	65.6	0.0	63.1	68.9	40.2	23.1	69.5	40.2	25.0
Incr Delay (d2), s/veh	26.1	0.0	4.5	22.8	0.0	2.9	45.8	137.7	0.1	94.8	281.1	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(50%),veh/ln	10.6	0.0	5.7	9.6	0.0	5.0	8.3	67.5	3.3	11.1	100.9	6.4
LnGrp Delay(d),s/veh	91.2	0.0	67.1	88.5	0.0	66.0	114.6	178.0	23.2	164.3	321.3	25.2
LnGrp LOS	F		E	F		E	F	F	C	F	F	C
Approach Vol, veh/h		349			317			2457			3133	
Approach Delay, s/veh		81.8			80.0			165.6			289.6	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.0	80.0		27.1	20.0	80.0		25.8
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		6.5
Max Green Setting (Gmax), s	14.0	72.5		23.5	14.0	72.5		23.5
Max Q Clear Time (g_c+I1), s	16.0	74.5		20.0	14.6	74.5		18.7
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	218.7
HCM 2010 LOS	F

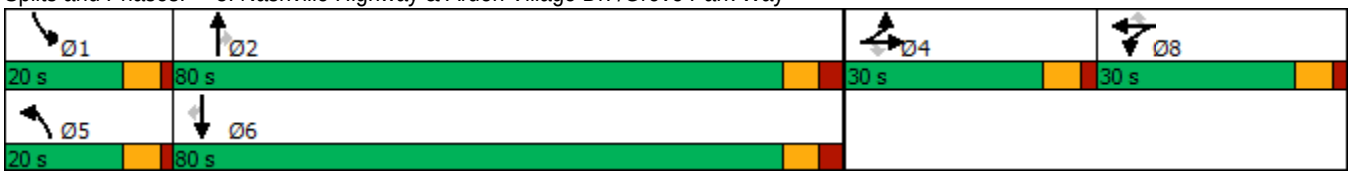
Intersection: 3: Nashville Highway & Arden Village Dr. /Grove Park Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	549	186	353	200	430	1401	1398	230	224	553	546	275
Average Queue (ft)	272	58	181	98	271	1378	1381	51	135	499	486	136
95th Queue (ft)	520	124	284	204	555	1402	1400	185	239	601	608	336
Link Distance (ft)	1451	1451				1377	1377			527	527	
Upstream Blk Time (%)						12	13			5	5	
Queuing Penalty (veh)						129	142			76	75	
Storage Bay Dist (ft)				100	330			130	125			175
Storage Blk Time (%)			39	6	0	60	59		23	39	38	
Queuing Penalty (veh)			42	12	0	82	74		293	63	85	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	5	125	5	110	136	2000	124	162	2498	223
Future Volume (vph)	5	125	5	110	136	2000	124	162	2498	223
Turn Type	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4		8		5	2		1	6	
Permitted Phases		4		8			2			6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	21.5	21.5	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	30.0	30.0	30.0	30.0	20.0	80.0	80.0	20.0	80.0	80.0
Total Split (%)	18.8%	18.8%	18.8%	18.8%	12.5%	50.0%	50.0%	12.5%	50.0%	50.0%
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	2.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5	6.5	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	21.6	21.6	20.9	20.9	14.0	72.6	72.6	14.0	72.6	72.6
Actuated g/C Ratio	0.14	0.14	0.13	0.13	0.09	0.47	0.47	0.09	0.47	0.47
v/c Ratio	0.87	0.40	0.83	0.38	0.93	1.32	0.17	1.11	1.65	0.30
Control Delay	97.1	12.6	92.8	14.3	124.7	182.0	7.1	165.3	322.6	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.1	12.6	92.8	14.3	124.7	182.0	7.1	165.3	322.6	15.4
LOS	F	B	F	B	F	F	A	F	F	B
Approach Delay	64.2		63.1			168.9			290.1	
Approach LOS	E		E			F			F	

Intersection Summary	
Cycle Length: 160	
Actuated Cycle Length: 155.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.65	
Intersection Signal Delay: 218.4	Intersection LOS: F
Intersection Capacity Utilization 110.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: Nashville Highway & Arden Village Dr. /Grove Park Way



Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	117	19	6	0	0	151
Future Vol, veh/h	117	19	6	0	0	151
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	127	21	7	0	0	164

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	7	0	-	0	282	7
Stage 1	-	-	-	-	7	-
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	1614	-	-	-	708	1075
Stage 1	-	-	-	-	1016	-
Stage 2	-	-	-	-	771	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1614	-	-	-	651	1075
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	935	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	6.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1614	-	-	-	1075
HCM Lane V/C Ratio	0.079	-	-	-	0.153
HCM Control Delay (s)	7.4	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	172	13	40	86	17	208	104	1824	155	349	2414	122
Future Volume (veh/h)	172	13	40	86	17	208	104	1824	155	349	2414	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	187	14	43	93	18	226	113	1983	168	379	2624	133
Adj No. of Lanes	1	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	288	245	218	37	245	107	1959	876	330	2405	1076
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.03	0.55	0.55	0.16	0.68	0.68
Sat Flow, veh/h	1131	1863	1583	1128	238	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	187	14	43	111	0	226	113	1983	168	379	2624	133
Grp Sat Flow(s),veh/h/ln	1131	1863	1583	1367	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	11.7	1.0	3.6	10.7	0.0	21.2	5.0	83.5	8.0	24.0	102.5	4.4
Cycle Q Clear(g_c), s	23.3	1.0	3.6	11.6	0.0	21.2	5.0	83.5	8.0	24.0	102.5	4.4
Prop In Lane	1.00		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	136	288	245	255	0	245	107	1959	876	330	2405	1076
V/C Ratio(X)	1.38	0.05	0.18	0.43	0.00	0.92	1.06	1.01	0.19	1.15	1.09	0.12
Avail Cap(c_a), veh/h	136	288	245	261	0	252	107	1959	876	330	2405	1076
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.6	54.3	55.4	59.1	0.0	62.9	43.9	33.7	16.8	55.7	24.2	8.5
Incr Delay (d2), s/veh	209.8	0.1	0.3	1.2	0.0	36.0	104.5	23.4	0.1	96.1	48.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.5	0.5	1.6	4.4	0.0	11.7	7.5	46.9	3.5	22.6	65.7	1.9
LnGrp Delay(d),s/veh	281.5	54.4	55.7	60.2	0.0	98.9	148.8	57.0	16.9	151.9	72.7	8.5
LnGrp LOS	F	D	E	E		F	F	F	B	F	F	A
Approach Vol, veh/h		244			337			2264			3136	
Approach Delay, s/veh		228.6			86.2			58.7			79.6	
Approach LOS		F			F			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.0	91.0		29.8	11.0	110.0		29.8
Change Period (Y+Rc), s	6.0	7.5		6.5	6.0	7.5		* 6.5
Max Green Setting (Gmax), s	24.0	83.5		22.5	5.0	102.5		* 24
Max Q Clear Time (g_c+I1), s	26.0	85.5		25.3	7.0	104.5		23.2
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	78.1
HCM 2010 LOS	E

Notes

Intersection: 6: Nashville Highway & Green Mills

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	350	1210	86	654	320	300	1081	1090	200	286	320	336
Average Queue (ft)	338	640	29	206	195	187	1064	1066	140	158	163	167
95th Queue (ft)	387	1159	64	513	341	402	1075	1079	288	267	315	318
Link Distance (ft)		1732	1732	3856			1056	1056			1377	1377
Upstream Blk Time (%)							27	31				
Queuing Penalty (veh)							279	324				
Storage Bay Dist (ft)	250				220	200			100	480		
Storage Blk Time (%)	88			2	23		72	73				9
Queuing Penalty (veh)	11			5	24		75	112				11

Intersection: 6: Nashville Highway & Green Mills

Movement	SB
Directions Served	R
Maximum Queue (ft)	40
Average Queue (ft)	12
95th Queue (ft)	34
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	140
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	172	13	40	86	17	208	104	1824	155	349	2414	122
Future Volume (vph)	172	13	40	86	17	208	104	1824	155	349	2414	122
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	24.5	24.5	24.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	29.0	29.0	29.0	29.0	29.0	29.0	11.0	91.0	91.0	30.0	110.0	110.0
Total Split (%)	19.3%	19.3%	19.3%	19.3%	19.3%	19.3%	7.3%	60.7%	60.7%	20.0%	73.3%	73.3%
Yellow Time (s)	4.5	4.5	4.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	2.0	2.0	2.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.5	6.5	6.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)	22.5	22.5	22.5		24.0	24.0	90.0	83.5	83.5	115.0	102.5	102.5
Actuated g/C Ratio	0.15	0.15	0.15		0.16	0.16	0.60	0.56	0.56	0.77	0.68	0.68
v/c Ratio	1.15	0.05	0.13		0.50	0.54	1.04	1.01	0.18	1.13	1.09	0.12
Control Delay	169.9	55.3	0.8		66.1	15.4	131.4	54.9	6.1	134.7	70.6	4.2
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	169.9	55.3	0.8		66.1	15.4	131.4	54.9	6.1	134.7	70.6	4.2
LOS	F	E	A		E	B	F	D	A	F	E	A
Approach Delay		133.5			32.1			55.1			75.6	
Approach LOS		F			C			E			E	

Intersection Summary	
Cycle Length: 150	
Actuated Cycle Length: 150	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.15	
Intersection Signal Delay: 67.7	Intersection LOS: E
Intersection Capacity Utilization 105.4%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 6: Nashville Highway & Green Mills



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	0	54	37	0	28	84	1984	63	48	2336	106
Future Volume (veh/h)	69	0	54	37	0	28	84	1984	63	48	2336	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	75	0	59	40	0	30	91	2157	68	52	2539	115
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	48	0	195	48	0	195	108	2565	1147	151	2552	1141
Arrive On Green	0.12	0.00	0.12	0.12	0.00	0.12	0.03	0.72	0.72	0.03	0.72	0.72
Sat Flow, veh/h	0	0	1583	0	0	1583	1774	3539	1583	1774	3539	1583
Grp Volume(v), veh/h	75	0	59	40	0	30	91	2157	68	52	2539	115
Grp Sat Flow(s),veh/h/ln	0	0	1583	0	0	1583	1774	1770	1583	1774	1770	1583
Q Serve(g_s), s	0.0	0.0	5.1	0.0	0.0	2.5	3.5	64.7	1.9	1.1	106.6	3.3
Cycle Q Clear(g_c), s	18.5	0.0	5.1	18.5	0.0	2.5	3.5	64.7	1.9	1.1	106.6	3.3
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	48	0	195	48	0	195	108	2565	1147	151	2552	1141
V/C Ratio(X)	1.57	0.00	0.30	0.84	0.00	0.15	0.84	0.84	0.06	0.34	1.00	0.10
Avail Cap(c_a), veh/h	48	0	195	48	0	195	108	2565	1147	157	2552	1141
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.3	0.0	60.1	75.3	0.0	59.0	51.0	14.6	6.0	24.4	20.7	6.3
Incr Delay (d2), s/veh	334.8	0.0	0.9	72.1	0.0	0.4	41.8	2.7	0.0	1.4	16.6	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(50%),veh/ln	6.4	0.0	2.3	2.6	0.0	1.1	5.0	32.1	0.8	1.4	57.4	1.4
LnGrp Delay(d),s/veh	410.0	0.0	61.0	147.4	0.0	59.4	92.8	17.3	6.0	25.7	37.4	6.4
LnGrp LOS	F		E	F		E	F	B	A	C	D	A
Approach Vol, veh/h		134			70			2316			2706	
Approach Delay, s/veh		256.3			109.7			19.9			35.8	
Approach LOS		F			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	116.6		23.5	11.0	116.0		23.5
Change Period (Y+Rc), s	6.0	7.5		* 5	6.0	7.5		5.0
Max Green Setting (Gmax), s	5.0	108.5		* 19	5.0	108.5		18.0
Max Q Clear Time (g_c+I1), s	3.1	66.7		20.5	5.5	108.6		20.5
Green Ext Time (p_c), s	0.0	25.6		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.4
HCM 2010 LOS	D

Notes

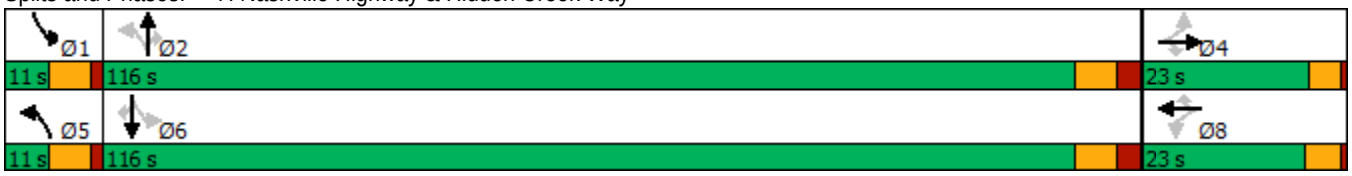
Intersection: 7: Nashville Highway & Hidden Creek Way

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	T	R
Maximum Queue (ft)	219	88	93	73	360	4969	4969	360	41	345	335	10
Average Queue (ft)	75	37	31	37	221	4926	4929	263	10	90	98	2
95th Queue (ft)	151	71	69	76	501	4944	4952	524	32	227	233	7
Link Distance (ft)	2047	2047	2206	2206		4906	4906			1056	1056	
Upstream Blk Time (%)						94	93					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (ft)					260			260	330			265
Storage Blk Time (%)						78	78			0	1	
Queuing Penalty (veh)						65	49			0	1	

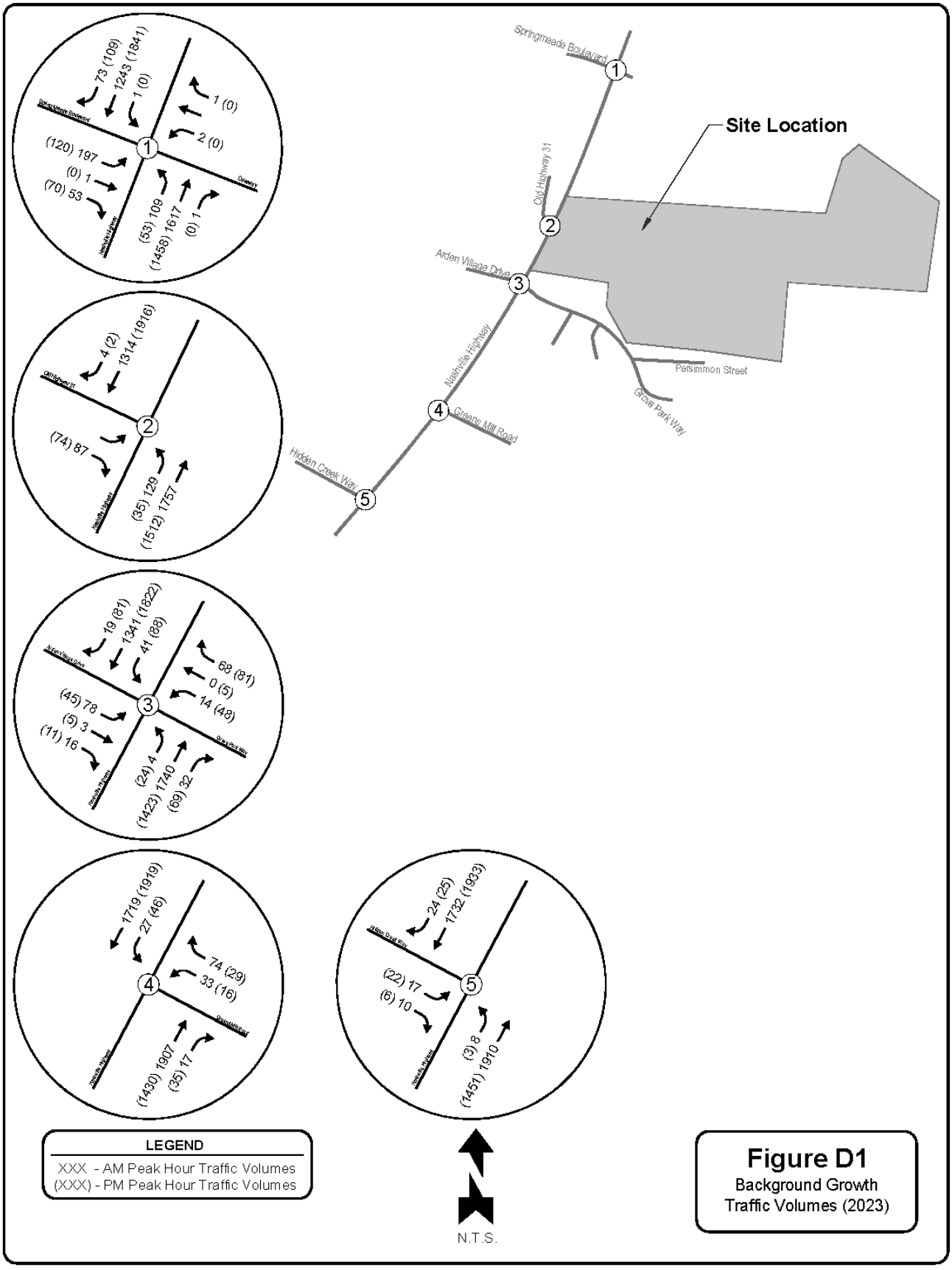
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	0	54	37	0	28	84	1984	63	48	2336	106
Future Volume (vph)	69	0	54	37	0	28	84	1984	63	48	2336	106
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	15.0	15.0	15.0	5.0	25.0	25.0	5.0	25.0	25.0
Minimum Split (s)	22.5	22.5	22.5	23.0	23.0	23.0	11.0	32.5	32.5	11.0	32.5	32.5
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	11.0	116.0	116.0	11.0	116.0	116.0
Total Split (%)	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	7.3%	77.3%	77.3%	7.3%	77.3%	77.3%
Yellow Time (s)	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5	4.5	4.5	4.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.5	3.0	3.0	1.5	3.0	3.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	4.5		5.0	5.0	6.0	7.5	7.5	6.0	7.5	7.5
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Min	Min	None	Min	Min
Act Effct Green (s)		16.1	16.1		15.6	15.6	116.2	110.7	110.7	115.0	108.5	108.5
Actuated g/C Ratio		0.11	0.11		0.11	0.11	0.79	0.75	0.75	0.78	0.74	0.74
v/c Ratio		0.51	0.25		0.31	0.13	0.83	0.81	0.06	0.44	0.98	0.10
Control Delay		74.5	9.2		68.0	1.1	76.5	15.9	1.8	20.5	31.7	1.9
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0
Total Delay		74.5	9.2		68.0	1.1	76.5	15.9	1.8	20.5	43.6	1.9
LOS		E	A		E	A	E	B	A	C	D	A
Approach Delay		45.8			39.3			17.8			41.4	
Approach LOS		D			D			B			D	

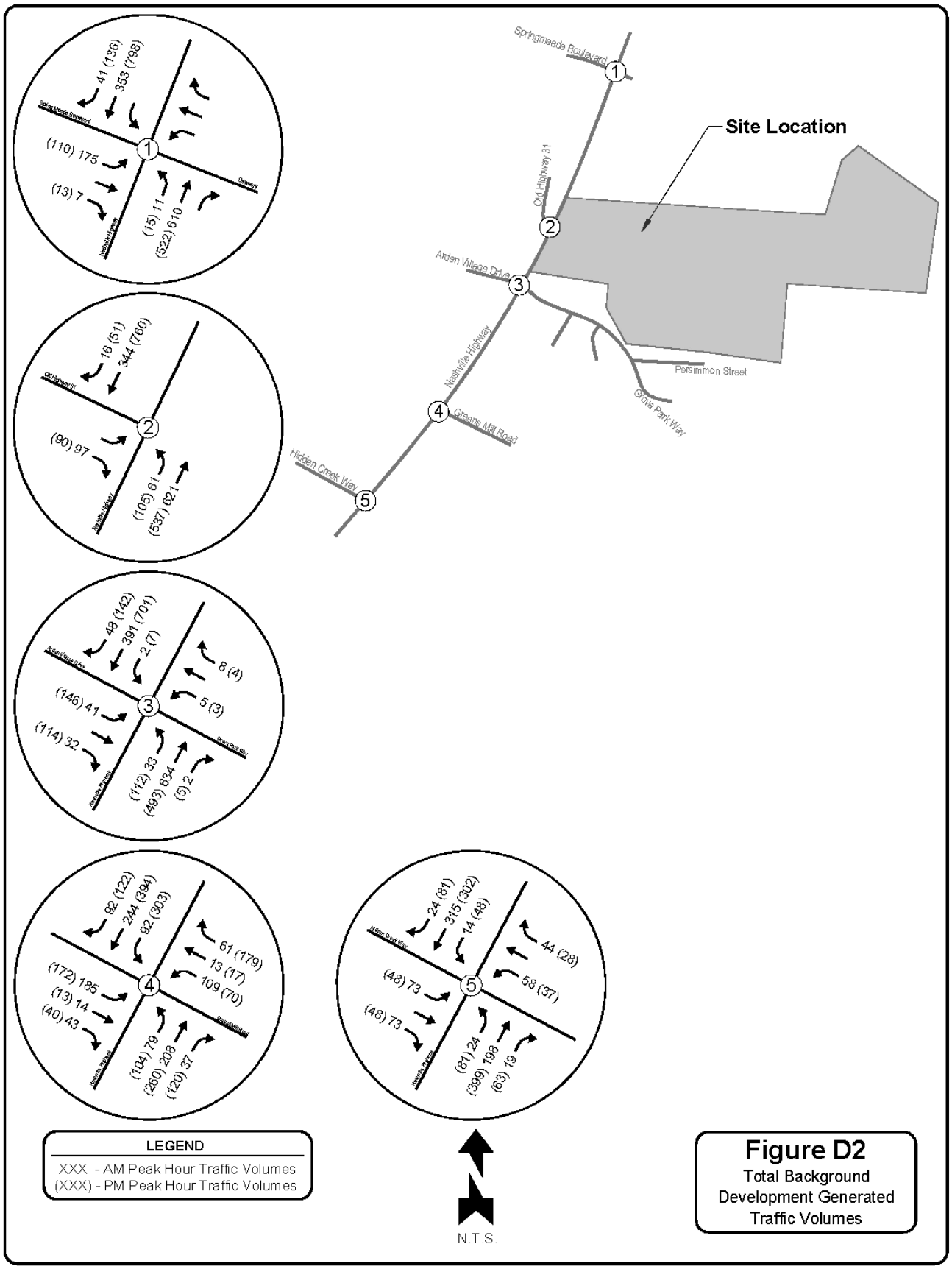
Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 147.6			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 31.1		Intersection LOS: C	
Intersection Capacity Utilization 95.4%		ICU Level of Service F	
Analysis Period (min) 15			

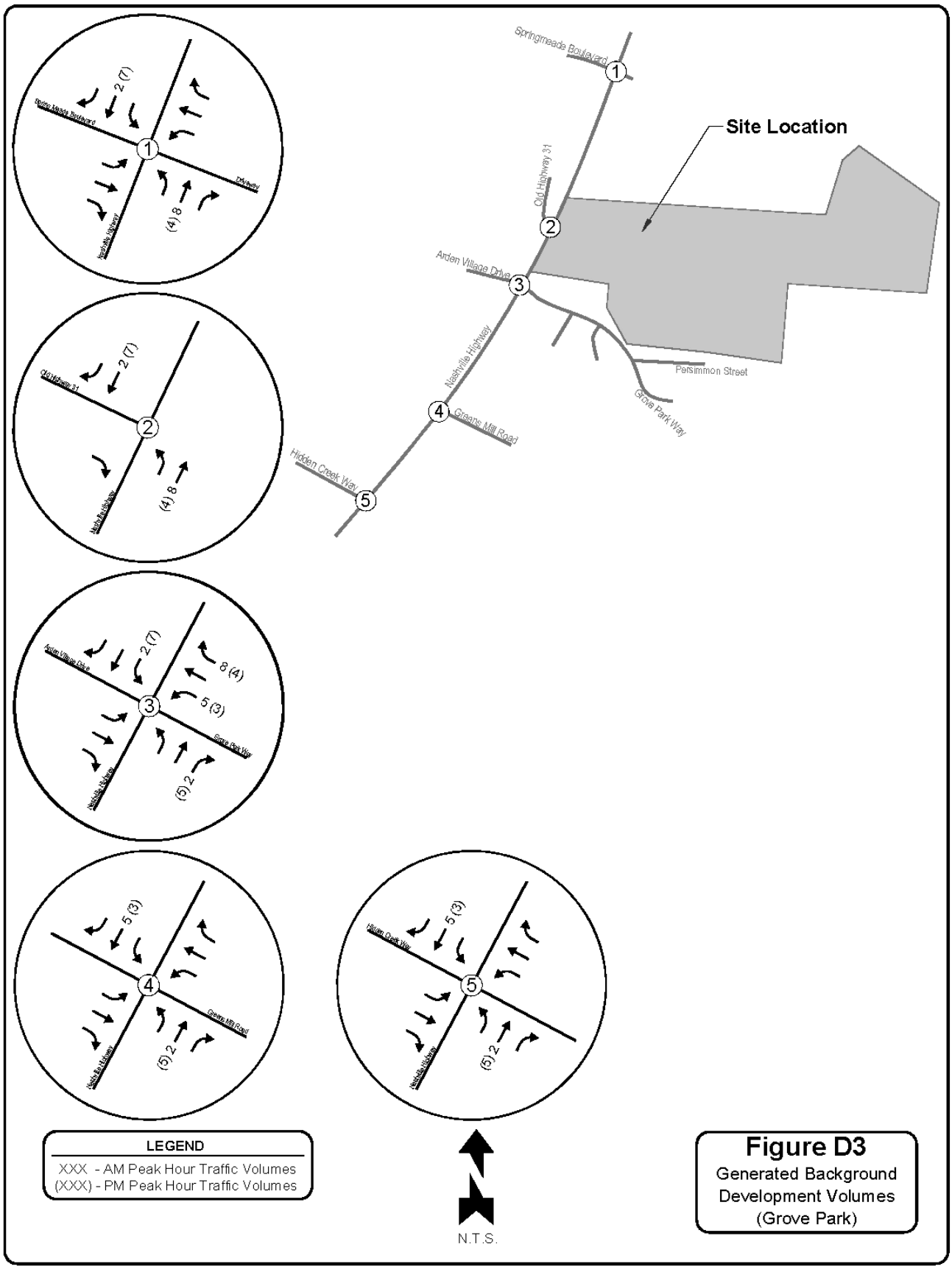
Splits and Phases: 7: Nashville Highway & Hidden Creek Way



APPENDIX D – ADDITIONAL FIGURES


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
1
2
3
4
5
73 (109)
1243 (1841)
1 (0)
1 (0)
2 (0)
(120) 197
(0) 1
(70) 53
(53) 109
(1458) 1617
(0) 1
4 (2)
1314 (1916)
(74) 87
(35) 129
(1512) 1757
19 (81)
1341 (1822)
41 (88)
68 (81)
0 (5)
14 (48)
(45) 78
(5) 3
(11) 16
(24) 4
(1423) 1740
(69) 32
1719 (1919)
27 (46)
74 (29)
33 (16)
(1430) 1907
(35) 17
24 (25)
1732 (1933)
(22) 17
(6) 10
(3) 8
(1451) 1910
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D1
Background Growth
Traffic Volumes (2023)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
41 (136)
353 (798)
(110) 175
(13) 7
(15) 11
(522) 610
16 (51)
344 (760)
(90) 97
(105) 61
(537) 621
48 (142)
391 (701)
2 (7)
8 (4)
(146) 41
5 (3)
(114) 32
(112) 33
(493) 634
(5) 2
92 (122)
244 (394)
92 (303)
61 (179)
13 (17)
109 (70)
(172) 185
(13) 14
(40) 43
(104) 79
(260) 208
(120) 37
24 (81)
315 (302)
14 (48)
44 (28)
58 (37)
(48) 73
(48) 73
(81) 24
(399) 198
(63) 19
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D2
Total Background
Development Generated
Traffic Volumes


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
2 (7)
(4) 8
8 (4)
5 (3)
(5) 2
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D3
Generated Background Development Volumes (Grove Park)

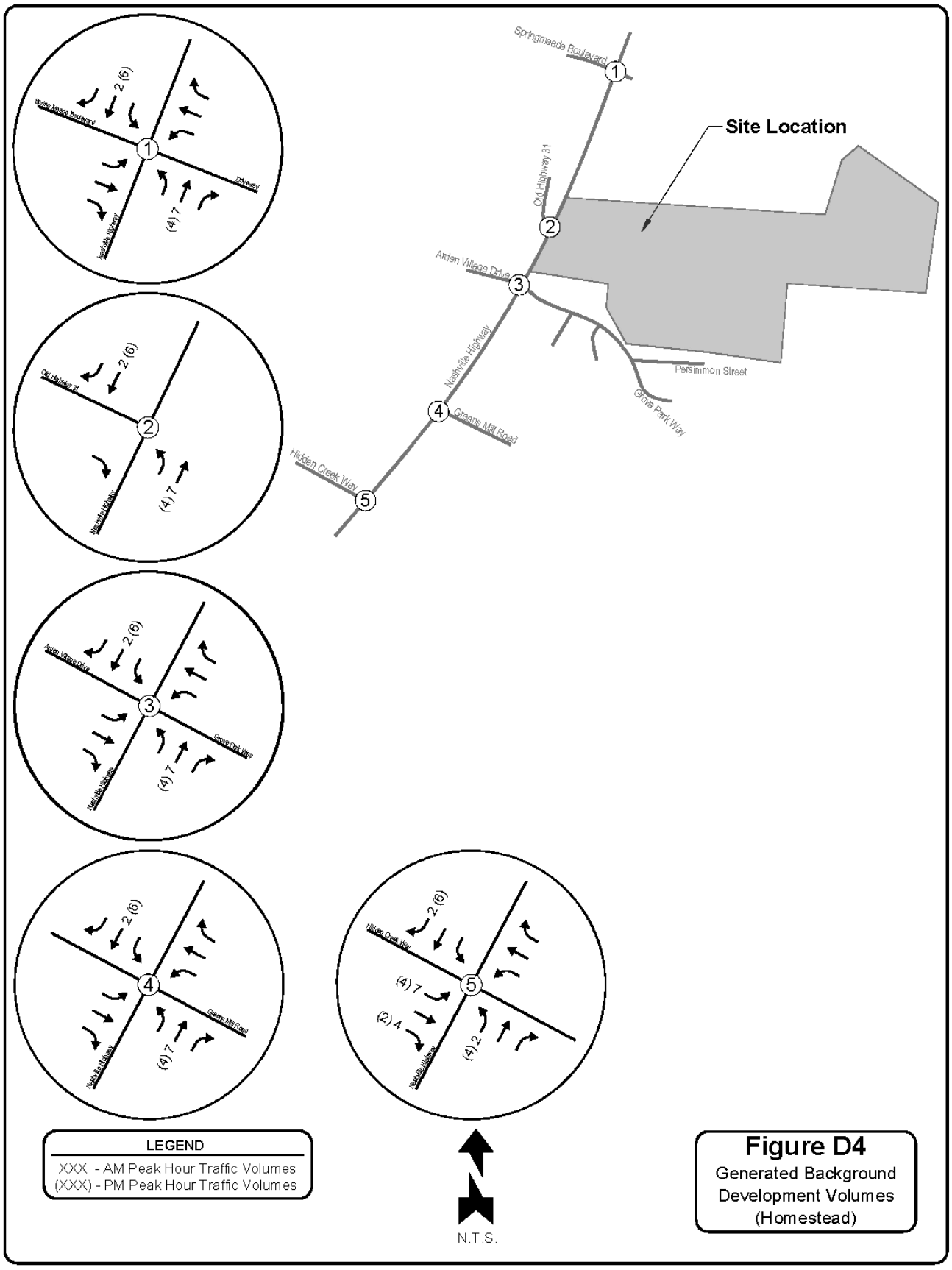
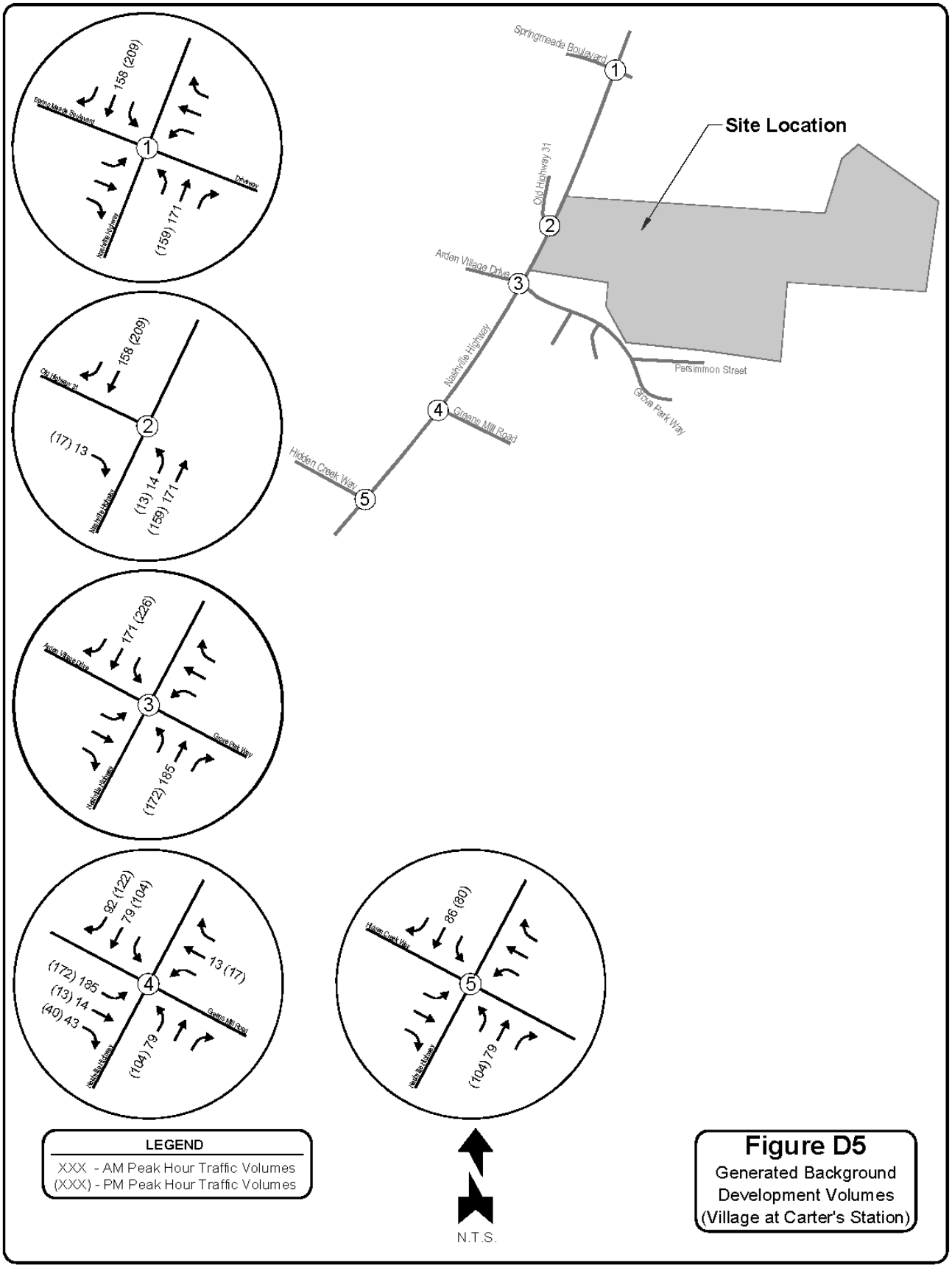
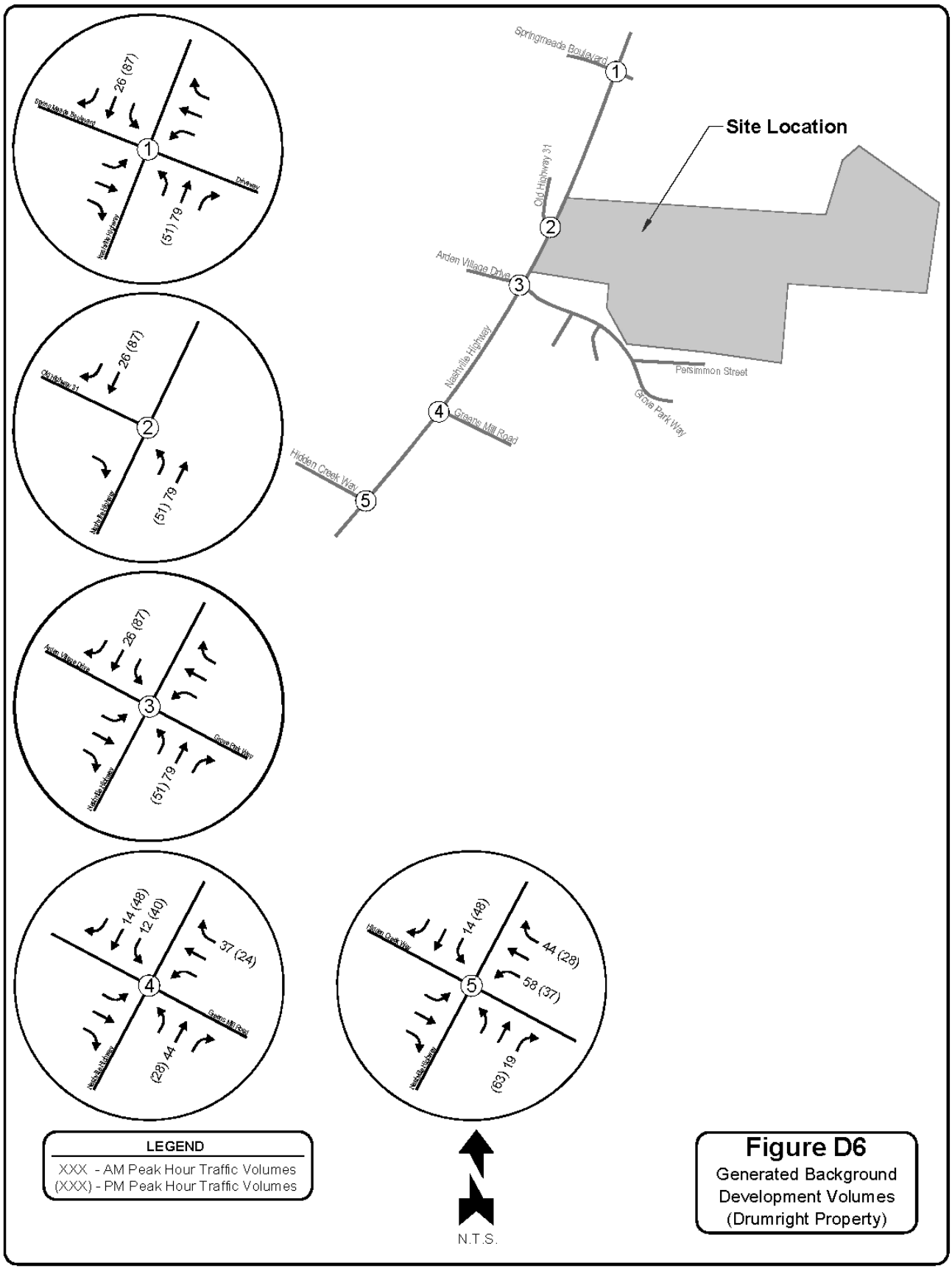


Figure D4
Generated Background Development Volumes (Homestead)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Grissim Mill Road
Hidden Creek Way
158 (209)
(159) 171
(17) 13
(13) 14
171 (226)
(172) 185
92 (122)
79 (104)
13 (17)
(40) 43
86 (80)
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D5
Generated Background Development Volumes
(Village at Carter's Station)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
1
2
3
4
5
26 (87)
(51) 79
14 (48)
12 (40)
37 (24)
(28) 44
44 (28)
58 (37)
(63) 19
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D6
Generated Background Development Volumes (Drumright Property)

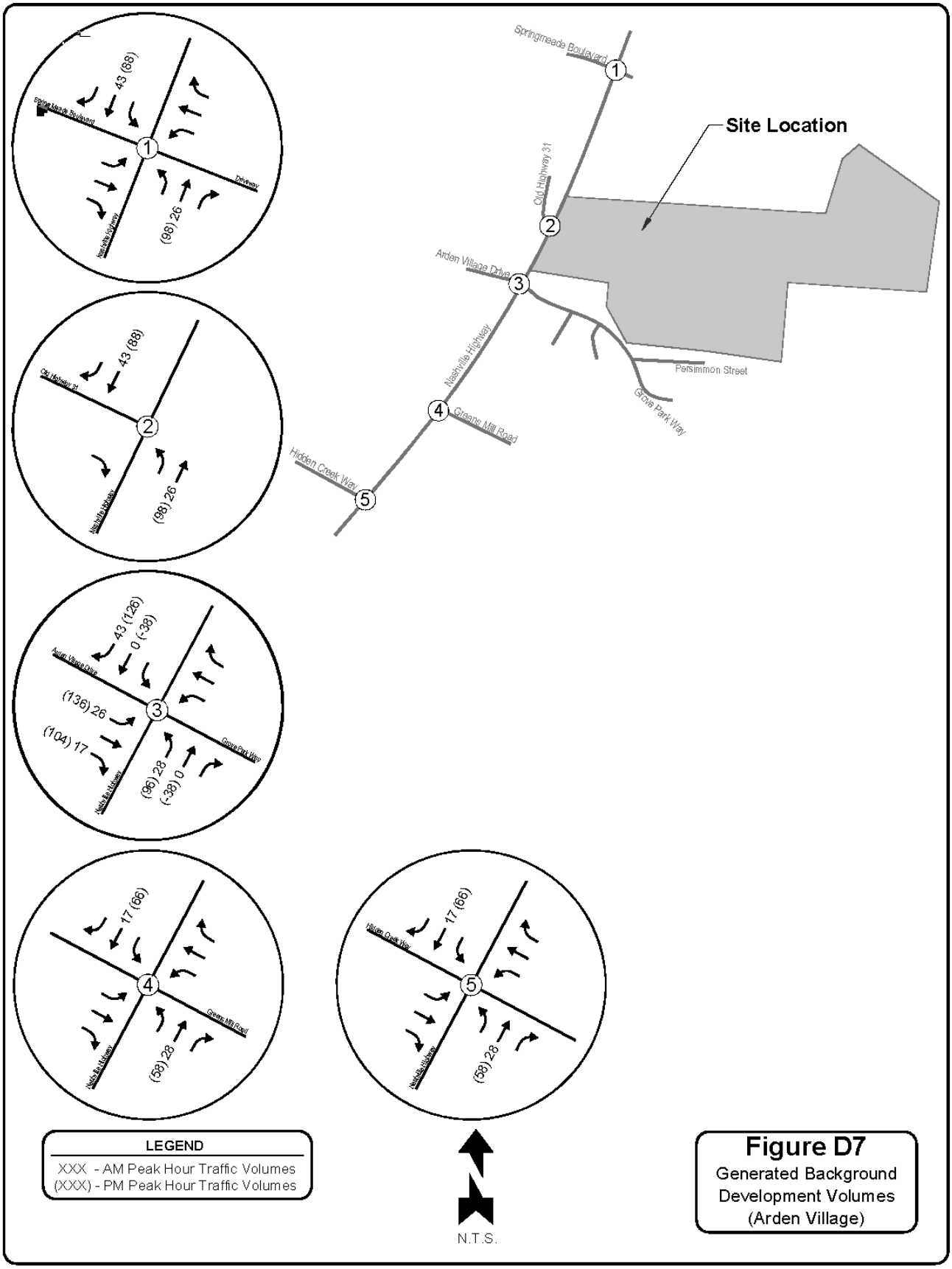
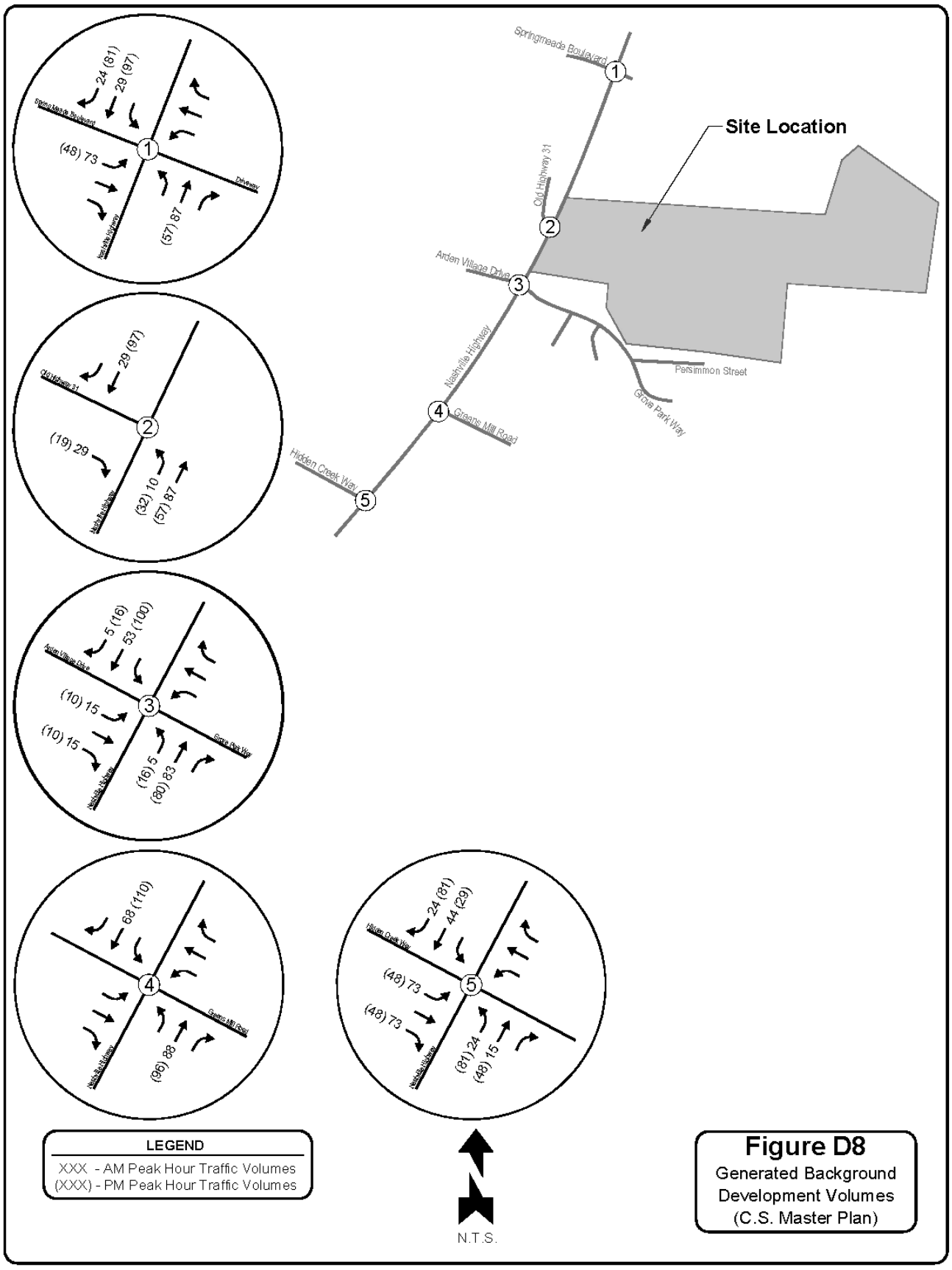
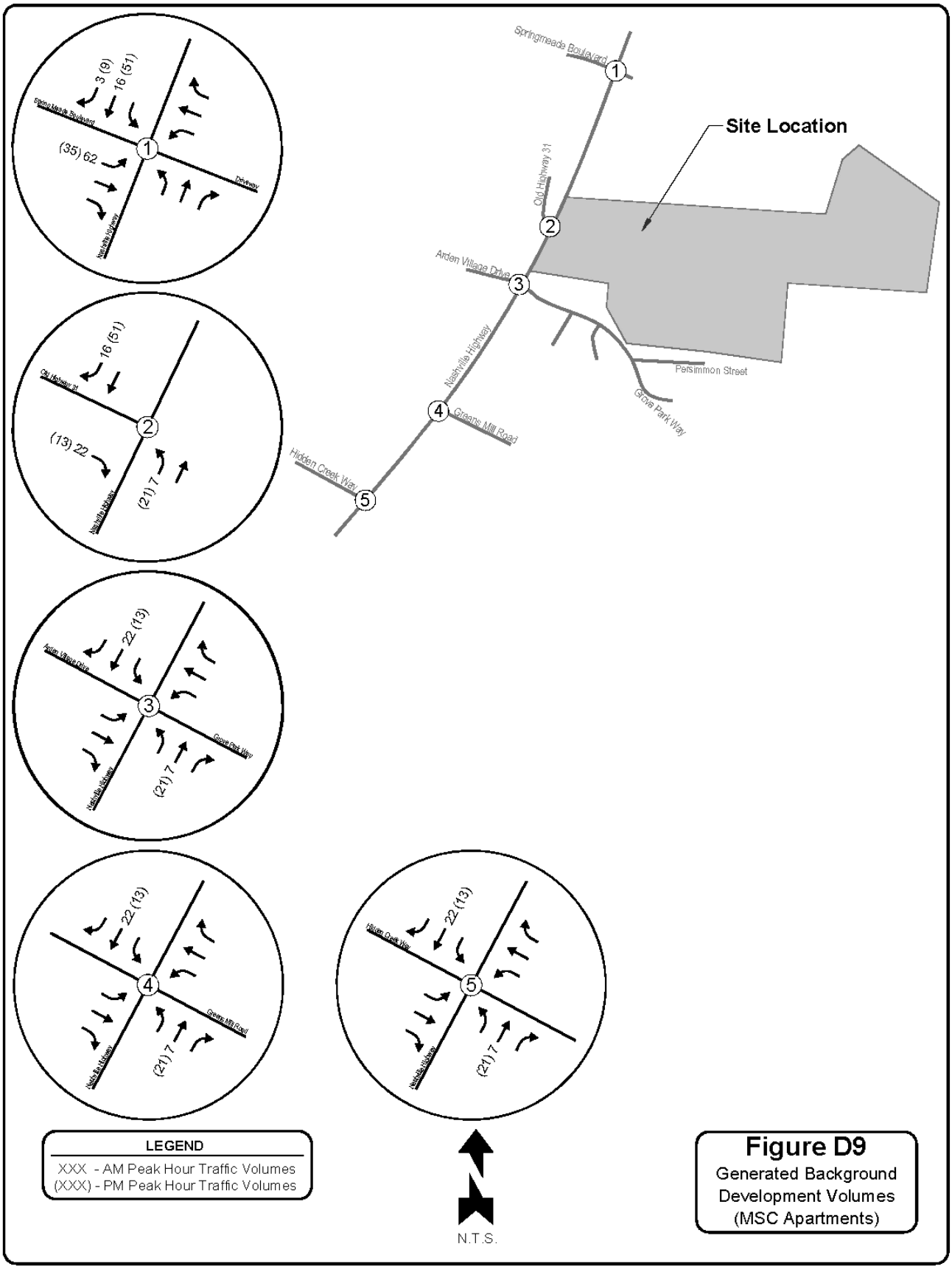
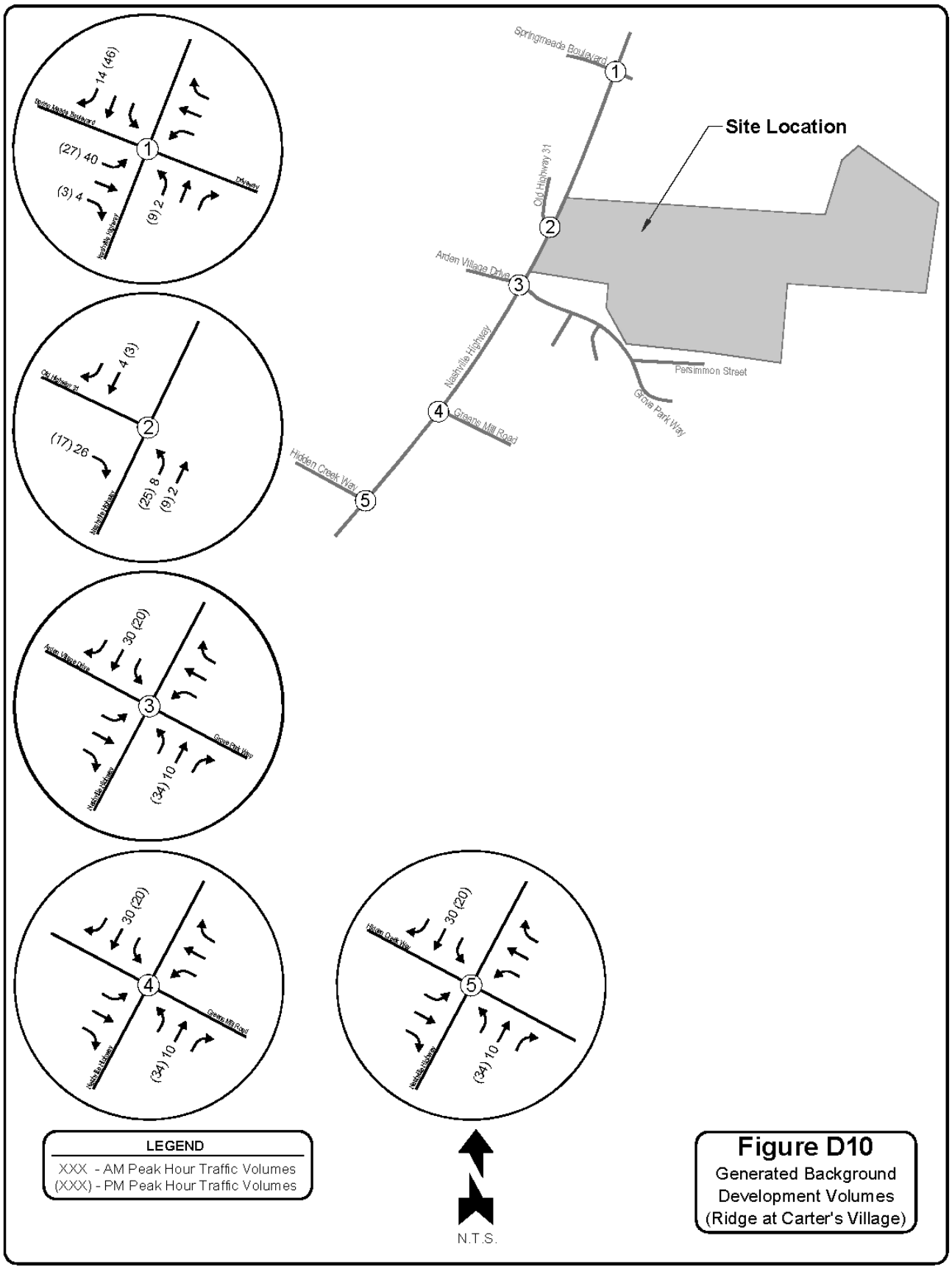
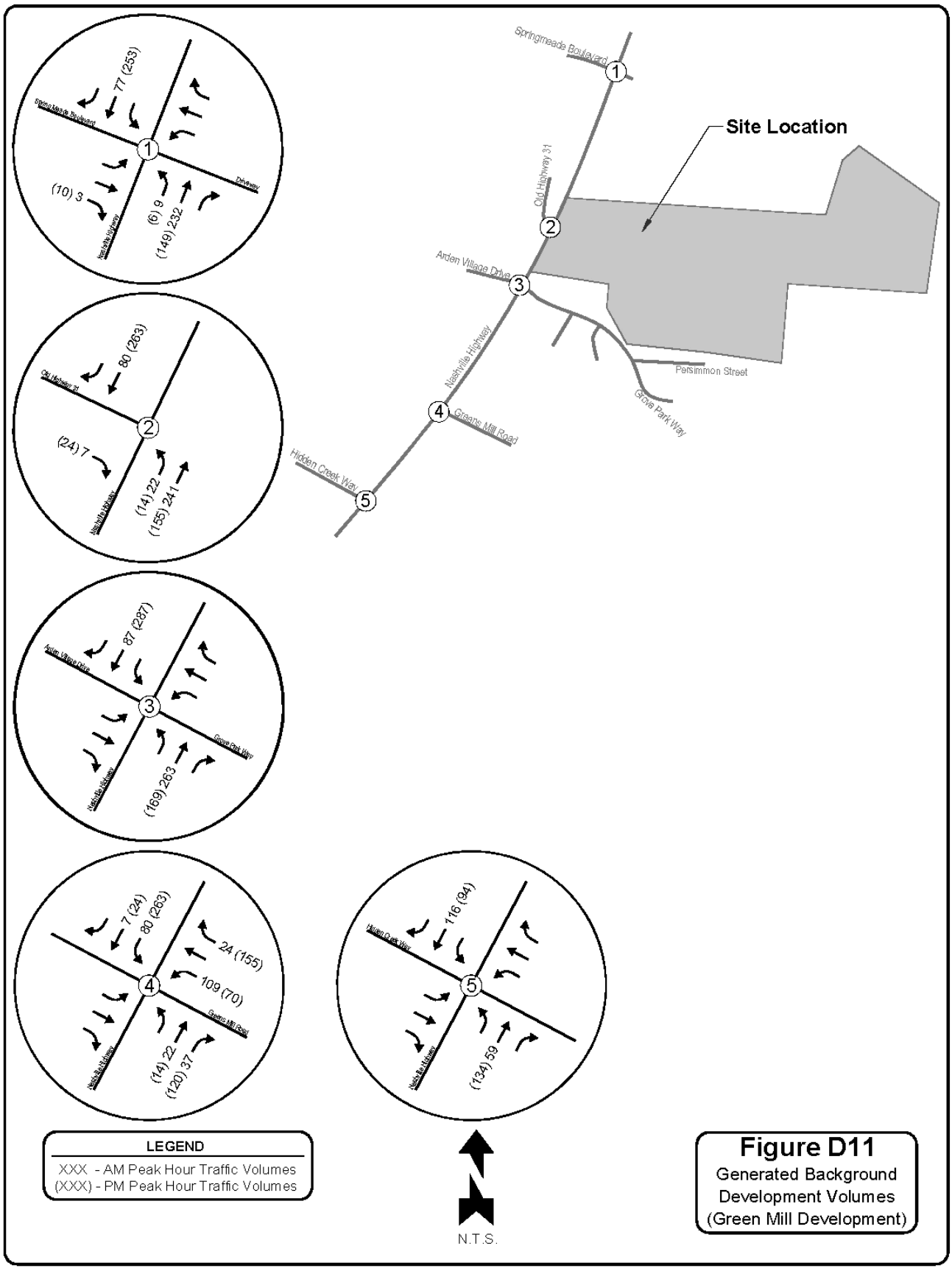


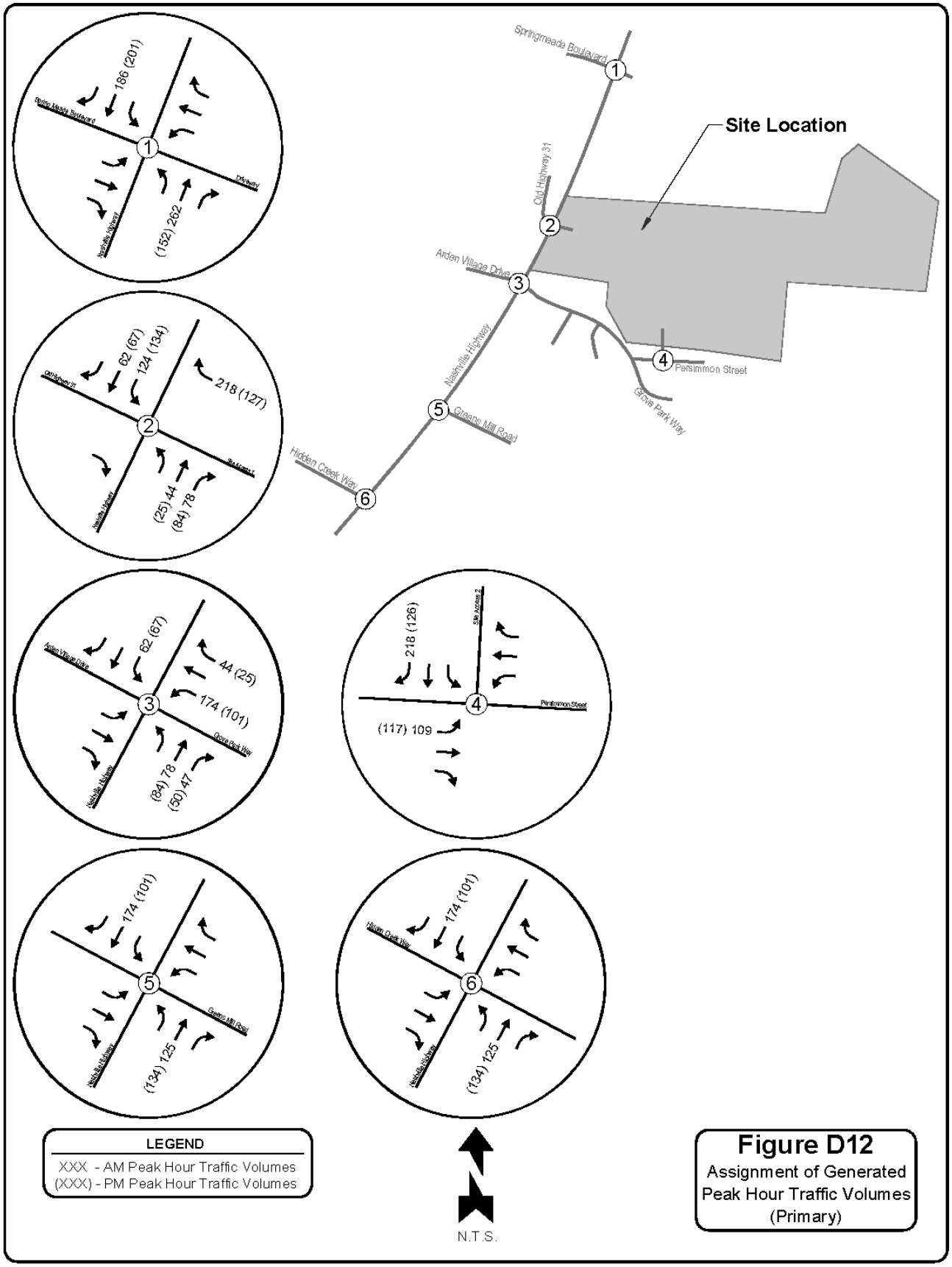
Figure D7
Generated Background Development Volumes (Arden Village)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
24 (81)
29 (97)
(48) 73
(57) 87
29 (97)
(19) 29
(32) 10
(57) 87
5 (16)
53 (100)
(10) 15
(10) 15
(16) 5
(80) 83
68 (110)
(96) 88
24 (81)
44 (29)
(48) 73
(48) 73
(81) 24
(48) 15
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D8
Generated Background
Development Volumes
(C.S. Master Plan)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
3 (9)
16 (51)
(35) 62
Driveway
16 (51)
(13) 22
(21) 7
22 (13)
(21) 7
22 (13)
(21) 7
22 (13)
(21) 7
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D9
Generated Background Development Volumes (MSC Apartments)


Springmeade Boulevard
1
Site Location
Old Highway 31
2
Arden Village Drive
3
Nashville Highway
Persimmon Street
Grove Park Way
4
Graans Mill Road
Hidden Creek Way
5
14 (46)
(27) 40
(3) 4
(9) 2
4 (3)
(17) 26
(25) 8
(9) 2
30 (20)
(34) 10
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D10
Generated Background Development Volumes
(Ridge at Carter's Village)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Grissim Mill Road
Hidden Creek Way
77 (253)
(10) 3
(6) 9
(149) 232
80 (263)
(24) 7
(14) 22
(155) 241
87 (287)
(169) 263
7 (24)
80 (263)
24 (155)
109 (70)
(14) 22
(120) 37
116 (94)
(134) 59
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D11
Generated Background Development Volumes (Green Mill Development)


Springmeade Boulevard
Site Location
Old Highway 31
Arden Village Drive
Nashville Highway
Persimmon Street
Grove Park Way
Graans Mill Road
Hidden Creek Way
1
2
3
4
5
6
186 (201)
(152) 262
62 (67)
124 (134)
218 (127)
(25) 44
(84) 78
62 (67)
44 (25)
174 (101)
(84) 78
(50) 47
218 (126)
(117) 109
174 (101)
(134) 125
174 (101)
(134) 125
LEGEND
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N.T.S.
Figure D12
Assignment of Generated Peak Hour Traffic Volumes (Primary)

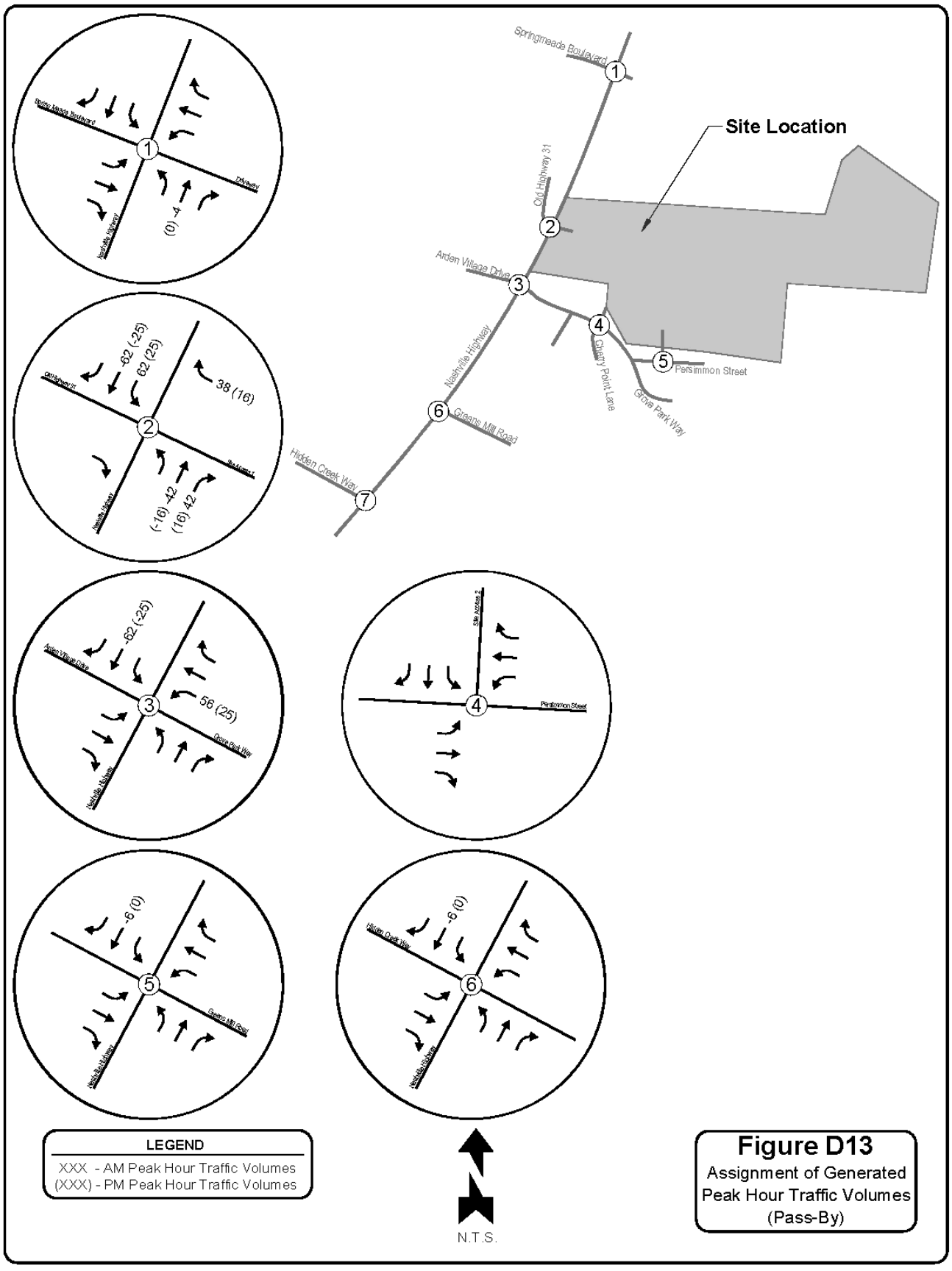


Figure D13
Assignment of Generated Peak Hour Traffic Volumes (Pass-By)

March 7, 2023

Mr. Travis Bonar
W&A Engineering
4101 Charlotte Ave. E215
Nashville, TN 37209
Sent via email: tbonar@waengineering.com

RE: Water Availability Letter
McClure Farms – 429 Units
2504 Nashville Hwy
Tax Map 51,42, Parcel 6.00,28.00
Columbia, Maury County, TN

Dear Mr. Bonar:

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 consists of 429 single-family units in detached and townhome configurations. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- This water letter represents a planning-only approval for the support of 429 single family units.
- Each Phase of the development will be considered individually to ensure water infrastructure including all related CPWS furnished equipment and appurtenances are available to support additional homes at the time application is made to proceed to construction for that Phase.
- System capacity for individual Phases of the development is reserved when CPWS has provided approval to proceed to construction and appropriate Impact Fees are paid.
- Based on State requirements, project phases will be delivered and activated as whole units. CPWS will not accept ownership of or activate portions of the water system that are smaller than the entirety of the infrastructure approved by the State on a single set of drawings. Phase boundaries should be defined with this is mind, as no water connections in the Phase will be activated until the entire Phase of construction is complete.
- Domestic waterline connection will be made to the existing 12-inch water main located on Nashville Highway.
- Minimum size 10-inch water main will be required along the main stem road, with looped 8-inch mains throughout the remainder of the development.
- A secondary connection will be made to the existing 8-inch main on Persimmon Street on the south side of the development.

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

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

- Present the attached hydrant analysis report for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide a development phasing drawing indicating boundaries of each phase and the number of each type of dwelling in each phase.
- Provide a proforma schedule or similar document indicating the timeline for delivery of homes, which aligns with the phases and boundaries in the phasing drawing.
- 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.

- Prior to expiration of this water availability letter in 120 days, remit to CPWS new water service fees for Phase 1 (estimated based on preliminary information) as follows:

New Water Service Fee: $1,500 + $370 per SFU (71 SFUs)	$27,770.00

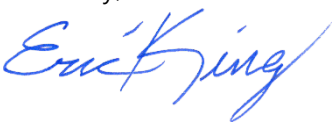
- CPWS will then develop water construction drawings for Phase 1 and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full or surety is provided in lieu of full payment. Final meter and impact fees are subject to change based on final design and meter size determination. Meter fees are subject to change based on market costs at time of purchase. Meters will not be set until meter and impact fees are paid in full. Meter and Impact Fees for Phase 1 are as follows:

Meter Fee: $540 per 3/4" meter (71 meters)	$38,340.00
Impact Fee: $4,500 per 3/4" meter (71 meters)	$319,500.00
Total Meter and Impact Fees Due =	**$357,840.00**

- 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.
- Subsequent Phases will require individual applications and associated fees. Should this letter expire prior to payment of the New Water Service Fee for Phase 1 of the development, a new application will be required to evaluate current conditions before proceeding.

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

Sincerely,



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

cc: Jonathan Hardin, CPWS
File 22-034

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: McClure Farms

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

General

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

Lots and Land-Use

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

Structures

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

CITY OF
COLUMBIA
TENNESSEE

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

Grading, Drainage, and Storm

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

Streets, Parking, and Pedestrian Elements

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

Landscaping, Open Space, and Amenities

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

Utilities

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

CITY OF
COLUMBIA
TENNESSEE

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

PUD Specific Items

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

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

Checklist Completed By:

Travis Bonar	Travis Bonar	5/22/2023
Print Name	Signature	Date

W&A Engineering

CIVIL ENGINEERING • LANDSCAPE ARCHITECTURE • TRAFFIC ENGINEERING
SURVEYING • SOIL AND ENVIRONMENTAL CONSULTING • ECONOMIC DEVELOPMENT

May 22, 2023

To: City of Columbia Development Services

Re: McClure Farms Preliminary Plat Phase 1 thru Phase 4

2504 Nashville Hwy – Columbia, Maury County, TN 38401

To whom it may concern:

As part of the request for Preliminary Plat approval for Phase 1 thru Phase 4, we are making the following submittal:

- Planning Commission Project Development Application
- Preliminary Plat Checklist
- Site Design Updates
- CPWS Water Availability Letter
- CPWS Power Availability
- Traffic Improvement Commitment Letter
- Traffic Impact Study (digital copy only)
- 1 copy – Preliminary Plat Phases 1-4
- 1 copy – Minor plat revision (commercial plat) with application
- Digital copy of all aforementioned documents (USB Drive)

If you have any questions or need additional information, please feel free to contact us at the number below.

Sincerely,

Travis Bonar, PE
tbonar@waengineering.com
615-610-1023

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	2504 Nashville Highway, Columbia, TN 38401		
	TAX MAP: 51	GROUP:	PARCEL: 6.00
SUMMARY OF NATURE OF REQUEST AND WORK	Preliminary Plat for Phase(s) 1-4. McClure Farms. All associated roads, utilities, storm sewer, etc...		

REQUEST DATE FOR PRE-APPLICATION CONFERENCE		*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*	Annexations/Rezoning: ❑ Written Legal Description copy ❑ Requested Zone Listed ❑ Compliance with Comprehensive Plan ❑ Annexation Permission Form ❑ Plans and/or Plats conforming to City standards Plats/PUDs: • Project Name (include Sections & Phases) McClure Farms • Total Number of Lots 431 • Total acreage 95.29

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	Travis Bonar	PHONE	(615)-610-1023
ADDRESS	4101 Charlotte Ave, Suite E215, Nashville, TN 37209	EMAIL	tbonar@waengineering.com

PROPERTY OWNER NAME	Brightland Homes of Tennessee, LLC	PHONE	(512)-330-9366 ext: 4233
ADDRESS	3815 S Capital Texas Hwy, Austin, TX 78704	EMAIL	sbarksdale@brightlandhomes.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.

Travis Bonar	Travis Bonar	5/19/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
		5/19/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

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

BOARD ACTION	

SITE PLAN FOR:

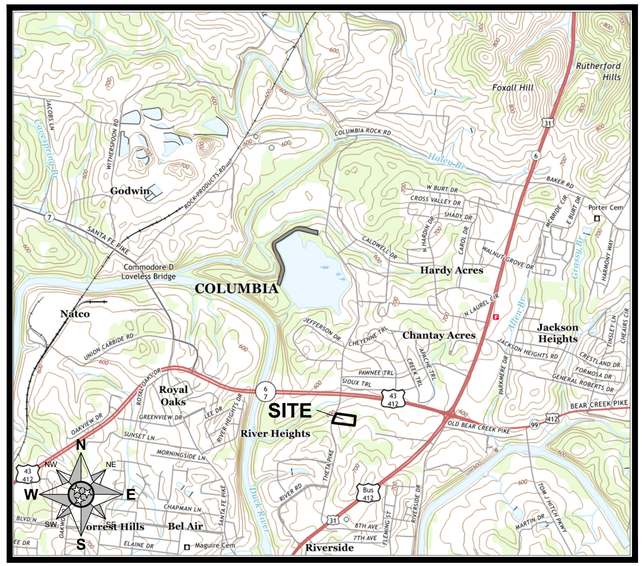
MACKENZIE PLACE

TAX MAP 90B, GROUP B, PARCEL 47.00

220 THETA PIKE

MAURY COUNTY, TENNESSEE

MAY 22, 2023



VICINITY MAP

SCALE: 1" = 2,000'

SOURCE: USGS

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C000	COVER SHEET
C001	GENERAL NOTES
C100	EXISTING CONDITIONS & DEMOLITION PLAN
C200	SITE LAYOUT PLAN
C201	INTERSECTION SIGHT DISTANCE PLAN
C300	OVERALL GRADING & DRAINAGE PLAN
C301	ENLARGED GRADING & DRAINAGE PLAN
C302	ENLARGED GRADING & DRAINAGE PLAN
C303	ENLARGED GRADING & DRAINAGE PLAN
C304	GRADING DETAILS
C305	STORM SEWER DETAILS
C401	INITIAL EPSC PLAN
C402	INTERMEDIATE EPSC PLAN
C403	FINAL EPSC PLAN
C404	EPSC DETAILS
C500	UTILITY PLAN
C501	OFFSITE SANITARY SEWER PLAN & PROFILE
C502	SANITARY SEWER PLAN & PROFILE
C600	SITE DETAILS
C601	UTILITY DETAILS
C602	UTILITY DETAILS
LP1.0	TREE PRESERVATION PLAN
LP2.0	LANDSCAPE PLAN
A0.0	ARCHITECTURAL ELEVATIONS
A0.1	ARCHITECTURAL ELEVATIONS
A1.0	ARCHITECTURAL FIRST FLOOR PLAN
A2.0	ARCHITECTURAL SECOND FLOOR PLAN
A3.0	ARCHITECTURAL RENDERING
A3.1	ARCHITECTURAL RENDERING
A3.2	ARCHITECTURAL RENDERING
A3.3	ARCHITECTURAL RENDERING
A3.4	ARCHITECTURAL RENDERING

PROJECT NOTES:

1. WATER FOR THIS DEVELOPMENT IS TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
2. SANITARY SEWER PROVIDER FOR THIS DEVELOPMENT IS TO BE COLUMBIA POWER & WATER SYSTEMS.
3. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY M2 GROUP, LLC DATED MAY, 2022.
4. ELECTRIC SERVICE TO BE PROVIDED BY COLUMBIA POWER & WATER SYSTEMS.
5. GAS SERVICE TO BE PROVIDED BY ATMOS ENERGY.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

CONTACT LIST

OWNER/DEVELOPER

WAITS DEVELOPMENT GROUP, LLC
ADDRESS: PO BOX 111285
NASHVILLE, TENNESSEE 37222
PHONE NO.:615-498-4190
CONTACT NAME: JOHN WAITS

CIVIL ENGINEER

M2 GROUP, LLC
P.O. BOX 848
FRANKLIN, TN 37065
PHONE: (615) 406-3415
CONTACT: MATT W. BRYANT, P.E.
E-MAIL: matt@m2groupllc.com

UTILITY CONTACTS:

WATER SUPPLY:
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

SANITARY SEWER
COLUMBIA WASTEWATER DEPARTMENT
1244 Treatment Plant Road
COLUMBIA, TN 38401
(931) 560-1001

ELECTRIC SERVICE
COLUMBIA POWER & WATER SYSTEMS
201 PICKENS LANE
COLUMBIA, TN 38401
(931) 388-4833

GAS SERVICE
ATMOS ENERGY CORPORATION
810 NASHVILLE HWY
COLUMBIA, TN 38401
(931) 388-9136

811 Know what's below. Call before you dig.

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRYANT — REGISTERED ENGINEER — COMMERCIAL — CERTIFICATE No. — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

COVER SHEET

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C000

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION OR EARTH MOVING OPERATIONS. INFORM ENGINEER OF ANY CONFLICTS DETRIMENTAL TO THE DESIGN INTENT.
2. 72 HOURS BEFORE DIGGING IS TO COMMENCE, THE CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES: TENNESSEE 811 AND ALL OTHER AGENCIES THAT MAY HAVE UNDERGROUND UTILITIES INVOLVING THIS PROJECT AND ARE NON-MEMBERS OF TENNESSEE 811.
3. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
4. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
5. CONTRACTOR SHALL OBTAIN A PERMIT FOR ALL CONSTRUCTION ACTIVITIES AND PERFORM SAID ACTIVITIES IN ACCORDANCE WITH ALL LOCAL, STATE, FEDERAL & OSHA REGULATIONS.
6. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, PAY ALL REQUIRED FEES AND ATTEND REQUIRED PRE-CONSTRUCTION MEETINGS WITH CITY AND UTILITY COMPANIES PRIOR TO BEGINNING WORK.
7. ANY WORK PERFORMED IN THE LOCAL RIGHT OF WAYS SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC., FOR WORK PERFORMED IN THE RIGHT OF WAYS.
8. THE CONTRACTOR IS TO PERFORM ALL INSPECTIONS AS REQUIRED BY THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC) FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT AND FURNISH OWNERS REPRESENTATIVE WITH WRITTEN REPORTS. OWNER WILL SUBMIT THE NOTICE OF INTENT (NOI) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN ORDER TO OBTAIN A NOTICE OF COVERAGE (NOC) UNDER THE STATE OF TENNESSEE NPDES PERMIT. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOI AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
9. CONTRACTOR SHALL IMPLEMENT ALL SOIL AND EROSION CONTROL, PRACTICES REQUIRED BY CITY OF COLUMBIA AND TDEC.
10. ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION AND ARE TO FINAL GRADE AND ARE TO REMAIN SO, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH SPECIFICATIONS.
11. ALL WORK SHALL COMPLY WITH THE TENNESSEE DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND ALL CONSTRUCTION WORK SHALL BE DONE ACCORDING TO SAID SPECIFICATIONS AND IN ACCORDANCE WITH APPLICABLE STANDARDS OF CITY OF COLUMBIA SUBDIVISION REGULATIONS.
12. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT.
13. CONTRACTOR SHALL REFER TO OTHER PLAN SHEETS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
14. BEFORE INSTALLATION OF STORM OR SANITARY SEWER, OR OTHER UTILITY THE CONTRACTOR SHALL VERIFY ALL CROSSINGS, BY EXCAVATION WHERE NECESSARY, AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT THEY ARE NOT NOTIFIED OF DESIGN CONFLICTS PRIOR TO CONSTRUCTION.
15. WHERE CURB IS PRESENT, DIMENSIONS ARE SHOWN TO THE FACE OF CURB, OTHERWISE DIMENSIONS ARE SHOWN TO THE EDGE OF PAVEMENT OR AS NOTED.
16. SITE SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
17. CONCRETE WALKS SHALL BE 4" THICK OVER 4" COMPACTED GRAVEL WITH CONTROL JOINTS EQUALLY SPACED AT IN ACCORDANCE WITH ACI 330R-01 AND ACI 325R 9-91, ISOLATION JOINTS AT ALL FIXED STRUCTURES (MANHOLES, INLETS, WALLS, BUILDING, ETC.). ALL SIDEWALKS ARE TO BE BROOM FINISHED.
18. CONSTRUCTION OF ALL ROADWAYS AND SIDEWALKS SHALL MEET THE REQUIREMENTS OF CITY OF COLUMBIA ROADWAY CONSTRUCTION CRITERIA AND STANDARD DETAILS.
19. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH STATE DEPARTMENT OF TRANSPORTATION REGULATIONS AND AS REQUIRED BY LOCAL AGENCIES WHEN WORKING IN AND/OR ALONG STREETS, ROADS, HIGHWAYS, ETC. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL AND COORDINATE WITH LOCAL AND/OR STATE AGENCIES REGARDING THE NEED, EXTENT AND LIMITATIONS ASSOCIATED WITH INSTALLING AND MAINTAINING TRAFFIC CONTROL MEASURES.
20. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL BE IN ACCORDANCE WITH ALL FEDERAL OSHA REGULATIONS. CONTRACTOR TO PAY PARTICULAR ATTENTION TO 29 CFR PART 1926, SUBPARTS M AND P.

DEMOLITION NOTES

1. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD BY THE CONTRACTOR.
2. NO TREES SHALL BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE.
3. TREE PROTECTION FENCING SHALL BE IN ACCORDANCE WITH CITY OF COLUMBIA STANDARDS AND DETAILED DRAWINGS. DO NOT OPERATE OR STORE EQUIPMENT, NOR HANDLE OR STORE MATERIALS WITHIN THE DRIP LINES OF THE TREES SHOWN TO REMAIN.
4. PROTECTION OF EXISTING TREES AND VEGETATION: PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC, OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY GUARDS TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING.
5. ALL DEMOLITION WASTE AND CONSTRUCTION DEBRIS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. REPAIR DAMAGE ACCORDING TO THE APPROPRIATE UTILITY COMPANY STANDARDS AND AT THE CONTRACTOR'S EXPENSE.
6. ALL UTILITY DISCONNECTION, REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY / AGENCY. UTILITY CONTACTS ARE LISTED ON THE COVER SHEET.
7. THE BURNING OF CLEARED MATERIAL AND DEBRIS SHALL NOT BE ALLOWED UNLESS CONTRACTOR OBTAINS PRIOR WRITTEN AUTHORIZATION FROM THE LOCAL AUTHORITIES.
8. EROSION & SEDIMENT CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND FUNCTION PROPERLY PRIOR TO INITIALIZATION OF DEMOLITION ACTIVITIES.
9. HAZARDOUS MATERIALS ARE NOT EXPECTED, IF FOUND ON SITE, SUCH MATERIALS SHALL BE REMOVED BY A LICENSED HAZARDOUS MATERIALS CONTRACTOR. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IF HAZARDOUS MATERIALS ARE ENCOUNTERED.
10. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE, FEDERAL AND OSHA REGULATIONS DURING ALL DEMOLITION ACTIVITIES.
11. CONTRACTOR SHALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING DEMOLITION ACTIVITIES. IF DISTURBED, CONTRACTOR SHALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
12. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO REMAIN THAT HAVE BEEN DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
13. THE CONTRACTOR SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION ACTIVITIES.
14. ANY UTILITY AND STRUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND/OR AGENCY. DEMOLITION OF REGULATED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO WELLS, ASBESTOS, UNDER GROUND STORAGE TANKS, SEPTIC TANKS AND ELECTRIC TRANSFORMERS. DEMOLITION CONTRACTOR SHALL REFER TO ANY ENVIRONMENTAL STUDIES FOR DEMOLITION RECOMMENDATIONS AND GUIDANCE AVAILABLE ENVIRONMENTAL STUDIES MAY INCLUDE, BUT ARE NOT LIMITED TO PHASE I ESA, PHASE II ESA, WETLAND AND STREAM DELINEATION AND ASBESTOS SURVEY. ALL APPLICABLE ENVIRONMENTAL STUDIES SHALL BE MADE AVAILABLE UPON REQUEST.

LAYOUT NOTES

1. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, AND INVERTS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING WORK.
2. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES. TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, OR AS NECESSARY FOR CONSTRUCTION.
3. PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING PAVEMENT AND NEW PAVEMENT. FIELD ADJUSTMENT OF FINAL GRADES MAY BE NECESSARY. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ALL UTILITIES; INCLUDING, BUT NOT LIMITED TO, ALL UTILITIES AND CROSSINGS PRIOR TO PAVEMENT INSTALLATION.
4. ALL DAMAGE TO EXISTING PAVEMENT TO REMAIN, WHICH RESULTS FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPLACED WITH LIKE MATERIALS AT THE CONTRACTOR'S EXPENSE.
5. SITE DIMENSIONS SHOWN ARE TO THE FACE OF CURB, OR EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL MAINTAIN ONE SET OF AS-BUILT/RECORD DRAWINGS ON-SITE DURING CONSTRUCTION FOR DISTRIBUTION TO THE OWNER AND/OR OWNER'S REPRESENTATIVE UPON COMPLETION.
7. THIS SITE LAYOUT IS SPECIFIC TO THE APPROVALS NECESSARY FOR THE CONSTRUCTION IN ACCORDANCE WITH CITY OF COLUMBIA REQUIREMENTS. NO CHANGES TO THE SITE LAYOUT ARE ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. CHANGES MADE TO THE SITE LAYOUT WITHOUT APPROVAL IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR. CHANGES INCLUDE BUT ARE NOT LIMITED TO, INCREASED IMPERVIOUS PAVEMENT, ADDITION / DELETION OF PARKING SPACES, MOVEMENT OF CURB LINES, CHANGES TO DRAINAGE STRUCTURES AND PATTERNS, LANDSCAPING, ETC.
8. CONTRACTOR SHALL PERFORM A PROOF ROLL PER CITY OF COLUMBIA REQUIREMENTS PRIOR TO STONE AND PAVEMENT INSTALLATION.
9. ALL PAVEMENT MARKINGS SHALL BE INSTALLED USING WHITE OR YELLOW, REFLECTIVE TRAFFIC MATERIALS (SEE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.).
10. THE CITY WILL MEASURE THE CROSS SLOPE OF FINAL CONSTRUCTED ROADWAYS WITHIN THE SUBDIVISION. THE CROSS SLOPE OF THE FINAL CONSTRUCTED ROADWAYS SHALL BE PER THE ROADWAY SECTION SHOWN ON THE CONSTRUCTION PLANS OR IT SHALL BE REPAIRED AT NO COST TO THE CITY OR OWNER.
11. OWNER SHALL PROVIDE STAKING OF THE FRONT PROPERTY LINES OF EACH LOT AND WILL SET FINAL PROPERTY CORNERS. ALL OTHER STAKING/SURVEYING THAT IS REQUIRED TO CONSTRUCT THE IMPROVEMENTS SHOWN IN THESE CONSTRUCTION PLANS IS THE RESPONSIBILITY OF THE CONTRACTOR.
12. THE ENGINEER SHALL PROVIDE FILES IN COMPUTER-AIDED-DRAFTING (CAD) FORMAT TO THE CONTRACTOR. THE CONTRACTOR WILL BE BOUND BY THE TERMS IN THE ENGINEER'S "CAD FILES DISCLAIMER, WAIVER AND LIMITATION OF LIABILITY" AGREEMENT.

GRADING NOTES

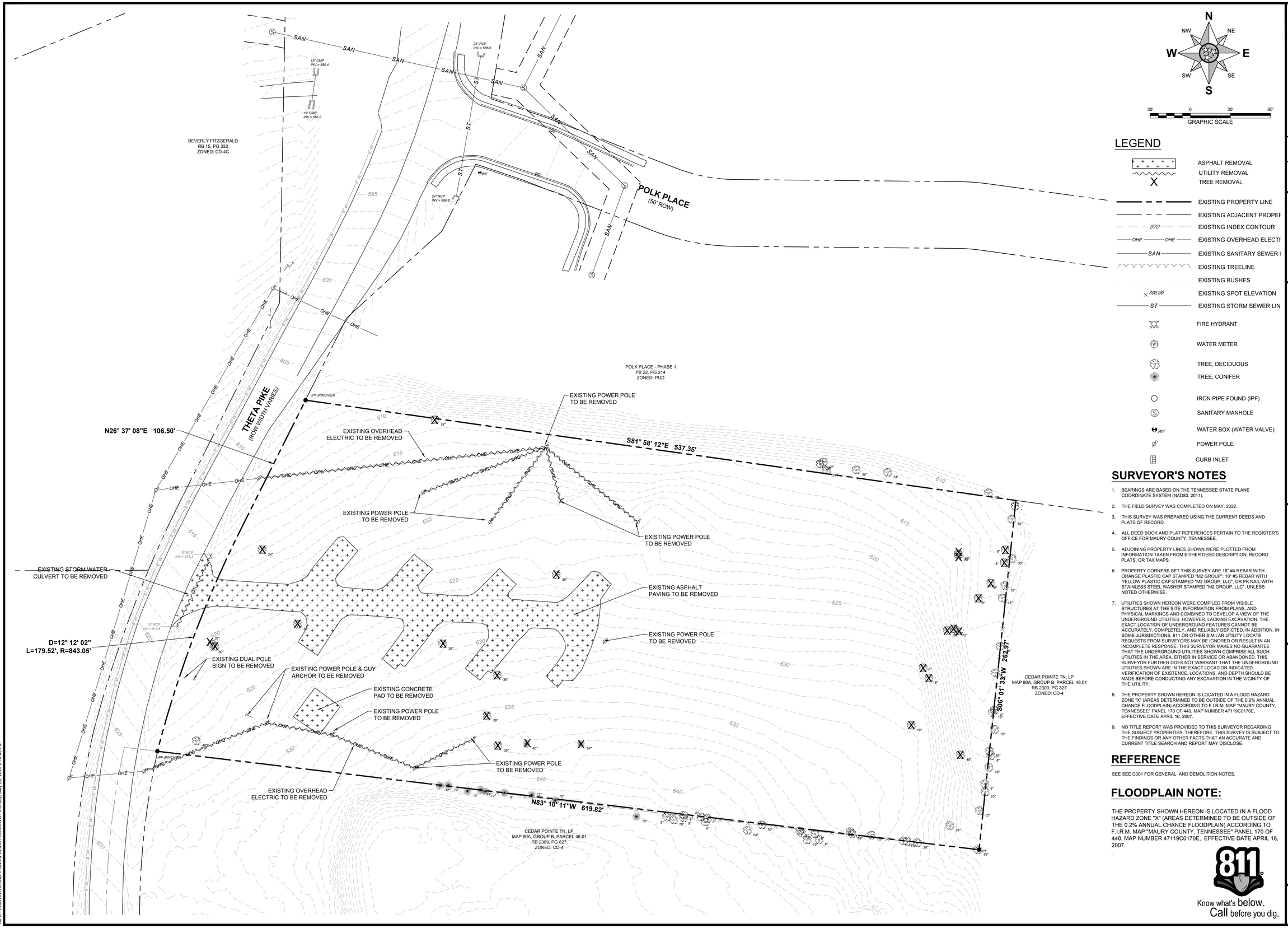
1. THE CONTRACTOR SHALL CHECK ALL EXISTING AND FINISHED GRADES, DIMENSIONS, ETC. PRIOR TO BEGINNING NOTIFY THE OWNERS REPRESENTATIVE OF ANY DISCREPANCIES AND/OR ERRORS IN THE PLANS PRIOR TO COMMENCING WORK.
2. ALL PROPOSED GRADES SHOWN ARE FINAL GRADES, TOP OF GROUND LEVEL, OR TOP OF PAVEMENT, OR GRATE ELEVATION AT THE DRAWDOWN POINT, UNLESS INDICATED OTHERWISE.
3. ALL ELEVATIONS SHOWN ARE FINISHED GRADE ELEVATIONS.
4. CONTRACTOR SHALL ADHERE TO THE EROSION & SEDIMENT CONTROL PLAN PREPARED FOR THIS PROJECT.
5. EARTHWORK SHALL INCLUDE CLEARING AND GRUBBING, STRIPPING AND STOCKPILING TOPSOIL, MASS GRADING, EXCAVATION, FILLING, UNDER CUT AND REPLACEMENT, IF REQUIRED, AND COMPACTION.
6. CONTRACTOR TO REFILL UNDERCUT AREAS (IF REQUIRED) WITH SUITABLE MATERIAL AND COMPACT AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
7. EXCAVATED SUBGRADES AND EACH LAYER OF FILL SHALL BE OF A QUALITY ACCEPTABLE TO THE OWNERS REPRESENTATIVE AND SHALL NOT INCLUDE ORGANIC MATERIAL, BOULDERS, DEBRIS, WET MATERIAL, ETC. CUT OR STRIPPED AREAS SHALL BE PROOF ROLLED PRIOR TO ANY FILLING. ALL GRADING ACTIVITY AND PLACEMENT OF MATERIAL SHALL BE MONITORED BY A QUALIFIED GEOTECHNICAL ENGINEER (OR THEIR REPRESENTATIVE), OR AS DIRECTED BY THE OWNERS REPRESENTATIVE. MATERIAL SHALL MEET OR EXCEED COMPACTION REQUIREMENTS SPECIFIED IN THE SPECIFICATIONS PUBLISHED BY CITY OF COLUMBIA.
8. PLACE TOPSOIL OVER THE SUBGRADE OF UNPAVED, DISTURBED AREAS TO A MINIMUM DEPTH OF 6". TOPSOIL SHALL BE FREE OF ROCK AND DEBRIS.
9. ALL SLOPES IN NON-PAVED AREAS SHALL BE 3:1 (HORIZONTAL:VERTICAL) MAXIMUM UNLESS NOTED OTHERWISE.
10. ALL AREAS NOT PAVED SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION & SEDIMENT CONTROL PLAN, UNLESS NOTED OTHERWISE.
11. ALL FILLS SHALL BE CONTROLLED, COMPACTED, AND INSPECTED BY AN APPROVED TESTING LABORATORY OR AN INSPECTOR FROM THE APPROPRIATE GOVERNMENTAL AGENCY.
12. ALL EXCESS SOIL MATERIALS, OTHER THAN TOPSOIL, SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE (INCLUDING ALL CHARTER COMMERCIAL, LLC PROPERTY OR FUTURE PHASES OF HIGH PARK HILL SUBDIVISION) AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
13. THE CONTRACTOR IS RESPONSIBLE FOR THE SITE EARTHWORK BY IMPORTING OR EXPORTING AS NECESSARY TO ACHIEVE DESIGN GRADES AND SPECIFICATIONS.
14. THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION. THE CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO ADJACENT PROPERTIES OCCURRING DURING CONSTRUCTION OF THIS PROJECT. NO WORK SHALL BE PERFORMED OUTSIDE THE PROJECT BOUNDARY WITHOUT PROPER AGREEMENTS WITH THE AFFECTED PROPERTY OWNERS.
15. THE LOCATION AND/OR ELEVATION OF THE EXISTING UTILITIES SHOWN HEREON ARE BASED ON UTILITY COMPANY RECORDS, AND WHERE POSSIBLE, FIELD MEASUREMENTS. THE CONTRACTOR SHALL NOT RELY UPON THIS INFORMATION AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 3 DAYS BUT NOT MORE THAN 10 DAYS PRIOR TO ANY EXCAVATION AND REQUEST FIELD VERIFICATION OF UTILITY LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES TO REMAIN. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY DAMAGED UTILITIES ACCORDING TO LOCAL CODES AT THE CONTRACTORS EXPENSE.
16. THE GENERAL CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR JOB SITE CONDITIONS, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING CONSTRUCTION. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS.
17. MATERIALS NOT SUITABLE FOR FILL OR REUSE SHALL BE DISPOSED OF OFFSITE IN ACCORDANCE WITH THE REQUIREMENTS OF CITY OF COLUMBIA AND AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE.
18. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT T.O.S.H.A. PROVISIONS AND THE MANUAL OF ACCIDENT PREVENTION AND CONSTRUCTION, ISSUED BY THE AGC OF AMERICA, INCORPORATED, AND THE SAFETY AND HEALTH REGULATIONS OF CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR.
19. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGH THE SITE DURING ALL PHASES OF CONSTRUCTION.
20. CONTRACTOR SHALL REMOVE FROM THE LIMITS OF DISTURBANCE ALL UNSUITABLE MATERIAL, DEBRIS, LARGER BOULDERS, DELETERIOUS MATERIAL, ETC. STOCKPILING OF ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION IS PROHIBITED WITHOUT THE EXPRESS WRITTEN CONSENT OF THE DEVELOPER AND THE ENGINEER OF RECORD. CONSENT TO PLACE ANY MATERIAL IN FUTURE PHASES OF THIS SUBDIVISION SHALL ONLY BE GRANTED UNDER THE FOLLOWING PROVISIONS:
    - IF THE AREA IS CLEARED, MAINTAINED AND PROPER EROSION CONTROL MEASURES INSTALLED TO PREVENT EROSION OR SEDIMENT DEPOSITION.
    - MATERIAL IS PLACED AND GRADED IN A PERMANENT LOCATION THAT WILL NOT BE REQUIRED TO BE MOVED IN A FUTURE PHASE OF THIS SUBDIVISION DEVELOPMENT AND PERMANENTLY STABILIZED IN ACCORDANCE WITH TDEC AND CITY REGULATIONS.
21. ALL SOILS, REGARDLESS OF THE CHARACTER OF SURFACE AND SUBSURFACE CONDITIONS ENCOUNTERED, ARE CONSIDERED TO BE UNCLASSIFIED. THE CONTRACTOR RECOGNIZES THAT THIS PROJECT IS LOCATED IN AN AREA WHERE ROCK ENCOUNTER IS LIKELY. THE CONTRACTOR IS RESPONSIBLE TO VISIT THE SITE, MAKE ANY TESTS, BORES, TEST PITS, SURVEYS, ETC. NECESSARY TO FAMILIARIZE HIMSELF WITH ALL SPECIFIC SITE CONDITIONS RELATED TO THIS PROJECT. NO CHANGES IN THE CONTRACT SUM OR THE CONTRACT TIME WILL BE AUTHORIZED FOR ANY ROCK ENCOUNTER, THE EXCAVATION/REMOVAL THEREOF, OR DISPOSAL OF ROCK/SOIL MIX AND/OR UNSUITABLE SOIL

STORM DRAINAGE NOTES

1. DISTANCES SHOWN ON PIPING ARE HORIZONTAL DISTANCES FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE, UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE INSTALLATION, INSPECTION, TESTING AND FINAL ACCEPTANCE OF ALL NEW STORMWATER MANAGEMENT FACILITIES CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE REGULATING AGENCIES CONCERNING INSTALLATION, INSPECTION AND APPROVAL OF THE STORM DRAINAGE SYSTEM CONSTRUCTION.
3. ALL STORMWATER MANAGEMENT FACILITIES, INCLUDING COLLECTION AND CONVEYANCE STRUCTURES, SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES AND REGULATIONS.
4. THE CONTRACTOR IS TO CONSTRUCT CURBS, CATCH BASINS, PIPING, ETC. AS REQUIRED TO CONVEY THE LANDSCAPED & PAVED SURFACE DRAINAGE THROUGH THE SITE.
5. STORM SEWER PIPE LABELED "RCP" SHALL BE REINFORCED CONCRETE PIPE. ALL STORM IS TO BE INSTALLED PER CITY OF COLUMBIA REQUIREMENTS AND SPECIFICATIONS.
6. STORM SEWER IS TO BE BEDDED WITH CLEAN GRANULAR MATERIAL (AGGREGATE) CONSISTING OF AASHTO #57 OR #67 STONE. BEDDING TO BE MINIMUM OF 6" BELOW & 12" ABOVE AND ON THE SIDES OF THE PIPE OR AS REQUIRED BY CITY OF COLUMBIA INSPECTOR.
7. ALL TRENCH SPOILS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE AT NO ADDITIONAL COST TO THE OWNER IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS.
8. CONTRACTOR SHALL INCLUDE A LINE ITEM IN THEIR CONTRACT TO THE OWNER FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROL MEASURES AT THE END OF THE BOND PERIOD WITH CITY OF COLUMBIA.

EROSION AND SEDIMENT CONTROL NOTES

1. THE ISSUED NOTICE OF COVERAGE (NOC) OF THE PERMIT TO DISCHARGE CONSTRUCTION ACTIVITY STORMWATER SHALL BE POSTED NEAR THE SITE CONSTRUCTION ENTRANCE. THE CONTRACTOR SHALL HAVE THE SWPPP AND A SET OF APPROVED EPSC PLANS ON SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR WILL BE REQUIRED TO SIGN THE NOTICE OF INTENT (NOI) AND SUBMIT UPDATED NOI TO THE STATE OF TENNESSEE UPON SELECTION TO COMPLETE THE CONSTRUCTION AND BE A PERMITTEE LISTED ON THE NOC.
2. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
3. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
4. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY TDEC PRIOR TO ADDITIONAL DISTURBANCE.
5. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
6. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
7. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
8. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
9. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
10. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
11. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
12. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN TCP-10 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
13. FOR PERMANENT STABILIZATION OF DRAINAGE SWALES, INSTALL TURF REINFORCEMENT MATTING (TENSAR NORTH AMERICAN GREEN SC250 OR APPROVED EQUAL) PER MANUFACTURERS' RECOMMENDATIONS.
14. FOR PERMANENT STABILIZATION OF PERMANENT DETENTION POND, INSTALL SOD PER MANUFACTURERS' RECOMMENDATIONS. SOD SHALL BE AS FOLLOWS: SOD SHALL BE HIGH-QUALITY TURF TYPE TALL FESCUE OF KNOWN GENETIC ORIGIN. FREE OF NOXIOUS WEEDS, DISEASE, AND INSECT PROBLEMS. SOD SHALL APPEAR HEALTHY AND VIGOROUS, AND CONFORM TO ALL SPECIFICATIONS IN THE TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
15. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
16. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
17. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING PLANS. THE EQUIPMENT NECESSARY TO IMPLEMENT A CLEANUP SHALL BE MADE AVAILABLE TO FACILITY PERSONNEL. THE OPERATOR SHALL IMMEDIATELY NOTIFY THE DESIGNATED STATE AND LOCAL GOVERNMENT AGEN



N
NW NE
W E
SW SE
S

30' 0 30' 60'
GRAPHIC SCALE

LEGEND

- ASPHALT REMOVAL
- UTILITY REMOVAL
- TREE REMOVAL
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPEF
- EXISTING INDEX CONTOUR
- EXISTING OVERHEAD ELECTI
- EXISTING SANITARY SEWER I
- EXISTING TREELINE
- EXISTING BUSHES
- EXISTING SPOT ELEVATION
- EXISTING STORM SEWER LIN
- FIRE HYDRANT
- WATER METER
- TREE, DECIDUOUS
- TREE, CONIFER
- IRON PIPE FOUND (IPF)
- SANITARY MANHOLE
- WATER BOX (WATER VALVE)
- POWER POLE
- CURB INLET

SURVEYOR'S NOTES

1. BEARINGS ARE BASED ON THE TENNESSEE STATE PLANE COORDINATE SYSTEM (NAD83, 2011).
2. THE FIELD SURVEY WAS COMPLETED ON MAY, 2022.
3. THIS SURVEY WAS PREPARED USING THE CURRENT DEEDS AND PLATS OF RECORD.
4. ALL DEED BOOK AND PLAT REFERENCES PERTAIN TO THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
5. ADJOINING PROPERTY LINES SHOWN WERE PLOTTED FROM INFORMATION TAKEN FROM EITHER DEED DESCRIPTION, RECORD PLATS, OR TAX MAPS.
6. PROPERTY CORNERS SET THIS SURVEY ARE 18" #4 REBAR WITH ORANGE PLASTIC CAP STAMPED "M2 GROUP", 18" #5 REBAR WITH YELLOW PLASTIC CAP STAMPED "M2 GROUP, LLC", OR PK NAIL WITH STAINLESS STEEL WASHER STAMPED "M2 GROUP, LLC", UNLESS NOTED OTHERWISE.
7. 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.
8. THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.
9. NO TITLE REPORT WAS PROVIDED TO THIS SURVEYOR REGARDING THE SUBJECT PROPERTIES, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OR ANY OTHER FACTS THAT AN ACCURATE AND CURRENT TITLE SEARCH AND REPORT MAY DISCLOSE.

REFERENCE

SEE SEE C001 FOR GENERAL AND DEMOLITION NOTES.

FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED LAND SURVEYOR
NUMBER 2609
COMMERCIAL
CERTIFICATE NO.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

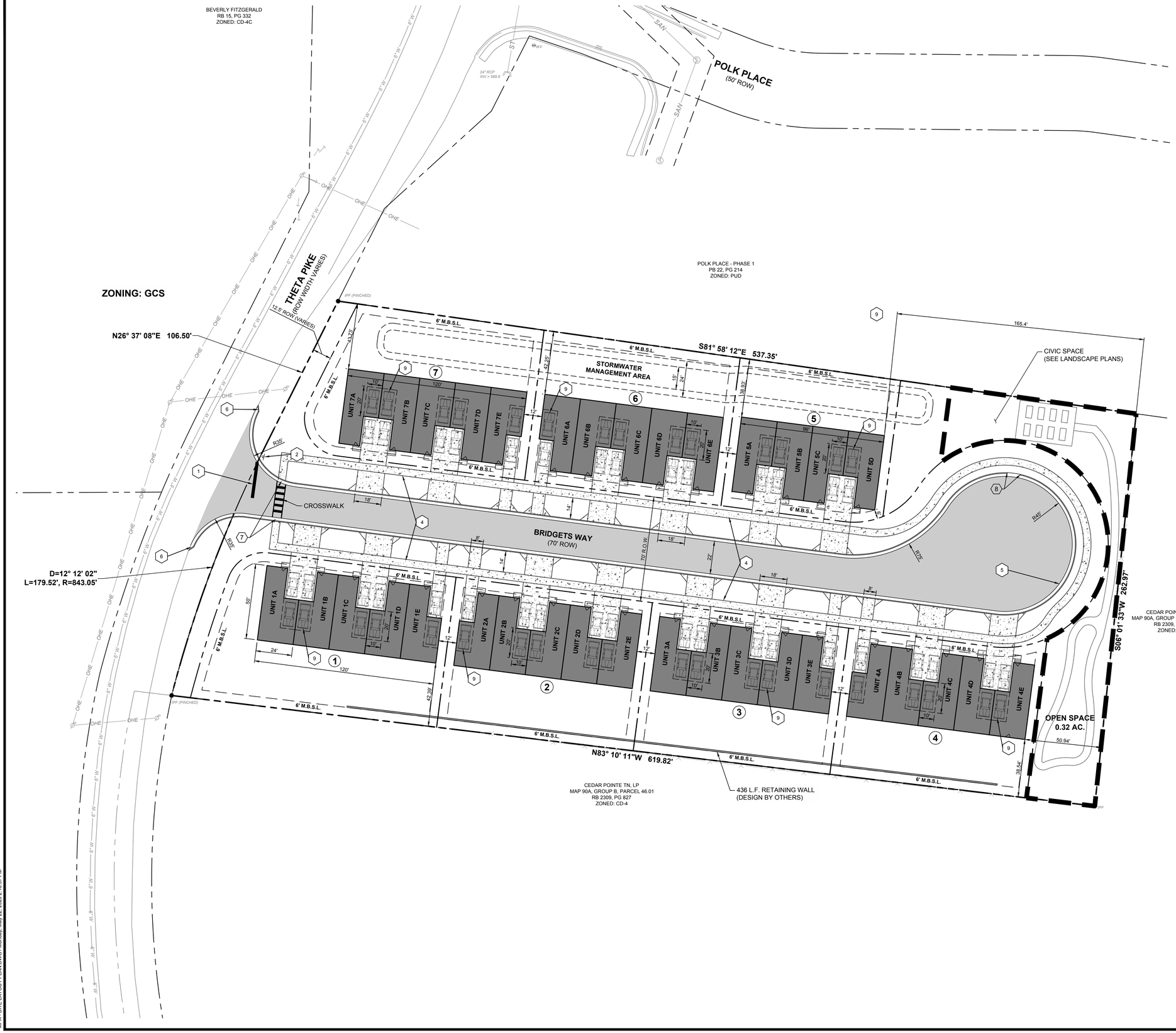
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

EXISTING CONDITIONS & DEMOLITION PLAN

DATE :	DRAWN BY :	CHECKED BY :
MAY 22, 2023	M2G	MWB
PROJECT NO. :		
22-085		

SHEET NUMBER:
C100

MPA - EXISTING CONDITIONS & DEMO PLAN.DWG / Monday, May 22, 2023 2:10:49 PM



N
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30' 0 30' 60'
GRAPHIC SCALE

SITE PLAN KEY NOTES

1. 2' WIDE x 18' LONG THERMOPLASTIC STOP BAR
2. STOP / STREET SIGN (REF. SHEET C600)
3. PROPOSED LIGHT POLE/FIXTURE, SEE SITE PHOTOMETRICS PLAN
4. 5' CONCRETE SIDEWALK (REF SHEET C600)
5. CURB AND GUTTER (TYP.) (REF. SHEET C600)
6. CURB TAPER (REF. SHEET C6.0)
7. ADA RAMP (REF. SHEET C6.0)
8. 2' WIDE CURB CUT
9. UNIT PARKING (2 SPACES PER UNIT)

LOCAL NOTE:

PROJECT IS INTENDED TO BE PLATTED AND RECORDED UNDER THE HORIZONTAL PROPERTY REGIME STANDARDS OF THE STATE OF TENNESSEE. THEREFORE A PRELIMINARY PLAT AND FINAL PLAT ARE NOT REQUIRED.

SITE DATA TABLE		
ZONING	CD-4	
TOTAL LOT AREA	3.59	AC.
TOTAL NUMBER OF UNITS	34	EA.
DENSITY	9.47	UNITS / AC.
PARKING SPACES REQUIRED	68	EA.
PARKING SPACES PROVIDED	68	EA.
FRONT YARD SETBACK	6' - 20'	L.F.
SIDE YARD SETBACK	6	L.F.
REAR YARD SETBACK	6	L.F.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120,000
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2G GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE LAYOUT PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C200

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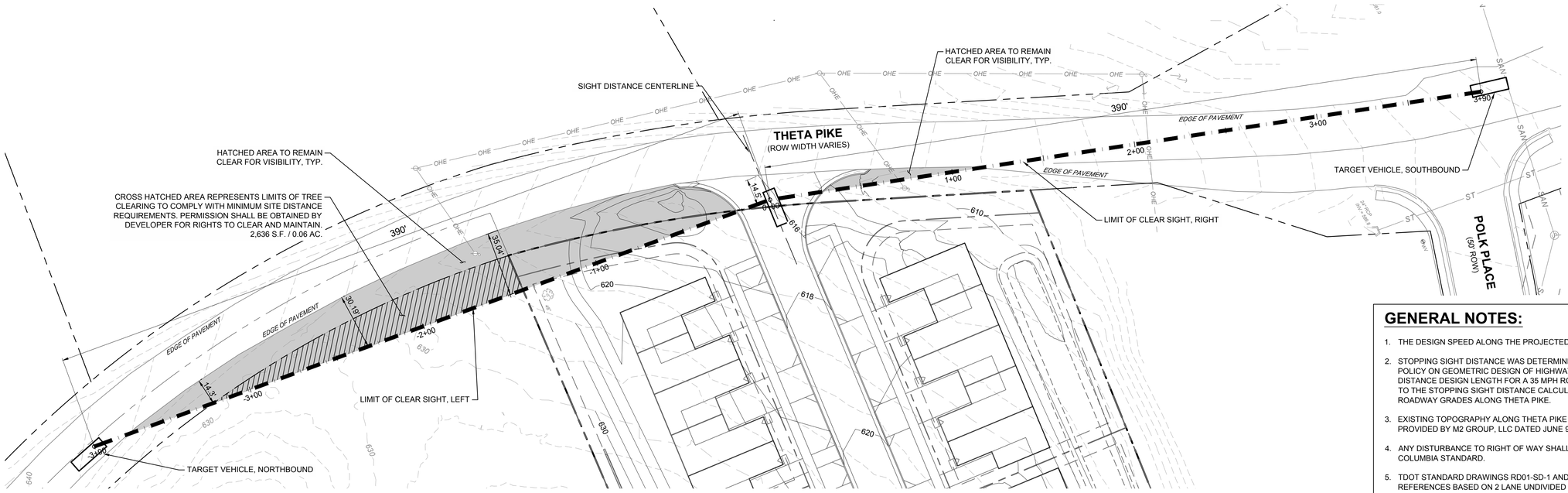
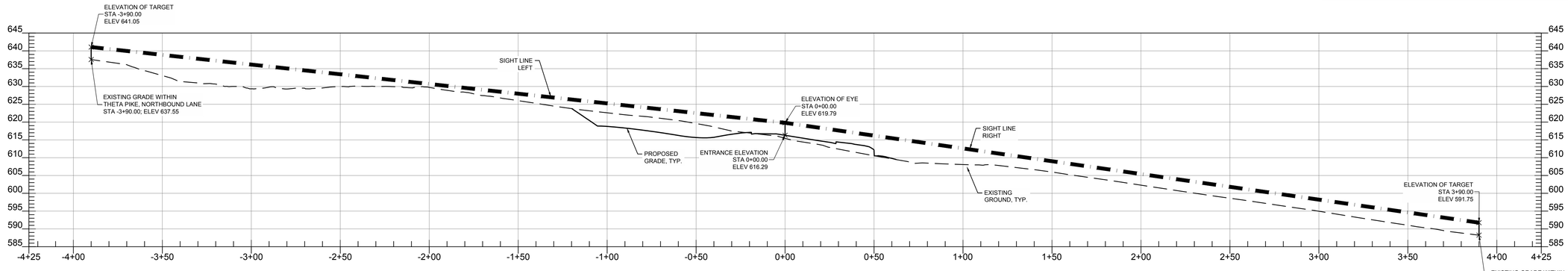


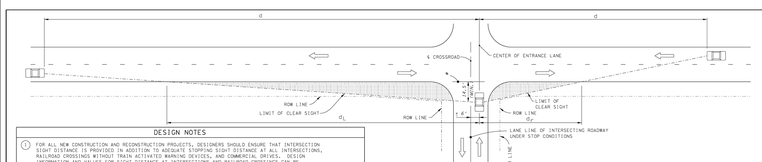
GENERAL NOTES:

1. THE DESIGN SPEED ALONG THE PROJECTED CORRIDOR OF THETA PIKE IS 35 MPH.
2. STOPPING SIGHT DISTANCE WAS DETERMINED UTILIZING THE AASHTO GREEN BOOK - A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS. THE STOPPING SIGHT DISTANCE DESIGN LENGTH FOR A 35 MPH ROADWAY ON FLAT GRADE IS 390 FT. REFER TO THE STOPPING SIGHT DISTANCE CALCULATIONS BELOW WHICH ACCOUNT FOR ROADWAY GRADES ALONG THETA PIKE.
3. EXISTING TOPOGRAPHY ALONG THETA PIKE IS DERIVED FROM TOPOGRAPHIC SURVEY PROVIDED BY M2 GROUP, LLC DATED JUNE 9, 2022.
4. ANY DISTURBANCE TO RIGHT OF WAY SHALL BE RESURFACED AS PER CITY OF COLUMBIA STANDARD.
5. TDOT STANDARD DRAWINGS RD01-SD-1 AND RD01-SD-3 WERE UTILIZED AS DESIGN REFERENCES BASED ON 2 LANE UNDIVIDED ROADWAY - SYMMETRICAL LAYOUT.



SIGHT DISTANCE PROFILE

SCALE H:1"=30'; V:1"=15'



ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD, STOP CONDITIONS

EDGE OF MAJOR ROAD TRAVELED WAY; THE TRAVELED WAY IS THE PORTION OF THE ROADWAY FOR THE MOVEMENT OF VEHICLES, EXCLUSIVE OF SHOULDERS, PARKING SPACES AND MARKED BICYCLE LANES.

DEFINITIONS

d =CLEAR LINE SIGHT DISTANCE

d_R= CLEAR LINE OF SIGHT DISTANCE TO THE RIGHT

d_L= CLEAR LINE OF SIGHT DISTANCE TO THE LEFT

d_M DISTANCE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY (SEE SHEET RD01-SD-3)

DESIGN NOTES

1. FOR ALL NEW CONSTRUCTION AND RECONSTRUCTION PROJECTS, DESIGNERS SHOULD ENSURE THAT INTERSECTION SIGHT DISTANCE IS PROVIDED IN ADDITION TO STOPPING SIGHT DISTANCE AT ALL INTERSECTIONS, RAILROAD CROSSINGS WITHOUT TRAIN ACTUATED WARNING DEVICES, AND COMMERCIAL DRIVES. DESIGN INFORMATION AND VALUES FOR SIGHT DISTANCE AT INTERSECTIONS AND RAILROAD CROSSINGS CAN BE FOUND IN THE 2001 "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (AASHTO GREEN BOOK), CHAPTER 9, INTERSECTIONS.
2. INTERSECTION SIGHT DISTANCE SHOULD ALSO BE PROVIDED AT ALL PRIVATE DRIVES AND FIELD ENTRANCES WHEN FEASIBLE. IN THE EVENT THAT INTERSECTION SIGHT DISTANCE CANNOT BE ACHIEVED, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. INTERSECTION SIGHT DISTANCE SHOULD ALWAYS BE PROVIDED FOR A LEFT TURN MOVEMENT FROM THE MAJOR ROAD INTO A PRIVATE DRIVE OR FIELD ENTRANCE.
3. DESIGNERS SHOULD CONSIDER ALL FEATURES THAT COULD LIMIT ADEQUATE SIGHT DISTANCE INCLUDING BUILDINGS, PARKED VEHICLES, HIGHWAY STRUCTURES, ROADSIDE HARDWARE, HEDGES, TREES, BUSHES, UNMOWED GRASS, TALL CROPS, WALLS, FENCES, SLOPES, AND THE TERRAIN ITSELF. THE DETERMINATION OF WHETHER AN OBJECT CONSTITUTES A SIGHT OBSTRUCTION SHOULD CONSIDER THE HORIZONTAL AND VERTICAL ALIGNMENT OF BOTH INTERSECTING ROADWAYS, AS WELL AS THE WEIGHT AND POSITION OF THE OBJECT. IN MAKING THIS DETERMINATION, THE ASSUMED DRIVER'S EYE SHOULD BE 3.5 FT. ABOVE THE SURFACE OF THE INTERSECTING ROAD FOR PASSENGER CARS. FOR LANDSCAPING, THE MATURE SIZE OF THE ITEM SHALL BE USED.
4. IN AREAS OF LIMITED RIGHT-OF-WAY ACQUISITION SUCH AS A CURB AND GUTTER SECTION, ADDITIONAL RIGHT-OF-WAY MAY NEED TO BE ACQUIRED TO ENSURE THAT INTERSECTION SIGHT DISTANCE CAN BE ACHIEVED OR MAINTAINED. IN THE EVENT THAT IT IS NOT FEASIBLE TO OBTAIN MINIMUM INTERSECTION SIGHT DISTANCE VALUES, THE DESIGNER SHALL VERIFY THAT STOPPING SIGHT DISTANCE IS PROVIDED. IN ADDITION, THE DESIGN MANAGER WILL DOCUMENT IN THE PROJECT FILE THE REASON AND STEPS TAKEN TO MITIGATE. INTERSECTION SIGHT DISTANCE IS NOT ONE OF THE THIRTEEN CONTROLLING ELEMENTS OF DESIGN AS DETAILED IN SECTION 3-110.00 OF THE ROADWAY DESIGN GUIDELINES. THEREFORE, DESIGN EXCEPTIONS NEED NOT BE SUBMITTED.
5. DESIGNERS SHALL SHOW SIGHT LINES FOR ALL INTERSECTIONS IN THE DESIGN CADD FILE. SIGHT LINES SHALL ONLY BE SHOWN ON THE PRESENT AND PROPOSED LAYOUT SHEETS WHEN RIGHT-OF-WAY IS REQUIRED FOR THE PURPOSE OF ESTABLISHING OR MAINTAINING INTERSECTION SIGHT DISTANCE. SIGHT LINES SHOULD ALSO BE SHOWN FOR ALL INTERSECTIONS AND DRIVES ON ALL LANDSCAPING PLANS.
6. THE MINIMUM DRIVER EYE SETBACK OF 14.5' FROM THE EDGE OF THE TRAVELED WAY MAY BE ADJUSTED ON ANY INTERSECTION LEG ONLY WHEN JUSTIFIED BY A SITE SPECIFIC FIELD STUDY OF VEHICLE STOPPING POSITION AND DRIVER EYE POSITION.
7. FOR SIGNALIZED INTERSECTIONS SIGHT DISTANCES SHOULD BE DEVELOPED BASED ON AASHTO "CASE D: INTERSECTIONS WITH TRAFFIC SIGNAL CONTROL", AT SIGNALIZED INTERSECTIONS, THE FIRST VEHICLE STOPPED ON ONE APPROACH SHOULD BE VISIBLE TO THE DRIVER OF THE FIRST VEHICLE STOPPED ON EACH OF THE OTHER APPROACHES. THIS WILL PROVIDE THE DRIVER WITH THE OPPORTUNITY TO SEE GAPS IN ONCOMING TRAFFIC AND COMPLETE LEFT TURNS. APART FROM THESE SIGHT CONDITIONS, THERE ARE GENERALLY NO OTHER APPROACH OR DEPARTURE SIGHT TRIANGLES NEEDED FOR SIGNALIZED INTERSECTIONS. HOWEVER, IF THE TRAFFIC SIGNAL IS TO BE PLACED ON TWO-WAY FLASHING OPERATION (I.E. FLASHING YELLOW ON THE MAJOR ROAD APPROACHES AND FLASHING RED ON THE MINOR-ROAD APPROACHES) UNDER OFF-PEAK OR NIGHTTIME CONDITIONS, THE SIGHT TRIANGLES FOR STOP CONTROL SHOWN IN CASE B1 OR CASE B2 OF FIGURE 9-55 OF THE AASHTO BOOK SHOULD BE PROVIDED FOR THE MINOR-ROAD APPROACHES. IN ADDITION, IF RIGHT TURNS ON A RED SIGNAL ARE TO BE PERMITTED FROM ANY APPROACH, THEN THE APPROPRIATE DEPARTURE SIGHT TRIANGLE TO THE LEFT FOR CASE B2 SHOULD BE PROVIDED TO ACCOMMODATE RIGHT TURNS FROM THAT APPROACH.
8. WHERE CURVATURE, SUPERELEVATION, ADVERSE SPLIT PROFILES OR OTHER CONDITIONS PRECLUDE THE USE OF STANDARD TREE SIZES AND SPACING, PROOF OF VIEW AND SIGHT DISTANCE RESTRAINTS SHOULD BE DETAILED IN THE PLANS.
9. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
10. THE INFORMATION SHOWN IS INTENDED SOLELY FOR THE PURPOSE OF CLEAR SIGHT DEVELOPMENT AND MAINTENANCE AT INTERSECTING HIGHWAYS, ROADS AND STREETS, AND IS NOT INTENDED TO BE USED TO ESTABLISH ROADWAY AND ROADSIDE SAFETY EXCEPT AS RELATED TO INTERSECTION SIGHT CORRIDORS.
11. THE INTERSECTION SIGHT DISTANCE TABLES DO NOT SUPERCEDE AASHTO STOPPING SIGHT DISTANCE REQUIREMENTS. THE DESIGNER MUST ENSURE THAT STOPPING SIGHT DISTANCES ARE MET.
12. DETAILS ARE BASED ON THE AASHTO "A POLICY ON GEMETRIC DESIGN OF HIGHWAYS AND STREETS, 2001", CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B AND F, AND THE DEPARTMENT PRACTICES FOR CHANNELIZED MEDIAN OPENINGS (LEFT TURNS ON MAJOR ROADWAYS).

GENERAL NOTES

A. DETAILS APPLY TO BOTH RURAL AND URBAN INTERSECTIONS UNDER STOP SIGN CONTROL OR FLASHING BEACON CONTROL. FOR FULL SIGNAL CONTROLLED INTERSECTIONS SEE DESIGN NOTE NO 7.

B. INTERSECTION SIGHT DISTANCE (id) APPLIES TO NORMAL AND SKEWED INTERSECTIONS (INTERSECTING ANGLES FROM 60° TO 120°) WITH TWO-LANE HIGHWAYS. FOR SKEWED INTERSECTIONS (WHEN PRESENT), SIGHT DISTANCE (id) IS MEASURED ALONG THE MAJOR ROADWAY FROM THE CENTER OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO THE CENTER OF THE NEAR APPROACH LANE (RIGHT OR LEFT) OF THE MAJOR ROADWAY. DISTANCES d_L AND d_R ARE MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE (CROSS ROAD) OF THE MINOR ROADWAY TO A POINT ON THE EDGE OF THE NEAR SIDE OUTER TRAFFIC LANE ON THE MAJOR ROADWAY. DISTANCE d_M IS MEASURED FROM THE CENTERLINE OF THE ENTRANCE LANE OF THE MINOR ROADWAY TO A POINT ON THE MEDIAN CLEAR ZONE LIMIT OR HORIZONTAL CLEARANCE LIMIT FOR THE FAR SIDE ROADWAY OF THE MAJOR ROADWAY.

C. 1. THE LIMITS OF CLEAR SIGHT DEFINE A CORRIDOR THROUGHOUT WHICH A CLEAR LINE OF SIGHT MUST BE PRESERVED. SEE VERTICAL LIMITS OF CLEAR SIGHT DETAIL ON SHEET RD01-SD-2.
2. PLANTINGS, FENCES, WALLS, EMBANKMENTS AND VEHICLES AT INTERSECTION STOP LOCATIONS AND VEHICLES ON THE MAJOR ROADWAY WITHIN DIMENSION "J".
3. SINCE OBSERVATIONS ARE MADE IN BOTH DIRECTIONS ALONG THE LINE OF SIGHT, THE REFERENCE DATUM BETWEEN ROADWAYS IS 3'-6" ABOVE RESPECTIVE PAVEMENTS.

D. BARRIER SYSTEMS WITHIN INTERSECTION SIGHT CORRIDORS, WHERE PENETRATION INTO THE CLEAR LINE OF SIGHT MIGHT OCCUR, SHALL BE LOCATED TO PROVIDE THE LEAST ADVERSE AFFECT PRACTICAL.

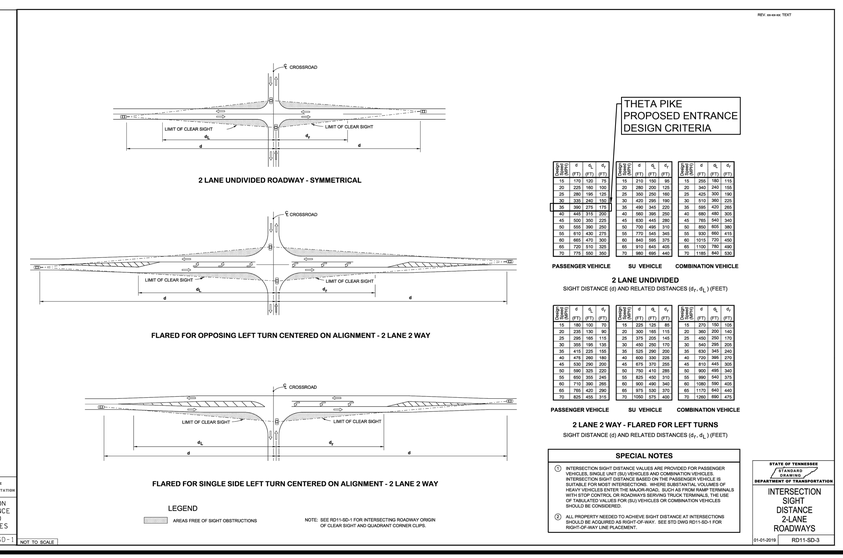
E. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY.

F. SIGHT DISTANCE VALUES IN THESE STANDARD DRAWINGS ARE APPROXIMATE FOR GENERALLY FLAT AREAS WHERE THE ROADWAY GRADES ARE IN THE APPROXIMATE RANGE OF 10 TO 6%. FOR LOCATIONS WHERE ROADWAYS ARE CURVED OR WITH GRADES OUTSIDE THE 10 TO 6% RANGE, THE VALUES SHOULD BE ADJUSTED TO ENSURE THAT THEY COMPLY WITH AASHTO "A POLICY FOR GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" AS CURRENTLY ADOPTED BY TDOT.

LEGEND

AREAS FREE OF SIGHT OBSTRUCTIONS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
INTERSECTION SIGHT DISTANCE DESIGN AND GENERAL NOTES
10-1-08 RD01-SD-1 NOT TO SCALE



THETA PIKE
PROPOSED ENTRANCE
DESIGN CRITERIA

2 LANE UNDIVIDED ROADWAY				2 LANE 2 WAY - FLARED FOR LEFT TURNS				2 LANE 2 WAY - FLARED FOR LEFT TURNS			
DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)	DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)	DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	170	105	75	15	215	155	95	15	215	155	95
20	225	160	105	20	280	200	125	20	340	240	155
25	280	195	135	25	350	255	165	25	425	360	190
30	335	245	170	30	430	295	190	30	510	360	225
35	390	280	210	35	500	345	230	35	595	420	260
40	445	315	240	40	570	395	255	40	680	480	295
45	500	355	275	45	630	445	290	45	765	540	340
50	555	390	290	50	700	495	310	50	850	600	380
55	610	430	375	55	770	545	345	55	935	660	415
60	665	470	300	60	840	595	375	60	1015	720	455
65	720	510	325	65	910	645	405	65	1100	780	490
70	775	550	350	70	980	695	440	70	1185	840	530
PASSENGER VEHICLE		SU VEHICLE		PASSENGER VEHICLE		SU VEHICLE		COMBINATION VEHICLE			

2 LANE UNDIVIDED
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_R, d_L) (FEET)

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	190	105	75
20	235	130	80
25	280	165	115
30	350	195	135
35	410	225	155
40	475	260	180
45	530	290	205
50	590	325	225
55	650	355	245
60	710	390	265
65	765	420	290
70	825	455	315

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	235	120	85
20	305	165	115
25	375	205	145
30	450	250	170
35	525	290	200
40	600	330	225
45	675	375	255
50	750	410	285
55	825	450	310
60	900	490	340
65	975	535	370
70	1050	575	400

DESIGN SPEED (MPH)	d (FT)	d_L (FT)	d_R (FT)
15	215	155	105
20	360	200	140
25	420	250	170
30	540	295	205
35	630	345	240
40	720	395	270
45	810	445	305
50	900	495	340
55	990	545	375
60	1080	590	405
65	1170	640	440
70	1260	690	475
PASSENGER VEHICLE		SU VEHICLE		COMBINATION VEHICLE			

2 LANE 2 WAY - FLARED FOR LEFT TURNS
SIGHT DISTANCE (d) AND RELATED DISTANCES (d_R, d_L) (FEET)

SPECIAL NOTES

1. INTERSECTION SIGHT DISTANCE VALUES ARE PROVIDED FOR PASSENGER VEHICLES, SINGLE UNIT (SU) VEHICLES AND COMBINATION VEHICLES. INTERSECTION SIGHT DISTANCE BASED ON THE PASSENGER VEHICLE IS SUITABLE FOR MOST INTERSECTIONS. WHERE SUBSTANTIAL VOLUMES OF HEAVY VEHICLES ENTER THE MAJOR-ROAD, SUCH AS FROM RAMP TERMINALS WITH STOP CONTROL OR ROADWAYS SERVING TRUCK TERMINALS, THE USE OF TABULATED VALUES FOR I SU1 VEHICLES OR COMBINATION VEHICLES SHOULD BE CONSIDERED.
2. ALL PROPERTY NEEDED TO ACHIEVE SIGHT DISTANCE AT INTERSECTIONS SHOULD BE ACQUIRED AS RIGHT-OF-WAY. SEE STD DWG RD11-SD-1 FOR RIGHT-OF-WAY LINE PLACEMENT.

STATE OF TENNESSEE
STANDARD DRAWING
DEPARTMENT OF TRANSPORTATION
INTERSECTION SIGHT DISTANCE 2-LANE ROADWAYS
01-01-2019 RD11-SD-3

NORTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: -6% (AVERAGE)

STOPPING SIGHT DISTANCE, S: $S = 1.47 * V * 2.5 + [V^2 / (30 * (0.347826 \pm (G / 100)))]$
$S = 1.47 * 40 * 2.5 + [35^2 / (30 * (0.347826 + (-6 / 100)))]$
$S = 270.49$ FT. = 271 FT.

SOUTHBOUND STOPPING SIGHT DISTANCE ANALYSIS:

DESIGN SPEED, V: 35 MPH
GRADE, G: +7% (AVERAGE)

STOPPING SIGHT DISTANCE, S: $S = 1.47 * V * 2.5 + [V^2 / (30 * (0.347826 \pm (G / 100)))]$
$S = 1.47 * 35 * 2.5 + [35^2 / (30 * (0.347826 + (7 / 100)))]$
$S = 226.35$ FT. = 227.00 FT.

811 Know what's below. Call before you dig.

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN
REGISTERED ENGINEER
COMMERCIAL
CERTIFICATE NO. 120183
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

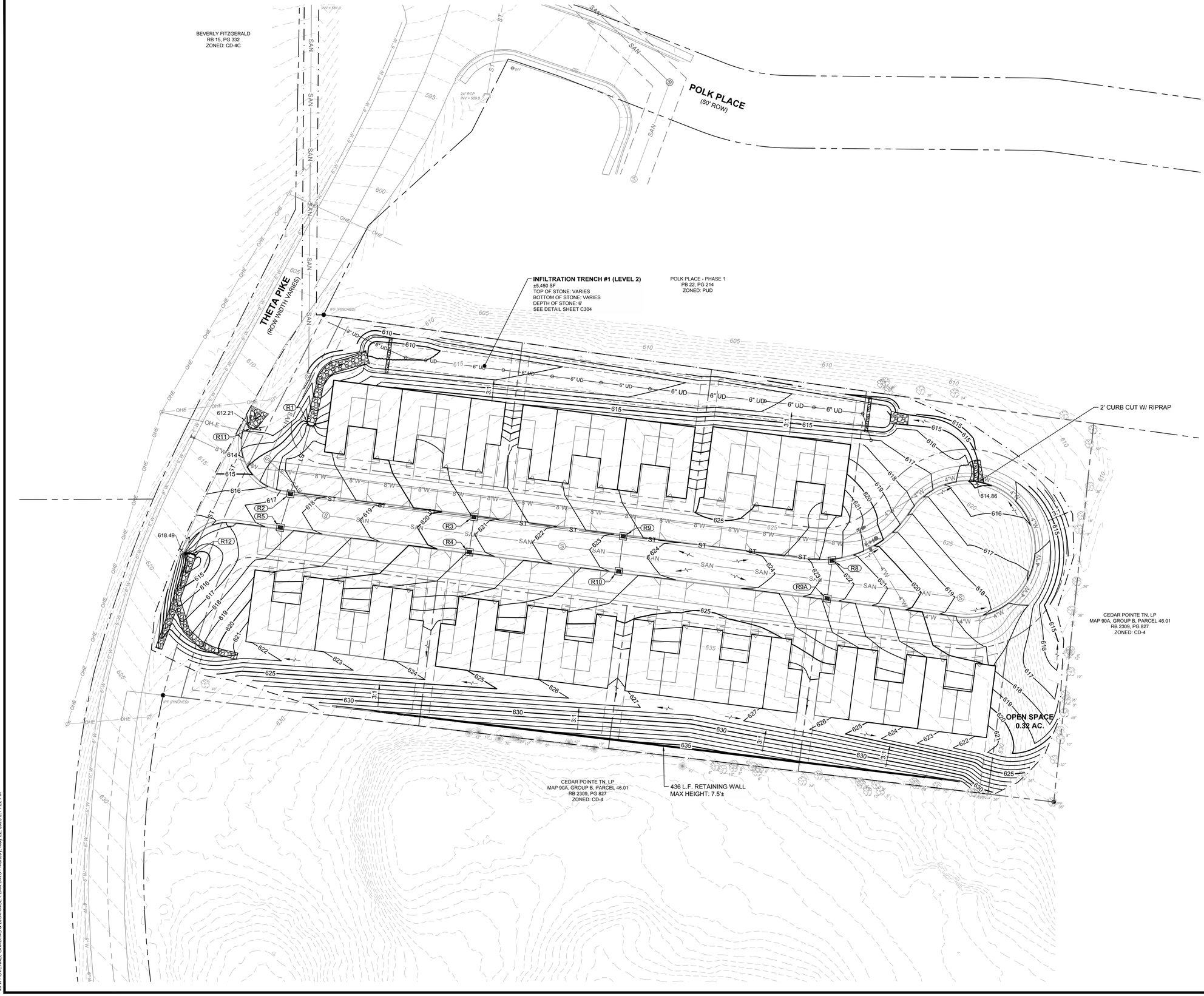
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

INTERSECTION SIGHT DISTANCE PLAN

DATE: MAY 22, 2023
PROJECT NO. : 22-085
DRAWN BY : M2G
CHECKED BY : MWB

SHEET NUMBER:
C201

MPA - INTERSECTION SIGHT DISTANCE.DWG / Monday, May 22, 2023 2:11:09 PM



FLOODPLAIN NOTE:

THE PROPERTY SHOWN HEREON IS LOCATED IN A FLOOD HAZARD ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN) ACCORDING TO F.I.R.M. MAP "MAURY COUNTY, TENNESSEE" PANEL 170 OF 440, MAP NUMBER 47119C0170E, EFFECTIVE DATE APRIL 16, 2007.

RETAINING WALL NOTE:

SPOT ELEVATIONS AT BOTTOM OF RETAINING WALLS REPRESENTS GROUND LEVEL ELEVATION, NOT THE TOP OF FOOTER. RETAINING WALLS ARE TO BE DESIGNED BY OTHERS.

STORM SEWER NOTE:

STORM SEWER STRUCTURES ARE SHOWN FOR GRAPHICAL PURPOSES ON THIS SHEET. SEE PIPE AND STRUCTURE TABLES ON SHEET C305 FOR ACTUAL STORM STRUCTURE SIZING AND DETAILS.

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
LICENSED ENGINEER
COMMERCIAL
STATE OF TENNESSEE
05/22/23

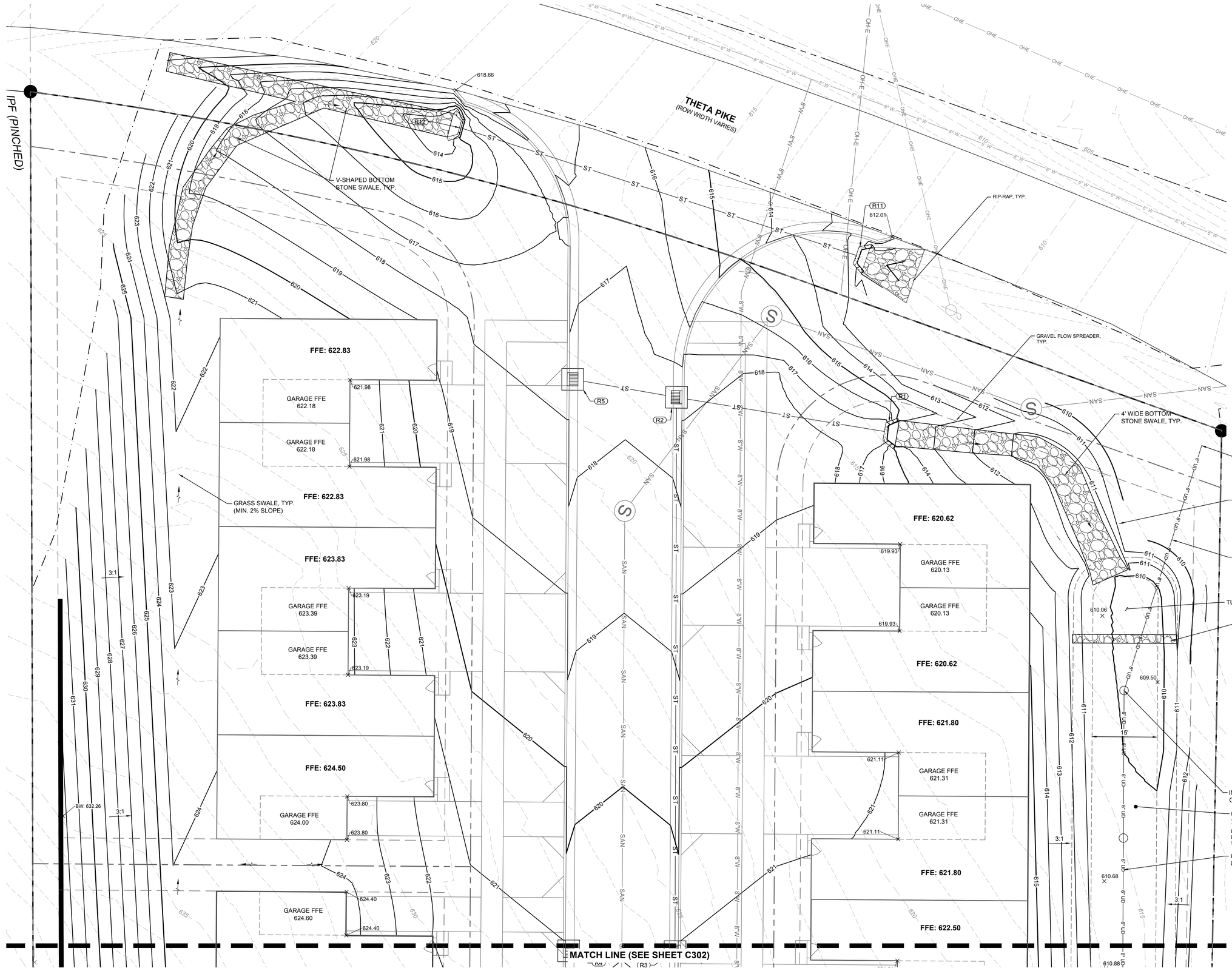
SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

OVERALL GRADING & DRAINAGE PLAN

DATE:	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C300



DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120144
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:
C301

811 Know what's below. Call before you dig.

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, May 22, 2023 2:11:39 PM

MATCH LINE (SEE SHEET C301)

MATCH LINE (SEE SHEET C303)

FFE: 625.10
FFE: 626.00
GARAGE FFE 625.30
GARAGE FFE 625.30
625.10
625.10
GRASS SWALE, TYP. (MIN. 2% SLOPE)
FFE: 626.00
FFE: 627.00
GARAGE FFE 626.50
GARAGE FFE 626.50
626.30
626.30
FFE: 627.00
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 628.50
GARAGE FFE 628.02
GARAGE FFE 628.02
627.82
627.82
FFE: 628.50
FFE: 622.50
GARAGE FFE 622.01
621.81
621.81
GARAGE FFE 622.81
622.61
622.61
FFE: 623.30
FFE: 624.50
GARAGE FFE 624.03
GARAGE FFE 624.03
623.83
623.83
FFE: 624.50
FFE: 625.68
GARAGE FFE 625.20
GARAGE FFE 625.20
625.00
625.00
FFE: 625.68
FFE: 626.00
GARAGE FFE 625.57
GARAGE FFE 625.57
625.37
625.37
FFE: 626.00
FFE: 625.40
BW: 633.09
BW: 633.93
BW: 634.77
BW: 635.56
HP: 627.72
GRADE BREAK
HP: 624.52
GRADE BREAK
3:1
3:1
3:1
3:1
R3
R4
R9
R10
S
SAN
ST
W-8"
610.88
611.19
611.59
611.56
612.31
612.50
612.82
OBSERVATION WELL, TYP.
INFILTRATION TRENCH #1 (LEVEL 2)
±5,450 SF
TOP OF STONE: VARIES
BOTTOM OF STONE: VARIES
DEPTH OF STONE: 6'
SEE DETAIL SHEET C304
6" CORRUGATED HDPE UNDERDRAIN AT 0.5% MIN. SLOPE
15'
N
NW
NE
W
E
SW
SE
S
10' 0 10' 20'
GRAPHIC SCALE

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRYAN
LICENSED PROFESSIONAL ENGINEER
COMMERCIAL
CERTIFICATE NO. 120,XXX
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE : MAY 22, 2023 | DRAWN BY : M2G
PROJECT NO. : 22-085 | CHECKED BY : MWB

SHEET NUMBER:
C302

811 Know what's below. Call before you dig.

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG | Monday, May 22, 2023 2:11:40 PM

MATCH LINE (SEE SHEET C302)

FFE: 628.50

FFE: 627.00

GARAGE FFE
626.52

626.32

626.32

FFE: 626.50

GARAGE FFE
625.85

625.65

625.65

FFE: 625.50

GARAGE FFE
623.81

623.61

GARAGE FFE
622.81

623.61

GRASS SWALE, TYP.
(MIN. 2% SLOPE)

FFE: 625.50

FFE: 623.75

GARAGE FFE
622.33

622.13

GARAGE FFE
622.33

622.13

FFE: 623.75

OPEN SPACE
0.32 AC.

FFE: 625.40

624.70

GARAGE FFE
624.90

GARAGE FFE
624.90

624.70

FFE: 625.40

BW: 634.51

BW: 633.51

BW: 632.51

3:1

3:1

3:1

R9A

R8

INFILTRATION TRENCH
UNDERDRAIN CLEANOUT

2' CURB CUT W/ RIPRAP

614.86

TRAPEZOIDAL SWALE
2' BOTTOM WIDTH
3:1 SIDE SLOPES

6" CORRUGATED HDPE
UNDERDRAIN AT 0.5% MIN. SLOPE

INFILTRATION TRENCH
OBSERVATION WELL

PERMEABLE PRETREATMENT BERM
12" TALL
1:1 SIDE SLOPES

TURF OR STONE PRETREATMENT AREA

15'

IPF

N NE E SE S SW W NW

10' 0 10' 20'
GRAPHIC SCALE

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED ENGINEER
AGRICULTURAL & COMMERCIAL
CERTIFICATE NO. 120,143
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

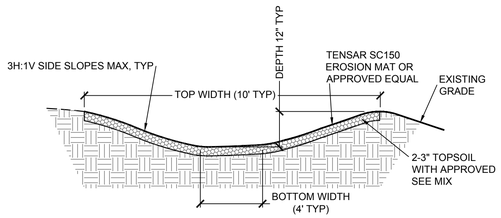
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

ENLARGED GRADING & DRAINAGE PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

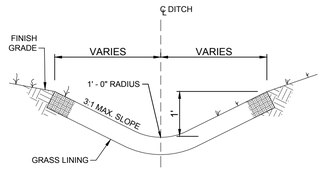
SHEET NUMBER:
C303

MPA - ENLARGED GRADING & DRAINAGE PLAN.DWG / Monday, May 22, 2023 2:11:42 PM



NORTH GRASS SWALE SECTION

N.T.S.

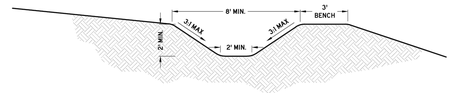


SOUTH GRASS SWALE SECTION

N.T.S.

TYPE	TDOT STANDARD DRAWING OR CASTING MODEL
CURB INLET CATCH BASINS	TDOT CB SERIES NOS. 10, 11, 12, 13, 14, 16, 17
CURB AND GUTTER INLET CASTINGS	JB&S 3080
EXTRUDED CURB INLET CASTINGS	JB&S 3103
AREA DRAIN CATCH BASINS	TDOT CB SERIES NOS. 38, 39, 40, 42, 43
AREA DRAIN CASTINGS	TDOT CBB-42
JUNCTION BOXES	TDOT JBS SERIES NOS. 1, 2, 3, 4, AND 5
MANHOLES	TDOT MH SERIES NOS. 2, 3, 4, 5, 6, 7 AND TDOT RF-1
TRENCH DRAINS	TDOT TD-1
CONCRETE PIPE INSTALLATION	TDOT PB-1
FLEXIBLE PIPE INSTALLATION	TDOT PB-2
OVAL AND ARCH PIPES	TDOT PO-1
SAFETY CROSS DRAIN ENDWALLS	TDOT PE SERIES
SAFETY SIDE DRAIN ENDWALLS	TDOT SEW SERIES AND TDOT MSE-1
PROTECTED ENDWALLS	TDOT PE, PEW SERIES
FLUMES	TDOT FLU-1

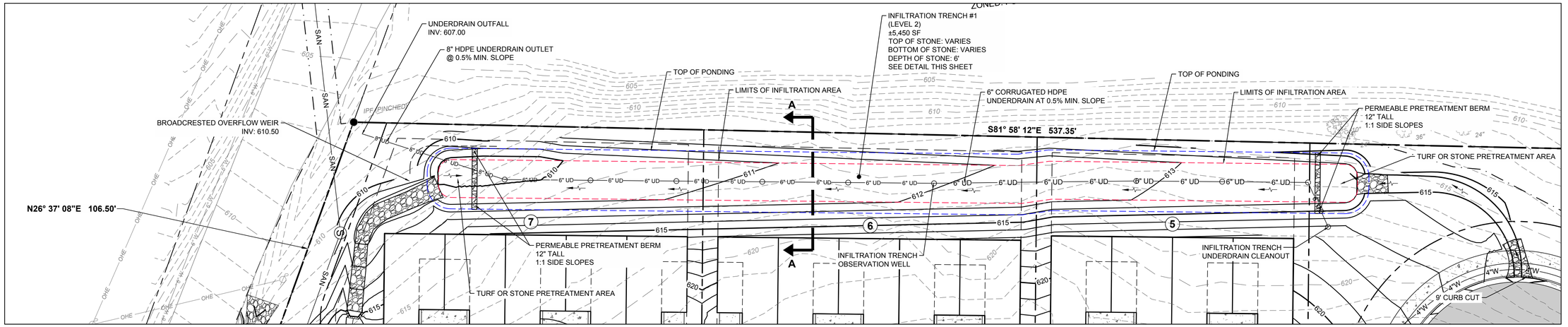
CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	INLETS, CASTINGS, STRUCTURES, AND PIPES (NTS)	DATE 6/9/2022 DD-01



NOTES:

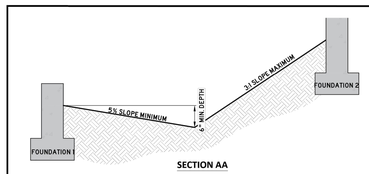
1. DITCHES SHALL BE STABILIZED WITH APPROPRIATELY DESIGNED SOFT ARMORING.
2. RIP-RAP OR OTHER HARD ARMORING TECHNIQUES ARE DISCOURAGED AND SHALL ONLY BE APPROVED WHEN ALL OTHER MEANS OF STABILIZATION ARE EXHAUSTED.
3. FLOW LINE GRADE SHALL NOT BE LESS THAN 1.0%
4. FLOW LINE GRADE SHALL NOT BE MORE THAN 7.5%
5. WHERE PLACED ON A SLOPE, A BENCH OF MINIMUM WIDTH OF 3 FEET SHALL BE PROVIDED.
6. A MINIMUM OF 6 INCHES OF FREEBOARD ABOVE THE DESIGN FLOW DEPTH SHALL BE PROVIDED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	TRAPEZOIDAL DITCH (NTS)	DATE 6/9/2022 DD-03

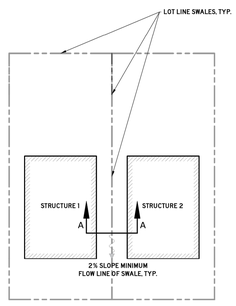


INFILTRATION TRENCH #1

SCALE: 1"=20'



SECTION AA

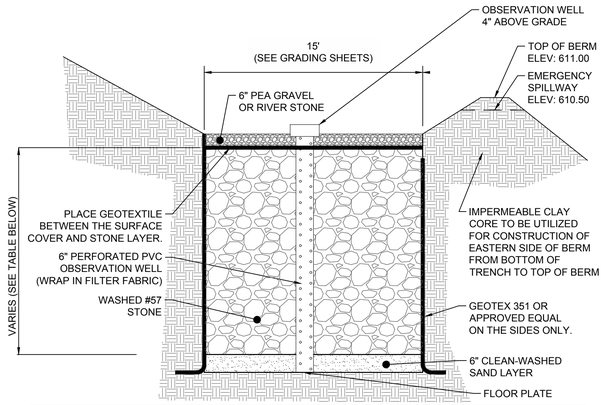


PLAN

NOTES:

1. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE, ALL AREAS WITHIN A LOT SHALL BE GRADED TO DRAIN TO AN APPROVED STORMWATER CONVEYANCE.
2. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATIONS.
   2.1. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 6 INCHES OF FALL WITHIN THE FIRST 10 FEET OF THE STRUCTURE ALONG THE DIRECTION OF FLOW.
   2.2. LOTS SHALL BE GRADED TO PROVIDE A MINIMUM OF 1V:20H OF FALL PERPENDICULAR TO THE FACE OF THE FOUNDATION WALL WITHIN THE FIRST 5 FEET.
   2.3. IMPERVIOUS SURFACES SHALL BE SLOPED AT A MINIMUM OF 2% AWAY FROM THE STRUCTURE.
3. SWALES SHALL BE LOCATED ALONG LOT LINES TO REDUCE LOT TO LOT DRAINAGE, AND DIRECT STORMWATER RUNOFF TOWARDS APPROVED STORMWATER CONVEYANCES.
4. SWALES SHALL HAVE A MINIMUM SLOPE OF 2%.
5. FOUNDATIONS SHALL BE AT MINIMUM 12 INCHES ABOVE ANY THE RIM ELEVATION OR HIGHEST FLOW LINE OF ANY PUBLIC STORMWATER INFRASTRUCTURE THAT SURFACE DRAINAGE FROM THE LOT IS DIRECTED TO.
6. NON-PUBLIC STORMWATER INFRASTRUCTURE SHALL NOT SUCH AS YARD DRAINS SHALL NOT ALLEVIATE THE REQUIREMENTS OF NOTES 2 AND 3.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE	CITY OF COLUMBIA DEVELOPMENT SERVICES DEPARTMENT ENGINEERING DIVISION STANDARD DETAILS	RESIDENTIAL LOT GRADING AND DRAINAGE (NTS)	DATE 6/9/2022 DD-04



INFILTRATION TRENCH SUMMARY				
INFILTRATION TRENCH	INFILTRATION AREA (SF)	TOP OF STONE	STONE DEPTH (FT)	BOTTOM OF STONE
IT#1	5,450	609.5 (VARIES)	6	603.5 (VARIES)

INFILTRATION TRENCH
SECTION A - A

N.T.S.

DESCRIPTION | DATE | REVISION #

MATTHEW W. BRIAN
REGISTERED ENGINEER
CERTIFICATE No. 120144
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

GRADING DETAILS

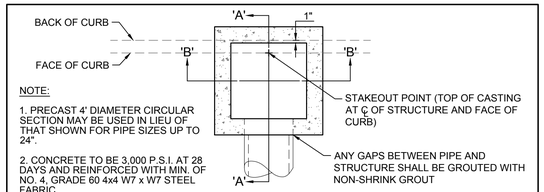
DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C304

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:11:59 PM

STRUCTURE TABLE		
NAME	INLET TYPE	DETAILS
R1	Headwall	INV IN = 613.965
R2	Single Curb Inlet	RIM = 617.470 INV IN = 614.210 INV IN = 614.208 INV OUT = 614.210
R3	Single Curb Inlet	RIM = 620.621 INV IN = 617.000 INV IN = 617.000 INV OUT = 617.000
R4	Single Curb Inlet	RIM = 620.622 INV OUT = 617.000
R5	Single Curb Inlet	RIM = 617.330 INV OUT = 614.330
R8	Single Curb Inlet	RIM = 622.006 INV IN = 619.235 INV OUT = 619.280
R9	Single Curb Inlet	RIM = 623.221 INV IN = 618.500 INV IN = 618.000 INV OUT = 618.000
R9A	Single Curb Inlet	RIM = 622.413 INV OUT = 619.557
R10	Single Curb Inlet	RIM = 623.220 INV OUT = 620.200
R11	Headwall	INV IN = 610.500
R12	Headwall	INV OUT = 613.050

PIPE TABLE				
NAME	MATERIAL	DIA.	APPROX. LENGTH	SLOPE
R1-R2	RCP	24"	49'	0.50%
R2-R3	RCP	18"	128'	2.18%
R2-R5	RCP	18"	24'	0.50%
R3-R4	RCP	18"	24'	0.00%
R3-R9	RCP	18"	104'	0.96%
R8-R9A	RCP	15"	26'	1.22%
R9-R8	RCP	18"	145'	0.88%
R9-R10	RCP	18"	25'	6.93%
R12-R11	RCP	18"	96'	2.66%



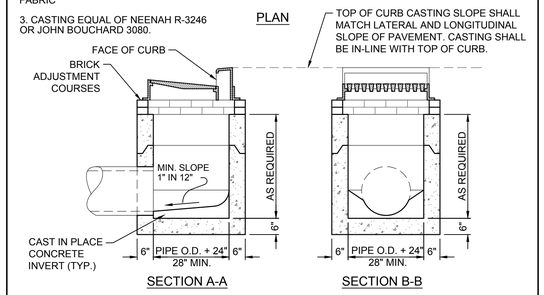
NOTE:

1. PRECAST 4' DIAMETER CIRCULAR SECTION MAY BE USED IN LIEU OF THAT SHOWN FOR PIPE SIZES UP TO 24".

2. CONCRETE TO BE 3,000 P.S.I. AT 28 DAYS AND REINFORCED WITH MIN. OF NO. 4, GRADE 60 4x4 W7 x W7 STEEL FABRIC

3. CASTING EQUAL OF NEENAH R-3246 OR JOHN BOUCHARD 3080.

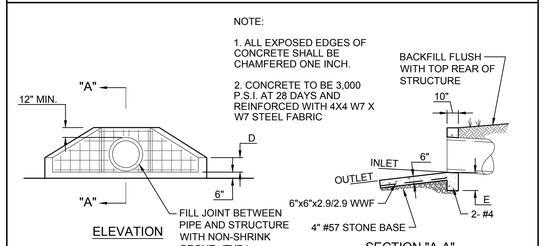
PLAN



SECTION A-A SECTION B-B

SINGLE PRECAST CURB INLET

N.T.S.



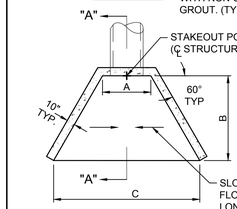
NOTE:

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED ONE INCH.

2. CONCRETE TO BE 3,000 P.S.I. AT 28 DAYS AND REINFORCED WITH 4X4 W7 X W7 STEEL FABRIC

ELEVATION

SECTION "A-A"

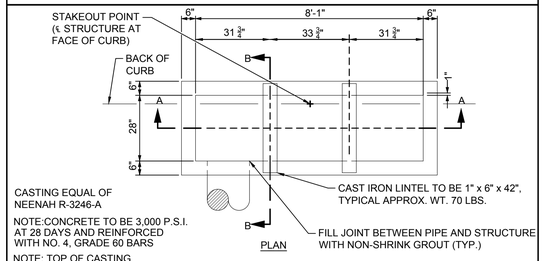


DIMENSIONS TABLE					
PIPE DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"

PLAN

CONCRETE WINGED HEADWALL/ENDWALL

N.T.S.

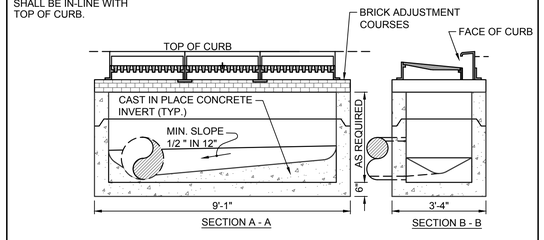


CASTING EQUAL OF NEENAH R-3246-A

NOTE:CONCRETE TO BE 3,000 P.S.I. AT 28 DAYS AND REINFORCED WITH NO. 4, GRADE 60 BARS

NOTE: TOP OF CASTING SHALL BE IN-LINE WITH TOP OF CURB.

PLAN



SECTION A - A SECTION B - B

TRIPLE PRECAST CURB INLET

N.T.S.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN
REGISTERED ENGINEER
AGRICULTURE
COMMERCIAL
CERTIFICATE NO. 120,142
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

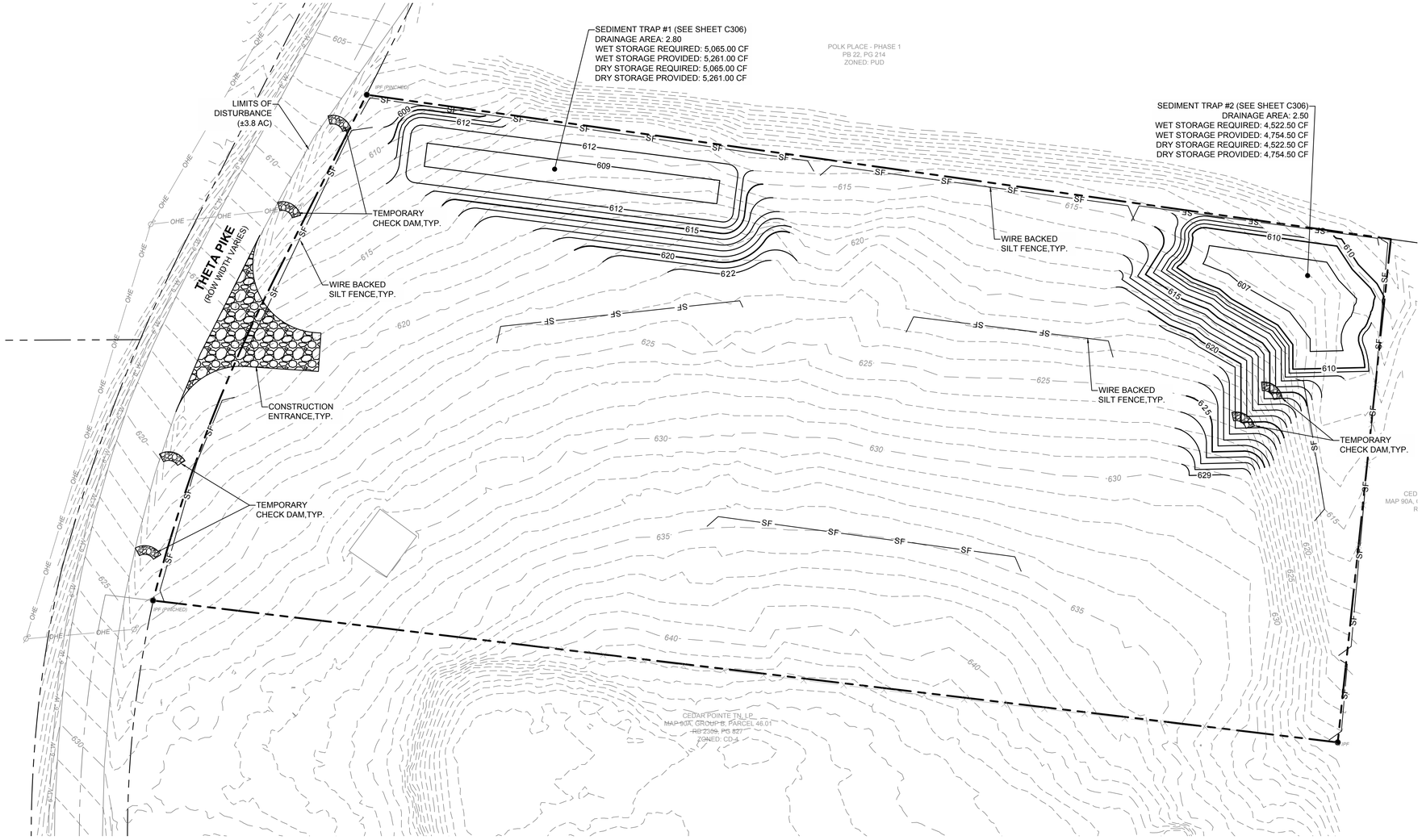
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

STORM SEWER DETAILS

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C305

SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**
* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION		
** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION		



TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL, OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT BASIN, IF REQUIRED
4. INSTALL WATER QUALITY BUFFER SIGNS, IF REQUIRED
5. INSTALL TREE PROTECTION FENCING
6. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
7. CLEAR, GRUB, AND GRADE THE SITE
8. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
9. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN — LICENSED LANDSCAPE ARCHITECT — AGRICULTURE — COMMERCE — RESIDENTIAL — CORPORATE SEAL — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

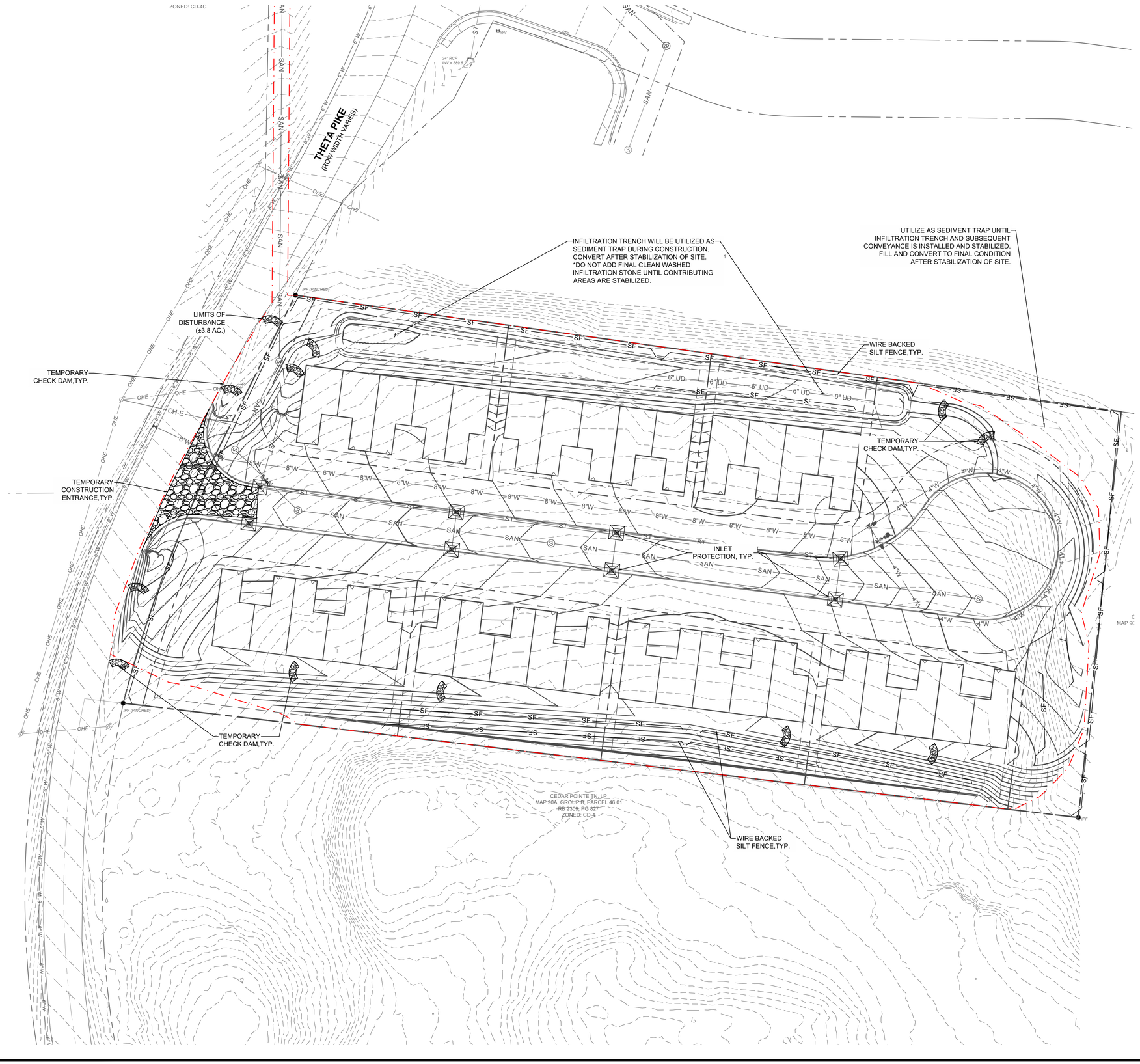
MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

INITIAL EPSC PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C401

MPA - INITIAL EPSC PLAN.DWG | Monday, May 22, 2023 2:12:10 PM



TDEC - NPDES NOC NOTE:

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13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
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15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS, IF REQUIRED
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
6. CLEAR, GRUB, AND GRADE THE SITE
7. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
8. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

Know what's below.
Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN
REGISTERED ENGINEER
AGRICULTURAL
COMMERCIAL
RESIDENTIAL
CORPORATE SEAL
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

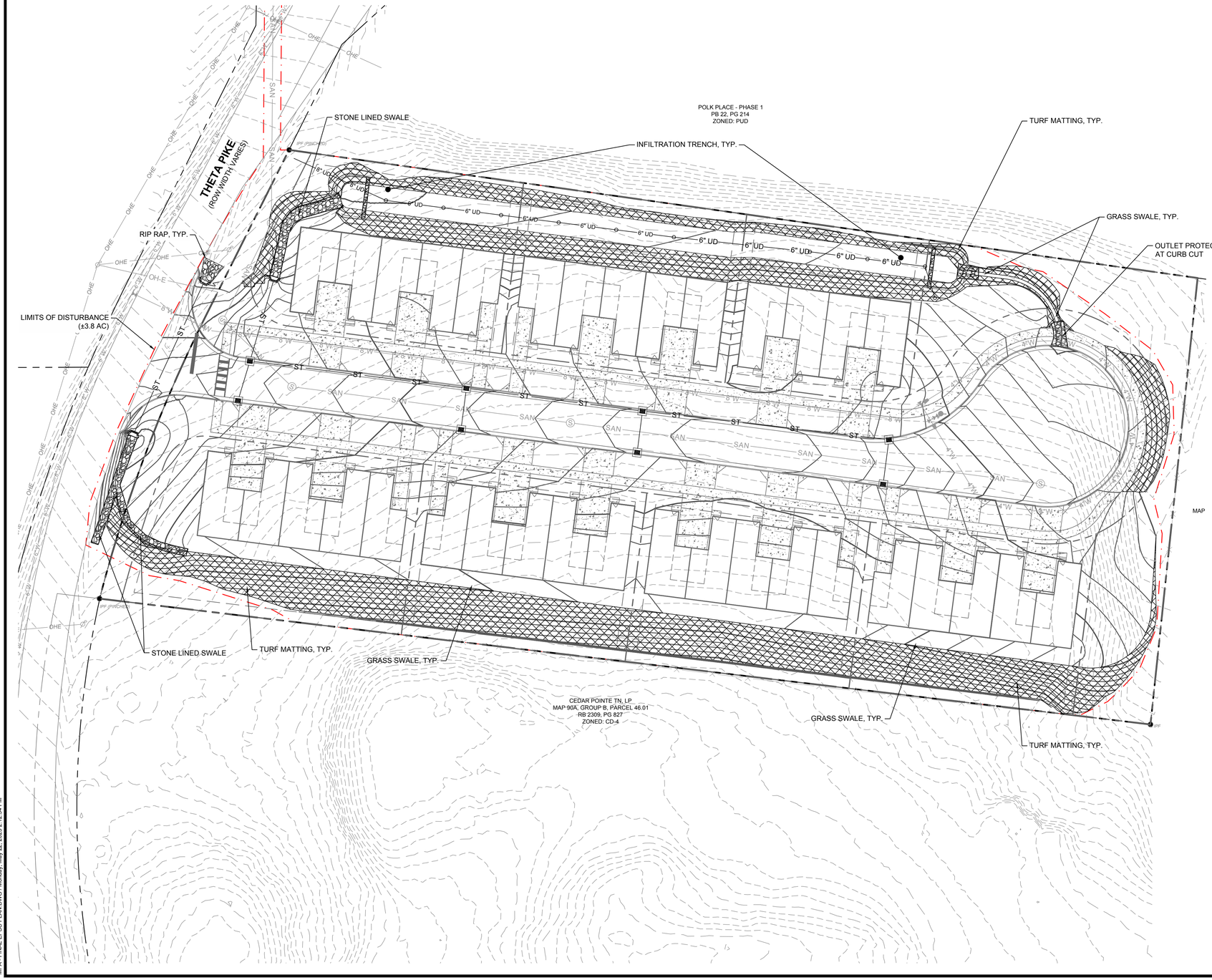
M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

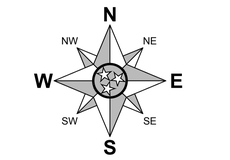
INTERMEDIATE EPSC PLAN

DRAWN BY :	M2G
CHECKED BY :	MWB
DATE :	MAY 22, 2023
PROJECT NO. :	22-085

SHEET NUMBER:
C402

MPA - INTERMEDIATE EPSC PLAN.DWG / Monday, May 22, 2023 2:12:22 PM





30' 0 30' 60'

GRAPHIC SCALE

TDEC - NPDES NOC NOTE:

THE PROJECT ASSOCIATED WITH THESE PLANS IS REQUIRED TO BE COVERED UNDER TENNESSEE GENERAL STORM WATER PERMIT TNR100000 BECAUSE THE LIMITS OF DISTURBANCE IS OVER 1 ACRE. THE LIMITS OF DISTURBANCE IS APPROXIMATELY 3.8 ACs.

EPSC GENERAL NOTES

1. SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE; SEDIMENT SHALL BE REMOVED FROM ALL OTHER EPSC MEASURES AND CONTROL AS RECOMMENDED IN THE TNEPSC HANDBOOK, AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50%.
2. EPSC SHALL BE IMPLEMENTED BEFORE EARTH- MOVING BEGINS.
3. AREAS WHERE CONSTRUCTION HAS TEMPORARILY/PERMANENTLY CEASED SHALL BE STABILIZED NO LATER THAN 14 DAYS (7 DAYS FOR ≥35% SLOPES).
4. INSPECTIONS OF OUTFALLS/EPSC MEASURES SHALL BE CONDUCTED AT LEAST TWICE WEEKLY AND AT LEAST 72 HOURS APART.
5. VEGETATION, EPSCS & OTHER PROTECTIVE MEASURES SHALL BE REPAIRED, REPLACED, OR MODIFIED AFTER BEING NOTIFIED OF AN ISSUE WITHIN 7 DAYS OR BY THE NEXT SIGNIFICANT RAIN CHANCE OF 50% OR GREATER. ISSUES WITH IMMEDIATE THREATS TO WATER QUALITY SHALL BE REPAIRED IMMEDIATELY AS PER FMC 23-106(2)(g).
6. CONSTRUCTION SHALL BE PHASED FOR ACTIVITIES THAT WILL DISTURB >50 ACRES.
7. EPSCS SHALL BE DESIGNED TO CONTROL THE RAINFALL AND RUNOFF FROM A 5-YEAR, 24-HOUR RETURN INTERVAL STORM.
8. TEMPORARY SEDIMENT BASIN(S) SHALL BE PROVIDED FOR ON-SITE OUTFALLS THAT RECEIVE DRAINAGE FROM ≥10 ACRES; ≥5 ACRES FOR SITES THAT DISCHARGE TO IMPAIRED OR EXCEPTIONAL TN WATERS.
9. GREEN INFRASTRUCTURE BMPS SHALL BE PROTECTED DURING SITE WORK, WITH SILT FENCE, TO PREVENT SEDIMENTATION AND COMPACTION.
10. IF DEEMED APPROPRIATE, THE CITY MAY REQUIRE THE ADDITION, REMOVAL OR MODIFICATION OF EPSC MEASURES AND/OR EPSC LOCATIONS AT ANY TIME DURING THE CONSTRUCTION PROCESS TO ENSURE PROPER EPSC PERFORMANCE.

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. PRIOR TO INSTALLATION OF EROSION CONTROL MEASURES OR INITIATION OF EARTH DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CLEARLY DELINEATE THE PROPOSED LIMITS OF DISTURBANCE IN THE FIELD UTILIZING FLAGGING, STAKES, AND/OR CONSTRUCTION FENCE. NO DISTURBANCE BEYOND THESE LIMITS SHALL BE PERMITTED WITHOUT FIRST OBTAINING WRITTEN PERMISSION FROM THE ENGINEER, THE AFFECTED PROPERTY OWNER AND ANY APPLICABLE REGULATORY AGENCIES.
2. THE CONSTRUCTION ACTIVITIES ANTICIPATED FOR THIS PROJECT INCLUDES GRADING, PAVING, AND UTILITY INSTALLATION.
3. THE APPROXIMATE TOTAL DISTURBED AREA OF THIS SITE IS 6.60 ACRES. ANY INCREASE IN THE APPROXIMATE TOTAL DISTURBED AREA SHALL BE APPROVED BY THE CITY OF COLUMBIA PRIOR TO ADDITIONAL DISTURBANCE.
4. CONSTRUCTION SHALL BE SEQUENCED BY THE CONTRACTOR AS TO MINIMIZE EXPOSURE TIME OF CLEARED SURFACE AREAS. PERIMETER EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO EARTH MOVING OPERATIONS.
5. THE CONTRACTOR SHALL DESIGNATE IN WRITING THE NAME AND PHONE NUMBER OF THE PERSON(S) RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS AT THE SITE. THIS INFORMATION SHALL BE POSTED AT THE JOB SITE TRAILER, OR AT THE SITE CONSTRUCTION SIGN.
6. PRE-CONSTRUCTION VEGETATIVE GROUNDCOVER SHALL NOT BE REMOVED MORE THAN 14 DAYS PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES. ALL GRADED AREAS EXPECTED TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS SHALL BE COVERED WITH TEMPORARY GRASS, SOD, STRAW, MULCH, OR FABRIC MATTING. STEEP SLOPES (GREATER THAN 35%) SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN 15 DAYS OF THE ESTABLISHMENT OF FINAL GRADES.
7. THE CONTRACTOR SHALL MAINTAIN RECORDS OF EROSION AND SEDIMENT CONTROL FOR A PERIOD OF THREE YEARS AFTER COMPLETION OF CONSTRUCTION OR AS REQUIRED BY GOVERNING AUTHORITIES.
8. TEMPORARY SEEDING FOR THIS PROJECT SHALL UTILIZE TDOT, TDEC OR LOCAL STANDARDS UNLESS OTHERWISE INDICATED HEREON.
9. MULCHING SHALL CONSIST OF LOOSE HAY OR STRAW APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH MUST BE CRIMPED INTO THE SOIL BY MECHANICAL MEANS. BROADCAST SPREADING OF MULCH IS NOT ACCEPTABLE.
10. SOIL STOCKPILES SHALL BE STABILIZED AND PROTECTED FROM EROSION. ALL STOCKPILES SHALL BE COVERED WITH TEMPORARY SEEDING AND PROTECTED WITH SILT FENCING.
11. FOR PERMANENT STABILIZATION OF ALL SLOPES 3:1 OR STEEPER, INSTALL TEMPORARY EROSION CONTROL BLANKET (TENSAR NORTH AMERICAN GREEN S150 OR APPROVED EQUAL) INSTALLED PER MANUFACTURERS' RECOMMENDATIONS SHALL BE USED IN PLACE OF STRAW MULCH.
12. THE LOCATION OF SOME OF THE EROSION CONTROL MEASURES MAY NEED TO BE ALTERED DUE TO CHANGING SITE CONDITIONS COMMENSURATE WITH PROGRESS OF THE WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION AND SEDIMENT CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES OF CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL A PERMANENT GROUND COVER IS ESTABLISHED. SEEDED AREAS MUST HAVE A MINIMUM 70% COVERAGE (ENGINEER WILL DETERMINE APPROXIMATE PERCENTAGE OF COVER) PRIOR TO REMOVAL OF THE TEMPORARY EROSION CONTROL DEVICES. FINAL SEEDING AND ESTABLISHMENT OF GROUNDCOVER SHALL BE APPLIED TO ANY AREA DISTURBED AS A RESULT OF THE REMOVAL OF THE EROSION CONTROL MEASURES.
14. CONTRACTOR SHALL PREPARE, IMPLEMENT, AND MAINTAIN A SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PLAN, AS A SEPARATE DOCUMENT OR AS A COMPONENT OF THE SWPPP, FOR ALL TANKS/CONTAINERS STORING ONSITE FUEL, CHEMICALS, OR OTHER POLLUTANTS CONSISTENT WITH THE REQUIREMENTS OF STATE NPDES RULES. EFFECTIVE MEASURES NECESSARY TO PREVENT SPILLS AND TO CLEAN UP SPILLS OF ANY TOXIC POLLUTANT, AS DOCUMENTED IN THE FACILITY'S SPCC PLAN, SHALL BE FULLY IMPLEMENTED. SOIL CONTAMINATED BY HAZARDOUS SUBSTANCES, PAINTS, FUEL OR CHEMICAL SPILLS, SHALL BE IMMEDIATELY CLEANED UP, MANAGED, AND DISPOSED OF IN AN APPROVED MANNER. WHERE POTENTIAL SPILLS CAN OCCUR, MATERIALS HANDLING PROCEDURES SHALL BE SPECIFIED AND PROCEDURES FOR IMMEDIATE CLEANUP/REMEDIATION OF SPILLS SHALL BE DESCRIBED IN THE SPCC PLAN OR EMPLOYEE TRAINING EXACT LOCATION OF THE SPILL, COMPANY NAME AND LOCATION, THE MATERIAL SPILLED, THE ESTIMATED QUANTITY, THE SOURCE OF THE SPILL, THE CAUSE OF THE SPILL, THE NEAREST DOWNSTREAM WATER WITH THE POTENTIAL TO RECEIVE THE SPILL, AND THE ACTIONS BEING TAKEN FOR CONTAINMENT AND CLEANUP.
15. ALL EROSION AND SEDIMENT CONTROL DEVICES TO BE SELECTED, INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDEC SEDIMENT AND EROSION CONTROL HANDBOOK, LATEST EDITION.
16. WATER QUALITY BMPs SHALL NOT BE INSTALLED UNTIL BUILD IS NEAR COMPLETION TO PREVENT CONSTRUCTION SEDIMENT FROM ENTERING WATER QUALITY BMPs. WATER QUALITY AREAS SHALL NOT BE USED AS SEDIMENT BASINS DURING CONSTRUCTION. INSTALLER'S OF WATER QUALITY BMPs SHOULD FOLLOW ALL INSTALLATION GUIDELINES SET FORTH IN THE CITY OF COLUMBIA BMP MANUAL LOCATED ON THE CITY'S WEBSITE.
17. WATER QUALITY SIGNS SHALL BE PLACED WITHIN THE WATER QUALITY AREAS. THE SIGNS, MATERIALS, AND LABOR TO INSTALL WILL BE PROVIDED BY THE CITY STAFF.

CONSTRUCTION SEQUENCE

1. INSTALL CONSTRUCTION ENTRANCE
2. INSTALL EROSION PREVENTION AND SEDIMENT CONTROL MEASURES
3. INSTALL SEDIMENT TRAPS
4. INSTALL TREE PROTECTION FENCING
5. CONTACT CITY OF COLUMBIA FOR INSPECTION OF EROSION PREVENTION AND SEDIMENT CONTROL DEVICES AND TO OBTAIN A FULL GRADING PERMIT.
6. CLEAR, GRUB, AND GRADE THE SITE
7. CONSTRUCT REMAINDER OF SITE PER APPROVED PLANS INCLUDING INSTALLATION OF ALL ADDITIONAL EPSC MEASURES SHOWN ON THE PLANS OR AS DIRECTED BY THE EPSC INSPECTOR
8. UPON PERMANENT STABILIZATION OF THE SITE, REMOVE ALL TEMPORARY EROSION CONTROL DEVICES (SEE FINAL EPSC PLAN FOR POST CONSTRUCTION CLOSEOUT PROCESS.

EPSC DATA CHART:

BMP DESIGN RAIN EVENT: 5 YEAR, 24 HR STORM

811 Know what's below. Call before you dig.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN — LICENSED LANDSCAPE ARCHITECT — COMMERCIAL — RESIDENTIAL — AGRICULTURAL — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2G GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

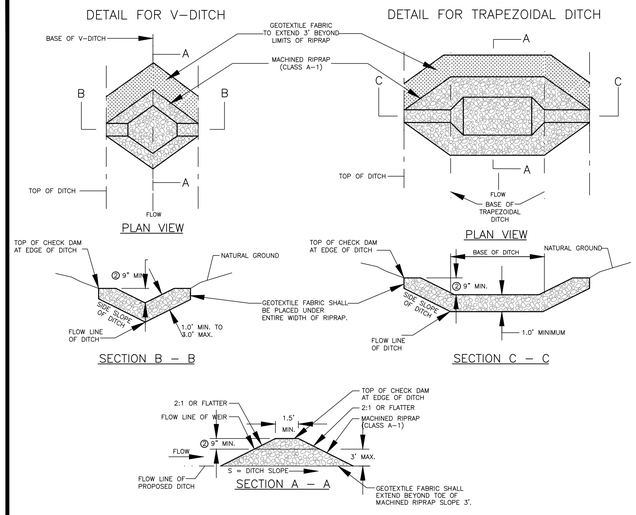
FINAL EPSC PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:

C403

MPA - FINAL EPSC PLAN.DWG | Monday, May 22, 2023 2:12:34 PM



CHECK DAM

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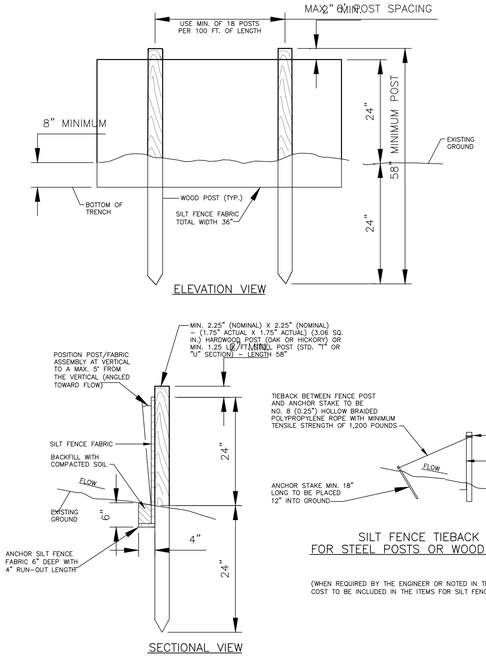

SILT FENCE

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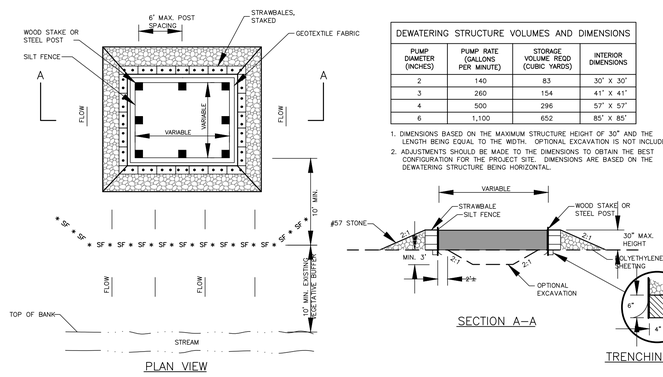


DEWATERING STRUCTURE VOLUMES AND DIMENSIONS			
PUMP DIAMETER (INCHES)	PUMP RATE (GALLONS PER MINUTE)	STORAGE VOLUME REQD (CUBIC YARDS)	INTERIOR DIMENSIONS
2	140	83	30' X 30'
3	260	154	41' X 41'
4	500	296	57' X 57'
6	1,100	652	85' X 85'

1. DIMENSIONS BASED ON THE MAXIMUM STRUCTURE HEIGHT OF 30" AND THE LENGTH BEING EQUAL TO THE WIDTH. OPTIONAL EXCAVATION IS NOT INCLUDED.
2. ADJUSTMENTS SHOULD BE MADE TO THE DIMENSIONS TO OBTAIN THE BEST CONFIGURATION FOR THE PROJECT SITE. DIMENSIONS ARE BASED ON THE DEWATERING STRUCTURE BEING HORIZONTAL.

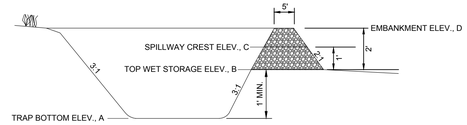
SILT FENCE & STRAW DEWATERING PIT

SCALE: N.T.S.

SEDIMENT TRAP ELEVATIONS, SEE DETAIL FOR REFERENCE → A, B, C, D

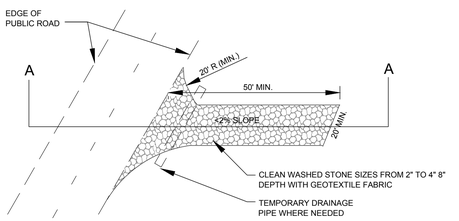
SEDIMENT TRAP DESIGN		
	ST-1	ST-2
DRAINAGE AREA (AC.)	2.80	2.50
TOTAL VOL. REQUIRED (CF)	10,130.00	9,045.00
WET VOL. REQUIRED (CF)	5,065.00	4,522.50
DRY VOL. REQUIRED (CF)	5,065.00	4,522.50
WET STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TRAP BOTTOM ELEV. (FT)	607.00	607.00
TOP WET STORAGE ELEV. (FT)	608.50	608.50
SPILLWAY CREST ELEV. (FT)**	610.00	610.00
TOP EMBANKMENT ELEV. (FT)	610.00	610.00
SPILLWAY CREST LENGTH (FT)	15.00	15.00
SPILLWAY CREST WIDTH (FT)	5.00	5.00
EMBANKMENT TOP WIDTH (FT)	5.00	5.00
DRY STORAGE VOL. PROVIDED (CF)	**5,261.00**	**4,754.50**
TOTAL VOL. PROVIDED (CF)	**10,522.00**	**9,509.00**

* RUNOFF COEFFICIENT ASSUMED TO BE BARE SOIL CONDITION
** SPILLWAY CREST ELEVATION IS ALSO TOP OF DRY STORAGE ELEVATION

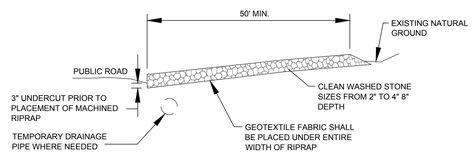


TEMPORARY SEDIMENT TRAP

N.T.S.



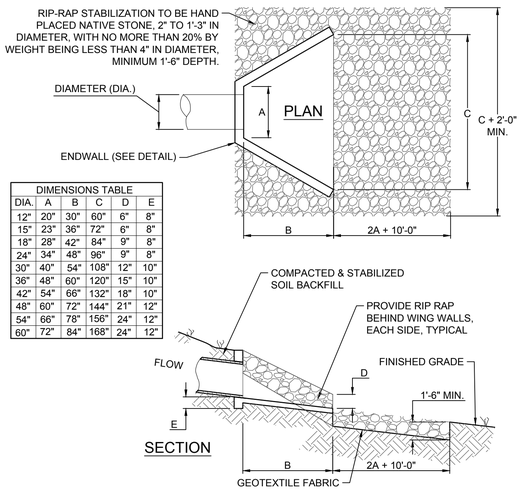
PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



SECTION A-A

CONSTRUCTION EXIT

SCALE: N.T.S.



DIMENSIONS TABLE					
DIA.	A	B	C	D	E
12"	20"	30"	60"	6"	8"
15"	23"	36"	72"	6"	8"
18"	28"	42"	84"	9"	8"
24"	34"	48"	96"	9"	8"
30"	40"	54"	108"	12"	10"
36"	48"	60"	120"	15"	10"
42"	54"	66"	132"	18"	10"
48"	60"	72"	144"	21"	12"
54"	66"	78"	156"	24"	12"
60"	72"	84"	168"	24"	12"

RIP RAP AT ENDWALL

N.T.S.

ACTIVITY: Geotextiles	PESC – 02

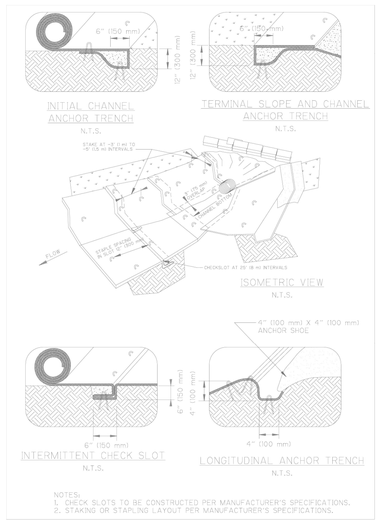


Figure PESC-02-1
Anchoring Geotextiles in Channels

Stormwater Best Management Practices – Permanent EP&SC | PESC-02-3 | January 2014

ACTIVITY: Geotextiles	PESC – 02

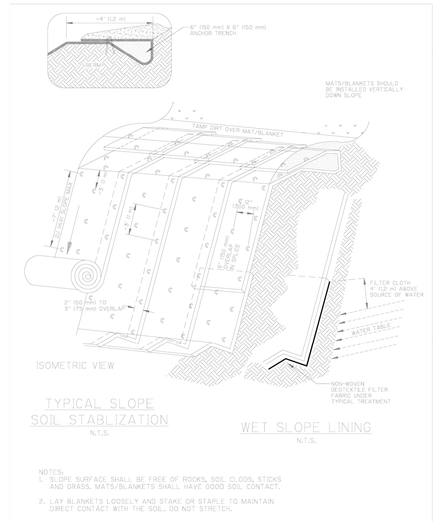


Figure PESC-02-2
Anchoring Geotextiles on Embankments

Stormwater Best Management Practices – Permanent EP&SC | PESC-02-4 | January 2014

TURF REINFORCEMENT MATTING DETAILS

SCALE: N.T.S.

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN — REGISTERED ENGINEER — No. 120183 — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

EPSC DETAILS

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C404

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

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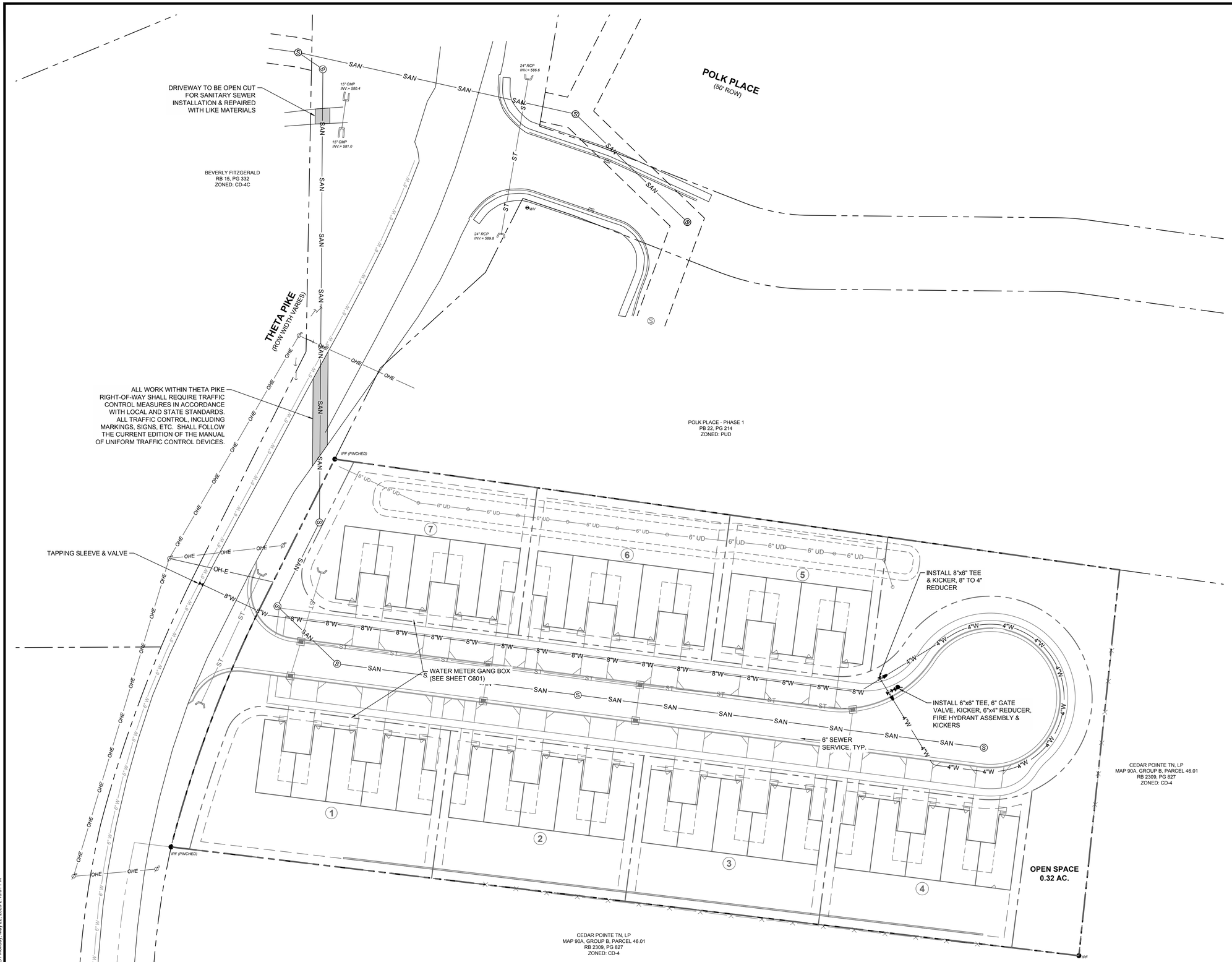

LEGEND

SAN	SANITARY SEWER
OHE	OVERHEAD ELECTRIC
UG-E	UNDERGROUND ELECTRIC
8"W	8" WATERLINE
G	NATURAL GAS
ST	STORMWATER DRAINAGE PIPE
W	WATER SERVICE

DESCRIPTION	DATE	REVISION #

MATTHEW W. BRYAN
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
CERTIFICATE No.
STATE OF TENNESSEE
05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

UTILITY PLAN

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C500

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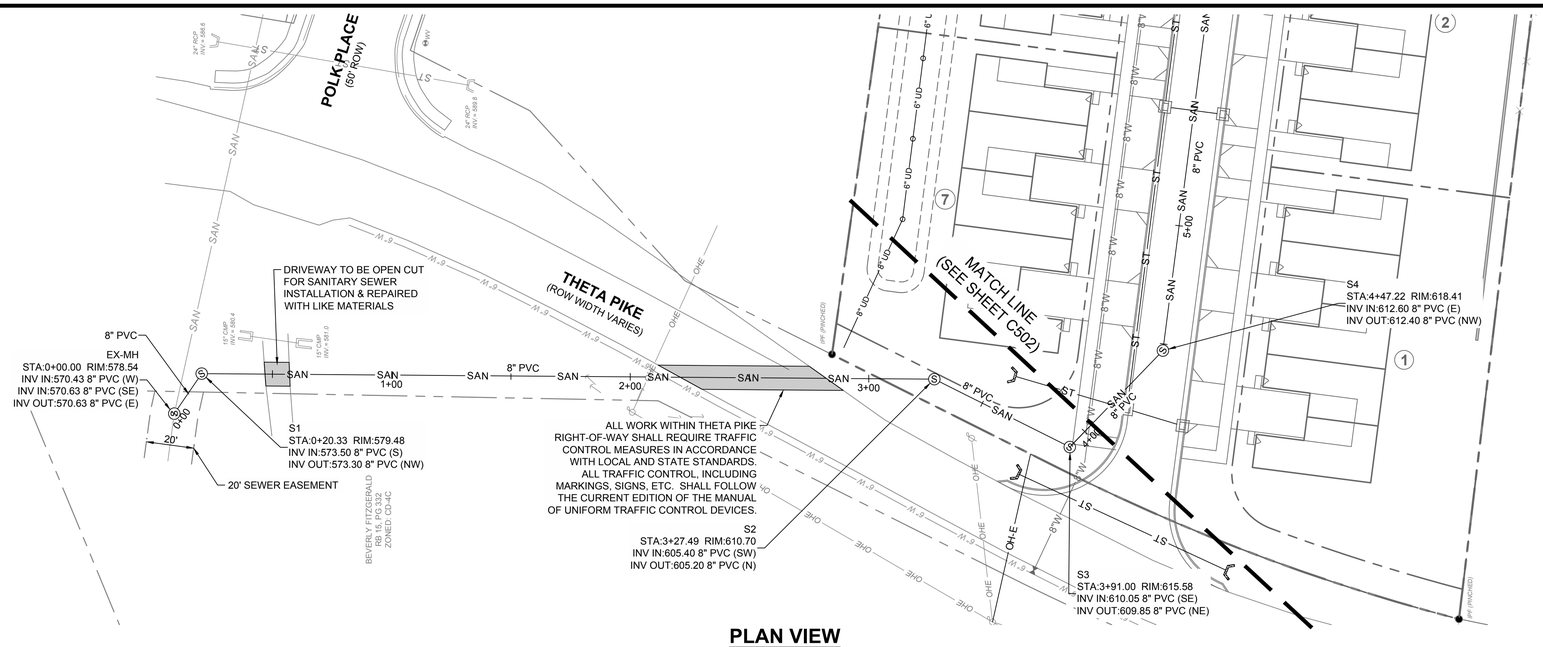
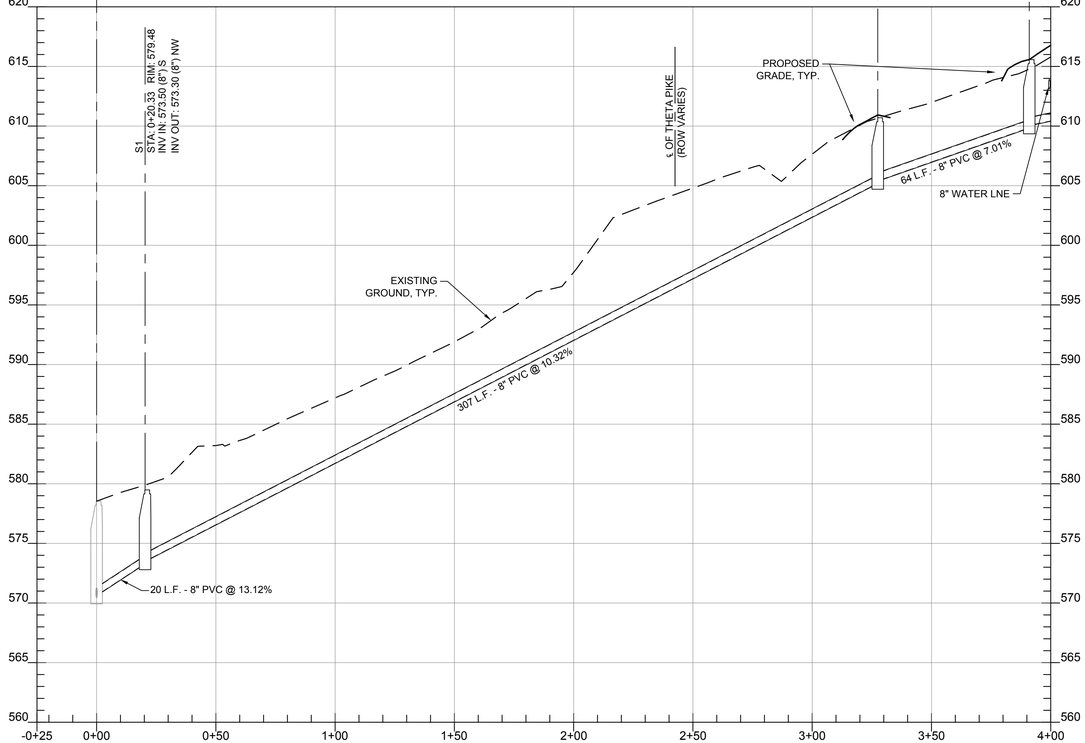
MPA - UTILITY PLAN.DWG | Monday, May 22, 2023 2:13:01 PM



PLAN VIEW

SCALE: 1" = 30'



PROPOSED OFFSITE SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

REVISION #	DATE	DESCRIPTION

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MATTHEW W. BRYAN
REGISTERED
LICENSED PROFESSIONAL ENGINEER
CERTIFICATE No. 120111
COMMERCIAL
STATE OF TENNESSEE
05/22/23

M2G GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

OFFSITE SANITARY SEWER PLAN & PROFILE

DATE :	MAY 22, 2023	DRAWN BY :	M2G
PROJECT NO. :	22-085	CHECKED BY :	MWB

SHEET NUMBER:
C501

Know what's below. Call before you dig.

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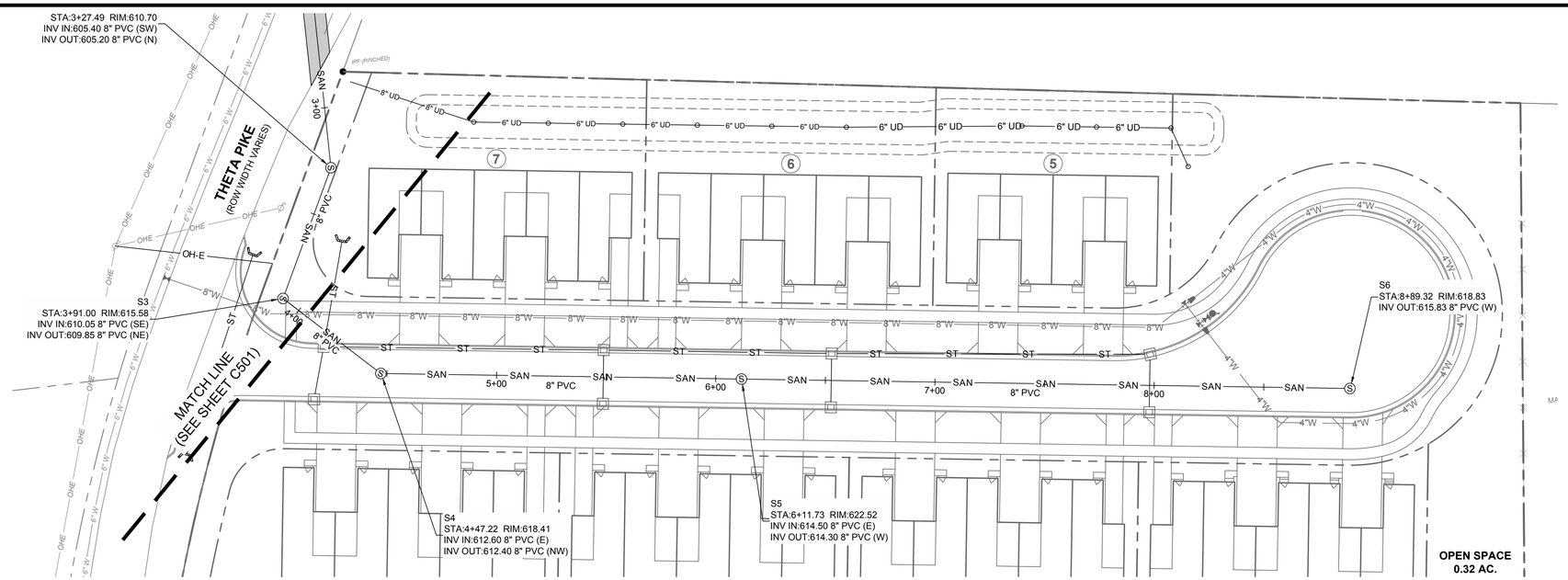
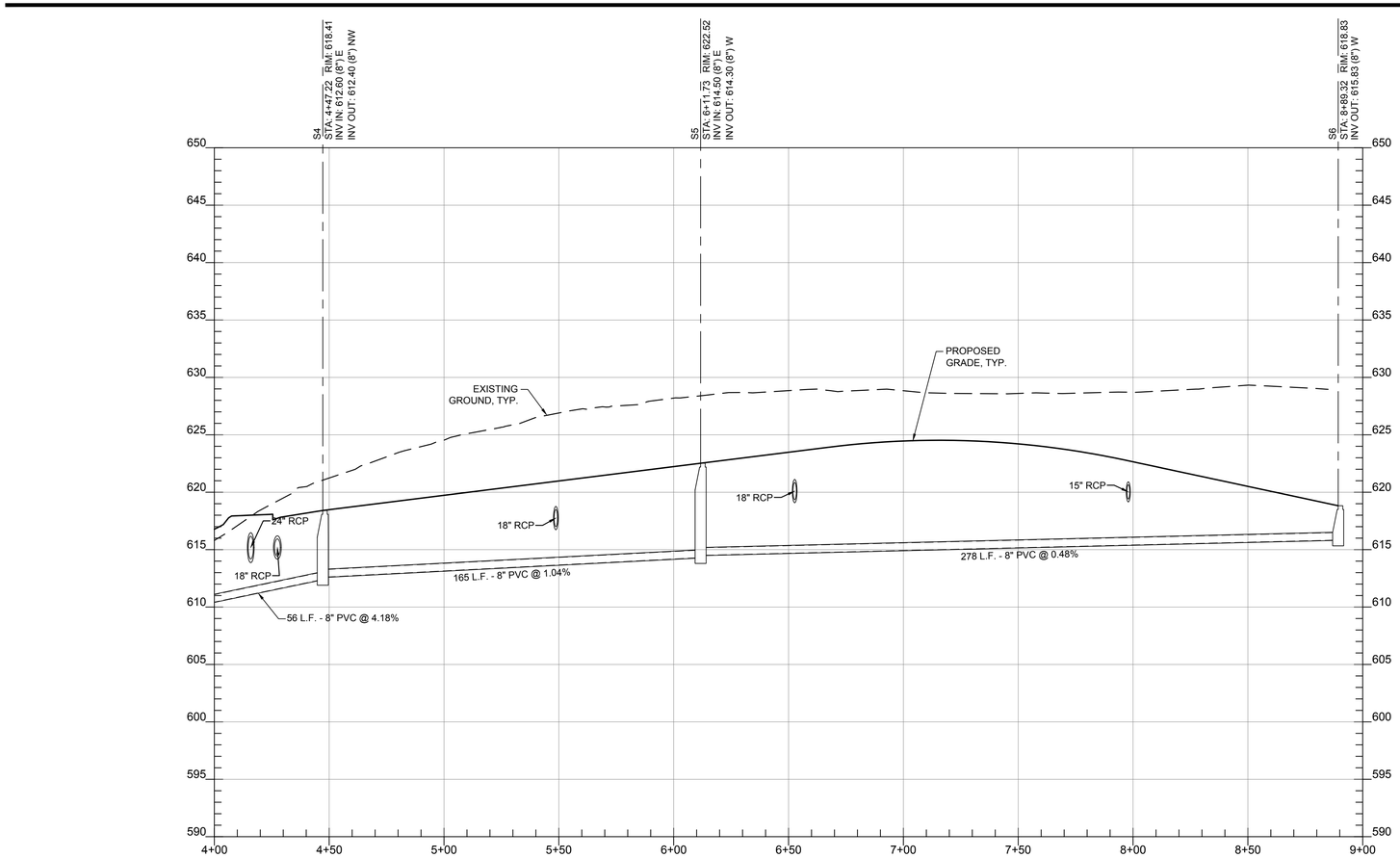


PLAN VIEW

SCALE: 1" = 30'



PROPOSED SANITARY SEWER PROFILE

SCALE H:1"=30'; V:1"=6'

Know what's below. Call before you dig.

REVISION # | DATE | DESCRIPTION

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MATTHEW W. BRYAN — LICENSED PROFESSIONAL ENGINEER — NUMBER 130 — COMMERCIAL — CERTIFICATE NO. — STATE OF TENNESSEE — 05/22/23

MZ GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

SANITARY SEWER PLAN & PROFILE

DATE :	MAY 22, 2023
PROJECT NO. :	22-085
DRAWN BY :	M2G
CHECKED BY :	MWB

SHEET NUMBER:
C502

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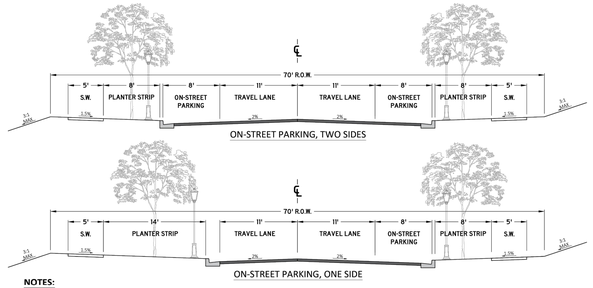


NOTES:

1. ONLY PERMITTED WITHIN THE APPLICABLE ZONING DISTRICTS.
2. ONLY PERMITTED ON MINOR LOCAL AND MAJOR LOCAL ROADWAY CLASSIFICATIONS.
3. PAVEMENT SECTION SHALL FOLLOW APPLICABLE ROADWAY CLASSIFICATION.
4. CURB AND GUTTER, SEE SD-01
5. TREES SHALL BE CENTERED WITHIN THE PLANTING STRIP, OFFSET A MINIMUM OF 20 FEET ALONG THE CENTERLINE OF THE ROAD FROM ANY STREET LIGHTING.
6. DECORATIVE LIGHT BASES SHALL BE BETWEEN 18" AND 24" BEHIND THE BACK OF CURB.
7. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
8. DIMENSIONS REFLECT A MINIMUM STANDARD.
9. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

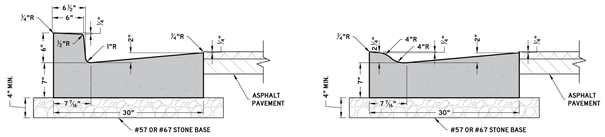
STANDARD DETAILS

CHARACTER DISTRICT STREET URBAN NEIGHBORHOOD

(NTS)

DATE 6/9/2022

DS-03

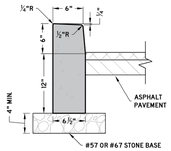


6-30 CONCRETE CURB AND GUTTER

LOWERED CONCRETE CURB AND GUTTER

NOTES:

1. BASED ON TDOT STANDARD DRAWING RP-VC-11
2. ONLY PERMITTED IN APPLICABLE ROADWAY SECTIONS
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 100 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. CONTRACTION JOINTS SHALL BE AS FOLLOWS:
   - 6.1. A MAXIMUM SPACING OF 10 FEET
   - 6.2. A MINIMUM SPACING OF 6 FEET
   - 6.3. 1/4 INCH DEPTH, EITHER SAWCUT OR HAND GROOVED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



VERTICAL POST CURB

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

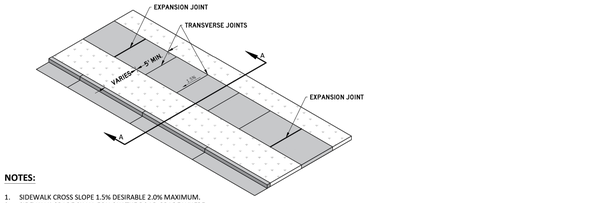
STANDARD DETAILS

CURB AND GUTTER AND POST CURB

(NTS)

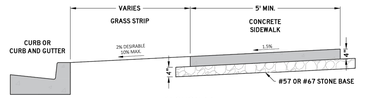
DATE 6/9/2022

SD-01



NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. SIDEWALK GRADE SHALL FOLLOW THE ROAD GRADE WHERE POSSIBLE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. 4" MIN. THICKNESS CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT, BROOM FINISHED.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK
   - 5.2. A MAXIMUM SPACING OF 25 FEET
   - 5.3. AT TANGENTS OF ALL RADII OF CURVES
   - 5.4. BETWEEN CURBS AND ANY RIGID OBJECTS
   - 5.5. ALIGNED WITH ADJACENT EXPANSION JOINTS
   - 5.6. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1)
   - 5.7. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139)
6. PROVIDE TRANSVERSE JOINTS AS NEARLY AS SQUARE AS PRACTICABLE. ON SIDEWALKS GREATER THAN 8 FEET IN WIDTH, PROVIDE A LONGITUDINAL JOINT ALONG THE CENTERLINE OF THE SIDEWALK.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER



SECTION AA

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

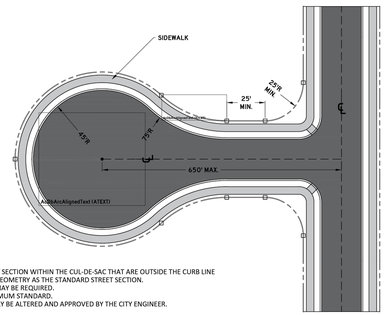
STANDARD DETAILS

CONCRETE SIDEWALK

(NTS)

DATE 6/9/2022

SD-10



NOTES:

1. ALL ELEMENTS OF THE STREET SECTION WITHIN THE CUL-DE-SAC THAT ARE OUTSIDE THE CURB LINE SHALL MAINTAIN THE SAME GEOMETRY AS THE STANDARD STREET SECTION.
2. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED.
3. DIMENSIONS REFLECT A MINIMUM STANDARD.
4. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER.

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

STANDARD DETAILS

CUL-DE-SAC

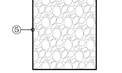
(NTS)

DATE 6/9/2022

SD-15

PAVEMENT SCHEDULE

①	**SURFACE @ 1.5" THICK** 411-E (ASPHALT CONCRETE MIX, (PG64-22) (ACS) GRADING D (SURFACE)), OR 411-D (ASPHALT CONCRETE MIX, (PG64-22) (ACS) GRADING C ⓦ (SURFACE))
②	**TACK COAT (GENERAL USE)** 403-01 BITUMINOUS MATERIAL FOR TACK COAT (CQ) (0.05 - 0.10 GAL/SY)
③	**BIT. BINDER @ 2" THICK** 307-01.08 ASPHALT CONCRETE MIX, (PG64-22) (DPW) HMC GRADING D MZ
④	**PRIME COAT** 402-10 BITUMINOUS MATERIAL FOR PRIME COAT (PC) (0.30-0.35 GAL/SY) 402-02 AGGREGATE FOR COVER MATERIAL (PC) (8-12 LB/SY)
⑤	**MINERAL AGGREGATE BASE @ 6" THICK** 303-01 MINERAL AGGREGATE, TYPE A BASE, GRADING D



CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

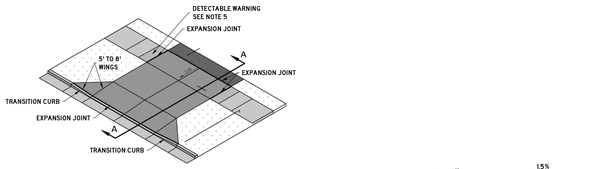
STANDARD DETAILS

PARKING LOT PAVEMENT SECTION

(NTS)

DATE 6/9/2022

MD-02



SECTION AA

NOTES:

1. SIDEWALK CROSS SLOPE 1.5% DESIRABLE 2.0% MAXIMUM.
2. APRON SLOPE 2.0% MIN. 10% MAX. MINIMUM OF 6" RISE ABOVE GUTTER LINE.
3. 4" MIN. THICK #57 OR # 67 STONE BASE
4. CLASS A 3000 PSI CONCRETE WITH FIBER REINFORCEMENT
   - 4.1. 6" MIN. THICKNESS RESIDENTIAL.
   - 4.2. 8" MIN. THICKNESS COMMERCIAL, MULTI-FAMILY, AND MIXED-USE.
5. EXPANSION JOINTS SHALL BE AS FOLLOWS:
   - 5.1. 1/2 INCH THICK.
   - 5.2. RUBBERIZED EXPANSION JOINT FILLER (AASHTO M153, TYPE 1).
   - 5.3. POLYPROPYLENE FOAM JOINT FILLER (ASTM D8139).
6. DETECTABLE WARNINGS WHERE DRIVEWAY IS STOP CONTROLLED.
7. ELEMENTS OF THIS DETAIL MAY BE ALTERED AND APPROVED BY THE CITY ENGINEER

CITY OF COLUMBIA TENNESSEE

CITY OF COLUMBIA
DEVELOPMENT SERVICES DEPARTMENT
ENGINEERING DIVISION

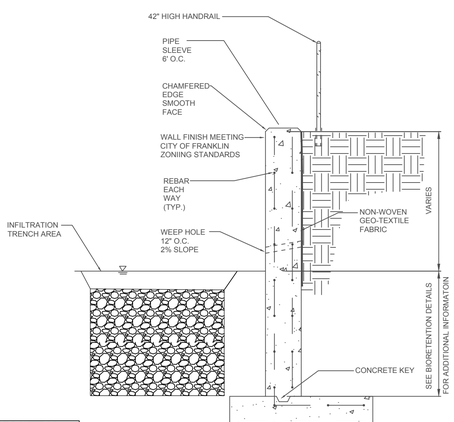
STANDARD DETAILS

DRIVEWAY APRON

(NTS)

DATE 6/9/2022

SD-12



NOTE: A FORMAL WALL SUBMITTAL PREPARED BY A LICENSED PROFESSIONAL WILL BE SUBMITTED WITH GUARDRAIL DETAILS PRIOR TO OBTAINING A BUILDING PERMIT.

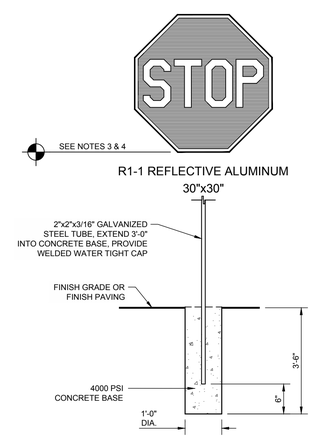
NOTE: RETAINING WALLS ADJACENT TO INFILTRATION TRENCH AREAS SHALL NOT RELY ON STONE DRAINAGE MEDIA FOR STABILITY OR LATERAL RESISTANCE. BOTTOM OF WALL/TOP OF FOOTING ELEVATION SHALL BE LOCATED AT OR BELOW BOTTOM OF LOWERMOST STONE DRAINAGE MEDIA.

RETAINING WALL ILLUSTRATIVE CROSS-SECTION

ADJACENT TO INFILTRATION TRENCH

FOR ILLUSTRATIVE PURPOSES ONLY, NOT TO BE USED FOR CONSTRUCTION

NO SCALE



R1-1 REFLECTIVE ALUMINUM 30"x30"

NOTES:

1. SET POSTS IN CONCRETE TO A MINIMUM DEPTH OF 36". SIGN PANELS SHALL BE 0.100 ALUMINUM WITH RAISED OR SILKSCREEN COPY.
2. FOR POST MOUNTING, USE NON-CORROSIVE 3/8" MACHINE BOLTS W/ WASHERS, 2 PER SIGN; OR IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
3. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 60" ABOVE FINISHED GRADE, WHERE NO PEDESTRIAN TRAFFIC IS POSSIBLE.
4. ALL SIGNAGE IS TO BE INSTALLED WITH THE BOTTOM EDGE OF THE LOWEST SIGN AT LEAST 84", WHERE PEDESTRIAN TRAFFIC IS POSSIBLE.
5. STOP SIGN TO BE HIGH INTENSITY GRADE.

STOP SIGN/SPEED LIMIT SIGN

N.T.S.

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRIAN — REGISTERED ENGINEER — CERTIFICATE No. 120144 — COMMERCE & CONSUMER AFFAIRS — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

SITE DETAILS

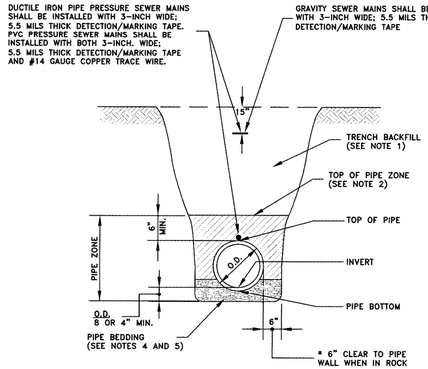
DATE : MAY 22, 2023
PROJECT NO. : 22-085
DRAWN BY : M2G
CHECKED BY : MWB

SHEET NUMBER:
C600

MPA - SITE DETAILS.DWG | Monday, May 22, 2023 2:13:31 PM

NOTES:

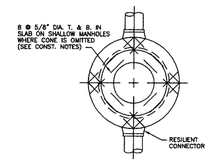
1. SEE PROJECT SPECIFICATIONS FOR BACKFILL REQUIREMENTS.
2. "PIPE ZONE" EXTENDS TO 6" ABOVE TOP OF PIPE AND BACKFILL IN TO BE CRUSHED STONE, GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE ENGINEER.
3. LIMIT TRENCH WIDTH AT TOP OF PIPE ZONE TO O.D. + 16", UNLESS PERMITTED OTHERWISE BY ENGINEER.
4. PIPE BEDDING IS TO BE CRUSHED GRAVEL OR OTHER GRANULAR MATERIAL AS APPROVED BY ENGINEER. DEPTH UNDER BOTTOM OF PIPE IS TO BE 1/8 OUTER DIAMETER (O.D.) OF PIPE OR 4", WHICHEVER IS GREATER.*
5. PIPE TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL EXCEPT AT BELLS. BELL HOLES ARE REQUIRED SUCH THAT NO BEARING LOAD IS TAKEN BY THE BELL.



TYPICAL SEWER INSTALLATION

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S1



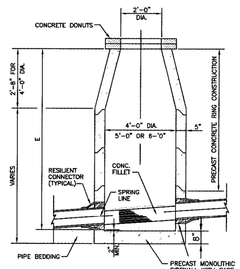
PLAN

NOTE: ALL MANHOLES SHALL BE MANUFACTURED WITH XYPEX ADMIX C-1000/C-2000 IN CONCRETE FOR WATERPROOFING AND PROTECTION AGAINST HYDROGEN SULFIDE DETERIORATION. XYPEX ADMIX SHALL BE AS SUPPLIED BY TOM WILLIAMS; 1231 ANTIOCH PIKE, NASHVILLE. PRECAST MANHOLES SHALL BE AS SUPPLIED BY CLOUD CONCRETE PRODUCTS OR ENGINEER APPROVED EQUAL.

CONSTRUCTION NOTES

CYLINDRICAL AND CONICAL SECTIONS OF ALL MANHOLES SHALL BE CONSTRUCTED OF EITHER MONOLITHIC CONCRETE OR PRECAST CONCRETE RINGS AS DESIGNED IN THE PROJECT SPECIFICATIONS OF THE CONTRACT DOCUMENT.
CONCENTRIC CONES SHALL BE USED ON PRECAST CONCRETE AND MONOLITHIC CONCRETE UNITS.
DIMENSION "E" VARIES. WHEN LESS THAN 5-FEET OMIT CONE AND EXTEND CYLINDRICAL MANHOLE SIDEWALL SECTION TO AN ELEVATION 8-INCHES BELOW BOTTOM OF ADJUSTING BRICK. CONSTRUCT 8-INCH THICK CONCRETE SLAB ON TOP OF CYLINDRICAL SECTION REINFORCED WITH 5/8-INCH DIA. BARS AS SHOWN. PROVIDE 24-INCH DIAMETER OPENING IN SLAB FOR MANHOLE'S FRAME AND BRICK ADJUSTMENT RINGS AS ON CONED MANHOLE.
BENCH WALLS IN MANHOLE AND SEWERS 18-INCHES IN DIAMETER AND SMALLER TO BE BUILT UP TO THE TOP OF THE LARGEST PIPE. FOR SEWERS 21-INCHES TO 30-INCHES IN DIAMETER, 1'-0" WIDE BENCH. LAYOUT SEWERS TO SPRING LINE. BENCH WALLS REQUIRED IN DEAD END MANHOLES, ALTHOUGH BOTTOM TO BE PROPERLY DISHED.

NOTE: GRANULAR BACKFILL MATERIAL SHALL BE PLACED ADJACENT TO MANHOLE IN AREAS WHERE SWELLING CLAY EXIST.



SECTION

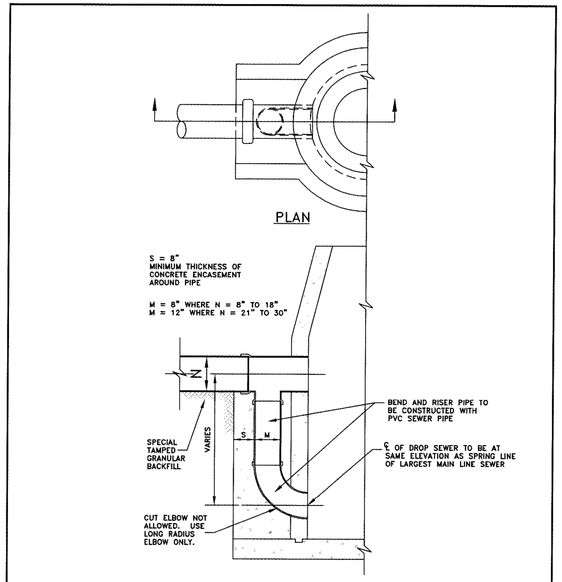
FOR SEWERS 36" DIAMETER & SMALLER
NOT TO SCALE

POURED IN PLACE MANHOLE
NOT TO SCALE

STANDARD MANHOLES

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S2



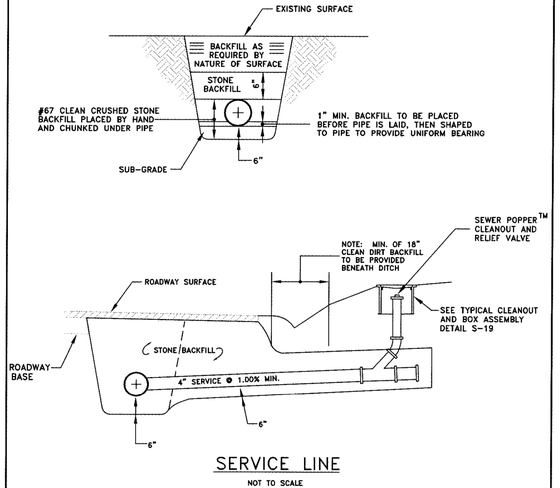
SECTION

DROP PIPE FOR STANDARD MANHOLES

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S3

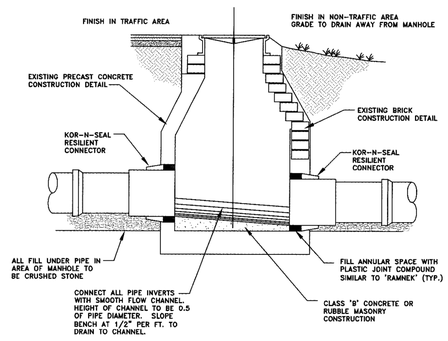


SERVICE LINE

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S4



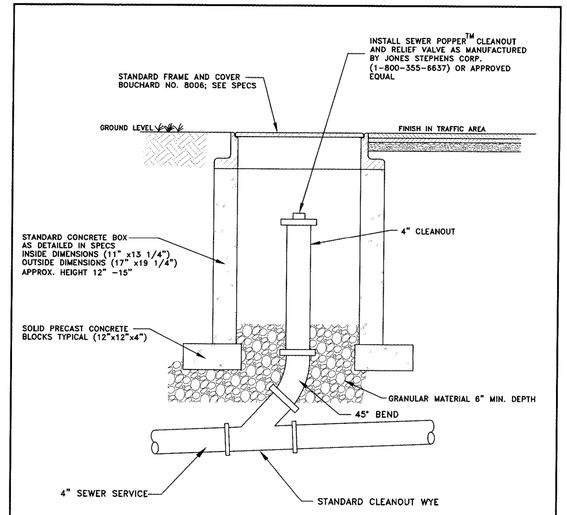
CONNECTION TO EXISTING MANHOLE

NOT TO SCALE

NOTE: THE CONTRACTOR SHALL NOT CONNECT TO EXISTING MANHOLE UNTIL ALL NEW SEWAGE FACILITIES HAVE BEEN INSTALLED, TESTED AND RELEASED FOR SERVICE.

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S5



TYPICAL CLEANOUT ASSEMBLY

NOT TO SCALE

WMS# 15157

COLUMBIA WASTEWATER TREATMENT SYSTEM	STANDARD DETAIL	S19

REVISION #	DATE	DESCRIPTION

MATTHEW W. BRYAN — REGISTERED ENGINEER — STATE OF TENNESSEE — 05/22/23

SITE PLANS FOR:
MACKENZIE PLACE
220 THETA PIKE
TAX MAP 90B, GROUP B, PARCEL 47.00
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

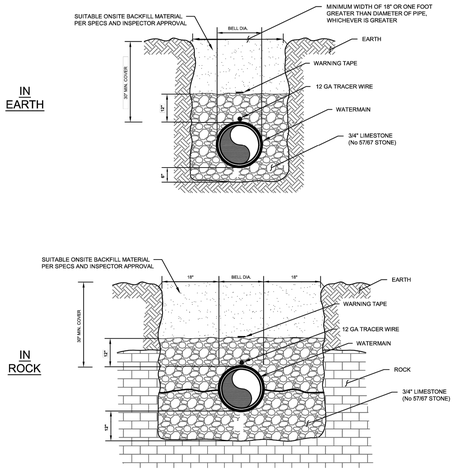
MZG GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MZGROUPLLC.COM

UTILITY DETAILS

DRAWN BY: MZG
CHECKED BY: MWB
DATE: MAY 22, 2023
PROJECT NO.: 22-085

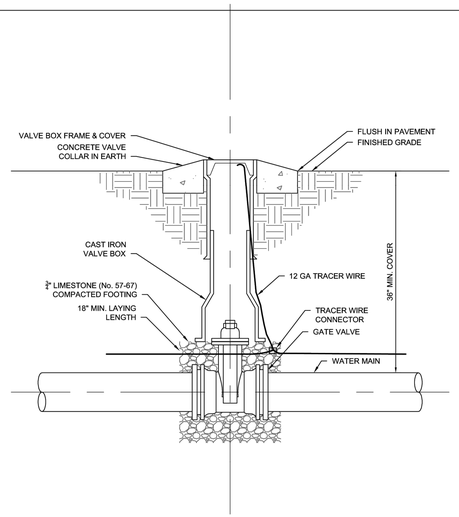
SHEET NUMBER:
C602

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:13:35 PM



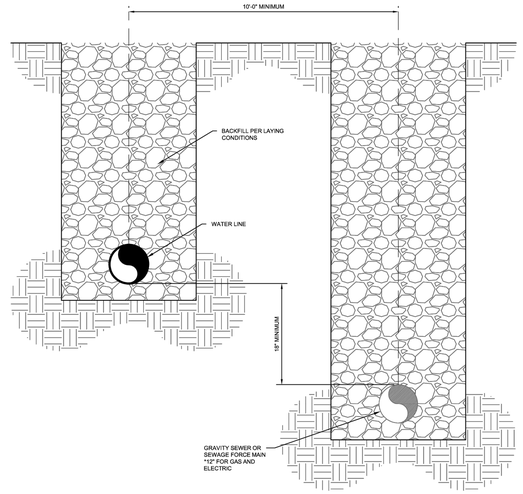
NOTES:
1. **30" MINIMUM COVER IN TRAFFIC AREAS.**
2. **UNSUITABLE EARTH MATERIALS MAY REQUIRE OVER-EXCAVATION AND GRAVEL BEDDING AND HAUNCHING.**

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: WATER LINE LAYING CONDITIONS IN ROCK OR EARTH | FIGURE NO.: CWS-1



NOTES:
1. ALL VALVE BOXES SHALL BE SET TO BE FLUSH WITH FINAL GRADES AND SHALL NOT BE COVERED WITH ANY PAVING, DIRT, SOD, GRASSING, AND/OR LANDSCAPING.
2. THIS DETAIL IS VALID FOR 16" AND SMALLER VALVE SIZES. FOR LARGER SIZES, SEE CONTRACT SPECS. OR CONFIRM WITH CPWS.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: LINE VALVE SETTING | FIGURE NO.: CWS-2



CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: UTILITY SEPARATION | FIGURE NO.: CWS-3

LENGTH TO BE RESTRAINED (L)							
PIPE SIZE	HORIZONTAL BENDS				VERTICAL OFFSETS 45° BENDS		VALVES OR DEAD ENDS
	11.25°	22.5°	45°	90°	UPPER	LOWER	
6"	3 FT	6 FT	13 FT	30 FT	23 FT	4 FT	66 FT
8"	4 FT	8 FT	16 FT	38 FT	30 FT	6 FT	86 FT
10"	5 FT	9 FT	19 FT	45 FT	36 FT	7 FT	103 FT
12"	6 FT	11 FT	22 FT	53 FT	43 FT	8 FT	121 FT
16"	7 FT	14 FT	28 FT	66 FT	55 FT	10 FT	154 FT
20"	8 FT	16 FT	33 FT	79 FT	66 FT	12 FT	185 FT
24"	8 FT	16 FT	33 FT	79 FT	77 FT	15 FT	204 FT

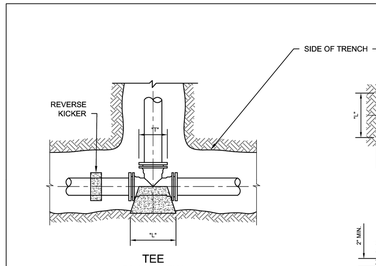
NOTES:
1. PIPE TO BE INSTALLED IN TRENCH AS PER LINE LAYING CONDITION DETAIL.
2. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED AND SHALL BE PROVIDED WITH MECHANICAL JOINT THRUST RESTRAINTS AT ALL DIRECTION CHANGES, SIZE CHANGES, AND DEAD ENDS. ALL CONNECTIONS TO EXISTING PIPE SHALL BE MADE WITH RETAINER GLANDS.
3. MECHANICAL JOINT RESTRAINTS SHALL BE DUCTILE IRON IN ACCORDANCE WITH ASTM A536 - STANDARD SPECIFICATION FOR DUCTILE IRON CASTINGS.
4. CONTRACTOR SHALL FURNISH AND INSTALL MECHANICAL JOINT RESTRAINTS WITH ALL HARDWARE AND ACCESSORIES AS REQUIRED BY THE MANUFACTURER FOR PROPER INSTALLATION.
5. CONTRACTOR SHALL PROVIDE THE SERIES/MODEL OF JOINT RESTRAINT AS REQUIRED FOR THE PIPE SIZE, MATERIAL, AND FLANGED FITTING SHOWN ON THE PLANS.
6. RESTRAINT LENGTH CALCULATIONS WERE PERFORMED UNDER THE FOLLOWING CONDITIONS: PVC PIPE MATERIAL, GM SOIL TYPE, 1.5 SAFETY FACTOR, TYPE 3 TRENCH, 2.5 FT BURY DEPTH, 150 PSI TEST PRESSURE.

REDUCERS	
SIZE	L
6x4	34'
8x6	36'
8x4	62'
10x8	35'
10x6	63'
12x10	36'
12x8	64'
16x12	66'
16x10	92'
20x18	35'
20x16	66'
20x12	117'
24x20	56'
24x18	80'
24x16	101'

TEES		
RUN	BRANCH	L
4"	4"	F.O.
4"	6"	10'
	<6"	F.O.
8"	8"	29'
	<8"	F.O.
10"	10"	45'
	8"	13'
	<8"	F.O.
12"	12"	62'
	10"	32'
	<8"	F.O.
16"	16"	94'
	12"	39'
	10"	5'
	<10"	F.O.
20"	20"	125'
	16"	76'
	12"	14'
	<12"	F.O.
24"	24"	124'
	20"	84'
	16"	36'
	<16"	F.O.

F.O. = FITTING ONLY

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: PIPE JOINT RESTRAINT SCHEDULE | FIGURE NO.: CWS-4

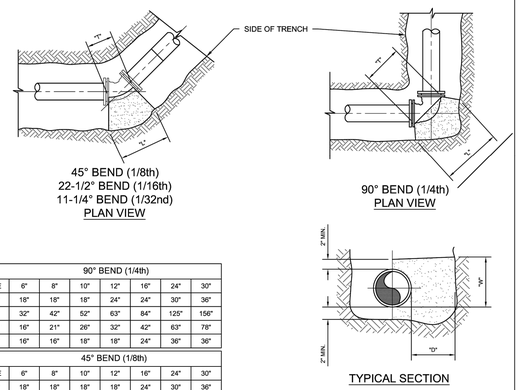


TEE							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	16"	16"	18"	18"	24"	36"	36"

PLUG							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	19"	25"	31"	38"	50"	75"	93"
"W"	19"	25"	31"	38"	50"	75"	93"
"T"	12"	12"	12"	12"	18"	30"	36"

NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" SEPARATION BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: CONCRETE BLOCKING DETAILS (TEES AND PLUGS) | FIGURE NO.: CWS-5



90° BEND (1/4th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	24"	24"	30"	36"
"L"	32"	42"	52"	63"	84"	125"	156"
"W"	16"	21"	26"	32"	42"	63"	78"
"T"	16"	16"	18"	18"	24"	36"	36"

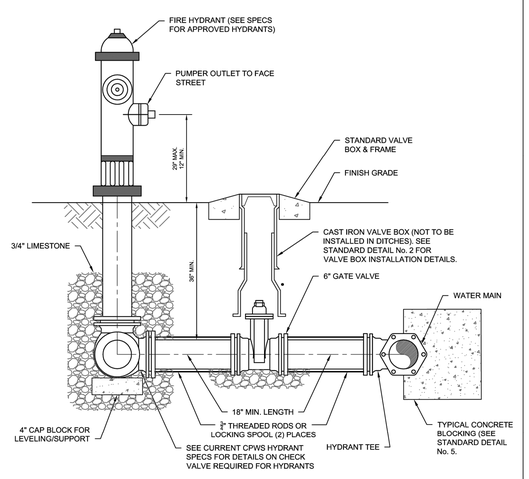
45° BEND (1/8th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	18"	18"	18"	18"	24"	30"	36"
"L"	24"	31"	39"	46"	62"	92"	115"
"W"	12"	16"	20"	23"	31"	46"	58"
"T"	16"	16"	18"	18"	18"	24"	24"

22.5° BEND (1/16th)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	17"	23"	28"	33"	44"	66"	82"
"W"	9"	12"	14"	17"	22"	33"	41"
"T"	16"	16"	18"	18"	18"	24"	24"

11.25° BEND (1/32nd)							
SIZE	6"	8"	10"	12"	16"	24"	30"
"D"	12"	12"	18"	18"	24"	24"	24"
"L"	12"	16"	20"	24"	32"	47"	59"
"W"	6"	8"	10"	12"	16"	24"	30"
"T"	16"	16"	18"	18"	18"	24"	24"

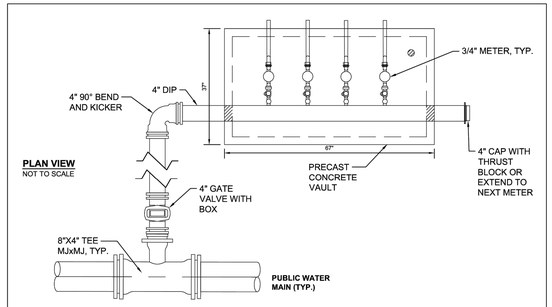
NOTES:
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE AGAINST UNDISTURBED EARTH.
2. ALL BOLTS AND FITTINGS MUST BE WRAPPED IN MINIMUM THREE (3) MIL. PLASTIC.
3. LEAVE APPROXIMATELY 12" CLEARANCE BETWEEN CONCRETE AND FITTING BELLS
4. THRUST BLOCK DIMENSIONS BASED ON 150 PSI OPERATING PRESSURE AND 50% ADDITIONAL SURGE PRESSURE.
5. SOIL BEARING PRESSURE USED FOR THRUST BLOCK DIMENSIONS SHOWN IS 4,000 PSF. IF SOIL SURROUNDING THRUST BLOCK DOES NOT HAVE THIS CAPACITY, ADDITIONAL THRUST BLOCK VOLUME MAY BE REQUIRED.
6. CONCRETE TO BE USED FOR THRUST BLOCKS TO BE 3,500PSI CONCRETE.
7. LENGTH (L) AND WIDTH (W) DIMENSIONS CAN BE MODIFIED SLIGHTLY AS LONG AS TOTAL AREA DOES NOT CHANGE, BY WRITTEN DIRECTION OF CPWS ONLY TO MEET SITE SPECIFIC CONCERNS.
8. ELEVATION OF GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF THRUST BLOCK.

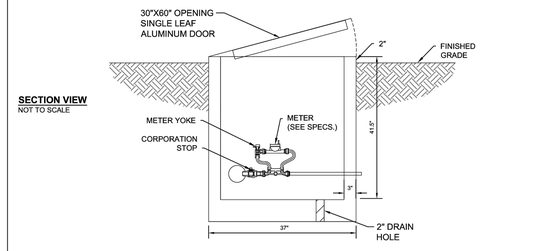
CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: CONCRETE BLOCKING (BENDS) | FIGURE NO.: CWS-6



NOTES:
1. FIRE HYDRANT SHALL BE INSTALLED SO THE PUMPER NOZZLE IS POINTED TOWARD THE STREET.
2. ALL M.J. FITTINGS TO INCLUDE WEDGE STYLE THRUST RESTRAINT.
3. FIRE HYDRANTS TO BE SAFETY YELLOW.
4. TRACER WIRE TO EXTEND TO VALVE AND HYDRANT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: FIRE HYDRANT ASSEMBLY | FIGURE NO.: CWS-11





NOTES:
1. THE GANG VAULT MAY VARY FROM 3 TO 6 METERS DEPENDING ON CONDITIONS. VAULT SIZE WILL VARY ACCORDINGLY.
2. PRECAST VAULT TO COMPLY WITH ASTM C-857 & C-858.
3. TRACER WIRE TO EXTEND TO METER VAULT.

CPWS Columbia Power & Water Systems | STANDARD WATER DETAIL: GANG METER VAULT | FIGURE NO.: CWS-22

DESCRIPTION | DATE | REVISION #

SITE PLANS FOR:
MACKENZIE PLACE
TAX MAP 90B, GROUP B, PARCEL 47.00
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

MATTHEW W. BRYAN — REGISTERED ENGINEER — 109161 — COMMERCE — CERTIFICATE No. — STATE OF TENNESSEE — 05/22/23

MPA GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.MPAGROUPLLC.COM

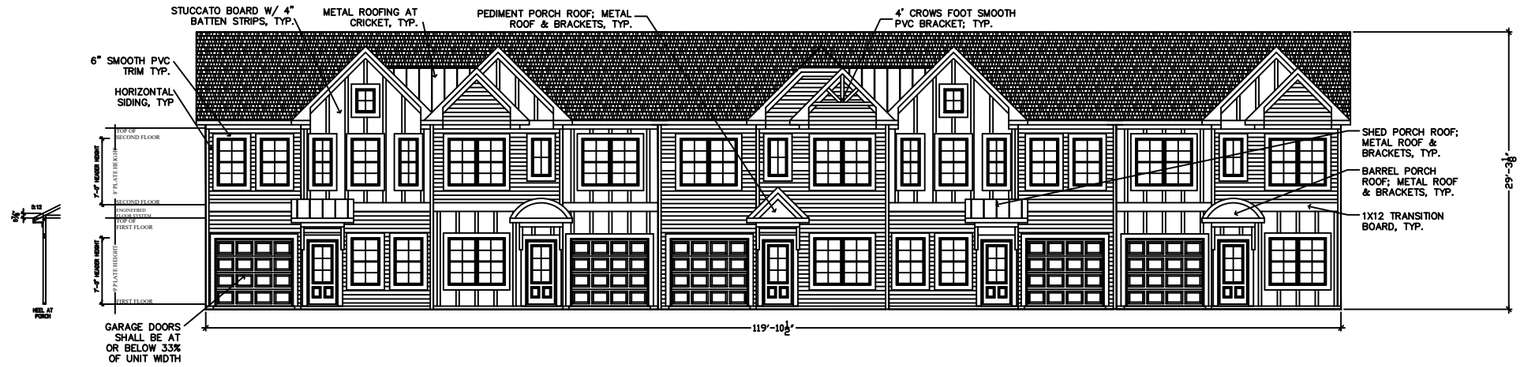
UTILITY DETAILS

DRAWN BY : M2G
CHECKED BY : MWB
DATE : MAY 22, 2023
PROJECT NO. : 22-085

SHEET NUMBER:
C601

MPA - SITE DETAILS.DWG / Monday, May 22, 2023 2:13:42 PM

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



FRONT ELEVATION: OPTION A



FRONT ELEVATION: OPTION B

ELEMENTS CHANGED PER INDIVIDUAL UNITS: PORCH ROOF STYLE, COLUMNS/ BRACKETS, EXTERIOR FINISHES: HORIZONTAL & VERTICAL SIDING, STUCATTO BOARD & BATTENS, VENTS, BRACKETS, ETC.

FRONT ELEVATIONS 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

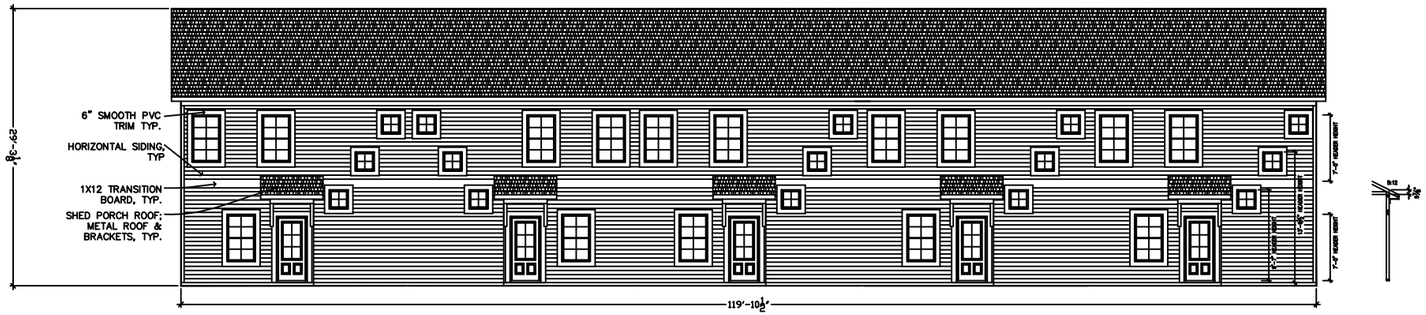
Scale: 1/16"=1'-0"

Date: XX/XX/XX

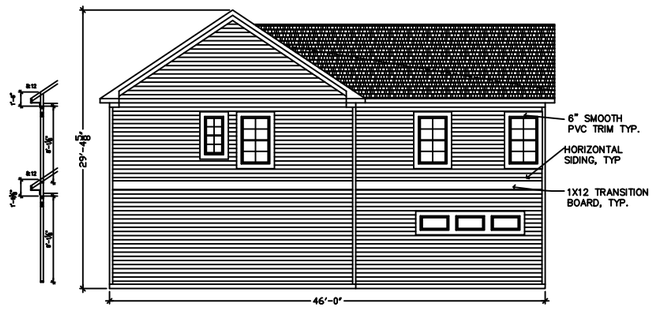
Revision Dates:

A0.0

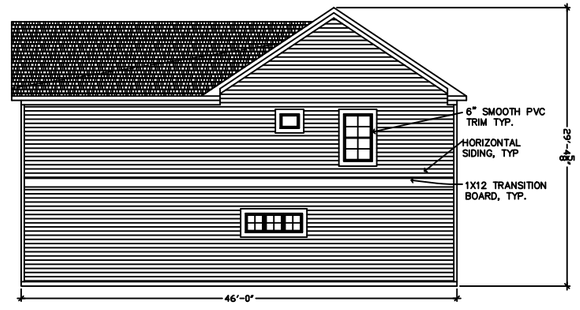
NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



REAR ELEVATION 1/16"=1'-0"



LEFT ELEVATION 1/16"=1'-0"



RIGHT ELEVATION 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

Scale: 1/16"=1'-0"

Date: XX/XX/XX

Revision Dates:

A0.1

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



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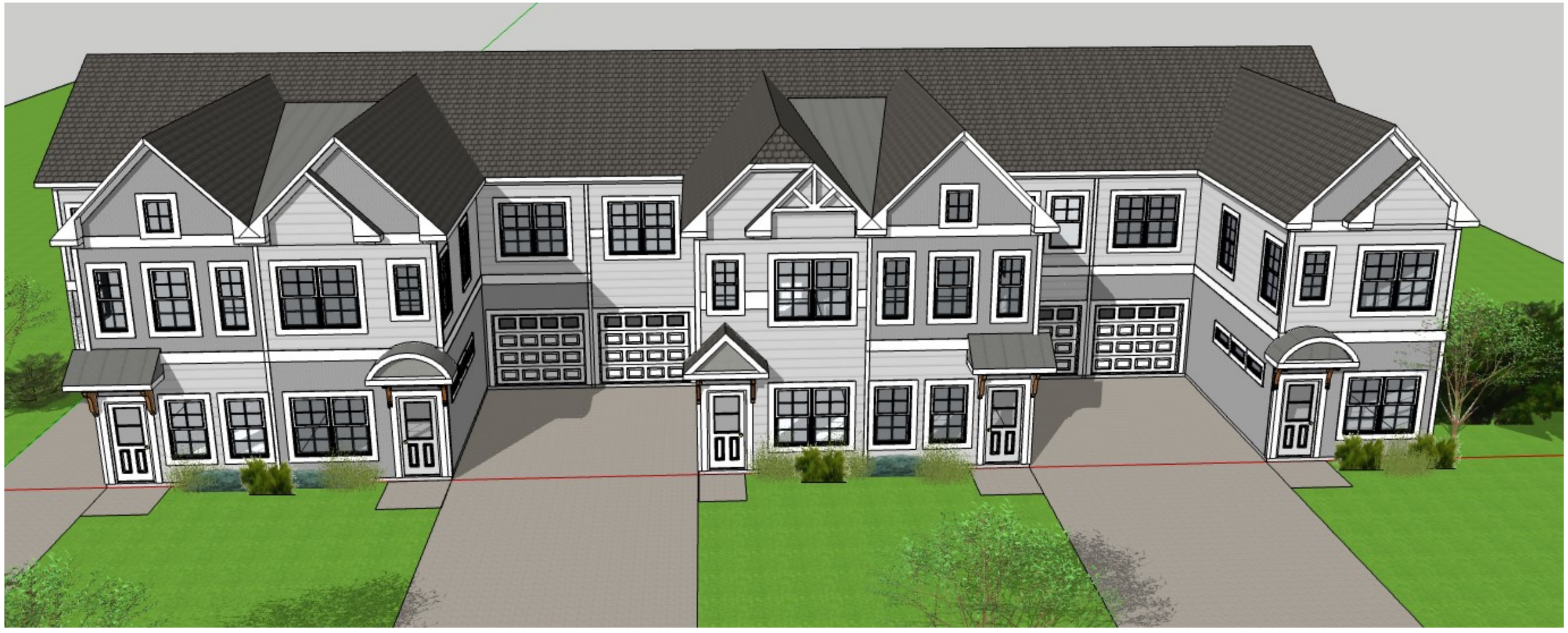

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NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



May 22, 2023

City of Columbia, Tennessee
700 North Garden Street
Columbia, Tennessee 38401

RE: Agency Comment Responses
Site Plan Submittal
MacKenzie Place Townhomes
220 Theta Pike

M2 Group, LLC (M2) has received the previous review comments of the MacKenzie Place Townhomes project. Please allow this letter to serve as a response to the review comments. A digital copy of the revised Site Plan has been included in this resubmittal.

Per comments received via a virtual meeting with City Staff, on April 5, 2023, we offer the following comment responses;

Review Comments

1. *Sidewalks need to be provided around the entire cul-de-sac.*
   Sidewalk has been added as requested to provide a loop for pedestrian circulation.

2. *Architecturals*
   a. *Needs to vary*
   b. *Comply with Building standards*
   c. *Difference in FFE – step from garage to first floor with require Foundation Cladding*
   d. **ADD NOTE* Element requirements of CD-4 Article 4 must be met*

   Updated architectural information has been provided with a specific note requiring the adherence to City standards. Detailed conversations with the Owner/Developer have been had and they fully understand this requirement.

3. *Tree Preservation*
   a. *Replacement requirement is 80 trees per acre*
   b. *31 new trees required (street trees don't count)*
   c. *Fix legend to clarify what is happening*
   d. *Street Trees required 50' o/c*
   e. *Street section requires standard spacing*
   f. *Planting interval does not meet code*
   g. *Separate tree count for street trees vs. canopy retention*

   Updated landscape plans have been provided that show compliance with the review comments received.

4. *Intersection Sight Distance *may be a problem**
   a. *390' vs. 290' distance*
   b. *Need vertical profile*
   c. *Review vertical curve*
   d. *Plan & profile*
   e. *14.5' off edge of pavement for stop bar*
   f. *3.5' height of object / 3.5' may need additional topo*
   g. *Intersection sight distance/currently showing stopping sight distance*

   The intersection sight distance plan has been revised to provide requested items. Additional topographic information was obtained and analyzed for obstructions. The existing grade along the line of sight does not impair the decision point. However, clearing of vegetation will be required within the sight triangle which has been shown. A letter of permission has been included from the adjacent neighbor granting permission to clear vegetation for the required site triangles.

5. *Concerns with infiltration trench*
   a. *Need EoF*
   b. *City does not like*
   c. *Wants something more traditional*
   d. *Peak runoff control*

   A drainage report has been provided to demonstrate the design intent and effectiveness of infiltration trench that was proposed. The infiltration trench methodology is proposed because it can provide compliance with both the water quality requirements as well as attenuate the post development peak runoffs from the proposed site. The report demonstrates compliance with both of these items. Infiltration testing was also performed to demonstrate there will be some infiltration from this trench, however, there is also an underdrain and emergency overflow spillway that direct any excess runoff to the roadside ditch along Theta Pike.

6. *Preliminary plat for road only since it's a multifamily site*

   Acknowledged.

7. *Sanitary Easement*
   a. *Show R/W on C500*
   b. *Theta Pike was just repaved*

   Right of way for Theta Pike is now shown.

8. *Guest Parking?*
   c. *PC will have concerns about parking on street*

   Acknowledged. The development meets parking requirements.

9. *Architectural – compatibility with neighborhood?*
   Note has been added to architectural plans as requested.

10. *Trash collection?*
    No dumpster is proposed. Trash will be collected by private trash hauling service which will utilize roller cans at each residence.

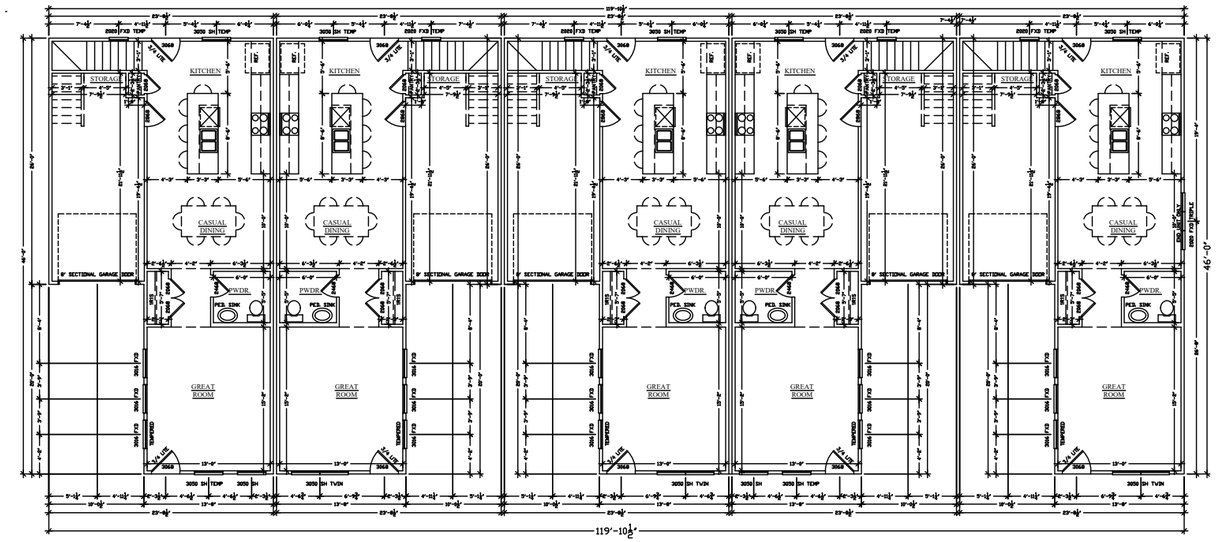
If you have any questions, please feel free to contact me at 615.406.3415 or matt@m2groupllc.com.

Sincerely,
M2 Group, LLC
Matthew W. Bryant, P.E.

Enclosures

cc: John Waits, John Phillips

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



STANDARD FIRST FLOORPLAN 1/16"=1'-0"

Project

TOWNHOME

Spec. Revision Date:

Lot #	Market Home or Home Owner
#	Name:

Plan Name:

PROPOSED

Sheet Name:

STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR

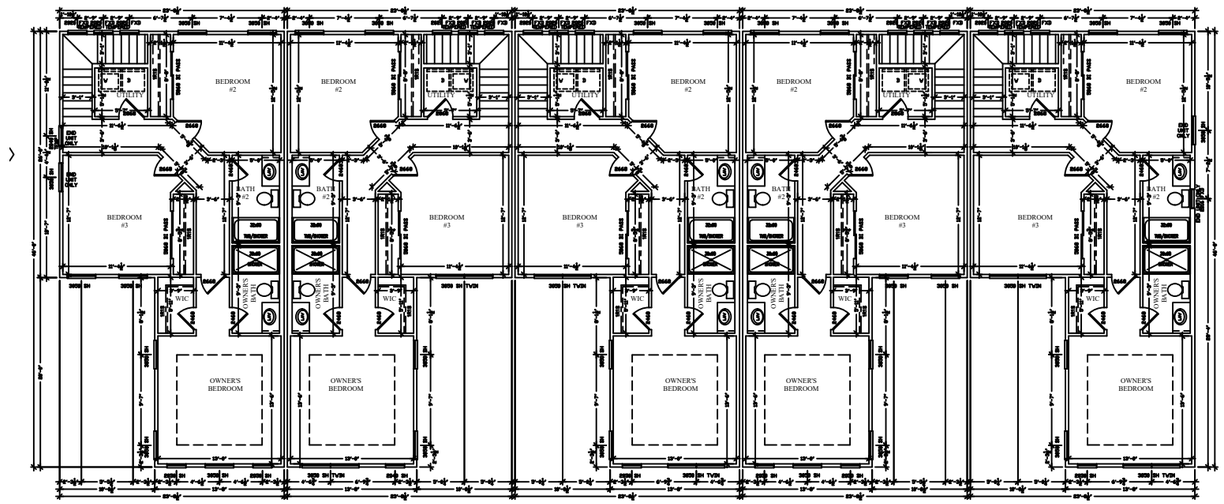
Scale: 1/16"=1'-0"

Date: XX/XX/XX

Revision Dates:

A1.0

NOTE: ALL BUILDING ELEMENTS MUST MEET THE REQUIREMENTS OF ARTICLE 4 BUILDING, LOT & BUILDING SITE STANDARDS, TABLE 4.3.1-D OF THE CD-4 ZONING DISTRICT.



STANDARD SECOND FLOORPLAN 1/16"=1'-0"

Project
TOWNHOME
Spec. Revision Date:
Lot # / Market Home or Home Owner
/ Name:
Plan Name:
PROPOSED
Sheet Name:
STANDARD FLOORPLANS

THE JONES COMPANY of Tennessee, LLC
LIVE LARGER >> LIVEJONES.COM

Drawn By: BSR
Scale: 1/16"=1'-0"
Date: XX/XX/XX
Revision Dates:

A2.0



TREE PRESERVATION PLAN

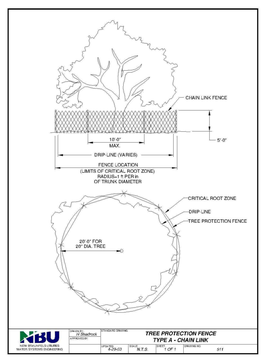
TREE CANOPY CALCULATIONS:	
LOT SIZE:	141,429 SF
EX TREE CANOPY:	33,202 SF (23.4% OF LOT)
EX TREE CANOPY TO BE PRESERVED:	4,401 SF (13.25%)
REQUIRED TREE CANOPY RETENTION:	48%
TREES PROVIDED TO COMPENSATE (SEE L2.O)	52

TABLE 4.3.16.L TREE CANOPY COVER RETENTION

Existing Tree Canopy Cover (as % of Total Development, Lot or Building Site Size)	Minimum Tree Canopy Retention by Zoning District (as % of Total Tree Canopy Cover) [1,2]		
	CD-2 CD-3L CD-3 CD-4 [3] CD-4C [3] CD-5C [3] SD-MHP SD-INT [3] PUD-R PUD-MU [3]	CD-4 [4] CD-4C [4] CD-5C [4] SD-INT [4] PUD-MU [4]	SD-LI [4] SD-HI
80% - 100%	30%	15%	10%
60% - 79%	36%	18%	11%
40% - 59%	45%	22%	12%
20% - 39%	48%	24%	13%
19% - less	54%	26%	14%



UNHEALTHY HERITAGE TREE TO BE REMOVED



KEY

TREE CANOPY OUTLINE

TREE CANOPY TO BE PRESERVED

ON SITE TREE CANOPY TO BE REMOVED

SCALE: 1" = 20'

0 10 20 60

The Addison Group, LLC 2023

theaddisongroup
LANDSCAPE ARCHITECT
http://addison-group.com/
7123 Crossroads Blvd Ste. E | Brentwood, TN 37027

TREE PRESERVATION PLAN

MACKENZIE PLACE TOWNHOMES

220 THETA PIKE
COLUMBIA, TENNESSEE

Prepared For:
Mackenzie Place Townhomes

DANIEL WOODS
REGISTERED
AGRICULTURE
ENGINEER
TENNESSEE
Tennessee No. 293
LANDSCAPE ARCHITECT
5.19.23

2023 The Addison Group LLC Drawings, written material, and design concepts shall not be used or reproduced in whole or part in any form or format without prior written consent of The Addison Group, LLC

DATE: 01.17.23

REVISIONS:

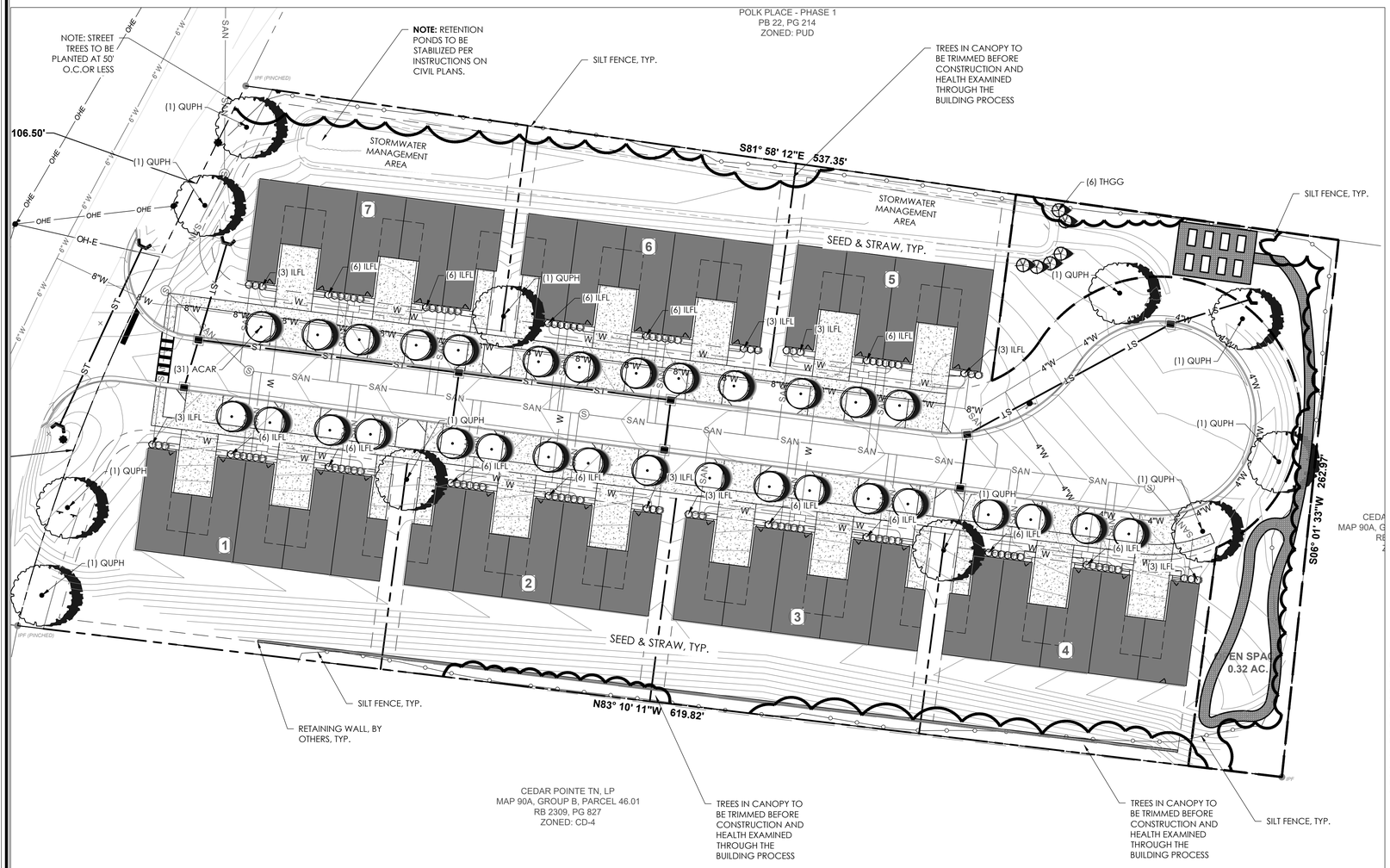
03.20.23

04.13.23

05.19.23

SHEET NO.

LP1.0



LANDSCAPE PLAN

PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE		REMARKS
ACAR	31	Acer rubrum 'Armstrong' / Armstrong Red Maple	3" Cal.		
QUPH	11	Quercus phellos / Willow Oak	2.5" Cal.		
THGG	6	Thuja x 'Green Giant' / Green Giant Arborvitae	12-14` Ht. Min.		
SHRUBS	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**	**SPACING**	**REMARKS**
ILFL	102	Illicium floridanum / Florida Anise	3` Ht.	42" o.c.	

LANDSCAPE REQUIREMENTS

ZONING: **CD-4**

TABLE 4.3.1 D
REQUIRED - CONTINUOUS SHRUBS AROUND FOUNDATION AT FACADE IF 1ST LAYER IS ≥ 3 FT. DEEP, PLUS IF 1ST LAYER IS ≥ 15 FT. DEEP, 1 TREE PLANTED IN 1ST LAYER EVERY 50' FT OF FRONTAGE. DRIVE AISLE WITHIN THE 1ST LAYER, CONTINUOUS SHRUBS LANDSCAPING MUST COMPLY WITH SECTION 4.3.16.

TABLE 4.3.16.D-2 (TREES-# PER GENERA)
WHEN MORE THAN 20 TREES ARE PLANTED OR USED ON A SITE TO MEET THESE REGULATIONS, A MIX OF TREES (GENERA) SHALL BE PROVIDED.

52 TREES PROVIDED
31 TREES REQUIRED
2 GENERA REQUIRED
3 GENERA PROVIDED

TABLE 5.7.8 PROJECT BUFFERS
PER TABLE 5.7.8 (PROJECT BUFFERS), THERE ARE **NO BUFFERS REQUIRED** FOR PARCELS ZONED **CD-4.**

MULCH NOTE: ALL PLANTS SHALL BE MULCHED A MINIMUM OF THREE INCHES DEEP WITH A HARDWOOD MULCH.

Plant Materials
Plant material shall be delivered to the site after the beds are prepared and are ready for planting. Shipments of plant materials shall be thoroughly protected from the sun and from drying winds during transit. All plants which cannot be planted at once, after delivery to the site, shall be well protected. Plant materials remain the property of the Contractor until initial acceptance.

Shrubs And Groundcovers
Plants shall be nursery grown, healthy, vigorous, compact, bushy to the ground, well branched, of normal habit of growth for the species, and shall be free from defects, decay, girding roots, sun-scald injuries, abrasions of the bark or limbs, disease, insect eggs, and larvae. They shall have ball sizes that meet the standard set forth by the American Association of Nurserymen, Inc. The specified sizes shall be before pruning, and the plants shall be measured from their nominal top branches in normal position to the top of the ball or soil level. Plants shall not be pruned prior to delivery, except upon special approval.

All plants shall be of specimen quality. Specimen means an exceptionally heavy, symmetrical, tightly knit plant, so trained or favored in its development that its appearance is unquestionable and outstandingly superior in form, number of branches, compactness and symmetry.

All plants shall be hardy under climatic conditions similar to those in the locality of the project.

Shade Trees
Shade trees shall be healthy, vigorous, full-branched on all sides, well-shaped, specimen quality, symmetrical, and shall meet the trunk diameter, height and spread requirements as specified. Single trunk trees shall have a straight trunk. Trees which have a damaged or crooked leader or trunk or are one-sided or do not have a full, symmetrical branch structure and crown, will be rejected. Ball shall be firm, neat, slightly tapered, and well burlapped. Any tree loose in the ball or with broken ball at the time of planting will be rejected. Trees with abrasions on the bark, disfiguring knots, or wounds over two (2) inches which have not calloused will be rejected. All trees shall have trunk flare exposed, excess soil shall be removed from root ball necessary
. Tree ball sizes shall be as outlined in ANSI Z6.0.1 - 1980.

Multi-trunk Trees: No division of the trunk which branches more then six (6) inches from the ground level, as determined by the root crown of the plant, shall be considered a stem.

Ornamental Trees
Ornamental trees shall be healthy, vigorous; full branched, well shaped, and shall meet the height and spread, caliper and branching character as specified. Trees not having a full, symmetrical branch structure and crown will be rejected.

Single trunk ornamental trees shall have straight trunks with branching beginning a minimum of forty-two (42) inches above the top of the bail or container.

Multi-trunk ornamental trees shall be pruned so all "sucker" type branching is removed from around trunk canes as well as extraneous branching on trunk canes below crown of trees. Pruning shall be such that as least one-half of the plant is trunk branching and approximately one-half is crown foliage. All multi-trunk trees will conform to the number of trunk canes and/or caliper specified.

Materials
Compost: 100% organic, aerobically composted humus, fully composted under proper C/H ratios with sustained temperatures to 170 degrees F., possessing excellent air porosity, water holding capacity and drainage, optimum cation exchange capacity, free of weeds, weed seeds, insect pests and with a pH averaging 6.5 to 7.0. As supplied by Living Earth Technology, Dallas, Texas, or approved equal.

Fertilizer: Complete slow release fertilizer with an organic base, uniform in composition, dry and free flowing. Deliver fertilizer to site in original unopened containes, each bearing manufacturer's guaranteed statement of analysis. Fertilizer shall contain 20% nitrogen, 10% phosphoric acid, 10% potash, unless otherwise specified or approved. "Agriform" by Sierra Chemical Company, or approved equal.

Peat Moss: Clean hypnum peat, free of noxious weeds and rubble, dark brown in color.
Pine Fines: Fine texture, ¼ to ½ inch size, free of noxious weeds and rubble.

Topsoil: Fertile natural surface soil, uniform in composition, similar to site topsoil if approved, free of stones, lumps, weeds, and roots. Minimum 20 percent organic matter, 50 to 70 percent sand, 15 to 20 percent clay. If topsoil of the site does not meet specifications, Contractor is responsible for importing topsoil to the site for the purpose of backfilling plant pits.

Bed Alignment And Plant Placement
Shrubs and groundcover shall be planted in string line straight rows using alternative spaces between rows. The specified quantity of shrubs or groundcover shall be placed in the bed prior to planting to assure even coverage. The specified quantity of seasonal color shall be placed in the bed prior to planting to assure even coverage. After the planting is completed, all cultivated areas shall be leveled, loosened, and raked, and the edges carefully trimmed so that the tree pits and beds shall present a neat appearance. Care shall be used that these bed edges conform as closely as possible with the lines shown on the Planting Plan. Steel edging stakes shall be on the inside of the beds.

Top Dressing
After the work of planting has been completed and approved by the Landscape Architect, mulch all beds and tree rings with two (3) inches of shredded hardwood bark mulch, lightly cultivated into area. Do not disturb watering saucer and do not cover root flair.

Tree Pits And Planting

If planting occurs without approval of plant locations by the Landscape Architect, the Landscape Architect reserves the right to relocate plant material as deemed necessary.

Ornamental Trees: Plant ornamental trees in pits twelve (12) inches larger than the tree ball. After setting the tree, the pit shall be backfilled with parts of topsoil to one (1) part of compost and carefully settled by watering to prevent air pockets. Form a three (3) inch high watering ring for each ornamental tree. All cord or wire to secure burlap on tree ball shall be cut from top of ball and around trunk. Place a (2) inch layer of compost inside the watering ring.

Shade Trees: Plant shade trees in a tree pit two (2) feet greater in diameter that the tree ball. The crown of the tree ball should be approximately one (1) inch higher than the existing grade. After setting the tree, the pit shall be backfilled with four (4) parts of acceptable existing soil or topsoil to one (1) part compost and carefully settled by watering to prevent air pockets. Form a four (4) inch high watering ring around the tree. All cord or wire used to secure burlap on tree ball shall be cut from top one-third of ball and from around trunk after setting. Place two (2) inch layer of compost or bark mulch inside the watering ring.

Percolation Test Pits: The Contractor shall excavate at least four (4) test pits on the site and fill with water to test for percolation. Size of pits shall be comparable to largest tree pit to be excavated. Location can be in conjunction with proposed shade tree location. Monitor pit for forty-eight (48) hours. If, at the end of that time, water has not significantly percolated, a Stand Pipe underdrain system should be installed for trees in that area.

Stand Pipe Installation: Should it be determined that tree pits will not percolate, or do so very slowly, shade trees shall have sump pipes installed in specially excavated tree pits.

Bed Preparation

Groundcover Beds: Loosen all groundcover beds to a depth of six (6) inches. Two (2) inches of peat moss or compost shall be applied and worked into the upper six (6) inches of bed. Beds shall be thoroughly tilled and pulverized to a depth of six (6) inches and raked smooth. Work fertilizer into soil at the rate of twelve (12) pounds per 1000 square feet. Delivery receipts of soil amendments may be requested.

Rototill all seasonal color beds to a depth of six (6) inches. Four (4) inches of peat moss or compost shall be applied and worked into the upper six (6) inches of the bed. Beds shall be thoroughly tilled and pulverized to a depth of six (6) inches and raked smooth. Beds shall be left two (2) to three (3) inches higher than surrounding grade for proper drainage.

Shrub Bed Planting: Rototill all shrub beds to a depth of six (6) inches. Four (4) inches of peat moss or compost shall be applied and worked into the upper six (6) inches of the bed. Beds shall be thoroughly tilled and pulverized to a depth of six (6) inches and raked smooth. Beds shall be left two (2) to three (3) inches higher than surrounding grade for proper drainage. Broadcast fertilizer and work lightly into the soil around the shrubs at the rate of (12) twelve pounds per 1000 square feet. Bed shall be left high to prevent poor drainage or ponding of water within the bed.

Care shall be taken to prevent planting beds from blocking drainage against building or impeding site drainage in any way.

Tree Guying And Staking

Submit unit cost in bid for staking all trees four (4) inch caliper and under, with three (3) steel stakes and three (3) Adj-A-Tye straps, Model 5100. Stakes should be located equal distant around the tree, and outside of tree pit. Stakes to be embedded a minimum of two (2) feet into stable soil.

Staked and guys shall be removed following the one (1) year warranty period.

Grass And Weed Removal

Existing grass and weeds in areas of proposed beds shall be removed either chemically or by excavation, including root systems. Existing weeds shall be removed either chemically or by excavation, including root system, from all proposed lawn areas prior to installation of grass. Contractor shall re-fill excavated areas with topsoil to finish grade before bed preparation or grass installation.

Soil Erosion Protection

Install jute mesh or approved equal in planting bed with slopes greater than three to one prior to planting. Mesh shall have a minimum overlap of twelve (12) inches where sections join. Materials shall be installed in lengthwise sections running parallel with the slope, providing the length of slope is in excess of ten (10) linear feet from top to bottom. Jute mesh on slopes with lengths less than ten (10) linear feet shall be installed across the lope and double pinned at the twelve (12) inch overlap. Pins shall be installed so that no gaps or sags are visible in mesh.

Lawns

Loosen and rake smooth all areas to be grassed. Remove all weeds, debris and any clumps, stones, clods, etc. larger than three quarter (3/4) inch diameter. Ensure lawn areas and swales are graded for proper drainage. Areas next to sidewalks and curbs shall be graded down to one (1) inch below finished grade to allow for thickness of grass build-up.

Sod: Areas will be planted with sod as indicated on the plan. All sod shall be dark, rich green, free of weeds and nut grass and placed so joints are flush between pieces. Sod is to have root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners. Sodded areas shall be rolled with a 200 pound roller immediately after laying, watered thoroughly and rerolled. All sodded grass areas shall be fertilized at the rate of twenty-five (25) pounds per 1000 square feet, prior to laying sod. Dead patches of sod shall be removed and replaced immediately.

Lawn Establishment

It is the responsibility of the Contractor to establish a dense lawn of permanent grasses, free from weeds, lumps and depressions. Any part of the area that fails to show a uniform germination shall be reseeded or resodded, and such reseeding or resodding shall continue until a dense lawn is established, regardless of amount of rain.

Water, mow and edge the lawn until initial acceptance. Mow each time after the law has reached a height of three and a half (3 ½) inches. Mow to a height of two and a half (2 ½) inches, returning the clippings to the lawn. Damage to seeded areas resulting from erosion shall be repaired by the Contractor. Scattered bare spots will not be allowed over one (1) foot square in the lawn area. Never mow off more than one-third of the grass leaves.

Clean-Up

During the work, the premises are to be kept neat and orderly at all times. Storage areas for plant and other materials shall be so organized that they, too, are neat and orderly. All trash, including debris resulting from removing weeds or rocks from planting area, preparing beds, or planting plants, shall be removed from the site daily as the work progresses. All walks and drives shall be kept clean by sweeping and hosing. Excavated soil may be distributed on the site or hauled off site as directed by Owner.

Maintenance

The Contractor shall maintain all trees, shrubs, and groundcover under this Contract until initial acceptance, by adequate watering, cultivating the top two (2) inches, weeding every two (2) weeks, spraying, and replacing as necessary to keep plants in a healthy, vigorous condition. Bed areas shall be raked as may be required to keep them neat.

The Contractor shall maintain all grass areas under this Contract until initial acceptance by watering, mowing, spraying, fertilizing, etc.

One Year Maintenance

The Contractor shall submit a separate price for maintenance of the landscape and irrigation installation for a period of one (1) year after initial acceptance. Maintenance shall be based on the Maintenance Specifications listed above.

The Addison Group, LLC 2023

theaddisongroup
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http://addison-group.com/
7123 Crossroads Blvd Ste. E | Brentwood, TN 37027

MACKENZIE PLACE TOWNHOMES

220 THETA PIKE
COLUMBIA, TENNESSEE

LANDSCAPE PLAN

Prepared For:
Mackenzie Place Townhomes

DANIEL WOODS
REGISTERED
AGRICULTURE
TENNESSEE
License No. 338
LANDSCAPE ARCHITECT
5.19.23

2023 The Addison Group LLC Drawings, written material, and design concepts shall not be used or reproduced in whole or part in any form or format without prior written consent of The Addison Group, LLC

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REVISIONS:
3.20.23
4.13.23
5.19.23

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June 10, 2022

Glenn Harper, PE
City Engineer
City of Columbia
700 N Garden Street
Columbia, TN 38401

Re: Mackenzie Place Apartments
Traffic Impact Study
Review Comments

Dear Glenn:

This memorandum provides the findings of the independent review of the Mackenzie Place Apartments Traffic Impact Study (TIS) Update. Our review includes the traffic projections and the operational analyses; evaluation of the proposed roadway network; review and evaluation of the recommended infrastructure improvements; and identification of any recommended modifications or additions to the recommended infrastructure improvements identified in the TIS.

General Project Information

The Mackenzie Place Apartments TIS, dated May 2022, was completed by the Corradino Group, Inc. for Waits Development Group, LLC. Mackenzie Place Apartments development in Columbia, TN is proposed to be located east of Theta Pike and south of Highway 412/13, bound to the south and north by a multi-family residential development, to the west by a single-family residential, and to the east by multi-family housing and light industrial facilities. The Mackenzie Place Apartments development will consist of 80 multifamily units with one access point along Theta Pike. The site access is located approximately 650 feet south of the intersection of Theta Pike and Highway 412/13 and 475 feet north of Timber Trail. The development is expected to be complete in two years, which is a year 2024 horizon. Traffic counts were conducted by the Corradino Group, Inc. on a typical weekday in February 2022 while schools were in session for the intersections of Theta Pike and Highway 412/13, Theta Pike and Timber Trail, and Theta Pike/8th Avenue and Nashville Highway. In addition, 24-hour bi-directional volume and speed tube counts were conducted along Theta Pike in the vicinity of the proposed development access. To develop the growth rate to be applied to the existing traffic volumes, historical daily traffic volumes were obtained from the TDOT count stations located on Highway 412/43, Theta Pike, and Nashville Highway in the vicinity of the project site. The growth rate found from the count stations was 4% but a growth rate of 3.5% was selected through coordination with the City's traffic consultant. These counts were grown by an annual 3.5% to obtain the background 2024 traffic volumes. Additionally, there are two proposed developments, Theta Pike Cove & Taylor Landing, near the study area that are expected to

affect the traffic volumes at the study intersections. Traffic for both developments were added to the background 2024 traffic volumes.

Trip Generation and Trip Distribution

Future trips generated by Mackenzie Place Apartments were calculated using ITE's *Trip Generation*, 11th Edition based on the future land use. The land use used to determine the project-generated trips was 80 dwelling units of low-rise multifamily homes. The total development is expected to produce 588 trips per day with 48 new trips in the AM peak hour and 55 new trips in the PM peak hour. The new trips are detailed below.

	Total Entering Trips	Total Exiting Trips
AM	12	36
PM	35	20

These trips were distributed throughout the study area based on commuter patterns in the area and the proximity and routes to major transportation facilities. The directional distribution assumes approximately 40% of the project-generated traffic will be oriented from the southwest along Nashville Highway, 20% to the northwest along, Highway 412, 15% to the north along Theta Pike, 15% to the northeast along Highway 412, and 10% to the southeast along Nashville Highway.

Capacity/Level of Service Analyses

The operational analyses for the intersections within the study area was completed utilizing Synchro 11 software, which uses the methods from *Highway Capacity Manual 2010*. The intersections were evaluated for the weekday AM and PM existing, background, and projected traffic conditions. Additionally, turn lane and sight distance analysis was completed.

Intersection Capacity Analysis

In the projected 2024 conditions, the analyses indicate that all of the critical turning movements are expected to operate at LOS D or better during both peak hours.

Turn Lane Warrant Analysis

The intersection of Theta Pike at the Site Access was evaluated for the need for left turn lanes on Theta Pike based on methodology outlined in *M.D. Harmelink's Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections.* Based on the total projected peak hour traffic volumes presented in the TIS, a left turn deceleration lane on Theta Pike at the Site Access is not warranted. The intersection of Theta Pike at the Site Access was also evaluated for the need for right turn lanes on Theta Pike based on methodology in *Intersection Channelization Design Guide (NCHRP 279)*. Similarly, a right turn deceleration lane is not warranted by the total projected peak hour volumes. Therefore, separate turn lanes on Theta Pike are not needed.

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Intersection Sight Distance Evaluation

The available intersection sight distance along Theta Pike was evaluated where traffic will enter and exit the site. The criteria for intersection sight distance are provided in the AASHTO *Policy on Geometric Design of Highways and Streets*, commonly known as the Green Book. The sight distance at the proposed access location does not exceed the required sight distances per AASHTO. The available sight distance to the south is blocked but a "Theta Pike Residential" sign and vegetation. Construction of the site access should be completed with the minimum 390 feet of intersection sight distance provided to the north for a left turn from the site access to Theta Pike. In addition, a minimum of 335 feet of intersection sight distance provided to the south for a right turn from the site access onto Theta Pike.

Recommendations Identified in the TIS

The following conclusion and recommendations are included in the study and our response.

- The traffic operations in the study area for the Future Traffic Analysis are expected to continue to operate at the level currently being experienced or at the level of operation expected with the background traffic. To conclude, proposed development will have minimal impact on the nearby intersections thus requiring no improvements in terms of traffic signal and intersection geometry.
  Staff Response: *We agree that the proposed development will have minimal impact on the nearby intersections and that no improvements are required.*
- The proposed site access should be designed such that the departure sight triangles, as specified by AASHTO and detailed in this study, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.
  Staff Responses: *We agree that the site access should be constructed such that sufficient sight distance is provided.*
- The proposed site access on Theta Pike should be designed to include sufficient width for one entering lane and two exiting lanes as shown in the proposed site plan. This access should be stop controlled on the westbound approach for traffic exiting the site. STOP sign installation should be done based on TDOT sign guidelines.
  Staff Responses: *We agree that the proposed access should include one entering lane and two exiting lanes. This access should be constructed according to MUTCD, AASHTO, TDOT, and City of Columbia Standards, including providing sufficient sight distance.*
- All intersection and roadway signing and pavement markings should be completed according to the Manual on Uniform Traffic Control Devices (MUTCD).
  Staff Responses: *We agree that all signing and pavement marking should be completed according the MUTCD, AASHTO, TDOT, and City of Columbia Standards.*

Additional Staff Response:

- *Based on the site plan included in the TIS, the mail kiosk is proposed to be located very close to the access on Theta Pike. All design aspects should ensure a mail delivery vehicle and/or residents' vehicles will not impede incoming traffic that could block traffic onto Theta Pike.*

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Conclusion

The Mackenzie Place Apartments Traffic Impact Study submitted May 2022 covers the typical required traffic impact study components and identifies several feasible and beneficial infrastructure improvements. It is recommended The Corradino Group, Inc. make a note of the comments identified above; however, we require no additional evaluation or analysis.

Should you have any questions or need additional information, please contact me.

Sincerely,



Dyan C. Damron, PE, PTP
Director of Traffic, Planning & ROW
Volkert, Inc.

TRAFFIC IMPACT STUDY

MACKENZIE PLACE APARTMENTS
COLUMBIA, TN

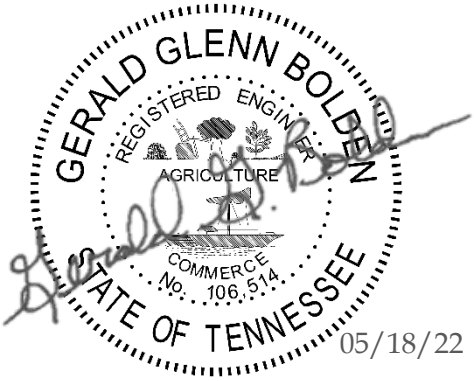
Prepared For: Waits Development Group, LLC

Prepared By: The Corradino Group, Inc.

May 2022

Traffic Impact Study
MacKenzie Place Apartment
Columbia, Tennessee

Prepared For:
Waits Development Group, LLC.



Prepared By:
The Corradino Group, Inc.
Franklin, TN

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Executive Summary

Project Description

This study will evaluate the traffic impacts of the proposed Mackenzie Place Apartment, a multifamily residential development located at 220 Theta Pike in Columbia, Tennessee. The site plan proposes 80 dwelling units accommodated in four two-story buildings. Access to the development is planned to be provided by a single access drive on Theta Pike. Surface parking is planned to accommodate the residential development. The purpose of this study is to analyze the access plan and the traffic impacts associated with this proposed development. For this study, it is assumed the development will be completed by 2024.

Existing Traffic Volumes

In order to analyze the roadway operations in the vicinity of the proposed development, typical weekday intersection turning movement counts were conducted at the following locations:

- Theta Pike and Highway 412/43
- Theta Pike and Timber Trail
- Theta Pike/8th Avenue and Nashville Highway

In addition, 24-hour bi-directional volume and speed tube counts were conducted along Theta Pike in the vicinity of the proposed development access.

Projection of Future Traffic Volumes

It is assumed that the traffic will continue to grow before the project is completed. Therefore, a historic growth rate was calculated and applied to the existing traffic counts. Additionally, traffic from two other approved developments were included in the background traffic volumes. Trips expected from the proposed multifamily residential development were added to background traffic in order to obtain the total projected traffic volumes for the study area. Finally, these trips were analyzed to determine the recommendations required for adequate roadway operations in the study.

Conclusions and Recommendations

The proposed Mackenzie Place development is located to the south of Hwy 412/43 and on the east side of Theta Pike in Columbia, Tennessee. According to the site engineer, the proposed development consists of approximately 80 multi-family dwelling units. The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project.

- The traffic operations in the study area for the Future Traffic Analysis are expected to continue to operate at the level currently being experienced or at the level of operation expected with the background traffic. To conclude, proposed development will have minimal impact on the nearby intersections thus requiring no improvement in terms of traffic signal and intersection geometry.

- The proposed site access should be designed such that the departure sight triangles, as specified by AASHTO and detailed in this study, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.

- The proposed site access on Theta Pike should be designed to include sufficient width for one entering lane and two exiting lanes as shown in the proposed site plan. This access should be stop controlled on the westbound approach for traffic exiting the site. STOP sign installation should be done based on TDOT sign guidelines.

- All intersection and roadway signing and pavement markings should be completed according to the Manual on Uniform Traffic Control Devices (MUTCD).

Introduction

This study aims to evaluate the traffic impacts of a proposed residential development located east of Theta Pike and south of Highway 412/43 in Columbia, Tennessee. The proposed development is within an area that is characterized by a mix of low to high density land uses, with multi-family residential developments immediately adjacent to the south, east and north of the project site. The site plan proposes 80 multi-family dwelling units. Access to the proposed development will create an intersection with Theta Pike. Access is located approximately 650 feet south of the intersection of Theta Pike and Highway 412/43 and 475 feet north of the Timber Trail.

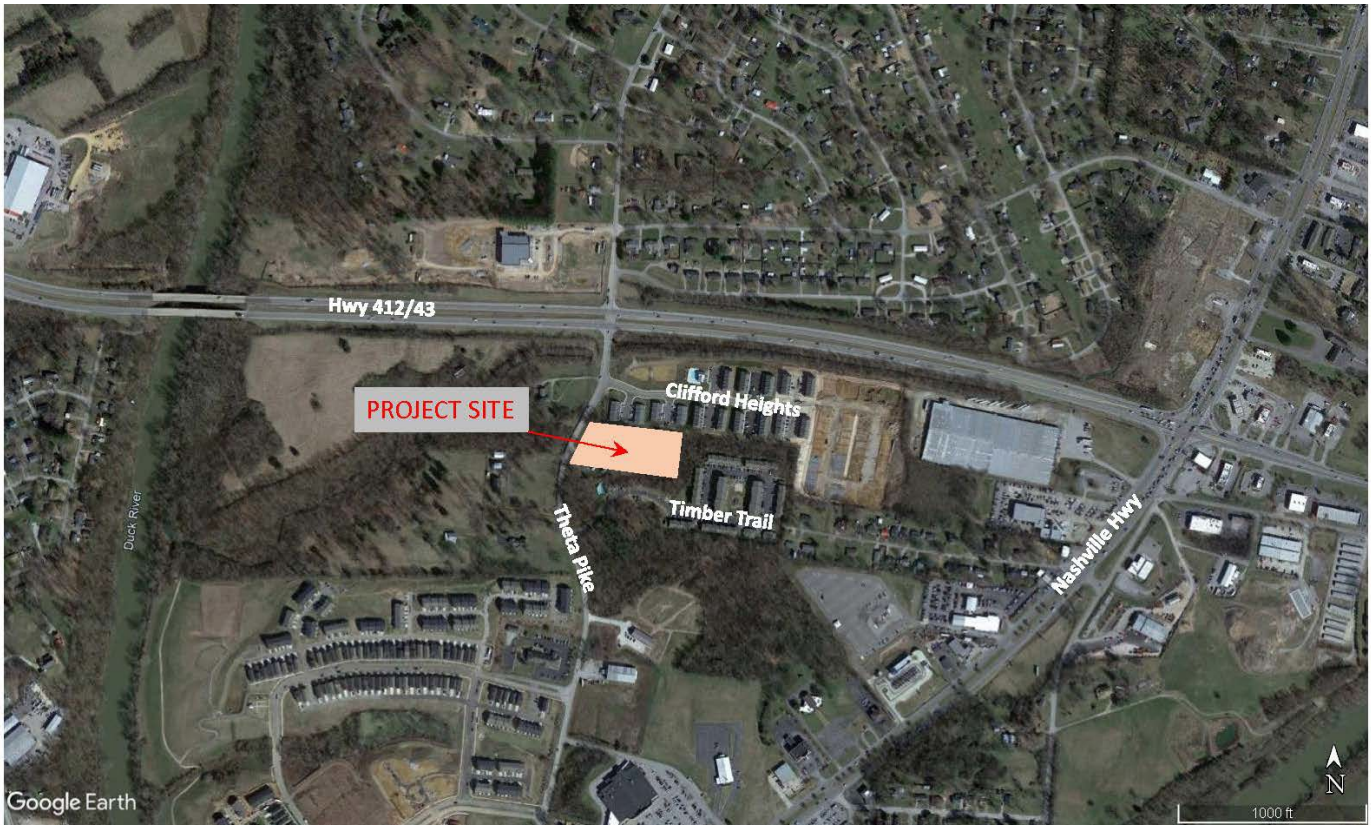
In this study existing operating conditions of the roadway network near the proposed development will be evaluated using traffic counts conducted along the study area roadways and intersections. The expected annual traffic growth will be determined based on historical traffic data. Using the estimated growth rate and trips generated by two other approved yet unbuild residential developments in the area, the background traffic volumes will be calculated. Trips generated by the proposed development will be determined and distributed to the roadway network to get the total projected traffic that will be present when the proposed development is completed.

Using the anticipated build-out final traffic, adjacent roadways and intersections will then be reevaluated to determine the anticipated traffic impacts of the proposed project. The project team will also conduct turn lane warrant analysis for the proposed access location. Industry standards will be used to analyze the traffic volumes and identify any necessary mitigation strategies to offset the decline (if any) in roadway operations resulting from the proposed development.

Project Description

The proposed residential development is located at 220 Theta Pike in Columbia, Tennessee. As shown on **Figure 1**, the development is located just east of Theta Pike, north of Timber Trail and south of south of Highway 412/43. The property is generally bounded on the south and north by multi-family housing, to the west by large lot single-family residential and on the east by multi-family housing and light industrial facilities. According to the site plan the property is intended to be zoned to RM-1 (High Density Residential).

As shown on the site plan provided in **Appendix A**, the development consists of 80 dwelling units accommodated in four two-story buildings. The proposed vehicular access point for the planned surface parking will be provided by an access drive on Theta Pike on the west side of the site. Access is located approximately in the mid-point between Timber Trail and Bancroft MI (Clifford Heights). The project is anticipated to be completed in 2024.



[Source: Google Earth]

Figure 1 Study Area

Existing Conditions

Existing Roadway Network

The existing roadway network, in the vicinity of the project site, includes Theta Pike, Highway 412/43 and Timber Trail. A description of this roadways and study intersections within the project vicinity is as follows:

Roadways

Theta Pike near the project site is a two-lane two-way undivided roadway with a posted speed limit of 35 mph. In the study area, this roadway runs in a north-south direction and provides a connection between Nashville Highway to the south and more rural areas of the county to the north. Based on Columbia's Transportation Master Plan, this roadway is classified as collector road. This road has 12-feet lane width in both directions along with open ditches and no shoulder. No on-street parking, sidewalk, transit, or bicycle facilities are provided on Theta Pike.



Northbound Theta Pike – Near Proposed Access



Southbound Theta Pike - Near Proposed Access

Timber Trail is a two-lane local road mainly serving as an access to the Cedar Pointe residential establishment (located southeast of the proposed development). The roadway is approximately 24 feet wide with mountable curb along each side. There is no sidewalk facilities on this section of road. There is no posted speed limit.



Westbound Timber Trail

Highway 412/43, near the project site, is a four-lane median divided roadway with paved shoulders and a posted speed limit of 45 mph. This segment of roadway runs in an east-west direction and provides a bypass around the north side of Columbia. As a

whole, Highway 412/43 provides a connection to I-65. To the east of Nashville Highway, this roadway has partial access control. There is no on-street parking, sidewalk, transit, or bicycle facilities are provided on Highway 412/43.

Intersections

Theta Pike and Highway 412/43 form a four-legged, signalized intersection. On both southbound and northbound approaches of Theta Pike, there is a shared through/right-turn lane and exclusive left-turn lane. The northbound left-turn lane has approximately 90 feet of available storage while the southbound left has approximately 150 feet. These approaches include protected-permissive left turn signal phasing. Highway 412/43 has one through lane, one shared through/right-turn lane and one exclusive left-turn lane on both the eastbound and westbound approaches. The westbound left-turn lane has approximately 185 feet of available storage while the eastbound left has approximately 140 feet. The eastbound and westbound approaches on Highway 412/43 have protected only left turn signal phasing. No pedestrian facilities are provided at the intersection.



Eastbound Highway 412/43 @ Theta Pike



Westbound Highway 412/43 @ Theta Pike



Northbound Theta Pike @ Highway 412/43



Southbound Theta Pike @ Highway 412/43

Theta Pike and Timber Trail form a three-leg stop controlled intersection with Timber Trail having the stop condition. Timber Trail has one shared left-turn/right-turn lane. Northbound Theta Pike has one shared through/right-turn lane while southbound Theta Pike has one shared through/left-turn lane.



Westbound Timber Trail @ Theta Pike

Theta Pike/8th Avenue and Nashville Highway forms a four-legged signalized intersection. Southbound Theta Pike has an exclusive left-turn lane with approximately 75 feet of storage and a shared through/right-turn lane. Northbound 8th Avenue has one shared through/left-turn lane and one exclusive right turn lane with approximately 90 feet of storage. Both eastbound and westbound approaches of Nashville Highway have one through lane, one shared through/right-turn lane and one exclusive left-turn lane. The westbound left-turn lane has approximately 85 feet of storage and the eastbound left-turn lane has approximately 300 feet of storage. The northbound and southbound approaches of Theta Pike and 8th Avenue operate as permissive phasing. Protected-permissive left turn signal phasing is utilized for the eastbound and westbound approaches of Nashville Highway.



Southbound Theta Pike/8th Avenue @ Nashville Highway



Northbound Theta Pike/8th Avenue @ Nashville Highway



Eastbound Nashville Highway @ Theta Pike/8th Avenue



Westbound Nashville Highway @ Theta Pike/8th Avenue

Existing Traffic Volumes

In order to analyze the roadway operations in the vicinity of the proposed development, typical weekday intersection turning movement counts were conducted at the following locations:

- Theta Pike and Highway 412/43
- Theta Pike and Timber Trail
- Theta Pike/8th Avenue and Nashville Highway

The turning movement counts were collected on Tuesday, February 22, 2022, during the AM and PM peak periods while school was in full session. The AM count period was from 6:00 – 9:00 AM and the PM count period was from 3:00 – 6:00 PM, to be inclusive of the school arrival and dismissal periods. In addition, 24-hour bi-directional volume and speed tube counts were conducted along Theta Pike in the vicinity of the proposed development access. The raw turning movement counts and 24-hour bi-directional counts are included in **Appendix B**.

Existing Traffic Analysis

To determine the effects of the proposed development on the existing roadway network, analysis of the roadway network in the study area was conducted. The existing traffic volumes used are shown in **Figure 2**. The operational analysis results in a Level of Service (LOS) for each intersection during the AM and PM peak hours. The LOS is based on the industry standard outlined in the *Highway Capacity Manual* 2010. The LOS results range from an A to a F with A being the best and F the worst. For intersections, the LOS is based on the volume-to-capacity ratio and amount of delay experienced by each movement. For unsignalized intersections, the LOS is reported for critical turning movements based on delay and volume-to-capacity (v/c) ratio and for signalized intersections the LOS is reported for each approach and for the overall intersection based on delay, as shown in **Table 1**. The LOS for the existing traffic volumes at the study intersections is shown in **Table 2** and **Appendix C** contains the LOS reports.

TABLE 1
LEVEL OF SERVICE THRESHOLDS

LOS	CONTROL DELAY/VEHICLE (s/veh)	
	UNSIGNALIZED	SIGNALIZED
A	0 – 10	≤ 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

TABLE 2
EXISTING LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	B	19.2	C	21.6
	Westbound Approach	B	18.3	C	26.1
	Northbound Approach	D	46.1	D	39.5
	Southbound Approach	D	53.0	D	54.1
	Overall Intersection	**C**	***22.5***	**C**	***28.0***
Theta Pike and Nashville Highway	Eastbound Approach	A	7.3	A	8.2
	Westbound Approach	A	9.8	B	10.3
	Northbound Approach	C	33.1	C	32.8
	Southbound Approach	D	38.6	D	40.2
	Overall Intersection	**B**	***10.4***	***B***	***11.4***
Theta Pike and Timber Trail	Westbound Approach	A	9.8	B	11.6
	Southbound Left	A	7.4	A	7.9

The results show that overall, all intersections operate at acceptable levels of service (LOS D or better) during AM and PM peak hour. The LOS analysis reports are included in **Appendix C**.

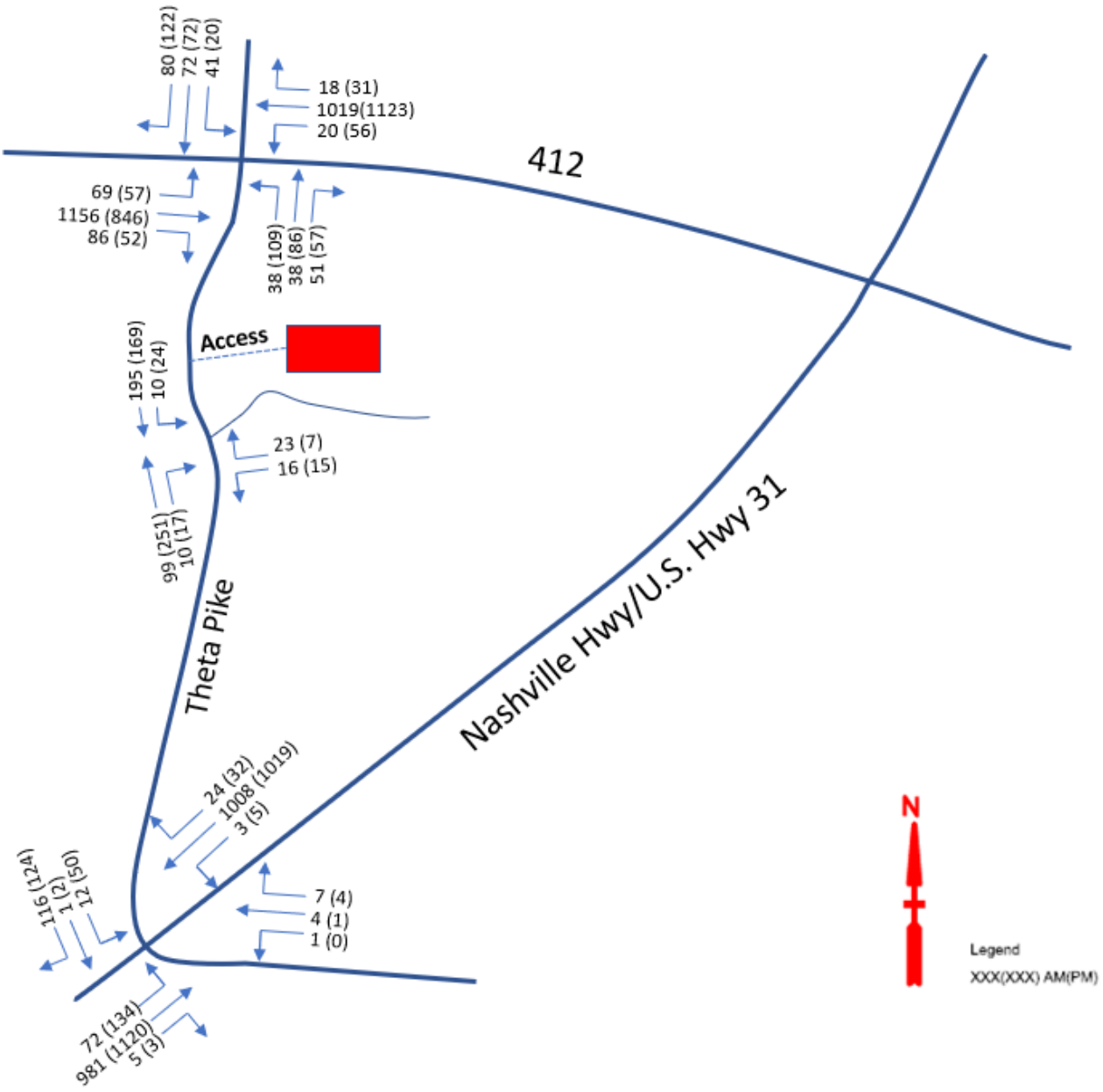


Figure 2 Existing Traffic Volumes

Background Traffic Volumes

Developing Historic Growth Rates

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. To develop the growth rate to be applied to the existing traffic volumes, historical daily traffic volumes were obtained from the TDOT count stations located on Highway 412/43, Theta Pike, and Nashville Highway in the vicinity of the project site. **Table 3** below shows the AADT for TDOT count Station. For these three-count station average linear growth rate from 2016 to 2021 is 4%. Through coordination with the City's traffic consultant and based on the historical count data, a 3.5% annual growth rate was used. Anticipated project build-out is 2024, so, percentage growth is calculated for 2-year period to represent the 2024 background traffic growth.

TABLE 3
TDOT COUNT STATION

TDOT Count Sta.60000043 Theta Pike		TDOT Count Sta. 60000202 New Lawrenceburg		TDOT Count Sta. 60000046 Nashville Hwy	
Year	**AADT**	**Year**	**AADT**	**Year**	**AADT**
2021	4,164	2021	32,654	2021	30,239
2020	3,809	2020	24,408	2020	27,741
2019	3,510	2019	24,166	2019	27,466
2018	3,060	2018	19,450	2018	26,893
2017	3,374	2017	28,345	2017	25,904
2016	3,440	2016	23,564	2016	26,101

There are two proposed developments, Theta Pike Cove & Taylor Landing, near the study area that is expected to affect the traffic volumes at the study intersections. Theta Pike Cove is a residential development of 162 townhome units. Taylor Landing, on the other hand, is a development consisting of 140 single family homes and 148 townhome units. For Taylor Landing, the traffic information provided by the city did not have trip distribution and assignment. The project team utilized the old distribution and assignment pattern to develop traffic for the updated trip generation. Traffic for both of these developments were included in the background growth. **Figure 3** shows the total background traffic volume for the study area which includes the 7% total ambient growth to account for the 2 years to buildout. The trip distribution and assignment figure for the approved developments are included in **Appendix D** for reference.

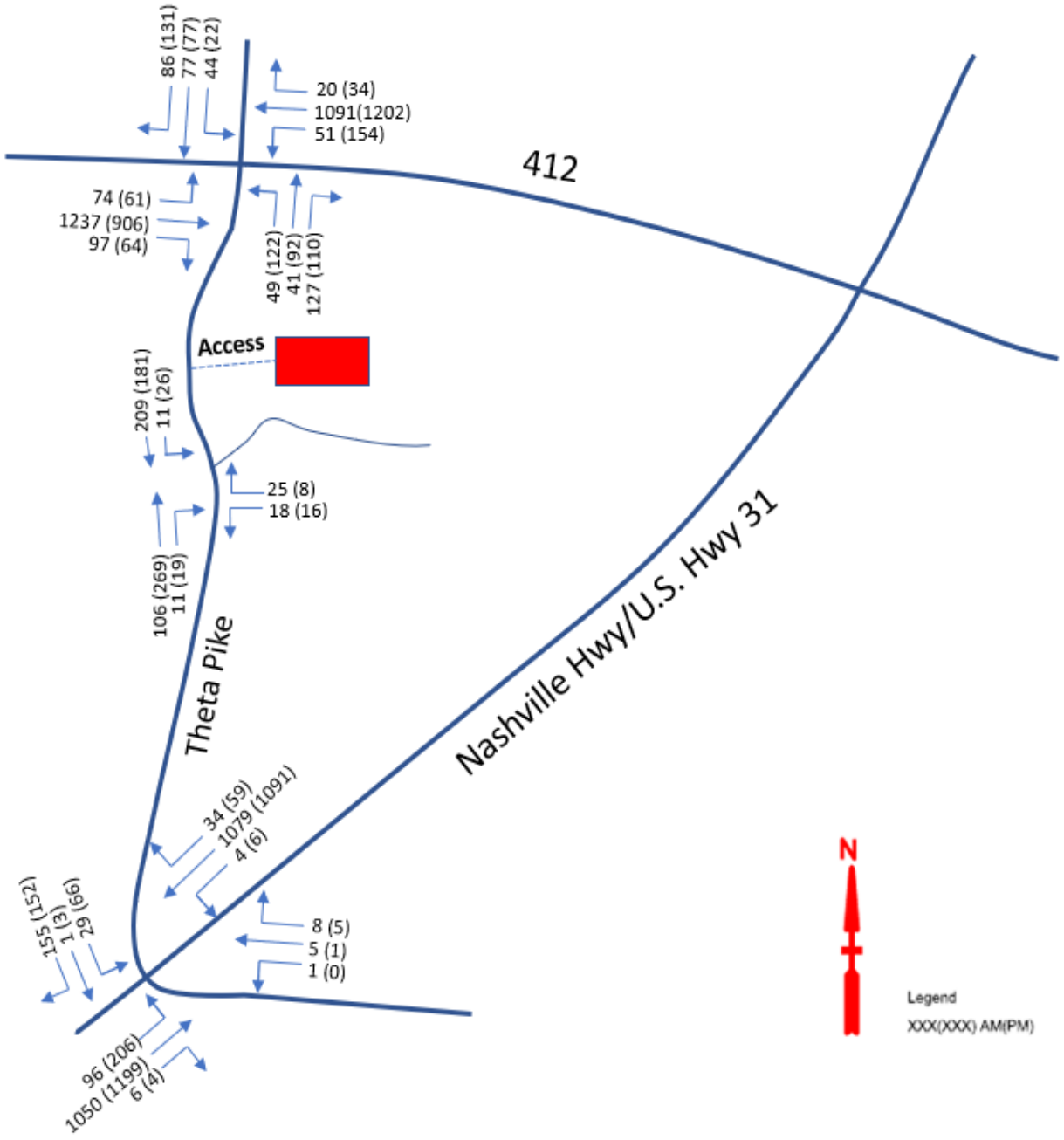


Figure 3 Background Traffic Volumes

Background Traffic Analysis

Using the background traffic volumes and the methodology outlined in the existing conditions, **Table 4** shows the results of the background traffic analysis. As shown, overall, all intersections in the study area are expected to operate at acceptable levels of service under background conditions similar to the existing condition. The LOS analysis reports are included in **Appendix C**.

TABLE 4
BACKGROUND LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	C	22.6	C	27.4
	Westbound Approach	C	21.0	D	45.0
	Northbound Approach	D	54.1	D	41.1
	Southbound Approach	D	51.7	D	54.2
	Overall Intersection	**C**	***26.2***	**D**	***39.2***
Theta Pike and Nashville Highway	Eastbound Approach	A	9.8	B	10.8
	Westbound Approach	B	13.3	B	13.8
	Northbound Approach	C	30.1	C	31.2
	Southbound Approach	D	40.9	D	44.5
	Overall Intersection	**B**	***13.9***	***B***	***14.8***
Theta Pike and Timber Trail	Westbound Approach	A	9.9	B	11.9
	Southbound Left	A	7.5	A	7.9

Proposed Development Impacts

Development Trip Generation

The proposed new development is expected to generate vehicular trips that will use the roadway network in the study area. To determine the expected amount of traffic to be generated from the residential development, *ITE Trip Generation Manual*, 11th Edition was used to calculate the daily trips, AM Peak hour trips, and PM peak hour trips. **Table 5** lists the calculated trips for the proposed development. **Appendix E** includes the trip generation calculations.

TABLE 5
TRIP GENERATION FOR PROPOSED DEVELOPMENT

Trip Generation Table							
Land Use	**LUC**	**Size**	**Daily Trips**	**AM Peak Hour Trips**		**PM Peak Hour Trips**	
				Enter	**Exit**	**Enter**	**Exit**
Multifamily Housing (Low-Rise)	220	80 units	588	12	36	35	20

Trip Distribution and Traffic Assignment

The trips generated by the proposed development will be distributed and assigned to the roadway network within the study area. The trip distribution is based on the existing traffic flow and attractors in the area and regionally. It is assumed the new traffic created by the Mackenzie Place development will travel in the same pattern through the study area roadway network to and from the proposed development as the existing traffic, given it is the same general land use. **Figures 4 and 5** show the trip distribution and traffic assignment for the proposed residential uses.

To determine the total amount of traffic traveling through the study area in 2024 when the development is complete, the trip assignment was added to the total background traffic volumes. The resulting total proposed traffic volumes are shown in **Figure 6**.

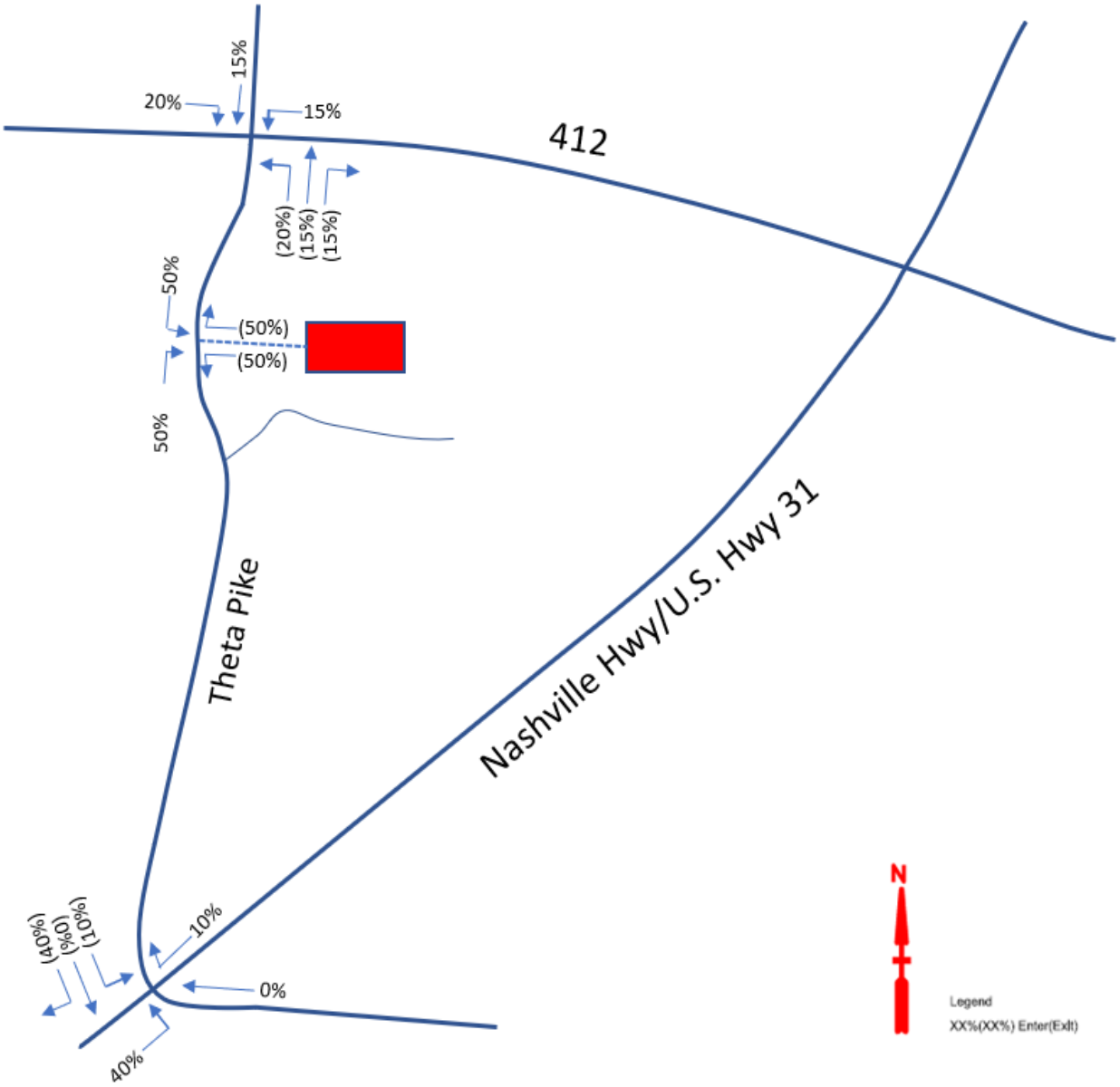


Figure 4 Peak Hour Traffic Distribution

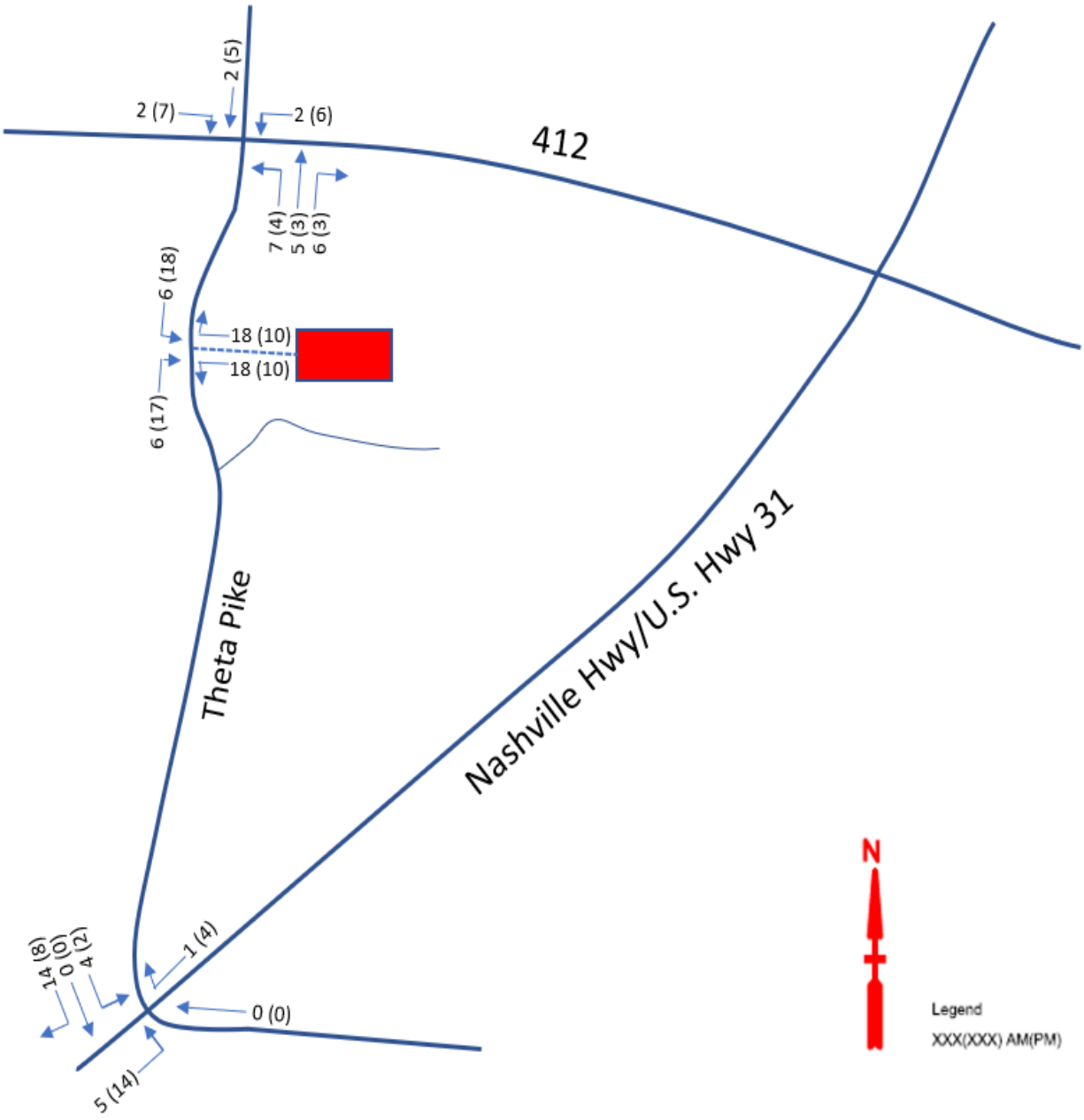


Figure 5 Peak Hour Traffic Assignment

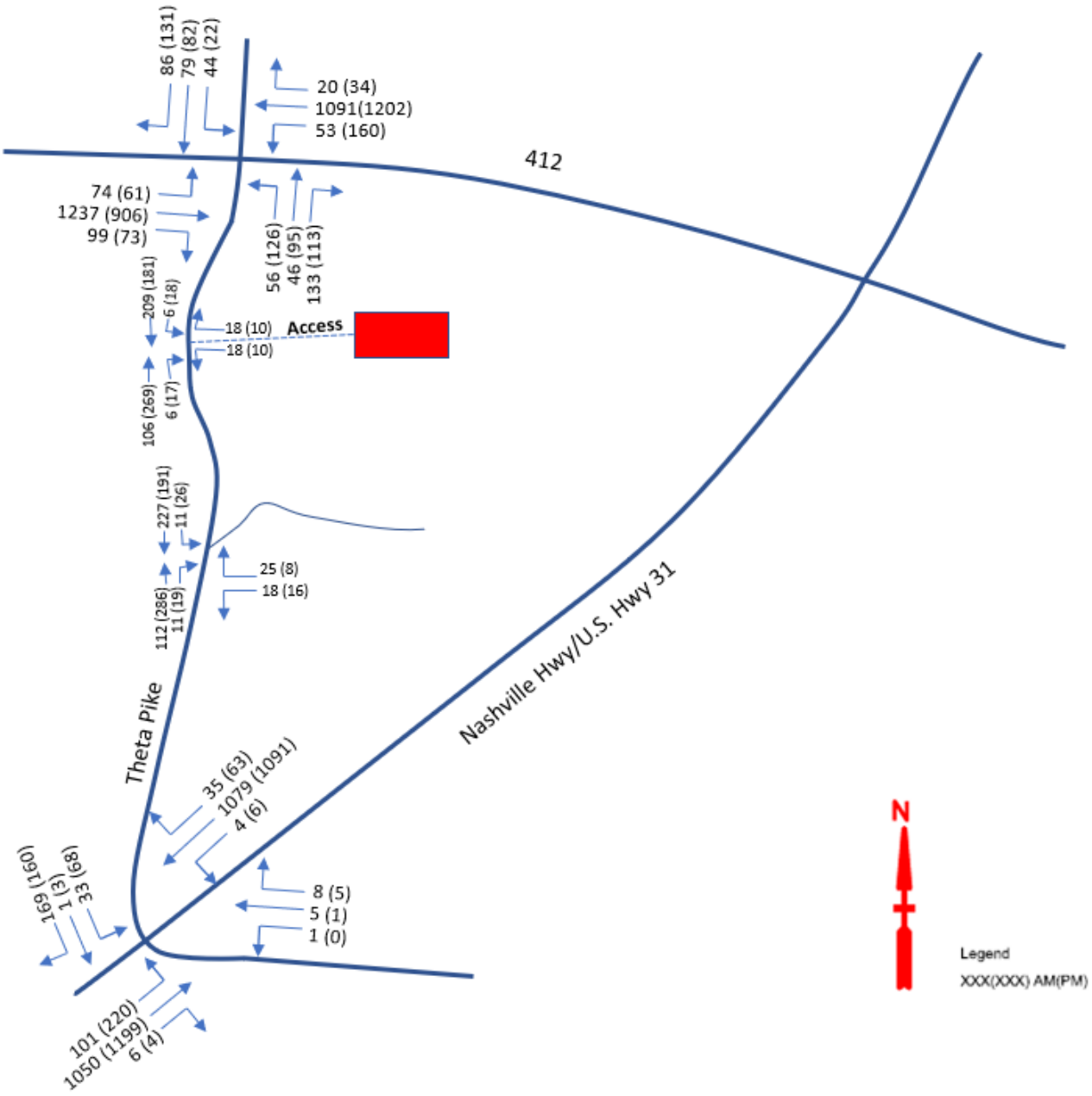


Figure 6 Total Projected Traffic Volumes Expected in Buildout Year

Future Traffic Analysis

Future traffic volumes were developed from the background traffic and proposed residential development. Capacity analyses were performed in order to determine the impact of the project on the study intersections. These capacity analyses were also used to evaluate the need for roadway and traffic control improvements at the intersections studied. For the analyses, the intersection configurations and signal timings were the same as the existing and background conditions. It was assumed the site access on Theta Pike will include one lane for entering traffic and two lanes for exiting traffic as shown in the site plan included in **Appendix A**.

Table 6 shows the resulting LOS for the intersections in the study area. According to the analysis under the projected conditions the capacity analyses indicate that the study intersections are expected to continue to operate at the same levels of service as under the background conditions with only slight increases in vehicular delay. All intersections are expected to continue to operate at acceptable levels of service. The LOS analysis reports are included in **Appendix C**.

TABLE 6
TOTAL PROJECTED LEVEL OF SERVICE

Intersection	Movement	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Theta Pike and Highway 412/43	Eastbound Approach	C	23.5	C	27.9
	Westbound Approach	C	21.7	D	47.9
	Northbound Approach	D	54.8	D	41.3
	Southbound Approach	D	51.2	D	54.6
	Overall Intersection	**C**	***27.2***	**D**	***40.8***
Theta Pike and Nashville Highway	Eastbound Approach	B	10.6	B	11.6
	Westbound Approach	B	14.3	B	14.6
	Northbound Approach	C	29.1	C	30.8
	Southbound Approach	D	41.6	D	45.7
	Overall Intersection	**B**	***14.9***	***B***	***15.6***
Theta Pike and Timber Trail	Westbound Approach	B	10.1	B	12.2
	Southbound Left	A	7.5	A	8.0
Theta Pike and Project Access	Westbound Left	B	11.1	B	12.8
	Westbound Right	A	9.1	B	10.0
	Southbound Left	A	7.5	A	7.9

Analysis of Site Plan

Turn Lane Analysis

The site access point on Theta Pike was evaluated for the need to provide a left turn lane based on the projected traffic volumes. This analysis was based on the procedures outlined in M.D. Harmelink's *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections*. The result of this analysis indicates that a left turn lane is not warranted by the projected traffic volumes at the study intersection. Details of the Harmelink analyses are included in **Appendix F**.

The site access point on Theta Pike was also evaluated for the need to provide a right turn lane based on the projected traffic volumes. According to the Intersection Channelization Design Guide (NCHRP 279), a full width right turn lane is not warranted at the site access point based on the projected peak hour traffic volumes. The right turn lane analysis is included in **Appendix F**.

Access Sight Distance

As previously mentioned, access to the proposed development will be provided by a single driveway on Theta Pike. Field investigations and sight distance measurements were conducted to determine if adequate sight distance would be available for motorists exiting the project site onto Theta Pike from the site access based on the current site plan. For a 35-mph speed, as posted on Theta Pike, the guidelines from *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), call for a minimum stopping sight distance of 250 feet as a design value. This is the distance required for a motorist to detect an object in the roadway necessitating a stop and be able to stop before reaching the object.

Subsequently, AASHTO also provides minimum design values for intersection sight distance. The intersection sight distance allows enough time gap for a motorist to turn from the site access onto Theta Pike without requiring a motorist on Theta Pike to significantly reduce speed. For a speed of 35 mph, the design value for intersection sight distance for a motorist turning left from a stop (Case B1) onto a two-lane roadway such as Theta Pike is 390 feet and for a motorist turning right from a stop (Case B2) is 335 feet.

The field investigations indicate that the sight distance available at the proposed intersection of the site access and Theta Pike will be more than adequate to the north of the access. However, intersection sight distance to the south of the access, for right turning vehicle, was measured at approximately 275 feet which falls below the required intersection sight distance. Currently, a "Theta Pike Residential" sign and trees are a hindrance for right-turning movement and limiting the available sight distance.

Construction of the site access should be completed such that a minimum of 390 feet of intersection sight distance is provided to the north for a left turn from the site access onto Theta Pike. In addition, a minimum of 335 feet of intersection sight distance should be provided to the south for a right turn from the site access onto Theta Pike.



Intersection Sight Distance for Right-Turning Vehicle: Existing Condition

Conclusions and Recommendations

The proposed Mackenzie Place development is located to the south of Hwy 412/43 and on the east side of Theta Pike in Columbia, Tennessee. According to the site engineer, the proposed development consists of approximately 80 multi-family dwelling units. The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project.

- The traffic operations in the study area for the Future Traffic Analysis are expected to continue to operate at the level currently being experienced or at the level of operation expected with the background traffic. To conclude, proposed development will have minimal impact on the nearby intersections thus requiring no improvement in terms of traffic signal and intersection geometry.

- The proposed site access should be designed such that the departure sight triangles, as specified by AASHTO and detailed in this study, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.

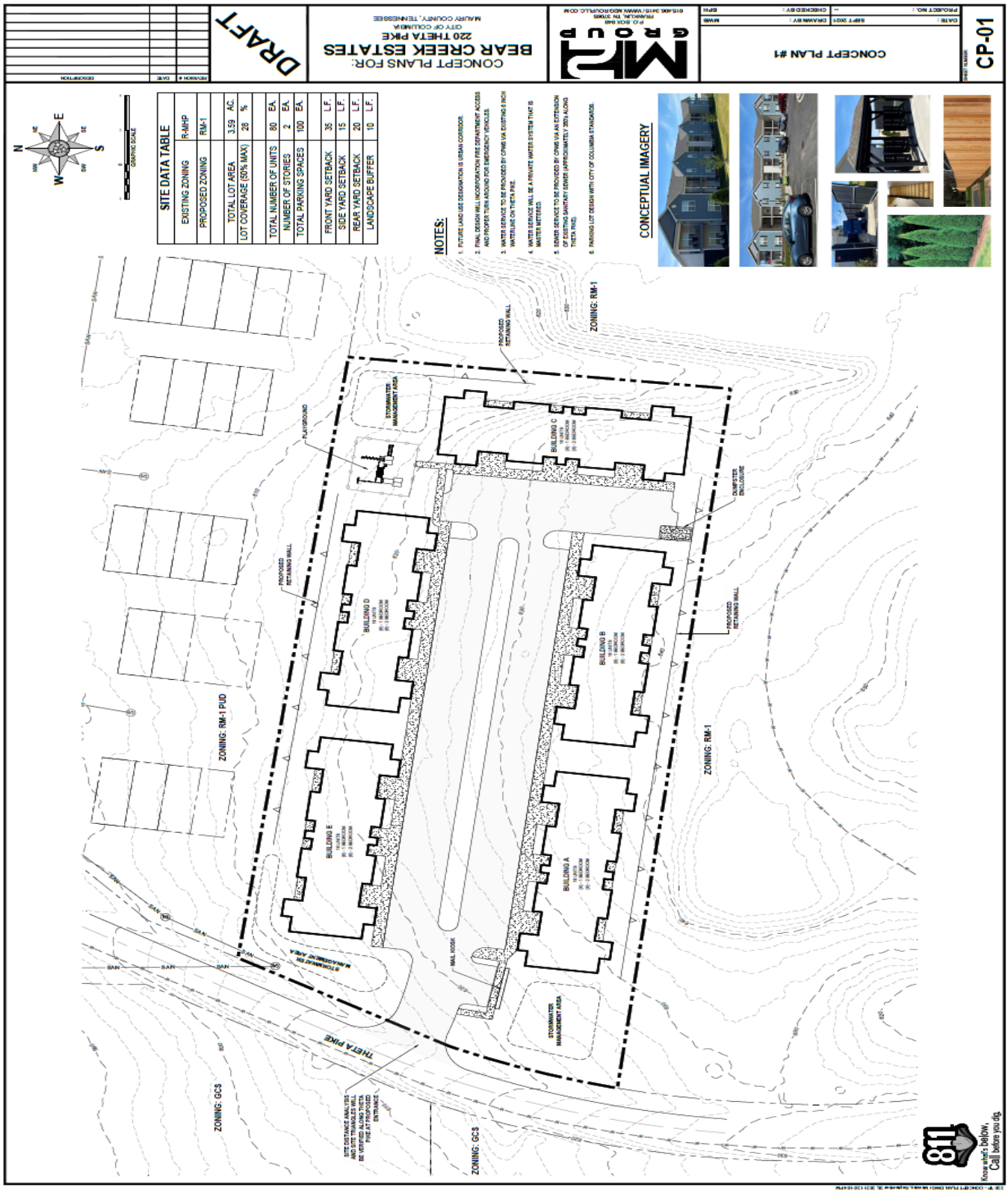
- The proposed site access on Theta Pike should be designed to include sufficient width for one entering lane and two exiting lanes as shown in the proposed site plan. This access should be stop controlled on the westbound approach for traffic exiting the site. STOP sign installation should be done based on TDOT sign guidelines.

- All intersection and roadway signing and pavement markings should be completed according to the Manual on Uniform Traffic Control Devices (MUTCD).

Appendix

A. Site Plan
B. Traffic Counts
C. Level of Service (LOS) Reports –
    Existing
    Background
    Projected
D. Background Traffic Data
E. Trip Generation
F. Turn Lane Analysis

A. Site Plan


CP-01
CONCEPT PLAN #1
DATE: SEPT 2021
PROJECT NO.: --
DRAWN BY: MMB
CHECKED BY: BPH
GROUP
P.O. BOX 949
FRANKLIN, TN 37065
615.406.3415 / WWW.MDGROUPLLC.COM
DRAFT
CONCEPT PLANS FOR:
BEAR CREEK ESTATES
220 THETA PIKE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE
SITE DATA TABLE
EXISTING ZONING R-MHP
PROPOSED ZONING RM-1
TOTAL LOT AREA 3.59 AC.
LOT COVERAGE (50% MAX) 28 %
TOTAL NUMBER OF UNITS 80 EA.
NUMBER OF STORIES 2 EA.
TOTAL PARKING SPACES 100 EA.
FRONT YARD SETBACK 35 L.F.
SIDE YARD SETBACK 15 L.F.
REAR YARD SETBACK 20 L.F.
LANDSCAPE BUFFER 10 L.F.
GRAPHIC SCALE
NOTES:
1. FUTURE LAND USE DESIGNATION IS URBAN CORRIDOR.
2. FINAL DESIGN WILL INCORPORATION FIRE DEPARTMENT ACCESS AND PROPER TURN AROUND FOR EMERGENCY VEHICLES.
3. WATER SERVICE TO BE PROVIDED BY CPWS VIA EXISTING 8 INCH WATERLINE ON THETA PIKE.
4. WATER SERVICE WILL BE A PRIVATE WATER SYSTEM THAT IS MASTER METERED.
5. SEWER SERVICE TO BE PROVIDED BY CPWS VIA AN EXTENSION OF EXISTING SANITARY SEWER (APPROXIMATELY 350') ALONG THETA PIKE).
6. PARKING LOT DESIGN WITH CITY OF COLUMBIA STANDARDS.
CONCEPTUAL IMAGERY
ZONING: RM-1
ZONING: RM-1 PUD
ZONING: GCS
ZONING: GCS
PROPOSED RETAINING WALL
STORMWATER MANAGEMENT AREA
PLAYGROUND
BUILDING C
BUILDING D
BUILDING B
BUILDING E
BUILDING A
DUMPSTER ENCLOSURE
MAIL KIOSK
THETA PIKE
SITE DISTANCE ANALYSIS AND SITE TRIANGLES WILL BE VERIFIED ALONG THETA PIKE AT PROPOSED ENTRANCE
811
Know what's below. Call before you dig.

B. Traffic Counts

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, February 22, 2022	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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	10	8	5	0	23	12	13	24	0	49	17	321	17	0	355	6	235	1	0	242	669
0730 - 0745	16	8	15	0	39	10	22	17	0	49	25	301	20	0	346	10	295	5	0	310	744
0745 - 0800	6	13	14	0	33	13	27	29	0	69	19	304	35	0	358	11	232	7	0	250	710
0800 - 0815	6	9	17	0	32	6	10	10	0	26	8	230	14	1	253	20	257	5	0	282	593
Total	38	38	51	0	127	41	72	80	0	193	69	1156	86	1	1312	47	1019	18	0	1084	2716
Approach %	29.92	29.92	40.16	0.00	-	21.24	37.31	41.45	0.00	-	5.26	88.11	6.55	0.08	-	4.34	94.00	1.66	0.00	-	
PHF	0.59	0.73	0.75	0.00	**0.81**	0.79	0.67	0.69	0.00	**0.70**	0.69	0.90	0.61	0.25	**0.92**	0.59	0.86	0.64	0.00	**0.87**	**0.91**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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	10	7	4	0	21	12	13	23	0	48	17	306	16	0	339	6	215	1	0	222	630
0730 - 0745	16	8	15	0	39	8	22	17	0	47	25	280	20	0	325	10	265	5	0	280	691
0745 - 0800	6	13	14	0	33	12	27	28	0	67	19	287	34	0	340	11	209	7	0	227	667
0800 - 0815	5	9	17	0	31	6	10	10	0	26	7	213	13	1	234	20	222	4	0	246	537
Total	37	37	50	0	124	38	72	78	0	188	68	1086	83	1	1238	47	911	17	0	975	2525
Approach %	29.84	29.84	40.32	0.00	-	20.21	38.30	41.49	0.00	-	5.49	87.72	6.70	0.08	-	4.82	93.44	1.74	0.00	-	
PHF	0.58	0.71	0.74	0.00	**0.79**	0.79	0.67	0.70	0.00	**0.70**	0.68	0.89	0.61	0.25	**0.91**	0.59	0.86	0.61	0.00	**0.87**	**0.91**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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	1	1	0	2	0	0	1	0	1	0	4	0	0	4	0	10	0	0	10	17
0730 - 0745	0	0	0	0	0	2	0	0	0	2	0	14	0	0	14	0	16	0	0	16	32
0745 - 0800	0	0	0	0	0	1	0	1	0	2	0	8	1	0	9	0	14	0	0	14	25
0800 - 0815	1	0	0	0	1	0	0	0	0	0	1	11	1	0	13	0	24	1	0	25	39
Total	1	1	1	0	3	3	0	2	0	5	1	37	2	0	40	0	64	1	0	65	113
Approach %	33.33	33.33	33.33	0.00	-	60.00	0.00	40.00	0.00	-	2.50	92.50	5.00	0.00	-	0.00	98.46	1.54	0.00	-	
PHF	0.25	0.25	0.25	0.00	**0.38**	0.38	0.00	0.50	0.00	**0.63**	0.25	0.66	0.50	0.00	**0.71**	0.00	0.67	0.25	0.00	**0.65**	**0.72**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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	11	1	0	12	0	10	0	0	10	22
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	14	0	0	14	21
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	0	9	0	0	9	18
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	11	0	0	11	17
Total	0	0	0	0	0	0	0	0	0	0	0	33	1	0	34	0	44	0	0	44	78
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	97.06	2.94	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	0.25	0.00	**0.71**	0.00	0.79	0.00	0.00	**0.79**	**0.89**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
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					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
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**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

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Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1615 - 1715

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
1615 - 1630	34	23	22	0	79	5	25	44	0	74	14	203	10	0	227	11	267	5	0	283	663
1630 - 1645	33	16	12	0	61	2	15	27	0	44	10	242	16	0	268	15	320	6	0	341	714
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	205	13	1	234	15	268	8	0	291	629
1700 - 1715	22	30	13	0	65	7	13	19	0	39	18	196	13	0	227	15	268	12	0	295	626
Total	109	86	57	0	252	20	72	122	0	214	57	846	52	1	956	56	1123	31	0	1210	2632
Approach %	43.25	34.13	22.62	0.00	-	9.35	33.64	57.01	0.00	-	5.96	88.49	5.44	0.10	-	4.63	92.81	2.56	0.00	-	
PHF	0.80	0.72	0.65	0.00	**0.80**	0.71	0.72	0.69	0.00	**0.72**	0.79	0.87	0.81	0.25	**0.89**	0.93	0.88	0.65	0.00	**0.89**	**0.92**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
1615 - 1630	33	23	22	0	78	5	25	44	0	74	14	195	10	0	219	10	255	5	0	270	641
1630 - 1645	33	16	12	0	61	2	14	27	0	43	10	233	16	0	259	14	309	6	0	329	692
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	187	13	1	216	15	265	8	0	288	608
1700 - 1715	22	30	13	0	65	7	12	19	0	38	18	185	13	0	216	15	260	12	0	287	606
Total	108	86	57	0	251	20	70	122	0	212	57	800	52	1	910	54	1089	31	0	1174	2547
Approach %	43.03	34.26	22.71	0.00	-	9.43	33.02	57.55	0.00	-	6.26	87.91	5.71	0.11	-	4.60	92.76	2.64	0.00	-	
PHF	0.82	0.72	0.65	0.00	**0.80**	0.71	0.70	0.69	0.00	**0.72**	0.79	0.86	0.81	0.25	**0.88**	0.90	0.88	0.65	0.00	**0.89**	**0.92**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
1615 - 1630	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	1	7	0	0	8	11
1630 - 1645	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	1	6	0	0	7	11
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	3	0	0	3	7
1700 - 1715	0	0	0	0	0	0	1	0	0	1	0	5	0	0	5	0	4	0	0	4	10
Total	1	0	0	0	1	0	2	0	0	2	0	14	0	0	14	2	20	0	0	22	39
Approach %	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	9.09	90.91	0.00	0.00	-	
PHF	0.25	0.00	0.00	0.00	**0.25**	0.00	0.50	0.00	0.00	**0.50**	0.00	0.70	0.00	0.00	**0.70**	0.50	0.71	0.00	0.00	**0.69**	**0.89**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
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	6	0	0	6	0	5	0	0	5	11
1645 - 1700	0	0	0	0	0	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	14
1700 - 1715	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	4	0	0	4	10
Total	0	0	0	0	0	0	0	0	0	0	0	32	0	0	32	0	14	0	0	14	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	0.57	0.00	0.00	**0.57**	0.00	0.70	0.00	0.00	**0.70**	**0.82**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
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**

Pedestrians

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
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**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 1 of 3
Theta Pike (South)
Theta Pike (North)
TN-6 (West)
TN-6 (East)

Date
Tuesday, February 22, 2022

Lat/Long
35.637331°, -87.027785°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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	3	3	5	0	11	3	4	3	0	10	7	248	3	0	258	3	98	2	0	103	382
0615 - 0630	3	2	9	0	14	3	5	6	0	14	7	322	3	0	332	1	162	2	0	165	525
0630 - 0645	5	4	12	0	21	4	7	9	0	20	10	291	7	0	308	0	171	3	1	175	524
0645 - 0700	9	3	11	0	23	2	12	14	0	28	9	281	8	0	298	3	179	4	0	186	535
Hourly Total	20	12	37	0	**69**	12	28	32	0	**72**	33	1142	21	0	**1196**	7	610	11	1	**629**	**1966**
0700 - 0715	11	6	7	0	24	9	11	14	0	34	12	258	10	0	280	5	220	7	0	232	570
0715 - 0730	10	8	5	0	23	12	13	24	0	49	17	321	17	0	355	6	235	1	0	242	669
0730 - 0745	16	8	15	0	39	10	22	17	0	49	25	301	20	0	346	10	295	5	0	310	744
0745 - 0800	6	13	14	0	33	13	27	29	0	69	19	304	35	0	358	11	232	7	0	250	710
Hourly Total	43	35	41	0	**119**	44	73	84	0	**201**	73	1184	82	0	**1339**	32	982	20	0	**1034**	**2693**
0800 - 0815	6	9	17	0	32	6	10	10	0	26	8	230	14	1	253	20	257	5	0	282	593
0815 - 0830	6	9	13	0	28	3	12	15	0	30	8	253	17	0	278	13	178	4	0	195	531
0830 - 0845	11	10	17	0	38	3	11	7	0	21	9	196	15	0	220	11	178	0	0	189	468
0845 - 0900	7	5	8	0	20	5	19	10	0	34	7	202	21	0	230	10	174	7	1	192	476
Hourly Total	30	33	55	0	**118**	17	52	42	0	**111**	32	881	67	1	**981**	54	787	16	1	**858**	**2068**
Grand Total	93	80	133	0	**306**	73	153	158	0	**384**	138	3207	170	1	**3516**	93	2379	47	2	**2521**	**6727**
Approach %	30.39	26.14	43.46	0.00	-	19.01	39.84	41.15	0.00	-	3.92	91.21	4.84	0.03	-	3.69	94.37	1.86	0.08	-	
Intersection %	1.38	1.19	1.98	0.00	4.55	1.09	2.27	2.35	0.00	5.71	2.05	47.67	2.53	0.01	52.27	1.38	35.36	0.70	0.03	37.48	
PHF	0.59	0.73	0.75	0.00	**0.81**	0.79	0.67	0.69	0.00	**0.70**	0.69	0.90	0.61	0.25	**0.92**	0.59	0.86	0.64	0.00	**0.87**	**0.91**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					TN-6 (West)					TN-6 (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
1500 - 1515	21	23	11	0	55	12	15	23	0	50	31	275	21	0	327	17	224	9	0	250	682
1515 - 1530	26	29	13	0	68	13	23	22	0	58	42	258	22	1	323	13	223	16	0	252	701
1530 - 1545	20	32	19	0	71	4	11	15	0	30	33	243	20	0	296	19	244	7	0	270	667
1545 - 1600	29	26	13	0	68	3	12	21	0	36	10	177	15	1	203	6	236	3	2	247	554
Hourly Total	96	110	56	0	**262**	32	61	81	0	**174**	116	953	78	2	**1149**	55	927	35	2	**1019**	**2604**
1600 - 1615	26	21	12	0	59	8	25	31	0	64	14	167	9	0	190	13	286	7	1	307	620
1615 - 1630	34	23	22	0	79	5	25	44	0	74	14	203	10	0	227	11	267	5	0	283	663
1630 - 1645	33	16	12	0	61	2	15	27	0	44	10	242	16	0	268	15	320	6	0	341	714
1645 - 1700	20	17	10	0	47	6	19	32	0	57	15	205	13	1	234	15	268	8	0	291	629
Hourly Total	113	77	56	0	**246**	21	84	134	0	**239**	53	817	48	1	**919**	54	1141	26	1	**1222**	**2626**
1700 - 1715	22	30	13	0	65	7	13	19	0	39	18	196	13	0	227	15	268	12	0	295	626
1715 - 1730	22	20	10	0	52	5	24	25	0	54	9	195	14	0	218	7	256	5	0	268	592
1730 - 1745	13	27	7	0	47	9	13	18	0	40	17	148	11	0	176	12	238	8	0	258	521
1745 - 1800	16	22	5	0	43	5	10	14	0	29	9	140	14	0	163	11	179	13	0	203	438
Hourly Total	73	99	35	0	**207**	26	60	76	0	**162**	53	679	52	0	**784**	45	941	38	0	**1024**	**2177**
Grand Total	282	286	147	0	**715**	79	205	291	0	**575**	222	2449	178	3	**2852**	154	3009	99	3	**3265**	**7407**
Approach %	39.44	40.00	20.56	0.00	-	13.74	35.65	50.61	0.00	-	7.78	85.87	6.24	0.11	-	4.72	92.16	3.03	0.09	-	
Intersection %	3.81	3.86	1.98	0.00	9.65	1.07	2.77	3.93	0.00	7.76	3.00	33.06	2.40	0.04	38.50	2.08	40.62	1.34	0.04	44.08	
PHF	0.80	0.72	0.65	0.00	**0.80**	0.71	0.72	0.69	0.00	**0.72**	0.79	0.87	0.81	0.25	**0.89**	0.93	0.88	0.65	0.00	**0.89**	**0.92**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, February 22, 2022	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right		App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	2.1	2.2	2.3		Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0715 - 0730	0	1	2	-	3	3	0	28	0	31	9	242	3	0	254	1	213	6	0	220	508
0730 - 0745	0	2	3	-	5	0	0	31	0	31	16	239	1	0	256	1	268	6	0	275	567
0745 - 0800	1	0	0	-	1	5	1	36	0	42	27	293	1	0	321	0	285	11	0	296	660
0800 - 0815	0	1	2	-	3	4	0	21	0	25	20	207	0	0	227	1	242	1	0	244	499
Total	1	4	7	0	12	12	1	116	0	129	72	981	5	0	1058	3	1008	24	0	1035	2234
Approach %	8.33	33.33	58.33	0.00	-	9.30	0.78	89.92	0.00	-	6.81	92.72	0.47	0.00	-	0.29	97.39	2.32	0.00	-	
PHF	0.25	0.50	0.58	0.00	**0.60**	0.60	0.25	0.81	0.00	**0.77**	0.67	0.84	0.42	0.00	**0.82**	0.75	0.88	0.55	0.00	**0.87**	**0.85**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right		App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	2.1	2.2	2.3		Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0715 - 0730	0	1	2	-	3	2	0	28	0	30	8	232	3	0	243	1	207	5	0	213	489
0730 - 0745	0	2	3	-	5	0	0	30	0	30	16	231	1	0	248	1	262	6	0	269	552
0745 - 0800	1	0	0	-	1	5	1	36	0	42	27	281	1	0	309	0	278	11	0	289	641
0800 - 0815	0	1	2	-	3	4	0	21	0	25	19	198	0	0	217	1	229	1	0	231	476
Total	1	4	7	0	12	11	1	115	0	127	70	942	5	0	1017	3	976	23	0	1002	2158
Approach %	8.33	33.33	58.33	0.00	-	8.66	0.79	90.55	0.00	-	6.88	92.63	0.49	0.00	-	0.30	97.41	2.30	0.00	-	
PHF	0.25	0.50	0.58	0.00	**0.60**	0.55	0.25	0.80	0.00	**0.76**	0.65	0.84	0.42	0.00	**0.82**	0.75	0.88	0.52	0.00	**0.87**	**0.84**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right		App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	2.1	2.2	2.3		Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	0	1	8	0	0	9	0	5	1	0	6	15
0730 - 0745	0	0	0	-	0	0	0	1	0	1	0	5	0	0	5	0	5	0	0	5	11
0745 - 0800	0	0	0	-	0	0	0	0	0	0	0	11	0	0	11	0	5	0	0	5	16
0800 - 0815	0	0	0	-	0	0	0	0	0	0	1	8	0	0	9	0	8	0	0	8	17
Total	0	0	0	0	0	0	0	1	0	1	2	32	0	0	34	0	23	1	0	24	59
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	-	5.88	94.12	0.00	0.00	-	0.00	95.83	4.17	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	**0.25**	0.50	0.73	0.00	0.00	**0.77**	0.00	0.72	0.25	0.00	**0.75**	**0.87**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right		App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	2.1	2.2	2.3		Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0715 - 0730	0	0	0	-	0	1	0	0	0	1	0	2	0	0	2	0	1	0	0	1	4
0730 - 0745	0	0	0	-	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
0745 - 0800	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
0800 - 0815	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	5	6
Total	0	0	0	0	0	1	0	0	0	1	0	7	0	0	7	0	9	0	0	9	17
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	0.58	0.00	0.00	**0.58**	0.00	0.45	0.00	0.00	**0.45**	**0.71**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right		App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	2.1	2.2	2.3		Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0715 - 0730	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
0745 - 0800	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
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					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	2a	2b			Total	2c	2d			Total	2e	2f			Total	2g	2h			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**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

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Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1500 - 1600

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	1	1	-	2	9	0	40	0	49	33	307	1	1	342	0	282	10	2	294	687
1515 - 1530	0	0	3	-	3	13	0	34	0	47	38	305	2	1	346	3	264	7	1	275	671
1530 - 1545	0	0	0	-	0	12	1	23	0	36	31	262	0	0	293	1	248	8	2	259	588
1545 - 1600	0	0	0	-	0	16	1	27	0	44	32	246	0	1	279	1	225	7	1	234	557
Total	0	1	4	0	5	50	2	124	0	176	134	1120	3	3	1260	5	1019	32	6	1062	2503
Approach %	0.00	20.00	80.00	0.00	-	28.41	1.14	70.45	0.00	-	10.63	88.89	0.24	0.24	-	0.47	95.95	3.01	0.56	-	
PHF	0.00	0.25	0.33	0.00	**0.42**	0.78	0.50	0.78	0.00	**0.90**	0.88	0.91	0.38	0.75	**0.91**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	1	1	-	2	9	0	39	0	48	33	301	1	1	336	0	277	10	2	289	675
1515 - 1530	0	0	3	-	3	13	0	34	0	47	38	297	2	1	338	3	257	7	1	268	656
1530 - 1545	0	0	0	-	0	12	1	23	0	36	31	260	0	0	291	1	239	8	2	250	577
1545 - 1600	0	0	0	-	0	16	1	27	0	44	32	244	0	1	277	1	224	7	1	233	554
Total	0	1	4	0	5	50	2	123	0	175	134	1102	3	3	1242	5	997	32	6	1040	2462
Approach %	0.00	20.00	80.00	0.00	-	28.57	1.14	70.29	0.00	-	10.79	88.73	0.24	0.24	-	0.48	95.87	3.08	0.58	-	
PHF	0.00	0.25	0.33	0.00	**0.42**	0.78	0.50	0.79	0.00	**0.91**	0.88	0.92	0.38	0.75	**0.92**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	1	0	1	0	3	0	0	3	0	4	0	0	4	8
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	7	0	0	7	0	6	0	0	6	13
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	2	0	0	2	0	9	0	0	9	11
1545 - 1600	0	0	0	-	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	3
Total	0	0	0	0	0	0	0	1	0	1	0	14	0	0	14	0	20	0	0	20	35
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	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	0.25	0.00	**0.25**	0.00	0.50	0.00	0.00	**0.50**	0.00	0.56	0.00	0.00	**0.56**	**0.67**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	2	0	0	2	6
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	0.33	0.00	0.00	**0.33**	0.00	0.50	0.00	0.00	**0.50**	**0.38**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	Left 2.1	Thru 2.2	Right 2.3		App Total	Left 2.4	Thru 2.5	Right 2.6	U-Turn 2.7	App Total	Left 2.8	Thru 2.9	Right 2.10	U-Turn 2.11	App Total	Left 2.12	Thru 2.13	Right 2.14	U-Turn 2.15	App Total	Int Total
1500 - 1515	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	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					
	8th Ave					Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
Time	EB 2a	WB 2b			App Total	EB 2c	WB 2d			App Total	NB 2e	SB 2f			App Total	NB 2g	SB 2h			App Total	Int Total
1500 - 1515	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1515 - 1530	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 2 of 3
8th Ave
Theta Pike
TN-99 Nashville Hwy (West)
TN-99 Nashville Hwy (East)

Date
Tuesday, February 22, 2022

Lat/Long
35.627192°, -87.029283°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound				Southbound					Eastbound					Westbound					
	8th Ave				Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
0600 - 0615	0	1	3	4	0	0	5	1	6	2	141	0	0	143	0	69	0	0	69	222
0615 - 0630	0	0	0	0	0	0	6	0	6	2	156	0	0	158	1	105	0	0	106	270
0630 - 0645	0	0	4	4	0	0	9	0	9	10	193	1	0	204	0	114	2	0	116	333
0645 - 0700	3	0	1	4	3	0	13	0	16	3	195	0	0	198	1	134	0	0	135	353
Hourly Total	3	1	8	**12**	3	0	33	1	**37**	17	685	1	0	**703**	2	422	2	0	**426**	**1178**
0700 - 0715	0	0	4	4	2	0	14	0	16	14	195	1	0	210	1	154	0	0	155	385
0715 - 0730	0	1	2	3	3	0	28	0	31	9	242	3	0	254	1	213	6	0	220	508
0730 - 0745	0	2	3	5	0	0	31	0	31	16	239	1	0	256	1	268	6	0	275	567
0745 - 0800	1	0	0	1	5	1	36	0	42	27	293	1	0	321	0	285	11	0	296	660
Hourly Total	1	3	9	**13**	10	1	109	0	**120**	66	969	6	0	**1041**	3	920	23	0	**946**	**2120**
0800 - 0815	0	1	2	3	4	0	21	0	25	20	207	0	0	227	1	242	1	0	244	499
0815 - 0830	2	0	0	2	4	0	20	0	24	22	182	0	0	204	1	188	19	1	209	439
0830 - 0845	0	0	2	2	14	0	31	0	45	13	210	1	0	224	0	231	10	0	241	512
0845 - 0900	0	0	1	1	8	0	30	0	38	13	200	1	0	214	0	224	6	2	232	485
Hourly Total	2	1	5	**8**	30	0	102	0	**132**	68	799	2	0	**869**	2	885	36	3	**926**	**1935**
Grand Total	6	5	22	**33**	43	1	244	1	**289**	151	2453	9	0	**2613**	7	2227	61	3	**2298**	**5233**
Approach %	18.18	15.15	66.67	-	14.88	0.35	84.43	0.35	-	5.78	93.88	0.34	0.00	-	0.30	96.91	2.65	0.13	-	
Intersection %	0.11	0.10	0.42	0.63	0.82	0.02	4.66	0.02	5.52	2.89	46.88	0.17	0.00	49.93	0.13	42.56	1.17	0.06	43.91	
PHF	0.25	0.50	0.58	**0.60**	0.60	0.25	0.81	0.00	**0.77**	0.67	0.84	0.42	0.00	**0.82**	0.75	0.88	0.55	0.00	**0.87**	**0.85**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound				Southbound					Eastbound					Westbound					
	8th Ave				Theta Pike					TN-99 Nashville Hwy (West)					TN-99 Nashville Hwy (East)					
	Left	Thru	Right	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	Total	2.4	2.5	2.6	2.7	Total	2.8	2.9	2.10	2.11	Total	2.12	2.13	2.14	2.15	Total	Total
1500 - 1515	0	1	1	2	9	0	40	0	49	33	307	1	1	342	0	282	10	2	294	687
1515 - 1530	0	0	3	3	13	0	34	0	47	38	305	2	1	346	3	264	7	1	275	671
1530 - 1545	0	0	0	0	12	1	23	0	36	31	262	0	0	293	1	248	8	2	259	588
1545 - 1600	0	0	0	0	16	1	27	0	44	32	246	0	1	279	1	225	7	1	234	557
Hourly Total	0	1	4	**5**	50	2	124	0	**176**	134	1120	3	3	**1260**	5	1019	32	6	**1062**	**2503**
1600 - 1615	0	0	0	0	11	1	20	0	32	23	255	1	2	281	4	322	10	2	338	651
1615 - 1630	0	1	0	1	5	0	31	0	36	25	217	2	0	244	4	264	17	2	287	568
1630 - 1645	0	0	0	0	6	1	40	0	47	19	252	0	0	271	4	219	0	2	225	543
1645 - 1700	1	0	2	3	4	1	27	0	32	28	243	0	1	272	5	365	5	0	375	682
Hourly Total	1	1	2	**4**	26	3	118	0	**147**	95	967	3	3	**1068**	17	1170	32	6	**1225**	**2444**
1700 - 1715	2	1	1	4	3	2	20	0	25	33	300	1	2	336	2	273	4	0	279	644
1715 - 1730	0	0	1	1	3	1	20	0	24	30	227	4	3	264	4	250	8	1	263	552
1730 - 1745	0	0	1	1	5	0	28	0	33	25	209	1	2	237	0	276	6	3	285	556
1745 - 1800	2	1	2	5	4	1	21	0	26	14	169	2	0	185	1	232	6	0	239	455
Hourly Total	4	2	5	**11**	15	4	89	0	**108**	102	905	8	7	**1022**	7	1031	24	4	**1066**	**2207**
Grand Total	5	4	11	**20**	91	9	331	0	**431**	331	2992	14	13	**3350**	29	3220	88	16	**3353**	**7154**
Approach %	25.00	20.00	55.00	-	21.11	2.09	76.80	0.00	-	9.88	89.31	0.42	0.39	-	0.86	96.03	2.62	0.48	-	
Intersection %	0.07	0.06	0.15	0.28	1.27	0.13	4.63	0.00	6.02	4.63	41.82	0.20	0.18	46.83	0.41	45.01	1.23	0.22	46.87	
PHF	0.00	0.25	0.33	**0.42**	0.78	0.50	0.78	0.00	**0.90**	0.88	0.91	0.38	0.75	**0.91**	0.42	0.90	0.80	0.75	**0.90**	**0.91**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, February 22, 2022	
Period	0600 - 0900
Peak Hour	0715 - 0815

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	19	1	0	20	0	38	0	0	38	0	0	0	0	0	3	0	7	0	10	68
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	67	1	0	73	0	0	0	0	0	4	0	1	0	5	109
0800 - 0815	0	24	5	0	29	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	86
Total	0	99	10	0	109	10	195	1	0	206	1	0	0	0	1	16	0	23	0	39	355
Approach %	0.00	90.83	9.17	0.00	-	4.85	94.66	0.49	0.00	-	100.00	0.00	0.00	0.00	-	41.03	0.00	58.97	0.00	-	
PHF	0.00	0.85	0.50	0.00	**0.88**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	17	1	0	18	0	37	0	0	37	0	0	0	0	0	3	0	7	0	10	65
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	66	1	0	72	0	0	0	0	0	4	0	1	0	5	108
0800 - 0815	0	23	5	0	28	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	85
Total	0	96	10	0	106	10	193	1	0	204	1	0	0	0	1	16	0	23	0	39	350
Approach %	0.00	90.57	9.43	0.00	-	4.90	94.61	0.49	0.00	-	100.00	0.00	0.00	0.00	-	41.03	0.00	58.97	0.00	-	
PHF	0.00	0.83	0.50	0.00	**0.85**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
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	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0800 - 0815	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Approach %	0.00	100.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.38	0.00	0.00	**0.38**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Approach %	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.25**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0715 - 0730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0730 - 0745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0745 - 0800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0800 - 0815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	3a	3b			Total	3c	3d			Total	3e	3f			Total	3g	3h			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**

Peak Hour Turning Movement Count

Bear Creek Estates

Click here for Map

Marr Traffic DATA COLLECTION

www.marrtraffic.com

Tuesday, February 22, 2022	
Period	1500 - 1800
Peak Hour	1500 - 1600

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	52	4	0	56	8	46	0	0	54	0	0	0	0	0	3	0	3	0	6	116
1515 - 1530	0	65	3	0	68	8	46	0	0	54	0	0	0	0	0	7	0	2	0	9	131
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Total	0	251	17	0	268	24	169	0	0	193	0	0	0	0	0	15	0	7	1	23	484
Approach %	0.00	93.66	6.34	0.00	-	12.44	87.56	0.00	0.00	-	0.00	0.00	0.00	0.00	-	65.22	0.00	30.43	4.35	-	
PHF	0.00	0.92	0.85	0.00	**0.92**	0.75	0.92	0.00	0.00	**0.89**	0.00	0.00	0.00	0.00	**0.00**	0.54	0.00	0.58	0.25	**0.64**	**0.92**

Passenger Vehicles (1-3)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	50	4	0	54	6	46	0	0	52	0	0	0	0	0	2	0	2	0	4	110
1515 - 1530	0	65	3	0	68	7	46	0	0	53	0	0	0	0	0	7	0	2	0	9	130
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Total	0	249	17	0	266	21	169	0	0	190	0	0	0	0	0	14	0	6	1	21	477
Approach %	0.00	93.61	6.39	0.00	-	11.05	88.95	0.00	0.00	-	0.00	0.00	0.00	0.00	-	66.67	0.00	28.57	4.76	-	
PHF	0.00	0.92	0.85	0.00	**0.91**	0.75	0.92	0.00	0.00	**0.90**	0.00	0.00	0.00	0.00	**0.00**	0.50	0.00	0.75	0.25	**0.58**	**0.92**

Single Unit Trucks (4-7)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	2	0	0	2	2	0	0	0	2	0	0	0	0	0	1	0	1	0	2	6
1515 - 1530	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	3	0	0	0	3	0	0	0	0	0	1	0	1	0	2	7
Approach %	0.00	100.00	0.00	0.00	-	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	50.00	0.00	50.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	**0.25**	0.38	0.00	0.00	0.00	**0.38**	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.25	0.00	**0.25**	**0.29**

Combination Trucks (8-13)

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	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**

Bikes

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
Time	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1515 - 1530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1530 - 1545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1545 - 1600	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					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	EB	WB			App	EB	WB			App	NB	SB			App	NB	SB			App	Int
Time	3a	3b			Total	3c	3d			Total	3e	3f			Total	3g	3h			Total	Total
1500 - 1515	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1515 - 1530	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1530 - 1545	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
1545 - 1600	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0	0	-	-	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION

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Bear Creek Estates

Site 3 of 3
Theta Pike (South)
Theta Pike (North)
Driveway
Timber Trail

Date
Tuesday, February 22, 2022

Lat/Long
35.624217°, -87.028542°

Weather
Cloudy
65°F

0600 - 0900 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
0600 - 0615	0	13	0	0	13	0	8	0	0	8	0	0	0	0	0	1	0	0	0	1	22
0615 - 0630	0	8	1	0	9	1	8	0	0	9	0	0	0	0	0	3	0	3	0	6	24
0630 - 0645	0	15	2	0	17	2	12	0	0	14	0	0	0	0	0	1	0	2	0	3	34
0645 - 0700	0	14	0	0	14	1	20	0	0	21	0	0	0	0	0	2	0	5	0	7	42
Hourly Total	0	50	3	0	**53**	4	48	0	0	**52**	0	0	0	0	**0**	7	0	10	0	**17**	**122**
0700 - 0715	0	14	2	0	16	3	21	0	0	24	0	0	0	0	0	0	0	6	0	6	46
0715 - 0730	0	19	1	0	20	0	38	0	0	38	0	0	0	0	0	3	0	7	0	10	68
0730 - 0745	0	27	2	0	29	0	51	0	0	51	0	0	0	0	0	2	0	10	0	12	92
0745 - 0800	0	29	2	0	31	5	67	1	0	73	0	0	0	0	0	4	0	1	0	5	109
Hourly Total	0	89	7	0	**96**	8	177	1	0	**186**	0	0	0	0	**0**	9	0	24	0	**33**	**315**
0800 - 0815	0	24	5	0	29	5	39	0	0	44	1	0	0	0	1	7	0	5	0	12	86
0815 - 0830	0	21	2	0	23	3	36	0	0	39	0	0	0	0	0	0	0	1	0	1	63
0830 - 0845	0	29	2	0	31	1	38	0	0	39	0	0	0	0	0	4	0	7	0	11	81
0845 - 0900	0	18	4	0	22	1	46	0	0	47	0	0	0	0	0	2	0	2	0	4	73
Hourly Total	0	92	13	0	**105**	10	159	0	0	**169**	1	0	0	0	**1**	13	0	15	0	**28**	**303**
Grand Total	0	231	23	0	**254**	22	384	1	0	**407**	1	0	0	0	**1**	29	0	49	0	**78**	**740**
Approach %	0.00	90.94	9.06	0.00	-	5.41	94.35	0.25	0.00	-	100.00	0.00	0.00	0.00	-	37.18	0.00	62.82	0.00	-	
Intersection %	0.00	31.22	3.11	0.00	34.32	2.97	51.89	0.14	0.00	55.00	0.14	0.00	0.00	0.00	0.14	3.92	0.00	6.62	0.00	10.54	
PHF	0.00	0.85	0.50	0.00	**0.88**	0.50	0.73	0.25	0.00	**0.71**	0.25	0.00	0.00	0.00	**0.25**	0.57	0.00	0.58	0.00	**0.81**	**0.81**

1500 - 1800 (Weekday 3h Session) (02-22-2022)

All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Theta Pike (South)					Theta Pike (North)					Driveway					Timber Trail					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	3.1	3.2	3.3	3.4	Total	3.5	3.6	3.7	3.8	Total	3.9	3.10	3.11	3.12	Total	3.13	3.14	3.15	3.16	Total	Total
1500 - 1515	0	52	4	0	56	8	46	0	0	54	0	0	0	0	0	3	0	3	0	6	116
1515 - 1530	0	65	3	0	68	8	46	0	0	54	0	0	0	0	0	7	0	2	0	9	131
1530 - 1545	0	68	5	0	73	4	42	0	0	46	0	0	0	0	0	3	0	1	1	5	124
1545 - 1600	0	66	5	0	71	4	35	0	0	39	0	0	0	0	0	2	0	1	0	3	113
Hourly Total	0	251	17	0	**268**	24	169	0	0	**193**	0	0	0	0	**0**	15	0	7	1	**23**	**484**
1600 - 1615	0	53	1	0	54	3	37	0	0	40	0	0	0	0	0	2	0	4	0	6	100
1615 - 1630	0	71	7	0	78	2	44	0	0	46	0	0	0	0	0	3	0	4	0	7	131
1630 - 1645	0	59	1	0	60	2	44	0	0	46	0	0	0	0	0	2	0	1	0	3	109
1645 - 1700	0	44	7	0	51	2	38	0	0	40	0	0	0	0	0	1	0	2	0	3	94
Hourly Total	0	227	16	0	**243**	9	163	0	0	**172**	0	0	0	0	**0**	8	0	11	0	**19**	**434**
1700 - 1715	0	61	6	0	67	1	35	0	0	36	0	0	0	0	0	1	0	4	0	5	108
1715 - 1730	0	46	2	0	48	0	48	0	0	48	0	0	0	0	0	3	0	4	0	7	103
1730 - 1745	0	54	2	0	56	1	35	0	0	36	0	0	0	0	0	3	0	0	0	3	95
1745 - 1800	0	38	0	0	38	4	26	0	0	30	0	0	0	0	0	2	0	0	0	2	70
Hourly Total	0	199	10	0	**209**	6	144	0	0	**150**	0	0	0	0	**0**	9	0	8	0	**17**	**376**
Grand Total	0	677	43	0	**720**	39	476	0	0	**515**	0	0	0	0	**0**	32	0	26	1	**59**	**1294**
Approach %	0.00	94.03	5.97	0.00	-	7.57	92.43	0.00	0.00	-	0.00	0.00	0.00	0.00	-	54.24	0.00	44.07	1.69	-	
Intersection %	0.00	52.32	3.32	0.00	55.64	3.01	36.79	0.00	0.00	39.80	0.00	0.00	0.00	0.00	0.00	2.47	0.00	2.01	0.08	4.56	
PHF	0.00	0.92	0.85	0.00	**0.92**	0.75	0.92	0.00	0.00	**0.89**	0.00	0.00	0.00	0.00	**0.00**	0.54	0.00	0.58	0.25	**0.64**	**0.92**

Bi-Directional Speed & Class Count || Graphical Analysis NB EB

Bear Creek Estates

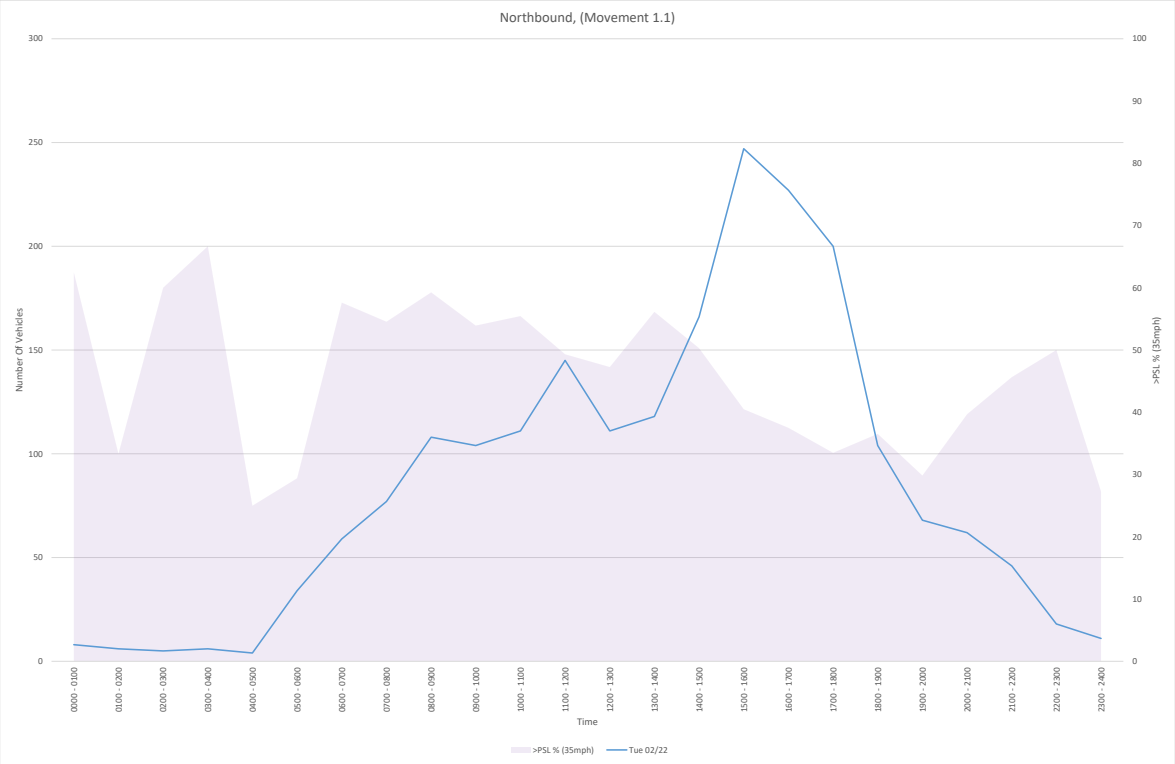
Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 1
Theta Pike,
south of Bancroft Ml

Lat/Long
35.635555°, -87.028507°

Click here for Map

0000 - 2400 (Weekday 24h Session)
Graphical Analysis NB EB



Bi-Directional Speed & Class Count || Graphical Analysis SB WB

Bear Creek Estates

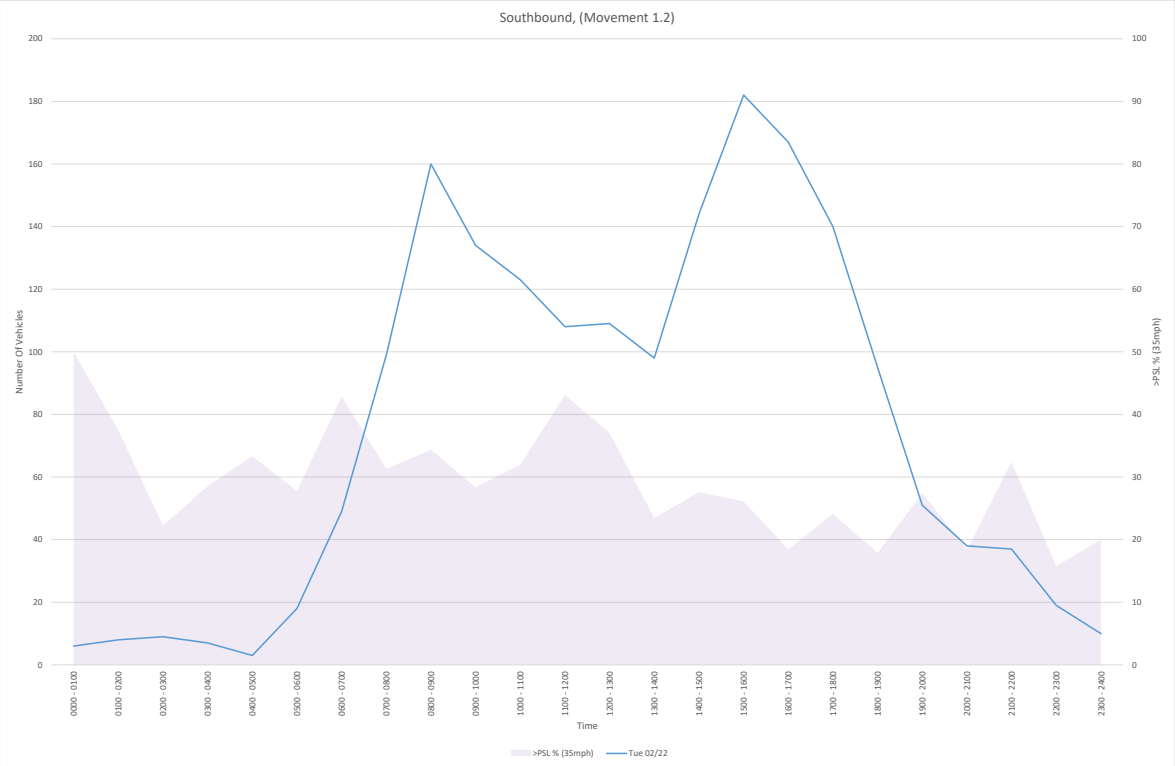
Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 1
Theta Pike,
south of Bancroft Ml

Lat/Long
35.635555°, -87.028507°

Click here for Map

0000 - 2400 (Weekday 24h Session)
Graphical Analysis SB WB



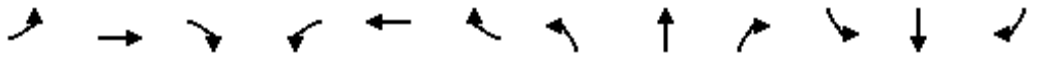
C. Level of Service

Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	1156	86	47	1019	18	38	38	51	41	72	80
Future Volume (veh/h)	69	1156	86	47	1019	18	38	38	51	41	72	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1870	1900
Adj Flow Rate, veh/h	76	1270	95	52	1120	20	42	42	56	45	79	88
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	97	1960	146	67	1955	35	151	85	113	199	96	107
Arrive On Green	0.05	0.61	0.61	0.04	0.59	0.59	0.03	0.12	0.12	0.03	0.12	0.12
Sat Flow, veh/h	1792	3217	240	1810	3302	59	1774	725	967	1691	810	902
Grp Volume(v), veh/h	76	672	693	52	557	583	42	0	98	45	0	167
Grp Sat Flow(s),veh/h/ln	1792	1705	1752	1810	1642	1718	1774	0	1692	1691	0	1711
Q Serve(g_s), s	4.7	28.2	28.4	3.2	23.2	23.3	2.3	0.0	6.0	2.6	0.0	10.6
Cycle Q Clear(g_c), s	4.7	28.2	28.4	3.2	23.2	23.3	2.3	0.0	6.0	2.6	0.0	10.6
Prop In Lane	1.00		0.14	1.00		0.03	1.00		0.57	1.00		0.53
Lane Grp Cap(c), veh/h	97	1039	1067	67	972	1017	151	0	198	199	0	202
V/C Ratio(X)	0.78	0.65	0.65	0.77	0.57	0.57	0.28	0.00	0.49	0.23	0.00	0.83
Avail Cap(c_a), veh/h	210	1039	1067	212	972	1017	229	0	305	302	0	339
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	0.00	1.00
Uniform Delay (d), s/veh	51.8	14.0	14.0	53.0	14.0	14.0	41.5	0.0	45.9	41.3	0.0	47.8
Incr Delay (d2), s/veh	5.0	3.1	3.1	6.8	2.5	2.3	0.7	0.0	1.9	0.4	0.0	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	14.0	14.6	1.7	11.2	11.7	1.1	0.0	2.9	1.2	0.0	5.5
LnGrp Delay(d),s/veh	56.9	17.1	17.1	59.7	16.4	16.3	42.2	0.0	47.8	41.7	0.0	56.0
LnGrp LOS	E	B	B	E	B	B	D		D	D		E
Approach Vol, veh/h		1441			1192			140			212	
Approach Delay, s/veh		19.2			18.3			46.1			53.0	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	74.6	8.1	19.1	11.0	72.7	8.3	19.0
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	10.5	20.0
Max Q Clear Time (g_c+I1), s	5.2	30.4	4.3	12.6	6.7	25.3	4.6	8.0
Green Ext Time (p_c), s	0.0	11.1	0.0	0.5	0.0	12.0	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	846	52	56	1123	31	109	86	57	20	72	122
Future Volume (veh/h)	57	846	52	56	1123	31	109	86	57	20	72	122
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1794	1900	1900	1729	1900	1863	1863	1900	1776	1865	1900
Adj Flow Rate, veh/h	63	930	57	62	1234	34	120	95	63	22	79	134
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	81	1734	106	80	1732	48	223	209	138	242	93	157
Arrive On Green	0.05	0.53	0.53	0.04	0.53	0.53	0.07	0.20	0.20	0.02	0.15	0.15
Sat Flow, veh/h	1792	3264	200	1810	3266	90	1774	1046	694	1691	623	1056
Grp Volume(v), veh/h	63	486	501	62	620	648	120	0	158	22	0	213
Grp Sat Flow(s),veh/h/ln	1792	1705	1759	1810	1643	1714	1774	0	1740	1691	0	1678
Q Serve(g_s), s	3.9	20.7	20.7	3.8	31.6	31.7	6.3	0.0	8.9	1.1	0.0	13.7
Cycle Q Clear(g_c), s	3.9	20.7	20.7	3.8	31.6	31.7	6.3	0.0	8.9	1.1	0.0	13.7
Prop In Lane	1.00		0.11	1.00		0.05	1.00		0.40	1.00		0.63
Lane Grp Cap(c), veh/h	81	906	935	80	871	909	223	0	347	242	0	250
V/C Ratio(X)	0.78	0.54	0.54	0.77	0.71	0.71	0.54	0.00	0.46	0.09	0.00	0.85
Avail Cap(c_a), veh/h	129	906	935	147	871	909	230	0	408	334	0	393
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	0.00	1.00
Uniform Delay (d), s/veh	52.4	17.0	17.0	52.5	19.7	19.7	37.0	0.0	39.1	34.4	0.0	46.0
Incr Delay (d2), s/veh	5.8	2.3	2.2	5.8	4.9	4.7	1.8	0.0	0.9	0.1	0.0	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	10.3	10.6	2.0	15.5	16.1	3.2	0.0	4.3	0.5	0.0	7.1
LnGrp Delay(d),s/veh	58.3	19.3	19.3	58.3	24.6	24.4	38.8	0.0	40.1	34.5	0.0	56.2
LnGrp LOS	E	B	B	E	C	C	D		D	C		E
Approach Vol, veh/h		1050			1330			278			235	
Approach Delay, s/veh		21.6			26.1			39.5			54.1	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	66.0	12.6	22.5	10.0	65.9	7.0	28.1
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	45.0	8.5	26.0	8.0	46.0	8.5	26.0
Max Q Clear Time (g_c+I1), s	5.8	22.7	8.3	15.7	5.9	33.7	3.1	10.9
Green Ext Time (p_c), s	0.0	11.1	0.0	0.8	0.0	9.2	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	12	1	116	1	4	7	72	981	5	3	1008	24
Future Volume (veh/h)	12	1	116	1	4	7	72	981	5	3	1008	24
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	14	1	136	1	5	8	85	1154	6	4	1186	28
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	129	1	185	59	182	197	387	2444	13	360	2255	53
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.05	0.69	0.69	0.01	0.64	0.64
Sat Flow, veh/h	1318	12	1589	85	1566	1615	1774	3542	18	1810	3499	83
Grp Volume(v), veh/h	14	0	137	6	0	8	85	566	594	4	594	620
Grp Sat Flow(s),veh/h/ln	1318	0	1601	1651	0	1615	1774	1736	1824	1810	1752	1830
Q Serve(g_s), s	0.9	0.0	7.0	0.0	0.0	0.4	1.2	12.7	12.7	0.1	15.5	15.5
Cycle Q Clear(g_c), s	7.9	0.0	7.0	7.0	0.0	0.4	1.2	12.7	12.7	0.1	15.5	15.5
Prop In Lane	1.00		0.99	0.17		1.00	1.00		0.01	1.00		0.05
Lane Grp Cap(c), veh/h	129	0	186	242	0	197	387	1198	1259	360	1129	1179
V/C Ratio(X)	0.11	0.00	0.73	0.02	0.00	0.04	0.22	0.47	0.47	0.01	0.53	0.53
Avail Cap(c_a), veh/h	201	0	273	337	0	284	515	1198	1259	574	1129	1179
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.1	0.0	36.3	33.3	0.0	32.9	5.8	6.1	6.1	5.7	8.1	8.1
Incr Delay (d2), s/veh	0.1	0.0	2.2	0.0	0.0	0.0	0.3	1.3	1.3	0.0	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.2	0.1	0.0	0.2	0.6	6.4	6.7	0.0	8.0	8.3
LnGrp Delay(d),s/veh	40.2	0.0	38.5	33.3	0.0	33.0	6.1	7.4	7.3	5.7	9.9	9.8
LnGrp LOS	D		D	C		C	A	A	A	A	A	A
Approach Vol, veh/h		151			14			1245			1218	
Approach Delay, s/veh		38.6			33.1			7.3			9.8	
Approach LOS		D			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	64.7		15.4	8.8	60.8		15.4
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	14.7		9.0	3.2	17.5		9.9
Green Ext Time (p_c), s	0.0	15.6		0.0	0.1	15.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	50	2	124	0	1	4	134	1120	3	5	1019	32
Future Volume (veh/h)	50	2	124	0	1	4	134	1120	3	5	1019	32
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	59	2	146	0	1	5	158	1318	4	6	1199	38
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	238	3	183	0	220	200	387	2443	7	311	2214	70
Arrive On Green	0.12	0.12	0.12	0.00	0.12	0.12	0.06	0.69	0.69	0.01	0.64	0.64
Sat Flow, veh/h	1326	22	1581	0	1900	1615	1774	3550	11	1810	3467	110
Grp Volume(v), veh/h	59	0	148	0	1	5	158	644	678	6	606	631
Grp Sat Flow(s),veh/h/ln	1326	0	1602	0	1900	1615	1774	1736	1825	1810	1752	1825
Q Serve(g_s), s	3.5	0.0	7.6	0.0	0.0	0.2	2.4	15.6	15.7	0.1	16.2	16.3
Cycle Q Clear(g_c), s	3.5	0.0	7.6	0.0	0.0	0.2	2.4	15.6	15.7	0.1	16.2	16.3
Prop In Lane	1.00		0.99	0.00		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	238	0	186	0	220	200	387	1195	1256	311	1119	1165
V/C Ratio(X)	0.25	0.00	0.80	0.00	0.00	0.03	0.41	0.54	0.54	0.02	0.54	0.54
Avail Cap(c_a), veh/h	310	0	273	0	324	288	504	1195	1256	521	1119	1165
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	0.0	36.6	0.0	33.2	32.7	6.7	6.6	6.6	6.1	8.5	8.5
Incr Delay (d2), s/veh	0.2	0.0	5.6	0.0	0.0	0.0	0.7	1.8	1.7	0.0	1.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	3.7	0.0	0.0	0.1	1.3	7.9	8.3	0.1	8.3	8.7
LnGrp Delay(d),s/veh	35.0	0.0	42.2	0.0	33.2	32.8	7.4	8.3	8.2	6.1	10.4	10.3
LnGrp LOS	D		D		C	C	A	A	A	A	B	B
Approach Vol, veh/h		207			6			1480			1243	
Approach Delay, s/veh		40.2			32.8			8.2			10.3	
Approach LOS		D			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	64.5		15.3	9.4	60.3		15.3
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	17.7		2.2	4.4	18.3		9.6
Green Ext Time (p_c), s	0.0	16.9		0.0	0.2	15.5		0.3

Intersection Summary			
HCM 2010 Ctrl Delay		11.4	
HCM 2010 LOS		B	

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	23	99	10	10	195
Future Vol, veh/h	16	23	99	10	10	195
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	25	108	11	11	212

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	348	114	0	0	119	0
Stage 1	114	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	653	944	-	-	1482	-
Stage 1	916	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	648	944	-	-	1482	-
Mov Cap-2 Maneuver	648	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	795	1482	-
HCM Lane V/C Ratio	-	-	0.053	0.007	-
HCM Control Delay (s)	-	-	9.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	7	251	17	24	169
Future Vol, veh/h	15	7	251	17	24	169
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	16	8	273	18	26	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	518	282	0	0	291	0
Stage 1	282	-	-	-	-	-
Stage 2	236	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	521	762	-	-	1282	-
Stage 1	770	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	509	762	-	-	1282	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	569	1282	-
HCM Lane V/C Ratio	-	-	0.042	0.02	-
HCM Control Delay (s)	-	-	11.6	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Background

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	1237	97	51	1091	20	49	41	127	44	77	86
Future Volume (veh/h)	74	1237	97	51	1091	20	49	41	127	44	77	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1870	1900
Adj Flow Rate, veh/h	81	1359	107	56	1199	22	54	45	140	48	85	95
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	103	1887	148	73	1885	35	165	53	166	150	106	119
Arrive On Green	0.06	0.59	0.59	0.04	0.57	0.57	0.04	0.13	0.13	0.03	0.13	0.13
Sat Flow, veh/h	1792	3204	251	1810	3300	61	1774	400	1244	1691	808	903
Grp Volume(v), veh/h	81	721	745	56	597	624	54	0	185	48	0	180
Grp Sat Flow(s),veh/h/ln	1792	1705	1751	1810	1642	1718	1774	0	1643	1691	0	1711
Q Serve(g_s), s	5.0	33.4	33.8	3.4	27.1	27.2	2.9	0.0	12.2	2.7	0.0	11.3
Cycle Q Clear(g_c), s	5.0	33.4	33.8	3.4	27.1	27.2	2.9	0.0	12.2	2.7	0.0	11.3
Prop In Lane	1.00		0.14	1.00		0.04	1.00		0.76	1.00		0.53
Lane Grp Cap(c), veh/h	103	1004	1031	73	938	982	165	0	219	150	0	225
V/C Ratio(X)	0.78	0.72	0.72	0.77	0.64	0.64	0.33	0.00	0.84	0.32	0.00	0.80
Avail Cap(c_a), veh/h	210	1004	1031	212	938	982	236	0	341	206	0	339
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	0.00	1.00
Uniform Delay (d), s/veh	51.6	16.2	16.3	52.8	16.0	16.0	40.2	0.0	47.0	40.2	0.0	46.8
Incr Delay (d2), s/veh	4.8	4.4	4.4	6.3	3.3	3.1	0.8	0.0	10.9	0.9	0.0	7.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.9	17.4	1.8	13.1	13.7	1.4	0.0	6.2	1.3	0.0	5.8
LnGrp Delay(d),s/veh	56.4	20.7	20.7	59.1	19.3	19.2	41.1	0.0	57.8	41.1	0.0	54.5
LnGrp LOS	E	C	C	E	B	B	D		E	D		D
Approach Vol, veh/h		1547			1277			239			228	
Approach Delay, s/veh		22.6			21.0			54.1			51.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	72.4	8.6	20.6	11.4	70.4	8.4	20.8
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	7.5	23.0
Max Q Clear Time (g_c+I1), s	5.4	35.8	4.9	13.3	7.0	29.2	4.7	14.2
Green Ext Time (p_c), s	0.0	7.8	0.0	0.6	0.0	10.9	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	906	64	154	1202	34	122	92	110	22	77	131
Future Volume (veh/h)	61	906	64	154	1202	34	122	92	110	22	77	131
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1865	1900
Adj Flow Rate, veh/h	67	996	70	169	1321	37	134	101	121	24	85	144
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	86	1554	109	147	1677	47	231	164	196	208	99	168
Arrive On Green	0.05	0.48	0.48	0.08	0.51	0.51	0.08	0.21	0.21	0.02	0.16	0.16
Sat Flow, veh/h	1792	3232	227	1810	3265	91	1774	773	926	1691	623	1056
Grp Volume(v), veh/h	67	525	541	169	664	694	134	0	222	24	0	229
Grp Sat Flow(s),veh/h/ln	1792	1705	1755	1810	1643	1713	1774	0	1699	1691	0	1679
Q Serve(g_s), s	4.1	25.7	25.7	9.0	36.6	36.7	6.9	0.0	13.1	1.2	0.0	14.8
Cycle Q Clear(g_c), s	4.1	25.7	25.7	9.0	36.6	36.7	6.9	0.0	13.1	1.2	0.0	14.8
Prop In Lane	1.00		0.13	1.00		0.05	1.00		0.55	1.00		0.63
Lane Grp Cap(c), veh/h	86	820	844	147	844	880	231	0	360	208	0	267
V/C Ratio(X)	0.78	0.64	0.64	1.15	0.79	0.79	0.58	0.00	0.62	0.12	0.00	0.86
Avail Cap(c_a), veh/h	129	820	844	147	844	880	231	0	398	312	0	408
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	0.00	1.00
Uniform Delay (d), s/veh	52.2	21.6	21.6	51.0	22.0	22.0	36.2	0.0	39.7	33.7	0.0	45.5
Incr Delay (d2), s/veh	7.8	3.8	3.7	120.9	7.3	7.1	3.2	0.0	2.4	0.2	0.0	10.9
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(50%),veh/ln	2.2	12.8	13.2	9.4	18.1	19.1	3.6	0.0	6.4	0.6	0.0	7.6
LnGrp Delay(d),s/veh	60.0	25.5	25.4	171.9	29.3	29.1	39.4	0.0	42.1	33.9	0.0	56.4
LnGrp LOS	E	C	C	F	C	C	D		D	C		E
Approach Vol, veh/h		1133			1527			356			253	
Approach Delay, s/veh		27.4			45.0			41.1			54.2	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	60.4	13.0	23.6	10.3	64.0	7.1	29.5
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	44.0	8.5	27.0	8.0	45.0	9.5	26.0
Max Q Clear Time (g_c+I1), s	11.0	27.7	8.9	16.8	6.1	38.7	3.2	15.1
Green Ext Time (p_c), s	0.0	9.8	0.0	0.9	0.0	5.3	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	29	1	155	1	5	8	96	1050	6	4	1079	34
Future Volume (veh/h)	29	1	155	1	5	8	96	1050	6	4	1079	34
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	34	1	182	1	6	9	113	1235	7	5	1269	40
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	149	1	251	61	247	265	336	2292	13	305	2078	65
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.65	0.65	0.01	0.60	0.60
Sat Flow, veh/h	1315	9	1592	78	1564	1615	1774	3540	20	1810	3468	109
Grp Volume(v), veh/h	34	0	183	7	0	9	113	606	636	5	641	668
Grp Sat Flow(s),veh/h/ln	1315	0	1600	1642	0	1615	1774	1736	1824	1810	1752	1825
Q Serve(g_s), s	2.1	0.0	9.2	0.0	0.0	0.4	1.9	16.0	16.1	0.1	19.6	19.7
Cycle Q Clear(g_c), s	11.4	0.0	9.2	9.2	0.0	0.4	1.9	16.0	16.1	0.1	19.6	19.7
Prop In Lane	1.00		0.99	0.14		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	149	0	252	307	0	265	336	1124	1181	305	1050	1094
V/C Ratio(X)	0.23	0.00	0.73	0.02	0.00	0.03	0.34	0.54	0.54	0.02	0.61	0.61
Avail Cap(c_a), veh/h	166	0	273	330	0	286	458	1124	1181	517	1050	1094
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.5	0.0	34.1	30.3	0.0	29.9	8.5	8.1	8.1	7.5	10.8	10.8
Incr Delay (d2), s/veh	0.3	0.0	7.0	0.0	0.0	0.0	0.6	1.9	1.8	0.0	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	4.6	0.1	0.0	0.2	1.0	8.1	8.5	0.0	10.2	10.6
LnGrp Delay(d),s/veh	39.7	0.0	41.1	30.3	0.0	29.9	9.1	10.0	9.9	7.5	13.4	13.3
LnGrp LOS	D		D	C		C	A	A	A	A	B	B
Approach Vol, veh/h		217			16			1355			1314	
Approach Delay, s/veh		40.9			30.1			9.8			13.3	
Approach LOS		D			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	61.0		18.9	9.2	56.9		18.9
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	18.1		11.2	3.9	21.7		13.4
Green Ext Time (p_c), s	0.0	15.7		0.0	0.1	14.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	66	3	152	0	1	5	206	1199	4	6	1091	59
Future Volume (veh/h)	66	3	152	0	1	5	206	1199	4	6	1091	59
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1882	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	78	4	179	0	1	6	242	1411	5	7	1284	69
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	266	5	215	0	261	236	359	2362	8	272	2030	109
Arrive On Green	0.14	0.14	0.14	0.00	0.14	0.14	0.07	0.67	0.67	0.01	0.60	0.60
Sat Flow, veh/h	1325	35	1570	0	1900	1615	1774	3548	13	1810	3382	181
Grp Volume(v), veh/h	78	0	183	0	1	6	242	690	726	7	664	689
Grp Sat Flow(s),veh/h/ln	1325	0	1605	0	1900	1615	1774	1736	1825	1810	1752	1812
Q Serve(g_s), s	4.6	0.0	9.4	0.0	0.0	0.3	4.1	18.8	18.8	0.1	20.7	20.8
Cycle Q Clear(g_c), s	4.6	0.0	9.4	0.0	0.0	0.3	4.1	18.8	18.8	0.1	20.7	20.8
Prop In Lane	1.00		0.98	0.00		1.00	1.00		0.01	1.00		0.10
Lane Grp Cap(c), veh/h	266	0	220	0	261	236	359	1155	1215	272	1052	1088
V/C Ratio(X)	0.29	0.00	0.83	0.00	0.00	0.03	0.67	0.60	0.60	0.03	0.63	0.63
Avail Cap(c_a), veh/h	310	0	274	0	324	290	446	1155	1215	480	1052	1088
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	35.7	0.0	31.7	31.1	12.1	7.9	7.9	7.6	10.9	11.0
Incr Delay (d2), s/veh	0.2	0.0	13.3	0.0	0.0	0.0	2.9	2.3	2.2	0.0	2.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.0	0.0	0.0	0.1	3.8	9.6	10.0	0.1	10.8	11.2
LnGrp Delay(d),s/veh	33.9	0.0	49.0	0.0	31.7	31.1	15.0	10.2	10.1	7.6	13.8	13.8
LnGrp LOS	C		D		C	C	B	B	B	A	B	B
Approach Vol, veh/h		261			7			1658			1360	
Approach Delay, s/veh		44.5			31.2			10.8			13.8	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	62.6		17.2	10.8	57.0		17.2
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	20.8		2.3	6.1	22.8		11.4
Green Ext Time (p_c), s	0.0	16.6		0.0	0.3	14.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	25	106	11	11	209
Future Vol, veh/h	18	25	106	11	11	209
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	27	115	12	12	227

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	372	121	0	0	127	0
Stage 1	121	-	-	-	-	-
Stage 2	251	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	633	936	-	-	1472	-
Stage 1	909	-	-	-	-	-
Stage 2	795	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	627	936	-	-	1472	-
Mov Cap-2 Maneuver	627	-	-	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1472	-
HCM Lane V/C Ratio	-	-	0.06	0.008	-
HCM Control Delay (s)	-	-	9.9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	269	19	26	181
Future Vol, veh/h	16	8	269	19	26	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	9	292	21	28	197

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	556	303	0	0	313	0
Stage 1	303	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	496	741	-	-	1259	-
Stage 1	754	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	741	-	-	1259	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	547	1259	-
HCM Lane V/C Ratio	-	-	0.048	0.022	-
HCM Control Delay (s)	-	-	11.9	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Projected

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	1237	99	53	1091	20	56	46	133	44	79	86
Future Volume (veh/h)	74	1237	99	53	1091	20	56	46	133	44	79	86
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1871	1900
Adj Flow Rate, veh/h	81	1359	109	58	1199	22	62	51	146	48	87	95
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	103	1857	148	75	1863	34	175	60	171	150	110	120
Arrive On Green	0.06	0.58	0.58	0.04	0.56	0.56	0.04	0.14	0.14	0.03	0.13	0.13
Sat Flow, veh/h	1792	3199	256	1810	3300	61	1774	426	1221	1691	819	894
Grp Volume(v), veh/h	81	722	746	58	597	624	62	0	197	48	0	182
Grp Sat Flow(s),veh/h/ln	1792	1705	1750	1810	1642	1718	1774	0	1647	1691	0	1713
Q Serve(g_s), s	5.0	34.2	34.6	3.5	27.6	27.6	3.3	0.0	13.0	2.7	0.0	11.4
Cycle Q Clear(g_c), s	5.0	34.2	34.6	3.5	27.6	27.6	3.3	0.0	13.0	2.7	0.0	11.4
Prop In Lane	1.00		0.15	1.00		0.04	1.00		0.74	1.00		0.52
Lane Grp Cap(c), veh/h	103	990	1016	75	927	970	175	0	231	150	0	230
V/C Ratio(X)	0.78	0.73	0.73	0.77	0.64	0.64	0.35	0.00	0.85	0.32	0.00	0.79
Avail Cap(c_a), veh/h	210	990	1016	212	927	970	238	0	341	206	0	339
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	0.00	1.00
Uniform Delay (d), s/veh	51.6	16.9	17.0	52.7	16.5	16.5	39.7	0.0	46.6	39.7	0.0	46.5
Incr Delay (d2), s/veh	4.8	4.7	4.7	6.1	3.4	3.3	0.9	0.0	12.7	0.9	0.0	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	17.3	17.9	1.9	13.3	13.9	1.7	0.0	6.7	1.3	0.0	5.9
LnGrp Delay(d),s/veh	56.4	21.7	21.7	58.8	20.0	19.8	40.6	0.0	59.2	40.5	0.0	54.0
LnGrp LOS	E	C	C	E	B	B	D		E	D		D
Approach Vol, veh/h		1549			1279			259			230	
Approach Delay, s/veh		23.5			21.7			54.8			51.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	71.4	9.0	20.9	11.4	69.7	8.4	21.6
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	13.0	45.0	8.5	22.0	13.0	45.0	7.5	23.0
Max Q Clear Time (g_c+I1), s	5.5	36.6	5.3	13.4	7.0	29.6	4.7	15.0
Green Ext Time (p_c), s	0.0	7.2	0.0	0.6	0.0	10.6	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	906	73	160	1202	34	126	95	113	22	82	131
Future Volume (veh/h)	61	906	73	160	1202	34	126	95	113	22	82	131
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1795	1900	1900	1729	1900	1863	1863	1900	1776	1866	1900
Adj Flow Rate, veh/h	67	996	80	176	1321	37	138	104	124	24	90	144
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	1	6	4	0	10	5	2	2	2	7	0	3
Cap, veh/h	86	1529	123	147	1669	47	230	166	198	206	105	167
Arrive On Green	0.05	0.48	0.48	0.08	0.51	0.51	0.08	0.21	0.21	0.02	0.16	0.16
Sat Flow, veh/h	1792	3198	257	1810	3265	91	1774	775	924	1691	647	1036
Grp Volume(v), veh/h	67	531	545	176	664	694	138	0	228	24	0	234
Grp Sat Flow(s),veh/h/ln	1792	1705	1750	1810	1643	1713	1774	0	1700	1691	0	1683
Q Serve(g_s), s	4.1	26.2	26.2	9.0	36.8	36.9	7.1	0.0	13.5	1.2	0.0	15.0
Cycle Q Clear(g_c), s	4.1	26.2	26.2	9.0	36.8	36.9	7.1	0.0	13.5	1.2	0.0	15.0
Prop In Lane	1.00		0.15	1.00		0.05	1.00		0.54	1.00		0.62
Lane Grp Cap(c), veh/h	86	815	837	147	840	876	230	0	365	206	0	272
V/C Ratio(X)	0.78	0.65	0.65	1.20	0.79	0.79	0.60	0.00	0.63	0.12	0.00	0.86
Avail Cap(c_a), veh/h	129	815	837	147	840	876	230	0	398	311	0	409
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	0.00	1.00
Uniform Delay (d), s/veh	52.2	21.9	22.0	51.0	22.3	22.3	36.1	0.0	39.5	33.5	0.0	45.3
Incr Delay (d2), s/veh	7.8	4.0	3.9	137.9	7.5	7.3	3.7	0.0	2.7	0.2	0.0	11.4
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(50%),veh/ln	2.2	13.2	13.5	10.1	18.4	19.1	3.7	0.0	6.6	0.6	0.0	7.8
LnGrp Delay(d),s/veh	60.0	26.0	25.9	188.9	29.8	29.6	39.8	0.0	42.2	33.7	0.0	56.7
LnGrp LOS	E	C	C	F	C	C	D		D	C		E
Approach Vol, veh/h		1143			1534			366			258	
Approach Delay, s/veh		27.9			47.9			41.3			54.6	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	60.1	13.0	23.9	10.3	63.7	7.1	29.8
Change Period (Y+Rc), s	5.0	7.0	4.5	6.0	5.0	7.0	4.5	6.0
Max Green Setting (Gmax), s	9.0	44.0	8.5	27.0	8.0	45.0	9.5	26.0
Max Q Clear Time (g_c+I1), s	11.0	28.2	9.1	17.0	6.1	38.9	3.2	15.5
Green Ext Time (p_c), s	0.0	9.7	0.0	0.9	0.0	5.1	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	33	1	169	1	5	8	101	1050	6	4	1079	35
Future Volume (veh/h)	33	1	169	1	5	8	101	1050	6	4	1079	35
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1881	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	39	1	199	1	6	9	119	1235	7	5	1269	41
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	153	1	272	61	259	286	328	2246	13	296	2030	66
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.06	0.63	0.63	0.01	0.59	0.59
Sat Flow, veh/h	1315	8	1592	77	1518	1615	1774	3540	20	1810	3464	112
Grp Volume(v), veh/h	39	0	200	7	0	9	119	606	636	5	641	669
Grp Sat Flow(s),veh/h/ln	1315	0	1600	1594	0	1615	1774	1736	1824	1810	1752	1824
Q Serve(g_s), s	2.5	0.0	10.1	0.0	0.0	0.4	2.1	16.6	16.6	0.1	20.3	20.4
Cycle Q Clear(g_c), s	12.5	0.0	10.1	10.1	0.0	0.4	2.1	16.6	16.6	0.1	20.3	20.4
Prop In Lane	1.00		1.00	0.14		1.00	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	153	0	273	320	0	286	328	1102	1157	296	1026	1069
V/C Ratio(X)	0.25	0.00	0.73	0.02	0.00	0.03	0.36	0.55	0.55	0.02	0.62	0.63
Avail Cap(c_a), veh/h	153	0	273	320	0	286	449	1102	1157	508	1026	1069
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	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	0.0	33.4	29.4	0.0	28.9	9.2	8.7	8.7	8.0	11.5	11.5
Incr Delay (d2), s/veh	0.3	0.0	8.6	0.0	0.0	0.0	0.7	2.0	1.9	0.0	2.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	5.1	0.1	0.0	0.2	1.1	8.5	8.9	0.0	10.4	10.9
LnGrp Delay(d),s/veh	39.7	0.0	42.0	29.4	0.0	29.0	9.9	10.7	10.6	8.0	14.4	14.3
LnGrp LOS	D		D	C		C	A	B	B	A	B	B
Approach Vol, veh/h		239			16			1361			1315	
Approach Delay, s/veh		41.6			29.1			10.6			14.3	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	59.9		20.0	9.2	55.8		20.0
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	18.6		12.1	4.1	22.4		14.5
Green Ext Time (p_c), s	0.0	15.4		0.0	0.1	14.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (veh/h)	68	3	160	0	1	5	220	1199	4	6	1091	63
Future Volume (veh/h)	68	3	160	0	1	5	220	1199	4	6	1091	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1759	1882	1900	1900	1900	1900	1863	1827	1900	1900	1844	1900
Adj Flow Rate, veh/h	80	4	188	0	1	6	259	1411	5	7	1284	74
Adj No. of Lanes	1	1	0	0	1	1	1	2	0	1	2	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	8	0	1	0	0	0	2	4	0	0	3	4
Cap, veh/h	273	5	224	0	271	245	360	2343	8	269	1987	114
Arrive On Green	0.14	0.14	0.14	0.00	0.14	0.14	0.08	0.66	0.66	0.01	0.59	0.59
Sat Flow, veh/h	1325	33	1571	0	1900	1615	1774	3548	13	1810	3367	194
Grp Volume(v), veh/h	80	0	192	0	1	6	259	690	726	7	667	691
Grp Sat Flow(s),veh/h/ln	1325	0	1604	0	1900	1615	1774	1736	1825	1810	1752	1809
Q Serve(g_s), s	4.7	0.0	9.9	0.0	0.0	0.3	4.5	19.1	19.1	0.1	21.4	21.5
Cycle Q Clear(g_c), s	4.7	0.0	9.9	0.0	0.0	0.3	4.5	19.1	19.1	0.1	21.4	21.5
Prop In Lane	1.00		0.98	0.00		1.00	1.00		0.01	1.00		0.11
Lane Grp Cap(c), veh/h	273	0	229	0	271	245	360	1146	1205	269	1034	1068
V/C Ratio(X)	0.29	0.00	0.84	0.00	0.00	0.02	0.72	0.60	0.60	0.03	0.65	0.65
Avail Cap(c_a), veh/h	310	0	274	0	324	290	438	1146	1205	476	1034	1068
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	35.5	0.0	31.3	30.7	13.3	8.1	8.1	7.9	11.5	11.6
Incr Delay (d2), s/veh	0.2	0.0	15.3	0.0	0.0	0.0	4.5	2.3	2.2	0.0	3.1	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	5.3	0.0	0.0	0.1	4.2	9.8	10.2	0.1	11.1	11.5
LnGrp Delay(d),s/veh	33.5	0.0	50.8	0.0	31.3	30.7	17.7	10.5	10.4	7.9	14.6	14.6
LnGrp LOS	C		D		C	C	B	B	B	A	B	B
Approach Vol, veh/h		272			7			1675			1365	
Approach Delay, s/veh		45.7			30.8			11.6			14.6	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.3	62.1		17.6	11.2	56.2		17.6
Change Period (Y+Rc), s	4.5	6.0		5.5	4.5	6.0		5.5
Max Green Setting (Gmax), s	10.5	44.0		14.5	10.5	44.0		14.5
Max Q Clear Time (g_c+I1), s	2.1	21.1		2.3	6.5	23.5		11.9
Green Ext Time (p_c), s	0.0	16.4		0.0	0.3	14.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	25	112	11	11	227
Future Vol, veh/h	18	25	112	11	11	227
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	27	122	12	12	247

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	128	0	0	134	0
Stage 1	128	-	-	-	-	-
Stage 2	271	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	611	927	-	-	1463	-
Stage 1	903	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	605	927	-	-	1463	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	903	-	-	-	-	-
Stage 2	771	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	758	1463	-
HCM Lane V/C Ratio	-	-	0.062	0.008	-
HCM Control Delay (s)	-	-	10.1	7.5	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	8	286	19	26	191
Future Vol, veh/h	16	8	286	19	26	191
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	17	9	311	21	28	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	586	322	0	0	332	0
Stage 1	322	-	-	-	-	-
Stage 2	264	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	476	724	-	-	1239	-
Stage 1	739	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	464	724	-	-	1239	-
Mov Cap-2 Maneuver	464	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	765	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1239	-
HCM Lane V/C Ratio	-	-	0.05	0.023	-
HCM Control Delay (s)	-	-	12.2	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	18	131	6	6	220
Future Vol, veh/h	18	18	131	6	6	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	20	20	142	7	7	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	399	146	0	0	149	0
Stage 1	146	-	-	-	-	-
Stage 2	253	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	611	906	-	-	1445	-
Stage 1	886	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	607	906	-	-	1445	-
Mov Cap-2 Maneuver	607	-	-	-	-	-
Stage 1	886	-	-	-	-	-
Stage 2	789	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	607	906	1445	-
HCM Lane V/C Ratio	-	-	0.032	0.022	0.005	-
HCM Control Delay (s)	-	-	11.1	9.1	7.5	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Intersection	
Int Delay, s/veh	0.7

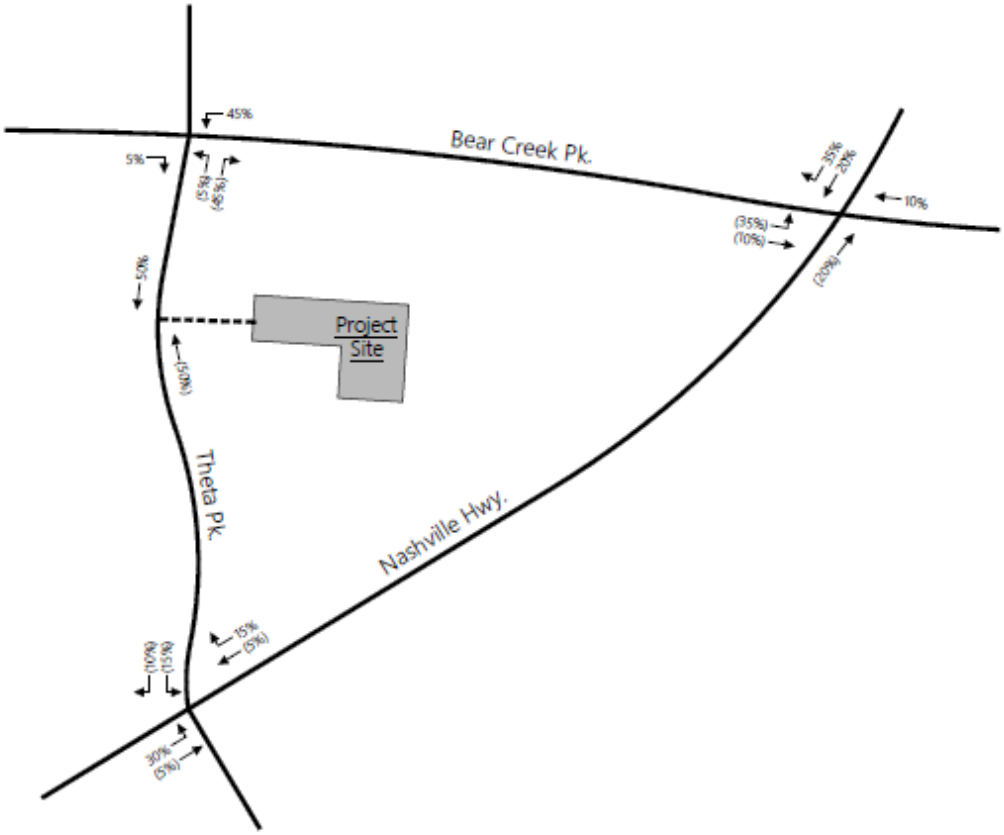
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	277	17	18	207
Future Vol, veh/h	10	10	277	17	18	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	11	11	301	18	20	225

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	575	310	0	0	319	0
Stage 1	310	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	483	735	-	-	1252	-
Stage 1	748	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	474	735	-	-	1252	-
Mov Cap-2 Maneuver	474	-	-	-	-	-
Stage 1	748	-	-	-	-	-
Stage 2	770	-	-	-	-	-

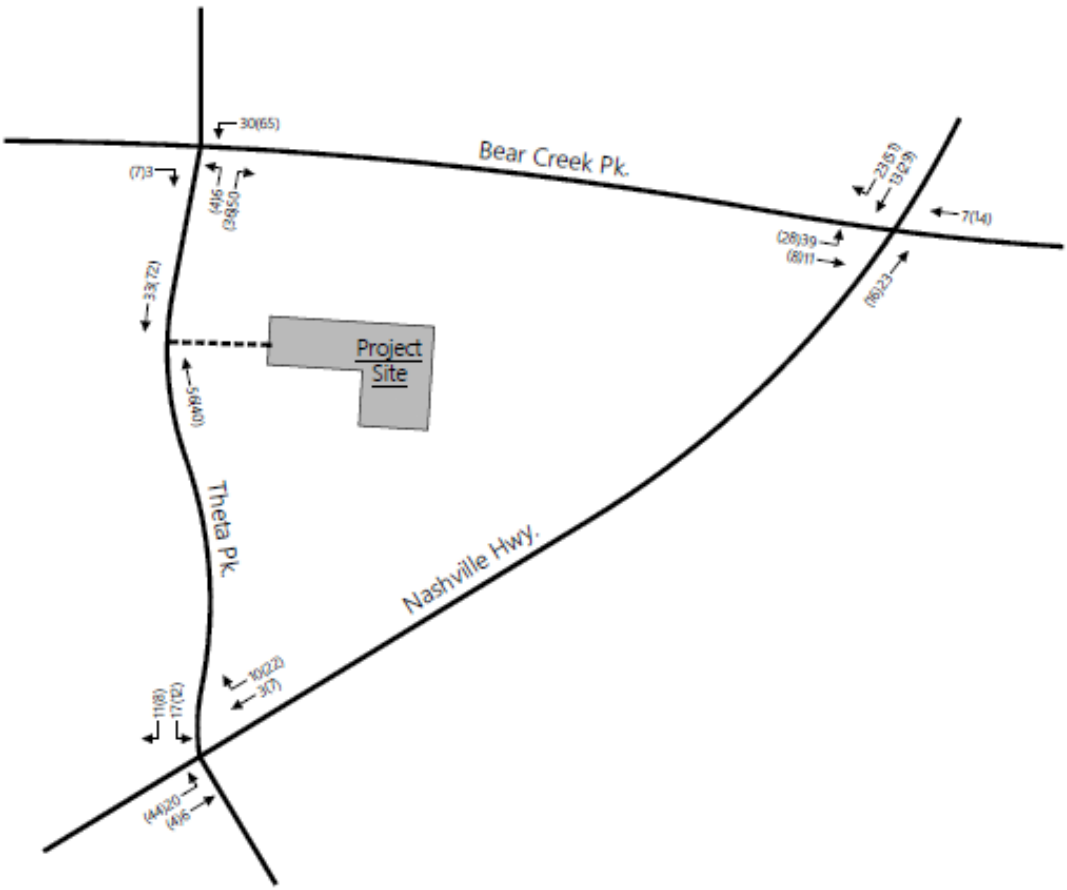
Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	474	735	1252	-
HCM Lane V/C Ratio	-	-	0.023	0.015	0.016	-
HCM Control Delay (s)	-	-	12.8	10	7.9	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

D. Background



Distribution of Peak Hour Traffic Volumes
Generated by Theta Pike Residential
(Not to Scale) Figure F1.

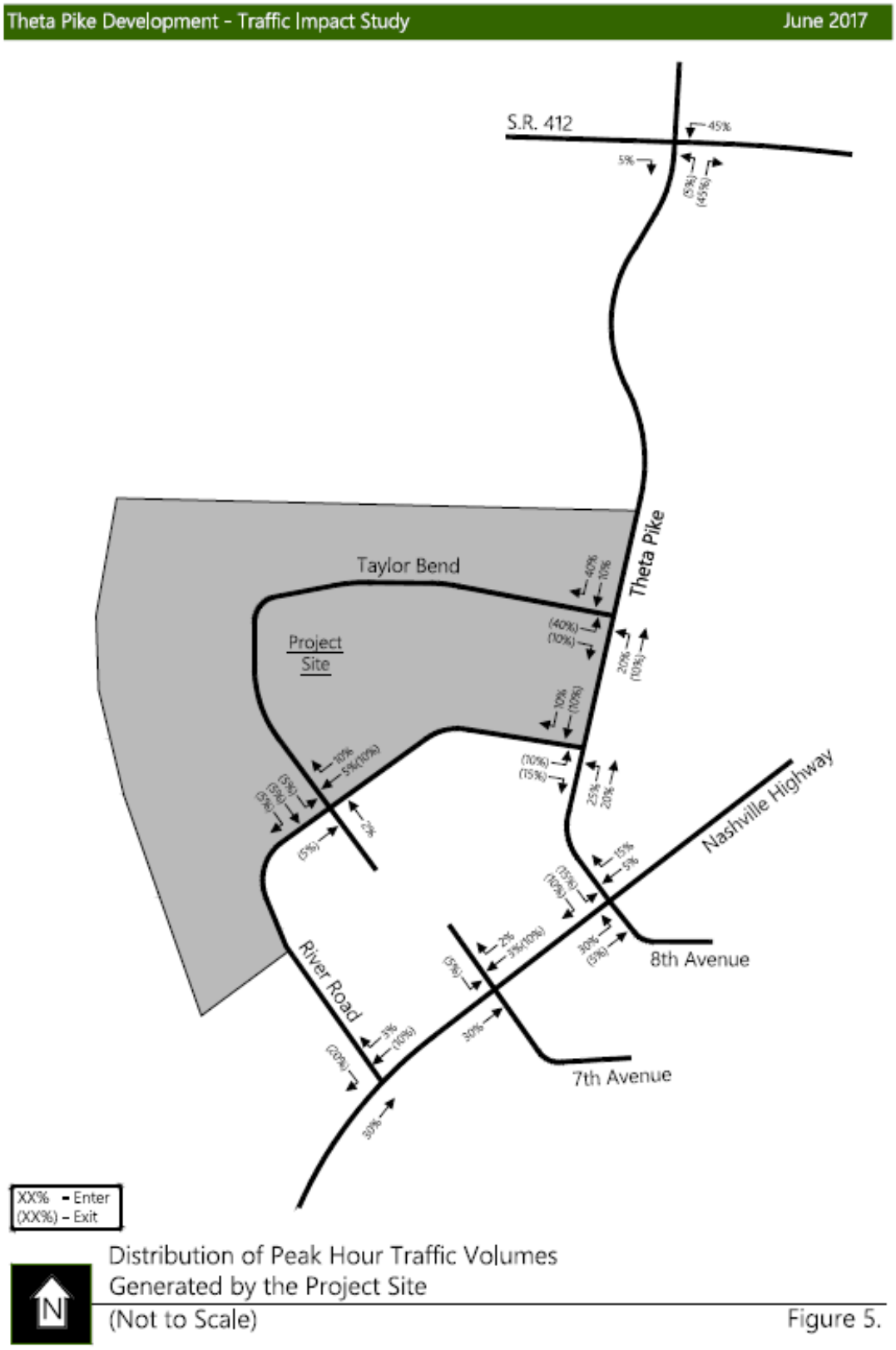


XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes

N

Assignment of Peak Hour Traffic Volumes Generated by Theta Pike Residential
(Not to Scale)

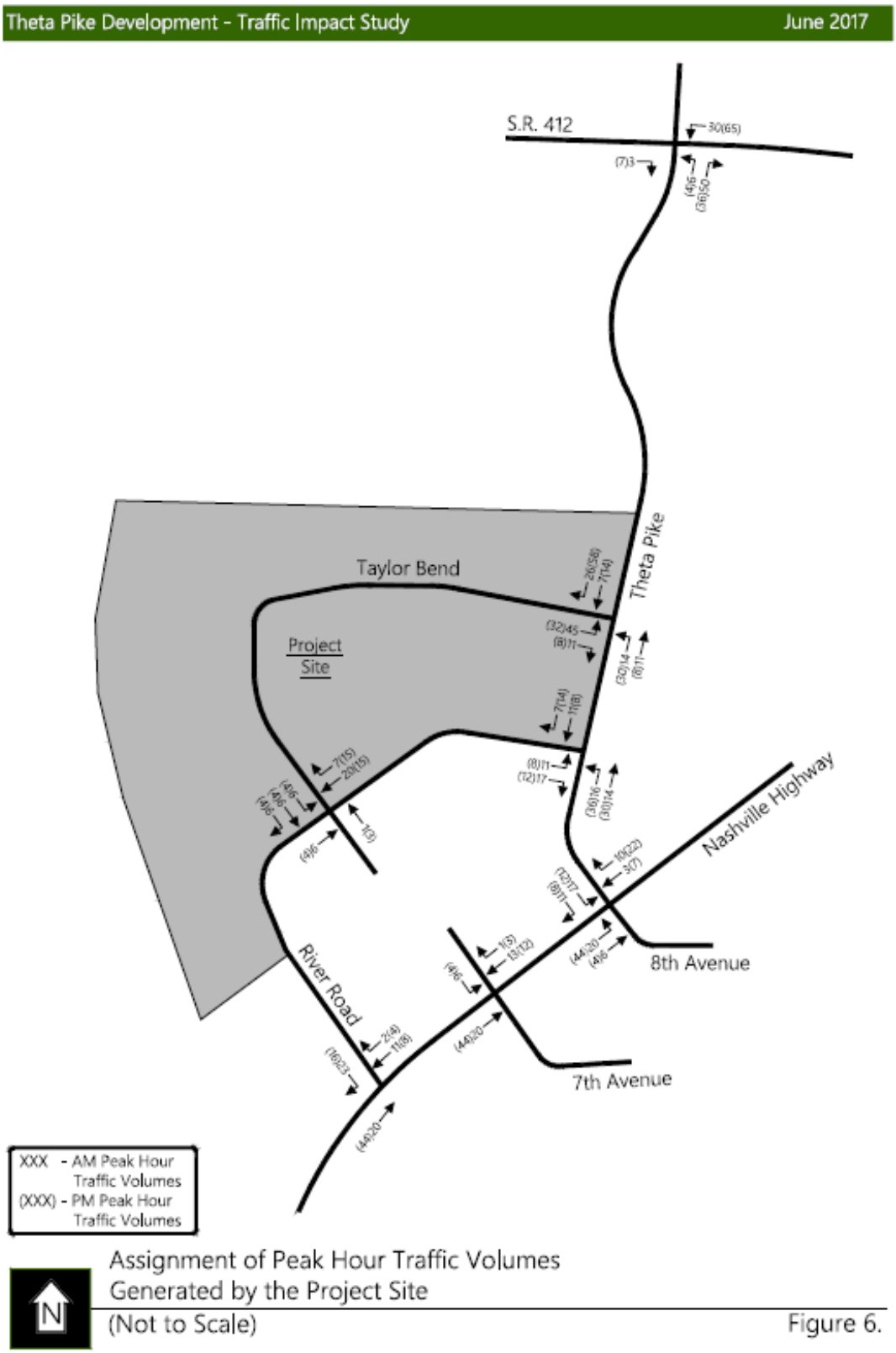
Figure F2.



Distribution of Peak Hour Traffic Volumes Generated by the Project Site

(Not to Scale)

Figure 5.


Theta Pike Development - Traffic Impact Study June 2017
S.R. 412
Taylor Bend
Project Site
Theta Pike
Nashville Highway
River Road
8th Avenue
7th Avenue
XXX - AM Peak Hour Traffic Volumes
(XXX) - PM Peak Hour Traffic Volumes
N
Assignment of Peak Hour Traffic Volumes Generated by the Project Site
(Not to Scale)
Figure 6.

E. Trip Generation

Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

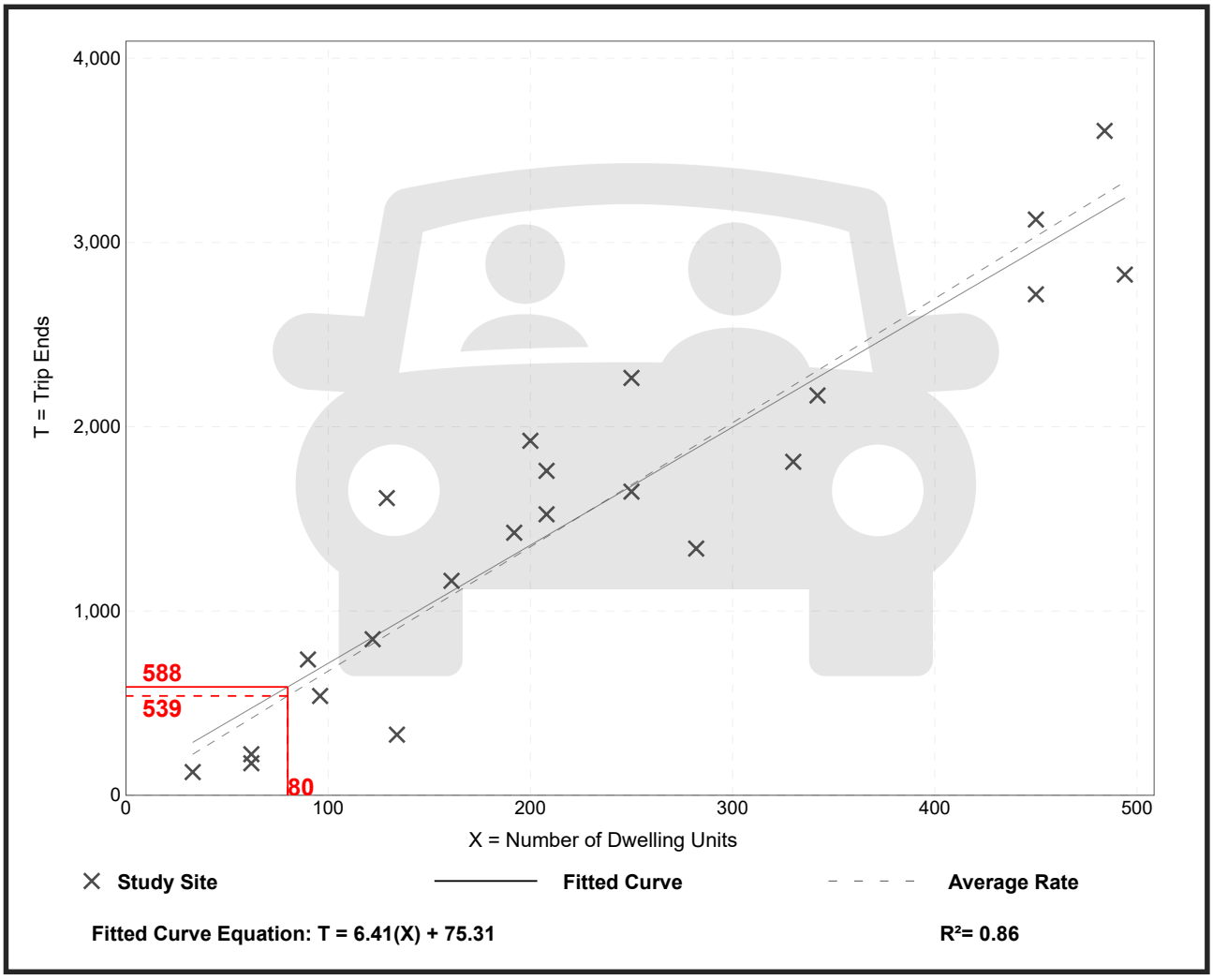
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 22
Avg. Num. of Dwelling Units: 229
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
6.74	2.46 - 12.50	1.79

Data Plot and Equation



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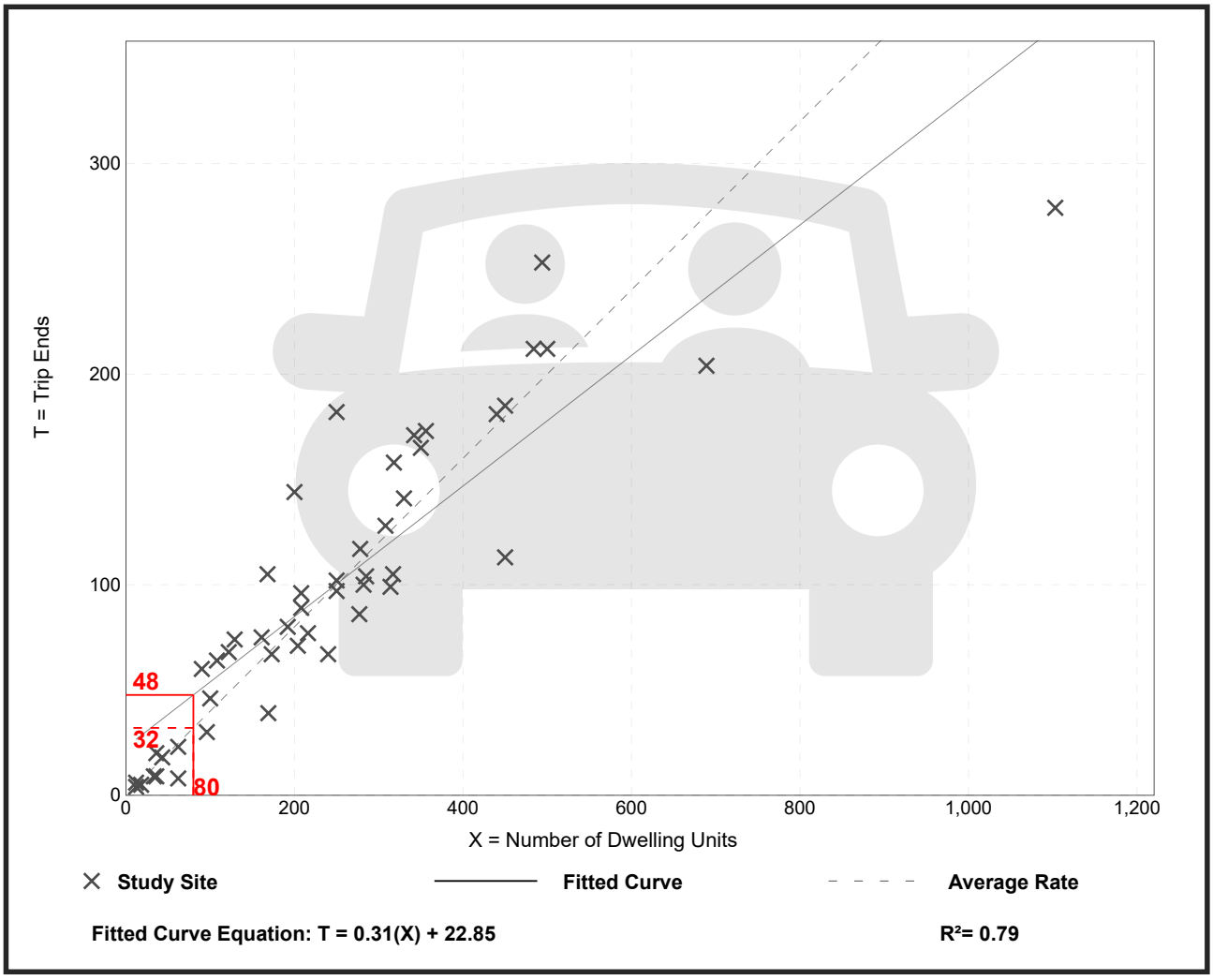
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



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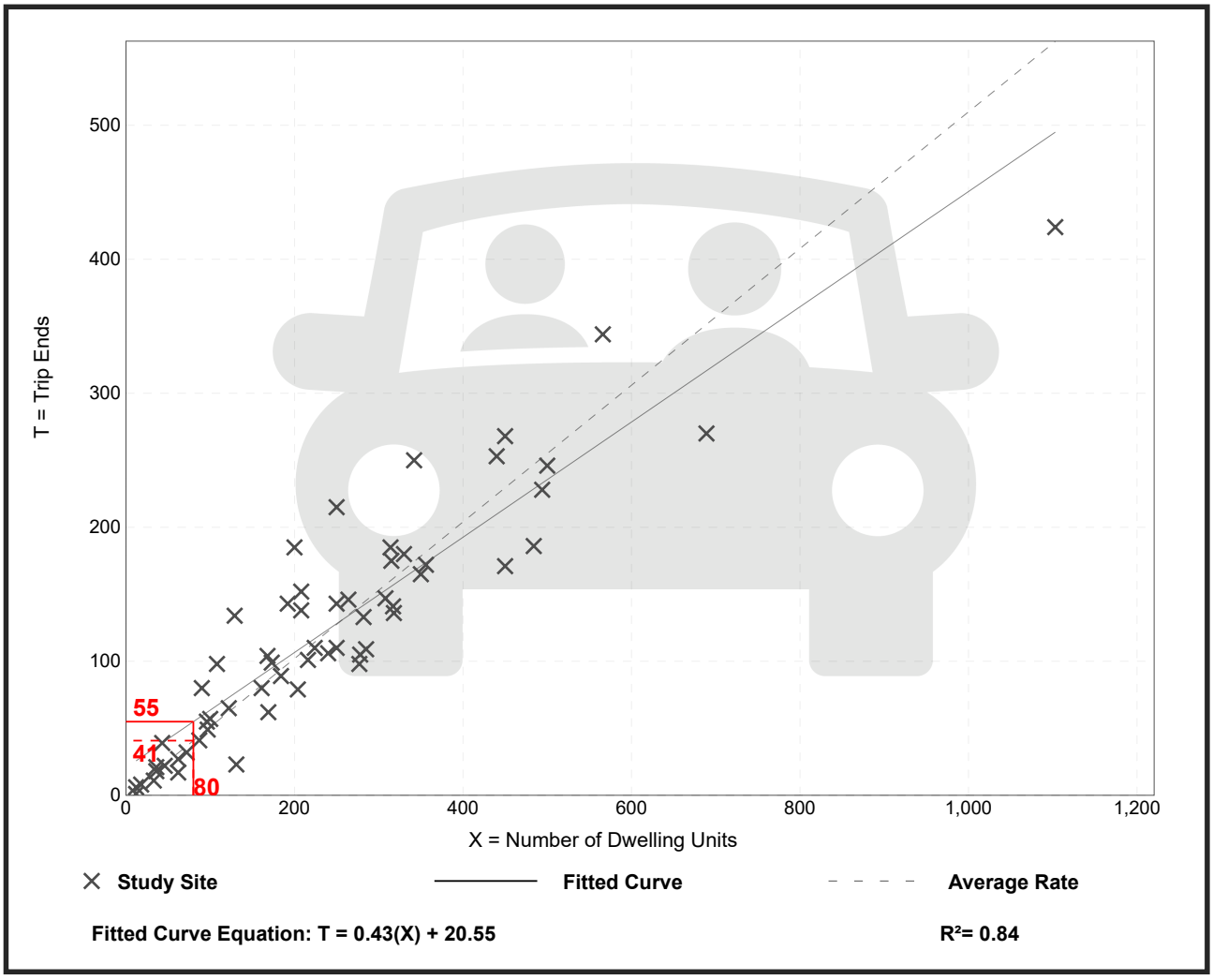
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



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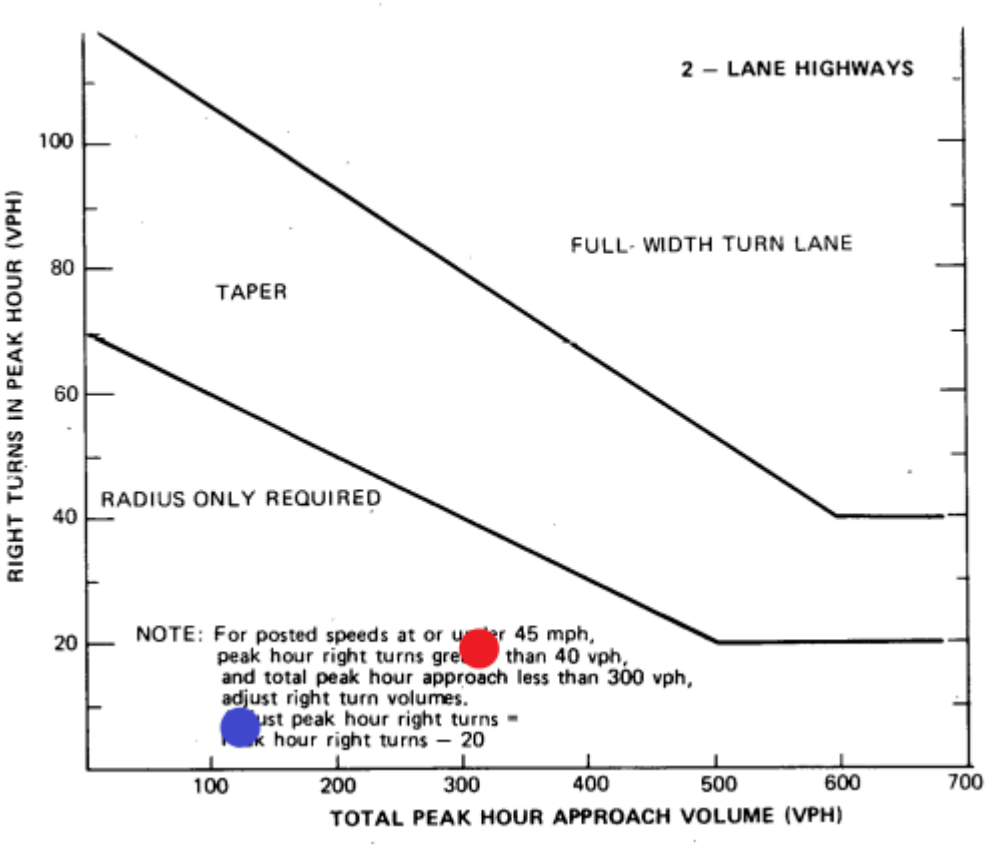
F. Turn Lane Analysis

RIGHT TURN LANE WARRANT ANALYSES
(Based on Intersection Channelization Design Guide)

Intersection Approach	AM Peak			PM Peak		
	V_{R*}	V_{A*}	Warranted?	V_{R*}	V_{A*}	Warranted?
Northbound Theta Pike @ Site Access	6	118	No	17	303	No

*V_R = Right Turn Volumes, V_A = Advancing Volumes ** Adjusted right turn volumes



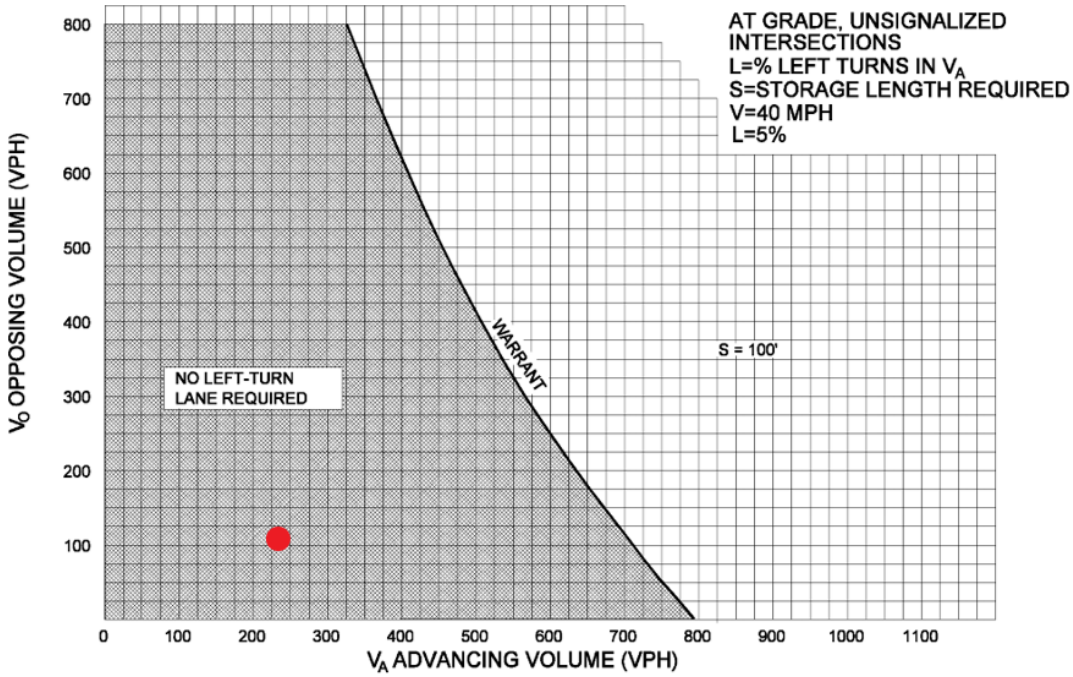
Under projected conditions, an exclusive right turn lane is not warranted on Theta Pike at the Site Access during either peak hour.

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Theta Pike and Site Access (AM Peak Hour)

2-lane roadway

Variable	Value
85th percentile speed, mph:	39
Percent of left turns in advancing volume (VA), %:	2.5%
Advancing volume (VA), veh/h:	233
Opposing volume (VO), veh/h:	118

HARMELINK CHARTS – 40 MPH



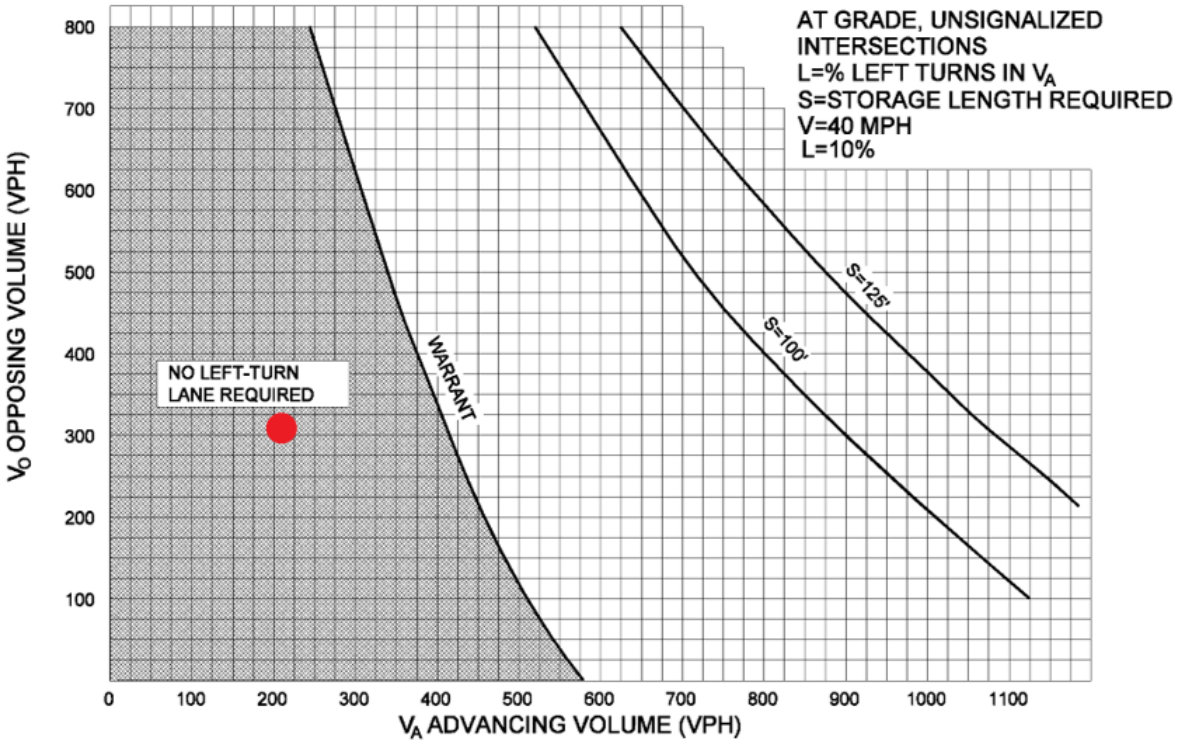
Warrant for 5% Left-Turn Storage Lanes at 40 mph

Under projected conditions, an exclusive **left turn lane is not warranted** on Theta Pike at the Site Access during **AM peak hour.**

LEFT TURN LANE WARRANT ANALYSES
(Based on Harmelink Methodology)
Theta Pike and Site Access (PM Peak Hour)

2-lane roadway

Variable	Value
85th percentile speed, mph:	39
Percent of left turns in advancing volume (VA), %:	8.5%
Advancing volume (VA), veh/h:	209
Opposing volume (VO), veh/h:	303



Warrant for 10% Left-Turn Storage Lanes at 40 mph

Under projected conditions, an exclusive **left turn lane is not warranted** on Theta Pike at the Site Access during **PM peak hour**.

Mackenzie Place
Stormwater Management/Quantity/Quality Calculations
May 2023



Enclosures:

- Post-Development Drainage Map (MAP 2)
- LID Calculations (Post-Development)
- Hydraflow Hydrographs
- USDA Web Soil Survey

Project Description

The project consists of the construction of (thirty-four) 34 multi-family units with associated roads, sidewalks, and utilities. An Infiltration Trench (Level 2) is proposed to meet the City of Columbia's water quality and quantity requirements.

Water Quality/Low Impact Design Analysis

An Infiltration Trench (Level 2) is proposed to satisfy the **80%** target runoff reduction requirement. Water quality requirements were calculated using Metro Nashville's BMP Manual and the Water Quality Calculation Tool.

The **proposed Rv** and required infiltration trench sizes were calculated using Metro's Water Quality Calculation Tool. These calculations are included as part of this report. The infiltration trench has been oversized in order to reduce the post-development Curve Number (CN). The CN for the existing condition, based on the Metro Water Quality Calculation Tool, is **80.5**. The post development CN has been calculated to be **77.9**.

Below are the ***sizing calculations*** *for the infiltration trench*:

Infiltration Trench #1 (Level 2)

Top of Infiltration Trench Gravel = 609.50

Top of Berm Elevation = 611.50

Gravel Depth = 6 feet De = 6' * (0.4) + 0.5' (ponding depth) = 2.9'

Tv Required from LID Spreadsheet = **6,921 CF**

Surface Area Required = (Tv /De): (6,921/2.9) = **2,387 SF**

Trench Surface Area Provided = **5,450 SF/2,387 SF = 228% of the required volume**

Water Quantity Analysis

The infiltration trench (Level 2) is proposed to attenuate post-developed flow rates at or below the pre-developed flow rates. Web soil survey was utilized to determine existing soil characteristics and establish a pre-development curve number (CN=77.9) in the calculations. The post-development peak flows were

calculated by pond hydrograph routing and resulting bypass. The time of concentration for the pre and post-developed conditions was calculated using TR-55.

Hydraflow Hydrographs Version 12 was utilized to analyze the peak flows of the effective area, in the pre and post development conditions, its contributing drainage area and the resulting bypass. The total hydrologic area of analysis is 3.61 acres. The post-development peak flows for the 2, 5, 10, 25, 50, and 100-year storm events are equal to or less than the pre-development peak flows.

Below is a summary of the Hydraflow Hydrograph results for the development:

STORMWATER PEAK RUNOFF ANALYSIS		
STORM EVENT	**PRE-DEVELOPED**	**POST-DEVELOPED (COMBINED)**
2-YR, 24-HR	9.38	4.062
5-YR, 24-HR	14.83	6.142
10-YR, 24-HR	18.55	10.21
25-YR, 24-HR	23.36	16.07
50-YR, 24-HR	26.95	17.80
100-YR, 24-HR	30.49	19.44

Post-Development Map (MAP 2)

MWS LID Site Design Tool

Project Name	Mackenzie Place
Parcel Identification #	
Engineer	M2 Group, LLC

Combined Sewer Overlay?	**NO**
Pre or Post Development Worksheet?	**Post**
Target Runoff Reduction Requirement =	**80%**

See Section 7.2.1 in Metro SWMM Volume 1

Capture Depth=	**1**	**inch**
Cistern Capture=		**% Total Vol captured**

From Cistern Design Tool

MWS LID SITE DESIGN TOOL VERSION 11 - October 20, 2021

Instructions

1. Input cells are in Green.
2. Break Site Into Sub areas by single soils and land use type combinations.
3. Assign a code to each subarea and input the code into column C. Descriptions can be entered in column B.
4. Input the subarea drainage area in column D.
5. Input treatment credit code (Column F) for the first tier of treatments
6. Input additional treatment code as desired (Column I) for any subarea
7. Adjust until you reach 80% reduction or better (Cell N turns green if 80% reached).
8. If 80% reduction is not reached and it has been decided that GIPs in series is an option use Step 3a to place GIPs in series . Their respective treatment volumes are calculated in column W. This volume is separate from GIPs upstream.

Percent Volume Reduction-Based Calculations

Step 1: Lay out the site and divide it into sub-areas each of a specific land use type and Rv.					Step 1a: Change any basic land use types through reforesting, permeable pavement or green roofs - or through use of open space for a GIP.			Step 2: Treat impervious areas through the use of sheet flow			Step 3: Treat primarily impervious areas with structural GIPs either in series with Step 3 intrinsic GIPs or alone downstream from Steps 1 and 2 land use.			Size controls for Step 3 by assigning structure ID to each sub-area, combining sub-areas into one structure if appropriate.			Step 3a Treatment in Series Calculation - Place Structural GIPs in same row as upstream GIP			Size controls for Step 3a in series by assigning a sequential structure ID to each area treated in series.				
Step1 Basic Land Use					**Step 1a Modified LU**			**Step 2 Intrinsic GIPs**			**Step 3 Structural GIPs**			**Structure ID**	**IA Capture**		**Step 3a Structural GIPs in Series**			**Structure ID**	**IA Capture**		**Nominal Curve Number**	
Subarea	Description	Code	Acres	Base Rv	Code	Acres	Eff Rv1	Code	Trtmt VR1	Eff Rv2	Code	Trtmt VR2	Eff Rv3	Site GIP ID Number	Tv Multiplier	Tv (cf)	Code	Trtmt VR2	Eff Rv4	Site GIP ID Number	Tv Multiplier	Structure in Series Tv (cf)	Step 1	Step 1A
1	Imp to IT#1	IA	1.4256198	0.95	IA	1.4256198	0.95		0	0.95	I2	0.9	0.10		1.25	6,145		0	0.10		0.00	-	98	98
2	Turf to IT #1	TC	0.8543802	0.20	TC	0.8543802	0.20		0	0.20	I2	0.9	0.02		1.25	775		0	0.02		0.00	-	79	79
3				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
4				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
5				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
6				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
7				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
8				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
9	East Bypass	TC	0.3951148	0.20	TC	0.3951148	0.20		0	0.20		0	0.20		0.00	-		0	0.20		0.00	-	79	79
10	East Imp Bypass	IA	0.1748852	0.95	IA	0.1748852	0.95		0	0.95		0	0.95		0.00	-		0	0.95		0.00	-	98	98
11	West Bypass - Imp	IA	0.1592975	0.95	IA	0.1592975	0.95		0	0.95		0	0.95		0.00	-		0	0.95		0.00	-	98	98
12	West Bypass-Turf	TC	0.6007025	0.20	TC	0.6007025	0.20		0	0.20		0	0.20		0.00	-		0	0.20		0.00	-	79	79
13				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
14				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
15				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
16				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
17				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
18				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
47				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
76				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
105				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
134				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
162				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
191				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
		Weighted Rv		0.566		Weighted Rv	0.566		Weighted Rv	0.566		Weighted Rv	0.187		Step 3 Tv Total	**6,921**			0.187		Final Tv Total	**6,921**	88.3	88.3
		Total Area=	3.61	2.04		Total Area=	3.61	2.04			2.04		0.68						0.68					
		% Removal		43.4%		% Removal		43.4%		% Removal	43.4%		**81.3%**					% Removal	**81.3%**					

↑ THIS CELL WILL TURN GREEN WHEN TARGET RUNOFF REDUCTION MET ↑

MWS LID Site Design Tool

Project Name	Mackenzie Place
Parcel Identification #	0

MWS LID SITE DESIGN TOOL VERSION 11 - October 20, 2021

PreDev CN	80.5

METRO RAINFALL	
Return Period	**Rainfall (in)**
2-yr	3.39
5-yr	4.50
10-yr	5.23
25-yr	6.16
50-yr	6.85
100-yr	7.53

Curve Number Instructions

1. Enter the composite pre-development curve number (CN), to the left, for the watershed.
2. The tool automatically assigns curve numbers for each subarea based on MWS policy matching the land uses of Steps 1 and 1a to curve numbers (see column **G COVER SHEET**).
3. Curve numbers are shown for both Step 1 and Step 1a in columns **X** and **Y** as well as the composite curve number for the site in line 59 of those columns.
4. The ratio of the **Tv provided/Tv required** for each GIP (as a %) is entered in column **AG** (e.g. if only required Tv is provided then this should be 100%).
5. Select the rainfall in **Cell AC19** based on return periods shown in table to left.
6. Adjusted curve numbers for each subarea are shown in the table below in column **AK**, as well as the composite adjusted curve number in **Cell AK59**, for the rainfall selected. If this value is greater than the composite Pre-Development CN then **Cell AK60** will state "Detention Required"
7. These are the curve numbers to be used in flood control design calculations. Each watershed must be calculated independently. If there are multiple watersheds for the project, then the composite pre-development curve number and composite adjusted curve number should be compared for each watershed to determine if detention is required.
8. If there are GIPs in series, use the 2nd table to calculate the additional reduction in CN.

Adjusted Curve Number Calculations (Step 3 only)

No Controls				With Structural Controls &Treatment Vol Removed						
Original CN	Rainfall (in)	S (in)	Q (in)	Tv required (cu ft)	Tv provided (%)	RO Vol Red (cu ft)	Q reduction (in)	Q adj (in)	Adjusted CN	Difference
98.0	7.53	0.204	7.29	6145	228.0%	14011	2.7075	4.583	**74.7**	-23.3
79.0	7.53	2.658	5.07	775	228.0%	1768	0.57	4.502	**73.9**	-5.1
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
79.0	7.53	2.658	5.07	-			0	5.072	**79.0**	0.0
98.0	7.53	0.204	7.29	-			0	7.291	**98.0**	0.0
98.0	7.53	0.204	7.29	-			0	7.291	**98.0**	0.0
79.0	7.53	2.658	5.07	-			0	5.072	**79.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
88.3	7.53	1.330	6.14	6920.6625			0.528121494	5.612	**77.9**	-10.4

Note that this assumes the same Pre- and Post-developpment Time of Concentrations and Drainage Areas **OK**

Adjusted Curve Number Calculations (Step 3a added)

No Controls				With Structural Controls &Treatment Vol Removed						
Adjusted CN (St 3)	Rainfall (in)	S (in)	Q (in)	Tv required (cu ft)	Tv provided (%)	RO Vol Red (cu ft)	Q reduction (in)	Q adj (in)	Adjusted CN	Difference
74.7	7.53	3.392	4.58	-			0	4.583	**74.7**	0.0
73.9	7.53	3.523	4.50	-			0	4.502	**73.9**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
79.0	7.53	2.658	5.07	-			0	5.072	**79.0**	0.0
98.0	7.53	0.204	7.29	-			0	7.291	**98.0**	0.0
98.0	7.53	0.204	7.29	-			0	7.291	**98.0**	0.0
79.0	7.53	2.658	5.07	-			0	5.072	**79.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
0.0	7.53	-	-	-			0	-	**0.0**	0.0
88.3	7.53	1.330	6.14	0			0	6.140	**77.9**	-10.4

Note that this assumes the same Pre- and Post-developpment Time of Concentrations and Drainage Areas **OK**

LID Calculations (Post-Development)

IMPERVIOUS LEGEND

- IMPERVIOUS AREA TO IT#1
- IMPERVIOUS BYPASS WEST
- IMPERVIOUS AREA TO IT #2
- IMPERVIOUS BYPASS EAST
- CATCHMENT AREA

INFILTRATION TRENCH #1

TO IT#1
Area: 2.28 AC
Perimeter: 1469.75'

BYPASS WEST
Area: 0.76 AC
Perimeter: 1297.41'

BYPASS EAST
Area: 0.57 AC
Perimeter: 1220.39'

N NW NE W E SW SE S

50' 0 50' 100'
GRAPHIC SCALE

POST DEVELOPMENT DRAINAGE MAP FOR:

MAP 2

MACKENZIE PLACE
CITY OF COLUMBIA
MAURY COUNTY, TENNESSEE

M2 GROUP
P.O. BOX 848
FRANKLIN, TN 37065
WWW.M2GROUPLLC.COM

Hydraflow Hydrographs

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	5.214	-------	8.194	10.21	12.82	14.76	16.67	Pre - West
2	SCS Runoff	------	-------	4.166	-------	6.636	8.339	10.54	12.19	13.82	Pre - East
4	Combine	1, 2,	-------	9.380	-------	14.83	18.55	23.36	26.95	30.49	Pre - Site Outfall
6	SCS Runoff	------	-------	8.999	-------	12.64	15.02	18.03	20.25	22.44	Post to Pond
7	Reservoir	6	-------	0.108	-------	1.884	5.421	7.424	7.785	11.20	Post thru Pond
8	SCS Runoff	------	-------	1.803	-------	2.692	3.282	4.034	4.591	5.138	Post - East Bypass
9	SCS Runoff	------	-------	2.260	-------	3.451	4.247	5.268	6.025	6.771	Post - West Bypass
11	Combine	7, 9,	-------	2.260	-------	3.451	7.697	12.16	13.36	14.81	Post - West
13	Combine	8, 11,	-------	4.062	-------	6.142	10.21	16.07	17.80	19.44	Post - Site Outfall

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

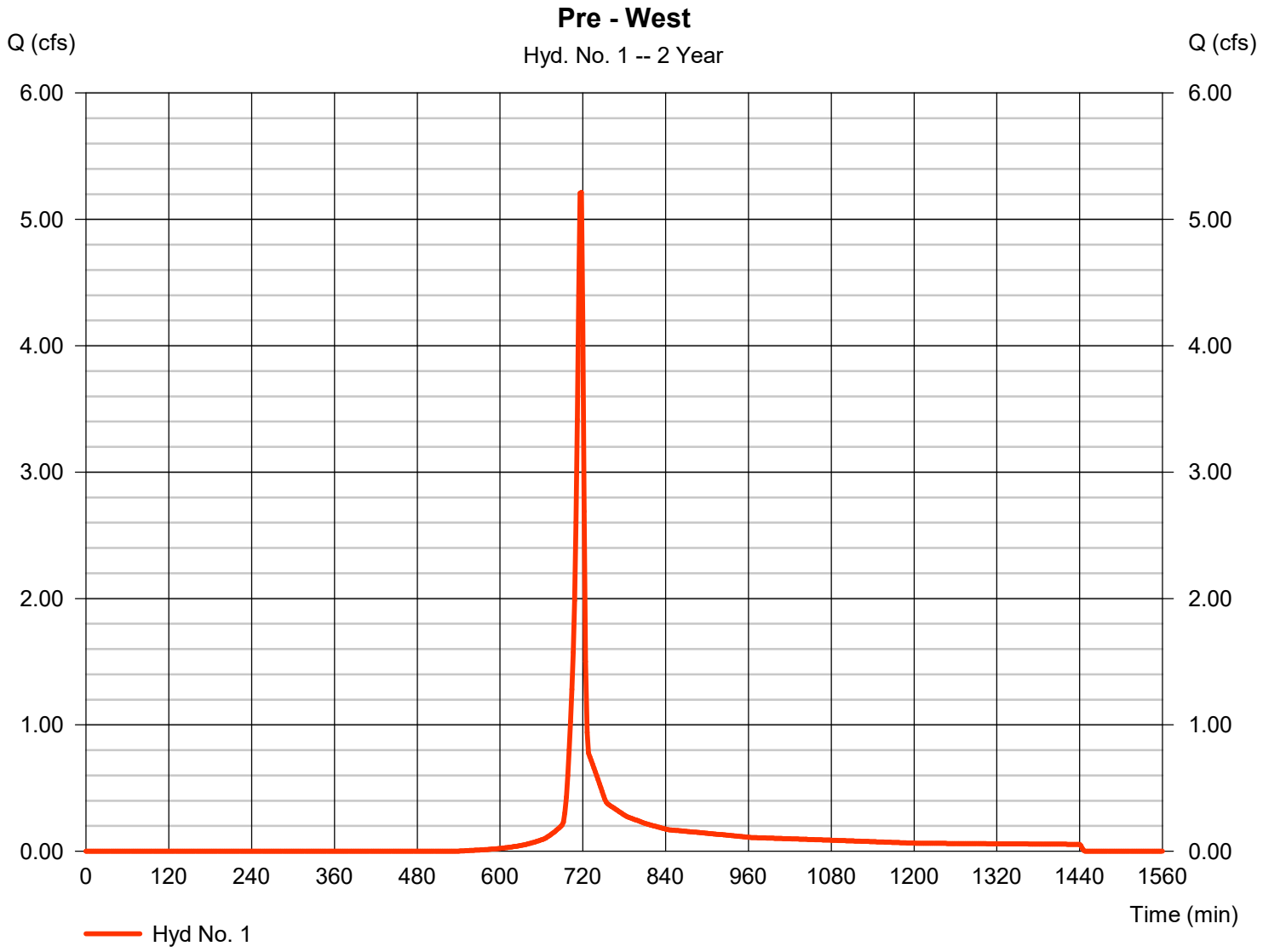
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.214	2	718	10,515	------	------	------	Pre - West
2	SCS Runoff	4.166	2	718	8,367	------	------	------	Pre - East
4	Combine	9.380	2	718	18,882	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	8.999	2	716	18,910	------	------	------	Post to Pond
7	Reservoir	0.108	2	862	843	6	610.02	13,909	Post thru Pond
8	SCS Runoff	1.803	2	716	3,661	------	------	------	Post - East Bypass
9	SCS Runoff	2.260	2	716	4,569	------	------	------	Post - West Bypass
11	Combine	2.260	2	716	5,412	7, 9,	------	------	Post - West
13	Combine	4.062	2	716	9,072	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.214 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	10,515 cuft
Drainage area	=	1.950 ac	Curve number	=	80.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	3.39 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



TR55 Tc Worksheet

Hyd. No. 1

Pre - West

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.150		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.39		0.00		0.00		
Land slope (%)	= 12.33		0.00		0.00		
Travel Time (min)	**= 4.60**	**+**	**0.00**	**+**	**0.00**	**=**	**4.60**
Shallow Concentrated Flow							
Flow length (ft)	= 310.00		0.00		0.00		
Watercourse slope (%)	= 9.83		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=5.06		0.00		0.00		
Travel Time (min)	**= 1.02**	**+**	**0.00**	**+**	**0.00**	**=**	**1.02**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.150		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

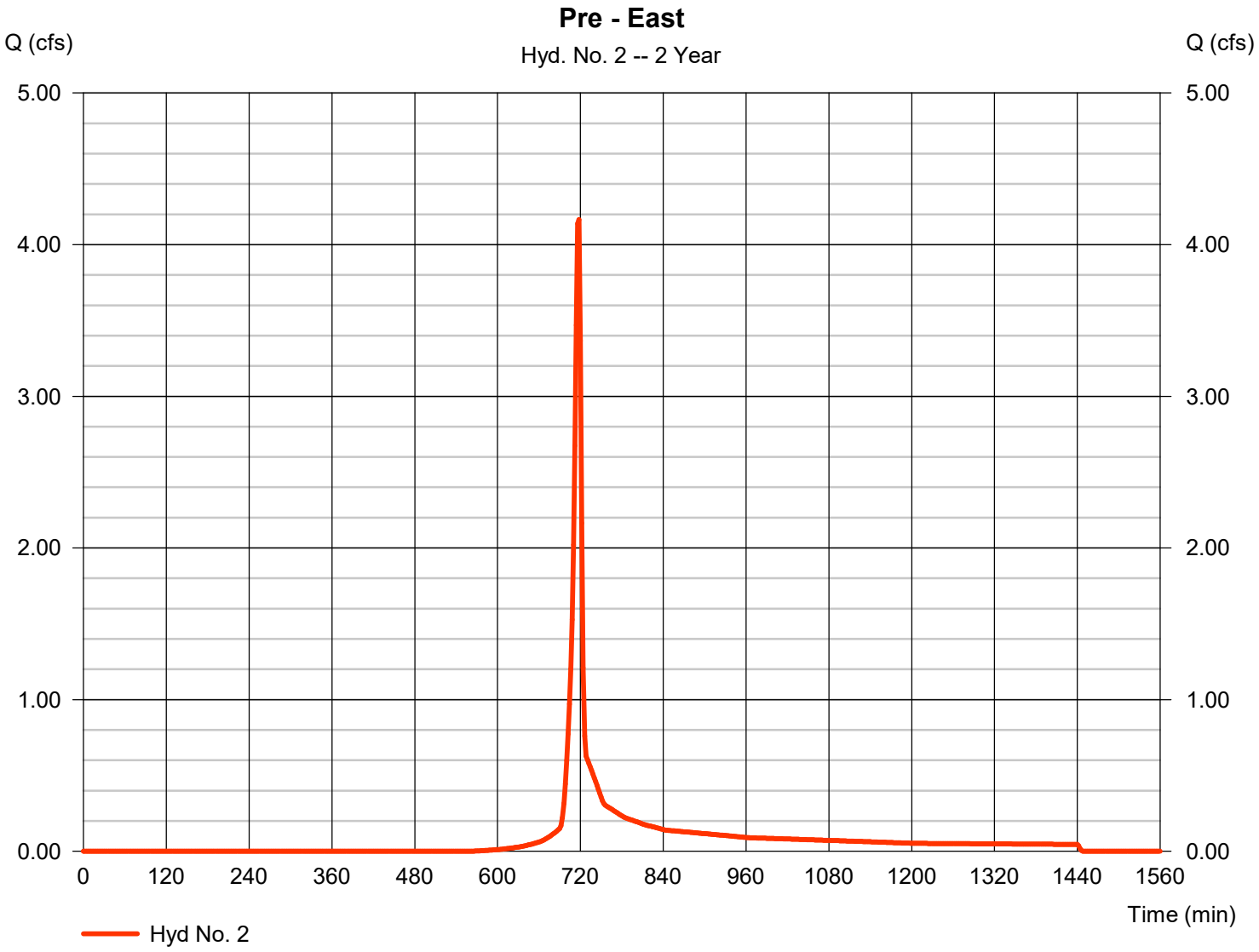
Total Travel Time, Tc ..... 5.60 min

Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	= SCS Runoff	Peak discharge	= 4.166 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 8,367 cuft
Drainage area	= 1.660 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.39 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



TR55 Tc Worksheet

Hyd. No. 2

Pre - East

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.150		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 3.39		0.00		0.00		
Land slope (%)	= 12.00		0.00		0.00		
Travel Time (min)	**= 4.65**	**+**	**0.00**	**+**	**0.00**	**=**	**4.65**
Shallow Concentrated Flow							
Flow length (ft)	= 403.00		0.00		0.00		
Watercourse slope (%)	= 10.50		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=5.23		0.00		0.00		
Travel Time (min)	**= 1.28**	**+**	**0.00**	**+**	**0.00**	**=**	**1.28**
Channel Flow							
X sectional flow area (sqft)	= 86.90		0.00		0.00		
Wetted perimeter (ft)	= 47.50		0.00		0.00		
Channel slope (%)	= 3.81		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=29.06						
			0.00				
					0.00		
Flow length (ft)	({0})100.0		0.0		0.0		
Travel Time (min)	**= 0.06**	**+**	**0.00**	**+**	**0.00**	**=**	**0.06**

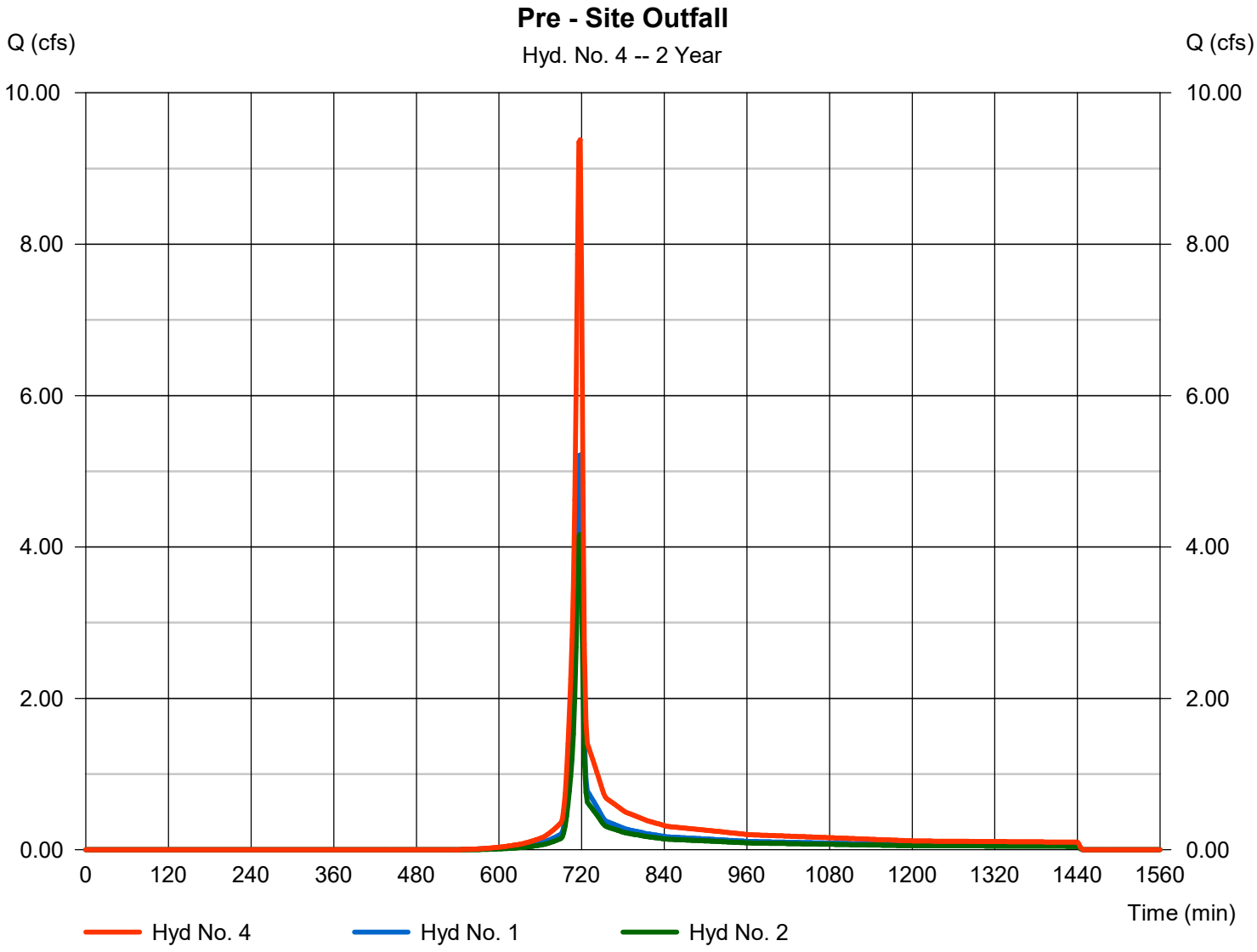
Total Travel Time, Tc ..... 6.00 min

Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	9.380 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	18,882 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	3.610 ac



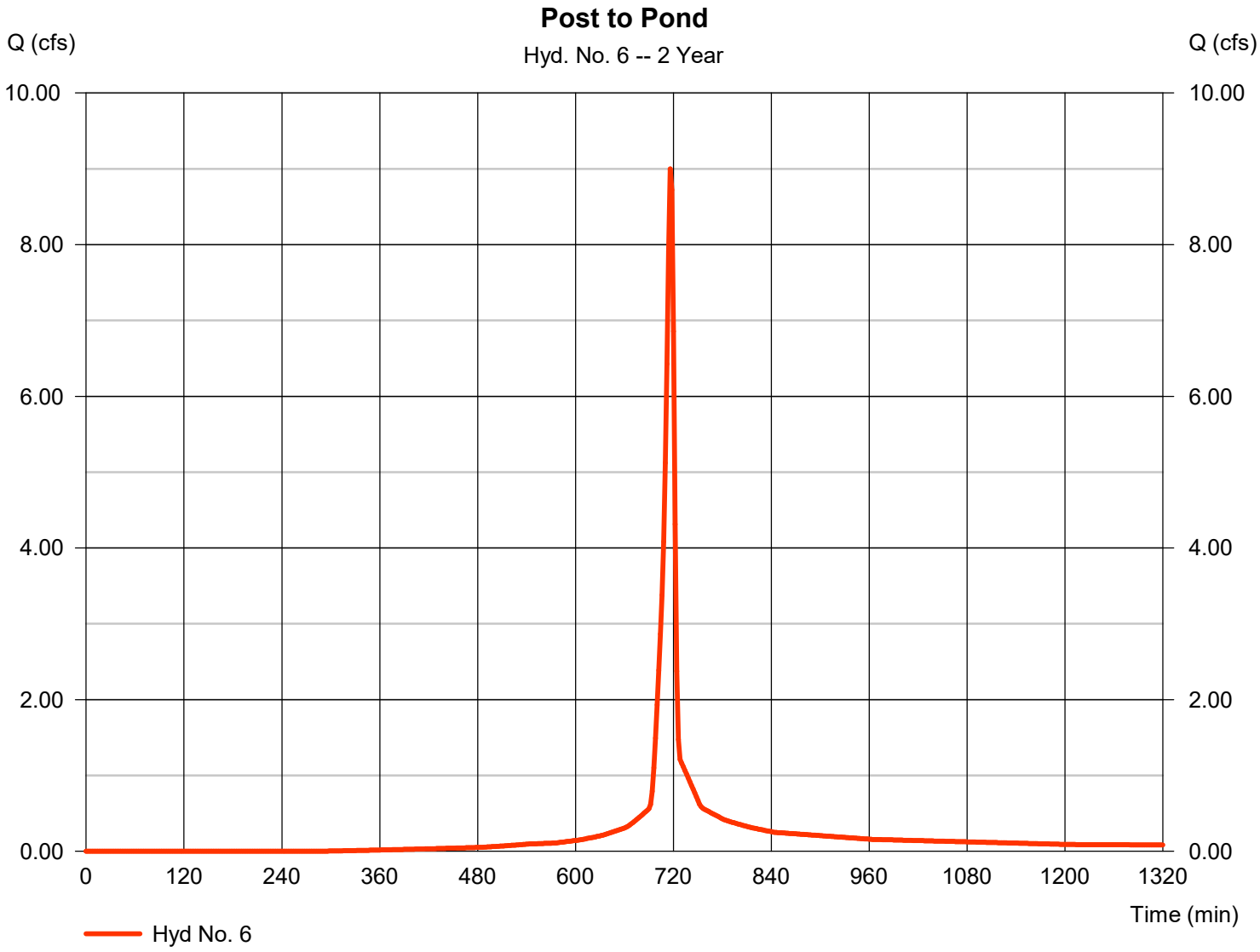
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.999 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	18,910 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.39 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



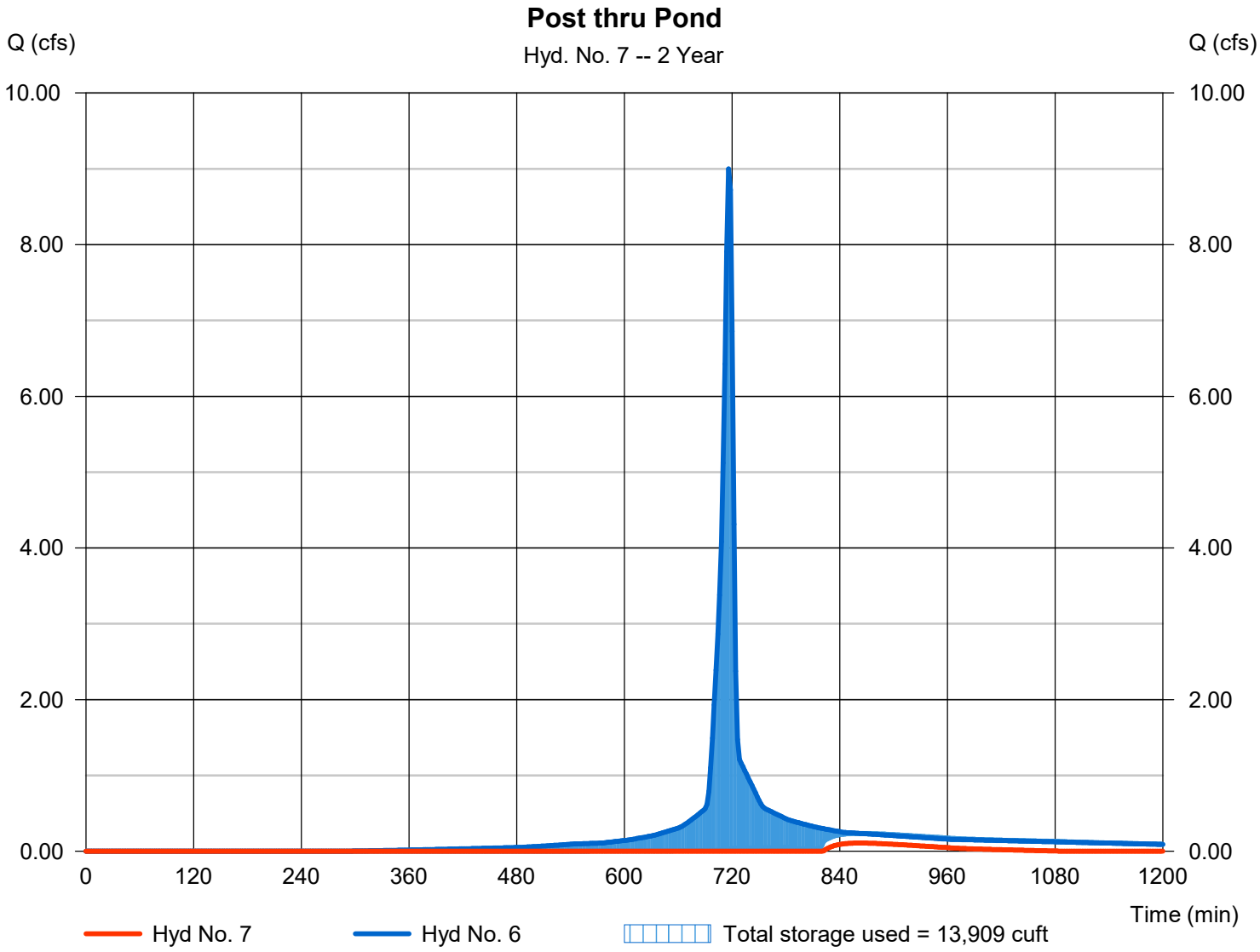
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	0.108 cfs
Storm frequency	=	2 yrs	Time to peak	=	862 min
Time interval	=	2 min	Hyd. volume	=	843 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	610.02 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	13,909 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond No. 3 - INFILTRATION 1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 603.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	603.50	2,180	0	0
6.00	609.50	2,180	13,079	13,079
6.01	609.51	1,365	18	13,096
6.49	609.99	1,365	655	13,751
6.50	610.00	5,450	32	13,783
8.00	611.50	8,900	10,656	24,439

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	0.00	0.00	0.00
Span (in)	= 12.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 606.00	0.00	0.00	0.00
Length (ft)	= 42.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 4.71	22.50	0.00	0.00
Crest El. (ft)	= 610.00	611.25	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= 1	Broad	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 1.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	603.50	0.00	---	---	---	0.00	0.00	---	---	0.000	---	0.000
0.60	1,308	604.10	0.00	---	---	---	0.00	0.00	---	---	0.005	---	0.005
1.20	2,616	604.70	0.00	---	---	---	0.00	0.00	---	---	0.010	---	0.010
1.80	3,924	605.30	0.00	---	---	---	0.00	0.00	---	---	0.015	---	0.015
2.40	5,231	605.90	0.00	---	---	---	0.00	0.00	---	---	0.020	---	0.020
3.00	6,539	606.50	0.00	---	---	---	0.00	0.00	---	---	0.025	---	0.025
3.60	7,847	607.10	0.00	---	---	---	0.00	0.00	---	---	0.030	---	0.030
4.20	9,155	607.70	0.00	---	---	---	0.00	0.00	---	---	0.035	---	0.035
4.80	10,463	608.30	0.00	---	---	---	0.00	0.00	---	---	0.040	---	0.040
5.40	11,771	608.90	0.00	---	---	---	0.00	0.00	---	---	0.045	---	0.045
6.00	13,079	609.50	0.00	---	---	---	0.00	0.00	---	---	0.050	---	0.050
6.00	13,080	609.50	0.00	---	---	---	0.00	0.00	---	---	0.049	---	0.049
6.00	13,082	609.50	0.00	---	---	---	0.00	0.00	---	---	0.047	---	0.047
6.00	13,084	609.50	0.00	---	---	---	0.00	0.00	---	---	0.045	---	0.045
6.00	13,086	609.50	0.00	---	---	---	0.00	0.00	---	---	0.043	---	0.043
6.00	13,087	609.50	0.00	---	---	---	0.00	0.00	---	---	0.041	---	0.041
6.01	13,089	609.51	0.00	---	---	---	0.00	0.00	---	---	0.039	---	0.039
6.01	13,091	609.51	0.00	---	---	---	0.00	0.00	---	---	0.037	---	0.037
6.01	13,093	609.51	0.00	---	---	---	0.00	0.00	---	---	0.035	---	0.035
6.01	13,095	609.51	0.00	---	---	---	0.00	0.00	---	---	0.033	---	0.033
6.01	13,096	609.51	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.06	13,162	609.56	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.11	13,227	609.61	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.15	13,293	609.65	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.20	13,358	609.70	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.25	13,424	609.75	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.30	13,489	609.80	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.35	13,555	609.85	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.39	13,620	609.89	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.44	13,686	609.94	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.49	13,751	609.99	0.00	---	---	---	0.00	0.00	---	---	0.032	---	0.032
6.49	13,755	609.99	0.00	---	---	---	0.00	0.00	---	---	0.041	---	0.041
6.49	13,758	609.99	0.00	---	---	---	0.00	0.00	---	---	0.051	---	0.051
6.49	13,761	609.99	0.00	---	---	---	0.00	0.00	---	---	0.060	---	0.060
6.49	13,764	609.99	0.00	---	---	---	0.00	0.00	---	---	0.069	---	0.069
6.49	13,767	609.99	0.00	---	---	---	0.00	0.00	---	---	0.079	---	0.079
6.50	13,770	610.00	0.00	---	---	---	0.00	0.00	---	---	0.088	---	0.088

Continues on next page...

INFILTRATION 1

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
6.50	13,774	610.00	0.00	---	---	---	0.00	0.00	---	---	0.098	---	0.098
6.50	13,777	610.00	0.00	---	---	---	0.00	0.00	---	---	0.107	---	0.107
6.50	13,780	610.00	0.00	---	---	---	0.00	0.00	---	---	0.117	---	0.117
6.50	13,783	610.00	0.00	---	---	---	0.00	0.00	---	---	0.126	---	0.126
6.65	14,849	610.15	0.92 oc	---	---	---	0.91	0.00	---	---	0.134	---	1.046
6.80	15,914	610.30	2.58 oc	---	---	---	2.58	0.00	---	---	0.142	---	2.720
6.95	16,980	610.45	4.74 oc	---	---	---	4.74	0.00	---	---	0.150	---	4.886
7.10	18,046	610.60	6.91 oc	---	---	---	6.91 s	0.00	---	---	0.158	---	7.065
7.25	19,111	610.75	7.28 oc	---	---	---	7.27 s	0.00	---	---	0.166	---	7.441
7.40	20,177	610.90	7.50 oc	---	---	---	7.50 s	0.00	---	---	0.174	---	7.676
7.55	21,243	611.05	7.69 oc	---	---	---	7.68 s	0.00	---	---	0.182	---	7.866
7.70	22,308	611.20	7.85 oc	---	---	---	7.84 s	0.00	---	---	0.190	---	8.034
7.85	23,374	611.35	8.00 oc	---	---	---	8.00 s	1.86	---	---	0.198	---	10.05
8.00	24,439	611.50	8.14 oc	---	---	---	8.13 s	7.31	---	---	0.206	---	15.65

...End

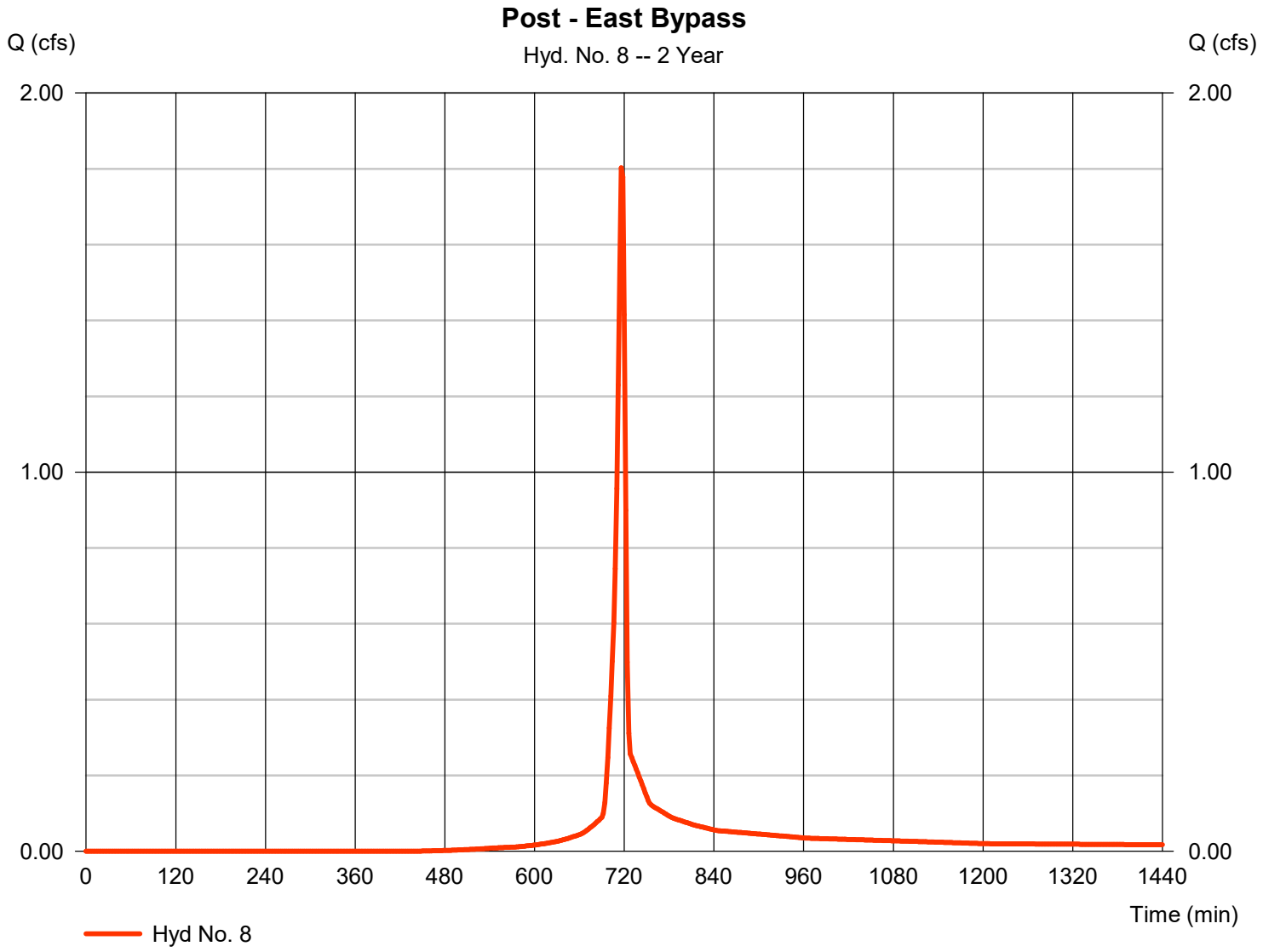
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.803 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	3,661 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.39 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



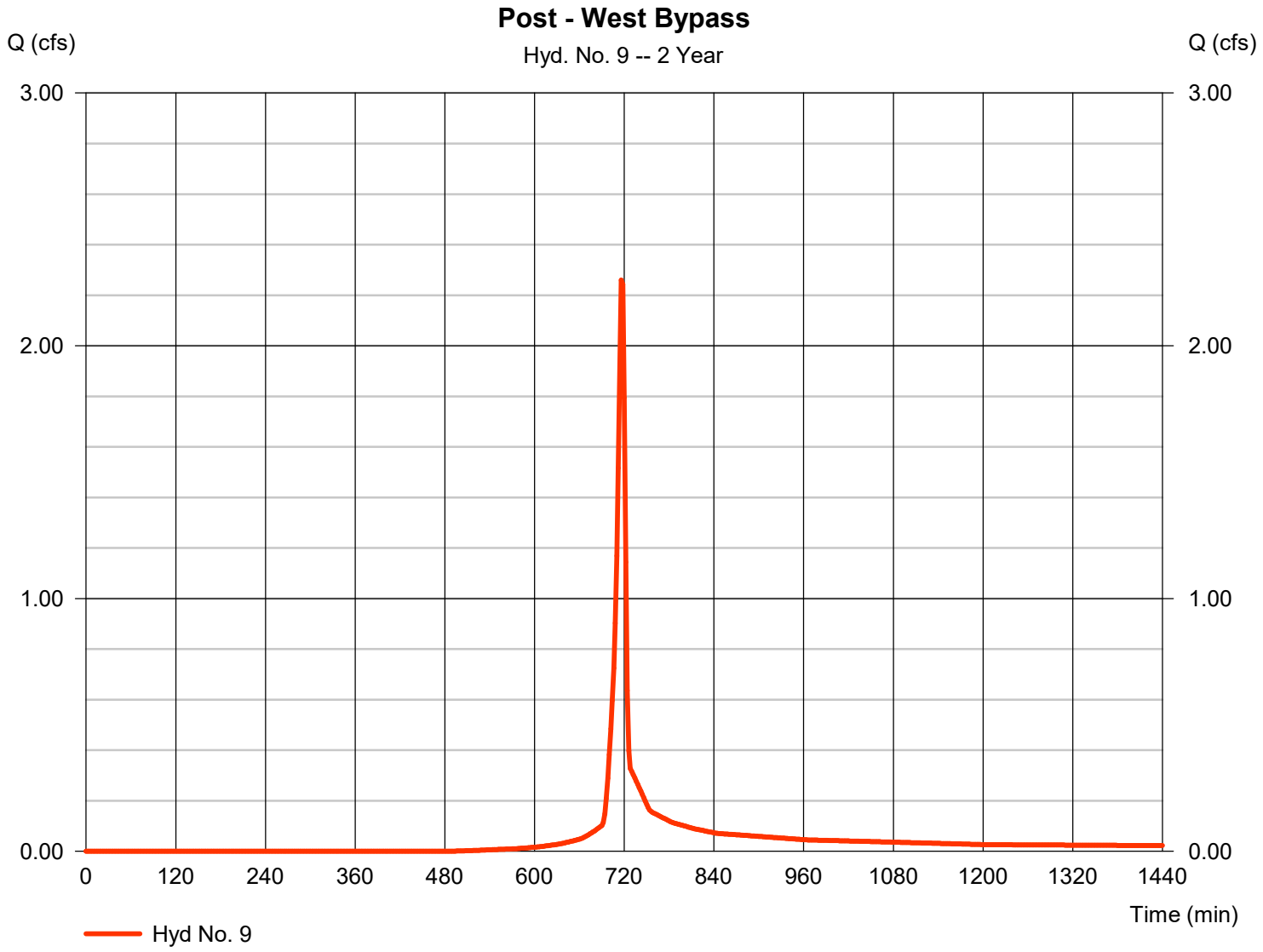
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.260 cfs
Storm frequency	=	2 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	4,569 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.39 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

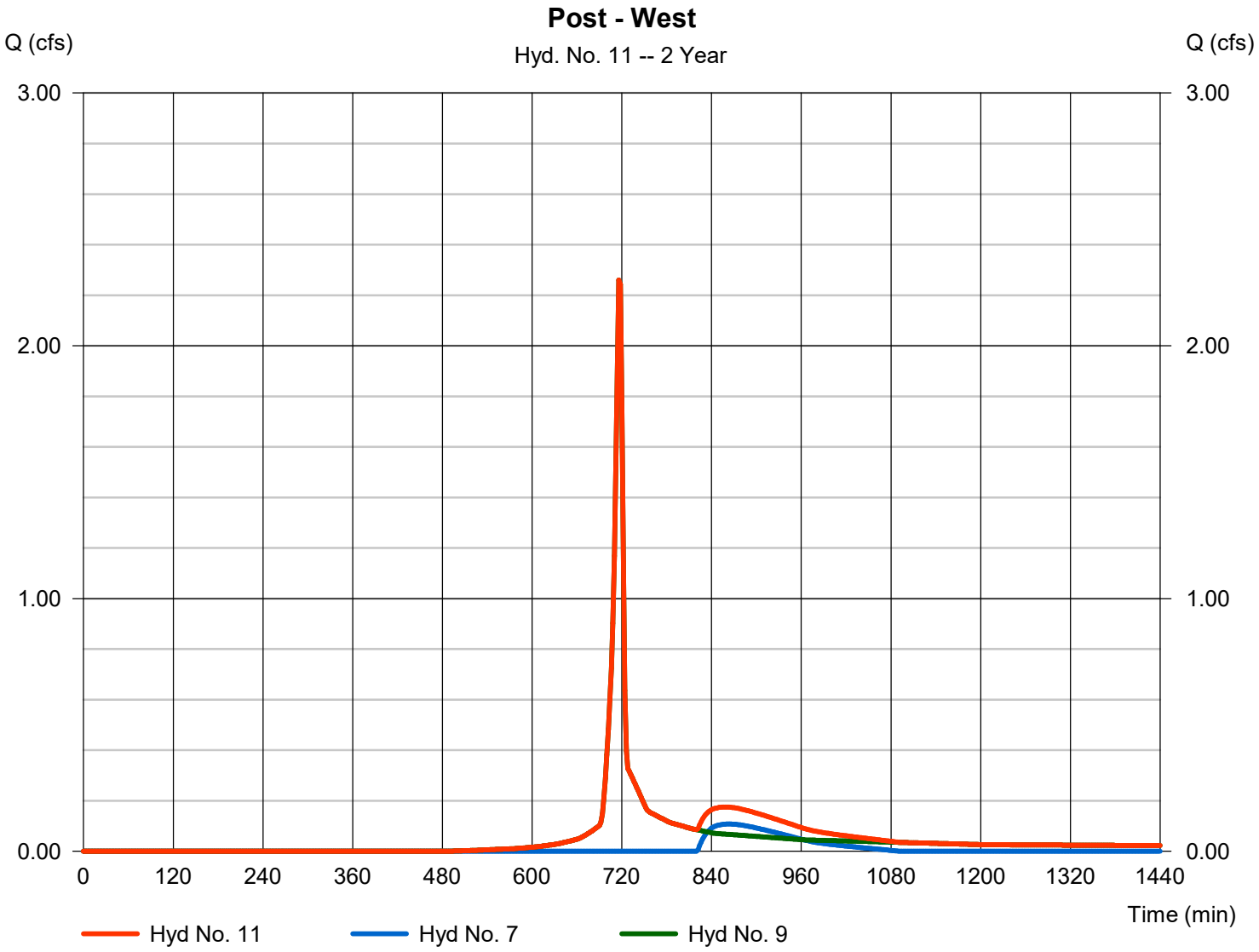


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	= Combine	Peak discharge	= 2.260 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 5,412 cuft
Inflow hyds.	= 7, 9	Contrib. drain. area	= 0.760 ac

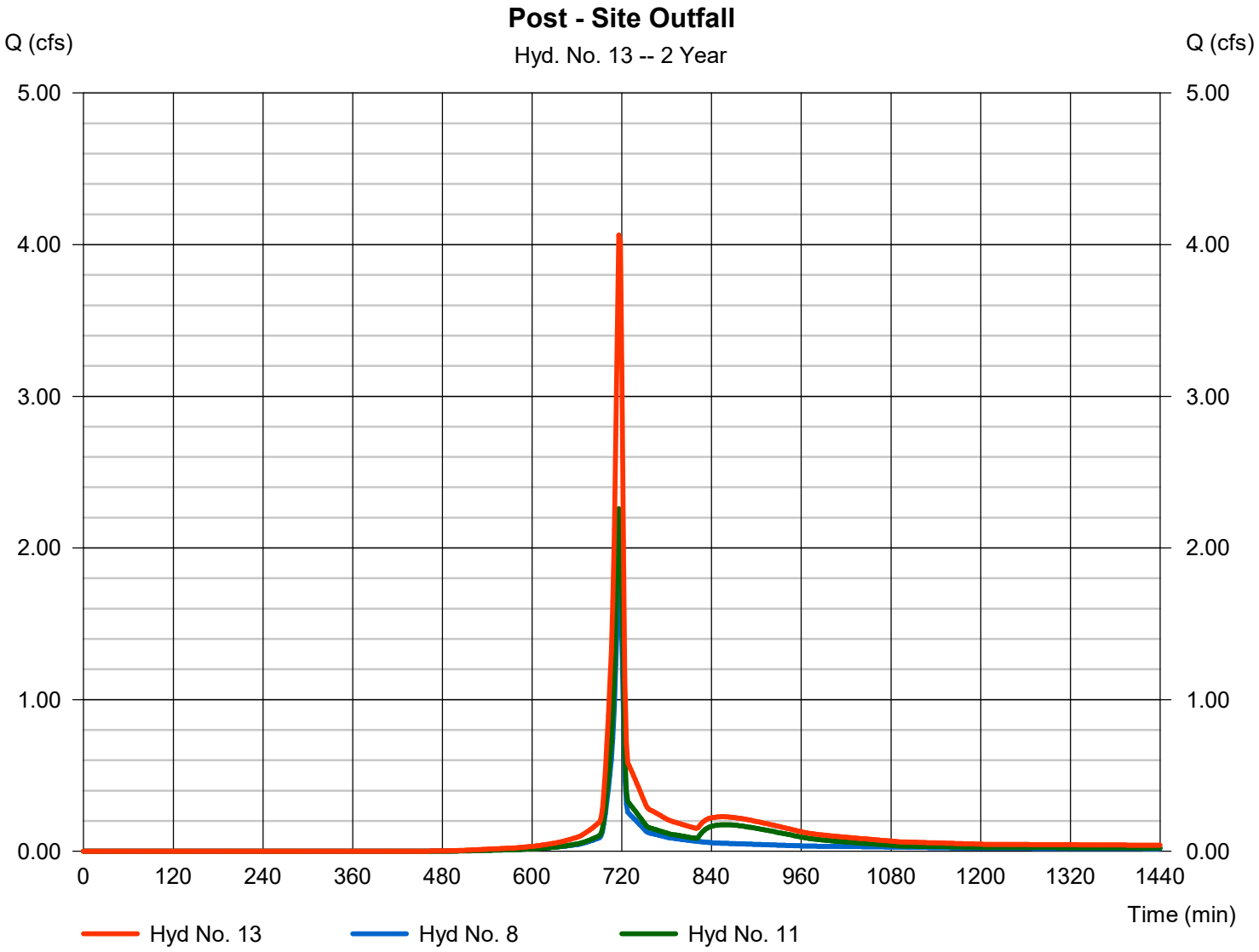


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	= Combine	Peak discharge	= 4.062 cfs
Storm frequency	= 2 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 9,072 cuft
Inflow hyds.	= 8, 11	Contrib. drain. area	= 0.560 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

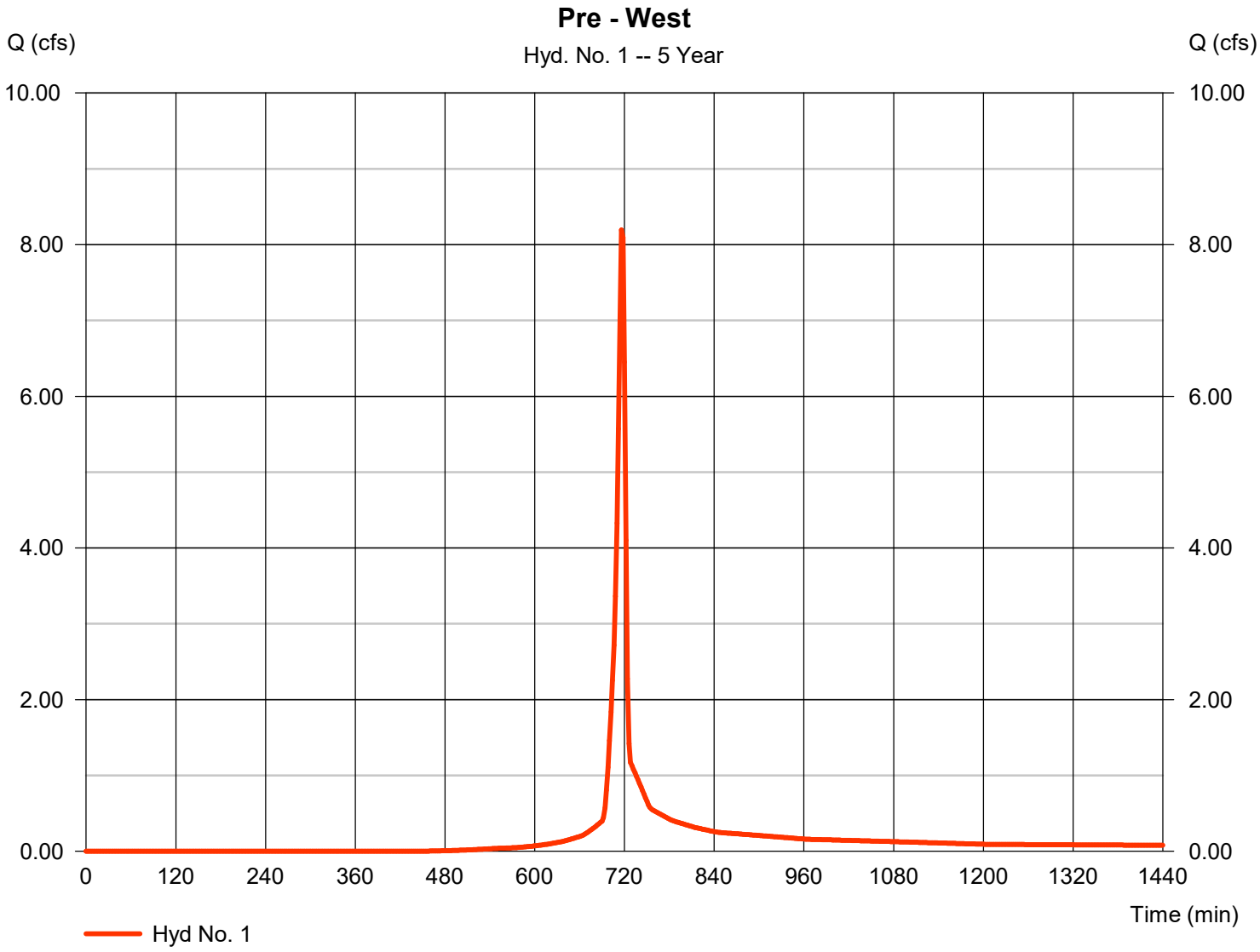
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.194	2	716	16,621	------	------	------	Pre - West
2	SCS Runoff	6.636	2	716	13,425	------	------	------	Pre - East
4	Combine	14.83	2	716	30,046	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	12.64	2	716	27,142	------	------	------	Post to Pond
7	Reservoir	1.884	2	726	7,866	6	610.24	15,471	Post thru Pond
8	SCS Runoff	2.692	2	716	5,544	------	------	------	Post - East Bypass
9	SCS Runoff	3.451	2	716	7,049	------	------	------	Post - West Bypass
11	Combine	3.451	2	716	14,915	7, 9,	------	------	Post - West
13	Combine	6.142	2	716	20,459	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.194 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	16,621 cuft
Drainage area	=	1.950 ac	Curve number	=	80.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

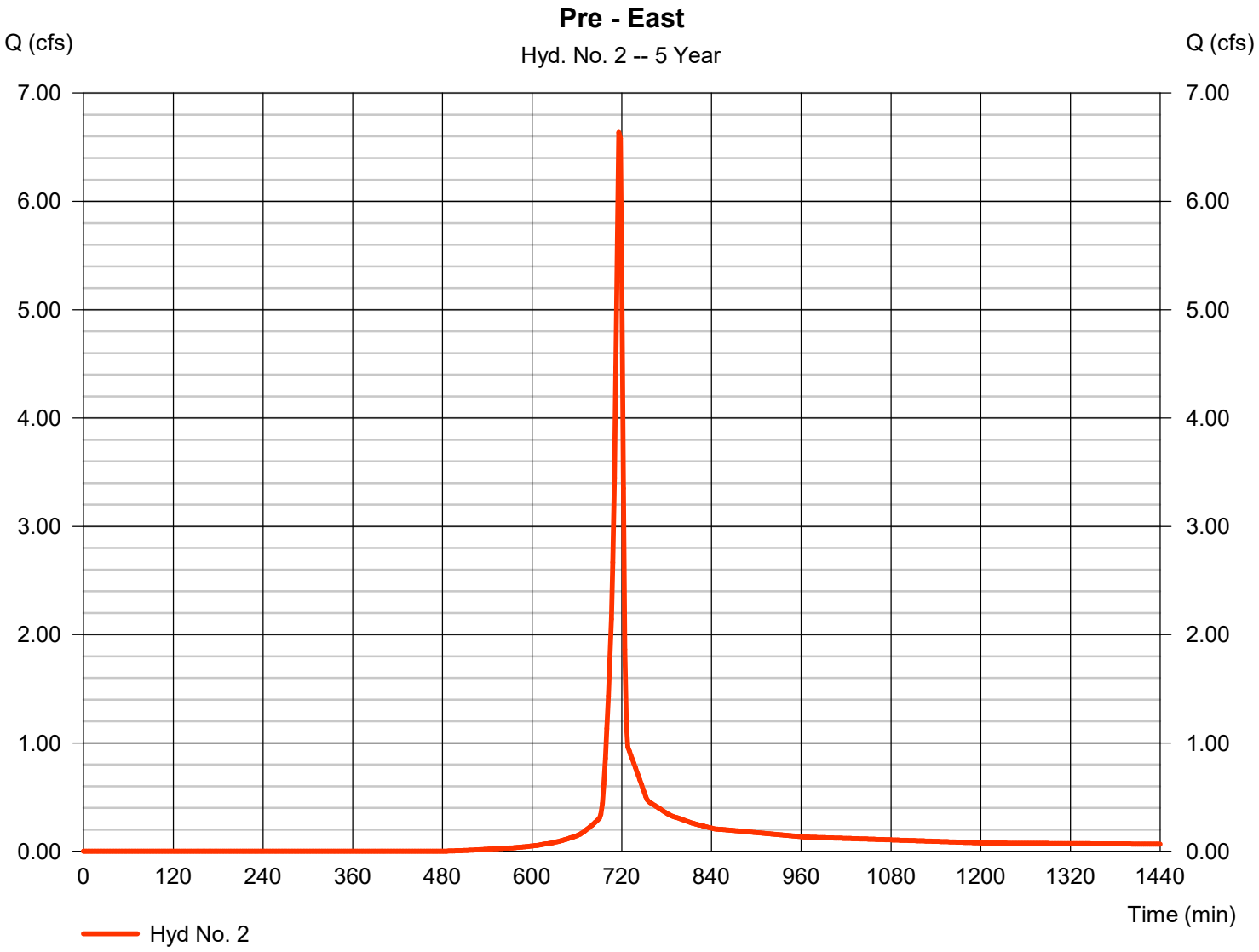


Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	= SCS Runoff	Peak discharge	= 6.636 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 13,425 cuft
Drainage area	= 1.660 ac	Curve number	= 79
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.00 min
Total precip.	= 4.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

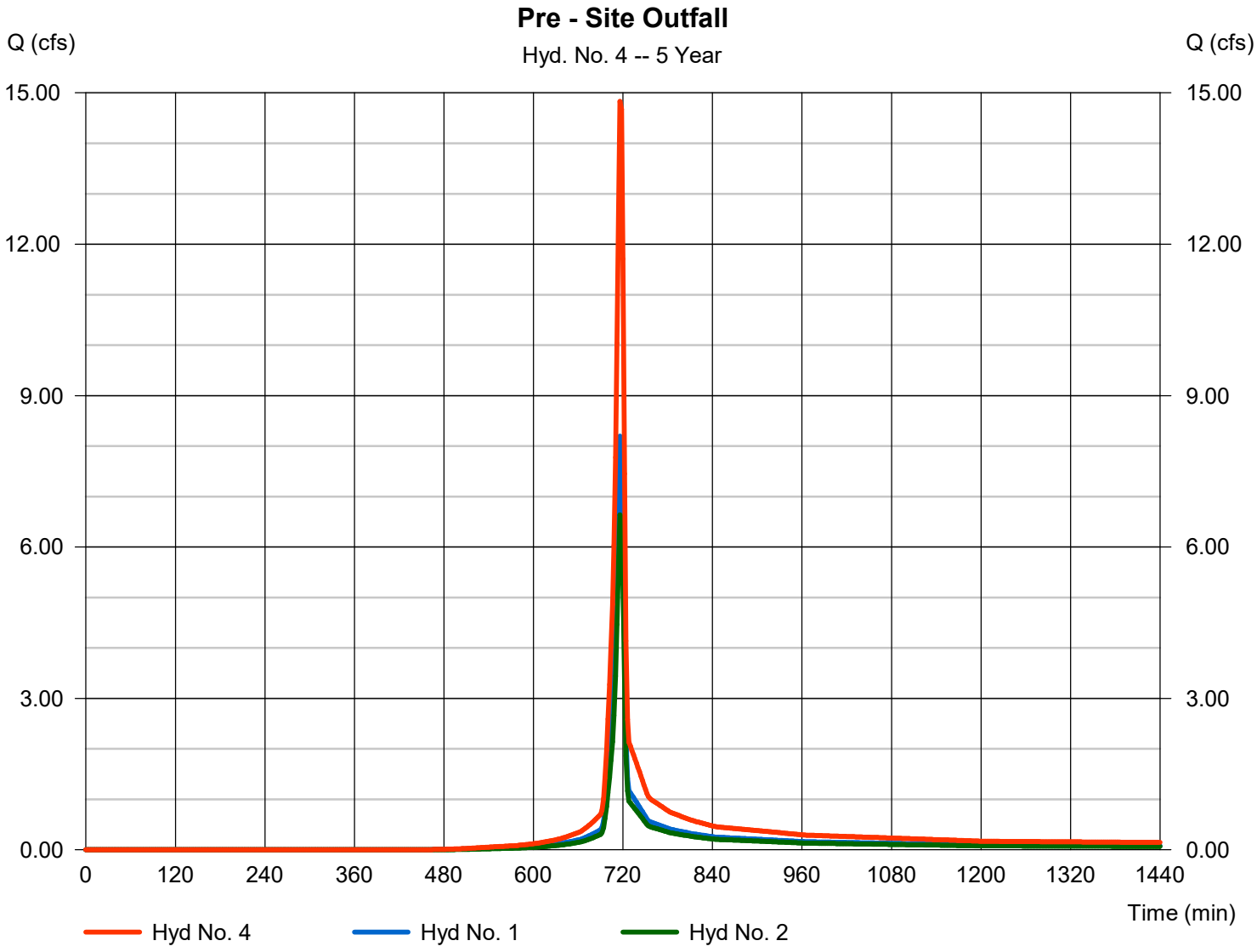


Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	14.83 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	30,046 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	3.610 ac



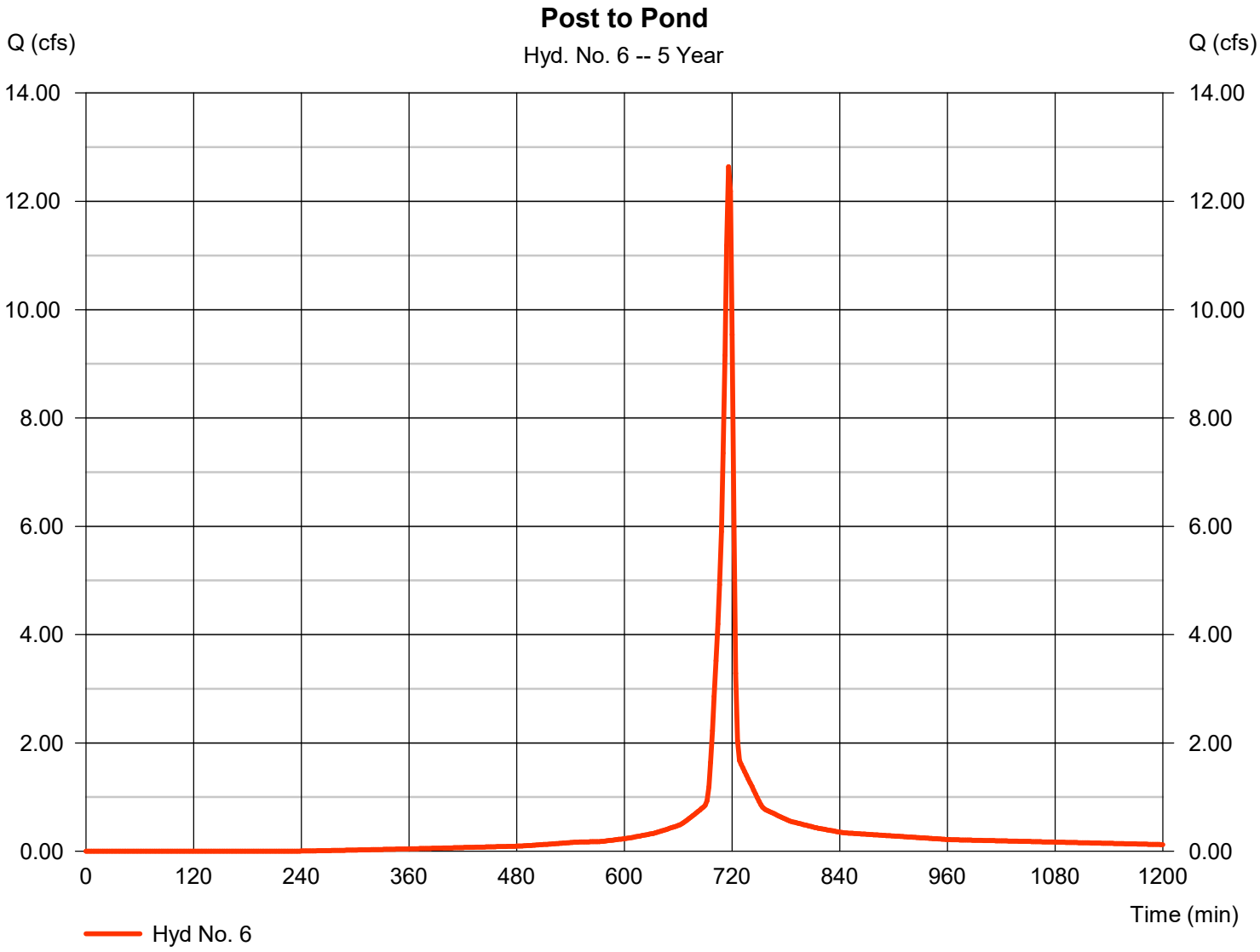
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.64 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	27,142 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



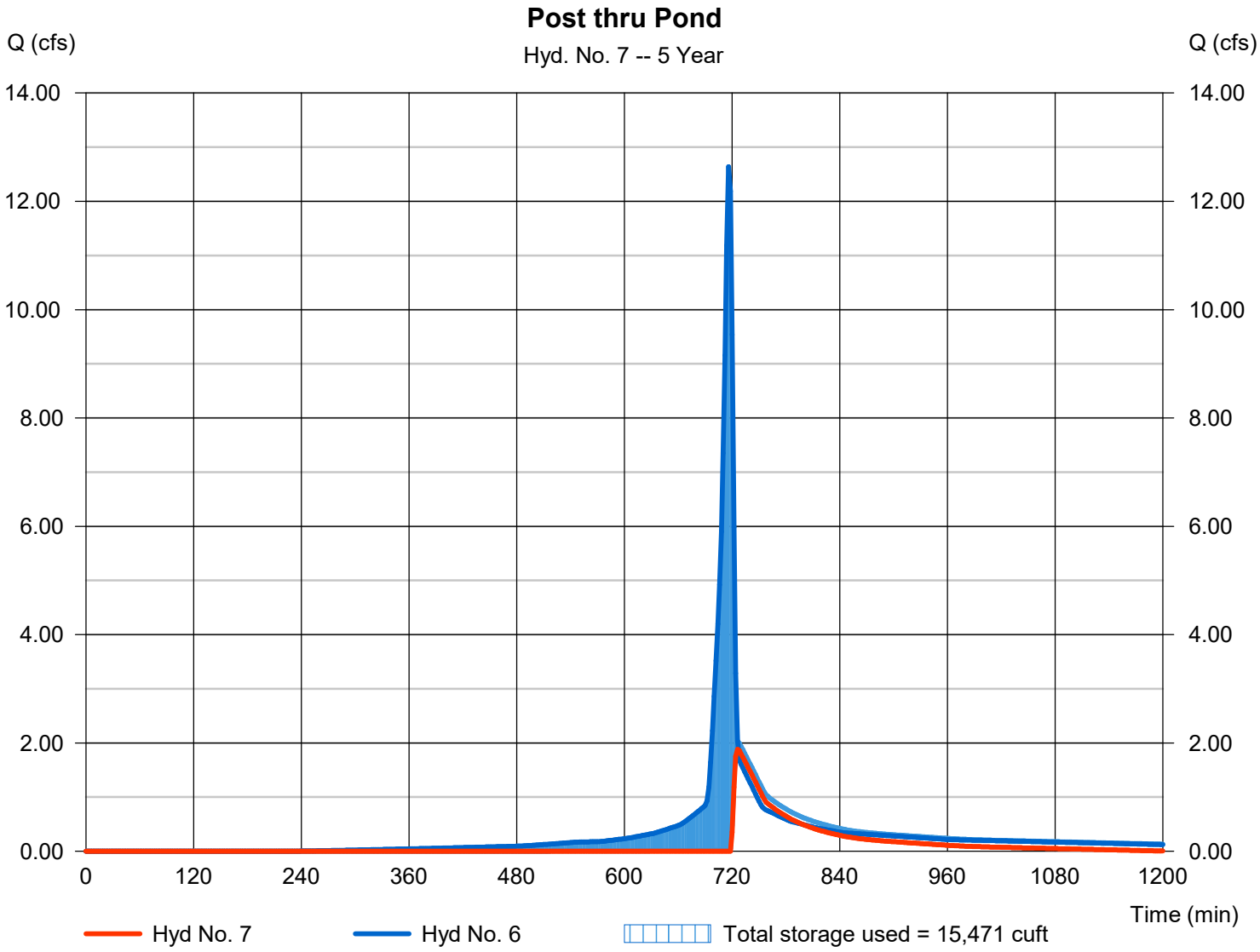
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	1.884 cfs
Storm frequency	=	5 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	7,866 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	610.24 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	15,471 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



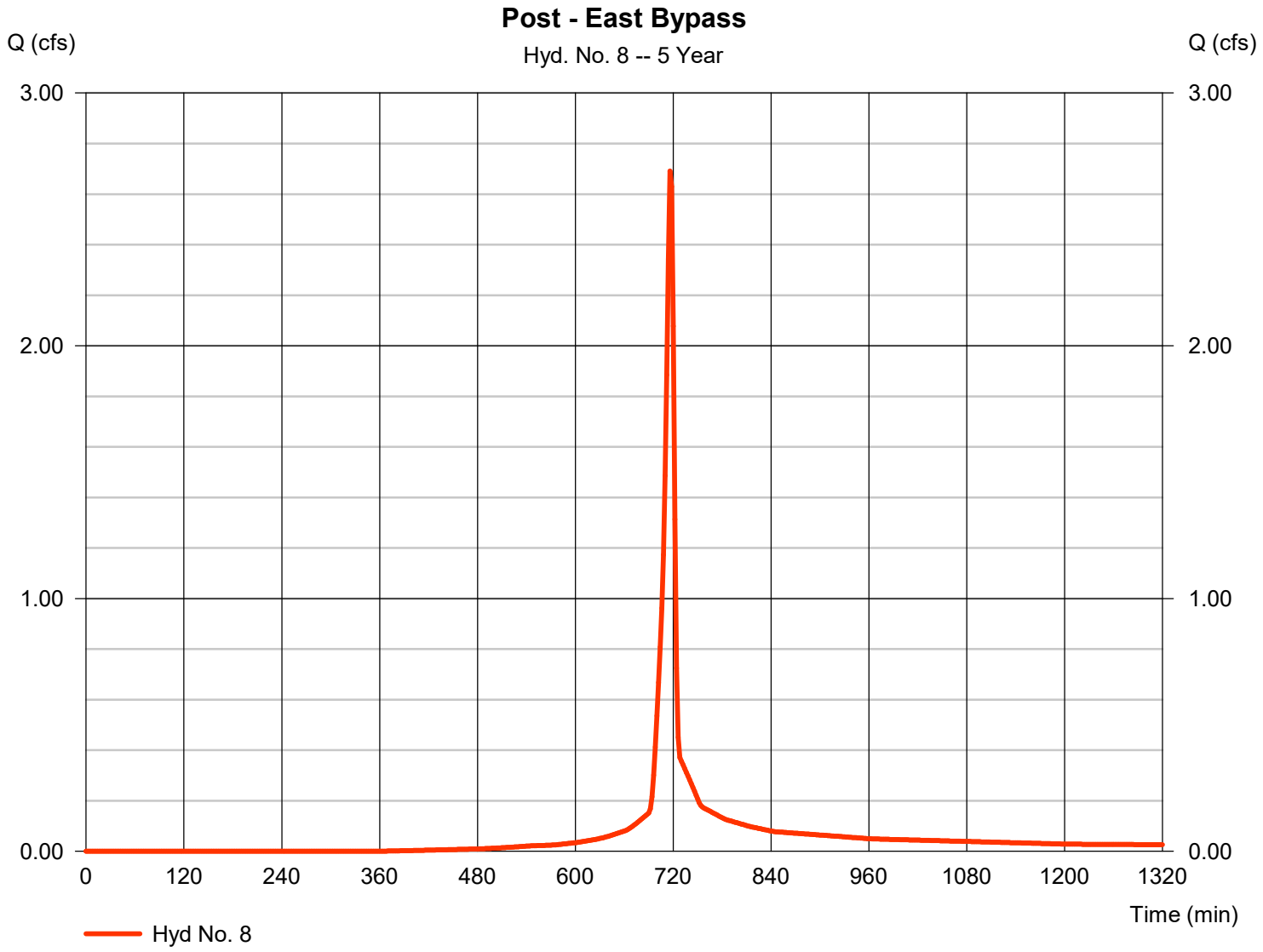
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.692 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	5,544 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



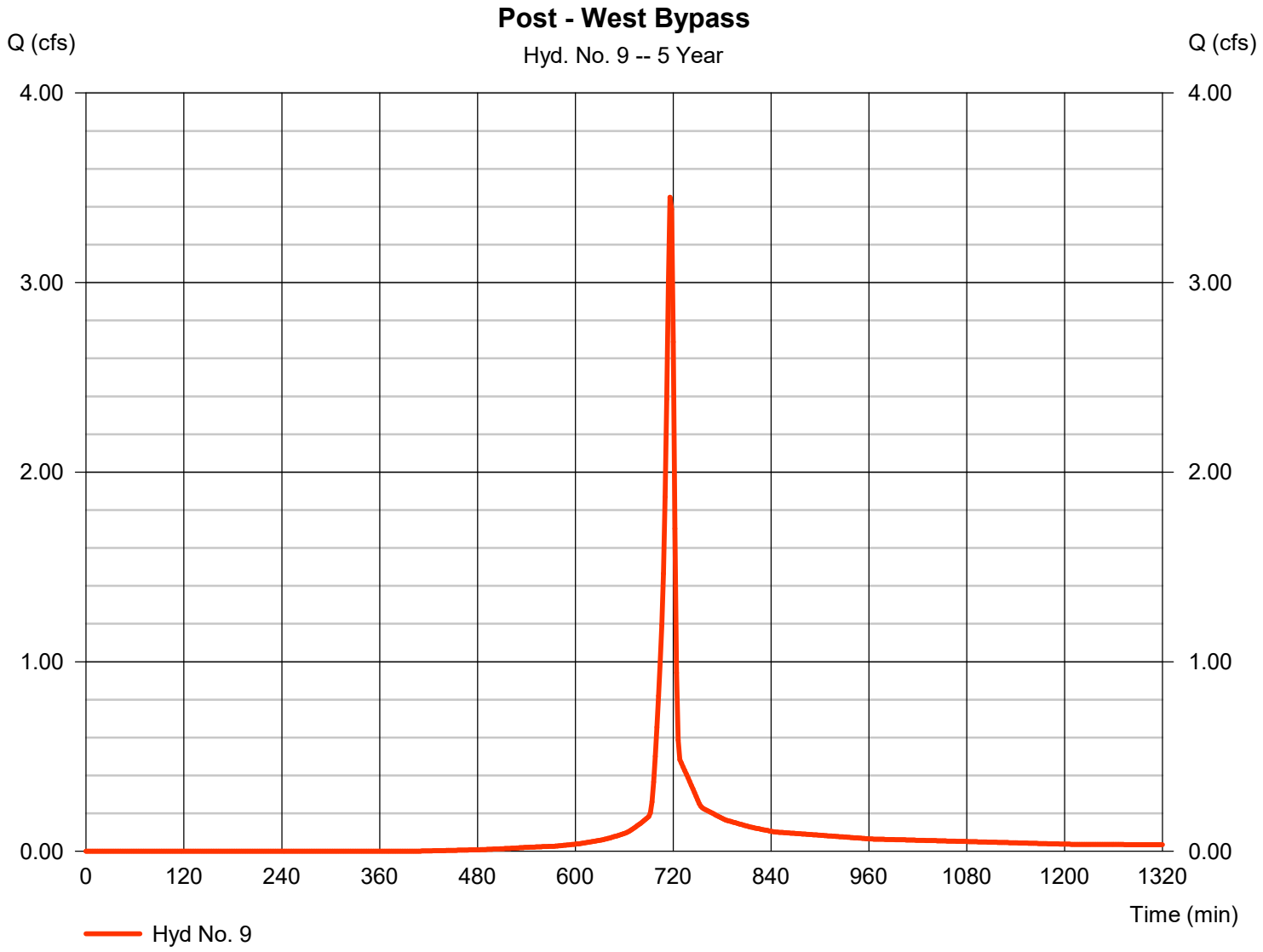
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.451 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	7,049 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	4.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

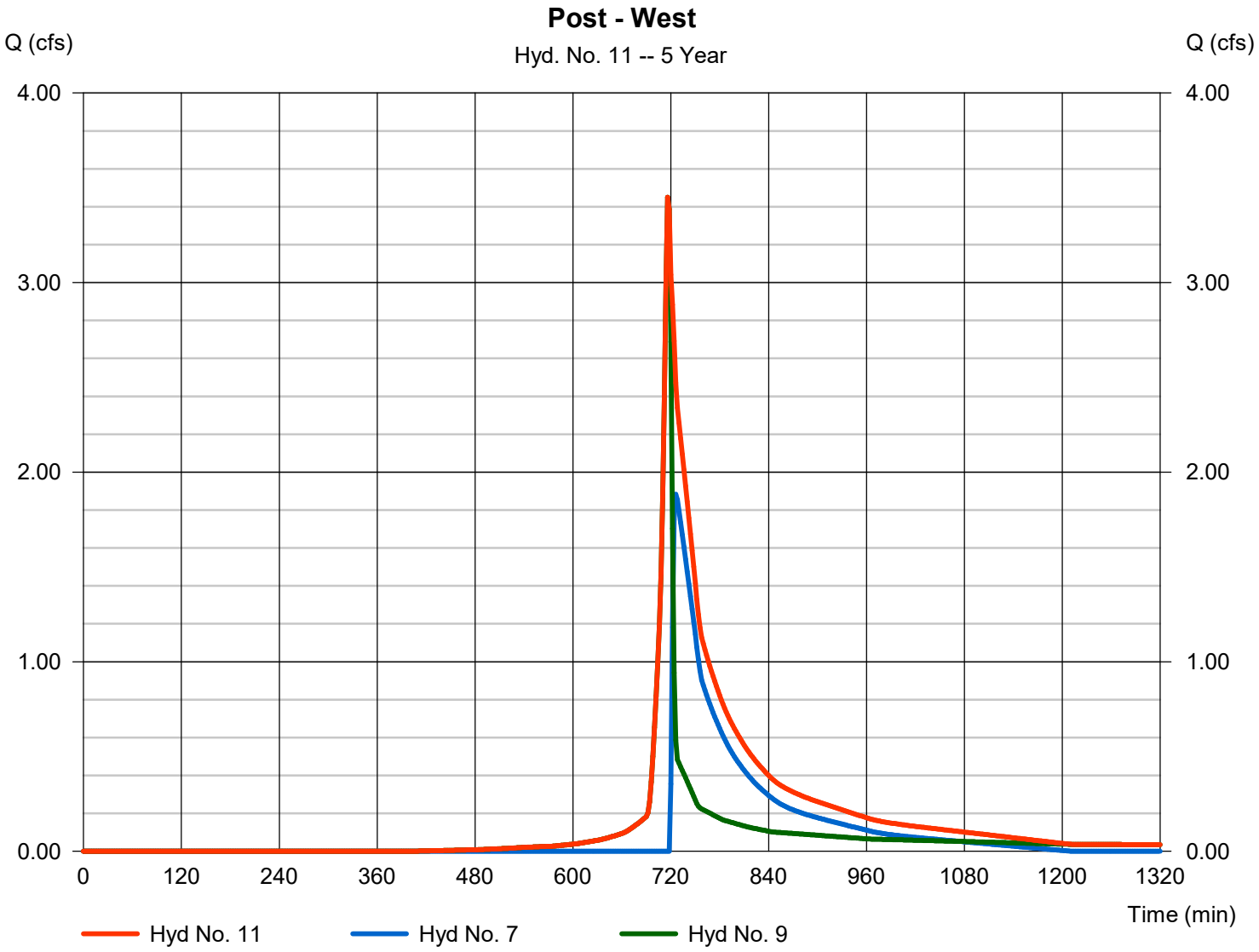


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	= Combine	Peak discharge	= 3.451 cfs
Storm frequency	= 5 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 14,915 cuft
Inflow hyds.	= 7, 9	Contrib. drain. area	= 0.760 ac

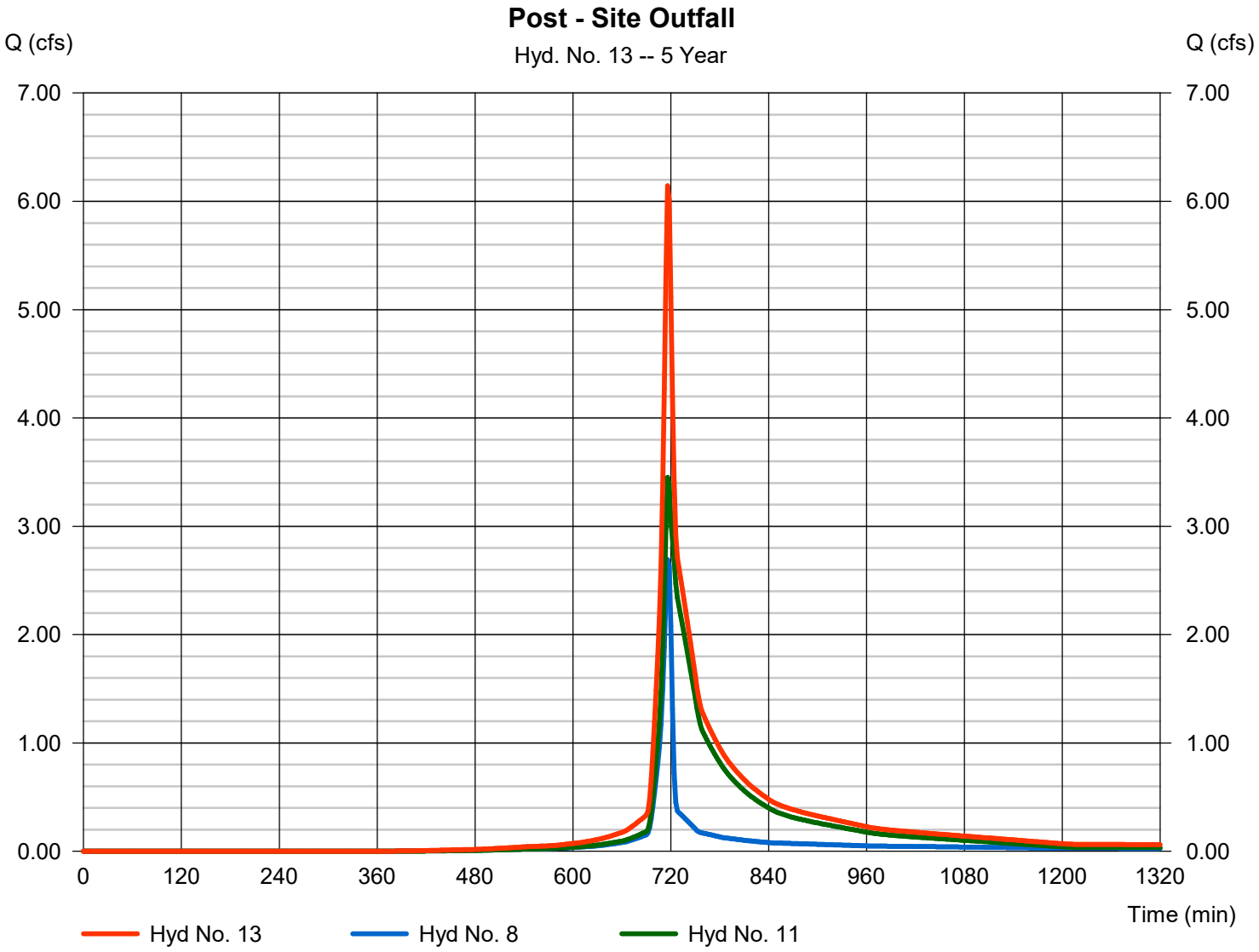


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	6.142 cfs
Storm frequency	=	5 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	20,459 cuft
Inflow hyds.	=	8, 11	Contrib. drain. area	=	0.560 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

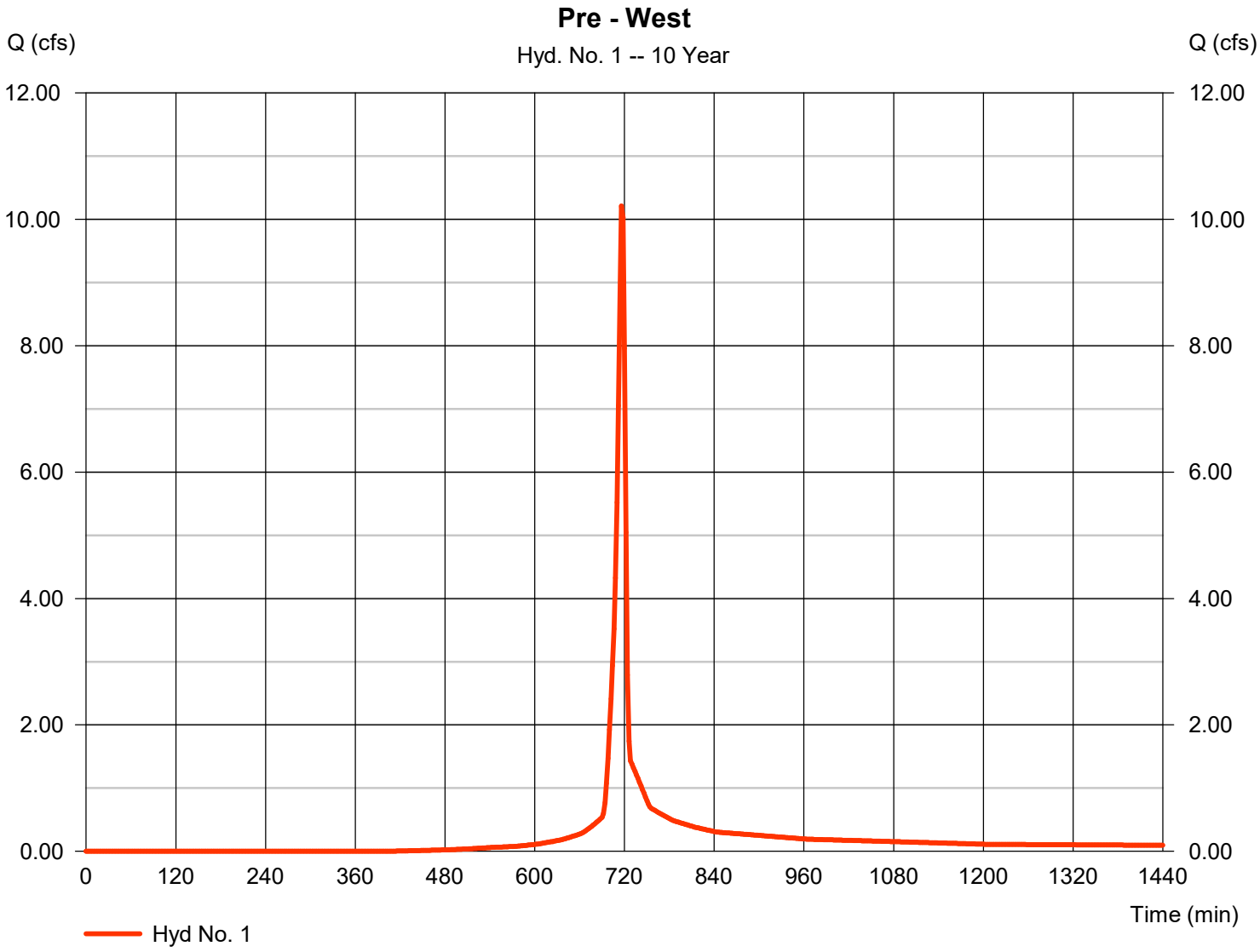
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	10.21	2	716	20,849	------	------	------	Pre - West
2	SCS Runoff	8.339	2	716	16,951	------	------	------	Pre - East
4	Combine	18.55	2	716	37,800	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	15.02	2	716	32,632	------	------	------	Post to Pond
7	Reservoir	5.421	2	722	13,070	6	610.50	17,316	Post thru Pond
8	SCS Runoff	3.282	2	716	6,825	------	------	------	Post - East Bypass
9	SCS Runoff	4.247	2	716	8,750	------	------	------	Post - West Bypass
11	Combine	7.697	2	720	21,819	7, 9,	------	------	Post - West
13	Combine	10.21	2	720	28,644	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	= SCS Runoff	Peak discharge	= 10.21 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 20,849 cuft
Drainage area	= 1.950 ac	Curve number	= 80.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 5.60 min
Total precip.	= 5.23 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

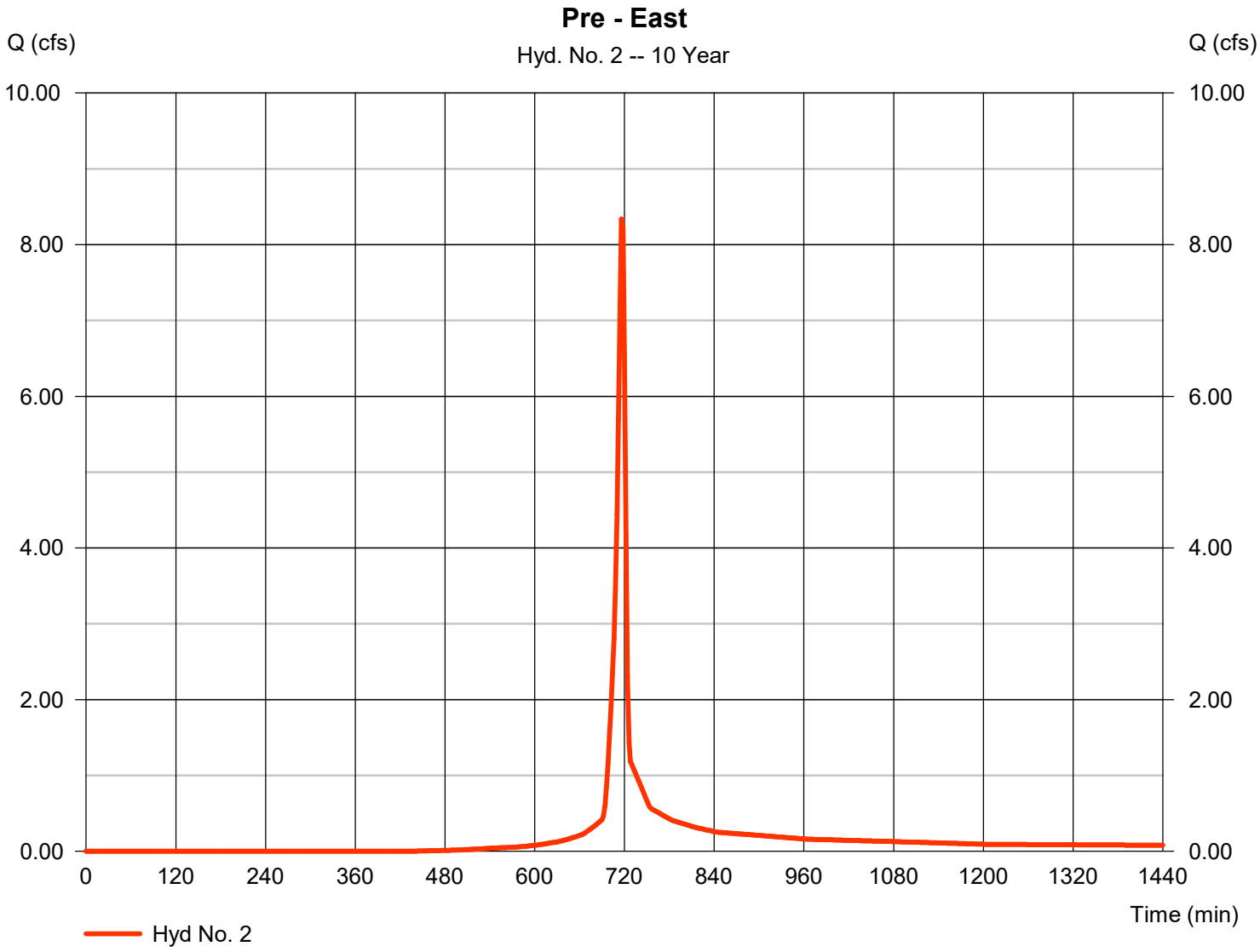


Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.339 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	16,951 cuft
Drainage area	=	1.660 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.23 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

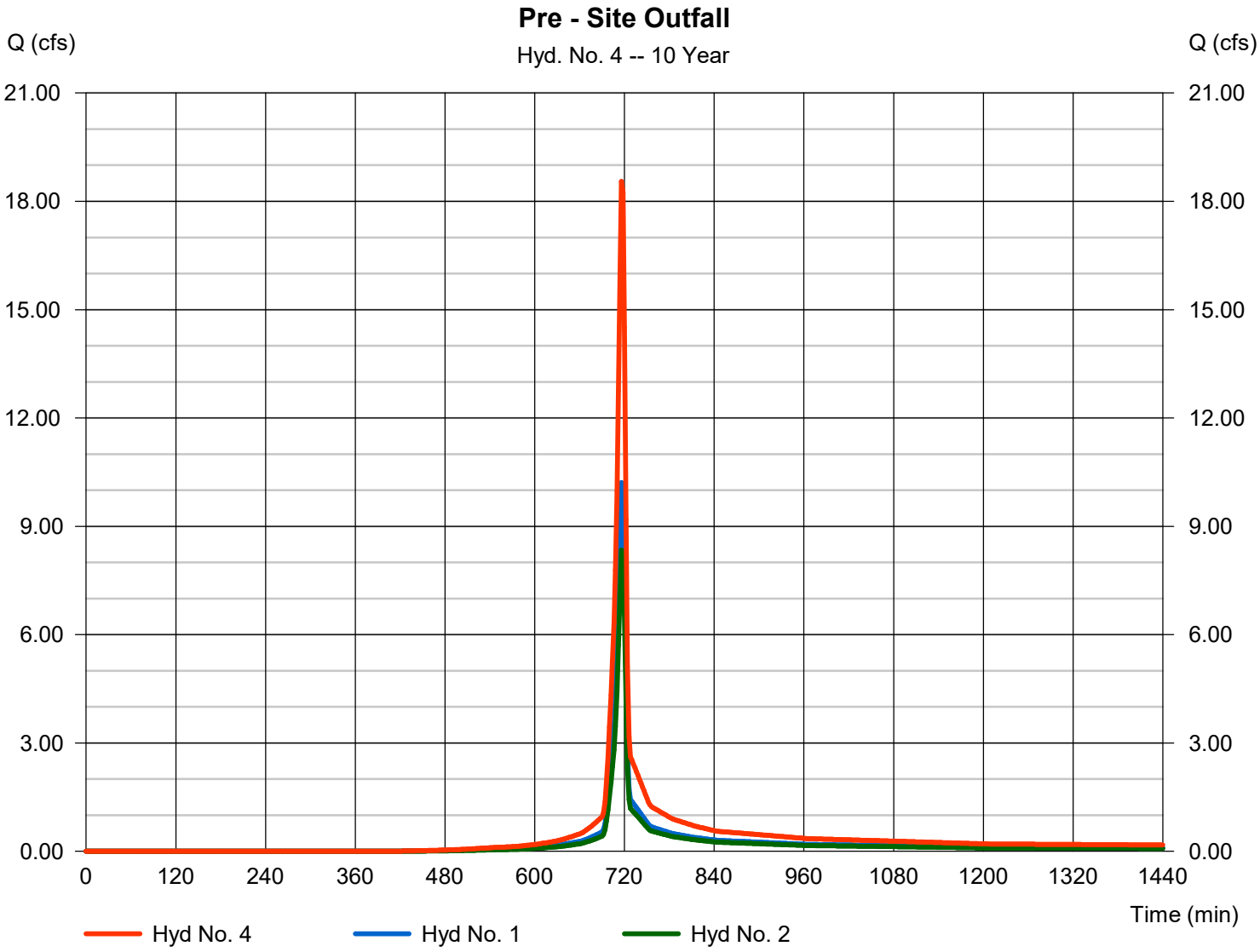


Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	= Combine	Peak discharge	= 18.55 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 37,800 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.610 ac



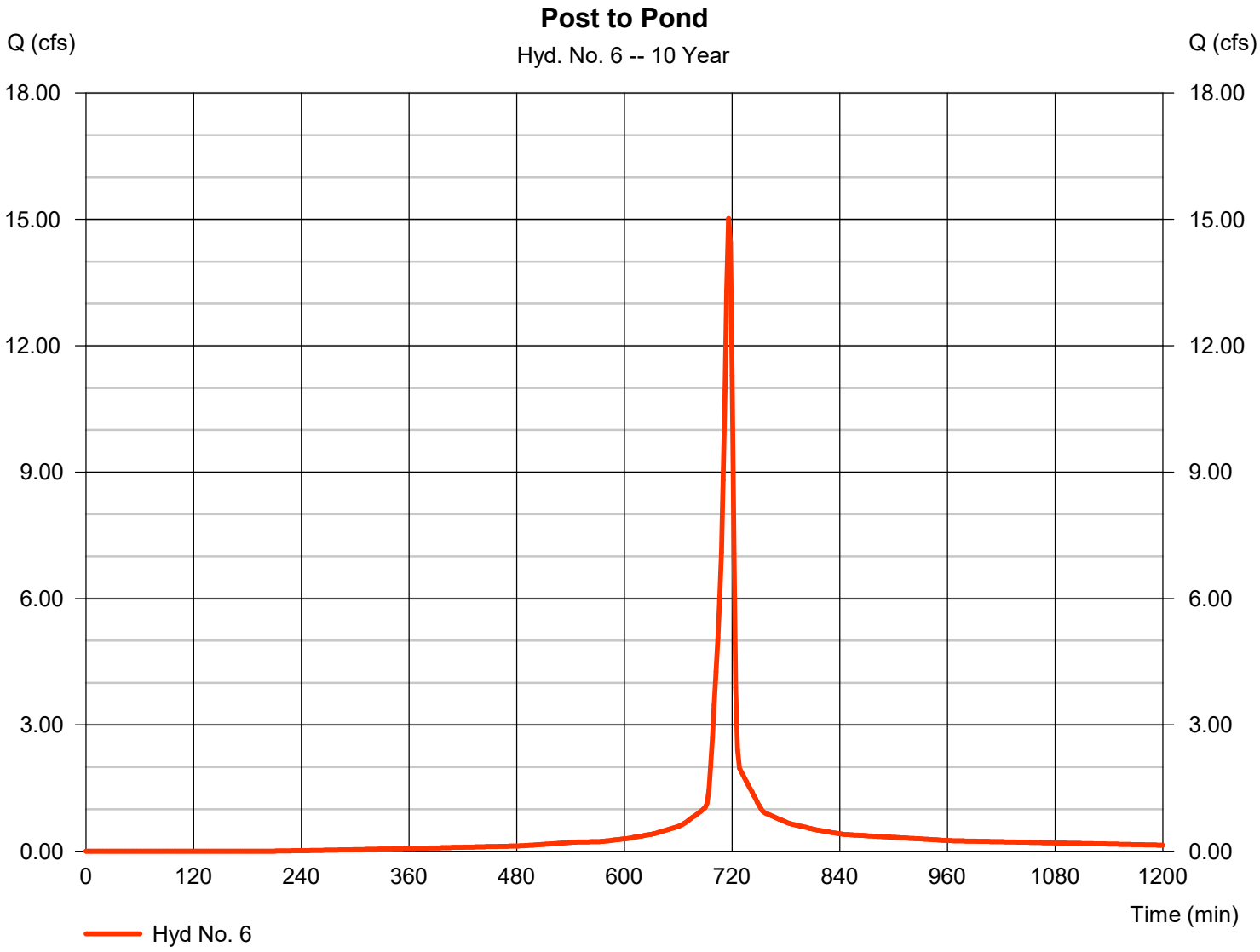
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.02 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	32,632 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.23 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



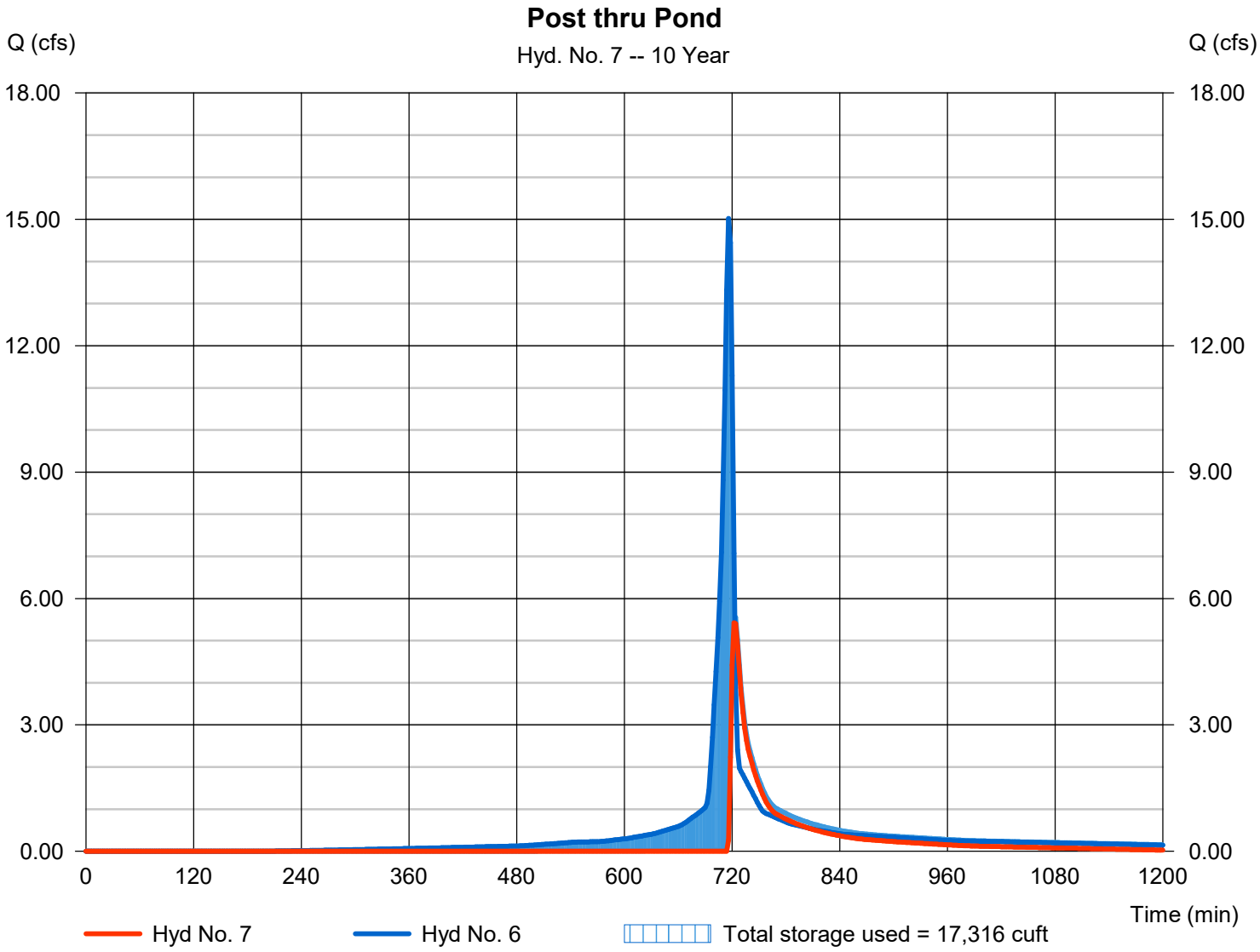
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	5.421 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	13,070 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	610.50 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	17,316 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



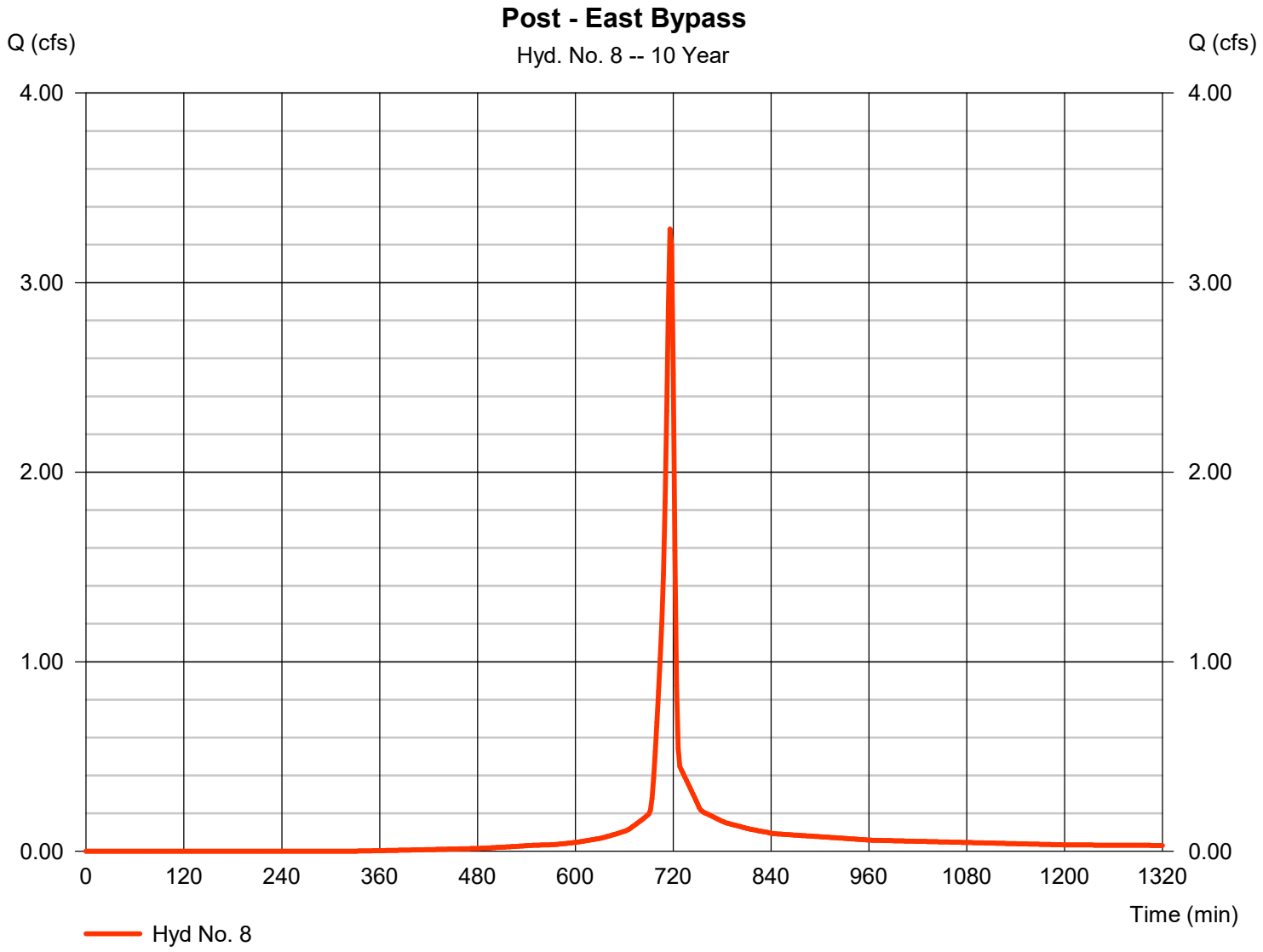
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.282 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	6,825 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.23 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



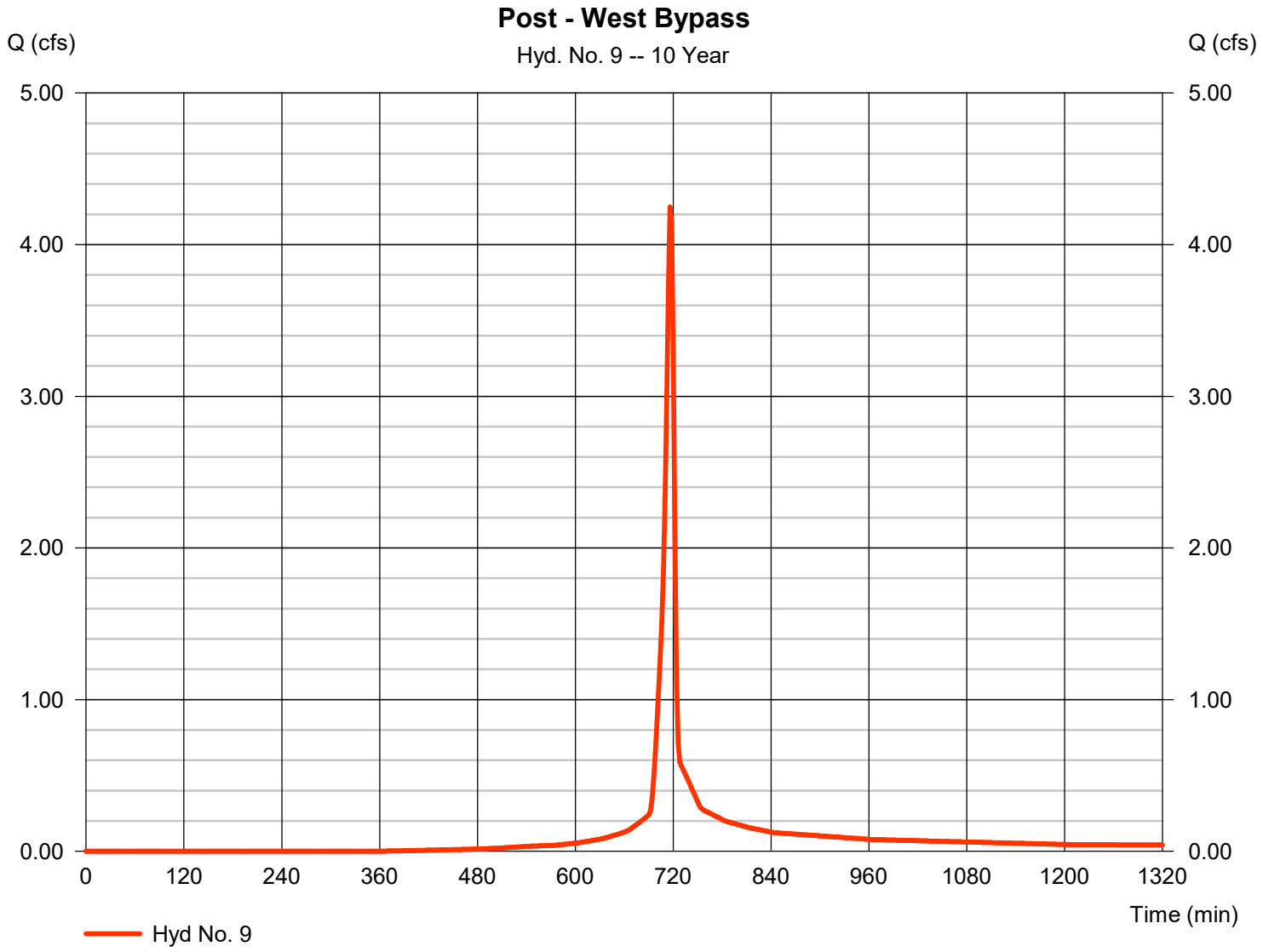
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.247 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	8,750 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	5.23 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

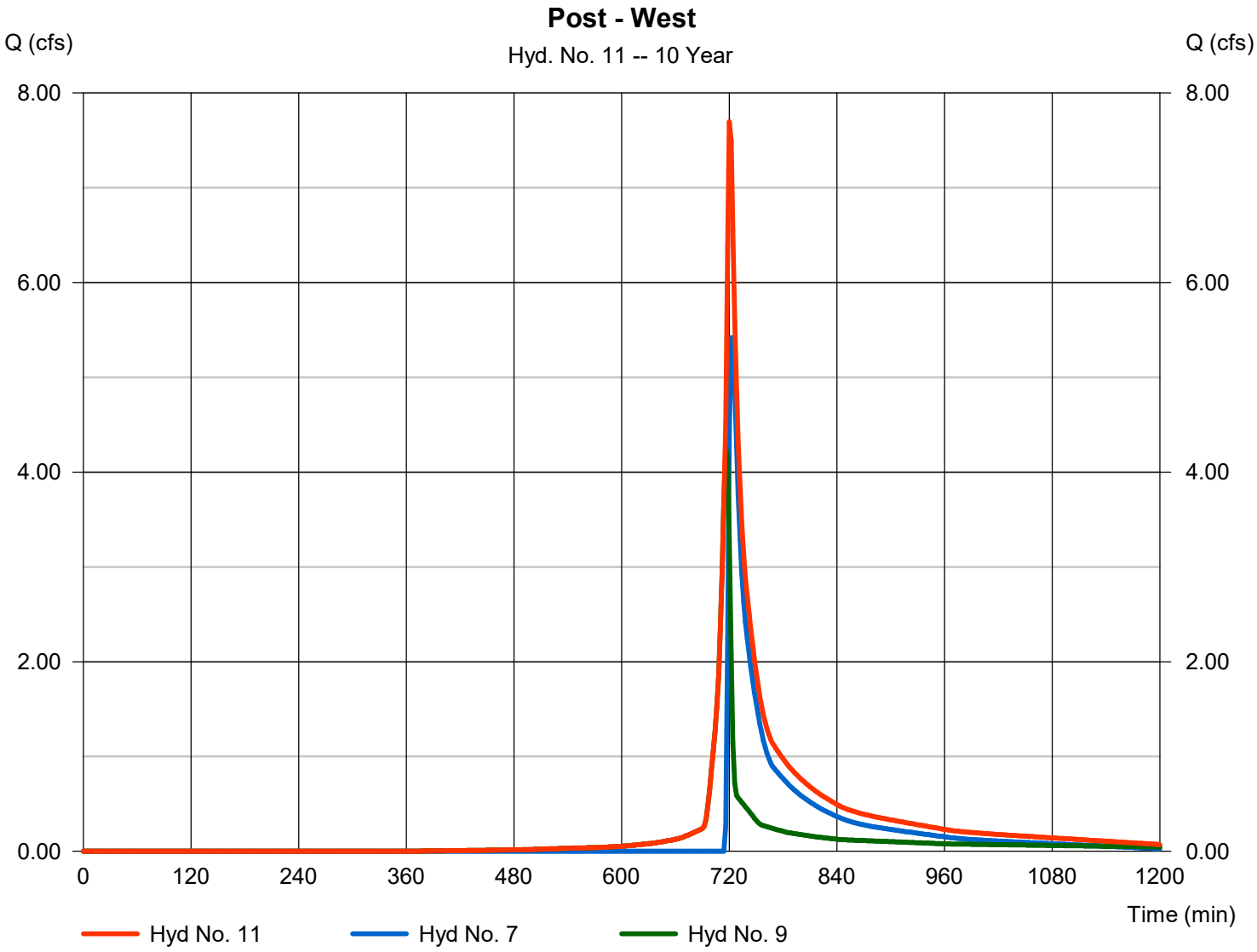


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	= Combine	Peak discharge	= 7.697 cfs
Storm frequency	= 10 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 21,819 cuft
Inflow hyds.	= 7, 9	Contrib. drain. area	= 0.760 ac

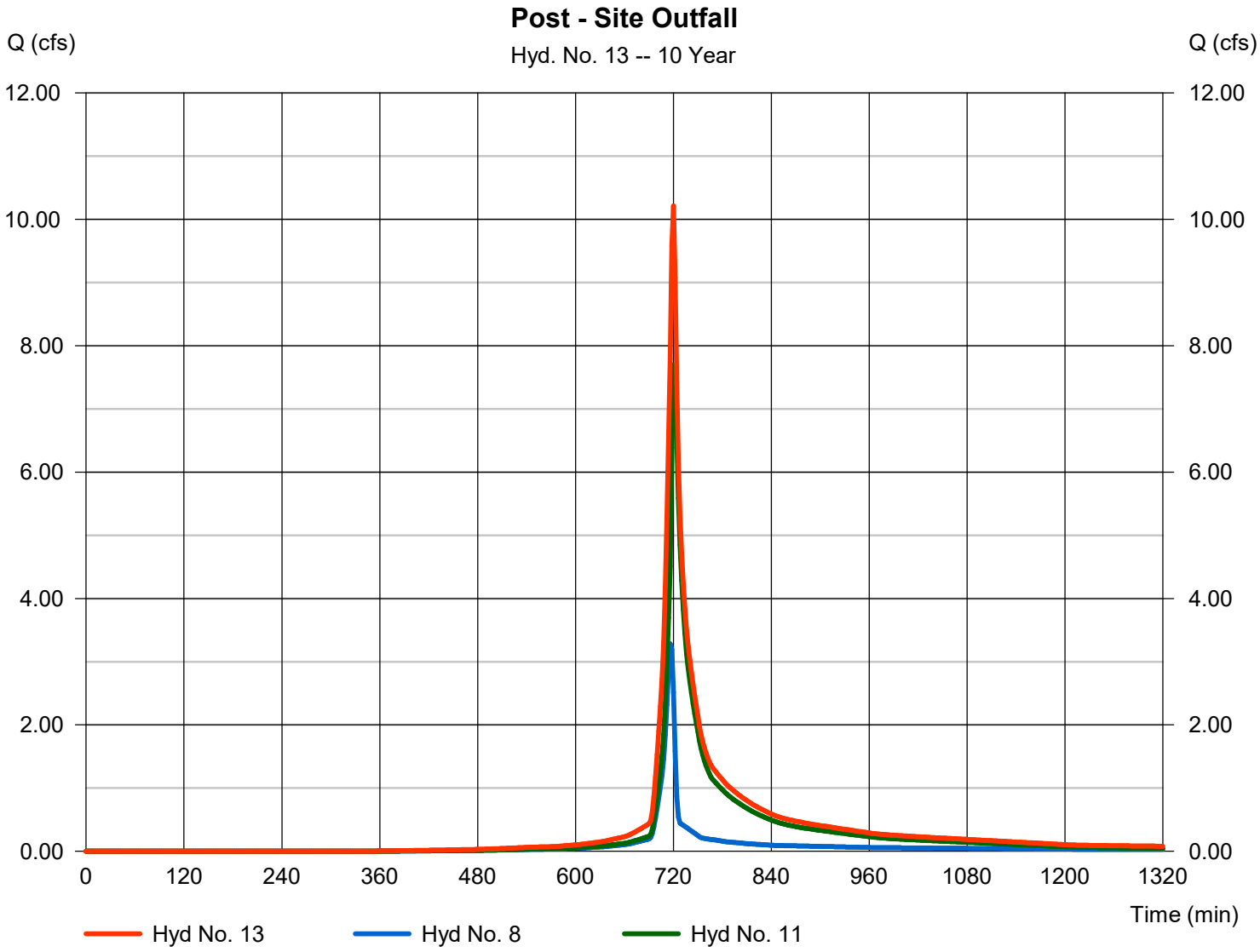


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	10.21 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	28,644 cuft
Inflow hyds.	=	8, 11	Contrib. drain. area	=	0.560 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

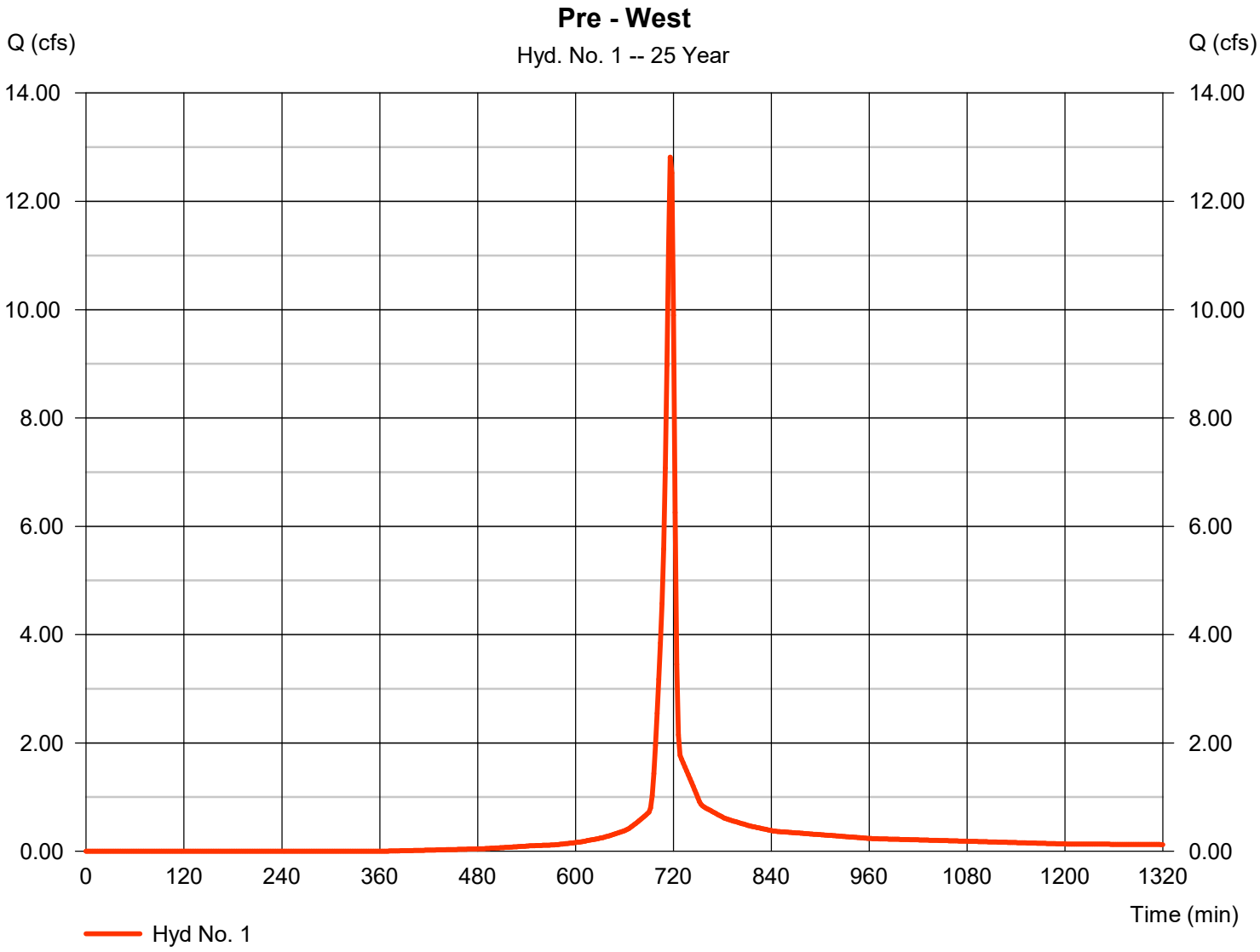
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	12.82	2	716	26,397	------	------	------	Pre - West
2	SCS Runoff	10.54	2	716	21,596	------	------	------	Pre - East
4	Combine	23.36	2	716	47,993	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	18.03	2	716	39,679	------	------	------	Post to Pond
7	Reservoir	7.424	2	722	19,961	6	610.85	19,814	Post thru Pond
8	SCS Runoff	4.034	2	716	8,488	------	------	------	Post - East Bypass
9	SCS Runoff	5.268	2	716	10,966	------	------	------	Post - West Bypass
11	Combine	12.16	2	718	30,927	7, 9,	------	------	Post - West
13	Combine	16.07	2	718	39,415	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.82 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	26,397 cuft
Drainage area	=	1.950 ac	Curve number	=	80.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	6.16 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

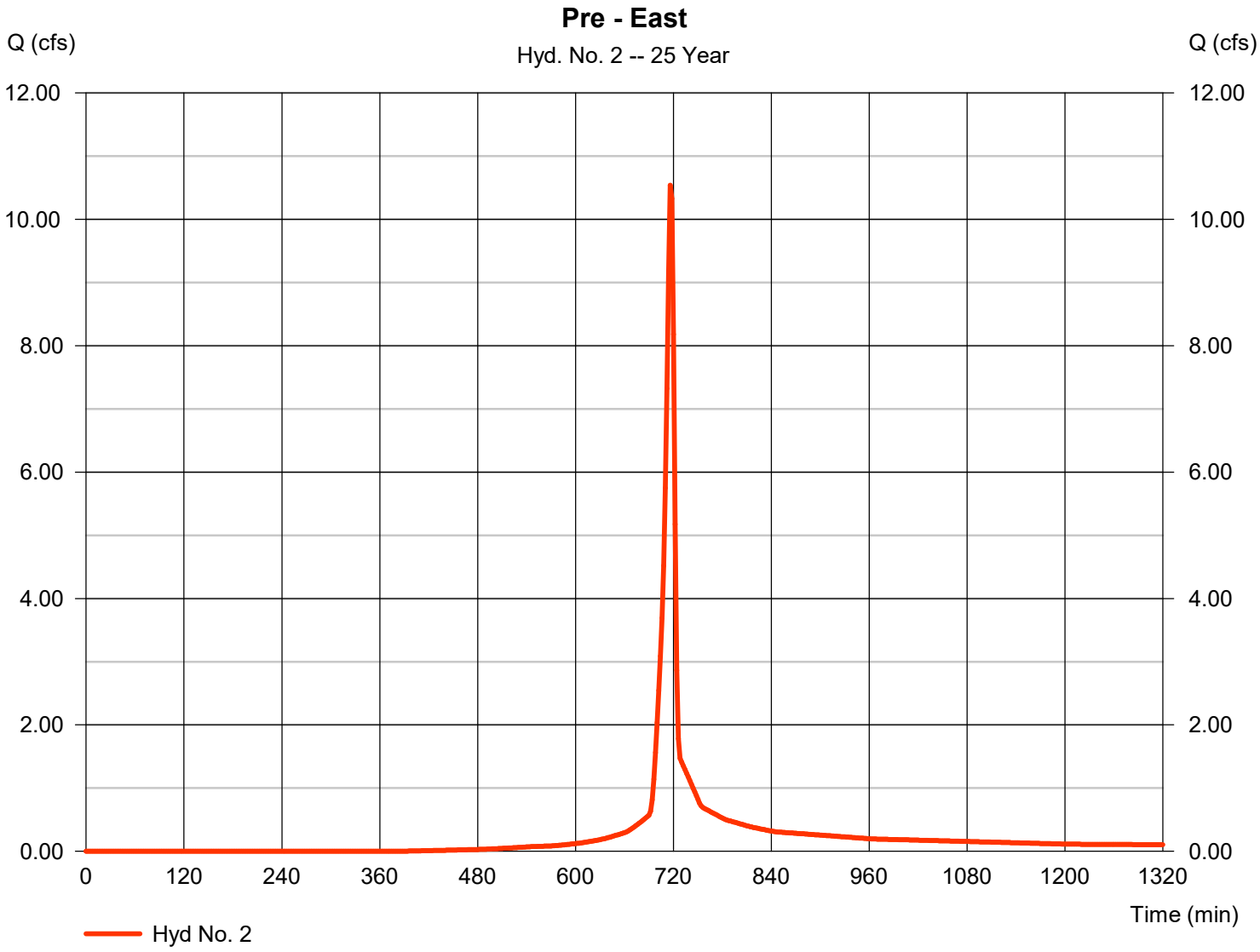


Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.54 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	21,596 cuft
Drainage area	=	1.660 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.16 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

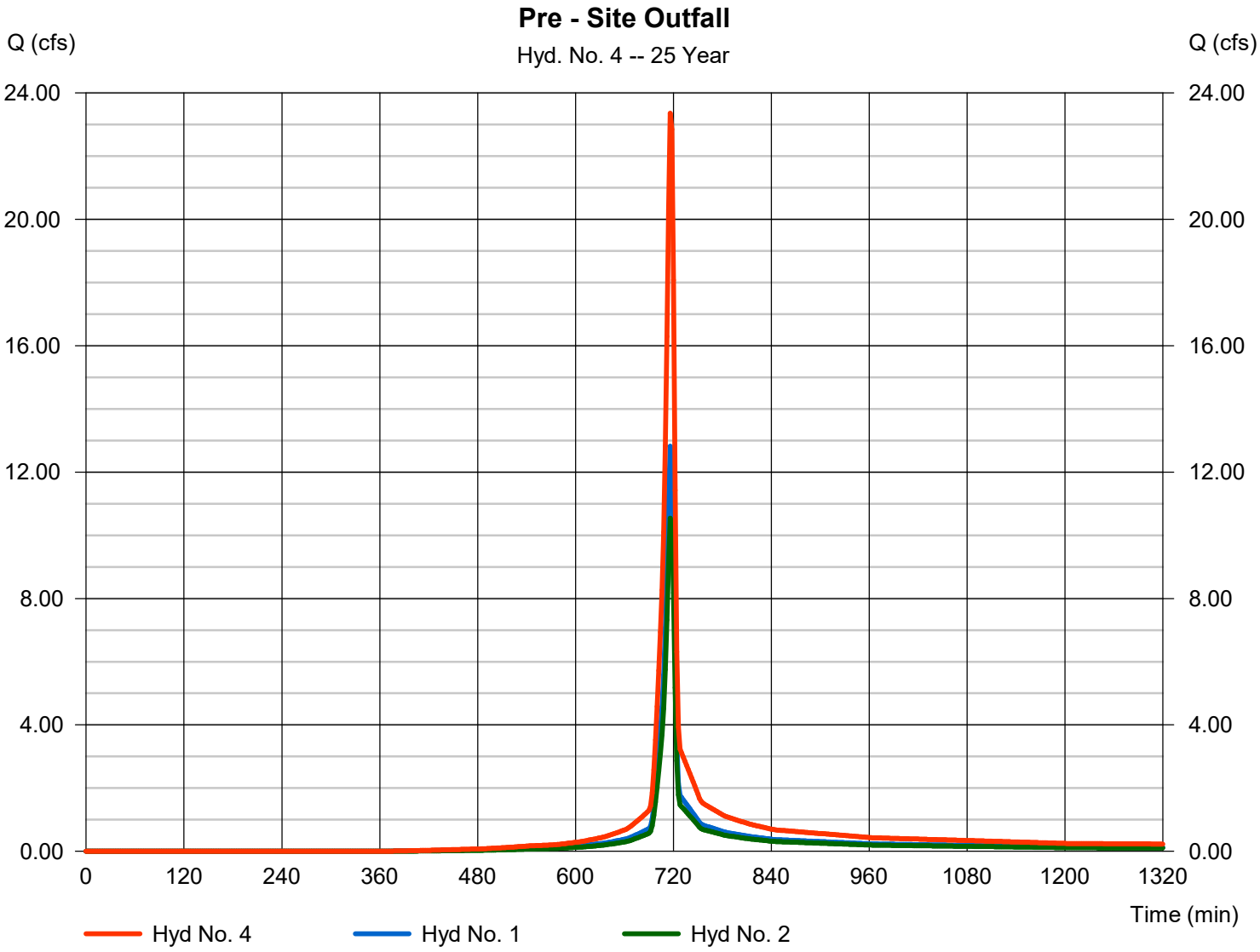


Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	= Combine	Peak discharge	= 23.36 cfs
Storm frequency	= 25 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 47,993 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.610 ac



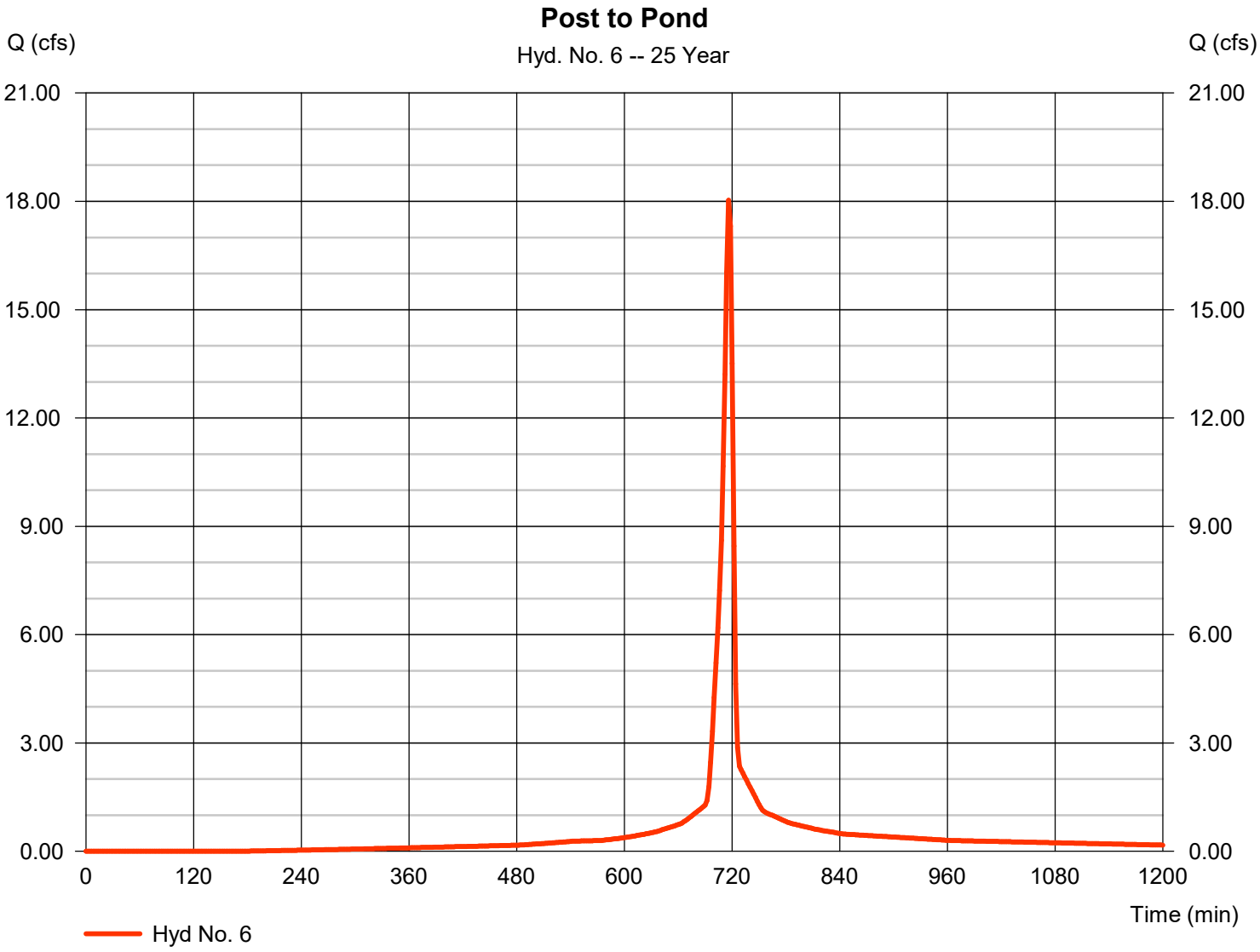
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	18.03 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	39,679 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.16 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



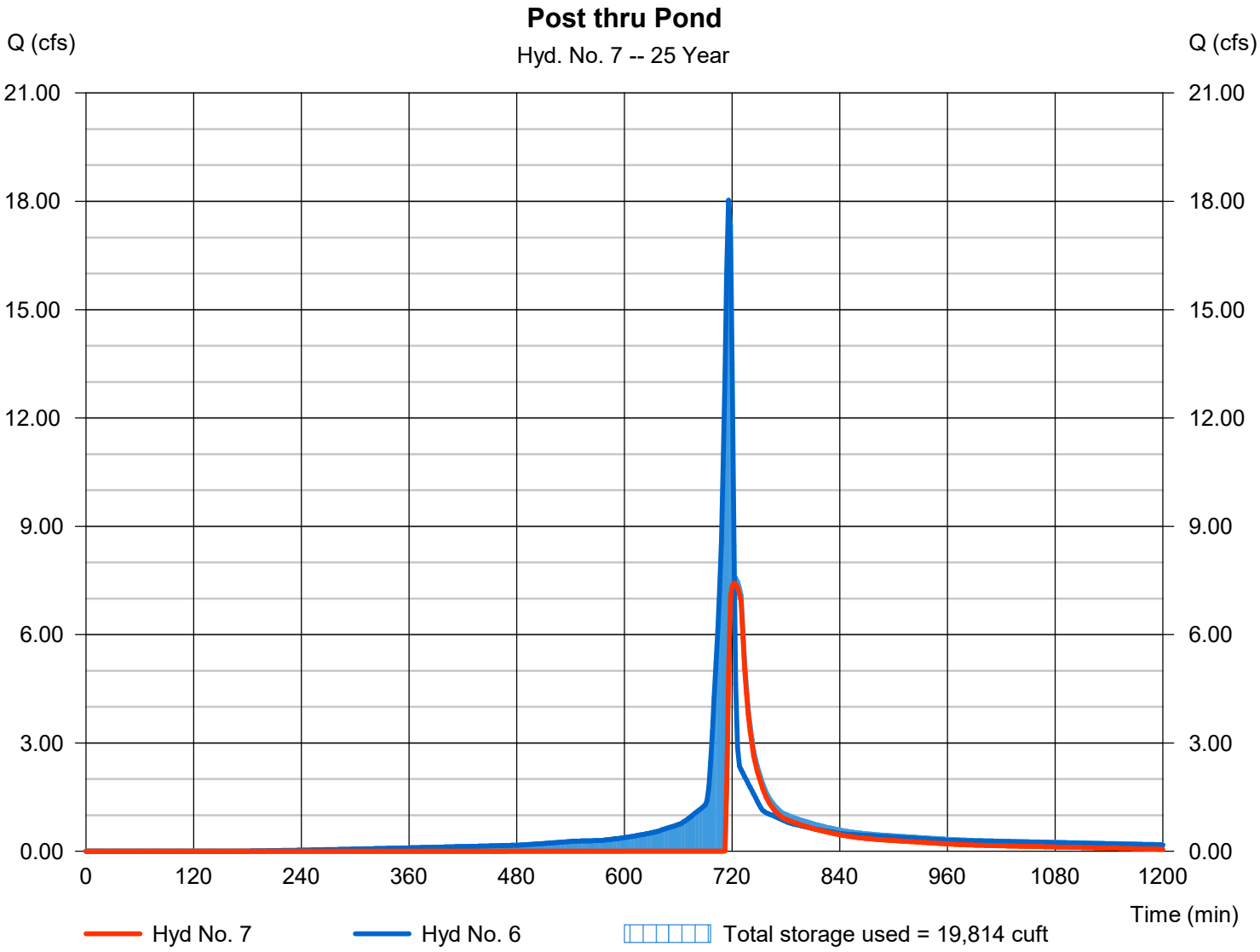
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	7.424 cfs
Storm frequency	=	25 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	19,961 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	610.85 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	19,814 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



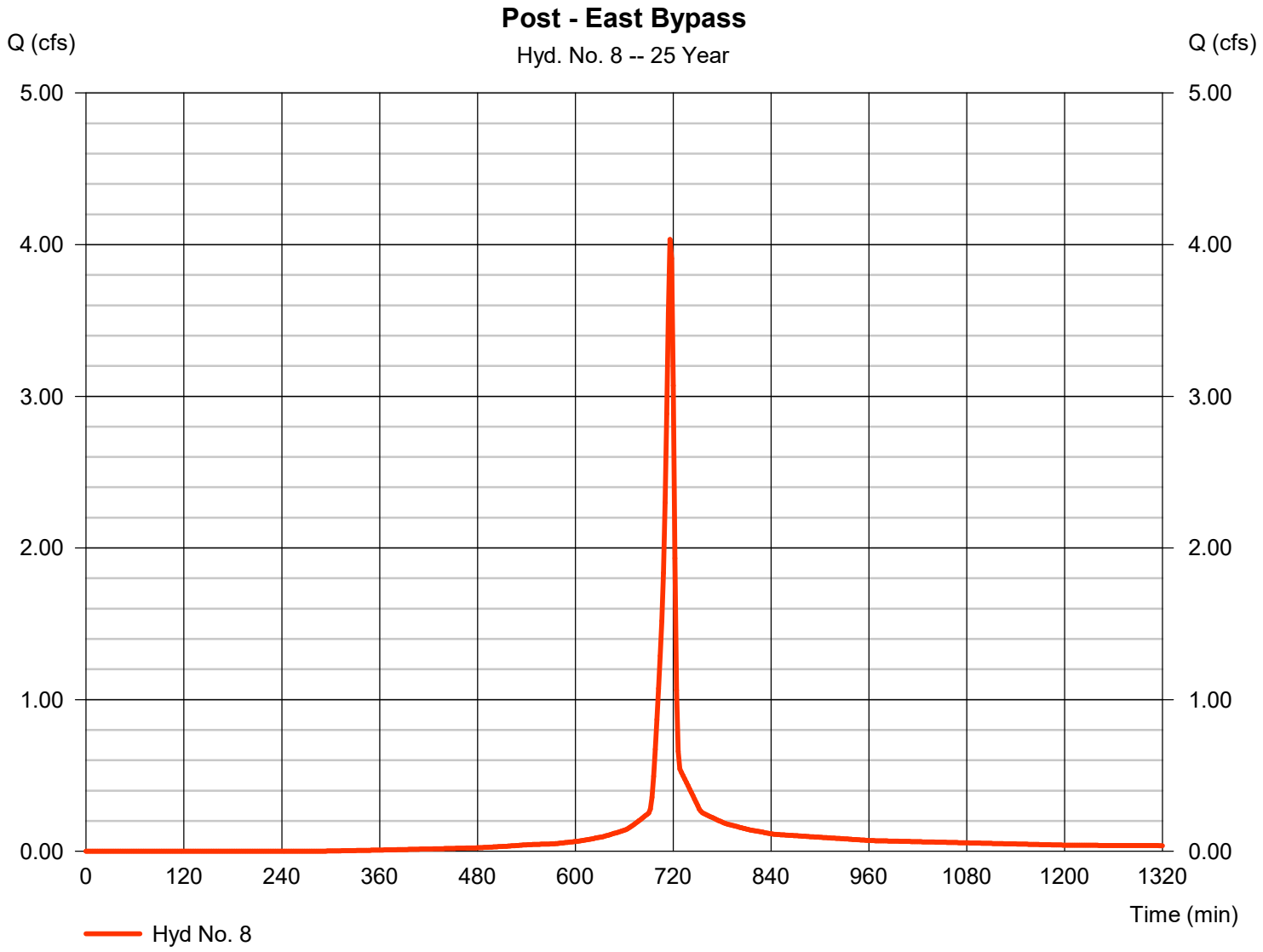
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.034 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	8,488 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.16 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



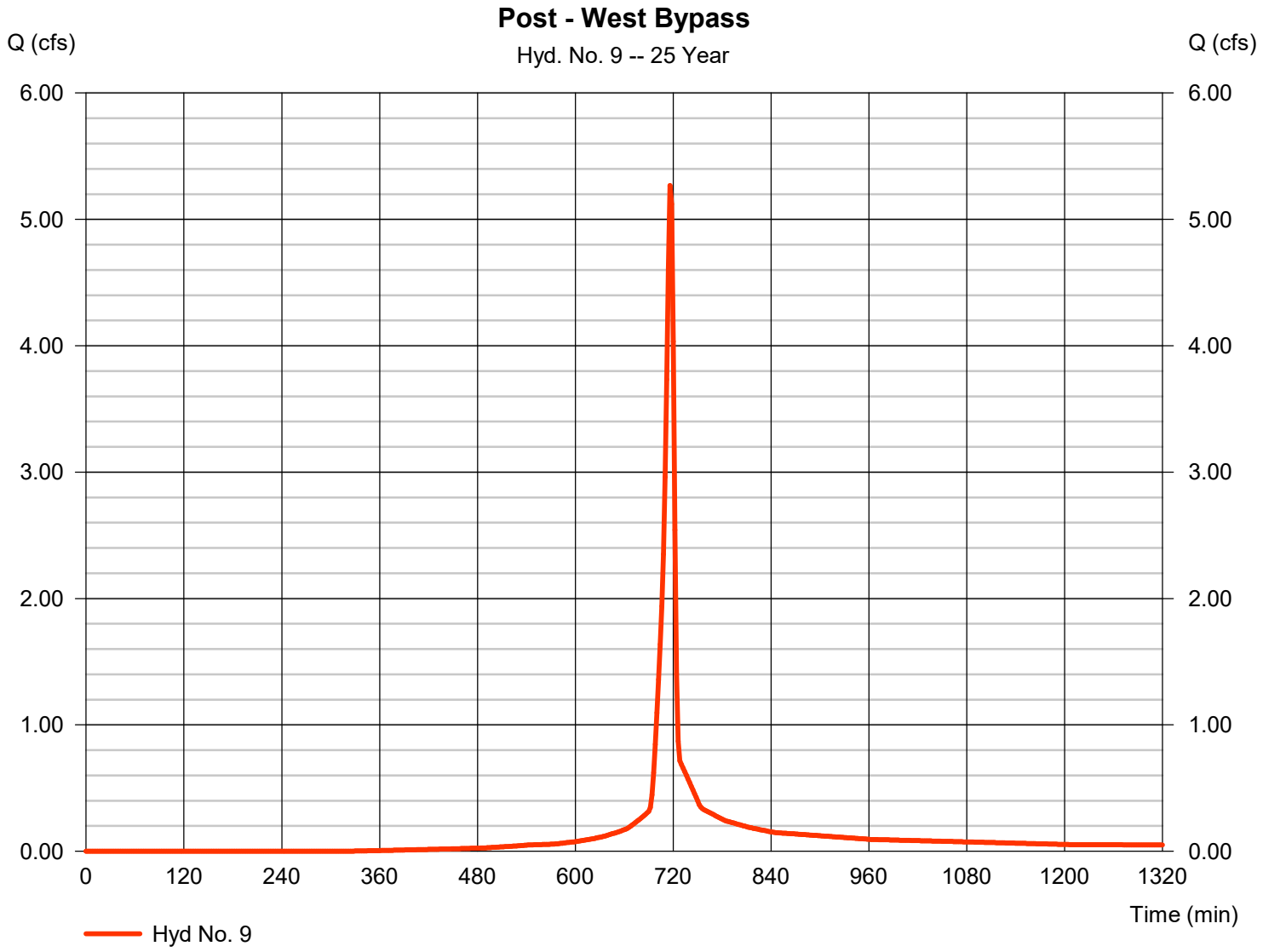
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.268 cfs
Storm frequency	=	25 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	10,966 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.16 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

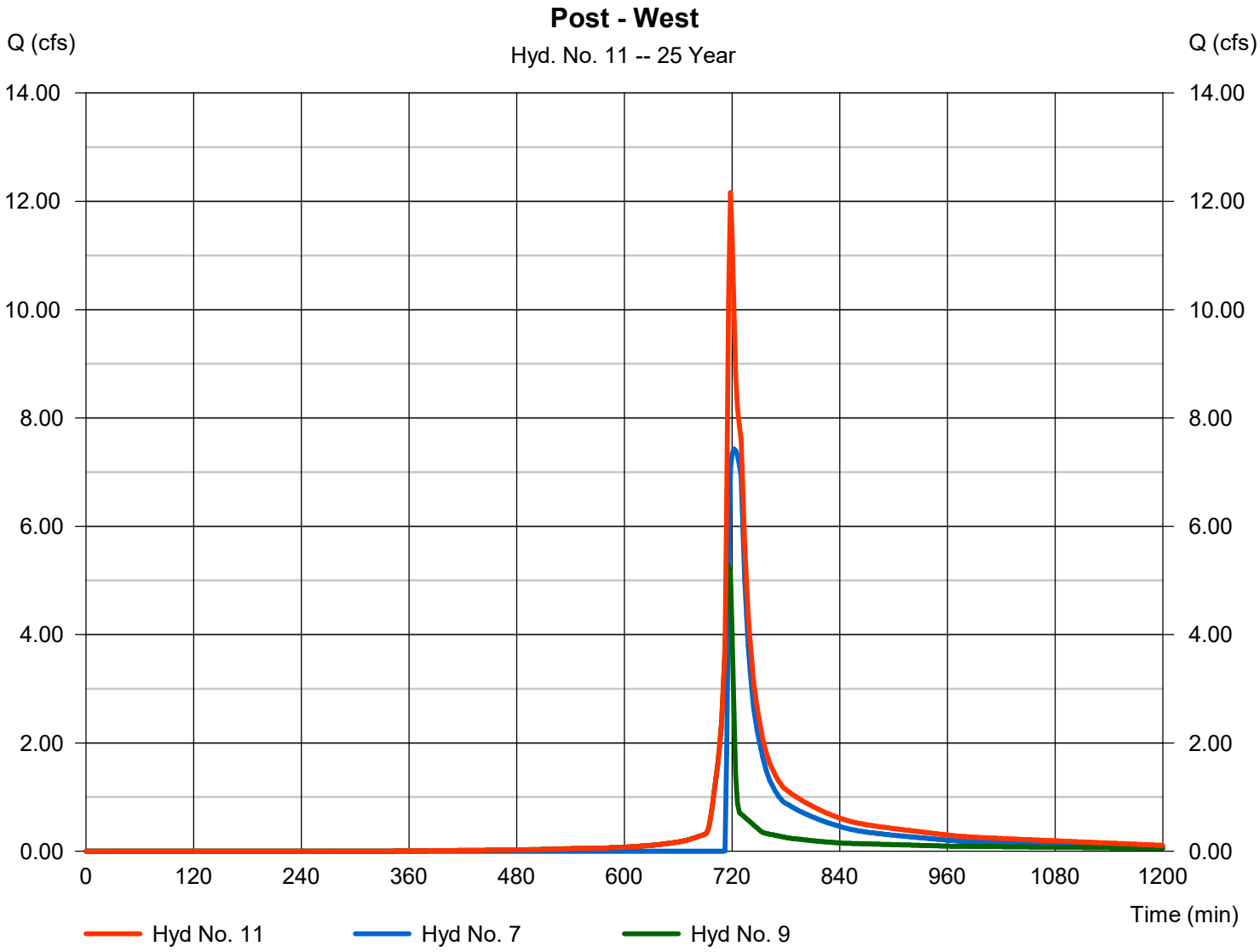


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	=	Combine	Peak discharge	=	12.16 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	30,927 cuft
Inflow hyds.	=	7, 9	Contrib. drain. area	=	0.760 ac

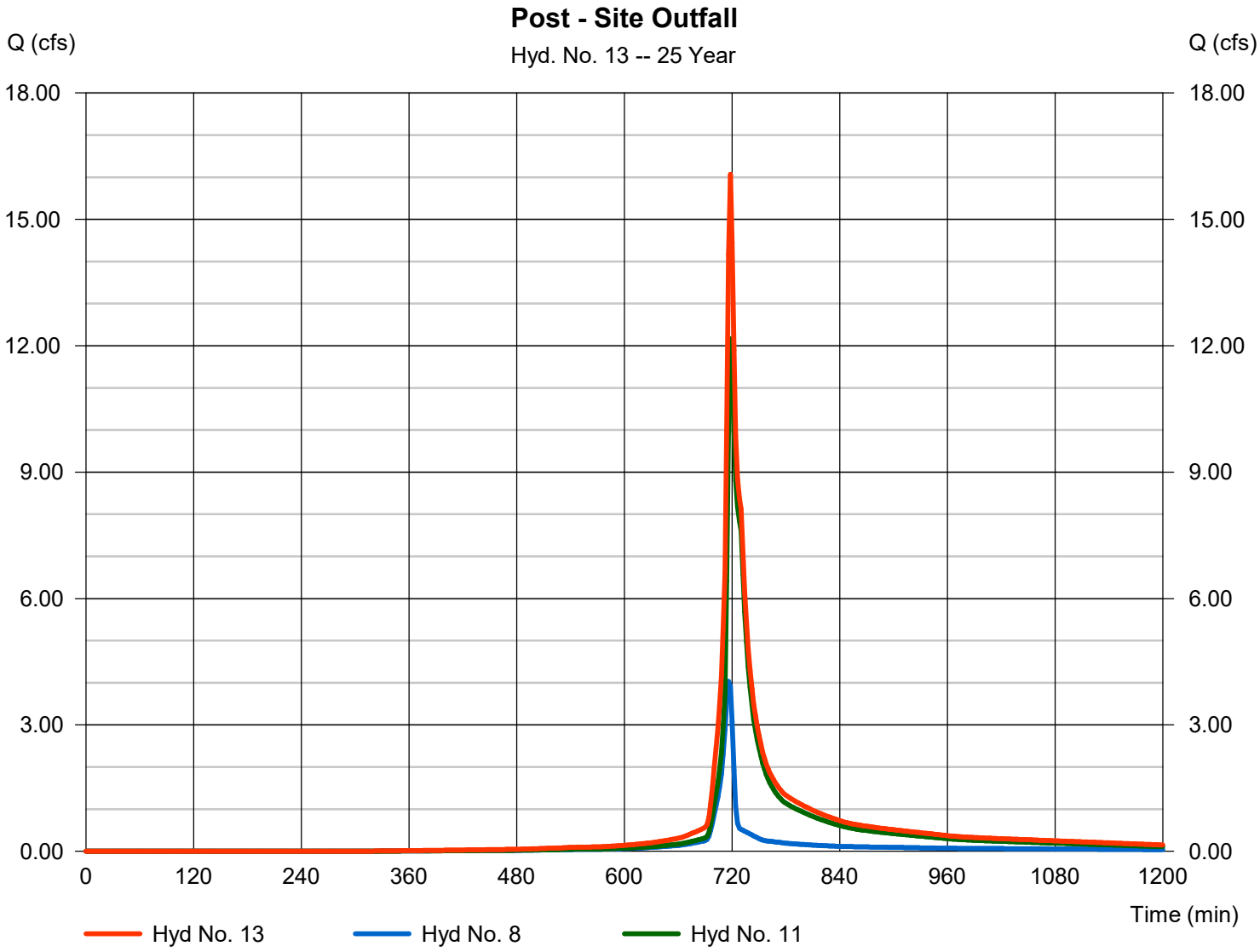


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	16.07 cfs
Storm frequency	=	25 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	39,415 cuft
Inflow hyds.	=	8, 11	Contrib. drain. area	=	0.560 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

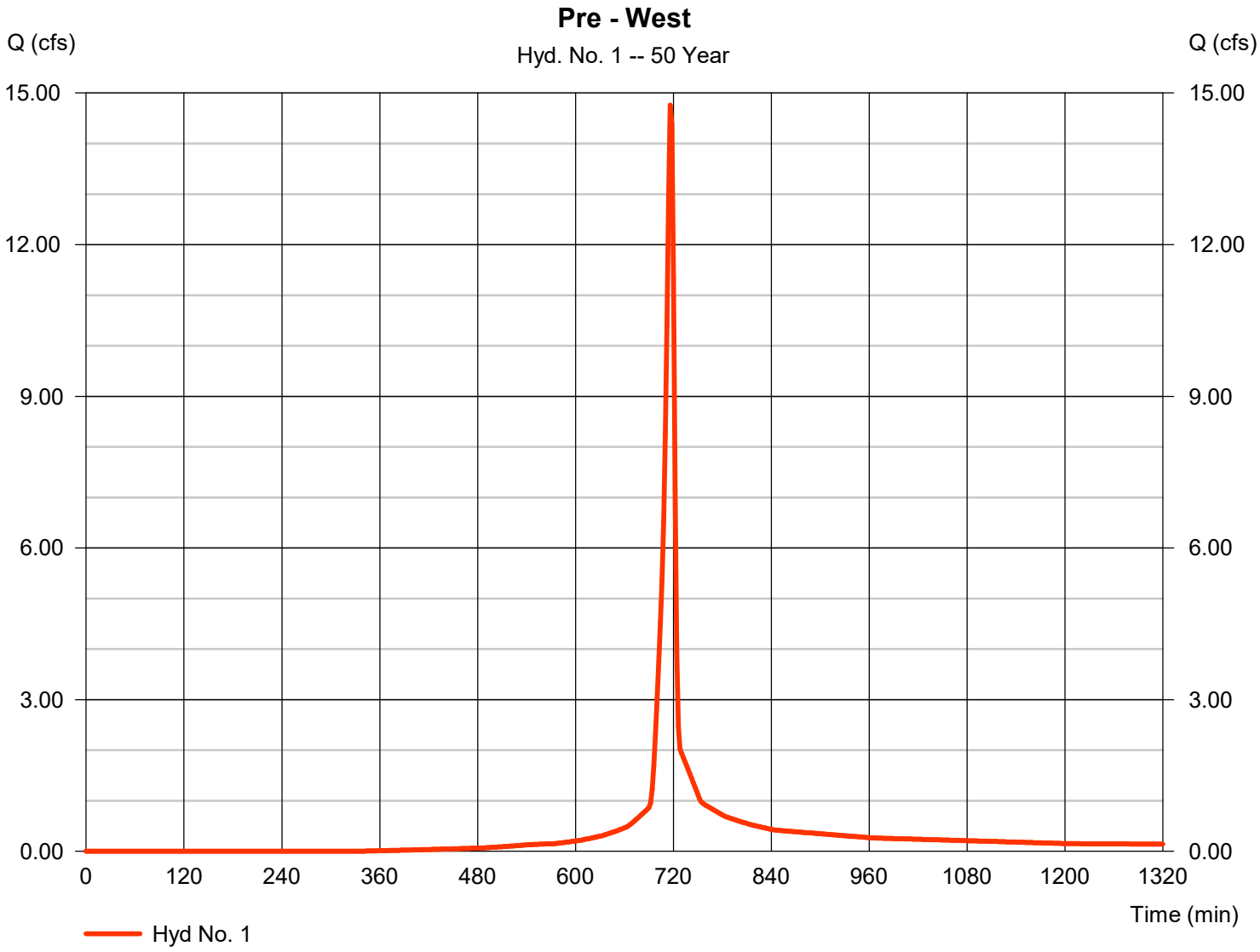
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	14.76	2	716	30,598	------	------	------	Pre - West
2	SCS Runoff	12.19	2	716	25,124	------	------	------	Pre - East
4	Combine	26.95	2	716	55,722	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	20.25	2	716	44,935	------	------	------	Post to Pond
7	Reservoir	7.785	2	722	25,098	6	611.14	21,914	Post thru Pond
8	SCS Runoff	4.591	2	716	9,737	------	------	------	Post - East Bypass
9	SCS Runoff	6.025	2	716	12,638	------	------	------	Post - West Bypass
11	Combine	13.36	2	718	37,736	7, 9,	------	------	Post - West
13	Combine	17.80	2	718	47,473	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	=	SCS Runoff	Peak discharge	=	14.76 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	30,598 cuft
Drainage area	=	1.950 ac	Curve number	=	80.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	6.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

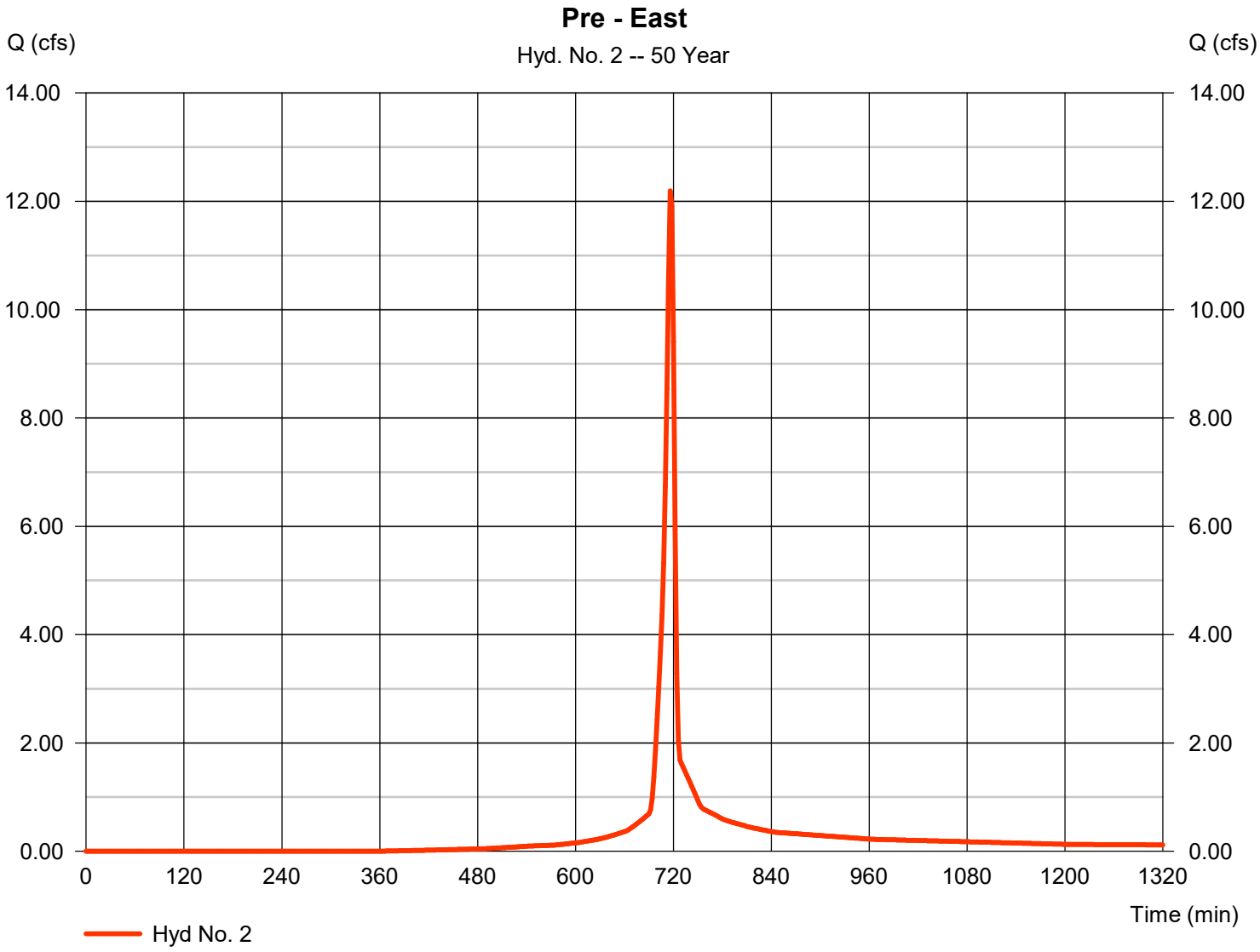


Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.19 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	25,124 cuft
Drainage area	=	1.660 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.00 min
Total precip.	=	6.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

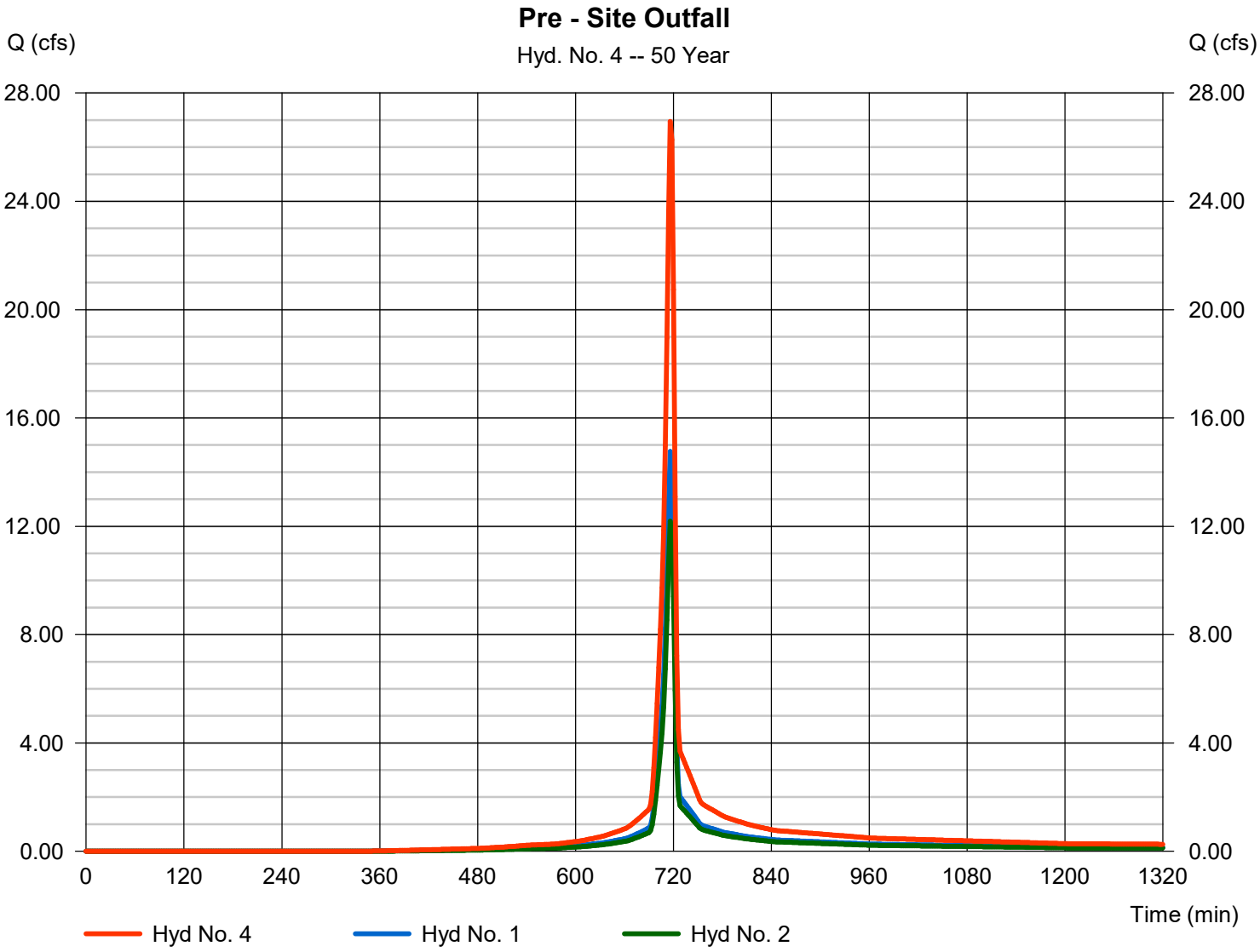


Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	= Combine	Peak discharge	= 26.95 cfs
Storm frequency	= 50 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 55,722 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 3.610 ac



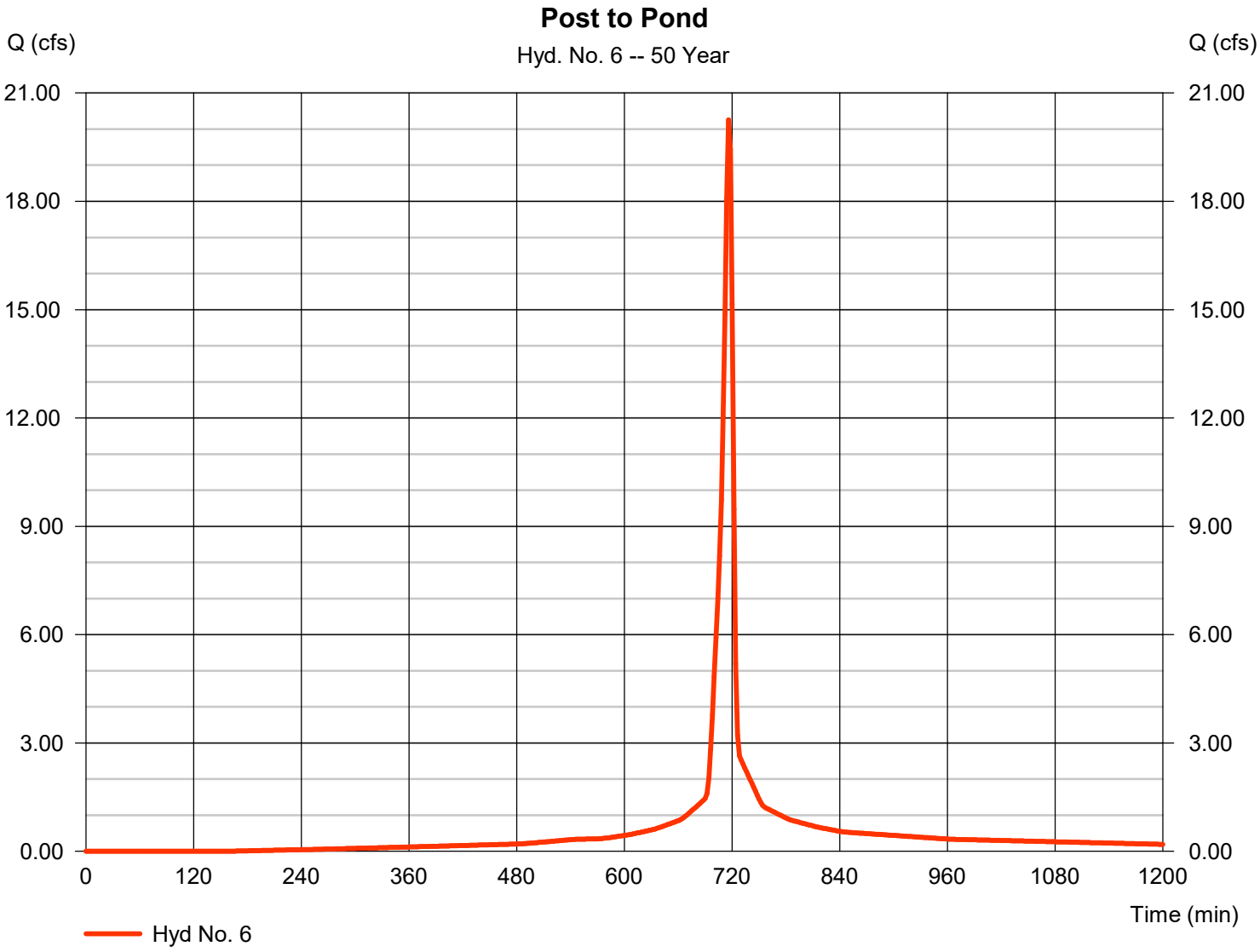
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	20.25 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	44,935 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



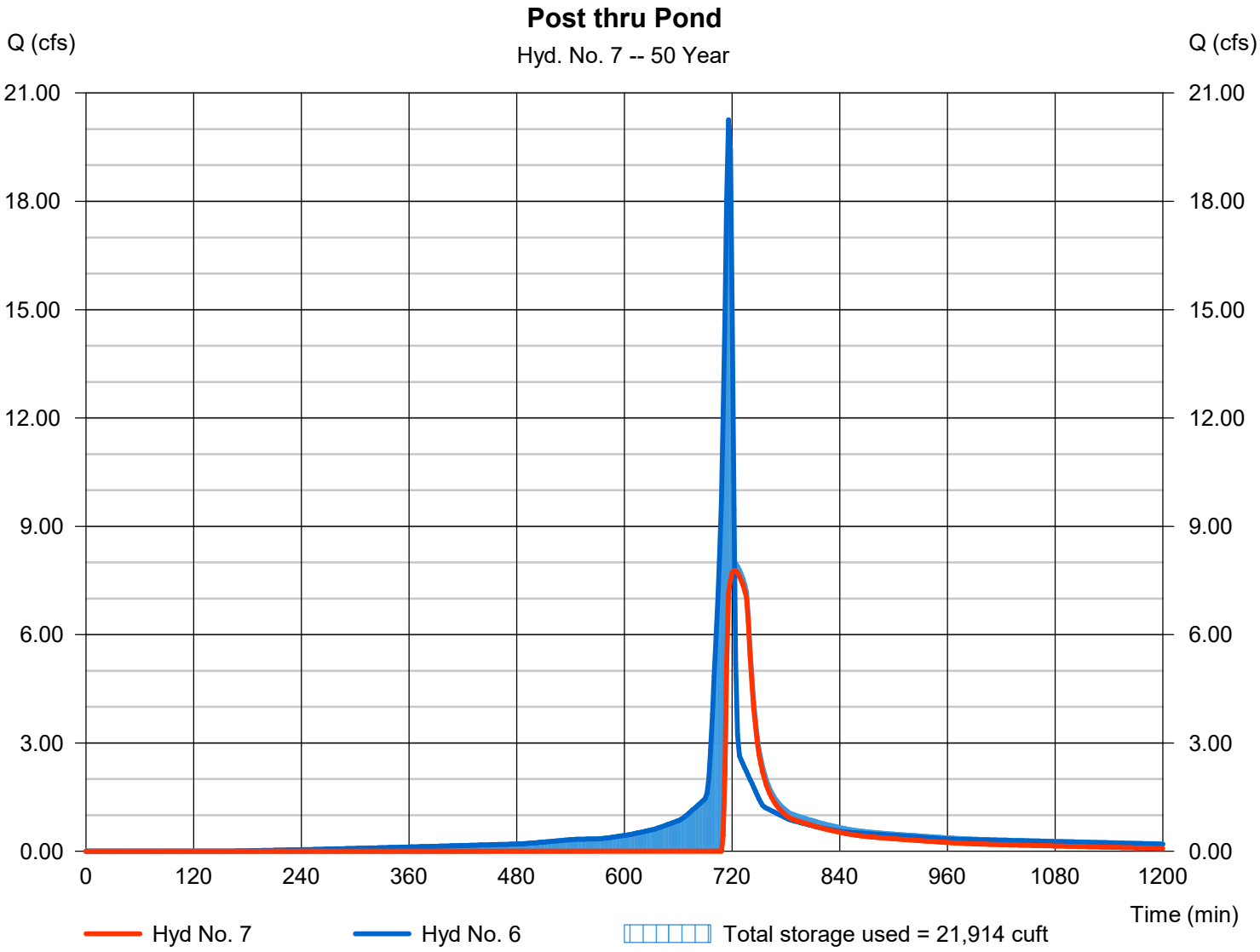
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	7.785 cfs
Storm frequency	=	50 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	25,098 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	611.14 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	21,914 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



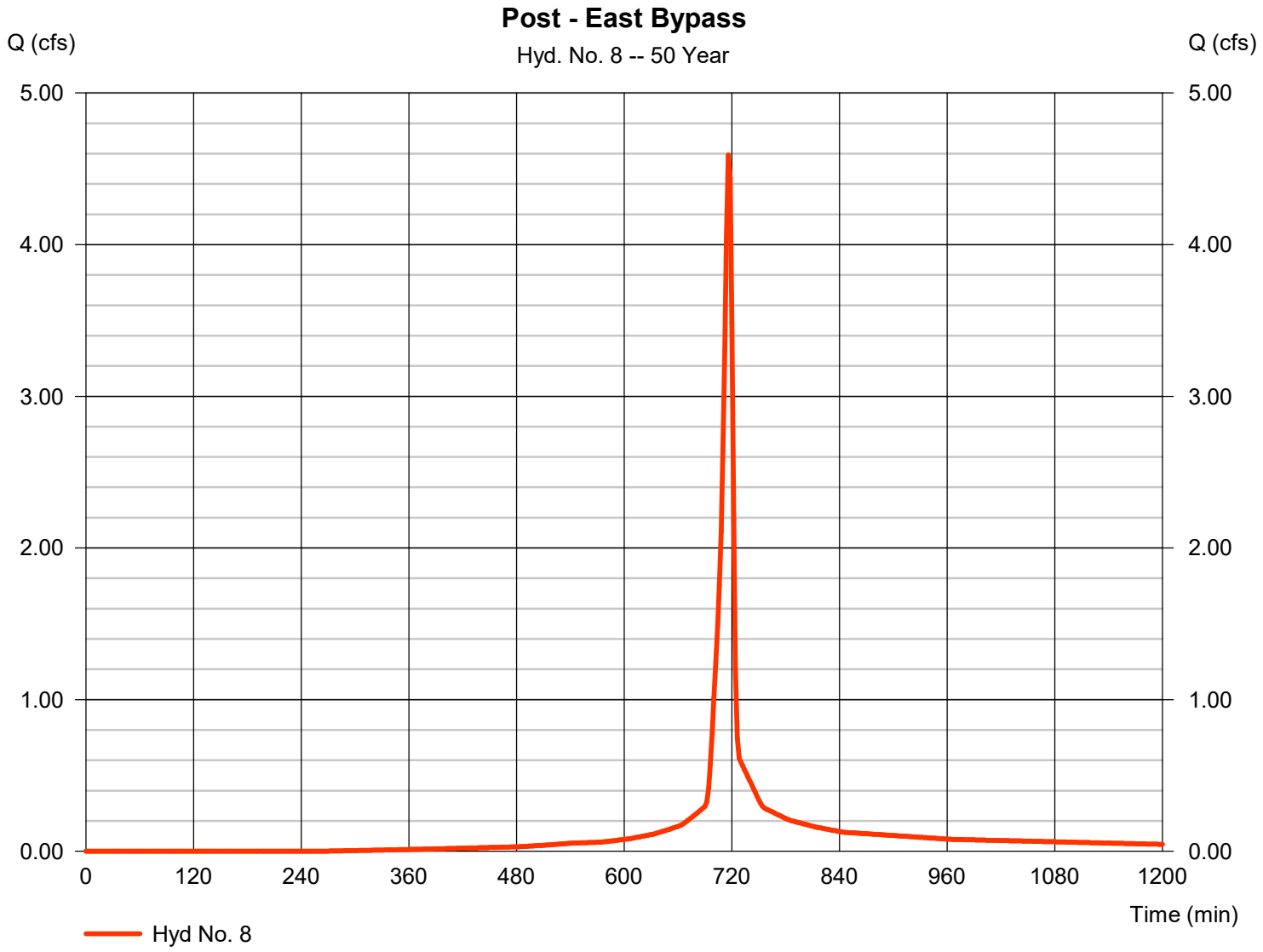
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.591 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	9,737 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



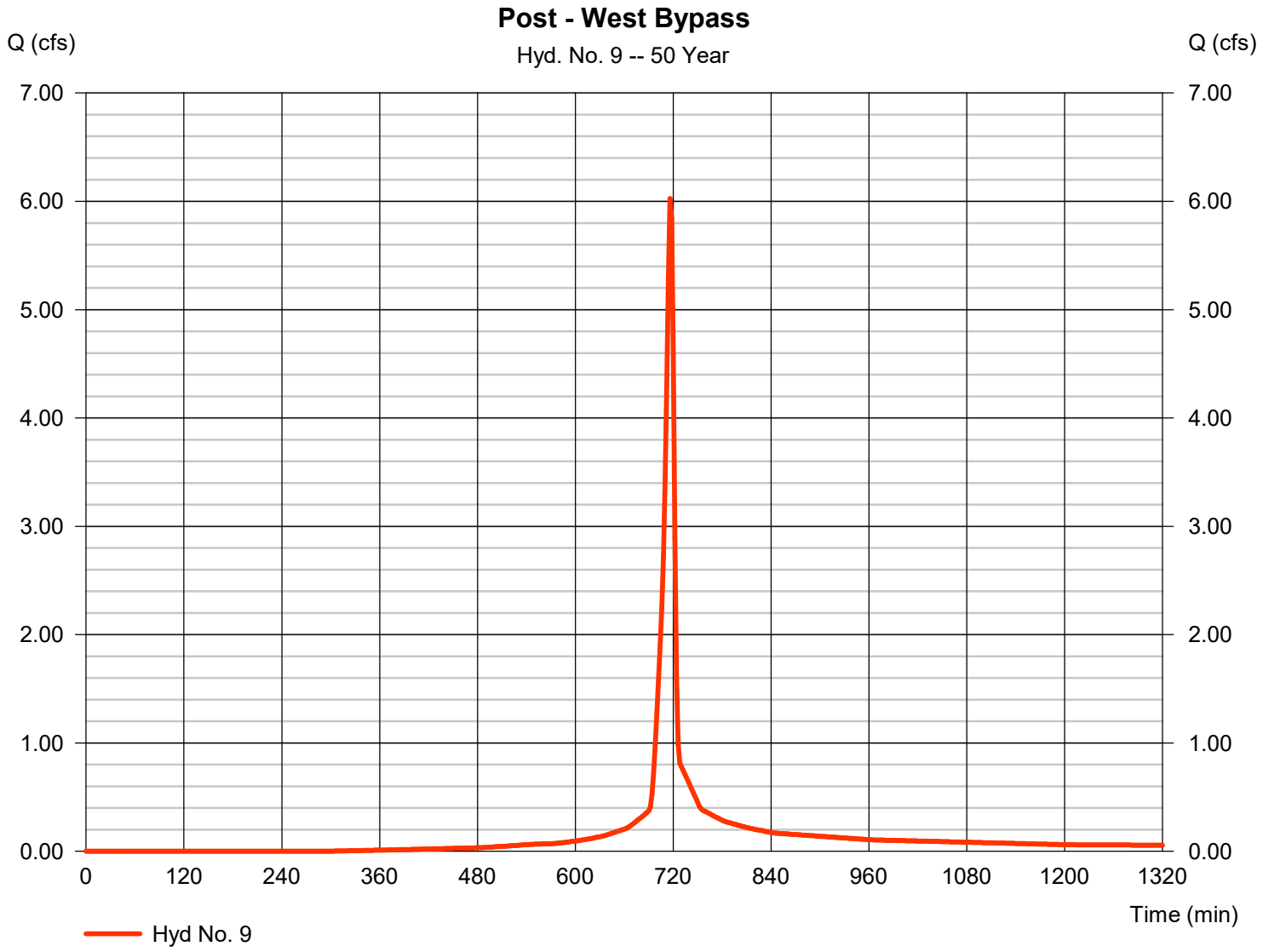
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.025 cfs
Storm frequency	=	50 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	12,638 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	6.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

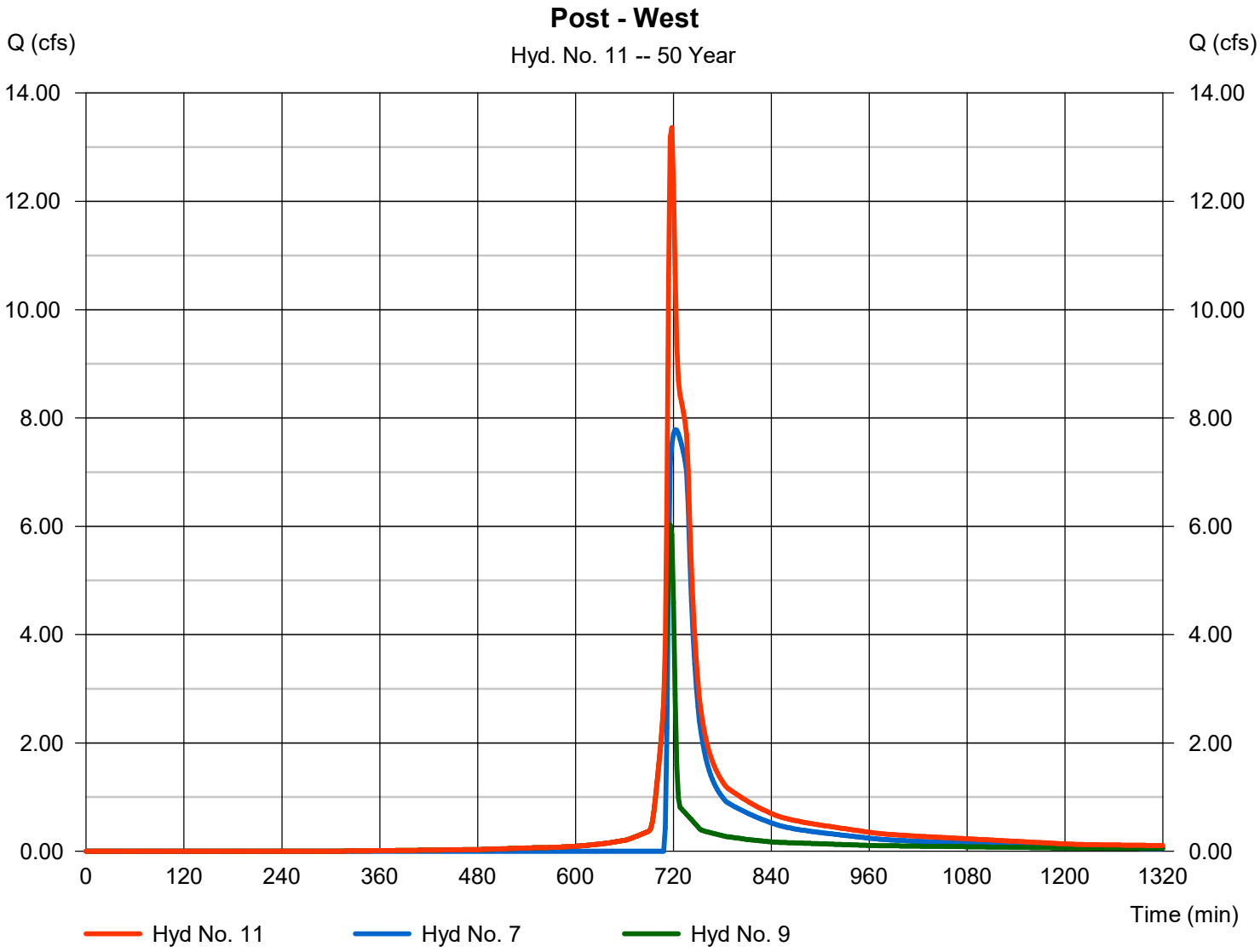


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	=	Combine	Peak discharge	=	13.36 cfs
Storm frequency	=	50 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	37,736 cuft
Inflow hyds.	=	7, 9	Contrib. drain. area	=	0.760 ac

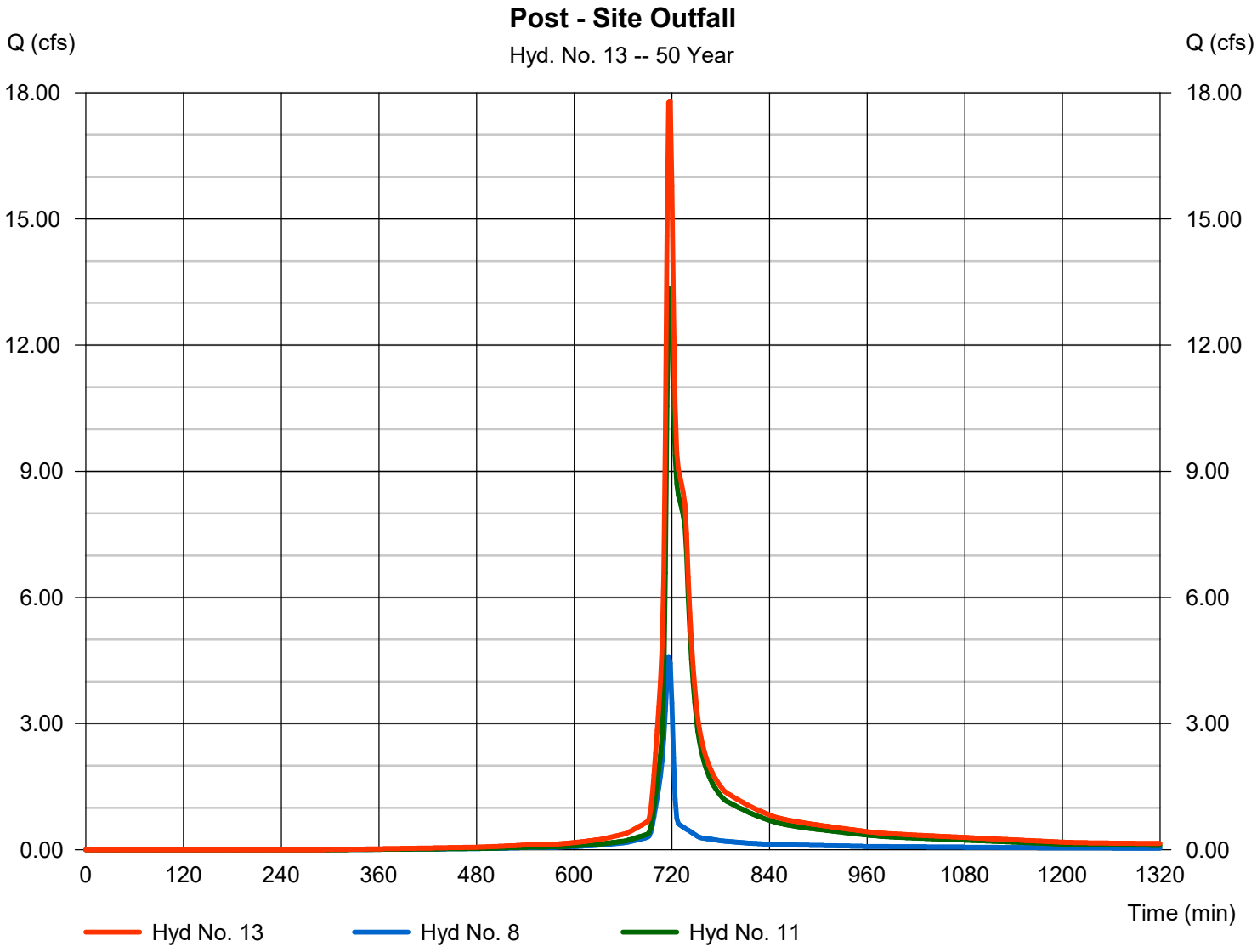


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	17.80 cfs
Storm frequency	=	50 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	47,473 cuft
Inflow hyds.	=	8, 11	Contrib. drain. area	=	0.560 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

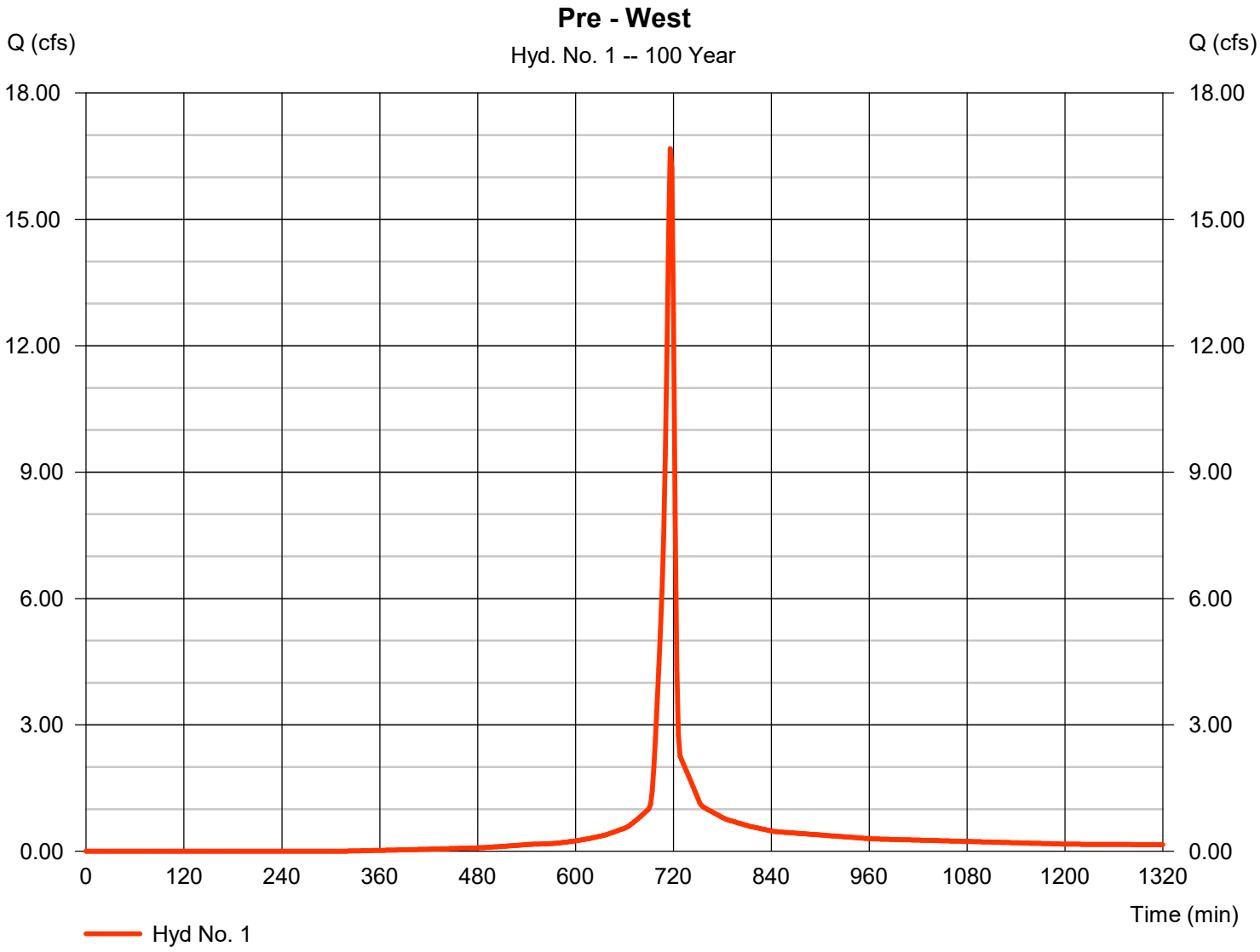
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	16.67	2	716	34,793	------	------	------	Pre - West
2	SCS Runoff	13.82	2	716	28,652	------	------	------	Pre - East
4	Combine	30.49	2	716	63,445	1, 2,	------	------	Pre - Site Outfall
6	SCS Runoff	22.44	2	716	50,130	------	------	------	Post to Pond
7	Reservoir	11.20	2	722	30,183	6	611.39	23,631	Post thru Pond
8	SCS Runoff	5.138	2	716	10,978	------	------	------	Post - East Bypass
9	SCS Runoff	6.771	2	716	14,302	------	------	------	Post - West Bypass
11	Combine	14.81	2	720	44,485	7, 9,	------	------	Post - West
13	Combine	19.44	2	716	55,463	8, 11,	------	------	Post - Site Outfall

Hydrograph Report

Hyd. No. 1

Pre - West

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.67 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	34,793 cuft
Drainage area	=	1.950 ac	Curve number	=	80.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	5.60 min
Total precip.	=	7.53 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

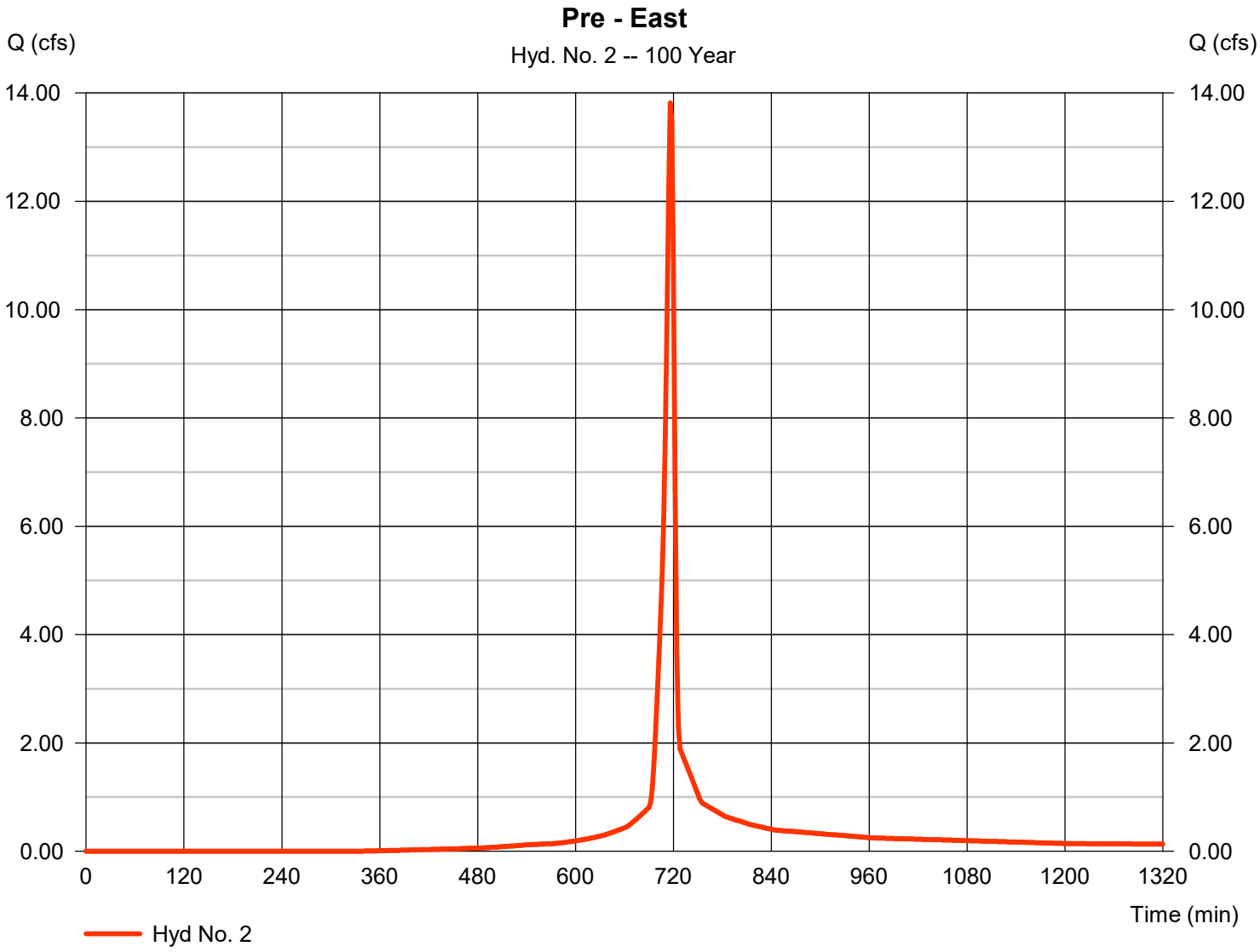


Hydrograph Report

Hyd. No. 2

Pre - East

Hydrograph type	=	SCS Runoff	Peak discharge	=	13.82 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	28,652 cuft
Drainage area	=	1.660 ac	Curve number	=	79
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	6.00 min
Total precip.	=	7.53 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

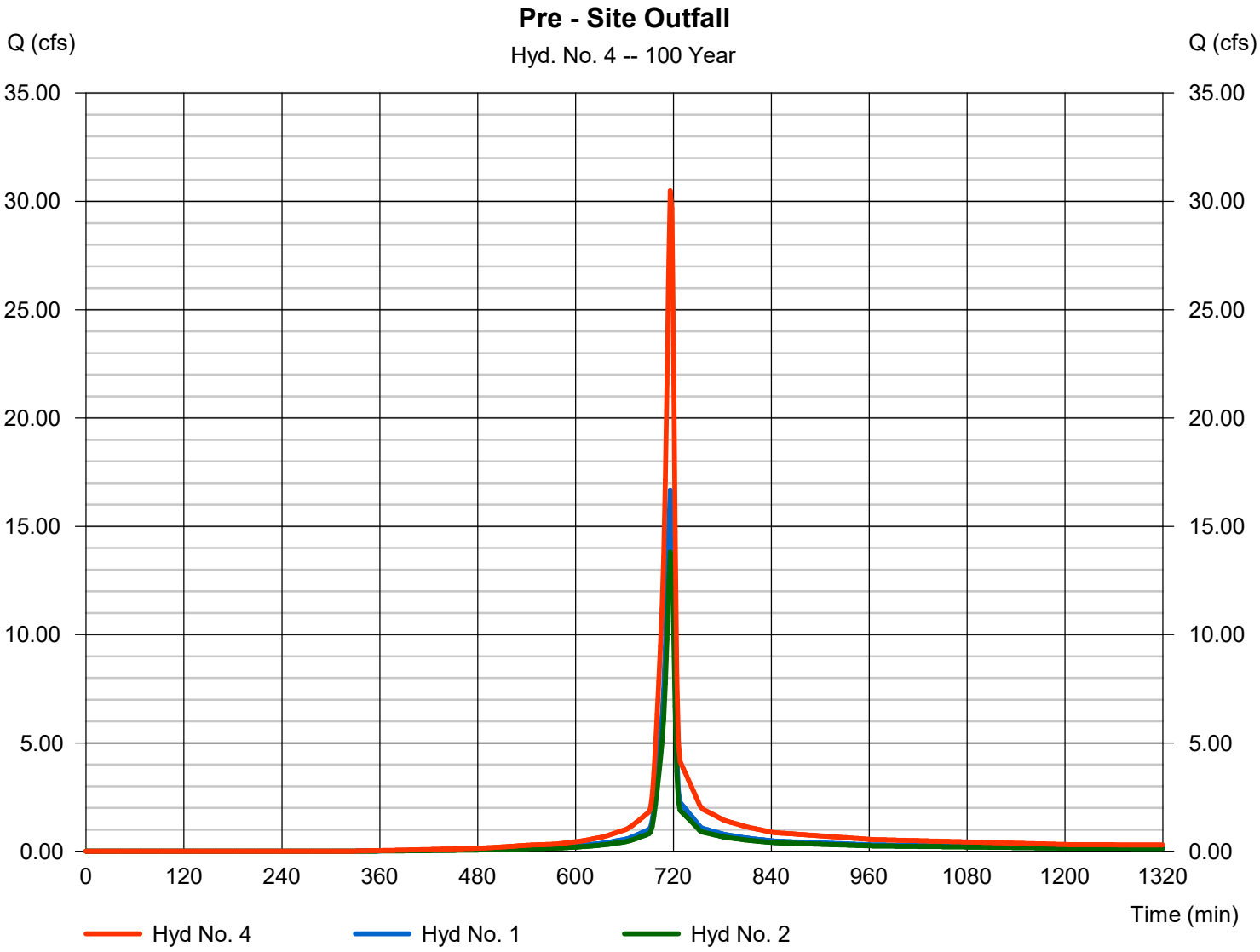


Hydrograph Report

Hyd. No. 4

Pre - Site Outfall

Hydrograph type	=	Combine	Peak discharge	=	30.49 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	63,445 cuft
Inflow hyds.	=	1, 2	Contrib. drain. area	=	3.610 ac



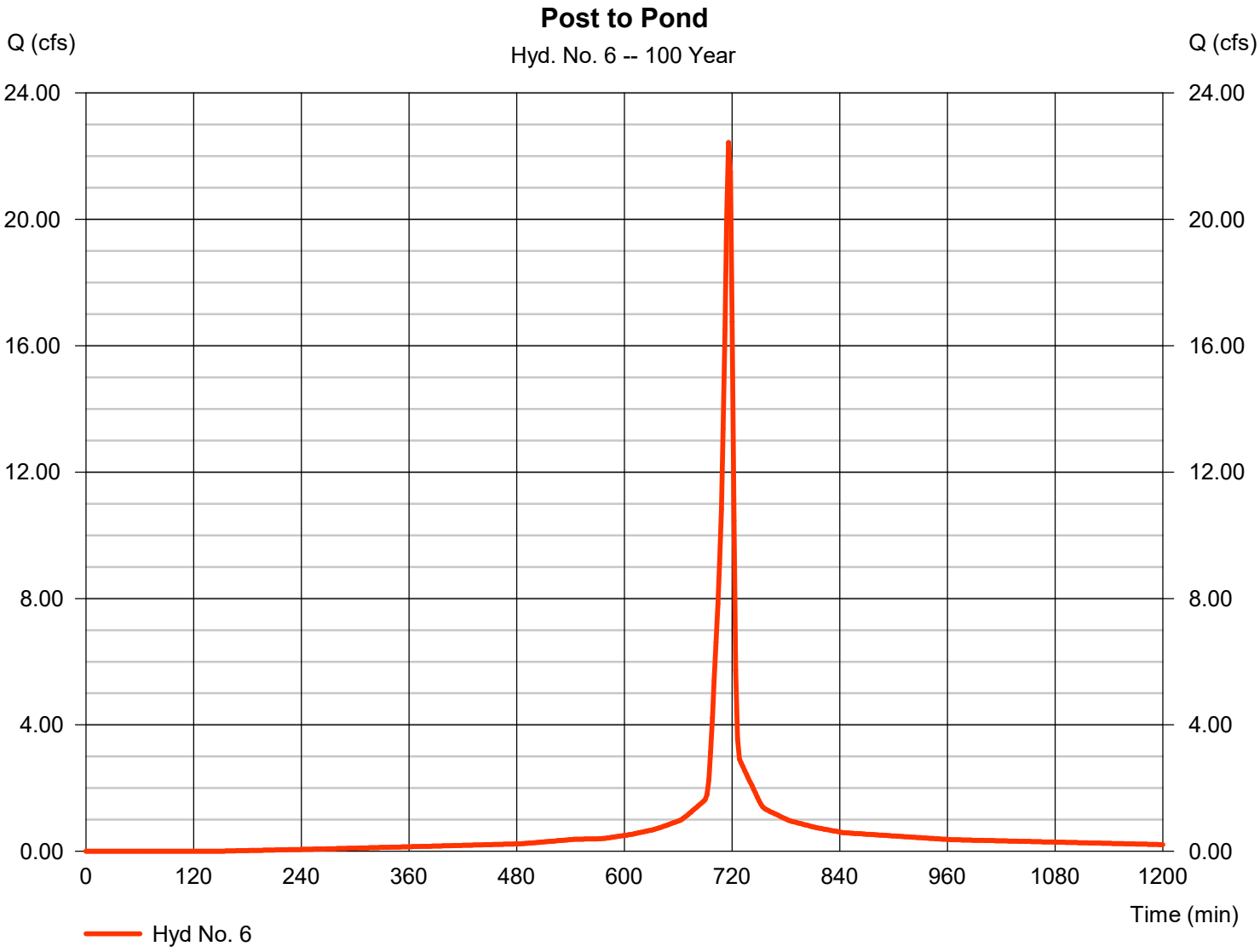
Hydrograph Report

Hyd. No. 6

Post to Pond

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.44 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	50,130 cuft
Drainage area	=	2.280 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.53 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.430 x 98) + (0.850 x 79)] / 2.280



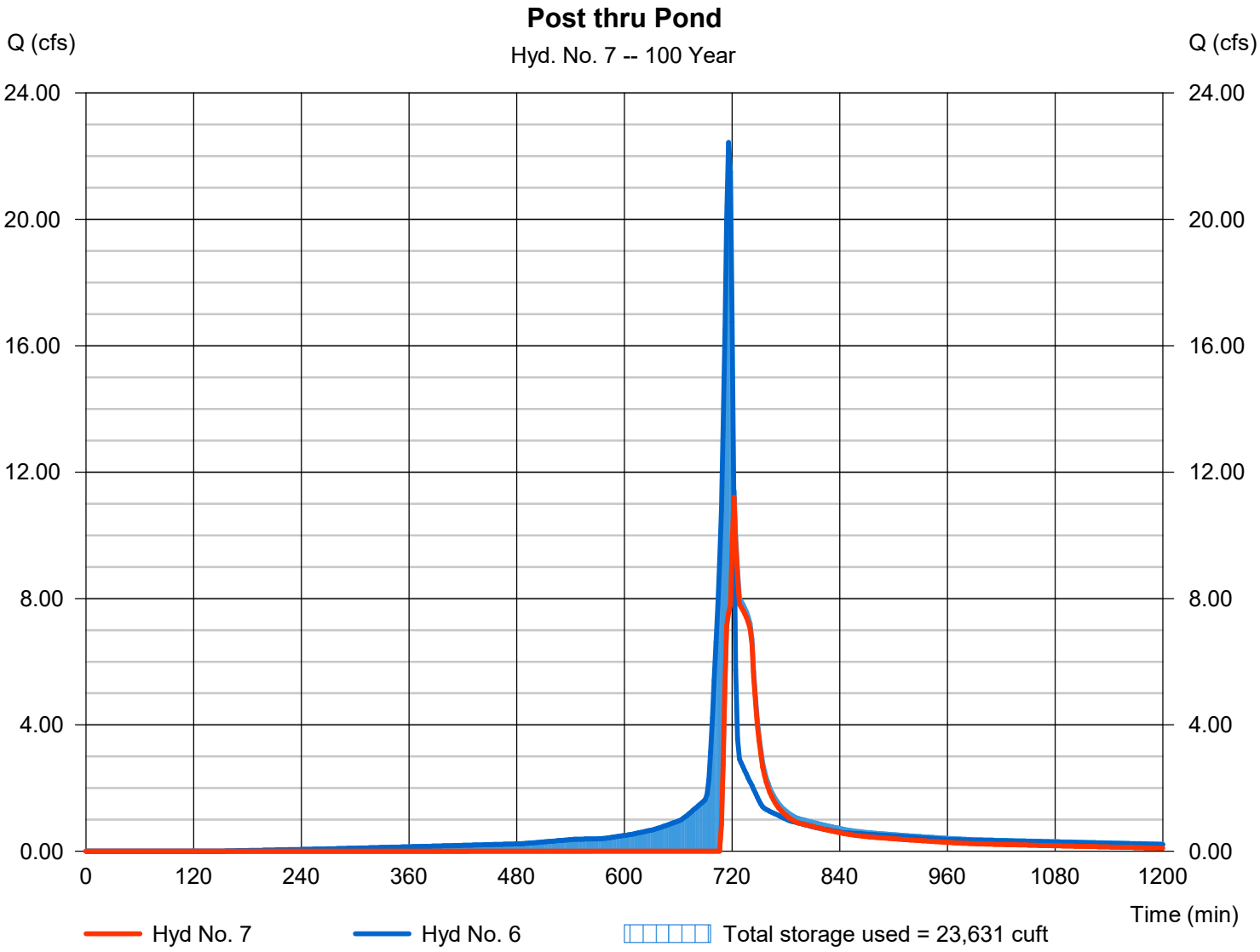
Hydrograph Report

Hyd. No. 7

Post thru Pond

Hydrograph type	=	Reservoir	Peak discharge	=	11.20 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	30,183 cuft
Inflow hyd. No.	=	6 - Post to Pond	Max. Elevation	=	611.39 ft
Reservoir name	=	INFILTRATION 1	Max. Storage	=	23,631 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



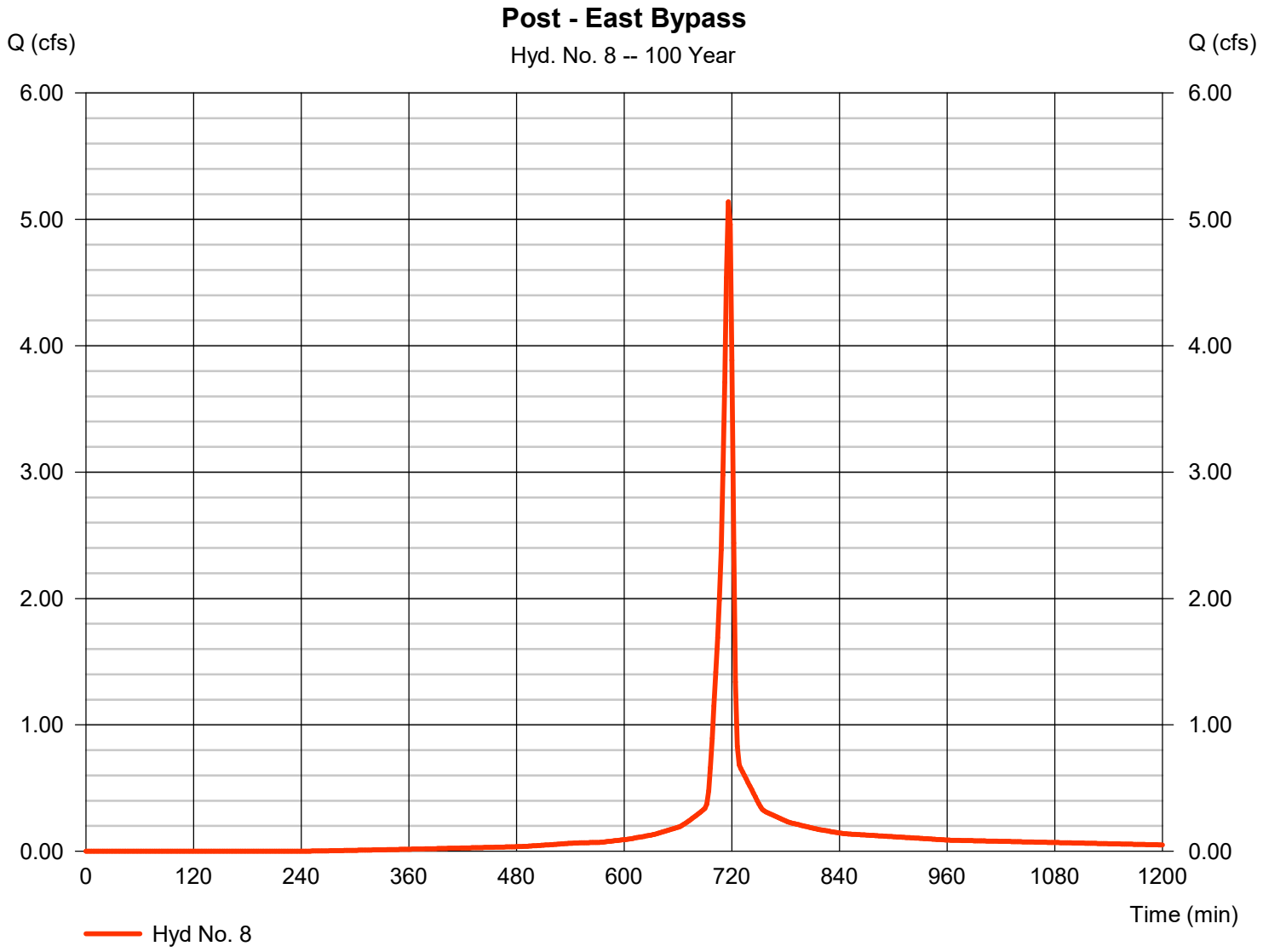
Hydrograph Report

Hyd. No. 8

Post - East Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.138 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	10,978 cuft
Drainage area	=	0.560 ac	Curve number	=	85*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.53 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.390 x 79) + (0.170 x 98)] / 0.560



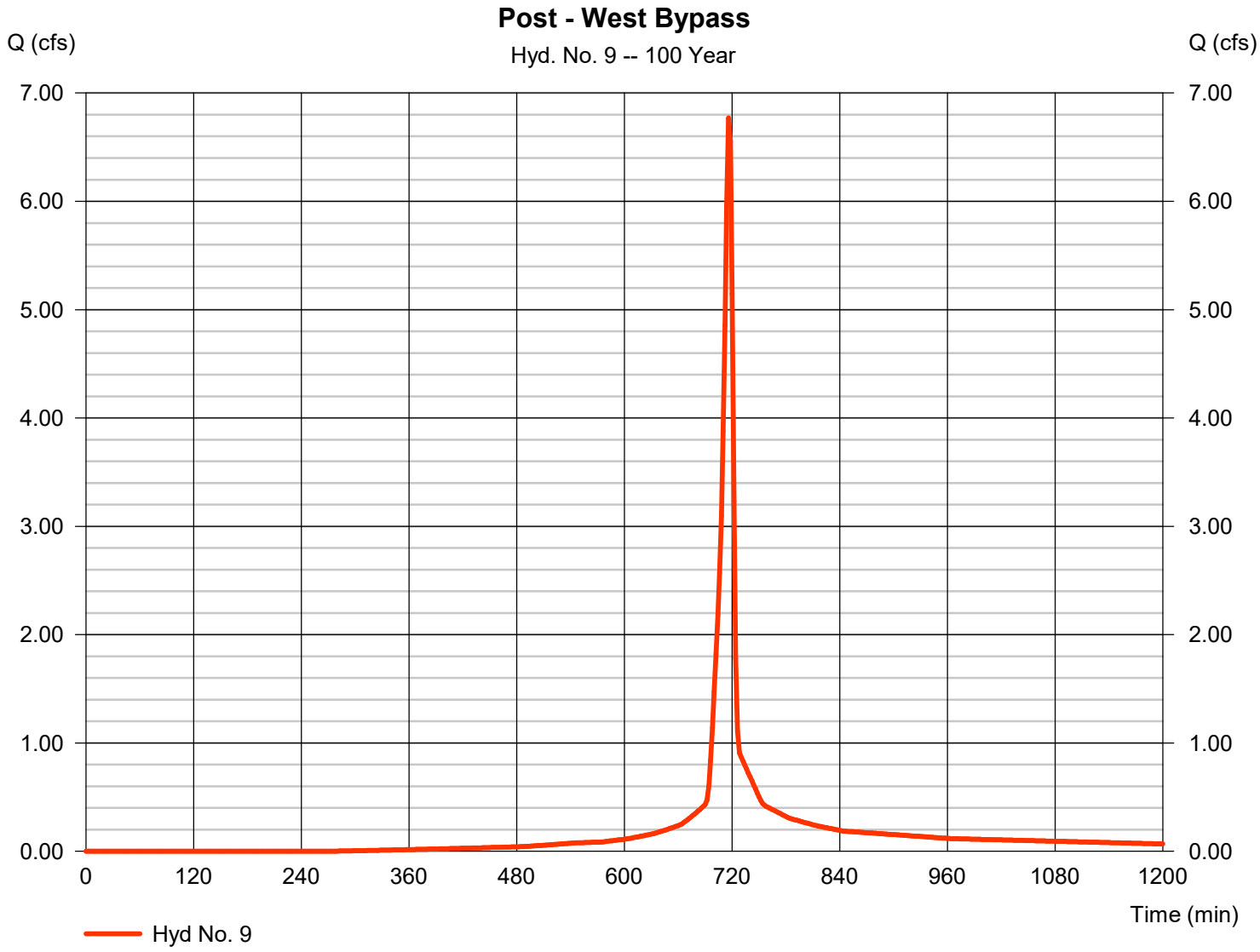
Hydrograph Report

Hyd. No. 9

Post - West Bypass

Hydrograph type	=	SCS Runoff	Peak discharge	=	6.771 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	14,302 cuft
Drainage area	=	0.760 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	7.53 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(0.160 x 98) + (0.600 x 79)] / 0.760

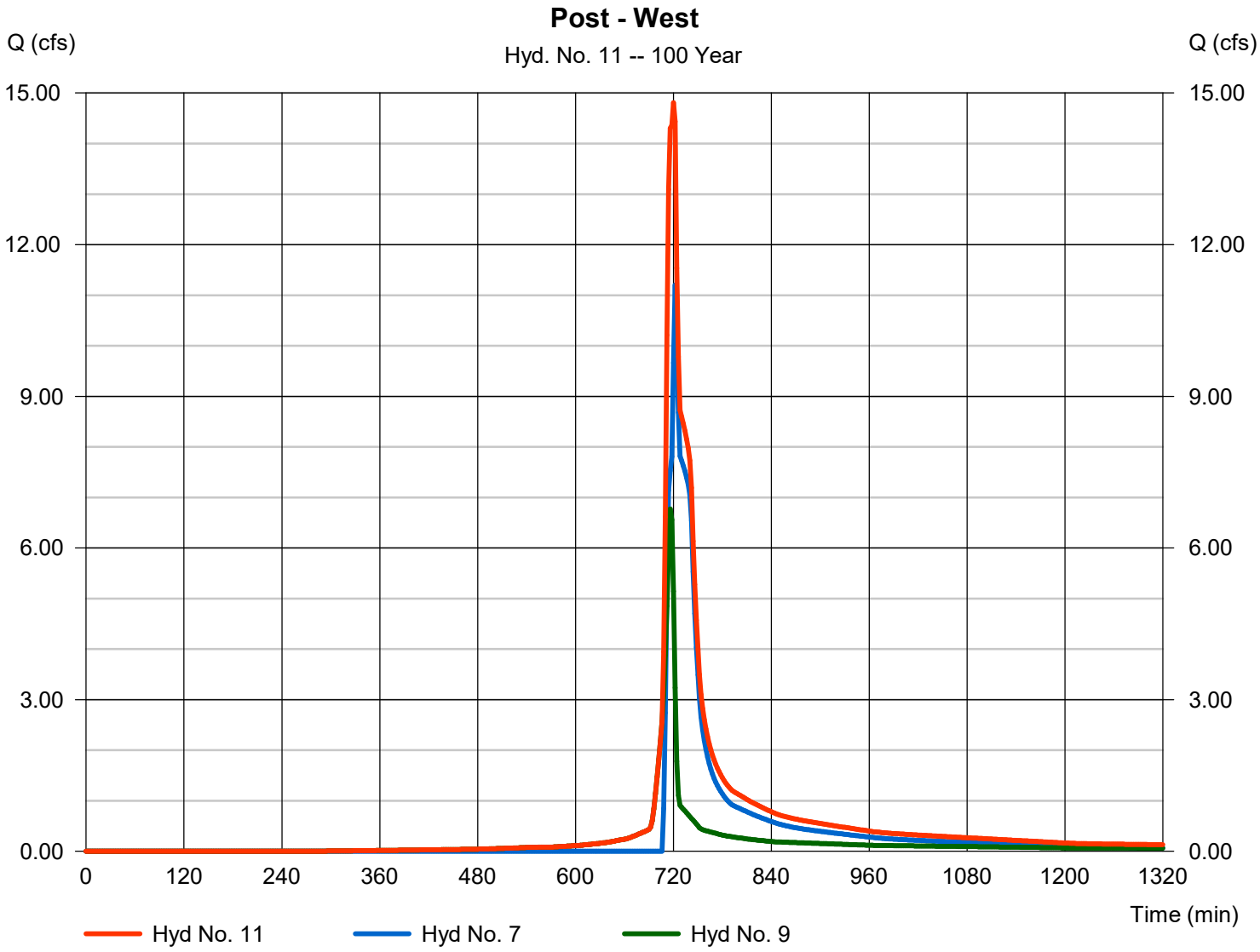


Hydrograph Report

Hyd. No. 11

Post - West

Hydrograph type	= Combine	Peak discharge	= 14.81 cfs
Storm frequency	= 100 yrs	Time to peak	= 720 min
Time interval	= 2 min	Hyd. volume	= 44,485 cuft
Inflow hyds.	= 7, 9	Contrib. drain. area	= 0.760 ac

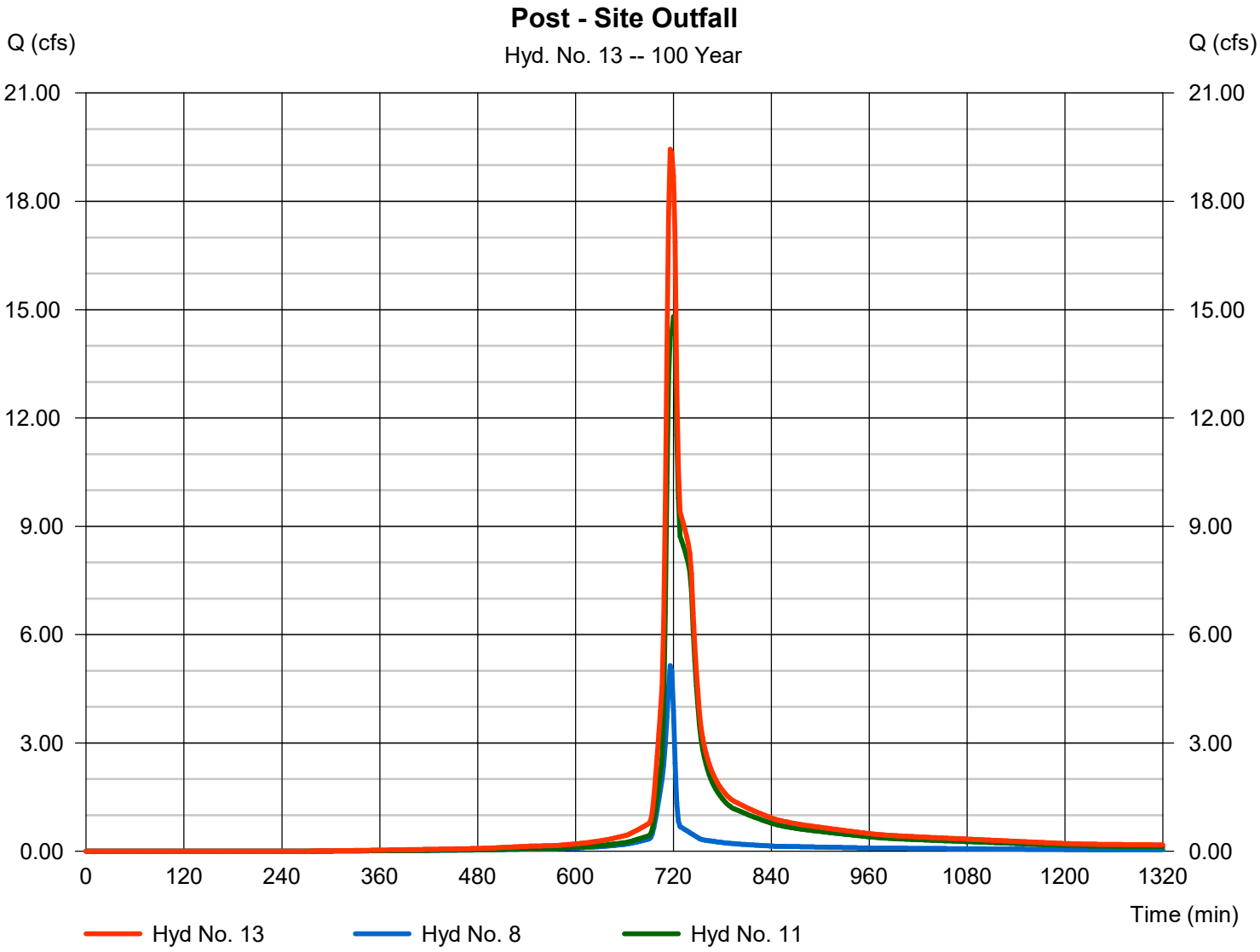


Hydrograph Report

Hyd. No. 13

Post - Site Outfall

Hydrograph type	= Combine	Peak discharge	= 19.44 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 55,463 cuft
Inflow hyds.	= 8, 11	Contrib. drain. area	= 0.560 ac



USDA Web Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Maury County, Tennessee



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


87° 1'43" W
87° 1'34" W
35° 38' 10" N
35° 38' 5" N
497390
497410
497430
497450
497470
497490
497510
497530
497550
497570
497590
497610
497630
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3943570
3943550
3943530
3943510
3943490
3943470
3943450
Theta Pike
Rd
Hr
Gd
Eh
Timber Trl
Soil Map may not be valid at this scale.
Map Scale: 1:1,120 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Maury County, Tennessee
Survey Area Data: Version 16, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2021—Apr 20, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Eh	Etowah silt loam, eroded sloping phosphatic phase	0.2	4.2%
Gd	Gullied land, phosphatic	0.0	0.4%
Hr	Huntington silt loam, local alluvium phosphatic phase	0.0	1.2%
Rd	Rockland, mimosa and inman materials, sloping	3.9	94.2%
Totals for Area of Interest		**4.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Maury County, Tennessee

Eh—Etowah silt loam, eroded sloping phosphatic phase

Map Unit Setting

National map unit symbol: kq5x
Elevation: 620 to 1,200 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 180 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Etowah and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Etowah

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium and/or colluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 30 inches: silty clay loam
H3 - 30 to 60 inches: silty clay loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Gd—Gullied land, phosphatic

Map Unit Composition

Gullied land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gullied Land

Typical profile

H1 - 0 to 30 inches: variable
R - 30 to 34 inches: bedrock

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: 9 to 79 inches to lithic bedrock

Hr—Huntington silt loam, local alluvium phosphatic phase

Map Unit Setting

National map unit symbol: kq6s
Elevation: 510 to 1,000 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Huntington and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huntington

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 24 inches: silt loam
H2 - 24 to 64 inches: silt loam

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Rd—Rockland, mimosa and inman materials, sloping

Map Unit Setting

National map unit symbol: kq7v
Elevation: 500 to 1,100 feet
Mean annual precipitation: 48 to 54 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 40 percent
Inman and similar soils: 30 percent
Mimosa and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Typical profile

R - 0 to 10 inches: bedrock

Description of Inman

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Clayey residuum weathered from limestone and shale

Typical profile

H1 - 0 to 6 inches: flaggy silty clay loam
H2 - 6 to 32 inches: flaggy clay
Cr - 32 to 42 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 39 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Mimosa

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 20 inches: clay
H3 - 20 to 55 inches: clay
R - 55 to 65 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

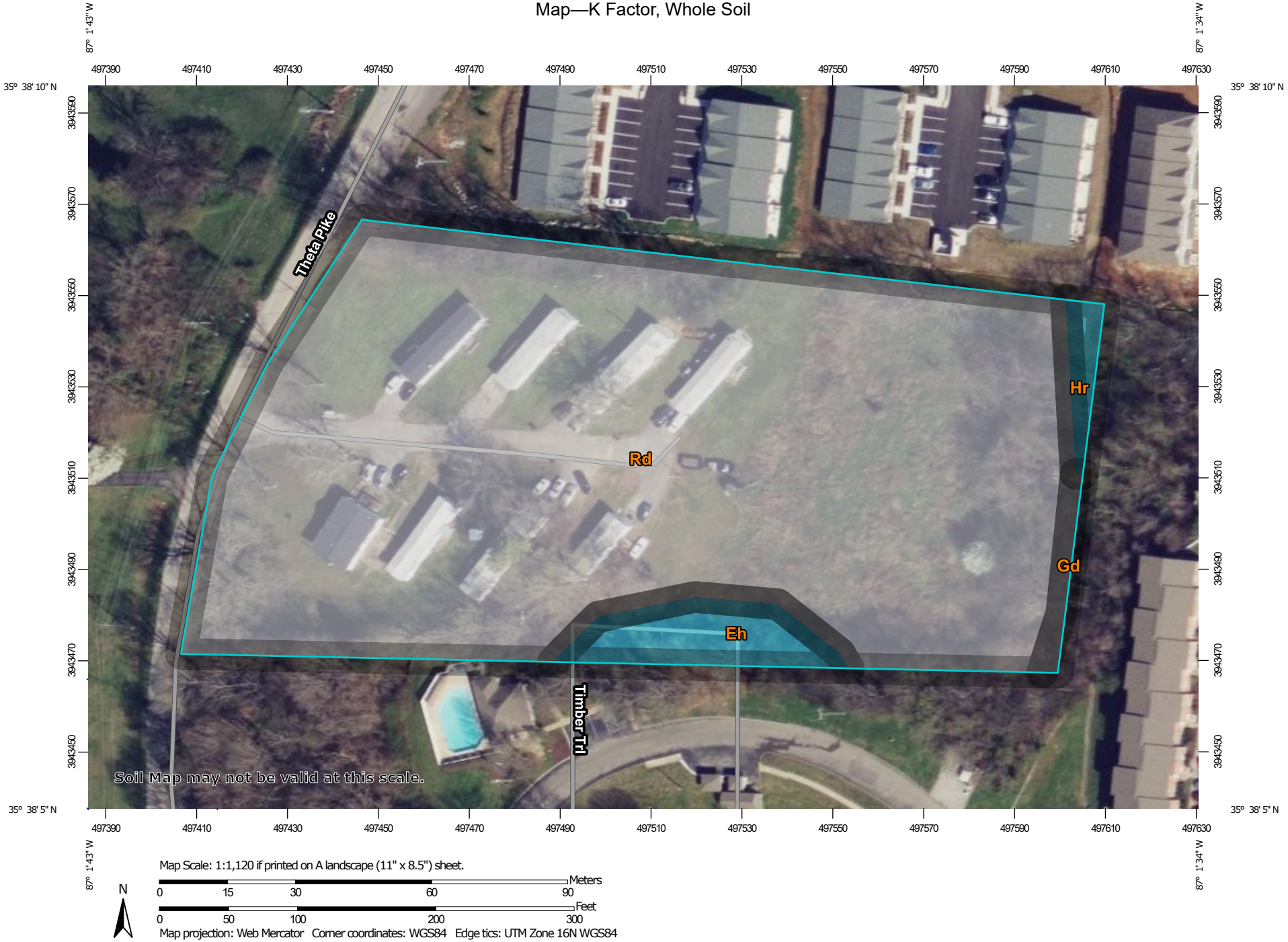
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Factor K does not apply to organic horizons and is not reported for those layers.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Soil Map may not be valid at this scale.
Map Scale: 1:1,120 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Maury County, Tennessee
Survey Area Data: Version 16, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 20, 2021—Apr 20, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Eh	Etowah silt loam, eroded sloping phosphatic phase	.37	0.2	4.2%
Gd	Gullied land, phosphatic		0.0	0.4%
Hr	Huntington silt loam, local alluvium phosphatic phase	.37	0.0	1.2%
Rd	Rockland, mimosa and inman materials, sloping		3.9	94.2%
Totals for Area of Interest			**4.1**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

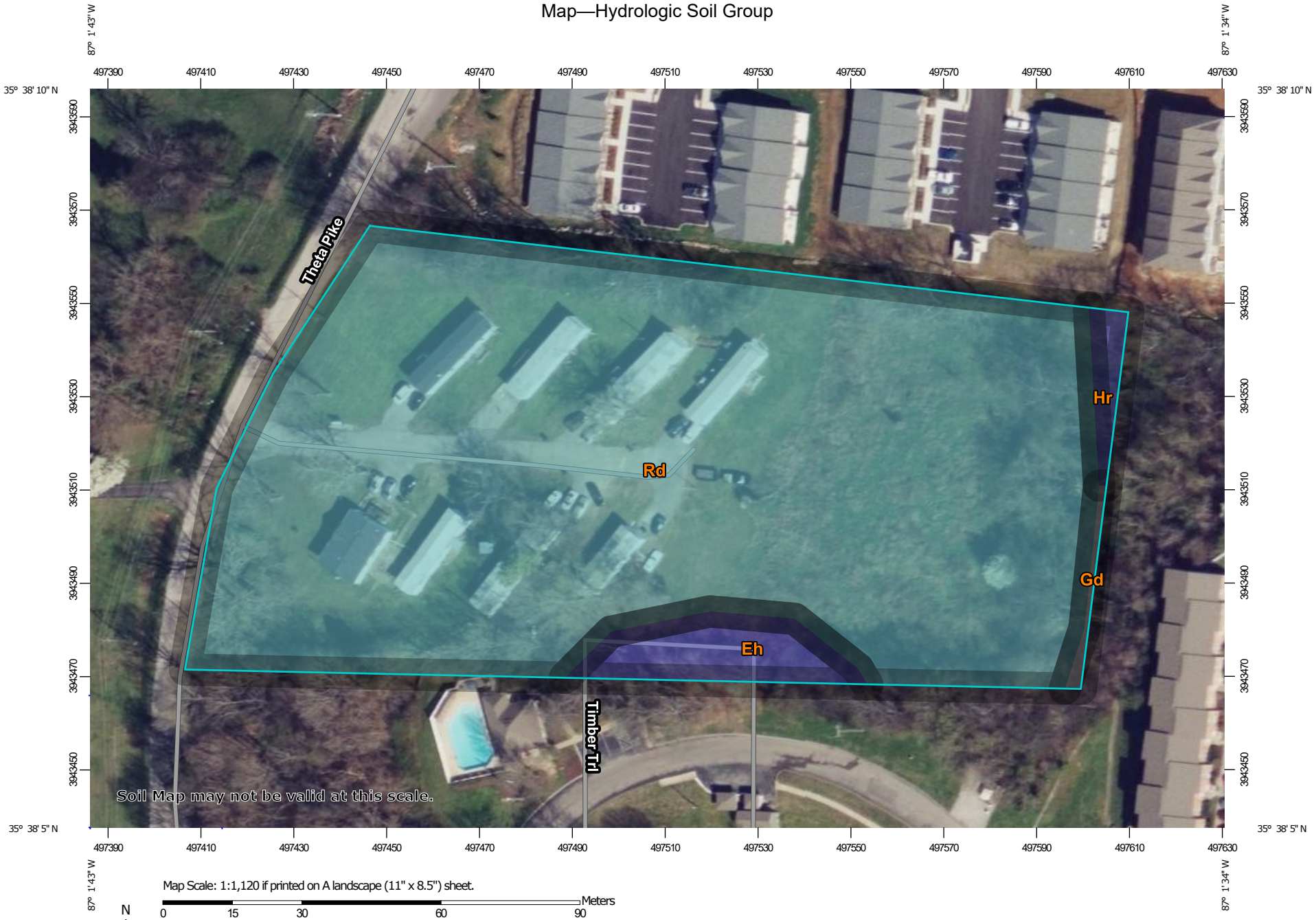
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.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N
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Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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Table—Hydrologic Soil Group

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Gd	Gullied land, phosphatic		0.0	0.4%
Hr	Huntington silt loam, local alluvium phosphatic phase	B	0.0	1.2%
Rd	Rockland, mimosa and inman materials, sloping	C	3.9	94.2%
Totals for Area of Interest			**4.1**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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March 20, 2023

City of Columbia, Tennessee
700 North Garden Street
Columbia, Tennessee 38401

Re: Mackenzie Place Townhomes – 220 Theta Pike
Cul-de-sac Justification Letter

To whom it may concern,

The following items are listed below to provide justification for a cul-de-sac on the aforementioned project:

1. Storm water management area directly to the east of the project site.

2. Lack of viable roadway connection to the east due to topography.

Sincerely,

Brian Holcombe

FREEMAN WEBB

5/11/2023

To the City of Columbia,

Freeman Webb agrees to allow the development of Mackenzie Place to remove vegetation along Theta Pike to the appropriate extent necessary in order to comply with minimum sight distance" However, in no event shall this be greater than the site distance shown and in no event shall any plantings or brush be disturbed around the entrance area of the Freeman Webb Property.

Best,

Bob Freeman

President

Mail – P.O. Box 23857 ● Nashville, TN 37202-3857
3810 Bedford Avenue, Suite 300 ● Nashville, TN 37215
Phone (615) 271-2700 ● Fax (615) 726-1967

GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

March 2, 2023

Waits Development
PO Box 111285
Nashville, Tennessee 37222

Attention: Mr. John Waits
John.waits1@icloud.com

Subject: **INFILTRATION TEST RESULTS**
Proposed Mackenzie Place Townhomes
220 Theta Pike
Columbia, Tennessee
GEOServices Project No. 31-231084

Dear Mr. Waits:

GEOServices has completed infiltration measurements, as requested by Waits Development personnel at the 220 Theta Pike development in Columbia, Tennessee. A total of eight (8) infiltration locations were requested by Waits Development personnel. One of the eight infiltrations were installed at the planned depth of 11 feet (IT-1) below the existing ground surface elevation. The remaining infiltration locations encountered shallow refusal conditions, but was able to be offset and completed approximately 1 to 2 feet above the refusal depth. During installation, lean and/or fat clays were encountered to the test depths. After installation, two feet of water was filled into each casing and allowed to presoak for an initial period of 24 hours prior to recording infiltration test results. After presoaking for 24 hours, the two-foot water level was re-established, readings taken after one hour, and the process repeated for a total of four hours. The infiltration locations were prefilled on February 23 (IT-1 through IT-4) and March 1 (IT-5 through IT-8), 2023 and the infiltration readings were completed on February 24 (IT-1 through IT-4) and March 2 (IT-5 through IT-8), 2023. The following table presents the findings recorded during the infiltration testing. According to test procedure guidelines, the infiltration rate can be taken as the 4th reading, or average of the four 1-hour readings.

Location #	Planned Depth (feet)	Refusal Depth (Feet)	Test Depth (feet)	Infiltration Rate (inches per hour)			
				1 hr	2 hr	3 hr	4 hr
IT-1	11	-	11	1.5	1.25	0.75	0.5
IT-2	13	5.25	4	0.5	0.5	0.5	0.5
IT-3	14	6.25	4	0	0	0	0
IT-4	15	5	4	3.5	2.25	1.5	1.25
IT-5	14	7.5	6.5	1	0.75	0.5	0.25
IT-6	13	9	8	1.5	1	0.75	0.5
IT-7	12	7	6	1	0.5	0.5	0.5
IT-8	11	11	10	3	2.25	2	1.75

Notes: Test depths rounded to the nearest 1/4 foot and test measurements rounded to the nearest 1/4 inch and should be considered approximate.

GEOServices looks forward to continuing to work with you on this project. If you have any questions or require additional information, please feel free to call us.

Sincerely,
GEOServices, LLC

Scott Williams

S. Scott Williams
Staff Professional

Jerry W. Gammon, P.E.
V.P., Nashville Area Branch Manager
TN 111633

Attachments: Infiltration Test Location Plan



Notes:

1) Site Source Provided by: Client
2) Aerial Provided by: Google Earth Pro, (2022)
3) Infiltration Test Locations are shown in general arrangement only
4) Do Not use Infiltration Test Locations for determinations of Distance or Quantities

Infiltration Test Location & Identifier

GEOS
GEOServices, LLC-Geotechnical and Materials Engineers
A Universal Engineering Sciences Company

Infiltration Test Location Plan
Proposed Mackenzie Place Townhomes
Columbia, Tennessee

DATE: 02/20/2023
GEOS Project No. 31-231084
FIGURE: 1

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

January 10, 2023

M2 Group, LLC
Matt Bryant, PE
matt@m2groupllc.com

Re: 220 Theta Pike
Mackenzie Place Apartments, 34 Townhome Units

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.
Vice President of Power Operations

kw

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

28 December 2022

Brian Holcombe
M2 Group, LLC
brian@m2groupllc.com

RE: 220 Theta Pike, Columbia, TN 38401

Brian,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

CPWS

May 19, 2023

Mr. Brian Holcombe
M2 Group, LLC
P.O. Box 848
Franklin, TN 37065
Sent via email: brian@m2groupllc.com

RE: Water Availability Letter
Mackenzie Place Townhomes – 34 Units
220 Theta Pike
Tax Map 90B, Parcel 47.00
Columbia, Maury County, TN

Dear Mr. Holcombe:

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, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 34 townhome units in 7 buildings. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 6-inch water main located on Theta Pike.
- Minimum size 8-inch water mains will be required throughout the development.

- Townhomes will be served via gang-meter vaults.

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

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

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

New Water Service Fee: $1,500 + $370 per SFU (34 SFUs)	$14,080.00

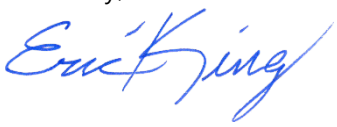
- CPWS will then develop water construction drawings and submit to TDEC for approval. Upon approval by TDEC and payment of meter and impact fees by the applicant, applicant may then schedule a pre-construction meeting with CPWS. Pre-construction meeting will not be scheduled until fees are paid in full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

Meter Fee: $540 per 3/4" meter (34 meters)	$18,360.00
Impact Fee: $875 per 3/4" meter (34 meters)	$29,750.00
Total Meter and Impact Fees Due =	**$48,110.00**

- 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 Mr. Jonathan Hardin or myself at 423-774-0349 or eric.king@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,



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

cc: Jonathan Hardin, CPWS
File 22-005

May 22, 2023

City of Columbia, Tennessee
700 North Garden Street
Columbia, Tennessee 38401

Re: **Mackenzie Place Townhomes**
220 Theta Pike
Description of Proposed Project

To Whom it May Concern:

The Mackenzie Place Townhome project consists of 34 townhome units that will be constructed along a 560+/- LF roadway terminating with a cul-de-sac. Each unit will have two parking spaces: one within the garage itself and the other space located in the driveway.

Due to topography, a 436+/- LF retaining wall with varying heights (7.5' at its maximum) will be required along the south property line.

Storm water will be managed via an (level 2) infiltration trench which will satisfy the 80% target runoff reduction requirement. The infiltration trench has been oversized in order to reduce the post-development Curve Number (CN) to meet the stormwater requirements and ensure that post developed flows do not exceed the pre-developed flows.

Sanitary Sewer will be provided with a proposed extension of the existing network connecting at a manhole adjacent to the intersection of Theta Pike and Polk Place.

Water will be provided with the construction of a new 8" main that will connect to an existing main along Theta Pike.

Thank you for your consideration of this site plan submittal and please do not hesitate to reach out to us if have any questions, or need any further information.

Sincerely,

Brian Holcombe

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: MacKenzie Place

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

General

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

Lots and Land-Use

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

Structures

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

CITY OF
COLUMBIA
TENNESSEE

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

Grading, Drainage, and Storm

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

Streets, Parking, and Pedestrian Elements

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

Landscaping, Open Space, and Amenities

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

Utilities

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

CITY OF
COLUMBIA
TENNESSEE

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

PUD Specific Items

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

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

Checklist Completed By:

Brian Holcombe	Brian Holcombe	05/22/23
Print Name	Signature	Date

DocuSign Envelope ID: A9390243-670C-4902-9842-71113075C10E

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	220 Theta Pike - Columbia, TN		
	TAX MAP: 90B	GROUP: B	PARCEL: 47.00
SUMMARY OF NATURE OF REQUEST AND WORK	34 town home units.		

DATE OF PRE-APPLICATION CONFERENCE	04/05/23	*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) _____ ❑ 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	M2 Group, LLC	PHONE	(615) 925-0851
ADDRESS	P.O. Box 848 - Franklin, TN 37064	EMAIL	brian@m2groupllc.com

PROPERTY OWNER NAME	Blair Property Management, LLC	PHONE	(615) 498-4190
ADDRESS	8217 VICTORY TRL BRENTWOOD TN 37027-7374	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.

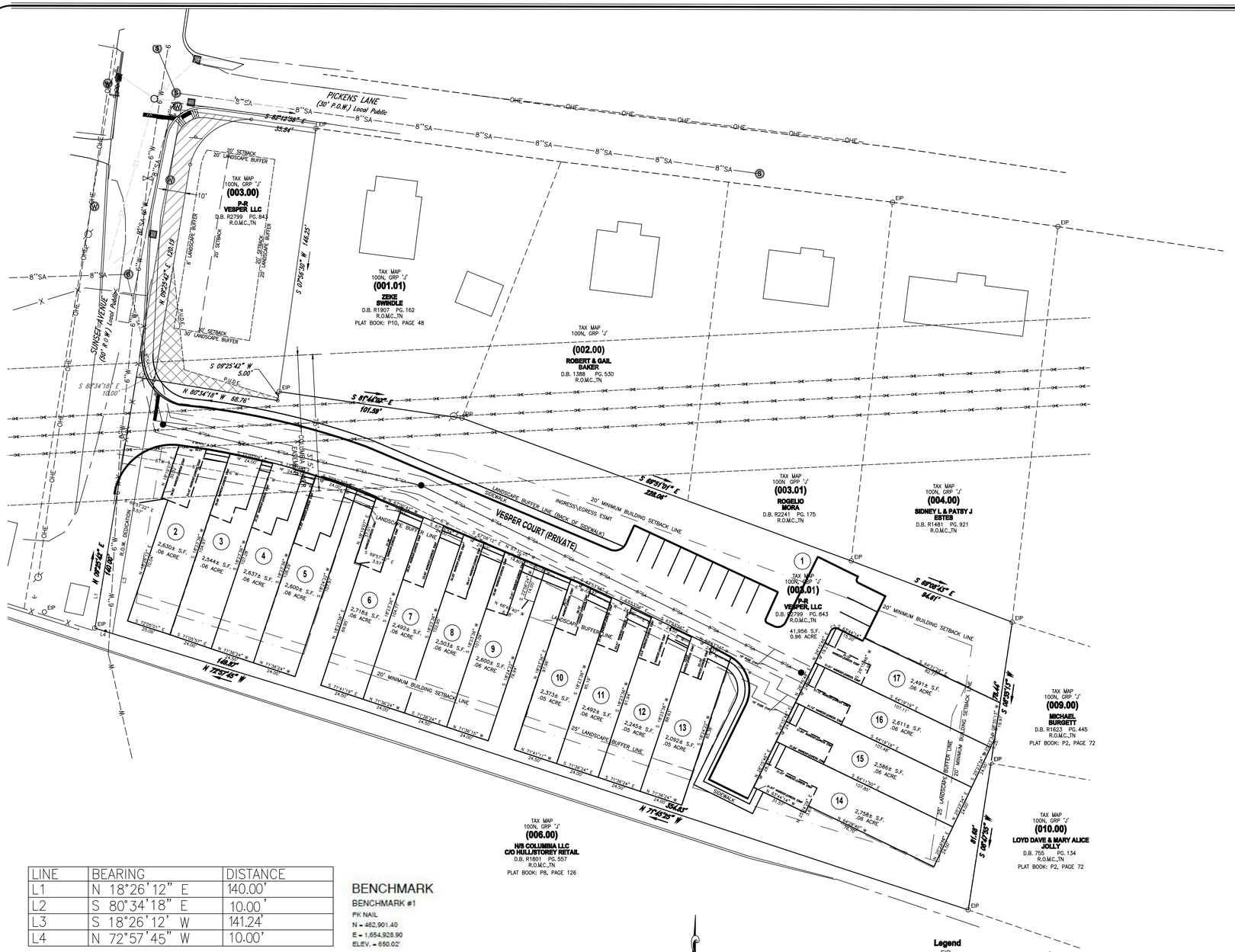
M2 Group, LLC APPLICANT NAME	DocuSigned by: Brian Holcombe 804B4D38BAE24F9... APPLICANT SIGNATURE	01-17-2023 | 12:27:59 CST DATE
Blair Property Management, LLC PROPERTY OWNER NAME	DocuSigned by: 5E3D27D00E42406... PROPERTY OWNER SIGNATURE	01-17-2023 | 12:31:33 CST DATE

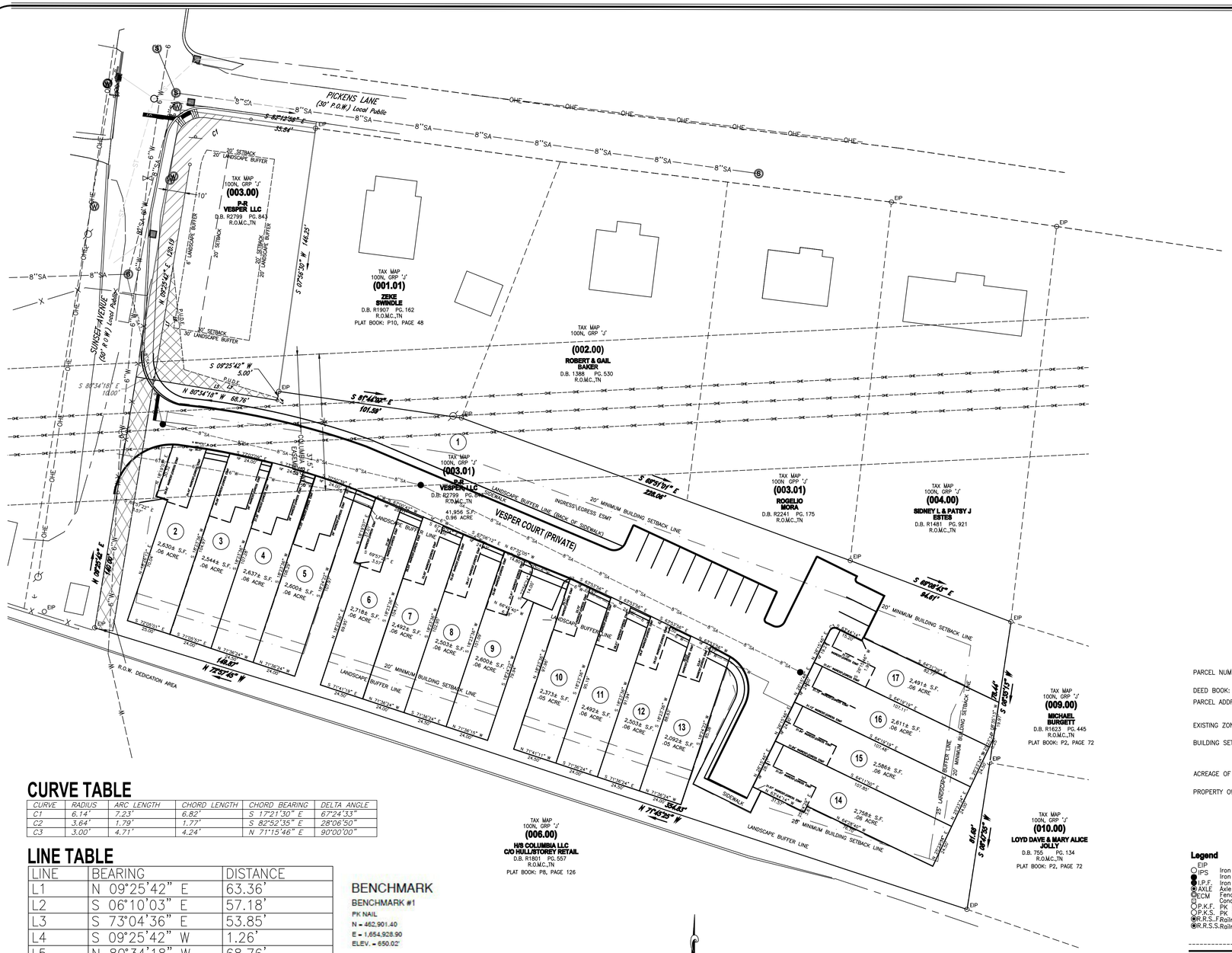
STAFF USE ONLY

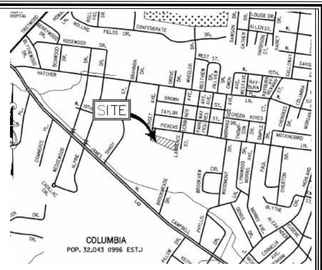
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

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

BOARD ACTION	


PICKENS LANE
(50' P.O.W.) Local Public
SUNSET AVENUE
(50' P.O.W.) Local Public
VESPER COURT (PRIVATE)
TAX MAP 100N, GRP 'J' (003.00) P-R VESPER LLC D.B. R2799 PG. 843 R.O.M.C.,TN
TAX MAP 100N, GRP 'J' (001.01) ZEKE SWINDLE D.B. R1907 PG. 162 R.O.M.C.,TN PLAT BOOK: P10, PAGE 48
TAX MAP 100N, GRP 'J' (002.00) ROBERT L & GAIL BAKER D.B. 1388 PG. 530 R.O.M.C.,TN
TAX MAP 100N GPP 'J' (003.01) ROGELIO MORA D.B. R2241 PG. 175 R.O.M.C.,TN
TAX MAP 100N, GRP 'J' (004.00) SIDNEY L & PATSY J ESTES D.B. R1481 PG. 921 R.O.M.C.,TN
TAX MAP 100N, GRP 'J' (003.01) P-R VESPER, LLC D.B. R2799 PG. 843 R.O.M.C.,TN 41,956 S.F. 0.96 ACRE
TAX MAP 100N, GRP 'J' (009.00) MICHAEL BURGETT D.B. R1623 PG. 445 R.O.M.C.,TN PLAT BOOK: P2, PAGE 72
TAX MAP 100N, GRP 'J' (010.00) LOYD DAVE & MARY ALICE JOLLY D.B. 755 PG. 134 R.O.M.C.,TN PLAT BOOK: P2, PAGE 72
TAX MAP 100N, GRP 'J' (006.00) HIS COLUMBIA LLC C/O HULL/STOREY RETAIL D.B. R1801 PG. 557 R.O.M.C.,TN PLAT BOOK: P8, PAGE 126
20' SETBACK
20' LANDSCAPE BUFFER
30' SETBACK
30' LANDSCAPE BUFFER
20' MINIMUM BUILDING SETBACK LINE
25' LANDSCAPE BUFFER LINE
INGRESS\EGRESS ESMT
SIDEWALK
P.U.D.E.
S 08°25'42" W 5.00'
S 80°34'18" E 10.00'
N 80°34'18" W 68.76'
S 81°41'08" E 101.59'
S 69°31'01" E 128.08'
S 69°31'01" E 94.61'
S 64°41'16" E 107.82'
S 64°41'16" E 107.82'
S 64°41'16" E 107.82





CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	6.14'	7.23'	6.82'	S 17°21'30" E	67°24'33"
C2	3.64'	1.79'	1.77'	S 82°52'35" E	28°06'50"
C3	3.00'	4.71'	4.24'	N 71°15'46" E	90°00'00"

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 09°25'42" E	63.36'
L2	S 06°10'03" E	57.18'
L3	S 73°04'36" E	53.85'
L4	S 09°25'42" W	1.26'
L5	N 80°34'18" W	68.76'

BENCHMARK

BENCHMARK #1
PK NAIL
N = 462,901.40
E = 1,654,928.90
ELEV. = 650.02'

OPEN SPACE NOTE

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

PURPOSE NOTE:
The purpose of this plat is to create 16 residential lots and 1 common lot.

GENERAL NOTE:
The recording of this plat vacates, voids, and supercedes lot 2 on previous plat of record, P10, Page 48.

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.

Date Number

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 OF WATER SYSTEM

I, (we) hereby certify that the water system(s) outlined or indicated on the final subdivision plat entitled Vesper Court, Phase 1,Rev 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 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 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 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 R2799 , Page 843, 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 PRINTED NAME/TITLE

SIGNED P-R VESPER, LLC

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

redacted surveyor sealing (digital copy)

Register of Deed Recording Stamp

PARCEL NUMBER: TAX MAP 100N, GROUP 'J', PCL 003.01

DEED BOOK: R2799, PAGE 843

PARCEL ADDRESS:
SUNSET AVENUE
COLUMBIA, TENNESSEE 38401

EXISTING ZONING:
RM-1

BUILDING SETBACKS:
FRONT – 20'(MINOR)
SIDE – 10'
REAR – 20'

ACREAGE OF PARCEL:
±1.89 ACRES (82,328± S.F.) TOTAL

PROPERTY OWNER:
P-R VESPER, LLC
1711 3rd Avenue North, Unit A
Nashville, TN 37208-2209

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 is ±1.89 Acres.
7. This property currently identified as Tax Map No. 100N, Group 'J', Parcel No. 003.01, Maury County. For designation shown thus ( ) indicates Parcel Numbers for said map.
8. Plat reference: P10, Page 48
9. Deed reference: Book R2799, Page 843
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. 47119C0285E, 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. There exists a P.U.D.E. that is 10' on all property lines parallel to and abutting roads and 5' on all interior lot lines

Legend

EIP Iron Rod Found	Bench Mark	Catch Basin	Electric Riser	Power Pole
IPS Iron Rod Set	Stake Found	Curb Inlet	Telephone Riser	Flag Pole
I.P.F. Iron Pipe Found	Fire Hydrant	Storm Pipe	Telephone Booth	Guy Wire
AXLE Axle Found	Water Meter	Cable Manhole	Gas Meter	Mailbox
FENCE Fence Post	Water Valve	Electric Manhole	Gas Valve	Parking Block
CM Concrete Monument Existing	Water Reducer	Telephone Manhole	Light Pole	Satellite Dish
P.K.F. PK Nail Found	Clean Out	Water Manhole	Power Pole	Handicap Parking
P.K.S. PK Nail Set	Sanitary Sewer Manhole	Electric Meter	Telephone Pole	Water Spigot
R.R.S..F Railroad Spike Found	Storm Sewer Manhole	Cable Riser	Guy Pole	Bollard
R.R.S.S Railroad Spike Set				

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 (G); Sanitary Sewer Line (SA); Water Line (W); Storm Sewer Line (ST); Overhead Utility Line (OH); Overhead Cable Line (OHC)

Overhead Electric Line (OHE); Overhead Telephone Line (OHT); Underground Utility Line (UG); Underground Cable Line (UGC); Underground Electric Line (UGE); Underground Telephone Line (UGT); Forced Main Line (FM)

CIVIL DESIGN CONSULTANTS, LLC
CIVIL • PLANNING • SURVEYING
CIVIL-DESIGN-CONSULTANTS, LLC
1731 CLEAT DAVIS RD., MCEWEN, TN. 37101
PHONE: (615) 312-4240 EMAIL: MCEWEN@CDC-NET.NET

VESPER COURT

PRELIMINARY PLAT RESUBDIVISON OF LOT 2

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

REVISIONS

DESIGNED BY:

DRAWN BY:

APPROVED BY:

SCALE: AS NOTED

DATE: DECEMBER 19, 2022

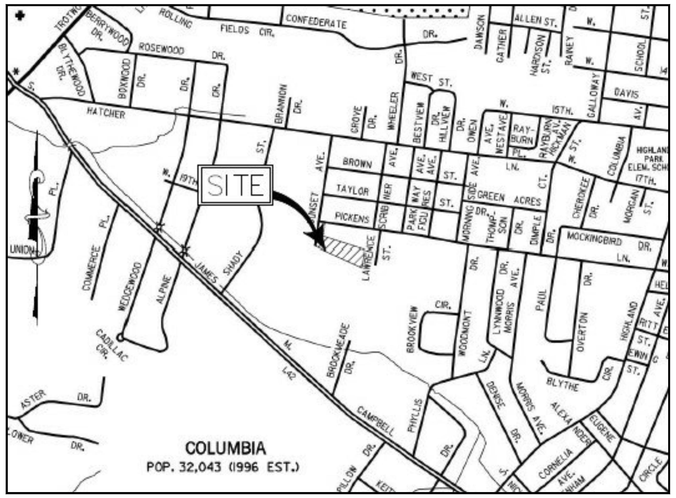
JOB NO. 19–100 WK. ORDER 001

SHEET NO. 1 OF 1

SITE DESIGN PLAN REVISION
FOR
VESPER COURT

SUNSET AVENUE, COLUMBIA, TENNESSEE
TAX MAP 100N, PARCEL 01.00 & 03.00
RESIDENTIAL SITE PLAN

PENTAGON HOLDINGS



LOCATION MAP
NOT TO SCALE

INDEX OF SHEETS

SHEET	DESCRIPTION
CS	COVER SHEET
C0	PRELIMINARY PLAT
C1	OVERALL LAYOUT PLAN
C2	OVERALL GRADING, DRAINAGE, OVERALL UTILITY PLAN
C2A	ROADWAY PLAN AND PROFILE
C2B	SEWER PLAN AND PROFILE
C2C	UTILITY PLAN
C2D	UTILITY NOTES AND DETAILS
C3	EPSC PLAN PHASE I
C3A	EPSC PLAN PHASE II
L1	LANDSCAPE ARCHITECTURE PLAN

3 5-2-23 (JRG) Rev. Per City Requirements
2 3-28-23 (JRG) Rev. Per City Requirements

OWNER: P-R VESPER LLC
1711 3RD AVE N UNIT A, NASHVILLE, TN, 37208

THIS SITE PLAN CONTAINS REVISIONS FROM THE APPROVED SITE PLAN COMPLETED BY WES ENGINEERING FOR WHICH REFERENCE WITHIN THIS PLAN IS MADE THE PURPOSE OF THIS SITE PLAN IS TO ALLOW CONSTRUCTION OF SINGLE FAMILY ATTACHED BUILDINGS.

CIVIL DESIGN CONSULTANTS, LLC
CIVIL ENGINEERS ◦ LAND PLANNERS
CIVIL-DESIGN-CONSULTANTS, LLC
5170 COLEY DAVIS RD., NASHVILLE, TN. 37221
PHONE: (615) 319-2734 EMAIL: JARED@CIVILCONSULTANTS.NET

VESPER COURT AND SUNSET AVE.
CITY OF COLUMBIA, MAURY COUNTY, TENNESSEE

THIS SITE PLAN HAS BEEN DESIGNED TO MEET THE CRITERIA OF THE CITY OF COLUMBIA, TENNESSEE. THE PLANS ARE NOT RELEASED FOR CONSTRUCTION UNTIL THE RELATIVE PERMIT HAS BEEN ISSUED BY THE MUNICIPALITY. CHANGES SHALL NOT BE MADE TO THE APPROVED SITE PLAN UNLESS APPROVED BY THE RELEVANT DEPARTMENT SUPERINTENDANT OR THE PLANNING COMMISSION.

CIVIL DESIGN CONSULTANTS, LLC
CIVIL ENGINEERS ◦ LAND PLANNERS
CIVIL-DESIGN-CONSULTANTS, LLC
5170 COLEY DAVIS RD., NASHVILLE, TN. 37221
PHONE: (615) 319-2734 EMAIL: JARED@CIVILCONSULTANTS.NET

JARED R. GRAY — REGISTERED — No. 108403 — STATE OF TENNESSEE

VESPER COURT
CITY OF COLUMBIA, MAURY COUNTY TENNESSEE
COVER SHEET

3 5-2-23 (JRG) Rev. Per City Requirements
2 3-28-23 (JRG) Rev. Per City Requirements

REVISIONS

DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	NOT TO SCALE
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

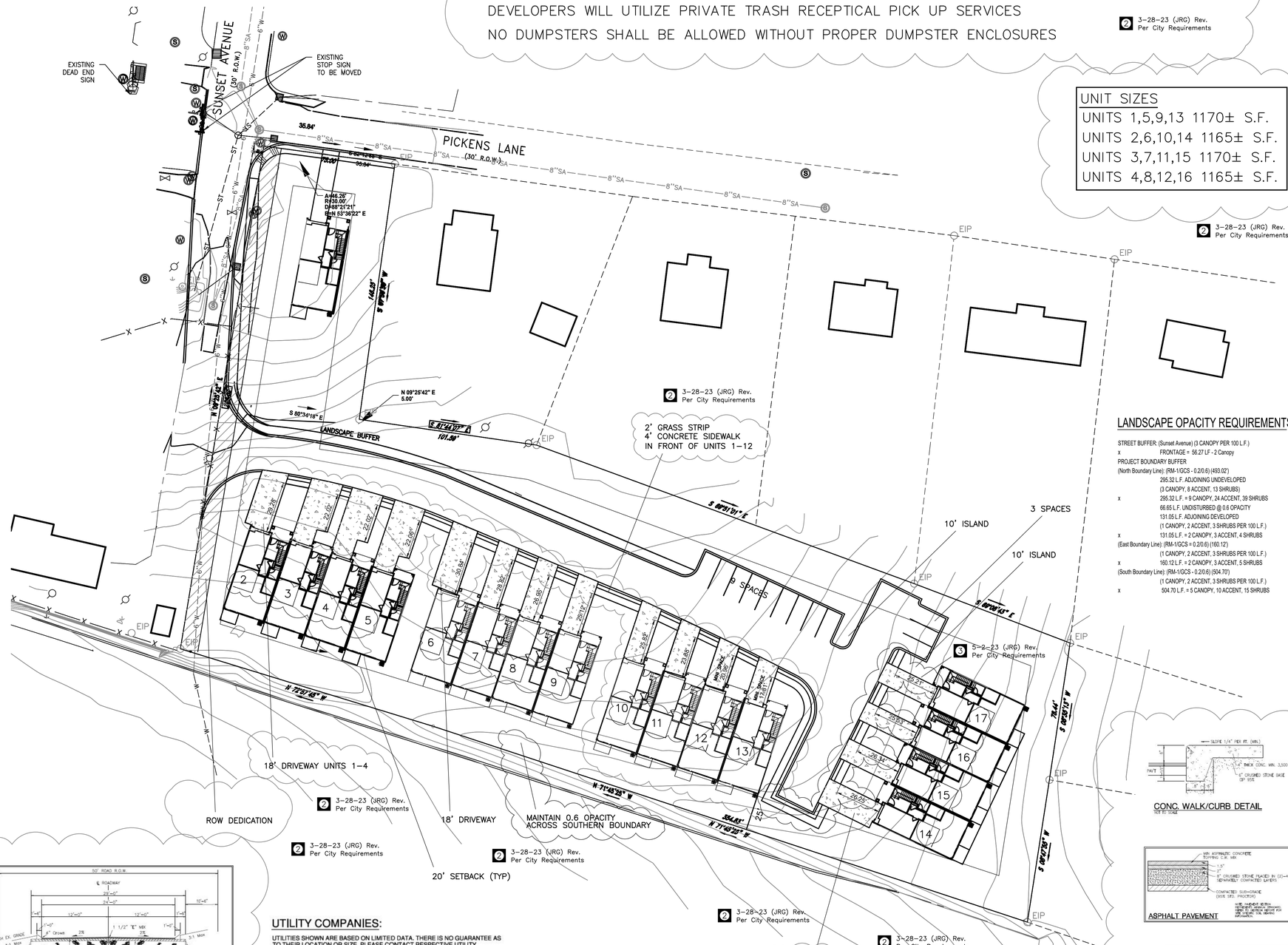
SHEET NO.
CS



28 SPACES PROVIDED 24 SPACES REQUIRED @ 1.5sp/UNIT BLDG. SPACES 10,11,12 ARE NOT COUNTED IN THE TOTAL. ALL DRIVES 12'X23' MIN. EXCEPT FOR UNITS 1,5,13 WHERE 18' IS USED FOR TWO SPACES
DEVELOPERS WILL UTILIZE PRIVATE TRASH RECEPTICAL PICK UP SERVICES
NO DUMPSTERS SHALL BE ALLOWED WITHOUT PROPER DUMPSTER ENCLOSURES

2 3-28-23 (JRG) Rev. Per City Requirements

UNIT SIZES
UNITS 1,5,9,13 1170± S.F.
UNITS 2,6,10,14 1165± S.F.
UNITS 3,7,11,15 1170± S.F.
UNITS 4,8,12,16 1165± S.F.



2 3-28-23 (JRG) Rev. Per City Requirements

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2 3-28-23 (JRG) Rev. Per City Requirements

3 5-2-23 (JRG) Rev. Per City Requirements

LANDSCAPE OPACITY REQUIREMENTS

STREET BUFFER: (Sunset Avenue) (3 CANOPY PER 100 L.F.)
x FRONTAGE = 56.27 LF - 2 Canopy
PROJECT BOUNDARY BUFFER
(North Boundary Line): (RM-1/GCS - 0.2/0.6) (493.02')
295.32 L.F. ADJOINING UNDEVELOPED
(3 CANOPY, 8 ACCENT, 13 SHRUBS)
x 295.32 L.F. = 9 CANOPY, 24 ACCENT, 39 SHRUBS
66.65 L.F. UNDISTURBED @ 0.6 OPACITY
131.05 L.F. ADJOINING DEVELOPED
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 131.05 L.F. = 2 CANOPY, 3 ACCENT, 4 SHRUBS
(East Boundary Line): (RM-1/GCS = 0.2/0.6) (160.12')
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 160.12 L.F. = 2 CANOPY, 3 ACCENT, 5 SHRUBS
(South Boundary Line): (RM-1/GCS - 0.2/0.6) (504.70')
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 504.70 L.F. = 5 CANOPY, 10 ACCENT, 15 SHRUBS

PAVING NOTES:

1. PROPOSED ASPHALT PAVEMENT CROSS-SECTION TO CONFORM TO CITY OF COLUMBIA STANDARDS. REFERENCE DETAIL PROVIDED.
2. ALL CURVE RADII = 5' (FIVE FEET) UNLESS NOTED OTHERWISE.
3. SURFACES TO RECEIVE MARKING PAINT SHALL BE CLEAN, DRY AND METAL SURFACES ARE TO BE FREE FROM HEAVY RUST.
4. YELLOW CURBING AND BOLLARDS ARE TO RECEIVE 2 COATS SHERWIN WILLIAMS - KEM 4000 ACRYLIC ALKYD ENAMEL SAFETY YELLOW B55Y300 (TO BE WHITE IF REQUIRED BY ARCHITECTURAL REVIEW COMMITTEE)
5. 4" WIDE TRANSVERSE PAVEMENT MARKING TO RECEIVE TOP COAT SHERWIN WILLIAMS -PRO MAR TRAFFIC MARKING PAINT, YELLOW TM5495. (TO BE WHITE IF REQUIRED BY ARCHITECTURAL REVIEW COMMITTEE) ACCESSIBLE SPACES TO RECEIVE TOP COAT SHERWIN WILLIAMS - PRO MAR TRAFFIC MARKING PAINT "H.C." BLUE.

STORMWATER NOTES:

1. ROOF DRAINAGE TO SHEET FLOW ACROSS PAVEMENT INTO THE PROPOSED DRAINAGE SYSTEM.
2. SUBJECT PROPERTY IS NOT IN A FLOODPLAIN AS PER F.I.R.M. F.E.M.A. COMMUNITY PANEL #47119C0285E, DATED APRIL 16, 2007.

WATERMAIN NOTES:

1. REFER TO COLUMBIA POWER & WATER SYSTEM DESIGN PLANS FOR WATER DESIGN AND SERVICE LOCATIONS.
2. ALL PROPOSED WATER MAINS AND SERVICES TO BE INSTALLED PER THE STANDARDS & SPECIFICATIONS OF COLUMBIA POWER & WATER SERVICE.
3. SERVICES, INCLUDING LONG TAPS AND SHORT TAPS, ARE TO BE INSTALLED TO THE PROPERTY LINE. MAINTAIN A 10' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN THE WATER SERVICE LINES AND OTHER UTILITIES WHERE FEASIBLE.

SANITARY SEWER LEAD NOTES:

1. MAINTAIN A MINIMUM OF 18" VERTICAL CLEARANCE, AND 10' HORIZONTAL CLEARANCE BETWEEN ALL UTILITIES.
2. ALL MATERIALS AND WORKMANSHIP FOR SANITARY SEWER LEADS SHALL BE IN STRICT COMPLIANCE WITH CURRENT CITY OF COLUMBIA WWTP STANDARDS.
3. SEWER SERVICE LEADS ARE TO BE EXTENDED TO A POINT 5-FT. OUTSIDE THE BUILDING WHERE THE PLUMBING CONTRACTOR WILL COMPLETE THE CONNECTION TO THE BUILDING PLUMBING SYSTEM.
4. ALL SANITARY SEWER LEADS WITHIN A 1:1 INFLUENCE OF EXISTING, PROPOSED, OR FUTURE PAVEMENT SHALL HAVE COMPACTED SAND BACKFILL.
5. NO CONNECTION TO THE EXISTING SANITARY SEWER SYSTEM WILL BE PERMITTED UNTIL THE PROPOSED WORK HAS BEEN COMPLETED IN COMPLIANCE WITH THE CITY OF COLUMBIA WWTP REGULATIONS.

ELECTRICAL CONDUIT NOTES:

1. ALL BUILDERS, CONTRACTORS, AND ELECTRICIANS MUST MEET WITH CITY OF COLUMBIA POWER & WATER SERVICE BEFORE CONSTRUCTION.
2. ALL ELECTRICAL CONNECTIONS AND FACILITIES TO CONFORM TO CURRENT COLUMBIA POWER & WATER SERVICE STANDARDS.
3. ALL ELECTRICAL CONNECTIONS TO BE EXTENDED FROM WITHIN THE EXISTING BUILDING TO ADDITIONS. NO SITE CONSTRUCTION OF ELECTRICAL SERVICES IS PROPOSED.

GEOTECHNICAL NOTE:

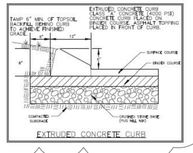
CONTRACTOR TO COMPLETE A GEOTECHNICAL STUDY CONDUCTED ON THIS SITE PRIOR TO COMMENCEMENT OF CONSTRUCTION. THE DESIGN FOR THE SITE IMPROVEMENTS SHOWN ON THIS PLAN HAVE RELIED ON GENERAL INFORMATION FROM FIELD REVIEW OF EXISTING TERRAIN. IF, IN THE PURSUIT OF THIS WORK BY THE CONTRACTOR, CONDITIONS OR CIRCUMSTANCES ARE ENCOUNTERED THAT ARE DIFFERENT THAN REFLECTED IN THESE PLANS OR THAT APPEAR TO IMPACT THE SCOPE OF THE WORK, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE CIVIL ENGINEER, THE GEOTECHNICAL ENGINEER AND THE OWNER/DEVELOPER. BEFORE ANY REMEDIAL COURSE OF ACTION OR DESIGN CHANGE IS INITIATED, ALL PARTIES TO THE PROCESS (OWNER, CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND CONTRACTOR) MUST BE IN AGREEMENT AND THE MAGNITUDE OF THE COST/TIME REQUIRED FOR THE MEASURES ESTABLISHED.

GENERAL NOTES:

1. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES AND OBTAIN ALL PERMITS, AND PAY ALL LEGAL FEES. HE SHALL ALSO COMPLY WITH ALL CITY, COUNTY AND STATE BUILDING LAWS, ORDINANCES OR REGULATIONS.
2. THERE IS A PUBLIC UTILITY AND DRAINAGE EASEMENT, 10 FT IN WIDTH ON FRONT AND REAR PROPERTY LINES AND ON ALL PROPERTY LINES PARALLEL TO OR ABUTTING ROADS. AND THERE IS A PUBLIC UTILITY AND DRAINAGE EASEMENT, 5 FT IN WIDTH ON ALL OTHER INTERIOR LOT LINES, EXCEPT AS OTHERWISE SHOWN.
3. TEMPORARY INLET FILTERS SHALL BE INSTALLED IN ALL EXISTING CATCH BASINS IN AREA PRIOR TO EARTH DISRUPTION.
4. EXISTING UTILITIES AS SHOWN INDICATE THE APPROXIMATE LOCATION OF FACILITIES ONLY AND NO GUARANTEE IS GIVEN TO THE COMPLETENESS OR ACCURACY THEREOF. NO EXCAVATION MAY BE MADE WITHIN 5 FEET OF THESE UTILITIES UNLESS AND UNTIL SUCH UTILITIES HAVE BEEN POSITIVELY LOCATED AS TO HORIZONTAL AND VERTICAL POSITION. CONTRACTOR SHALL CONTACT "TENNESSEE ONE CALL" AT 1-800-351-1111 THREE WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES.
5. ALL RADII ARE 3' UNLESS DIMENSIONED.
6. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING THE SEQUENCING OF CONSTRUCTION FOR ALL UTILITY LINES SO THAT WATER LINES, GAS LINES, AND ANY UNDERGROUND ELECTRIC LINES DO NOT CONFLICT WITH SEWAGE LINES OR STORM SEWERS. INSTALL ALL UTILITIES PRIOR TO FINAL PAVEMENT CONSTRUCTION.
7. BACKFILL UTILITY TRENCHES UNDER PAVEMENT AREAS WITH CRUSHED STONE OR GRAVEL. BACKFILL UTILITY TRENCHES IN LAWN AREAS WITH SATISFACTORY FILL MATERIAL.
8. CARE SHALL BE TAKEN TO PROTECT ANY UTILITIES, TREES, BUILDINGS, ETC. WHICH ARE TO REMAIN AND NOT TO BE DISTURBED BY THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO SUCH PROPERTY.
9. THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF THE ABOVE-NOTED SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THESE UNDERGROUND CABLES AND/OR LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.
10. THE OWNER AND ENGINEER DO NOT ASSUME RESPONSIBILITY FOR THE POSSIBILITY THAT, DURING CONSTRUCTION, UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT ACTUAL LOCATION OF THOSE SHOWN MAY BE DIFFERENT FROM THE LOCATIONS DESIGNATED ON THE CONTRACT DRAWINGS. IN AREAS WHERE IT IS NECESSARY THAT EXACT LOCATIONS BE KNOWN OF UNDERGROUND UTILITIES, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE POSITION OF UNDERGROUND UTILITIES.
11. THE CONTRACTOR SHALL REPAIR ANY CONTRACTOR CAUSED DAMAGE, ACCORDING TO THE LOCAL STANDARDS AND AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL ALSO COORDINATE ALL CONSTRUCTION TO MAINTAIN REQUIRED SERVICES TO THE EXISTING FACILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION WITH THE APPROPRIATE UTILITY COMPANY(IES).

CONC. WALK/CURB DETAIL
NOT TO SCALE

ASPHALT PAVEMENT

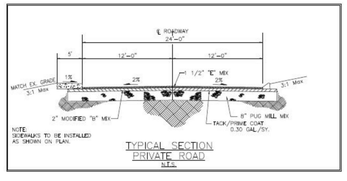


EXTRUDED CONCRETE CURB

SPECIFIED SEQUENCE OF WORK FOR THE SELECTED CONTRACTOR:

1. INSTALL PHASE 1 OF EROSION PREVENTION & SEDIMENT CONTROL MEASURES.
2. BEGIN SITE EXCAVATION & FILLING TO CONSTRUCT DETENTION BASINS TO FUNCTION AS SEDIMENT BASINS DURING CONSTRUCTION.
3. BEGIN ROADWAY CONSTRUCTION & UTILITY CONSTRUCTION.
4. CONSTRUCT / INSTALL PAVEMENT BASE STONE & BINDER ONCE UTILITY CONSTRUCTION IS COMPLETE.
5. COMPLETE SOIL STABILIZATION (FINAL DRESSING SITE) ONCE ROADWAY IS NEARING COMPLETION.
6. COMPLETE PUNCH LIST ITEMS, AS-BUILT, INFRASTRUCTURE CERTIFICATIONS AS REQUIRED FOR C.O.

NOTE: SIDEWALKS TO BE INSTALLED AS SHOWN ON PLAN.
TYPICAL SECTION
50' R.O.W.



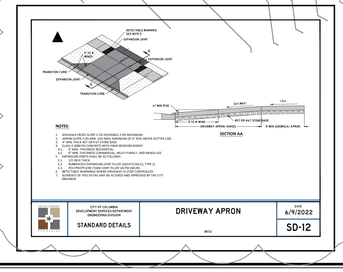
NOTE: SIDEWALKS TO BE INSTALLED AS SHOWN ON PLAN.
TYPICAL SECTION
PRIVATE ROAD
N.T.S.

UTILITY COMPANIES:

UTILITIES SHOWN ARE BASED ON LIMITED DATA. THERE IS NO GUARANTEE AS TO THEIR LOCATION OR SIZE. PLEASE CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO CONSTRUCTION. POSSIBLE CONTACTS IN THIS AREA INCLUDE:

MUNICIPALITY:	ELECTRIC:	CABLE TELEVISION:
CITY OF COLUMBIA 707 NORTH MAIN ST, COLUMBIA, TN 38401	COLUMBIA POWER & WATER SYSTEMS 201 PICKENS LANE COLUMBIA, TN 38401 (931) 388-4833	COLUMBIA POWER & WATER SYSTEMS 201 PICKENS LANE COLUMBIA, TN 38401 (931) 388-4833
STORM WATER:	**WATER:**	**CABLE TELEVISION:**
CITY OF COLUMBIA ENGINEERING/INSPECTION 707 N. MAIN STREET COLUMBIA, TN 38401 (931) 560-1530 Contact: Glenn Harper, P.E.	COLUMBIA POWER & WATER SYSTEMS 201 PICKENS LANE COLUMBIA, TN 38401 (931) 388-4833	CHARTER COMMUNICATIONS 2008 S. MAIN STREET COLUMBIA, TN 38401 (931) 388-1326
SANITARY:	**TELEPHONE:**	**GAS:**
CITY OF COLUMBIA WASTEWATER SYSTEM 1244 TREATMENT PLANT RD. COLUMBIA, TN 38401 (931) 560-1001 Mark Williams, Director	AT&T 904 S. HIGH ST COLUMBIA, TN 38401 (931) 380-3448	ATMOS ENERGY 810 NASHVILLE HWY. COLUMBIA, TN 38401 (888) 824-3434 NASHVILLE (615) 872-5100

PARCEL NUMBER	TAX MAP 100N, PARCEL 01.00 TAX MAP 100N, PARCEL 03.00 DEED BOOK: R2578, PG 1285
PARCEL ADDRESS:	SUNSET AVENUE COLUMBIA, TENNESSEE 38401
EXISTING ZONING:	CURRENT: RM-1
ACREAGE OF SITE:	±2.09 ACRES
DISTURBED ACREAGE:	±2.09 ACRES
MINIMUM REQUIRED BUILDING SETBACK LINES:	
	20' FRONT (MINOR) 20' REAR 10' SIDE



FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0285E DATED APRIL 16, 2007 (ZONE "X")

IF YOU DIG TENNESSEE... CALL US FIRST!
1-800-351-1111
1-615-366-1987
TENNESSEE ONE CALL
IT'S THE LAW

0 30 60 90

CIVIL DESIGN CONSULTANTS, LLC
CIVIL ENGINEERS • LAND PLANNERS
CIVIL DESIGN CONSULTANTS, LLC
1420 HAMPSHIRE PIKE, COLUMBIA, TN 38401
PHONE: (615) 319-2733 EMAIL: CIVILCONSULTANTS1@ELLSOUTH.NET

JARED R. GRAY
REGISTERED
No. 108403
STATE OF TENNESSEE
LICENSED PROFESSIONAL ENGINEER

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

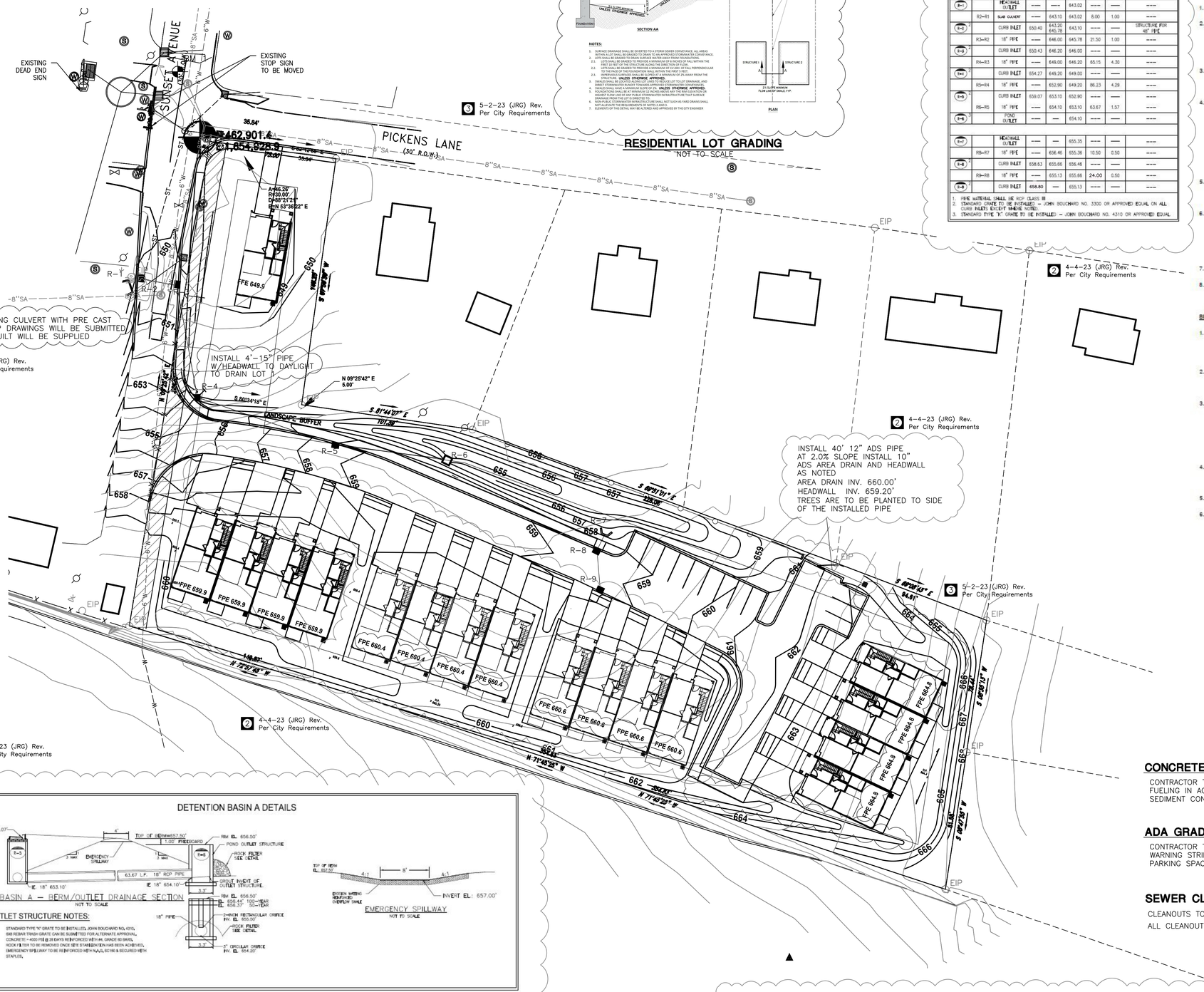
LAYOUT, AND UTILITY PLAN

1 11-28-22 (JRG) Rev. Per City Requirements
2 3-28-23 (JRG) Rev. Per City Requirements
3 5-2-23 (JRG) Rev. Per City Requirements

REVISIONS

DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	AS NOTED
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

SHEET NO.
C1



RESIDENTIAL LOT GRADING
NOT TO SCALE

3 5-2-23 (JRG) Rev. Per City Requirements

PROPOSED STORM SEWER STRUCTURE SCHEDULE

STR. NO.	PIPE	TYPE	RIM ELEV.	INV. IN	INV. OUT	LENGTH	SLOPE	NOTES
(S-1)		HEADWALL OUTLET	----	----	643.02	----	----	----
	R2-R1	SLAB CLAVERT	----	643.10	643.02	8.00	1.00	----
(S-2)		CURB INLET	650.40	643.20 645.78	643.10	----	----	STRUCTURE FOR 48" PIPE
	R3-R2	18" PIPE	----	646.00	645.78	21.50	1.00	----
(S-3)		CURB INLET	650.43	646.20	646.00	----	----	----
	R4-R3	18" PIPE	----	649.00	646.20	85.15	4.30	----
(S-4)		CURB INLET	654.27	649.20	649.00	----	----	----
	R5-R4	18" PIPE	----	652.90	649.20	86.23	4.29	----
(S-5)		CURB INLET	659.07	653.10	652.90	----	----	----
	R6-R5	18" PIPE	----	654.10	653.10	63.67	1.57	----
(S-6)		POND OUTLET	----	----	654.10	----	----	----
(S-7)		HEADWALL OUTLET	----	----	655.35	----	----	----
	R8-R7	18" PIPE	----	656.46	655.36	10.50	0.50	----
(S-8)		CURB INLET	658.63	655.66	656.46	----	----	----
	R9-R8	18" PIPE	----	655.13	655.66	24.00	0.50	----
(S-9)		CURB INLET	658.80	----	655.13	----	----	----

1. PIPE MATERIAL SHALL BE RCP CLASS III
2. STANDARD GRATE TO BE INSTALLED = JOHN BOUCHARD NO. 3300 OR APPROVED EQUAL ON ALL CURB INLETS EXCEPT WHERE NOTED.
3. STANDARD TYPE "C" GRATE TO BE INSTALLED = JOHN BOUCHARD NO. 4310 OR APPROVED EQUAL

2 4-4-23 (JRG) Rev. Per City Requirements

GENERAL GRADING AND DRAINAGE NOTES:

1. ALL GRADING AND DRAINAGE WORK AS SHOWN ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL ENGINEERING DEPARTMENT.
2. THE NECESSARY PERMITS FOR THE WORK SHOWN ON THESE SITE DEVELOPMENT PLANS WILL BE OBTAINED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON THIS PROJECT. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES INVOLVED IN SECURING SAID PERMITS. THE CONTRACTOR SHALL ALSO COMPLY WITH ALL LOCAL AND STATE BUILDING CODES, ORDINANCES AND REGULATIONS RELATING TO THE CONSTRUCTION OF THE ITEMS SHOWN ON THESE PLANS.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGE TO ALL EXISTING UTILITIES TO REMAIN DURING CONSTRUCTION. IF DAMAGE DOES OCCUR TO ANY SUCH EXISTING INSTALLATIONS, FULL REPAIR SHALL BE AT THE EXPENSE OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED AS PER THE CURRENT SPECIFICATIONS FOR SUCH WORK FOR THE RESPONSIBLE AGENCY.
4. THE LOCATION OF EXISTING PIPING AND UNDERGROUND UTILITIES (I.E., WATER AND GAS LINES, ELECTRICAL AND TELEPHONE CONDUITS, ETC.) AS SHOWN ON THIS PORTION OF THE PLANS HAVE BEEN DETERMINED FROM THE BEST INFORMATION FROM ACTUAL SURVEYS, OR TAKEN FROM THE RECORDS AND DRAWINGS OF THE EXISTING UTILITIES. HOWEVER, THE CIVIL ENGINEER DOES NOT ASSUME RESPONSIBILITY THAT, DURING CONSTRUCTION, THE POSSIBILITY OF UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED OR THAT THE ACTUAL LOCATIONS OF UTILITIES SHOWN MAY VARY SOMEWHAT FROM THE LOCATIONS DESIGNATED ON THIS PORTION OF THE PLANS. IN AREAS WHERE IT IS NECESSARY THAT THE EXACT LOCATIONS OF UNDERGROUND UTILITIES BE KNOWN, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH ALL LABOR AND TOOLS TO EITHER VERIFY AND SUBSTANTIATE OR DEFINITELY ESTABLISH THE LOCATION OF THE UTILITIES.
5. ALL DELETERIOUS MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF SITE BY THE CONTRACTOR AS PER THE INSPECTION AND FINAL APPROVAL OF THE ENGINEER AND OWNER. ALL FILL MATERIAL TO BE USED FOR SITE GRADING SHALL BE AN INORGANIC SOIL, FREE OF DEBRIS AND APPROVED BY THE ENGINEER AND OWNER.
6. THE PLACING AND SPREADING OF ANY FILL MATERIAL IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8 INCH THICKNESS. SAID FILL MATERIAL IS TO BE SOIL AND ROCK ONLY, FREE OF SOD, ROOTS, FROZEN SOILS, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) IN ALL AREAS OF FILL, AND COMPACTION OF 98% OF SAME SPECIFICATION FOR MATERIALS USED IN THE UPPER 12 INCHES BENEATH PAVEMENT AND GRADE SLABS.
7. THE CONTRACTOR IS TO CHECK AND VERIFY ALL MEASUREMENTS, LEVELS, ETC., BEFORE ORDERING MATERIALS AND PROCEEDING WITH WORK, AND IS RESPONSIBLE FOR THE SAME.
8. CONTRACTOR IS RESPONSIBLE FOR SECURING WRITTEN APPROVAL FROM ADJOINING PROPERTY OWNER FOR OFF SITE GRADING WORK THAT RESULTS FROM CONSTRUCTION ACTIVITIES.

BERM CONSTRUCTION NOTES:

1. AREAS UNDER THE EMBANKMENT OR ANY STRUCTURAL WORKS RELATED TO THE BASIN SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL , TREES, VEGETATION, ROOTS, OR OTHER OBJECTIONABLE MATERIAL. IN ORDER TO FACILITATE CLEANOUT AND RESTORATION, THE AREA OF MOST FREQUENT INUNDATION (MEASURED FROM THE TOP OF THE PRINCIPAL SPILLWAY) WILL BE CLEARED OF ALL BRUSH AND TREES.
2. THE PLACING AND SPREADING OF EMBANKMENT MATERIALS IS TO BE STARTED AT THE LOWEST POINT AND BROUGHT UP IN HORIZONTAL LAYERS OF 8" THICKNESS. SAID MATERIAL IS TO BE FREE OF SOD, ROOTS, FROZEN SOIL, OR ANY OTHER DECOMPOSABLE MATERIAL. THE RELATIVE COMPACTION OF EACH LAYER SHALL NOT BE LESS THAN 95% OF STANDARD PROCTOR TEST IN ALL AREAS.
3. FOR EARTH FILL EMBANKMENTS, A CUTOFF TRENCH SHALL BE EXCAVATED ALONG THE CENTERLINE OF THE BERM. THE TRENCH MUST EXTEND AT LEAST 1 FOOT INTO A STABLE, IMPERVIOUS LAYER OF SOIL AND HAVE A MINIMUM DEPTH OF TWO FEET. THE CUTOFF TRENCH SHALL EXTEND UP BOTH ABUTMENTS TO THE RISER CREST ELEVATION. THE MINIMUM BOTTOM WIDTH SHALL BE FOUR FEET, BUT ALSO MUST BE WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT. THE SIDE SLOPES SHALL BE NO STEEPER THAN 1:1. COMPACTION REQUIREMENTS SHALL BE THE SAME AS THOSE FOR THE EMBANKMENT. THE TRENCH SHALL BE DRY DURING THE BACKFILLING AND COMPACTION OPERATIONS.
4. THE EMBANKMENT SHALL BE CONSTRUCTED TO AN ELEVATION 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT IF COMPACTION IS OBTAINED WITH HAULING EQUIPMENT. IF COMPACTORS ARE USED FOR COMPACTION, THE OVERBUILD MAY BE REDUCED TO NOT LESS THAN 5 PERCENT.
5. THE EMBANKMENT OF THE DETENTION POND SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT VEGETATION IMMEDIATELY AFTER INSTALLATION OF THE BASIN.
6. ALL STATE AND LOCAL REQUIREMENTS SHALL BE MET CONCERNING FENCING AND SIGNS WARNING THE PUBLIC OF THE HAZARDS OF SOFT, SATURATED SEDIMENT AND FLOOD WATERS.

CONCRETE WASH DOWN/EQUIPMENT FUELING NOTE:

CONTRACTOR TO PROVIDE AN AREA FOR CONCRETE WASH DOWN AND EQUIPMENT FUELING IN ACCORDANCE WITH THE CURRENT LATEST EDITION OF TDECS EROSION AND SEDIMENT CONTROL HANDBOOK.

ADA GRADING NOTE:

CONTRACTOR TO COMPLY WITH THE CURRENT ADA MANDATES WITH RESPECT TO DETECTABLE WARNING STRIPS AND SLOPE REQUIREMENTS FOR ALL HANDICAP ACCESSIBLE PATHS AND PARKING SPACES.

SEWER CLEANOUT NOTE:

CLEANOUTS TO BE PLACED 5' OUTSIDE OF BUILDING – SEE BUILDING PLUMBING PLANS
ALL CLEANOUTS AND MANHOLE FRAMES/LIDS TO BE TRAFFIC BEARING IN VEHICULAR AREAS.

DETENTION BASIN A DETAILS

OUTLET STRUCTURE NOTES:

1. STANDARD TYPE "K" GRATE TO BE INSTALLED, JOHN BOUCHARD NO. 4310,
2. GAS REBAR TRASH GRATE CAN BE SUBMITTED FOR ALTERNATE APPROVAL,
3. CONCRETE = 4000 PSI @ 28 DAYS REINFORCED WITH #4, GRADE 60 BARS,
4. ROCK & TYEK TO BE REMOVED ONCE SITE STABILIZATION HAS BEEN ACHIEVED,
5. EMERGENCY SPILLWAY TO BE REINFORCED WITH N.A.G. S0150 & SECURED WITH STAPLES,

SEE APPROVED DRAWINGS FOR VESPER COURT FROM WES ENGINEERING FOR DETAILS & PLAN AND PROFILES FOR VESPER COURT INCLUDING DRAINAGE STRUCTURE DETAILS AND PLAN AND PROFILES.

FPE ELEVATIONS SHOWN ARE BUILDING PAD GRADE ELEVATIONS. THE SLAB FOR EACH BUILDING WILL BE ABOVE THIS ELEVATION PER THE THICKNESS SHOWN ON THE STRUCTURAL DRAWINGS FOR EACH BUILDING. THE FFE OF THE BUILDING SHALL BE A MIN. 6" ABOVE THE GROUND ELEVATION AT THE BUILDING FACE.

ALL EROSION CONTROL MEASURES PREVIOUSLY INSTALLED PER WES ENGINEERING VESPER COURT PLANS TO REMAIN AND BE MAINTAINED

2 4-4-23 (JRG) Rev. Per City Requirements

IF YOU DIG TENNESSEE... CALL US FIRST! 1-800-351-1111 1-615-366-1987 TENNESSEE ONE CALL IT'S THE LAW

0 30 60 90

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JARED R. GRAY — 101803 — REGISTERED — STATE OF TENNESSEE

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

GRADING, DRAINAGE & OVERALL UTILITY PLAN

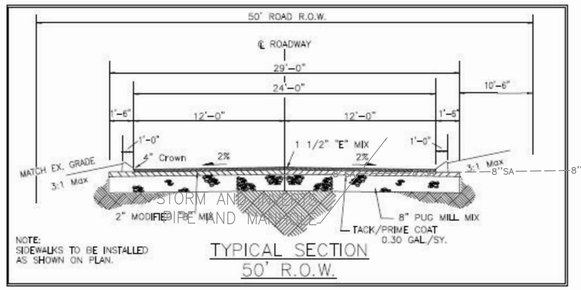
1 11-28-22 (JRG) Rev. Per City Requirements
2 4-4-23 (JRG) Rev. Per City Requirements
3 5-2-23 (JRG) Rev. Per City Requirements

REVISIONS

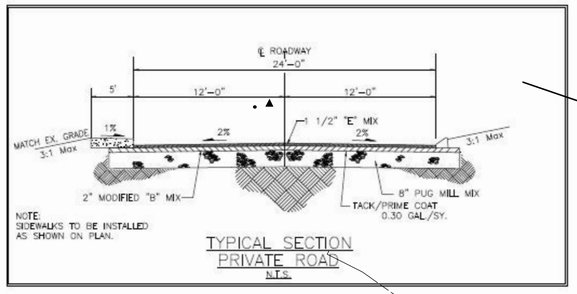
DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	AS NOTED
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

SHEET NO.
C2

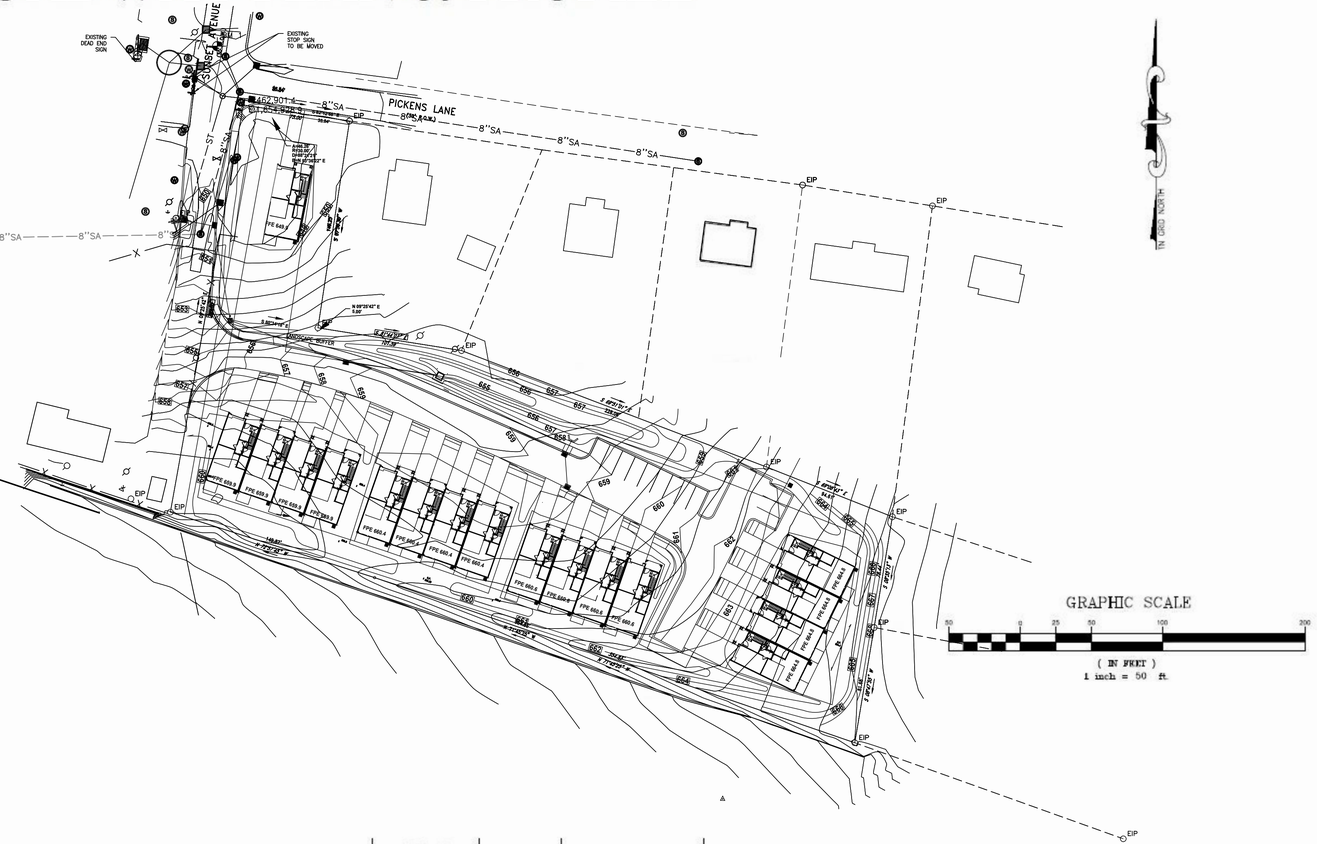
ROADWAY PLAN & PROFILE



TYPICAL SECTION
50' R.O.W.

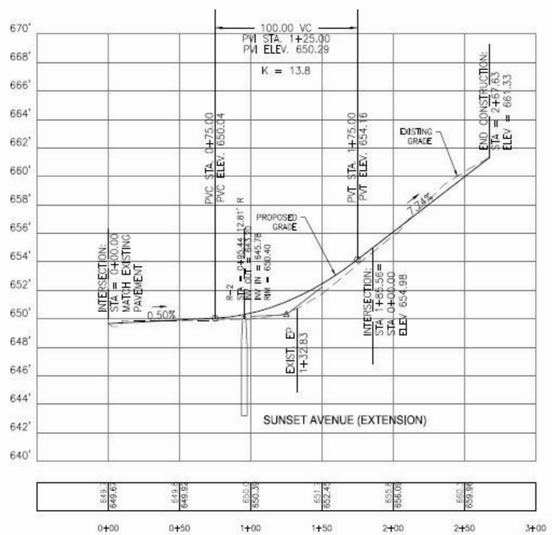


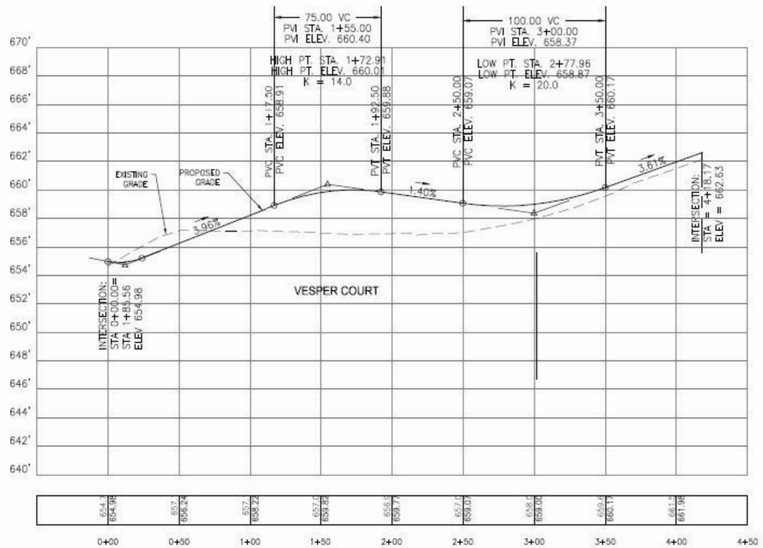
TYPICAL SECTION
PRIVATE ROAD
N.T.S.

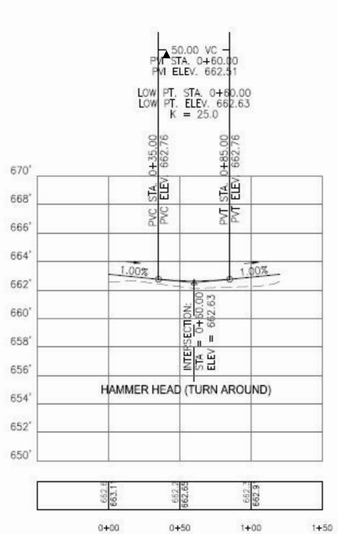


BENCHMARK

BENCHMARK #1
PK NAIL
N = 462,901.40
E = 1,654,928.90
ELEV. = 650.02'







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LICENSED PROFESSIONAL ENGINEER

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

ROADWAY PLAN AND PROFILE SHEET

1	11-28-22 (JRG) Rev. Per City Requirements
2	3-28-23 (JRG) Rev. Per City Requirements
3	5-2-23 (JRG) Rev. Per City Requirements

REVISIONS

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SHEET NO.
2 C2A

SANITARY SEWER PLAN & PROFILE

Vesper Court - Townhomes
Proposed 8" Sewer

I. Data:

A. Proposed Sewer line extension - Vesper Court

B. 8" Gravity Sewer System with minimum slope of 0.40%

C. Sewer drains to existing system along southern boundary line on existing property.

D. 16 Unit

II. Design Flow:

A. Method 1: (TDEC)

Per Capita Flow (Section 2.2.2.1 of State Sewer Regulations) Indicates Minimum Design Peak Flow is not less than 400% of ADF.

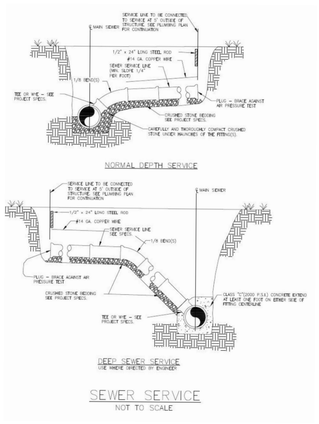
DEMAND 8" PIPE: ASSUME 4 PERSON PER LOT: 4*82/(100*(400%) = 91.1 GPM or 0.20 CFS

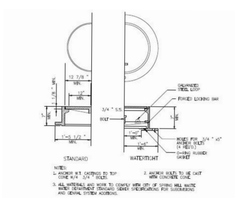
B The minimum slope for the proposed sewer extension is 0.50% slope for 8" SCR 26 PVC pipe. The full capacity flow @ 0.50% for 8" pipe is 466.8 gpm or 1.04 cfs.

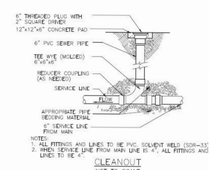
SEWER HYDRAULIC CALCULATIONS

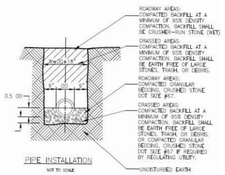
PROJECT: Vesper Court
PROJ. NO. 18-600 DATE: 1/15/2021

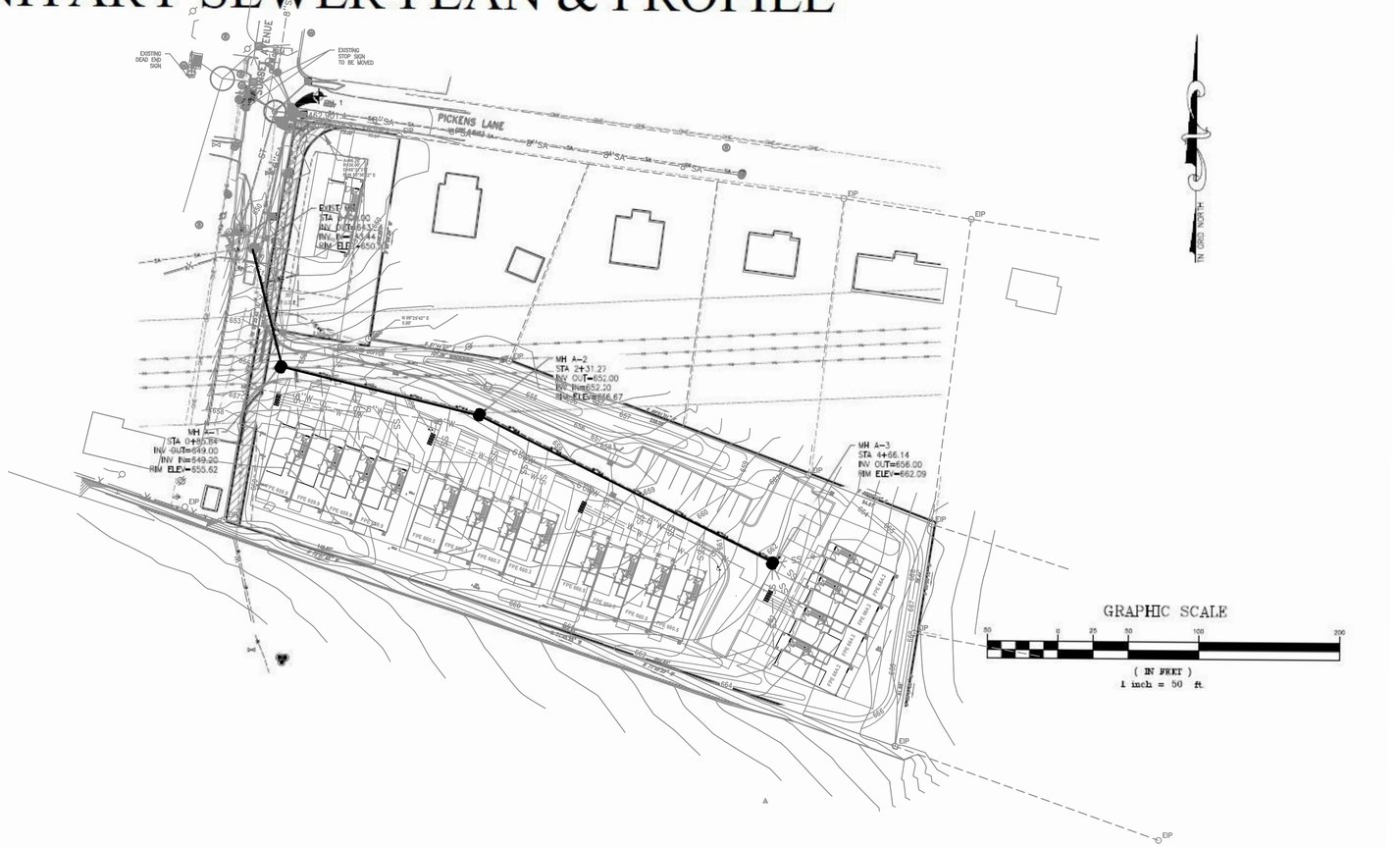
STREET	FROM MH	TO MH	LENGTH feet	MAX AREA SERVED			nw 0.0113	MAX SEWAGE FLOW cfs	PEAK SEWAGE FLOW cfs	PIPE DIAM. in	INVERT UPPER MH	INVERT LOWER MH	SEWER GRADE %	SEWER FALL feet	VELOCITY FLOWING FULL fts	CAPACITY FLOWING FULL cfs
							Line "A"									
	3A	2A	234.9	60 Ac			0.0113	0.069	0.275	8	653.76	652.35	0.60	1.41	3.1	1.074
	2A	1A	145.4	60 Ac			0.0113	0.069	0.275	8	652.15	650.70	1.00	1.45	4.0	1.384
	1A	EX	85.8				0.0113	0.069	0.275	8	650.50	645.14	6.24	5.36	9.9	3.463

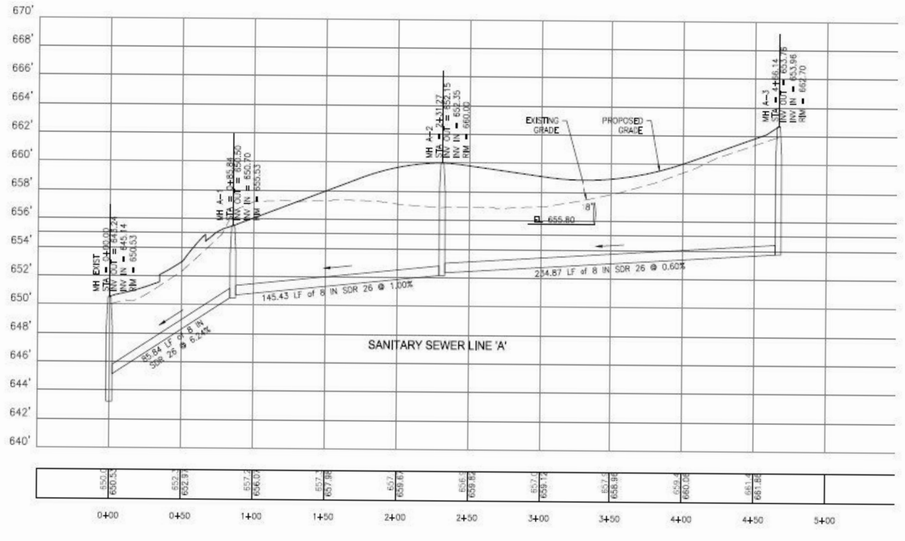


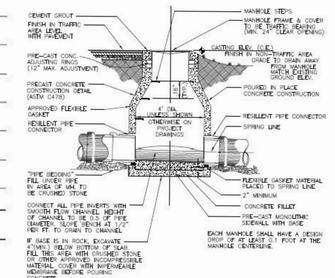


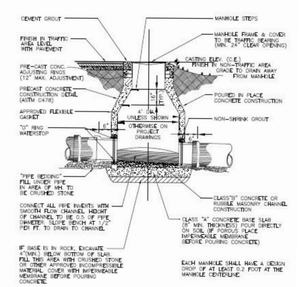












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STATE OF TENNESSEE

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

SANITARY SEWER PLAN AND PROFILE SHEET

REVISIONS
2 3-28-23 (JRG) Rev. Per City Requirements
3 5-2-23 (JRG) Rev. Per City Requirements

DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
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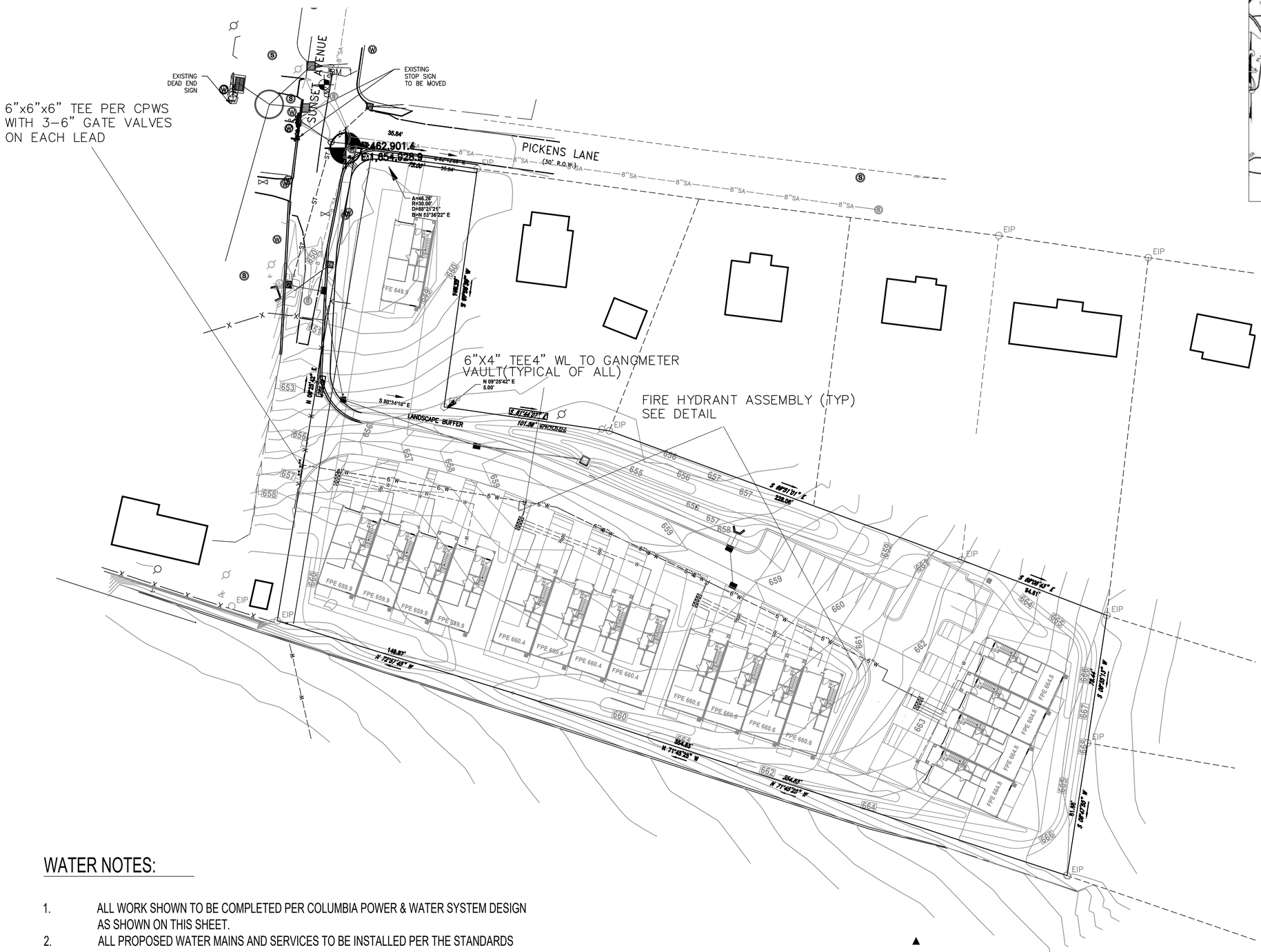
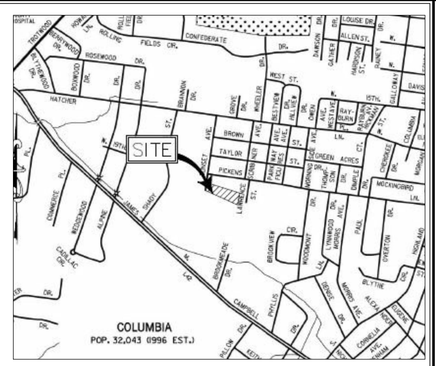
SHEET NO.
C2B
2





WATER NOTES:

1. ALL WORK SHOWN TO BE COMPLETED PER COLUMBIA POWER & WATER SYSTEM DESIGN AS SHOWN ON THIS SHEET.
2. ALL PROPOSED WATER MAINS AND SERVICES TO BE INSTALLED PER THE STANDARDS & SPECIFICATIONS OF COLUMBIA POWER & WATER SERVICE.
3. SERVICES, INCLUDING LONG TAPS AND SHORT TAPS, ARE TO BE INSTALLED TO THE PROPERTY LINE. MAINTAIN A 10' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN THE WATER SERVICE LINES AND OTHER UTILITIES WHERE FEASIBLE.

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CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

WATER UTILITY PLAN

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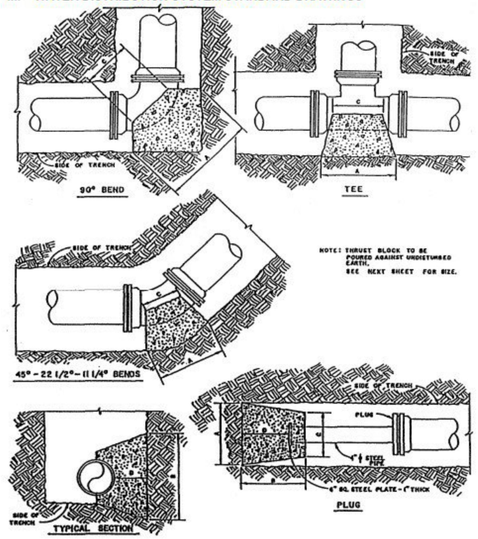
SHEET NO. 2	C2C

III. WATER DISTRIBUTION SYSTEM STANDARD DRAWINGS



COLUMBIA WATER SYSTEM	REVISED: December 2019	THRUST BLOCKING DETAILS	DRAWING NO. CWS 1

ALL DETAILS SHOWN ON THIS SHEET NOT TO SCALE

COLUMBIA WATER SYSTEM — REVISED: December 2019 — THRUST BLOCKING DIMENSIONS — DRAWING NO. CWS 2

90° BEND

Size	2"	4"	6"	8"	10"	12"	18"
A	16"	16"	26"	33"	40"	50"	70"
B	16"	16"	24"	33"	40"	50"	70"
C	9"	9"	12"	12"	15"	16"	22"
D	8"	8"	12"	16"	20"	25"	24"

11-1/4° BEND

Size	2"	4"	6"	8"	10"	12"	18"
A	9"	9"	11"	13"	16"	18"	30"
B	9"	9"	11"	13"	16"	18"	30"
C	8"	8"	10"	12"	14"	16"	15"
D	4"	4"	5"	6"	8"	9"	16"

45° BEND

Size	2"	4"	6"	8"	10"	12"	18"
A	12"	12"	18"	24"	31"	37"	52"
B	12"	12"	18"	24"	31"	37"	52"
C	8"	8"	10"	12"	14"	16"	14"
D	6"	6"	9"	12"	15"	18"	18"

TEE

Size		2"-6"	8"-12"	8"-10"	12"	12"	12"	18"
	Main	2"-6"	2"-6"	8"-10"	2"-6"	8"-10"	12"	16"-18"
	Branch							
A		9"	9"	11"	13"	16"	18"	30"
B		9"	9"	11"	13"	16"	18"	30"
C		8"	8"	10"	12"	14"	16"	15"
D		4"	4"	5"	6"	8"	9"	16"

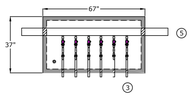
22-1/2° BEND

Size	2"	4"	6"	8"	10"	12"	18"
A	9"	9"	13"	18"	23"	26"	40"
B	9"	9"	13"	18"	23"	26"	40"
C	8"	8"	10"	12"	14"	16"	15"
D	4"	4"	6"	9"	11"	13"	16"

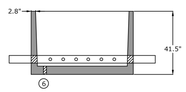
PLUG

Size	2"	4"	6"	8"	10"	12"	18"
A	26"	26"	26"	34"	43"	52"	79"
B	26"	26"	26"	34"	43"	52"	79"
C	12"	12"	12"	12"	12"	12"	39"
D	11	12	13	11"	22"	32"	32"

Top View



Side View

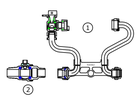


End View

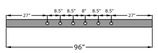


1. Line Setter
   Ford VBH71-7W-NL-41-33-Q-NL
   Single Check
2. Corporation Stop
   Ford FB1000-3-Q-NL
3. 3/4" x 18" Brass Nipple
4. 29" x 59" opening single leaf aluminum door, pedestrian rated (300 lb/ft^2) S1R029059CD
5. 4" Class 52 D.I.P.
6. 2" drain hole

Component Detail



Pipe detail for taps



Approved for Production

Project: _____ Date: _____

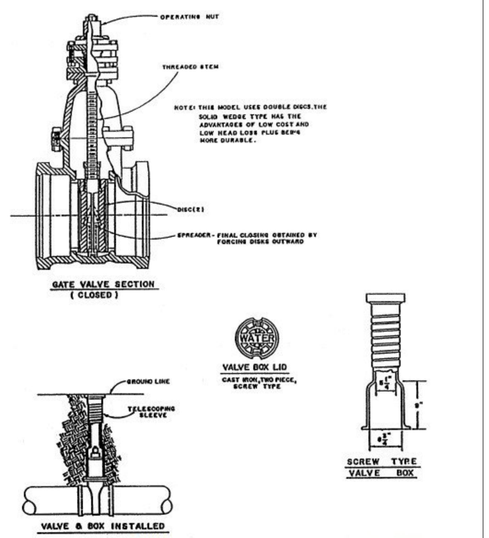
Quantity: _____ By: _____

CPWS

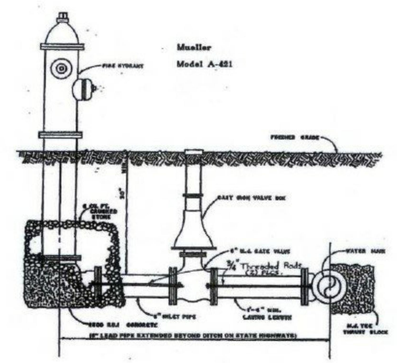
Specifications

6 Gang 5/8
Meter Vault MWSD

Date: Drawn By: Shane Andrews Approx. Empty Vault Weight: 3,100 lbs



COLUMBIA WATER SYSTEM	REVISED: December 2019	GATE VALVE & VALVE BOX	DRAWING NO. GV-VB 1



COLUMBIA WATER SYSTEM	REVISED: December 2019	FIRE HYDRANT ASSEMBLY	DRAWING NO. FHA 1

ADDITIONAL INFORMATION IS PROVIDED WITHIN THE CPWS SPECIFICATION MANUAL DATED DECEMBER 16, 2019 FROM WHICH THESE DETAILS ARE TAKEN. ALL WORK SHALL BE COMPLETED PER THE REQUIREMENTS OF THAT MANUAL.

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1-615-366-1987
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ALL DETAILS SHOWN ON THIS SHEET PROVIDED BY CPWS

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

WATER DETAILS PROVIDED BY CPWS

2 3-28-23 (JRG) Rev. Per City Requirements

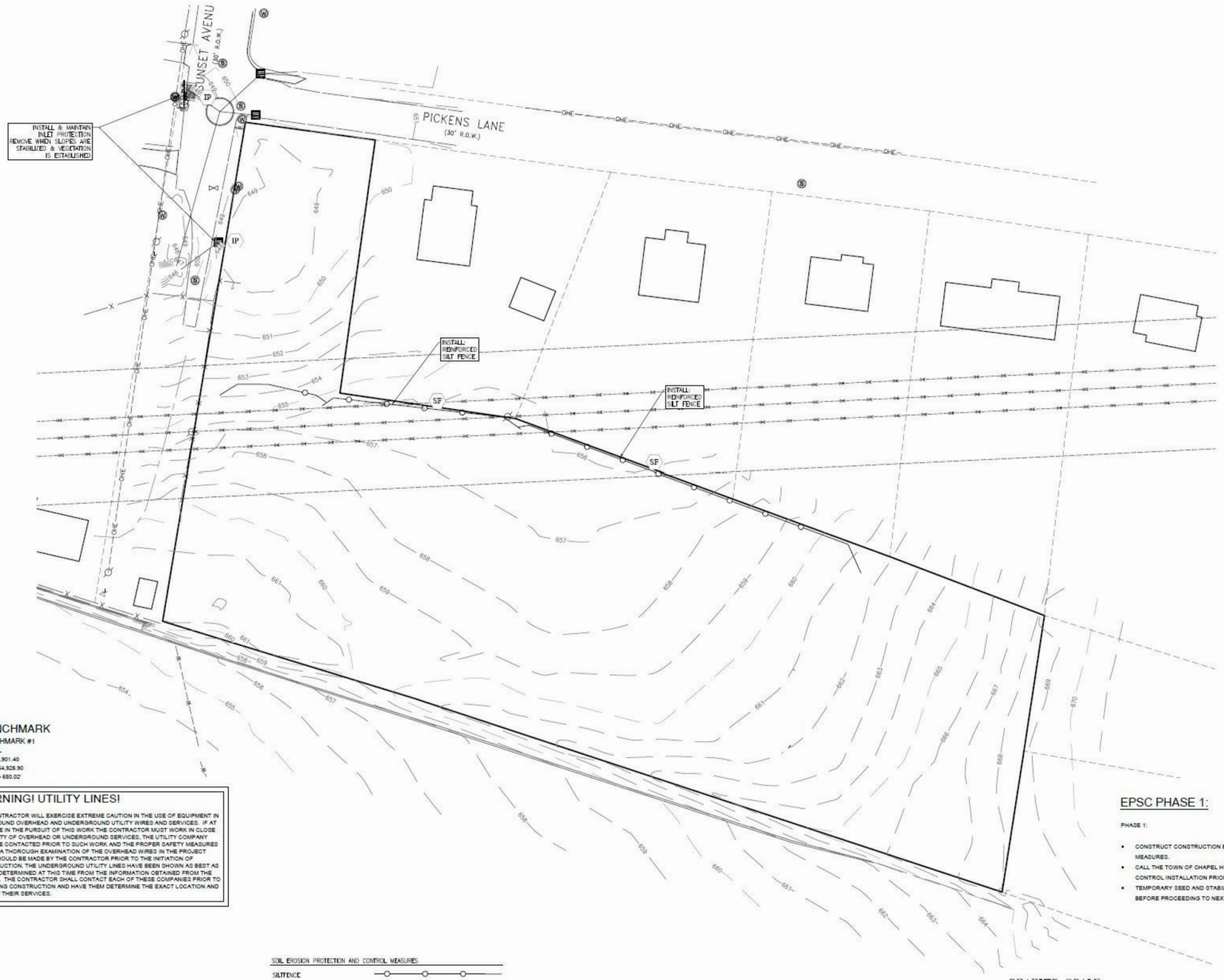
REVISIONS

DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	NOT TO SCALE
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

SHEET NO.

2 C2D

EROSION PREVENTION AND SEDIMENT CONTROL PLAN



BENCHMARK

BENCHMARK #1
PK NAIL
N = 462,901.40
E = 1,684,928.90
ELEV. = 650.02'

WARNING! UTILITY LINES!

THE CONTRACTOR WILL EXERCISE EXTREME CAUTION IN THE USE OF EQUIPMENT IN AND AROUND OVERHEAD AND UNDERGROUND UTILITY WIRES AND SERVICES. IF AT ANY TIME IN THE PURSUIT OF THIS WORK THE CONTRACTOR MUST WORK IN CLOSE PROXIMITY OF OVERHEAD OR UNDERGROUND SERVICES, THE UTILITY COMPANY SHALL BE CONTACTED PRIOR TO SUCH WORK AND THE PROPER SAFETY MEASURES TAKEN. A THOROUGH EXAMINATION OF THE OVERHEAD WIRES IN THE PROJECT AREA SHOULD BE MADE BY THE CONTRACTOR PRIOR TO THE INITIATION OF CONSTRUCTION. THE UNDERGROUND UTILITY LINES HAVE BEEN SHOWN AS BEST AS CAN BE DETERMINED AT THIS TIME FROM THE INFORMATION OBTAINED FROM THE SURVEY. THE CONTRACTOR SHALL CONTACT EACH OF THESE COMPANIES PRIOR TO BEGINNING CONSTRUCTION AND HAVE THEM DETERMINE THE EXACT LOCATION AND TYPE OF THEIR SERVICES.

SOIL EROSION PROTECTION AND CONTROL MEASURES

SILTFENCE			
CONSTRUCTION EXIT	CE	INLET PROTECTION	IP
SILT FENCE	SF	STORM OUTLET PROTECTION	OP
CHECK DAMS	CD	REINFORCEMENT MAT	MA
PERMANENT SEEDING & MULCHING	PS	TEMPORARY SEEDING	TS

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

EROSION/SILTATION CONTROL NOTES

1. EXPOSED AREAS AND TIME OF EXPOSURE OF UNPROTECTED SOILS SHALL BE KEPT TO A MINIMUM WHENEVER POSSIBLE.
2. KEEP DUST WITHIN TOLERABLE LIMITS BY SPRINKLING OR OTHER ACCEPTABLE MEANS APPROVED BY THE OWNER'S REPRESENTATIVE.
3. DISTURBED AREAS ARE TO BE GRADED TO DRAIN AS INDICATED ON PLAN TO SEDIMENT BARRIERS DURING AND UPON COMPLETION OF CONSTRUCTION.
4. NO OTHER WORK WILL BE INITIATED ON THE PROJECT UNTIL THE EROSION/SILTATION MEASURES SHOWN ON THE PLANS AND DETAILS ARE PROPERLY IN PLACE.
5. IF, AT ANY TIME DURING THE CONSTRUCTION PHASE OF THIS PROJECT, THE EROSION/SILTATION MEASURES INSTALLED FAIL TO FUNCTION PROPERLY, NEED MAINTENANCE OR REPAIR, OR NEED NEW REPLACEMENT IN KIND, THE CONTRACTOR WILL EFFECT SUCH ACTIONS AS ARE NEEDED TO CORRECT THE SITUATION AT NO ADDITIONAL COST TO THE OWNER.
6. EROSION/SILTATION FENCING SHOWN IS TO BE USED AS A TEMPORARY SEDIMENT BARRIER. FENCING IS TO BE FIRM AND SECURELY TIED AS SHOWN ON THE INCLUDED DETAIL.
7. USE TEMPORARY VEGETATION AND/OR MULCH TO PROTECT BARE AREAS FROM SEDIMENT LOSS DURING AND UPON COMPLETION OF CONSTRUCTION.
8. UPON STABILIZATION OF THE PROJECT SITE WITH A GOOD & ACCEPTABLE STAND OF GRASS AND/OR GROUND COVER, THE EROSION/SILTATION INSTALLATIONS WILL BE REMOVED AND THE AREA DISTURBED WILL BE SEEDED AND MULCHED WITH THE SAME TREATMENT AS OTHER NEW GRASSED AREAS OF THE PROJECT.
9. A STONE ACCESS RAMP IS TO BE CONSTRUCTED WITH A MINIMUM WIDTH OF 20 FEET AND MINIMUM LENGTH OF 100 FEET. RAMP IS TO BE BASED WITH 6 INCHES INCHES OF ASTM D 448, SIZE NO. 1 STONE, AND MAINTAINED THROUGHOUT CONSTRUCTION.
10. EROSION AND SEDIMENT CONTROL MUST BE IMPLEMENTED AND MAINTAINED. PERFORM ALL WORK IN ACCORDANCE WITH THE "TDEC EROSION AND SEDIMENT CONTROL HANDBOOK", AUGUST 2012. FAILURE TO COMPLY TO THESE BMP PRACTICES MAY RESULT IN A STOP WORK ORDER AND FINES.
11. IN AREAS OF 2:1 OR GREATER SLOPE THAT EXCEED 5-FEET IN UNINTERRUPTED VERTICAL ELEVATION CHANGE WILL RECEIVE NORTH AMERICAN GREEN SC150 EROSION CONTROL MAT SEEDED FOR STABILIZATION (TEMPORARY OR PERMANENT). FOLLOW STABILIZATION PLAN INCLUDED IN APPROVED SWPPP FOR TEMPORARY & PERMANENT STABILIZATION OF SITE.
12. ALL PROPOSED INLETS WILL BE INSTALLED WITH SILT FENCE EROSION PROTECTION OR APPROVED MAT TYPE INLET FILTER UNTIL STABILIZATION IS ESTABLISHED.
13. PHASE I EPSC SHOWN. ADJUSTMENTS TO BE MADE WHEN SLOPE CONSTRUCTION BEGINS TO KEEP SILT FENCE @ TOE OF SLOPE.
14. ALL OPEN FLOW CHANNELS AND OUTLET STRUCTURES ARE TO RECEIVE NORTH AMERICAN GREEN SC150 EROSION CONTROL MATTING FOR STABILIZATION.

BEST MANAGEMENT PRACTICES (BMP) NOTES:

1. LAND CLEARING SHALL TAKE PLACE ONLY IN AREAS WHERE ACTIVE CONSTRUCTION WILL BEGIN WITHIN A REASONABLE AMOUNT OF TIME. LAND CLEARING DURING THE RAINY SEASON SHALL BE AVOIDED IN SENSITIVE AREAS SUCH AS STEEP SLOPES AND BUFFERS, IF POSSIBLE.
2. DENUDED AREAS, SOIL STOCKPILES, DIKES, DAMS, CHANNELS, ETC., ARE TO BE SEEDED AND MULCHED. AREAS AND TIME OF EXPOSURE OF UNPROTECTED SOILS SHALL BE KEPT TO A MAXIMUM OF 15 DAYS. SUCH AREAS ARE TO IMMEDIATELY RECEIVE SEED AND MULCH STABILIZATION FOLLOWING THIS TIME PERIOD. ON STEEP SLOPES AND CHANNELS, MATTING SHALL BE FASTENED TO THE GROUND WITH WIRE STAPLES OR WOOD PEGS. WHERE SURFACE WATER CANNOT BE DIVERTED FROM FLOWING OVER THE FACE OF SLOPES, INSTALL A STRIP OF EROSION CONTROL MATTING AND FASTEN TIGHT ALONG THE CROWN OR TOP OF THE SLOPE FOR EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOIL.
3. STEEP AND UNSTABLE SLOPES SHALL NOT BE DISTURBED IF THEY ARE OUTSIDE OF THE APPROVED GRADING PLAN AREA. RUNOFF SHALL BE CONVEYED FROM THE TOP OF THE SLOPE IN A SAFE MANNER ENSURING THAT THE SLOPE IS STABILIZED AS SOON AS POSSIBLE. ALL RUNOFF EXITING THE CONSTRUCTION SITE SHALL BE FREE OF EXCESSIVE SEDIMENT, AND OTHER POLLUTANTS.
4. STREET AND/OR CURB INLET PROTECTION DEVICES SHALL BE PLACED AROUND ALL INLETS UPON THE CONSTRUCTION OF THE STORM WATER SEWER SYSTEM.
5. ALL MATTED AREAS TO RECEIVE PERMANENT SEEDING.
6. PLEASE CALL THE CITY OF COLUMBIA FOR INSPECTION OF EROSION CONTROL MEASURES BEFORE GRADING COMMENCES.

SUPPLEMENTAL NOTES

1. THE CONTRACTOR MUST OBTAIN AND REVIEW A COPY OF THE APPROVED STORM WATER POLLUTION PLAN SUBMITTED TO THE TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION. CONTRACTOR IS EXPECTED TO READ AND FOLLOW THIS PLAN DURING THE CONSTRUCTION OF THIS PROJECT. THE APPROVED SWPPP IS CONSIDERED TO BE A PART OF THE FINAL CONSTRUCTION DOCUMENTS.
2. THE EROSION PREVENTION & SEDIMENT CONTROL MEASURES INCLUDED ON THIS SHEET REPRESENT PHASE 1 ONLY AND ARE REQUIRED TO BE INSTALLED PRIOR TO THE START OF EARTH DISTURBANCE IN THE AFFECTED AREA.
3. ADJUSTMENTS TO THE EPSC MEASURES WILL BE REQUIRED DURING NORMAL PROGRESSION OF THE PROJECT. REVIEW ALL PHASES OF THE EPSC PLANS INCLUDED IN THE SWPPP FOR ADDITIONAL INFORMATION. COST ASSOCIATED WITH THESE ADJUSTMENTS ARE TO BE INCLUDED IN OTHER ITEMS OF CONSTRUCTION.
4. UNDERCUT / REPLACEMENT OF SOFT SOILS SHALL BE PERFORMED AT THE DIRECTION OF THE OWNER AND FOLLOWING THE REQUIREMENTS ESTABLISHED BY THE GEOTECHNICAL ENGINEER. THE REPLACEMENT OF MATERIAL MAY INCLUDE EXISTING SOILS MEETING THE GEOTECHNICAL REQUIREMENTS.
5. CONTRACTOR IS TO MARK THE LIMIT OF DISTURBANCE PRIOR TO START OF CONSTRUCTION AND OBSERVE THESE LIMITS FOR THE DURATION OF THE PROJECT.
6. MAINTAIN EROSION CONTROL MEASURES AS INDICATED IN THE SWPPP BETWEEN PHASES AND REPLACE BMP MATERIALS BEFORE FAILURE RESULTS DUE TO DEGREDATION.

EPSC PHASE 1:

PHASE 1:

- CONSTRUCT CONSTRUCTION EXIT AND TEMPORARY EPSC MEASURES.
- CALL THE TOWN OF CHAPEL HILL FOR INSPECTION OF EROSION CONTROL INSTALLATION PRIOR TO PROCEEDING.
- TEMPORARY SEED AND STABILIZATION OF EACH DISTURBED AREA BEFORE PROCEEDING TO NEXT AREA.

SITE BENCHMARK NOTE:

CONTRACTOR SHALL ESTABLISH A BENCHMARK PRIOR TO CONSTRUCTION. EXISTING BENCHMARK MUST BE RE VERIFIED AND APPROVED BY THE ENGINEER/SURVEYOR PRIOR TO USE.

FLOOD STUDY NOTE:

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA AS PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD BOUNDARY AND FLOODWAY MAP COMMUNITY PANEL NO. 47119C0285E DATED APRIL 16, 2007 (ZONE "X")

CIVIL DESIGN CONSULTANTS, LLC
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JARED R. GRAY
REGISTERED
No. 108403
STATE OF TENNESSEE

VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

EPSC PLAN PHASE I

2 3-28-23 (JRG) Rev. Per City Requirements

REVISIONS

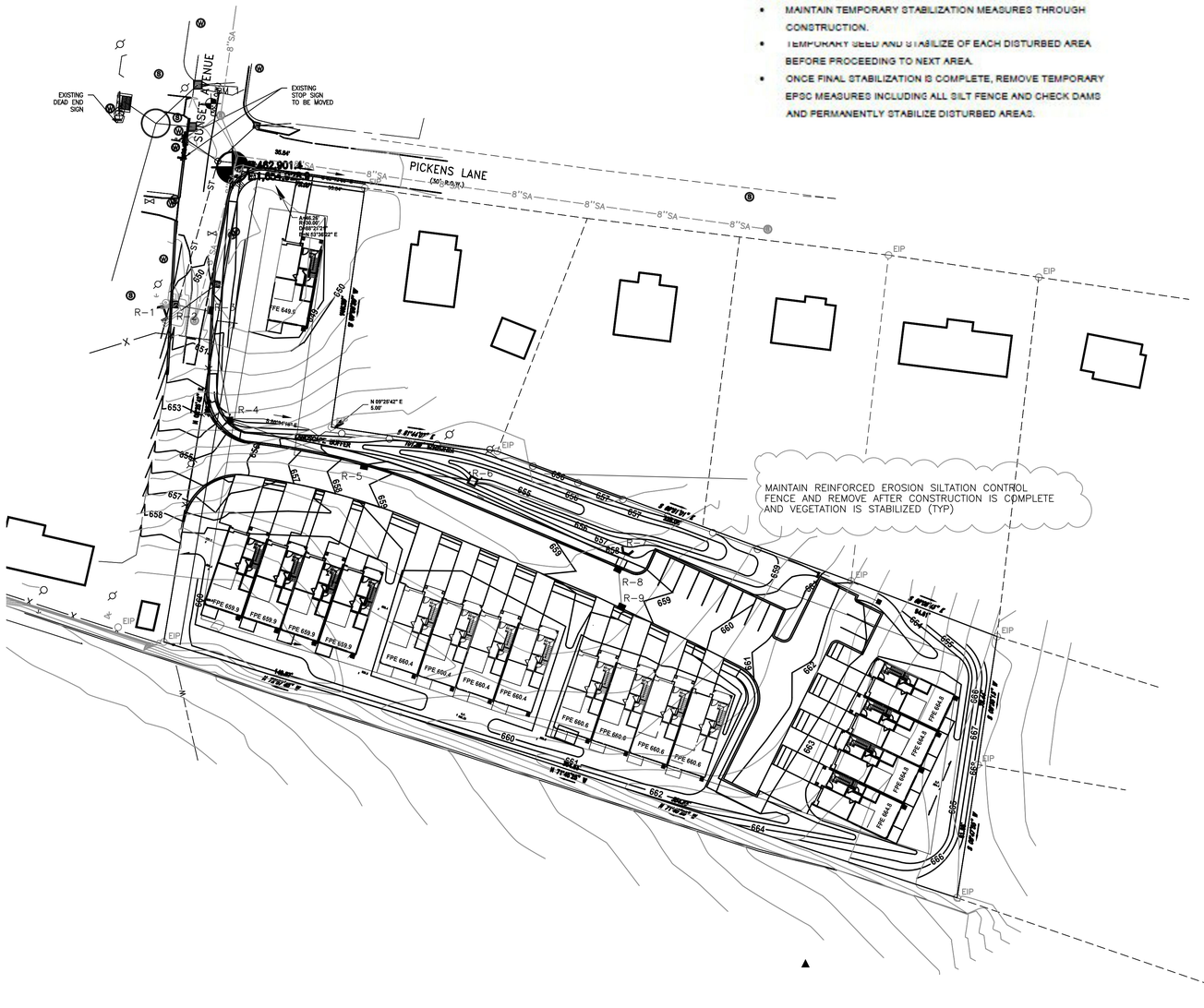
DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	AS NOTED
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

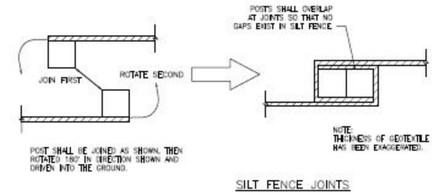
SHEET NO.
2 C3

EPSC PHASE 2:

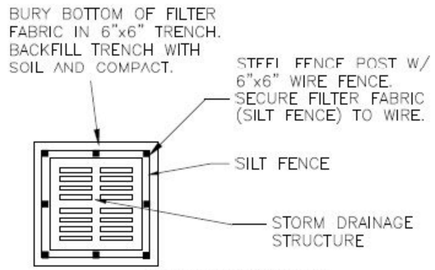
PHASE 2:

- MAINTAIN TEMPORARY STABILIZATION MEASURES THROUGH CONSTRUCTION.
- TEMPORARY SEED AND STABILIZE OF EACH DISTURBED AREA BEFORE PROCEEDING TO NEXT AREA.
- ONCE FINAL STABILIZATION IS COMPLETE, REMOVE TEMPORARY EPSC MEASURES INCLUDING ALL SILT FENCE AND CHECK DAMS AND PERMANENTLY STABILIZE DISTURBED AREAS.

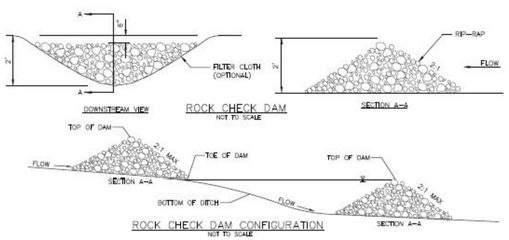




SILT FENCE JOINTS

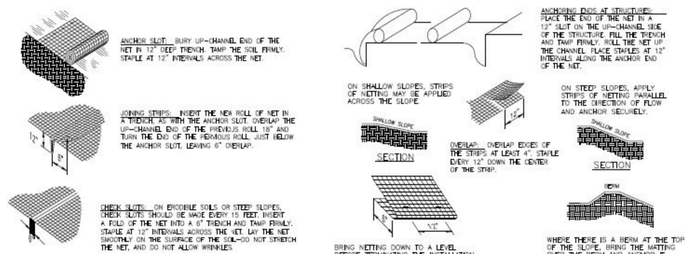


INLET PROTECTION
NOT TO SCALE



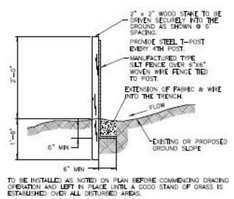
ROCK CHECK DAM
NOT TO SCALE

ROCK CHECK DAM CONFIGURATION
NOT TO SCALE



NOTE:
1. FOLLOW N.A.G. INSTALLATION INSTRUCTIONS FOR STAPLE PATTERN GUIDE.
2. INSTALL USING 3.75 STAPLES PER SQUARE YARD UNLESS OTHERWISE INDICATED ON THE PLANS.
3. ALL SLOPES 3:1 AND/OR GREATER TO RECEIVE EROSION CONTROL MATTING.

TEMPORARY EROSION CONTROL MATTING
NOT TO SCALE



TO BE INSTALLED AS NOTED ON PLAN BEFORE COMMENCING GRADING OPERATION AND LEFT IN PLACE UNTIL A GOOD STAND OF GRASS IS ESTABLISHED OVER ALL DISTURBED AREAS.

REINFORCED EROSION/SILTATION FENCE
NOT TO SCALE

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0 30 60 90

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VESPER COURT

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

EPSC PLAN PHASE II

2	3-28-23 (JRG) Rev. Per City Requirements
3	5-2-23 (JRG) Rev. Per City Requirements
REVISIONS	
DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	AS NOTED
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19-100	001

SHEET NO.
2 C3A

LEGEND

	EXISTING	PROPOSED
WATER MAIN	——W——	——W——
SANITARY SEWER	——8"SA——	——8"SA——
STORM SEWER	——18"ST——	——18"ST——
OVERHEAD		
FENCE		
GAS		
DRAINAGE DITCH		
TREE PROTECTION FENCE		
SIGN		
UTILITY POLE		
IRON PIN SET		
EXISTING IRON PIN	IP	
CONCRETE MONUMENT		
DECIDUOUS TREE		
GATE VALVE IN BOX		
LIGHT POLE		
BENCHMARK	BM 1	

TREE LINE
STORM STRUCTURE LABEL (ST)
ASPHALT
CONCRETE
PARKING SPACES (14)

AVERAGE USED TO MEET CITY GREEN SPACE REQUIREMENTS

EXISTING DEAD END SIGN

EXISTING STOP SIGN TO BE MOVED

PROPOSED MONUMENT SIGN

ACORN LIGHT POLE (TYP)

ACORN LIGHT POLE (TYP)

ALL PLANTINGS IN THIS AREA SHOULD BE TO THE SIDE OF THE DRAINAGE PIPE

MAINTAIN 0.6 OPACITY ON COMPLETE SOUTHERN BNDRY. PER CITY REQUIREMENTS (TYP)

5–2–23 (JRG) Rev. Per City Requirements

3–28–23 (JRG) Rev. Per City Requirements

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CONTRACTOR TO USE EXTREME CAUTION WHEN WORKING AROUND EXISTING POWER LINES!!!

LANDSCAPE REQUIREMENTS

STREET BUFFER: (Sunset Avenue) (3 CANOPY PER 100 L.F.)
x FRONTAGE = 56.27 LF - 2 Canopy
PROJECT BOUNDARY BUFFER
(North Boundary Line)/ (RM-1/GCS - 0.20.6) (493.02')
295.32 L.F. ADJOINING UNDEVELOPED
(3 CANOPY, 8 ACCENT, 13 SHRUBS)
x 295.32 L.F. = 9 CANOPY, 24 ACCENT, 39 SHRUBS
66.65 L.F. UNDISTURBED @ 0.6 OPACITY
131.05 L.F. ADJOINING DEVELOPED
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 131.05 L.F. = 2 CANOPY, 3 ACCENT, 4 SHRUBS
(East Boundary Line): (RM-1/GCS = 0.20.6) (160.12')
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 160.12 L.F. = 2 CANOPY, 3 ACCENT, 5 SHRUBS
(South Boundary Line): (RM-1/GCS - 0.20.6) (504.70')
(1 CANOPY, 2 ACCENT, 3 SHRUBS PER 100 L.F.)
x 504.70 L.F. = 5 CANOPY, 10 ACCENT, 15 SHRUBS

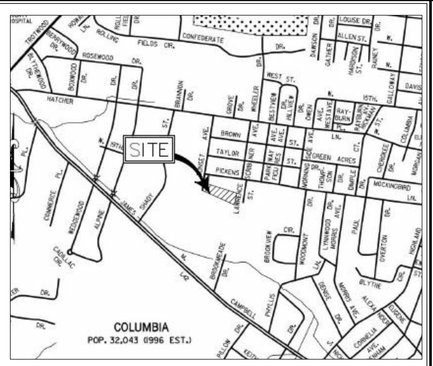
LANDSCAPE LEGEND:

Proposed Plantings
Plant Identification AG-9
Removed Trees
Proposed Canopy Trees
Proposed Understory Trees
Proposed Screening
Proposed Shrubs

MATERIALS SCHEDULE

KEY	QUANTITY	SCIENTIFIC NAME	COMMON NAME	HEIGHT	SPREAD	TRUNK	REMARKS
CANOPY TREES							
CA	4	Carya cordiformis	Bitternut Hickory	10'-12'	4'-5'	3"	4' CLEAR TRUNK
AR	3	Acer Rubrum	Red Maple	10'-12'	4'-5'	3"	4' CLEAR TRUNK
QP	5	Quercus Phellos	Willow Oak	10'-12'	4'-5'	3"	4' CLEAR TRUNK
CL	4	Cupressocyparis leylandii	Leyland Cypress	8'-10'	4'-5'	3"	4' CLEAR TRUNK
UNDERSTORY TREES							
CF	6	Cornus Florida	White Flowering Dogwood	8'-10'	3'-4'	3"	4' CLEAR TRUNK
BP	5	Betula nigra 'Heritage'	Heritage River Birch	8'-10'	3'-4'	3"	MULTI-TRUNK
LI	5	Lagerstroemia indica	Crapemyrtle	8'-10'	3'-4'	3"	MULTI-TRUNK
PY	7	Prunus x yedoensis	Yoshino Cherry	8'-10'	3'-4'	3"	4' CLEAR TRUNK
IF	6	Ilex Attenuata 'Fosteri'	Foster Holly	8'-10'	3'-4'	3"	4' CLEAR TRUNK
TG	3	Thuja 'Green Giant'	Green Giant Arborvitae	6'-10'	3'-4'	3"	F.T.B.
SHRUBS							
AG	10	Abelia hybrid 'Edward Goucher'	Pink Abelia	24"-30"	18"-24"	F.T.B.	
AK	17	Abelia x grandiflora 'Kaleidoscope'	Abelia Kaleidoscope	24"-30"	18"-24"	F.T.B.	
FO	36	Forsythia Intermedia	Forsythia	24"-30"	18"-24"	F.T.B.	
JC	11	Juniperus Chinensis 'Sea Green'	Sea Green Juniper	24"-30"	18"-24"	F.T.B.	
TURF							
SEED		Turf Mixture	Rebel III Turftype Fescue. Temporary seed all disturbed areas @ 91,000sf.				
SOD		Fine Bladed Fescue Sod	Rebel III Install 4' strip behind ALL curb grass areas & between building & curb.				
MISCELLANEOUS							
		Seasonal Color	Flower Beds for Seasonal Plantings.				
		Shredded Hardwood Bark Mulch	Minimum 3" depth throughout plant beds.				

NOTES
F.T.B. = Full To Base
EXISTING AREAS OUTSIDE OF THE PROPOSED LIMIT OF CONSTRUCTION TO REMAIN UNDISTURBED. SEE LIMIT OF CONSTRUCTION AS OUTLINED ON THIS PLAN.

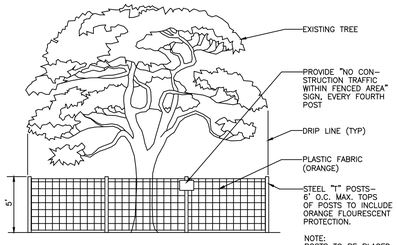


LANDSCAPE NOTES:

1. The landscape contractor shall verify the exact location of all utilities and take necessary precautions to prevent damage to these utilities.
2. The landscape contractor shall coordinate all construction with the appropriate utility company and shall be responsible for and damage to utilities.
3. Plant materials and stumps indicated for removal shall be removed and disposed off-site by the contractor. Backfill holes with topsoil free of roots and rocks.
4. All planting and mulch beds shall be hand weeded or sprayed with round-up (contractor's option) prior to the installation of mulch.
5. The landscape contractor shall be responsible for the fine grading of all planting areas.
6. The landscape contractor shall verify all material quantities. In the event of a discrepancy, the quantities shown on the plan will take precedence.
7. The landscape contractor shall be responsible for completely maintaining the work (including but not limited to: watering, mulching, spraying, fertilizing, etc.) of all planting areas and lawns until total acceptance of the work by the owner.
8. The standards set forth in "American Standard for Nursery Stock" represent general guideline specifications only and will constitute minimum quality requirements for plant material. All plants must meet minimum size noted at the materials schedule. Trees shall be No. 1 grade specimen and shrubs shall be heavy well shaped specimens as well.
9. The landscape contractor shall completely guarantee all work for a period of one year beginning at the date of acceptance. The landscape contractor shall make all replacements promptly (as per direction of owner).
10. The landscape contractor shall provide the owner with written instructions on the proper care of all specified plant materials prior to final payment.
11. Existing trees to remain shall be protected from construction damage. Selectively prune dead wood.
12. All disturbed areas shall be planted with seed and mulched or turf as indicated on the materials schedule.
13. All deciduous trees, existing and proposed shall be pruned to provide 4' minimum clear trunk unless otherwise noted.
14. All Landscape materials to be selected by owner and must be in accordance to the Required Plant Species requirements of the Zoning Ordinance. One tree for each 50 lineal feet of landscaped area required along parking area. Remaining areas to be surfaced with shrubs, ground cover, grass, or other landscape material (excluding rock). (Zoning Ordinance 10.5.5.C&D and 11.1.3.F)
15. Canopy trees shall be a minimum of ten feet in height with a four to five-foot spread and a 2-inch caliper trunk at time of planting. Accent trees shall be a minimum of eight feet in height with a three to four-foot spread and a 1 ½ -inch caliper trunk at time of planting.
16. Ten shrubs shall be planted for every 100 linear feet of building perimeter for nonresidential uses. All required shrubs shall be 20-inches in height in a minimum 3-gallon container. (Zoning Ordinance 11.1.3.F&I)
17. Deciduous trees shall have one dominant trunk with the tip of the leader on the main trunk left intact and the terminal bud on the central leader is at the highest point on the tree.
18. Trees with forked trunks are acceptable if all the following conditions are met:
A. The fork occurs in the upper ½ of the tree.
B. One fork is less than ½ the diameter of the dominant fork.
C. The top ½ of the smaller fork is removed at the time of planting.
19. No branch shall be greater than ⅓ the diameter of the trunk directly above the branch.
20. Several branches shall be larger in diameter and obviously more dominant.
21. Branching habit is to be more horizontal than vertical, and no branches are to be oriented nearly vertical to the trunk.
22. Branches are to be evenly distributed around the trunk with no more than one major branch located directly above another and the crown is to be full of foliage evenly distributed around the tree.
23. Stake all trees as shown in Planting on Slopes details.

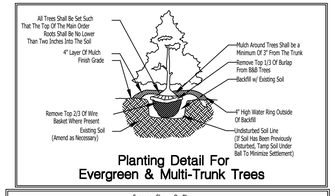
ATTENTION OWNER/ INSTALLER
This landscape plan has been designed to meet the minimum requirements of the Columbia, Tennessee zoning ordinance, the approval of the planning commission, and department policy. Relocating, substituting, resizing, reducing or deleting material may cause the site to no longer conform to the requirements. Deviation from the approved landscape plan shall not be made without first obtaining approval from either the planning commission or the planning department.

3–28–23 (JRG) Rev. Per City Requirements

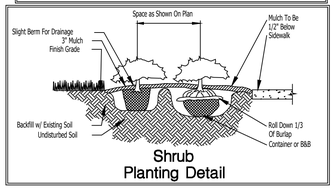


Tree Protection Fencing Detail

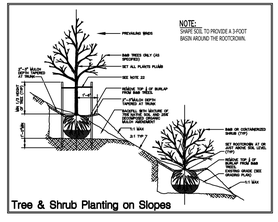
NOTE:
ALL TREE PROTECTION FENCING SHALL BE IN PLACE PRIOR TO BEGINNING DEMOLITION AND SHALL BE MAINTAINED IN GOOD WORKING ORDER UNTIL ALL CONSTRUCTION ACTIVITY IS COMPLETED. ANY REQUIRED EROSION CONTROL MEASURES SHALL BE PLACED OUTSIDE OF ANY TREE PROTECTION FENCING.



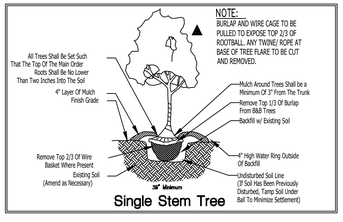
Planting Detail For Evergreen & Multi-Trunk Trees



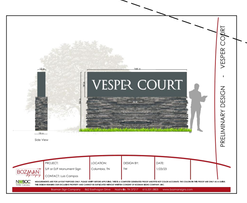
Shrub Planting Detail



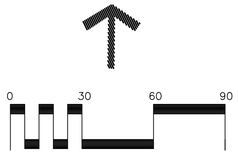
Tree & Shrub Planting on Slopes



Single Stem Tree



Monument Sign Example - NTS



CIVIL DESIGN CONSULTANTS, LLC
CIVIL ENGINEERS | LAND PLANNERS
OFFICE: (615) 519-2737 | FAX: (615) 519-2739
PHONE: (615) 519-2737 | EMAIL: CIVILCONSULTANTS@BELLSOUTH.NET

JARED R. GRAY
REGISTERED LANDSCAPE ARCHITECT
No. 108403
STATE OF TENNESSEE

VESPER COURT

LANDSCAPE PLAN

CITY OF COLUMBIA, MAURY COUNTY TENNESSEE

LANDSCAPE PLAN

11–28–22 (JRG) Rev. Per City Requirements
3–28–23 (JRG) Rev. Per City Requirements
5–2–23 (JRG) Rev. Per City Requirements

REVISIONS

DESIGNED BY:	J. GRAY
DRAWN BY:	J. GRAY
APPROVED BY:	J. GRAY
SCALE:	AS NOTED
DATE:	AUGUST 16, 2021
JOB NO.	WK. ORDER
19–100	001

SHEET NO.
L1

APPENDIX B: Subdivision Development Agreement

SUBDIVISION DEVELOPMENT AGREEMENT

THIS DEVELOPMENT AGREEMENT is made and entered into on this 10 day of JUNE, 2022, between THE CITY OF COLUMBIA, TENNESSEE, (hereinafter the "CITY"), and P-R VESPER, 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 called the "PROJECT"); and,

WHEREAS, the Development Plan of the PROJECT has been approved by the Columbia Municipal Planning Commission (hereinafter the "Planning Commission") on the 4 day of JANUARY 2023 pursuant to Tennessee Code Annotated Title 13, Chapters 3 and 4, and the Subdivision Regulations of Columbia, Tennessee (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 and public infrastructure to be constructed within and to serve the PROJECT. Public infrastructure shall include, but not be limited to, roads, bridges, sidewalks, storm water conveyance and detention systems, street signs, markings, signals and the like; and,

WHEREAS, in order for said 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 public improvements in said project and extend utilities to the project at his own cost; and,

WHEREAS, the CITY is willing to accept the dedication of the streets, utilities and other improvements 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, in consideration of the premises and mutual covenants of the parties herein contained, it is agreed and understood as follows:

I. GENERAL CONDITIONS

A. 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.

B. Surety

At the time of execution of this agreement, the DEVELOPER agrees that prior to recording a final plat, said DEVELOPER shall give the CITY an Irrevocable Letter-of-Credit, on a bank licensed to do business in Tennessee and insured by the FDIC, irrevocable without conditions, and callable upon a bank doing business in Columbia, Tennessee, in an amount determined by the Engineering Department for utilities and improvements, including roads, sidewalks, drainage, and other improvements specified by the plans and plats of the development approved by the CITY and the Planning Commission. This Letter-of-Credit shall secure performance of all obligations of the DEVELOPER under this agreement pursuant to Planning Commission approved plans and filings. The Letter-of-Credit shall meet all requirements established in Article 3 (ASSURANCE FOR COMPLETION AND MAINTENANCE OF IMPROVEMENTS) of the Subdivision Regulations and secure full compliance with all terms and conditions of this agreement, including payment of all amounts payable by the DEVELOPER or DEVELOPER'S obligations hereunder, and its obligations under the warranty and indemnification provisions hereof. The Letter-of-Credit may be called for failure to comply with the provisions of this agreement in whole or in part according to the terms of the Letter-of-Credit. The Letter-of-Credit will not be released, except and until there has been full compliance with this agreement and upon certification of a licensed engineer that the development has been completed in full compliance with the approved plat and construction plans.

C. Inspection

The CITY shall have a continuous right to inspect the work and facilities to assure that the facilities are constructed in accordance with the Subdivision Regulations and approved construction plans.

D. Right of Entry

The CITY shall have the right, in case a Letter-of Credit is called for noncompliance, to enter upon any property of the DEVELOPER and take all necessary actions to complete the work and obligations not completed.

E. Acceptance of Facilities

Upon notice by the CITY of acceptance of all or part of the facilities, then those facilities specified in the acceptance 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 parties intend that this agreement shall operate as a conveyance of the facilities when the facilities are accepted. 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.

F. 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 facilities installed. Should the CITY choose to accept all or a portion of these facilities, 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. The CITY'S election to accept such facilities shall not be construed as an assumption of any obligation related to these facilities such as the obligation to maintain the facilities or to pay for any part of the cost of installing the facilities.

G. Fees Not Refundable

If the DEVELOPER fails to install the facilities in accordance with the terms of this Agreement, no portion of the review fees or other amounts paid to the CITY shall be refundable to the DEVELOPER.

H. Legal Expense in Case of Default

In the event the DEVELOPER or its sureties breach this agreement, they shall bear all costs of the CITY'S reasonable expenses, including attorney's fees and other expenses incurred in enforcing or completing this agreement, whether incurred by negotiation, litigation or otherwise.

I. City Ordinances, Rules and Regulations

All currently existing CITY ordinances, rules and regulations and the Subdivision Regulations adopted by the Planning Commission 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.

J. 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.

K. Revocation and Interpretation

This agreement shall bind DEVELOPER when executed by DEVELOPER and may not be revoked by 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.

L. No Oral Agreement

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

M. 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.

N. Transferability

The DEVELOPER or Owner agrees that he will not transfer the property on which this proposed subdivision is to be located without first providing the CITY with notice of when the transfer is to occur and who the proposed transferee is, along with appropriate address and telephone numbers. If it is the transferee's intention to develop this subdivision in accordance with the agreement, the DEVELOPER agrees to provide the CITY an Assumption Agreement whereby the transferee agrees to perform the improvements required under this agreement and to provide the security needed to assure such performance. Said agreement will be subject to the approval of the CITY Attorney. The DEVELOPER and Owner understand that if he transfers said property without providing the notice of transfer and Assumption Agreement as required herein, he will be in breach of this agreement and in violation of the subdivision regulations. The DEVELOPER further agrees that he shall remain liable under the terms of this agreement though a subsequent sale of all or part of said property occurs, unless an Assumption Agreement is entered into between the new owners and the CITY and a new agreement and Performance Surety is issued naming the new owners as principal.

O. Covenants, Conditions and Restrictions to Be Filed

In the event a home owners' association is required or will be established, the DEVELOPER will submit a Declaration of Covenants, Conditions and Restrictions to be filed with and recorded with the final plat. The Declaration of Covenants, Conditions and Restrictions shall contain all provisions required by the Zoning Ordinances, of the CITY and shall include provisions for a home owners' association to maintain all detention or retention ponds, common drainage ditches and any and all common areas. The Declaration of Covenants, Conditions and Restrictions shall contain provisions for the CITY, to have the right, but not the obligation, to enforce any restrictions dealing with health, safety, and welfare which could be, otherwise, enforced by any land owner of record in the development. The Declaration of Covenants, Conditions and Restrictions shall also contain provisions for assessments of property for maintenance of common areas and provisions for enforcement of the assessments by liens, removal of voting rights, and enforcement at law and equity. The Declaration of Covenants, Conditions and Restrictions shall make adequate and sufficient provisions for the maintenance of any commonly owned detention ponds or drainage areas to include an amortizing of maintenance costs to be provided to the home owners' association by the DEVELOPER at the time of the establishment of the home owners' association. The Declaration of Covenants, Conditions and Restrictions shall run with the land and must be approved by the Planning Department, prior to recordation, as a part of the final plat.

P. Time Period for Construction

In consideration of the promise by the CITY to accept for maintenance the streets, utilities and other infrastructure covered by this agreement, the DEVELOPER agrees to be bound to complete within two (2) 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, he 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 his failure to complete the work as agreed and a prospective date for such completion. The DEVELOPER further agrees that if the surety (Letter-of-Credit) executed to secure the value of the work to be performed under this agreement, due to inflation or rising costs, is inadequate to secure the cost of said improvements at the time an extension is sought, he will provide the additional security to bring the surety amount in line with current cost projections as made by the CITY. The CITY agrees that it will not unreasonably withhold approval of extensions where the DEVELOPER has complied with the requirements of notice to the CITY and provided the required additional security, if any is needed. The DEVELOPER understands that his failure to follow this extension procedure constitutes a breach of this agreement and places him in violation of the Subdivision Regulations. The DEVELOPER further understands that should he 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 and sewer service within the subdivision until all items of this Agreement have been fulfilled by the DEVELOPER.

II. DESIGN AND APPROVAL

A. Contents of Plans

The DEVELOPER shall cause to be prepared and submitted to the CITY, plans (the "Plans") describing in reasonable detail all utility systems, all storm water management systems, and all street system improvements necessary to provide adequate services to the Project (hereinafter called the "IMPROVEMENTS"). The plans shall include all information required by Section 2-8 (Construction Plans) of the Subdivision Regulations and any other details as requested by the CITY. It is recognized that the IMPROVEMENTS may be constructed in phases as the Project is developed. The DEVELOPER shall submit the Plans as provided herein for each phase and execute a separate DEVELOPMENT AGREEMENT for each phase.

B. Preparation of Plans

The Plans shall be prepared by an engineer licensed by the State of Tennessee to design all systems and shall bear the seal, signature, date and license number of the engineer preparing the Plans

C. Design Criteria

The design of water and sewer improvements shall follow the State of Tennessee and Columbia Water and Sewerage Systems design criteria. Storm water management and road improvements shall be designed according to the Subdivision Regulations, all other applicable municipal specifications and ordinances and sound engineering judgment. In all cases, the specifications and design details for the Improvements shall be those of the CITY and those as approved by the State of Tennessee Department of Environment and

Conservation. CITY requirements will control if more stringent that State standards. In the event of a disagreement as to compliance with or interpretation of the Plans and the CITY'S specifications, the decision of the CITY shall be final and binding on the DEVELOPER. Five (5) sets of the Plans shall be submitted by the DEVELOPER to the CITY. The CITY Engineering Department agrees to review the Drawings and Plans so submitted in a timely manner. DEVELOPER agrees to make all revisions to the Plans as required by the CITY. Following review and approval of the Plans, or following review and approval of revised Plans if revisions have been required, a representative of the CITY Engineering Department will sign the Plans. The DEVELOPER must then submit the Plans, as approved by the CITY Engineer, to the Tennessee Department of Environment and Conservation for approval.

III. COMMENCEMENT OF CONSTRUCTION

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

A. The Plans are approved by the CITY, and all necessary facets of platting and construction plan approval, through the Planning Commission, have been completed.

B. 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.

C. If required, the review fee described in Paragraph XIII (FEES), hereof, has been paid in full.

D. The CITY shall have received an appropriately executed Development Agreement.

E. The DEVELOPER shall give the CITY notice of commencement of construction, in writing at least one (1) working day prior to commencement.

IV. CONSTRUCTION

A. Utilities

DEVELOPER agrees to pay the cost of a State approved sewage system complete with necessary stations and force mains and with manholes, outside the boundary of the subdivision as approved by the CITY. The DEVELOPER further agrees to pay the cost of sewer mains, manhole, and sewer service laterals from the sewer main to the front property line of each lot within the subdivision as approved by the CITY upon the subdivision plans and specifications. The DEVELOPER further agrees to pay the cost of all engineering, inspection and laboratory testing costs incidental to the sewer service in or to the subdivision. The DEVELOPER shall be responsible for the cost of any and all relocation, adjustment, modification, installation and removal of utilities brought about as a result of the development of the project, including street cut repair, both on and off site. As a part of constructing the Improvements, the DEVELOPER shall install, in accordance with the Plans and CITY specifications, all water service taps, fire lines, sewer service, and all facilities, equipment and accessories relating, thereto, necessary to provide utility service to the Project.

B. Storm Water Management Systems

The DEVELOPER shall be responsible for all storm water management work, including ditch stabilization, bank protection, and fencing adjacent to open ditches made necessary by the development of this subdivision.

1. The DEVELOPER shall provide and deliver the formal written opinion of a licensed and bonded professional engineer certifying that he has reviewed the entire water shed wherein the subdivision is located and that upon full development at the greatest allowable use density under existing zoning of all land within that watershed, the proposed subdivision will not increase, alter or affect the flow of surface waters, nor contribute to same, so as to damage, flood or adversely affect any property. Further, the DEVELOPER agrees to hold harmless and defend the CITY from any claim, cause of action or liability, alleged and/or proven, to have arisen directly or indirectly from alteration to the surface water by reason of the DEVELOPER'S design, construction, installation or the development itself, in whole or part.
2. To properly manage storm water runoff during the construction process the DEVELOPER shall provide necessary erosion control in accordance with the storm water management plan for the development as approved by the CITY in conformance with the published design standards and specifications of the CITY. All freshly excavated and embankment areas not covered with satisfactory vegetation shall be fertilized, mulched and seeded and/or sodded as required by the CITY to prevent erosion. In the event the CITY determines that necessary erosion control is not being provided by the DEVELOPER, the proper authority shall officially notify the DEVELOPER of the problem. If the DEVELOPER has not begun to provide satisfactory erosion control within five (5) days after the notice, then the proper authority shall issue a stop work order to be effective until satisfactory erosion control measures have been provided.
3. Any and all unenclosed water courses lying partially or wholly within the bounds of this subdivision shall be constructed to adequate cross section to provide design flow without threat of erosion or flooding of any property within this subdivision, or of any adjoining property.
4. All storm water management structures necessitated by the infrastructure plans for this development that affect any watercourse lying partially or wholly within this subdivision are to be provided by the DEVELOPER.
5. 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.

C. Street Construction

The DEVELOPER, hereby, agrees to construct and improve the streets shown on the Plans to comply with the construction standards of the CITY and to the satisfaction and approval of the CITY Engineer by grading, draining, subgrade preparation, base preparation, curb and gutter, signage, striping, signalization sidewalk installation and paving with the required amount of material the full required width. 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.

1. It is agreed and understood that all grading within the street right-of-way and public easements shall be completed before the utilities are installed.

2. The DEVELOPER further agrees to furnish and install asphalt base and a final asphalt surface course (wearing surface) in accordance with the Subdivision Regulations. The final surface shall be placed at least one (1) year (twelve (12) consecutive months) after final plat approval, but not more than two (2) years (twenty-four (24) consecutive months) unless a time extension is requested, and approved by the CITY. The DEVELOPER may request to install final surface within the first twelve months of acceptance if building activity is seventy-five (75) percent complete or otherwise specifically approved by the CITY.

3. 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 recommended by the CITY Engineer, prior to application of final surface. It is further agreed and understood that if it is not necessary to change the existing grade or disturb the pavement of an existing street or road, the DEVELOPER shall only be required to construct drainage, grade, gravel and pave to match the existing pavement and construct sidewalks and curb and gutter as required. If the existing grade is changed, the DEVELOPER shall be required to grade, gravel and pave the full width of said street.

D. Site Grading

The DEVELOPER, hereby, agrees to construct all site grading as shown on the Development plans to comply with the approved drawings, including the approved Erosion Control Plan for the development and to comply with the Subdivision Regulations, Stormwater Management Regulations, and other rules, regulations and ordinances of the CITY.

V. OFF-SITE IMPROVEMENTS (UTILITIES)

The DEVELOPER shall construct any and all off-site facilities that may be required to serve the Project, not including any additions, improvements and upgrades. Unless specifically noted in the Plans and made a part of this agreement, the CITY shall not be required to reimburse the DEVELOPER for construction of off-site Improvements if additional customers should later use the off-site facilities financed by the DEVELOPER.

VI. INSPECTION AND COMPLIANCE

After construction begins, the CITY shall provide on-site construction inspection as the CITY deems necessary to insure that all work is performed and completed in accordance with the Plans, the City's specifications and the contents of this agreement. In the event of a disagreement as to compliance with or interpretation of the 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 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.

VII. 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.

VIII. SCRAP REMOVAL

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

IX. ACCEPTANCE (ROADS AND UTILITIES)

At such time as the improvements have been constructed and installed, in accordance with the Plans and specifications, required testing has been accomplished and the test results found satisfactory, and all clean-up and cover-up has been done to the satisfaction of an authorized representative of the CITY, a letter of tentative acceptance of construction will be provided by the DEVELOPER. Formal acceptance shall follow the procedure established in the Subdivision Regulations.

The DEVELOPER agrees he shall have no claim, direct or implied, in the title or ownership of the improvements specified in this agreement when the approved phases are completed and thereafter accepted by the CITY. The DEVELOPER will be responsible for construction failures and defects in the subdivision for one (1) year after the date of preliminary acceptance of the subdivision construction. During this period, it shall remain the responsibility of the DEVELOPER to correct and cure these defects and failures.

X. WARRANTY

The DEVELOPER warrants that all installed facilities are free from defects in design, materials or workmanship for a period of one (1) year from the date of written preliminary acceptance by the CITY. Further, the DEVELOPER shall immediately repair, at its own costs, all defects of any type whatsoever which occur within one (1) year from the date the facilities are accepted in writing by the CITY. The CITY shall have the right to make repairs or have others make the repairs at the expense of the DEVELOPER, if the CITY deems it necessary. The DEVELOPER shall pay for all work, labor, materials and all other expenses of the facilities in a timely manner and this shall include any amounts that exceed the letter- of-credit. If the DEVELOPER does not pay in a timely manner, the DEVELOPER hereby authorizes the CITY to call payable its Letter-of-Credit, without any formal or further action, and to make the payments that are due for the facilities whether the debts are secured by a valid lien.

The DEVELOPER further agrees to execute a maintenance surety (Letter-of-Credit) with good security in the amount of ten (10) percent of the construction cost of the facilities being offered for dedication. Twelve (12) months after preliminary acceptance of the facilities included in the offer of dedication, a follow up inspection will be made by the CITY to determine and list any defects or failures of improvements within the subdivision. All failures

or defects, if any, shall be repaired within thirty (30) days, after which the surety will be released and cancelled by CITY.

XI. 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 or the Owner further agrees that he will grant the necessary easement and rights-of-way across his properties without expense to the CITY and waive any claim for damages.

XII. 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.

XIII. FEES

Review fees established by the CITY shall be paid prior to any review of the Plans. No construction or grading of any sort shall be begun prior to approval of such plans.

XIV. 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.

XV. REMEDIES

In the event of a default in the performance by either party of its obligation hereunder, the other party, in addition to any and all remedies set forth herein, shall be entitled to all remedies provided by law or in equity, including the remedy of specific performance or injunction.

XVI. BINDING EFFECT

The covenants and agreements herein contained shall bind and endure to the benefit of the parties hereto, their respective heirs, personal representatives, successors and assigns, as appropriate.

XVII. ATTORNEY'S FEES AND OTHER COSTS

The DEVELOPER shall pay all costs and expenses, including the CITY'S attorneys' 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.

XVIII. ENTIRE AGREEMENT

This document contains the entire agreement between the parties, and there are no collateral understandings or agreements between them, and 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.

XIX. 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.

XX. NOTICES

Any notice or other communication required to be given hereunder shall be in writing and delivered personally or sent by United States Certified Mail, return receipt requested, or sent by Federal Express Delivery Service, addressed to the CITY Engineer at City Hall and addressed to the DEVELOPER at the address set forth on the Addendum, or such other address as either party may hereafter give the other.

XXI. 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.

XXII. 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.

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.

OWNER

PRESIDENT
TITLE

ATTEST:

Director of Construction Operations
TITLE

DEVELOPER

PRESIDENT
TITLE

ATTEST:

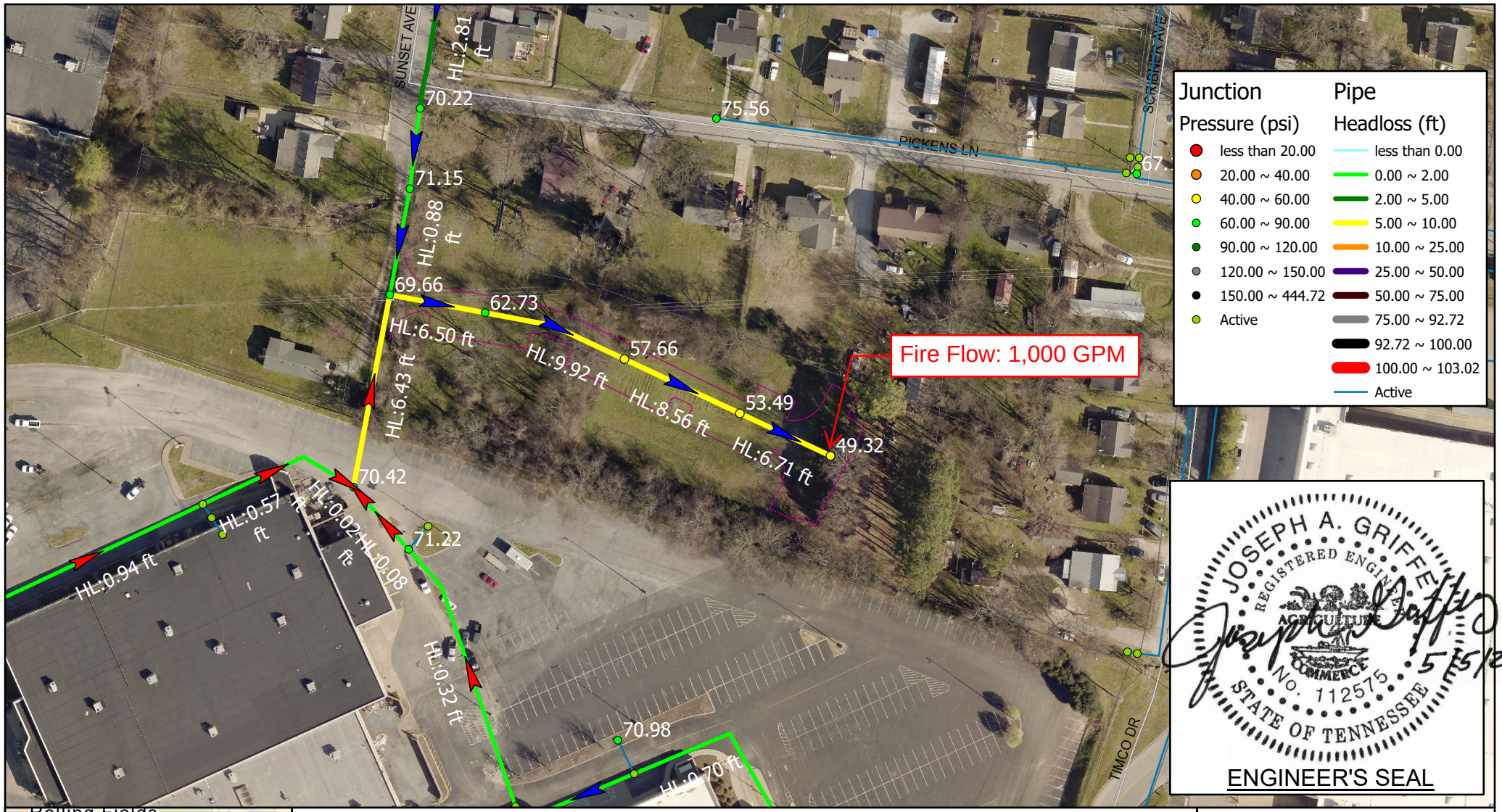
Director Of Construction Operations
TITLE

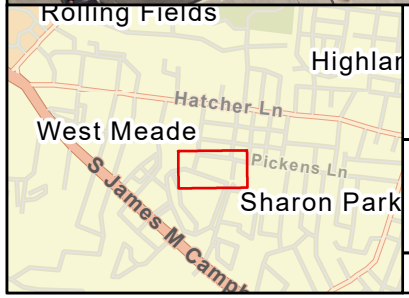
CITY OF COLUMBIA

BY:_____ _____
MAYOR DATE

APPROVED AS TO FORM:

BY:_____ _____
CITY ATTORNEY DATE





Hydraulic Calculations - Vesper Ct. Townhomes
Pressure and Head Loss @ Fire Flow

Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

2022

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

ENGINEER'S SEAL

N

0 0.01 0.03 Mi

0 0.03 0.06 Km

May 12, 2022

Mr. Curt Harakas
Harakas Construction Inc.
1138 New Hwy 7
Columbia, TN 38401
Sent via email: harakasconst@yahoo.com

RE: Water Availability Letter
Vesper Court Townhomes – 16 Units
1833 Sunset Ave
Tax Map 100, Parcel 1.00, 3.00
Columbia, Maury, TN

Dear Mr. Harakas:

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, provided the applicant complies with all rules and regulations of CPWS and conditions set out herein.

The proposed development consists of 16 townhome units. CPWS has evaluated the projected water demands for the proposed residential development in the water system hydraulic model and is able to meet a fire-flow capacity of 1,000 gpm at 20 psi while maintaining the existing level of service and pressures in this portion of the distribution system. CPWS can provide water for the proposed development according to the following requirements:

- Domestic waterline connection will be made to the existing 6-inch water main located on Sunset Avenue.
- Minimum size 6-inch water mains will be required throughout the development.
- Applicant will provide a 10-foot easement centered on the water mains and shown on the plat for the development. CPWS will have unrestricted access to all of its lines, meters, valves, vaults, and other water system facilities within the easements without seeking any further permission. CPWS has the right to disturb or remove any items within the easements that interfere with such access. The

property owner will be responsible for repairing or replacing any such items at the property owner's expense.

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

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

- Present the attached fire hydrant curve for coordination and approval of development from the Columbia Fire & Rescue Fire Marshall.
- Provide construction drawings for all public water infrastructure for the proposed development in both CAD and PDF format for CPWS review.
- When applicant has resolved all comments provided by CPWS for the construction drawings, CPWS will provide an approval letter and flow calculations to support TDEC approval of the construction drawings.
- Applicant then submits drawings to TDEC for approval. Upon approval by TDEC, applicant may schedule a pre-construction meeting with CPWS. 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 Mr. Jonathan Hardin or myself at 615-934-7499 or jason.english@inflodesign.com. This letter is valid for one-hundred twenty (120) days from the date of this letter.

Sincerely,

Jason E English

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

cc: Shane Matthews, CPWS
File 22-031

CPWS

Ms. Jennifer Dodd
Director, Division of Water Resources
ATTN: Engineering Services Unit
William R. Snodgrass Tennessee Tower
312 Rosa Parks Avenue, 11th Floor
Nashville, TN 37243

June 1, 2022

RE: Vesper Court Townhomes
Columbia Power and Water Systems, Maury County, Tennessee

Dear Ms. Dodd,

We have approved the design of the above referenced project consisting of approximately 420 LF of 6-inch water main serving 16 units in 4 townhome buildings, and all related appurtenances to provide water service, and agree to own, operate and maintain the proposed project once in operation. We have conducted an analysis and determined the system has adequate flow and pressure for the design flow rate and that the project will not negatively affect existing customers or the water distribution system in general.

Hydraulic modeling calculations were performed by our consultant, Inflo Design Group, and are included with this submittal. If you have any questions or require any additional information, please contact Jason English at 615-934-7499 or jason.english@inflodesign.com.

Sincerely,

Jonathan Hardin
Vice President of Water Operations

cc: File 22-031

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

April 20, 2022

Luis Campos
Director of Construction Operations
Q.S.P., C.I.S.E.C., T.D.E.C.1
luiscampos@pentagon-holdings.com

Re: Vesper Court Phase 1 off Sunset Avenue

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 SYSTEM

Doug Burgess, P.E.
Vice President of Power Operations

kw

CITY OF COLUMBIA
TENNESSEE

WASTEWATER DEPARTMENT

17 May 2023

P-R Vesper, LLC
0 Vesper Ct
Columbia, TN 38401

RE: 100N Group J Parcel 003.01

Luis,

This letter serves as confirmation that the City of Columbia Wastewater Department has the available capacity to service the above-referenced development. Any extension to the existing sewer infrastructure will be initiated by the owner/developer, reviewed by our department and approved by the State of Tennessee. The project must be advanced in accordance with local, state and federal rules, regulations and policies. Funding and construction of those improvements will remain the responsibility of the owner/developer. New customers will be required to pay all fees applicable at the time of connection. No detailed design plan for an extension of the sewer has been proposed at this time.

Donnie Boshers, Director
City of Columbia, TN
Wastewater Department

Pinnacle

Credit Administration- Franklin
205 Miller Springs Court
Franklin, TN 37064

IRREVOCABLE STANDBY LETTER OF CREDIT

DATE: MAY 3, 2022
LETTER OF CREDIT NO: 47998086688
EXPIRATION DATE: APRIL 18, 2023

TO: THE CITY OF COLUMBIA
700 NORTH GARDEN STREET
COLUMBIA, TENNESSEE 38401

RE: Irrevocable Standby Letter of Credit for P-R Vesper, LLC for Vesper Court, Columbia, Tennessee.

This Bank hereby issues in your favor its Irrevocable Standby Letter of Credit for the account of P-R Vesper, LLC for an amount not to exceed in the aggregate U.S. Dollars $18,500.00, effective May 3, 2022, and expiring automatically at this Bank's Office at 205 Miller Springs Court, Attn: Letter of Credit Department, Franklin, TN 37064 on April 18, 2023. The purpose of this Letter of Credit is to ensure the completion of work for Vesper Court, Columbia, Tennessee 38401 as required by the City of Columbia.

Funds under this credit are available only against your sight drafts drawn on this Bank, each bearing on its face the clause "Drawn under Letter of Credit No. 47998086688 presented at sight at Bank's above office, on or before the above expiration date, accompanied by the following documents, and in strict compliance with the following terms and conditions:

> A statement executed by an authorized official of the City of Columbia certifying that P-R Vesper, LLC has failed to perform the completion of work for Vesper Court, Columbia, Tennessee 38401 as required by the City of Columbia.

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

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

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

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

All documents to be presented to Pinnacle Bank, Attn: Letter of Credit Department, 205 Miller Springs Court, Franklin, TN 37064.

Except so far as otherwise expressly stated, this credit is subject to the Uniform Customs & Practice for Documentary Credits, 2007 Revision, International Chamber of Commerce Publication No. 600.

Kevin Roddey, SVP
Pinnacle Bank

Credit Administration- Franklin
205 Miller Springs Court
Franklin, TN 37064

LETTER OF CREDIT RENEWAL NOTIFICATION

Applicant	Beneficiary
P-R Vesper, LLC 6700 Tower Circle, Suite 330 Franklin, TN 37067	City of Columbia 700 North Garden Street Columbia, TN 38401

1/18/2023

Pinnacle Bank's Letter of Credit # 47998086688 in the amount of $18,500.00, issued on your behalf, will automatically renew on 4/18/2023 unless the City of Columbia is notified that the Letter of Credit is being canceled.

According to the terms of the Letter of Credit, the beneficiary must be notified at least 60 days prior to the current expiry date.

Please confirm to us whether you wish to cancel the above referenced Letter of Credit. No action will constitute an automatic renewal. **In case of cancellation, please return a signed copy of this letter in the enclosed envelope before 1/28/2023 in order to allow time to notify the beneficiary.**

Sincerely,

Kevin Roddey
Financial Advisor
Pinnacle Financial Partners

☒ I/We understand that Letter of Credit 47998086688 will automatically renew for an additional year on 4/18/2023 (Current Expiry Date).

☐ I/We wish to notify the beneficiary that we are canceling Letter of Credit # 47998086688.

APPLICANT:

X_____	1/18/2023	X_____	_____
Applicant Signature	Date	Applicant Signature	Date

Pinnacle Bank
Attn. Credit Administration
205 Miller Springs Court
Franklin, TN 37064

Letter of Credit – Fee Invoice

Date Due: 1/18/2023
Amount Due: $ 500.00
Letter of Credit # 47998086688

P-R Vesper, LLC
6700 Tower Circle, Suite 330
Franklin, TN 37067

Pinnacle Bank
Attn. Credit Administration
205 Miller Springs Court
Franklin, TN 37064

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	Vesper Court/ Sunset Ave		
	TAX MAP: 100N	GROUP: J	PARCEL: 003.01
SUMMARY OF NATURE OF REQUEST AND WORK	Final Plat Re subdivision of Lot 2		

DATE OF PRE-APPLICATION CONFERENCE	5/2/2023	*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) Vesper Court Lot 2 ☒ Total Number of Lots 16 ☒ Total acreage 1.89

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	P-R Vesper, LLC	PHONE	760-486-1931
ADDRESS	6700 Tower Circle Suite#330 Franklin, TN 37067	EMAIL	luiscampos@pentagon-holdings.com

PROPERTY OWNER NAME	P-R Vesper, LLC	PHONE	615-585-7850
ADDRESS	6700 Tower Circle Suite#330 Franklin, TN 37067	EMAIL	blakeseeberger@pentagon-holdings.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.

P-R Vesper, LLC		5/5/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
P-R Vesper ,LLC		5/5/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

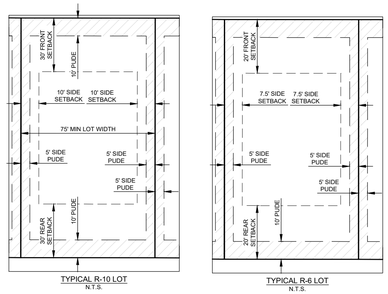
DOCKET NO.		FEE PAID	
RECEIPT NO.		REQUESTED AGENDA	

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

BOARD ACTION	



VICINITY MAP - NOT TO SCALE



TYPICAL R-10 LOT
N.T.S.

TYPICAL R-6 LOT
N.T.S.

* DENOTES R-10 LOT
~ DENOTES A CRITICAL LOT THAT WILL REQUIRE A LOT GRADING PLAN

SITE DATA		
CURRENT ZONING:	R-10 & R6	
MINIMUM BUILDING SETBACKS:	R-10	R6
FRONT:	30'	20'
REAR:	30'	20'
SIDE:	10'	7.5'
TOTAL PHASE AREA:	7.01 ACRES	
NEW ROW:	1.41 ACRES	

- HEADWALL
- CATCH BASIN
- PROPOSED SEWER LINE (TYP.)
- PROPOSED STORM LINE (TYP.)
- PROPOSED WATER LINE (TYP.)
- CURB INLET
- SEWER MANHOLE
- WATER VALVE
- FIRE HYDRANT (TYP.)

PULTE HOMES TENNESSEE LTD PARTNERSHIP
MAP 041, PARCEL 015.05
D.B. R2806, PG. 535, R.O.M.C.

Parcel Line Table		
Line #	Length	Direction
L80	120.00	S31° 19' 27.78"W
L81	120.00	N24° 36' 56.61"E
L82	120.00	S17° 54' 25.45"W
L83	120.00	S11° 11' 54.28"W
L84	47.01	N79° 46' 30.51"W
L85	47.01	S79° 46' 30.51"E
L86	120.00	S10° 13' 29.49"W
L87	55.00	N79° 46' 30.51"W
L88	55.00	S79° 46' 30.51"E
L89	120.00	S10° 13' 29.49"W
L90	55.00	N79° 46' 30.51"W
L91	55.00	S79° 46' 30.51"E
L92	120.00	S10° 13' 29.49"W
L93	55.00	N79° 46' 30.51"W
L94	55.00	S79° 46' 30.51"E
L95	120.00	S10° 13' 29.49"W
L96	55.00	N79° 46' 30.51"W
L97	55.00	S79° 46' 30.51"E
L98	120.00	N10° 13' 29.49"E
L99	16.45	S79° 46' 30.51"E
L100	16.45	N79° 46' 30.51"W
L101	120.00	S14° 26' 35.03"W
L102	120.00	N19° 43' 11.21"E
L103	120.00	S24° 59' 47.38"W
L104	120.00	N30° 16' 23.55"E
L105	120.00	S33° 59' 47.75"W
L106	5.00	N42° 37' 33.10"E
L198	125.00	S41° 33' 39.91"W
L199	125.00	N38° 32' 42.61"E

Parcel Line Table		
Line #	Length	Direction
L200	125.00	S35° 31' 45.32"W
L201	125.00	N32° 30' 48.02"E
L202	125.00	S29° 29' 50.72"W
L203	125.00	N26° 28' 53.43"E
L204	125.00	S23° 27' 56.13"W
L205	125.00	N20° 26' 58.84"E
L206	125.00	S17° 26' 01.54"W
L207	125.00	S14° 25' 04.25"W
L208	125.00	N11° 24' 06.95"E
L209	33.53	N79° 46' 30.51"W
L210	33.53	S79° 46' 30.51"E
L211	125.00	N10° 13' 29.49"E
L212	55.00	N79° 46' 30.51"W
L213	55.00	S79° 46' 30.51"E
L214	125.00	N10° 13' 29.49"E
L215	55.00	N79° 46' 30.51"W
L216	55.00	S79° 46' 30.51"E
L217	125.00	N10° 13' 29.49"E
L218	55.00	N79° 46' 30.51"W
L219	55.00	S79° 46' 30.51"E
L220	125.00	N10° 13' 29.49"E
L221	55.00	N79° 46' 30.51"W
L222	55.00	S79° 46' 30.51"E
L223	125.00	N10° 13' 29.49"E
L224	29.93	N79° 46' 30.51"W
L225	29.93	S79° 46' 30.51"E
L226	125.00	N15° 05' 49.80"E
L227	125.00	S25° 47' 41.86"W
L228	125.00	N36° 29' 33.93"E

Parcel Area Table		
PARCEL	SQ. FT.	ACRES
352	7165.79	0.16
353	7165.79	0.16
354	7165.79	0.16
355	6681.60	0.15
356	6600.00	0.15
357	6600.00	0.15
358	6600.00	0.15
359	6600.00	0.15
360~	10057.93	0.23
361~	10112.14	0.23
362~	10112.14	0.23
363~	10112.14	0.23
364~	6235.39	0.14
365~	7419.23	0.17
425~	7155.43	0.16
426~	7155.43	0.16
427~	7155.43	0.16
428~	7155.43	0.16
429~	7155.43	0.16
430~	7155.43	0.16
431~	7155.43	0.16
432	7155.43	0.16
433	7155.43	0.16
434	7155.43	0.16
435	6984.27	0.16
436	6875.00	0.16
437	6875.00	0.16
438	6875.00	0.16
439	6875.00	0.16
440	7329.25	0.17

Parcel Area Table		
PARCEL	SQ. FT.	ACRES
441	7876.90	0.18
442	7876.90	0.18

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C113	52.69	450.00	6.71	N62° 01' 48"W	52.66
C114	66.74	570.00	6.71	S62° 01' 48"E	66.70
C115	52.69	450.00	6.71	S68° 44' 19"E	52.66
C116	66.74	570.00	6.71	N68° 44' 19"W	66.70
C117	52.69	450.00	6.71	N75° 26' 50"W	52.66
C118	66.74	570.00	6.71	S75° 26' 50"E	66.70
C119	7.65	450.00	0.97	N79° 17' 18"W	7.65
C120	9.69	570.00	0.97	S79° 17' 18"E	9.69
C121	62.95	855.00	4.22	N77° 39' 58"W	62.93
C122	71.78	975.00	4.22	S77° 39' 58"E	71.76
C123	89.79	975.00	5.28	N72° 55' 07"W	89.76
C124	78.74	855.00	5.28	S72° 55' 07"E	78.71
C125	89.79	975.00	5.28	S67° 38' 31"E	89.76
C126	78.74	855.00	5.28	N67° 38' 31"W	78.71
C127	89.79	975.00	5.28	N62° 21' 55"W	89.76
C128	78.74	855.00	5.28	S62° 21' 55"E	78.71
C129	55.86	975.00	3.28	S58° 05' 08"E	55.85
C130	32.79	855.00	2.20	N58° 37' 41"W	32.79
C131	14.86	855.00	1.00	N57° 01' 54"W	14.86
C132	36.28	975.00	2.13	N51° 46' 36"W	36.27
C133	54.16	855.00	3.63	N54° 43' 08"W	54.15
C134	83.77	975.00	4.92	N40° 09' 52"E	83.75
C135	48.87	30.00	93.34	N4° 02' 33"W	43.64
C136	61.12	855.00	4.10	N50° 51' 23"W	61.11
C187	53.95	1025.00	3.02	N49° 56' 49"W	53.95
C188	60.53	1150.00	3.02	S49° 56' 49"E	60.53
C189	53.95	1025.00	3.02	S52° 57' 46"E	53.95
C190	60.53	1150.00	3.02	N52° 57' 46"W	60.53
C191	53.95	1025.00	3.02	N55° 58' 43"W	53.95
C192	60.53	1150.00	3.02	S55° 58' 43"E	60.53
C193	53.95	1025.00	3.02	S58° 59' 41"E	53.95
C194	60.53	1150.00	3.02	N58° 59' 41"W	60.53
C195	53.95	1025.00	3.02	N62° 00' 38"W	53.95
C196	60.53	1150.00	3.02	S62° 00' 38"E	60.53
C197	53.95	1025.00	3.02	S65° 01' 35"E	53.95

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C198	60.53	1150.00	3.02	N65° 01' 35"W	60.53
C199	53.95	1025.00	3.02	N68° 02' 33"W	53.95
C200	60.53	1150.00	3.02	S68° 02' 33"E	60.53
C201	53.95	1025.00	3.02	S71° 03' 30"E	53.95
C202	60.53	1150.00	3.02	N71° 03' 30"W	60.53
C203	53.95	1025.00	3.02	N74° 04' 27"W	53.95
C204	60.53	1150.00	3.02	S74° 04' 27"E	60.53
C205	53.95	1025.00	3.02	N77° 05' 24"W	53.95
C206	60.53	1150.00	3.02	S77° 05' 24"E	60.53
C207	21.06	1025.00	1.18	N79° 11' 12"W	21.06
C208	23.63	1150.00	1.18	S79° 11' 12"E	23.62
C209	34.02	400.00	4.87	N77° 20' 20"W	34.00
C210	23.39	275.00	4.87	S77° 20' 20"E	23.38
C211	74.68	400.00	10.70	S69° 33' 14"E	74.58
C212	25.80	275.00	5.38	N72° 12' 55"W	25.79
C213	25.55	275.00	5.32	N66° 51' 59"W	25.54
C214	74.68	400.00	10.70	N58° 51' 22"W	74.58
C215	51.35	275.00	10.70	S58° 51' 22"E	51.27

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE — NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE AND UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE AND UTILITIES DESIGNATED IN SUMMIT AT CARTER'S STATION, PHASE 2 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 TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

_____, 20____
DATE — CITY ENGINEER

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____
DATE — NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CATEGORY I LAND SURVEY AS DEFINED IN TITLE 62, CHAPTER 18, TENNESSEE CODE ANNOTATED, AND THAT THE RATIO OF PRECISION IS LESS THAN OR EQUAL TO 1:10,000.

_____, 20____
DATE — MARK CANTRELL, R.L.S

CERTIFICATE OF COMPLIANCE

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS AND OTHER ADOPTED ORDINANCES AND POLICIES.

_____, 20____
DATE — CITY ENGINEER

CERTIFICATE OF APPROVAL OF SUBDIVISION AND STREET NAMES

SUBDIVISION NAME AND STREET NAMES ARE APPROVED BY THE CITY ENGINEERING DEPARTMENT AND MAURY COUNTY E911.

_____, 20____
DATE — MAURY E911

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 SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____
DATE — DIRECTOR OF COLUMBIA WASTEWATER DEPARTMENT

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 RECORD BOOK NUMBER R2828, PAGE 296, MAURY COUNTY REGISTER'S OFFICE, AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINE, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC WAYS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED.

_____, 20____
DATE — OWNER

GENERAL NOTES

1. THE PURPOSE OF THIS PLAT IS TO CREATE 33 LOTS AND DEDICATE RIGHT-OF-WAY.
2. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
3. SUBJECT PROPERTY IS PARCEL 35.00 AS SHOWN ON MAURY COUNTY TAX MAP 42.
4. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS) USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM ZONE 4100, NAD83. DRONE AERIAL PHOTOMETRY WAS ALSO USED TO SURVEY SOME ELEMENTS.
5. NO TITLE REPORT HAS BEEN FURNISHED, THEREFORE THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
6. THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF A GENERAL PROPERTY SURVEY AND CONFORMS TO THE ACCURACY OF A CATEGORY 1 SURVEY AS CURRENTLY DEFINED AND ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THE RATIO OF PRECISION IS LESS THAN 1:10,000.
7. ALL PLOT AND DEED RECORDATION REFERENCES SHOWN HEREON ARE AS RECORDED IN THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
8. COLUMBIA POWER AND WATER SYSTEMS IS THE POWER PROVIDER.
9. STORMWATER MANAGEMENT OPERATION & MAINTENANCE WILL BE GOVERNED BY THE INSPECTION & MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES, DATED _____; RECORDED IN DEED BOOK _____, PAGE _____, REGISTER'S OFFICE OF MAURY COUNTY, TN.
10. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN FLOOD ZONE "X", AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0180E WITH AN EFFECTIVE DATE OF 4/16/2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 119C, PANEL NO. 0180 SUFFIX E, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED, SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
11. ACCORDING TO THE TYPICAL LOT DETAIL, ALL LOTS ARE TO HAVE A 10' PUDE IN THE FRONT AND REAR OF THE LOTS, AS WELL AS A 5' PUDE IN THE SIDE OF THE LOTS.

TN SPCS NAD 83

SCALE 1" = 50'

50 0 25 50 100

OWNER OF RECORD
TAMARACK LAND-CARTERS STATION LLC DEED BK. R2828 PG. 296, MAP 042 PARCEL 035.00
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

J. MARK CANTRELL
PROFESSIONAL LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 1859

NO.	DATE	REVISIONS

DATE: 5-19-2023
SCALE: 1" = 50'
DRAWN BY: DSW
REVIEWER:

FINAL PLAT - PHASE 2

MAP 042, P/O PARCEL 035.00
MAURY COUNTY, TENNESSEE

SUMMIT AT CARTER'S STATION

PROJECT
21-0515

SHEET
1 OF 1

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: Cobbler Court DATE: 11/1/2022

MODEL BY: Inflo Design Group, LLC SYS. DEMAND Max Day DURATION: 2 hrs

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Summit at Carters Station

MODEL DATA

FLOW HYDRANT(S)	0	n/a	n/a
GPM:	**1000**	0	0

TOTAL FLOW DURING SIMULATION: **1000** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: Stone Creek Pass

CONDITION 1
STATIC 82 PSI RESIDUAL: 70 PSI

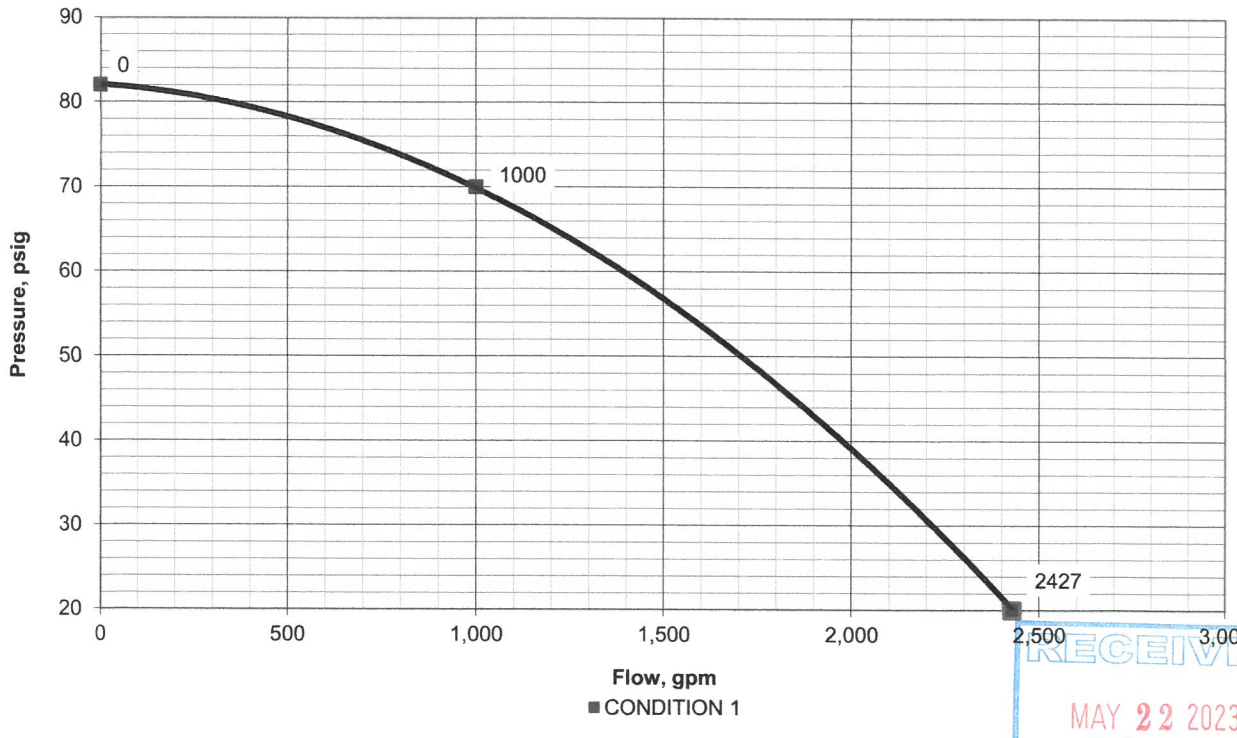
CONDITION 2
STATIC _____ PSI RESIDUAL: _____ PSI

RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 **2427** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevation of 725' and current CPWS water infrastructure and do not account for additional losses associated with development piping.



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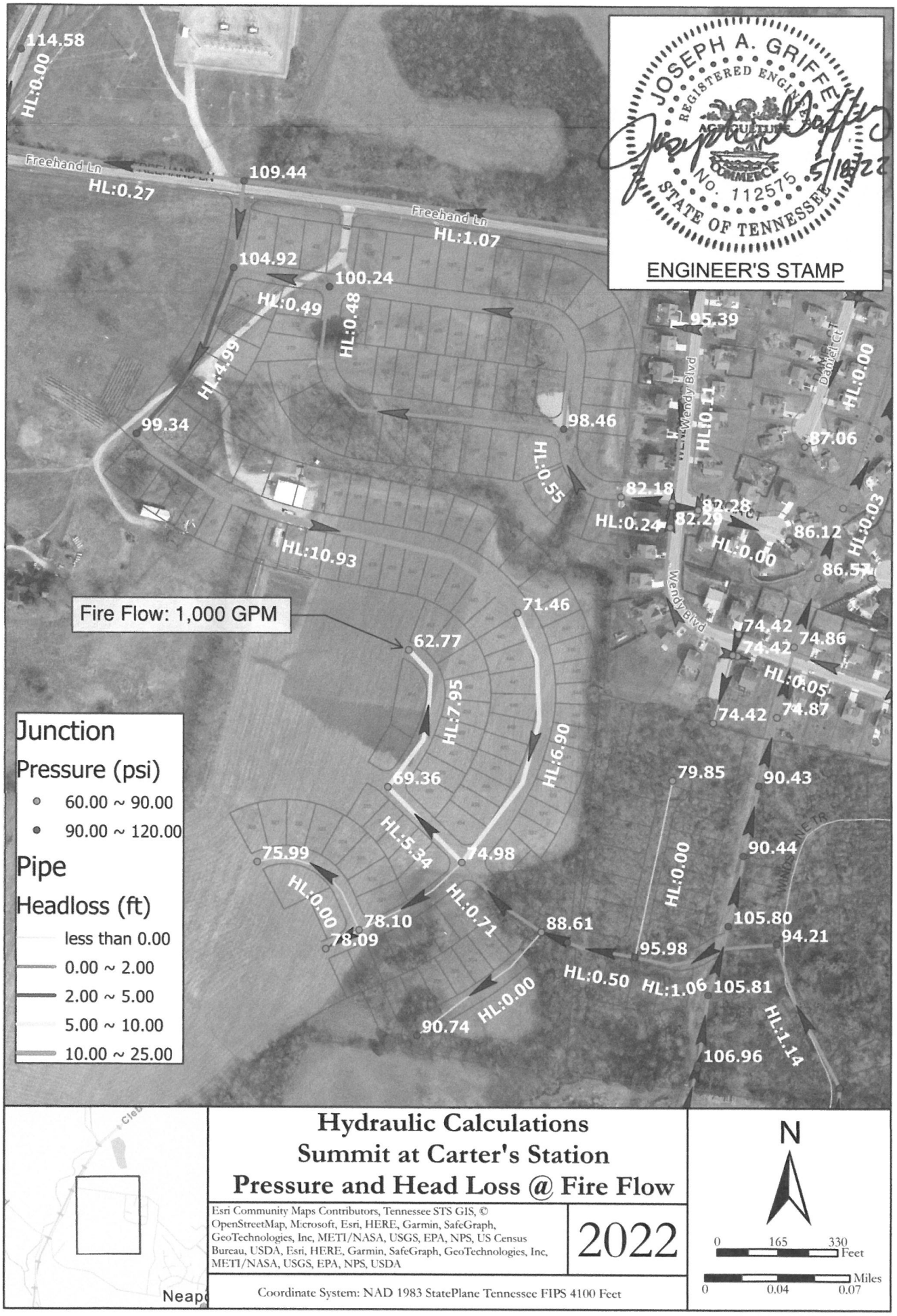
JOSEPH A. GRIFFE
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 112575
STATE OF TENNESSEE
5/18/22
ENGINEER'S STAMP
114.58
HL:0.00
Freehand Ln
HL:0.27
109.44
Freehand Ln
HL:1.07
104.92
100.24
HL:0.49
HL:0.48
HL:4.99
99.34
98.46
HL:0.55
95.39
Wendy Blvd
HL:0.11
Daniel Ct
HL:0.00
87.06
82.18
82.28
82.29
HL:0.24
86.12
HL:0.03
HL:0.00
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HL:10.93
Fire Flow: 1,000 GPM
71.46
62.77
Wendy Blvd
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74.86
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105.80
94.21
95.98
HL:0.50
HL:1.06
105.81
HL:0.00
90.74
HL:1.14
106.96
Junction
Pressure (psi)
60.00 ~ 90.00
90.00 ~ 120.00
Pipe
Headloss (ft)
less than 0.00
0.00 ~ 2.00
2.00 ~ 5.00
5.00 ~ 10.00
10.00 ~ 25.00
Hydraulic Calculations
Summit at Carter's Station
Pressure and Head Loss @ Fire Flow
Esri Community Maps Contributors, Tennessee STS GIS, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA
2022
Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
N
0 165 330 Feet
0 0.04 0.07 Miles

DOCUMENT PREPARED BY:
Name: Allison Corolla
Company T-Square Engineering
Address: 1329 West Main Street
Franklin, TN
After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 42, Parcel 35.00
Project Name: Summit at Carter's Station, Phase 2

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

THIS AGREEMENT, made this _____ day of _____, 20____ , by and between Tamarack Land - Carter's Station, LLC 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,

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By: 23-0202

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 Jeff Leone

Title Authorized Representative

Signature _____

Owner Tamarack Land - Carters Station, LLC

Address 512 Vista Blvd

City, State ZIP Waconia, MN 55387

STATE OF Tennessee
COUNTY OF Williamson

Before me, Jeff Leone of the state and county mentioned, personally appeared _____, 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 10th day of May, 2023.

Brayden Hosford
Notary Public

BRAYDEN HOSFORD
STATE OF TENNESSEE NOTARY PUBLIC
WILLIAMSON COUNTY
MY COMM. EXPIRES 01-23-2027

My Commission Expires: 01-23-27

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:_____

T-SQUAREENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

1329 West Main Street
Franklin, TN 37064
615.678.8212

www.T2-ENG.com

5/8/2023

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

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: THE SUMMIT AT CARTER'S STATION, PHASE 2

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds. This phase consists of:

- 1,458 LF of round concrete pipe and 22 storms 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. 1,458 LF OF RCP AND 22 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

CONSTRUCTION PLANS

FOR

SUMMIT AT CARTER'S STATION

PHASE 1

3040 CLEBURNE ROAD

COLUMBIA, TN 37174

CITY OF COLUMBIA, WARD #5

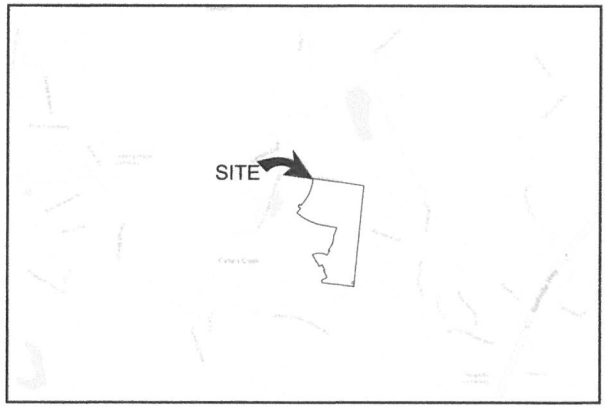
DEVELOPER: RICHMOND AMERICAN HOMES
12220 SUNRISE VALLEY DRIVE SUITE 400
RESTON, VA 20191
703-390-0900

ENGINEER: T-SQUARE ENGINEERING
1329 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: T-SQUARE ENGINEERING
1329 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

WATER UTILITY: CPWS Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP
N.T.S.

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Preliminary Plat
C-1.1	Existing Conditions
C-2.0	Site Plan
C-2.1	Parcel Site Plan
C-2.2	Parcel Data Tables
C-3.0	Initial Erosion Control
C-3.1	Temporary Erosion Control
C-3.2	Final Erosion Control
C-4.0	Predevelopment Stormwater Plan
C-4.1	Postdevelopment Stormwater Plan
C-5.0	Grading Plan
C-5.1	Drainage Plan
C-5.2	Drainage Plan Tables
C-5.3	Inlet Area Plan
C-6.0	Roadway Plan and Profile Wellwind Road
C-6.1	Roadway Plan and Profile Sellerback Way
C-6.2	Roadway Plan and Profile Youngfellow Drive
C-6.3	Fellowship Road
C-6.4	Fellowship Road & Haplander Court
C-6.5	Cobler Court & Candler Road
C-6.6	Pippin Street
C-7.0	Utility Plan
C-7.1	Sanitary Plan and Profile
C-7.2	Sanitary Plan and Profile
C-7.3	Sanitary Plan and Profile
C-7.4	Sanitary Plan and Profile
C-7.5	Sanitary Plan and Profile
C-7.6	Sanitary Plan and Profile
C-8.0	Detail Sheet
C-8.1	Detail Sheet
C-8.2	Detail Sheet
C-8.3	Detail Sheet
C-8.4	Detail Sheet
C-8.5	Detail Sheet
C-8.6	Detail Sheet
C-8.7	Detail Sheet

FLOOD NOTE
A PORTION OF THIS PROPERTY LIES WITHIN AN AREA DESIGNATED AS AE, AS EVIDENCED ON FEMA PANEL 64711C0180E OF MAURY COUNTY, TN, DATED 04/16/2007

OWNER OF RECORD
FP TCI CCS LLC
MAP 41, P/O PARCEL 15.00

APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

T-SQUARE ENGINEERING

NO.	DATE	REVISIONS
1	03/02/22	SANITARY SEWER MAIN REVISION
2	03/16/22	REVISIONS PER TDEC COMMENTS
3	04/14/22	REVISIONS PER CITY COMMENTS
4	08/03/22	REVISIONS PER TDEC COMMENTS
5	09/07/22	REVISIONS PER PULTE COMMENTS
6	11/15/22	REVISIONS TO MAIL DELIVERY
7	05/04/23	REVISIONS TO SANITARY PER CONTRACTOR

DATE: 10/13/21
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

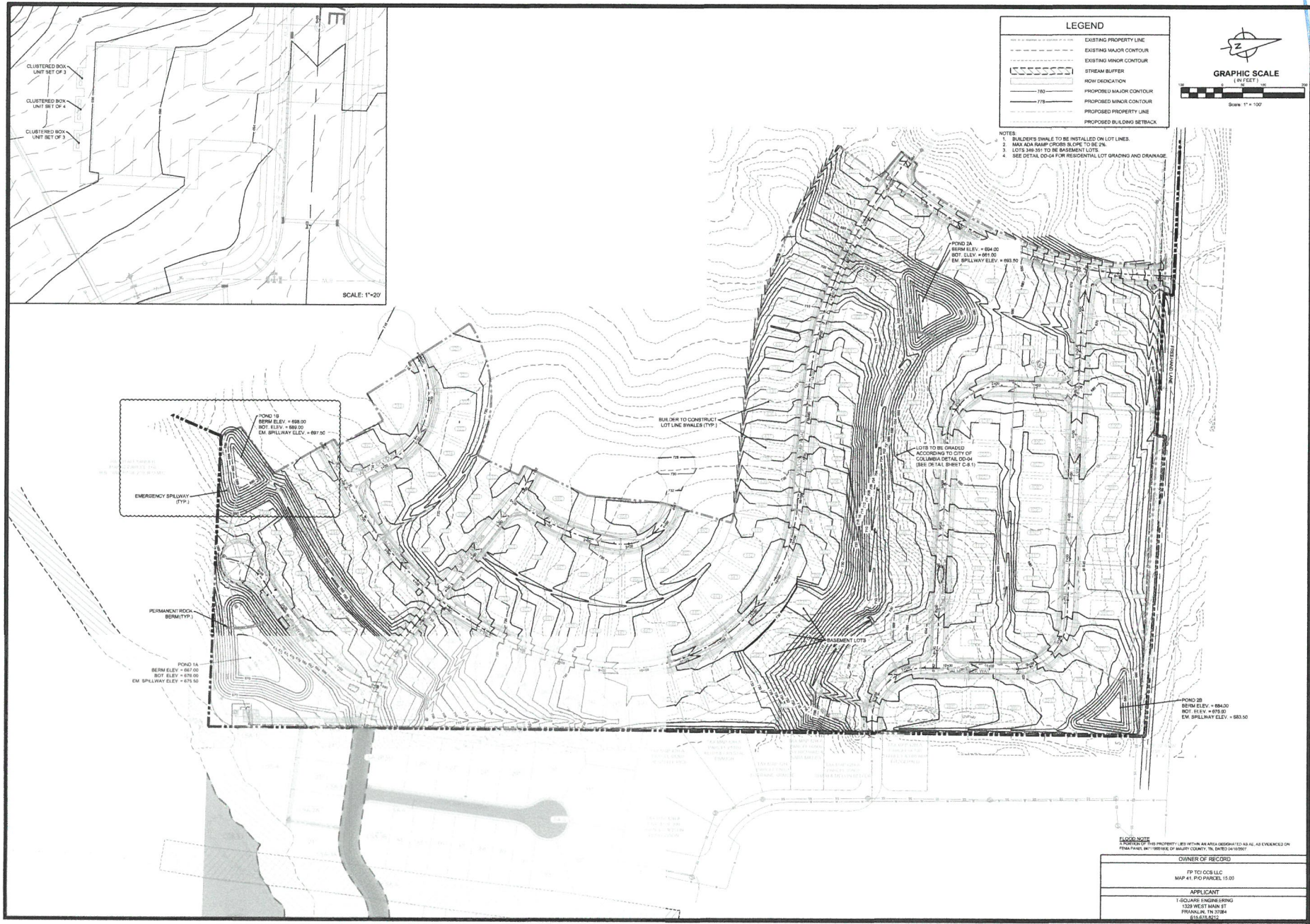
COVER SHEET
MAP 41, P/O PARCEL 15.00
COLUMBIA, TENNESSEE 37174

SUMMIT AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE
5/4/2023

PROJECT
21-0515

SHEET
C-0.0



NO.	DATE	REVISIONS
1	03/02/22	SANITARY SEWER MAIN REVISION
2	03/16/22	REVISIONS PER TDEC COMMENTS
3	04/14/22	REVISIONS PER CITY COMMENTS
4	05/31/22	REVISIONS PER TDEC COMMENTS
5	09/07/22	REVISIONS PER PLLC COMMENTS
6	11/15/22	REVISIONS TO MAIL DELIVERY
7	03/04/23	REVISIONS TO SANITARY PER CONTRACTOR

DATE: 10/19/21
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

GRADING PLAN

MAP 41, P/O PARCEL 15.00
COLUMBIA, TENNESSEE 37174

SUMMIT AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
101115
STATE OF TENNESSEE
5/4/2023

PROJECT
21-0515

SHEET
C-5.0

T-SQUARE ENGINEERING

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By: 23-0202...

Page 592 of 675



T-SQUARE ENGINEERING

SHEET C-5.1

PROJECT 21-0515

TIMOTHY E. TURNER
STATE OF TENNESSEE
5/4/2023

DRAINAGE PLAN

MAP 41, P/O PARCEL 15.00
COLUMBIA, TENNESSEE 37174

DATE:	10/13/21
SCALE:	AS SHOWN
DRAWN BY:	T-SQUARE
REVIEWER:	TET

NO.	DATE	REVISIONS
1	03/02/22	SANITARY SEWER MAIN REVISION
2	03/16/22	REVISIONS PER TDEC COMMENTS
3	04/14/22	REVISIONS PER CITY COMMENTS
4	08/03/22	REVISIONS PER TDEC COMMENTS
5	09/07/22	REVISIONS PER PULTE COMMENTS
6	11/15/22	REVISIONS TO MAIL DELIVERY
7	05/04/23	REVISIONS TO SANITARY PER CONTRACTOR

SUMMIT AT CARTER'S STATION

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
HW-1A	RIM = 969.10 TOP = 966.42	INV. IN = 966.39		HEADWALL
HW-2A	RIM = 981.12 TOP = ???	INV. IN = 978.41		HEADWALL
HW-2C	RIM = 979.77 TOP = 974.35	INV. IN = 973.09		HEADWALL
RISER-1A	RIM = 975.00 TOP = 968.83		INV. OUT =967.00	RISER
RISER-2A	RIM = 982.00 TOP = 982.00		INV. OUT =951.00	RISER
RISER-2C	RIM = 982.00 TOP = 976.00		INV. OUT =975.00	RISER

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
HW-A1	RIM = 977.87 TOP = 962.38	INV. IN = 960.00		HEADWALL
ST-A1	RIM = 715.53 TOP = 716.63	INV. IN = 711.28	INV. OUT =711.28	SINGLE INLET
ST-A1A	RIM = 718.13 TOP = 716.13		INV. OUT =711.53	SINGLE INLET
ST-A2	RIM = 714.83 TOP = 714.83	INV. IN = 709.68 INV. IN = 709.88	INV. OUT =709.68	SINGLE INLET
ST-A2A	RIM = 714.03 TOP = 714.03		INV. OUT =710.03	SINGLE INLET
ST-A2B	RIM = 714.78 TOP = 714.78	INV. IN = 710.90	INV. OUT =710.90	SINGLE INLET
ST-A3	RIM = 712.58 TOP = 712.58	INV. IN = 707.99	INV. OUT =707.99	SINGLE INLET
ST-A4	RIM = 708.93 TOP = 709.93	INV. IN = 705.12 INV. IN = 705.12	INV. OUT =709.12	SINGLE INLET
ST-A4A	RIM = 709.34 TOP = 708.34	INV. IN = 706.37	INV. OUT =705.37	SINGLE INLET
ST-A5	RIM = 708.45 TOP = 703.48	INV. IN = 704.97 INV. IN = 704.57	INV. OUT =704.97	SINGLE INLET
ST-A6A	RIM = 709.09 TOP = 709.09	INV. IN = 704.32	INV. OUT =704.32	SINGLE INLET
ST-A6B	RIM = 696.97 TOP = 696.97	INV. IN = 692.31 INV. IN = 692.31	INV. OUT =692.31	AREA DRAIN
ST-A6C	RIM = 695.92 TOP = 695.62	INV. IN = 691.11	INV. OUT =691.11	AREA DRAIN
ST-A6D	RIM = 696.98 TOP = 696.98		INV. OUT =694.18	AREA DRAIN
ST-A6	RIM = 709.87 TOP = 703.87		INV. OUT =705.63	SINGLE INLET
ST-A7	RIM = 713.48 TOP = 713.48	INV. IN = 709.20	INV. OUT =709.30	SINGLE INLET
ST-A7A	RIM = 714.09 TOP = 714.09		INV. OUT =709.48	SINGLE INLET
ST-A8	RIM = 715.97 TOP = 710.02	INV. IN = 709.97 INV. IN = 709.97	INV. OUT =709.97	SINGLE INLET
ST-A8A	RIM = 717.41 TOP = 716.81		INV. OUT =714.20	AREA DRAIN

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
HW-B1	RIM = 878.48 TOP = 874.43	INV. IN = 874.18		HEADWALL
HW-B2	RIM = 811.56 TOP = 809.56	INV. IN = 809.25		HEADWALL
RISER-1B	RIM = 890.71 TOP = 884.32		INV. OUT =886.00	RISER
ST-B1	RIM = 730.98 TOP = 730.98	INV. IN = 726.65	INV. OUT =726.65	SINGLE INLET
ST-B1A	RIM = 731.54 TOP = 731.54		INV. OUT =726.90	SINGLE INLET
ST-B2	RIM = 727.48 TOP = 727.48	INV. IN = 723.18 INV. IN = 723.18	INV. OUT =723.18	SINGLE INLET
ST-B2A	RIM = 726.09 TOP = 726.08		INV. OUT =723.43	SINGLE INLET
ST-B3	RIM = 734.85 TOP = 734.86	INV. IN = 729.82	INV. OUT =729.82	SINGLE INLET
ST-B3A	RIM = 725.44 TOP = 725.44	INV. IN = 720.57	INV. OUT =720.57	SINGLE INLET
ST-B4	RIM = 734.57 TOP = 734.57	INV. IN = 718.73 INV. IN = 718.73	INV. OUT =718.73	SINGLE INLET
ST-B4A	RIM = 723.88 TOP = 723.98		INV. OUT =718.98	SINGLE INLET
ST-B4B	RIM = 727.47 TOP = 722.47	INV. IN = 717.38 INV. IN = 717.38	INV. OUT =717.38	SINGLE INLET
ST-B4C	RIM = 722.13 TOP = 722.13		INV. OUT =718.00	AREA DRAIN
ST-B5	RIM = 718.42 TOP = 718.42	INV. IN = 713.38 INV. IN = 713.38	INV. OUT =713.38	SINGLE INLET
ST-B5A	RIM = 717.83 TOP = 717.83		INV. OUT =713.68	SINGLE INLET
ST-B6	RIM = 710.67 TOP = 710.67	INV. IN = 706.68 INV. IN = 705.68 INV. IN = 705.68	INV. OUT =705.68	SINGLE INLET
ST-B6A	RIM = 710.37 TOP = 710.07		INV. OUT =708.16	SINGLE INLET
ST-B7	RIM = 699.28 TOP = 699.28	INV. IN = 694.28 INV. IN = 694.28	INV. OUT =694.28	SINGLE INLET
ST-B7A	RIM = 698.96 TOP = 698.87		INV. OUT =694.79	SINGLE INLET
ST-B8	RIM = 699.11 TOP = 699.11	INV. IN = 678.42 INV. IN = 678.42	INV. OUT =678.18	SINGLE INLET
ST-B9	RIM = 694.00 TOP = 694.00	INV. IN = 679.10 INV. IN = 679.10	INV. OUT =679.10	SINGLE INLET
ST-B9A	RIM = 693.40 TOP = 693.40		INV. OUT =679.99	SINGLE INLET
ST-B9B	RIM = 704.00 TOP = 704.00		INV. OUT =702.00	AREA DRAIN
ST-B10	RIM = 697.74 TOP = 697.74	INV. IN = 677.70	INV. OUT =677.70	SINGLE INLET
ST-B10A	RIM = 698.31 TOP = 698.31	INV. IN = 677.95	INV. OUT =677.95	SINGLE INLET
ST-B11	RIM = 698.71 TOP = 693.71	INV. IN = 678.66 INV. IN = 678.66	INV. OUT =678.56	SINGLE INLET
ST-B11A	RIM = 686.31 TOP = 686.31		INV. OUT =682.29	SINGLE INLET
ST-B11B	RIM = 699.38 TOP = 699.38	INV. IN = 676.31	INV. OUT =676.31	SINGLE INLET
ST-B12	RIM = 699.56 TOP = 699.56	INV. IN = 674.92	INV. OUT =674.92	SINGLE INLET
ST-B12A	RIM = 697.19 TOP = 697.15	INV. IN = 674.67	INV. OUT =674.67	SINGLE INLET
ST-B13	RIM = 737.48 TOP = 737.48	INV. IN = 732.80	INV. OUT =732.80	SINGLE INLET
ST-B13A	RIM = 736.97 TOP = 736.87		INV. OUT =732.95	SINGLE INLET
ST-B14	RIM = 736.98 TOP = 735.98	INV. IN = 730.96 INV. IN = 730.96	INV. OUT =730.96	SINGLE INLET
ST-B14A	RIM = 735.27 TOP = 735.27		INV. OUT =731.34	SINGLE INLET
ST-B15	RIM = 733.80 TOP = 733.80	INV. IN = 729.03 INV. IN = 729.03	INV. OUT =729.03	SINGLE INLET
ST-B15A	RIM = 733.32 TOP = 733.32		INV. OUT =729.28	SINGLE INLET
ST-B16	RIM = 723.36 TOP = 723.36	INV. IN = 718.48 INV. IN = 718.48	INV. OUT =718.48	SINGLE INLET
ST-B16A	RIM = 722.78 TOP = 722.78		INV. OUT =718.71	SINGLE INLET
ST-B17	RIM = 718.39 TOP = 718.09	INV. IN = 713.22 INV. IN = 713.22	INV. OUT =713.22	SINGLE INLET
ST-B17A	RIM = 714.61 TOP = 714.61		INV. OUT =710.41	SINGLE INLET
ST-B19	RIM = 682.43 TOP = 682.43	INV. IN = 675.17 INV. IN = 675.17	INV. OUT =675.17	SINGLE INLET

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
[illegible]	RIM = 886.05 TOP = 880.99	INV. IN = 880.80	INV. OUT =879.42	SINGLE INLET
ST-C1	RIM = 733.78 TOP = 733.78	INV. IN = 729.44	INV. OUT =729.44	SINGLE INLET
ST-C1A	RIM = 732.79 TOP = 732.79		INV. OUT =729.69	SINGLE INLET
ST-C2	RIM = 727.18 TOP = 727.18	INV. IN = 723.10	INV. OUT =723.10	SINGLE INLET
ST-C3	RIM = 721.99 TOP = 721.99	INV. IN = 717.85 INV. IN = 717.85	INV. OUT =717.85	SINGLE INLET
ST-C3A	RIM = 721.98 TOP = 721.98		INV. OUT =717.90	SINGLE INLET
ST-C4	RIM = 716.99 TOP = 716.99	INV. IN = 712.91	INV. OUT =712.91	SINGLE INLET
ST-C5	RIM = 711.41 TOP = 711.41	INV. IN = 707.03 INV. IN = 707.03	INV. OUT =707.03	SINGLE INLET
ST-C6A	RIM = 712.02 TOP = 712.02		INV. OUT =707.28	SINGLE INLET
ST-C6	RIM = 701.03 TOP = 701.03	INV. IN = 691.14 INV. IN = 691.14	INV. OUT =691.14	SINGLE INLET
ST-C6A	RIM = 696.00 TOP = 689.00		INV. OUT =692.90	AREA DRAIN
ST-C7	RIM = 694.12 TOP = 694.12	INV. IN = 689.96	INV. OUT =689.96	SINGLE INLET
ST-C7A	RIM = 694.72 TOP = 694.72	INV. IN = 689.71	INV. OUT =689.71	SINGLE INLET

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
HW-G1	RIM = 697.48 TOP = 678.79	INV. IN = 678.20		HEADWALL
ST-D1	RIM = 696.34 TOP = 695.34	INV. IN = 692.03 INV. IN = 692.03	INV. OUT =692.03	SINGLE INLET
ST-D1A	RIM = 696.98 TOP = 695.98		INV. OUT =692.38	SINGLE INLET
ST-D1B	RIM = 708.08 TOP = 708.08		INV. OUT =703.00	AREA DRAIN
ST-D2	RIM = 693.71 TOP = 693.71	INV. IN = 689.67 INV. IN = 689.67	INV. OUT =689.67	SINGLE INLET
ST-D2A	RIM = 707.87 TOP = 701.87		INV. OUT =697.87	AREA DRAIN
ST-D3	RIM = 693.16 TOP = 693.16	INV. IN = 688.86	INV. OUT =688.65	SINGLE INLET
ST-D3A	RIM = 693.76 TOP = 693.76	INV. IN = 688.36	INV. OUT =688.36	SINGLE INLET
ST-D4	RIM = 685.77 TOP = 685.77	INV. IN = 684.84	INV. OUT =684.84	SINGLE INLET
ST-D5	RIM = 685.31 TOP = 680.31	INV. IN = 679.78 INV. IN = 679.78	INV. OUT =679.78	SINGLE INLET
ST-D5A	RIM = 684.72 TOP = 684.72		INV. OUT =680.28	SINGLE INLET

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
HW-E1	RIM = 683.77 TOP = ???	INV. IN = 680.52		HEADWALL
HW-E2	RIM = 676.15 TOP = 674.46	INV. IN = 673.39		HEADWALL
HW-E3	RIM = 675.82 TOP = ???	INV. IN = 672.91		HEADWALL
HW-E4	RIM = 685.45 TOP = 684.06		INV. OUT =682.74	HEADWALL
HW-E5	RIM = 673.11 TOP = 672.73	INV. IN = 671.95		HEADWALL
ST-E1	RIM = 694.07 TOP = 694.07		INV. OUT =690.11	SINGLE INLET
ST-E2	RIM = 692.80 TOP = 692.80	INV. IN = 688.62	INV. OUT =688.62	SINGLE INLET
ST-E2A	RIM = 692.80 TOP = 692.80	INV. IN = 688.67	INV. OUT =688.57	SINGLE INLET
ST-E2B	RIM = 692.28 TOP = 692.28	INV. IN = 688.09	INV. OUT =688.09	SINGLE INLET
ST-E2C	RIM = 691.15 TOP = 691.15	INV. IN = 687.04	INV. OUT =687.04	SINGLE INLET
ST-E3	RIM = 693.67 TOP = 689.67	INV. IN = 689.23	INV. OUT =689.23	AREA DRAIN
ST-E4	RIM = 685.67 TOP = 686.67	INV. IN = 681.94	INV. OUT =681.94	AREA DRAIN
ST-E5	RIM = 684.68 TOP = 684.68	INV. IN = 679.20	INV. OUT =679.20	AREA DRAIN
ST-E6	RIM = 680.48 TOP = 680.48	INV. IN = 675.37 INV. IN = 675.37	INV. OUT =675.37	SINGLE INLET
ST-E9	RIM = 679.20 TOP = 679.90	INV. IN = 675.87	INV. OUT =675.87	SINGLE INLET
ST-E7	RIM = 679.36 TOP = 679.36	INV. IN = 674.29	INV. OUT =674.29	SINGLE INLET
ST-E7A	RIM = 679.75 TOP = 679.76		INV. OUT =674.75	SINGLE INLET
ST-E8	RIM = 676.02 TOP = 676.02	INV. IN = 671.91	INV. OUT =671.91	SINGLE INLET
ST-E9	RIM = 669.73 TOP = 669.73	INV. IN = 665.62	INV. OUT =665.62	SINGLE INLET
ST-E10	RIM = 667.64 TOP = 667.64	INV. IN = 663.81 INV. IN = 663.81	INV. OUT =663.81	SINGLE INLET
ST-E10A	RIM = 668.24 TOP = 668.24	INV. IN = 663.36	INV. OUT =663.36	SINGLE INLET
ST-E11	RIM = 664.58 TOP = 664.68	INV. IN = 660.32	INV. OUT =660.32	SINGLE INLET
ST-E11A	RIM = 665.17 TOP = 665.17	INV. IN = 660.57	INV. OUT =660.57	SINGLE INLET
ST-E12	RIM = 655.64 TOP = 656.64	INV. IN = 652.11 INV. IN = 652.11	INV. OUT =652.11	SINGLE INLET
ST-E12A	RIM = 657.23 TOP = 657.23	INV. IN = 652.62	INV. OUT =652.62	SINGLE INLET
ST-E13	RIM = 660.93 TOP = 660.93	INV. IN = 673.52	INV. OUT =673.52	SINGLE INLET

STRUCTURE TABLE				
STRUCTURE NAME	DETAILS	PIPES IN	PIPES OUT	STRUCTURE
ST-E13A	RIM = 680.93 TOP = 680.93	INV. IN = 673.87	INV. OUT =673.87	SINGLE INLET
ST-E14	RIM = 671.17 TOP = 671.17	INV. IN = 666.59	INV. OUT =666.59	SINGLE INLET
ST-E15	RIM = 680.79 TOP = 680.79	INV. IN = 674.98	INV. OUT =674.98	SINGLE INLET
ST-E15A	RIM = 680.20 TOP = 680.20		INV. OUT =678.21	SINGLE INLET
ST-E16	RIM = 681.45 TOP = 681.43		INV. OUT =677.44	SINGLE INLET
ST-E17	RIM = 680.33 TOP = 680.33	INV. IN = 676.09 INV. IN = 676.09	INV. OUT =676.09	SINGLE INLET
ST-E17A	RIM = 680.32 TOP = 680.32		INV. OUT =676.34	SINGLE INLET
ST-E18	RIM = 680.16 TOP = 680.16	INV. IN = 675.11 INV. IN = 675.11	INV. OUT =675.11	DOUBLE INLET
ST-E18A	RIM = 679.54 TOP = 679.54	INV. IN = 674.86	INV. OUT =674.86	SINGLE INLET
ST-E18B	RIM = 680.58 TOP = 680.58		INV. OUT =676.19	SINGLE INLET
ST-E19	RIM = 682.78 TOP = 682.78		INV. OUT =678.14	SINGLE INLET
ST-E20	RIM = 682.02 TOP = 682.00	INV. IN = 678.18	INV. OUT =678.18	SINGLE INLET
ST-E20A	RIM = 680.22 TOP = 680.22	INV. IN = 676.33	INV. OUT =676.33	SINGLE INLET
ST-E20B	RIM = 681.86 TOP = 681.86		INV. OUT =678.00	AREA DRAIN
ST-E21	RIM = 679.27 TOP = 679.97	INV. IN = 675.35 INV. IN = 675.35	INV. OUT =675.35	SINGLE INLET
ST-E21A	RIM = 679.38 TOP = 679.38	INV. IN = 675.19	INV. OUT =675.19	SINGLE INLET
ST-E22	RIM = 678.14 TOP = 678.14	INV. IN = 673.23 INV. IN = 673.23	INV. OUT =673.23	SINGLE INLET
ST-E22A	RIM = 677.54 TOP = 677.54		INV. OUT =673.48	SINGLE INLET
ST-E23	RIM = 694.21 TOP = 694.21	INV. IN = 689.91	INV. OUT =689.91	SINGLE INLET
ST-E23A	RIM = 694.21 TOP = 694.21		INV. OUT =690.16	SINGLE INLET
ST-E24	RIM = 690.14 TOP = 690.14	INV. IN = 685.09	INV. OUT =685.09	SINGLE INLET
ST-E25	RIM = 687.97 TOP = 687.87	INV. IN = 683.39 INV. IN = 683.26	INV. OUT =683.36	SINGLE INLET
ST-E25A	RIM = 687.86 TOP = 687.66		INV. OUT =683.61	SINGLE INLET
ST-E26	RIM = 680.80 TOP = 680.80	INV. IN = 676.87	INV. OUT =676.87	SINGLE INLET
ST-E27	RIM = 680.80 TOP = 680.80	INV. IN = 676.87	INV. OUT =676.87	SINGLE INLET

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
RISER-1A TO HW-1A	18" Reinforced Concrete Pipe	66.80	1.00%
RISER-2A TO HW-2A	18" Reinforced Concrete Pipe	256.10	1.00%
RISER 2C TO HW-2C	18" Reinforced Concrete Pipe	189.91	1.00%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-A1 TO ST-A2B	18" Reinforced Concrete Pipe	76.87	1.00%
ST-A1A TO ST-A1	18" Reinforced Concrete Pipe	24.17	1.00%
ST-A2 TO ST-A3	18" Reinforced Concrete Pipe	90.35	1.88%
ST-A2A TO ST-A2	18" Reinforced Concrete Pipe	24.20	1.38%
ST-A2B TO ST-A2	18" Reinforced Concrete Pipe	80.91	1.00%
ST-A3 TO ST-A4	18" Reinforced Concrete Pipe	96.12	2.95%
ST-A4 TO ST-A5	18" Reinforced Concrete Pipe	52.55	1.00%
ST-A4A TO ST-A4	18" Reinforced Concrete Pipe	24.17	1.00%
ST-A5 TO ST-A5A	18" Reinforced Concrete Pipe	24.17	1.00%
ST-A5A TO ST-A5B	18" Reinforced Concrete Pipe	131.76	9.08%
ST-A5B TO ST-A5C	24" Reinforced Concrete Pipe	119.07	1.00%
ST-A5C TO HW-A1	24" Reinforced Concrete Pipe	57.78	1.90%
ST-A5C TO ST-A5B	24" Reinforced Concrete Pipe	183.04	1.00%
ST-A6 TO ST-A6A	18" Reinforced Concrete Pipe	44.19	1.00%
ST-A7 TO ST-A6	18" Reinforced Concrete Pipe	150.04	2.14%
ST-A7A TO ST-A7	18" Reinforced Concrete Pipe	24.23	1.00%
ST-A8 TO ST-A3	18" Reinforced Concrete Pipe	84.63	1.88%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
RISER-1B TO ST-B1B	18" Reinforced Concrete Pipe	179.11	5.08%
ST-B1 TO ST-B2	18" Reinforced Concrete Pipe	130.82	2.83%
ST-B1A TO ST-B1	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B2 TO ST-B3	18" Reinforced Concrete Pipe	97.62	2.38%
ST-B2A TO ST-B2	18" Reinforced Concrete Pipe	24.17	1.00%
ST-B3 TO ST-B3A	18" Reinforced Concrete Pipe	24.23	1.00%
ST-B3A TO ST-B4	18" Reinforced Concrete Pipe	36.30	2.04%
ST-B4 TO ST-B4B	18" Reinforced Concrete Pipe	105.73	2.20%
ST-B4A TO ST-B4	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B4B TO ST-B5	24" Reinforced Concrete Pipe	104.90	3.77%
ST-B4C TO ST-B4B	24" Reinforced Concrete Pipe	13.24	4.31%
ST-B5 TO ST-B5B	24" Reinforced Concrete Pipe	24.23	1.00%
ST-B5A TO ST-B5	18" Reinforced Concrete Pipe	24.19	1.97%
ST-B6 TO ST-B7	24" Reinforced Concrete Pipe	88.31	8.85%
ST-B6A TO ST-B6	24" Reinforced Concrete Pipe	24.19	1.97%
ST-B7A TO ST-B7	24" Reinforced Concrete Pipe	113.19	10.03%
ST-B7B TO ST-B8	24" Reinforced Concrete Pipe	24.19	1.97%
ST-B8 TO ST-B8A	24" Reinforced Concrete Pipe	118.65	13.21%
ST-B8A TO ST-B7	18" Reinforced Concrete Pipe	24.19	1.97%
ST-B9 TO ST-B10A	30" Reinforced Concrete Pipe	53.00	1.00%
ST-B9A TO ST-B9B	24" Reinforced Concrete Pipe	59.53	1.00%
ST-B9A TO ST-B9	18" Reinforced Concrete Pipe	75.33	3.36%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-B9B TO ST-B9	18" Reinforced Concrete Pipe	134.49	19.81%
ST-B10 TO ST-B11	30" Reinforced Concrete Pipe	100.84	1.00%
ST-B10A TO ST-B10	30" Reinforced Concrete Pipe	24.22	1.00%
ST-B11 TO ST-B11B	30" Reinforced Concrete Pipe	36.13	1.00%
ST-B11A TO ST-B11	18" Reinforced Concrete Pipe	25.13	21.97%
ST-B11B TO ST-B12	30" Reinforced Concrete Pipe	137.99	1.00%
ST-B12 TO ST-B12A	30" Reinforced Concrete Pipe	24.17	1.00%
ST-B12A TO HW-B1	30" Reinforced Concrete Pipe	47.48	1.00%
ST-B13 TO ST-B14	18" Reinforced Concrete Pipe	163.08	1.00%
ST-B13A TO ST-B13	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B14 TO ST-B15	18" Reinforced Concrete Pipe	160.34	1.18%
ST-B14A TO ST-B14	18" Reinforced Concrete Pipe	24.18	1.10%
ST-B15 TO ST-B16	18" Reinforced Concrete Pipe	202.23	5.26%
ST-B15A TO ST-B15	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B16 TO ST-B17	18" Reinforced Concrete Pipe	186.48	4.11%
ST-B16A TO ST-B16	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B17 TO ST-B19	18" Reinforced Concrete Pipe	49.41	5.99%
ST-B17A TO ST-B17	18" Reinforced Concrete Pipe	24.18	1.00%
ST-B18 TO HW-B2	18" Reinforced Concrete Pipe	113.99	5.17%
ST-B18A TO ST-B18	18" Reinforced Concrete Pipe	85.81	4.00%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-C1 TO ST-C2	18" Reinforced Concrete Pipe	130.83	4.90%
ST-C1A TO ST-C1	18" Reinforced Concrete Pipe	24.17	1.00%
ST-C2 TO ST-C3	18" Reinforced Concrete Pipe	159.66	4.91%
ST-C3 TO ST-C4	18" Reinforced Concrete Pipe	166.89	4.40%
ST-C3A TO ST-C3	18" Reinforced Concrete Pipe	24.17	1.00%
ST-C4 TO ST-C5	18" Reinforced Concrete Pipe	155.58	5.52%
ST-C5 TO ST-C6	18" Reinforced Concrete Pipe	157.53	14.80%
ST-C6A TO ST-C6	18" Reinforced Concrete Pipe	24.18	1.00%
ST-C6 TO ST-C7	18" Reinforced Concrete Pipe	68.03	1.78%
ST-C6A TO ST-C6	18" Reinforced Concrete Pipe	135.10	1.00%
ST-C7 TO ST-C7A	18" Reinforced Concrete Pipe	24.16	1.00%
ST-C7A TO HW-C1	18" Reinforced Concrete Pipe	161.76	1.00%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-D1 TO ST-D2	18" Reinforced Concrete Pipe	110.67	2.16%
ST-D1A TO ST-D1	18" Reinforced Concrete Pipe	24.17	1.00%
ST-D1B TO ST-D1	18" Reinforced Concrete Pipe	131.67	8.29%
ST-D2 TO ST-D3	18" Reinforced Concrete Pipe	88.27	1.78%
ST-D2A TO ST-D2	18" Reinforced Concrete Pipe	124.21	5.40%
ST-D3 TO ST-D3A	24" Reinforced Concrete Pipe	25.29	1.00%
ST-D3A TO ST-D4	24" Reinforced Concrete Pipe	791.79	1.57%
ST-D4 TO ST-D5	24" Reinforced Concrete Pipe	113.01	4.28%
ST-D5 TO HW-D1	24" Reinforced Concrete Pipe	186.66	1.00%
ST-D5A TO ST-D5	18" Reinforced Concrete Pipe	24.19	1.97%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
HW-E4 TO ST-E12A	18" Reinforced Concrete Pipe	11.50	1.00%
ST-E1 TO ST-E2	18" Reinforced Concrete Pipe	88.68	1.44%
ST-E2 TO ST-E2A	18" Reinforced Concrete Pipe	24.17	1.00%
ST-E2A TO ST-E2B	18" Reinforced Concrete Pipe	48.58	1.00%
ST-E2B TO ST-E2C	18" Reinforced Concrete Pipe	103.31	1.00%
ST-E2C TO ST-E3	18" Reinforced Concrete Pipe	179.61	1.00%
ST-E3 TO ST-E4	18" Reinforced Concrete Pipe	181.15	1.80%
ST-E4 TO ST-E5	18" Reinforced Concrete Pipe	126.31	2.15%
ST-E5 TO ST-E6	18" Reinforced Concrete Pipe	163.21	2.39%
ST-E6 TO ST-E7	24" Reinforced Concrete Pipe	110.78	1.00%
ST-E9A TO ST-E9	18" Reinforced Concrete Pipe	24.19	1.97%
ST-E7 TO ST-E13	24" Reinforced Concrete Pipe	40.91	1.00%
ST-E7A TO ST-E9	18" Reinforced Concrete Pipe	41.13	0.63%
ST-E8 TO ST-E9	18" Reinforced Concrete Pipe	86.10	6.30%
ST-E9 TO ST-E10	18" Reinforced Concrete Pipe	111.17	1.79%
ST-E10 TO ST-E10A	18" Reinforced Concrete Pipe	24.19	1.00%
ST-E10A TO ST-E11A	18" Reinforced Concrete Pipe	59.83	9.72%
ST-E11 TO ST-E12	18" Reinforced Concrete Pipe	114.18	7.12%
ST-E11A TO ST-E11	18" Reinforced Concrete Pipe	24.17	1.00%
ST-E12 TO HW-E1	24" Reinforced Concrete Pipe	157.82	1.00%

PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-E12A TO ST-E12	18" Reinforced Concrete Pipe	24.49	1.98%
ST-E13 TO ST-E13A	30" Reinforced Concrete Pipe	24.17	1.00%
ST-E14 TO ST-E25	18" Reinforced Concrete Pipe	163.61	1.00%
ST-E14 TO ST-E15	18" Reinforced Concrete Pipe	48.58	1.00%
ST-E15 TO ST-E16	18" Reinforced Concrete Pipe	133.32	6.99%
ST-E15A TO ST-E15	18" Reinforced Concrete Pipe	24.16	1.00%
ST-E16 TO ST-E17	18" Reinforced Concrete Pipe	108.78	1.73%
ST-E17 TO ST-E18	18" Reinforced Concrete Pipe	96.96	1.00%
ST-E17A TO ST-E17	18" Reinforced Concrete Pipe	24.19	1.00%
ST-E18 TO ST-E18A	18" Reinforced Concrete Pipe	24.72	0.99%
ST-E18A TO HW-E2	18" Reinforced Concrete Pipe	146.74	1.00%
ST-E18B TO ST-E18	18" Reinforced Concrete Pipe	95.06	1.25%
ST-E19 TO ST-E21	18" Reinforced Concrete Pipe	98.81	2.79%
ST-E20 TO ST-E21	18" Reinforced Concrete Pipe	41.92	1.89%
ST-E20A TO ST-E20	18" Reinforced Concrete Pipe	33.50	1.00%
ST-E20B TO ST-E20A	18" Reinforced Concrete Pipe	138.09	1.07%
ST-E21 TO ST-E21A	18" Reinforced Concrete Pipe	24.21	1.00%
ST-E21A TO ST-E22	18" Reinforced Concrete Pipe	52.36	3.59%
ST-E22 TO HW-E3	18" Reinforced Concrete Pipe	30.13	1.00%
ST-E22A TO ST-E22	18" Reinforced Concrete Pipe	24.17	1.00%

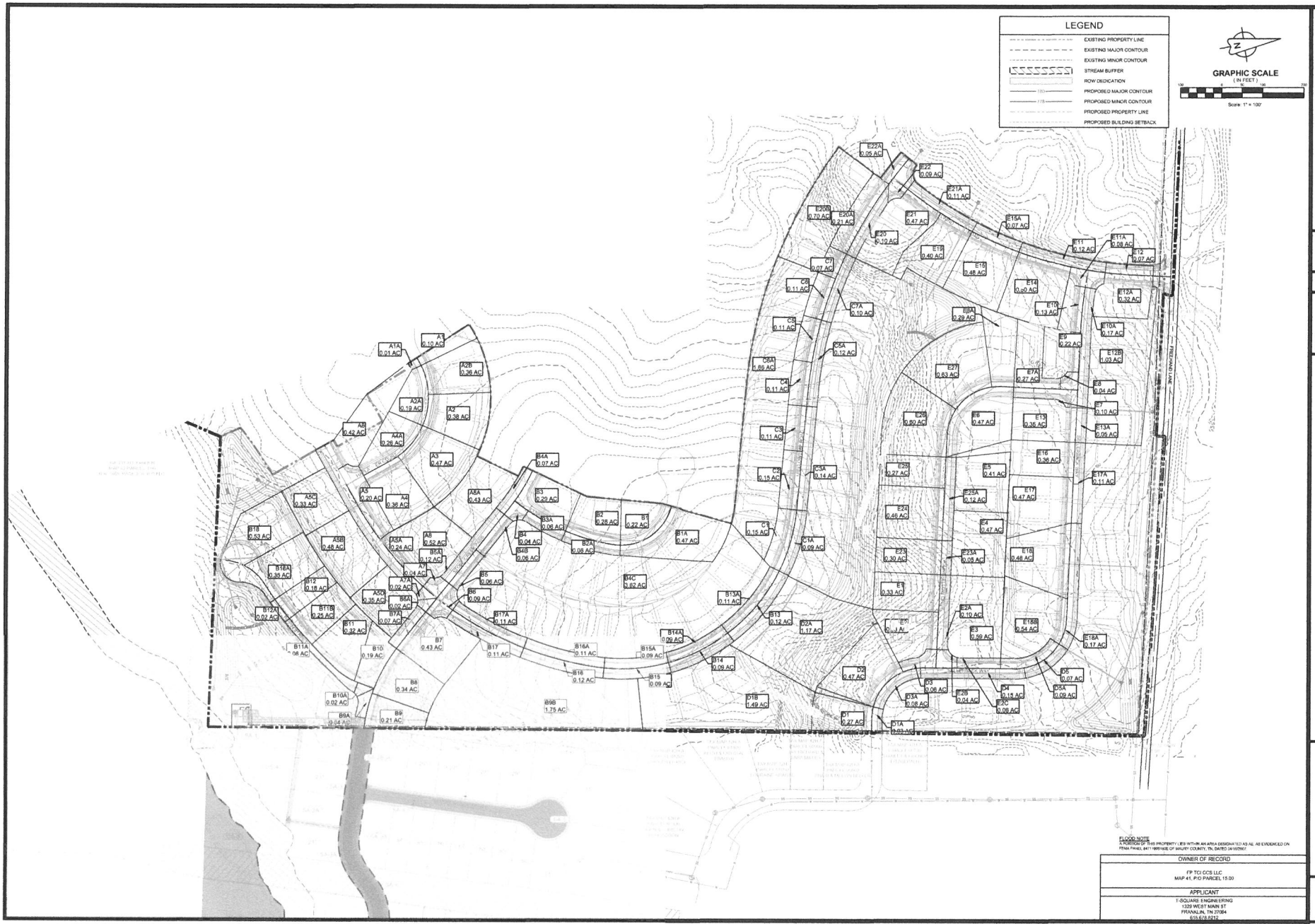
PIPE TABLE			
NAME	SIZE	LENGTH	SLOPE
ST-E23 TO ST-E24	18" Reinforced Concrete Pipe	123.84	3.85%
ST-E23A TO ST-E23	18" Reinforced Concrete Pipe	24.17	1.00%
ST-E24 TO ST-E25	18" Reinforced Concrete Pipe	74.86	3.99%
ST-E25 TO ST-E26	18" Reinforced Concrete Pipe	129.69	2.94%
ST-E25A TO ST-E25	18" Reinforced Concrete Pipe	24.18	1.00%
ST-E26 TO ST-E27	18" Reinforced Concrete Pipe	109.66	2.76%
ST-E27 TO ST-E6A	18" Reinforced Concrete Pipe	93.69	1.37%

FLOOD NOTE
A PORTION OF THIS PROPERTY LIES WITHIN AN AREA DESIGNATED AS AE, AS EVIDENCED ON FEMA PANEL #47119C0180E OF MAURY COUNTY, TN, DATED 04/20/2007.

OWNER OF RECORD
FP TCI CCS LLC
MAP 41, P/O PARCEL 15.00

APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

NO.	DATE	REVISIONS
1	03/02/23	SANITARY SEWER MAIN REVISION
2	03/16/23	REVISIONS PER TDEC COMMENTS
3	04/14/23	REVISIONS PER CITY COMMENTS
4	05/04/23	REVISIONS PER TDEC CO



NO.	DATE	REVISIONS
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3	04/14/23	REVISIONS PER CITY COMMENTS
4	05/02/23	REVISIONS PER TDEC COMMENTS
5	05/08/23	REVISIONS PER TDEC COMMENTS
6	11/15/22	REVISIONS TO MAIL DELIVERY
7	05/04/23	REVISIONS TO SANITARY PER CONTRACTOR

DATE: 10/13/21
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

SUMMIT AT CARTER'S STATION

INLET AREA PLAN

MAP 41, P/O PARCEL 15.00
COLUMBIA, TENNESSEE 37174

TIMOTHY E. TURNER
REGISTERED ENGINEER
10743
STATE OF TENNESSEE
5/4/2023

PROJECT
21-0515

SHEET
C-5.3

T-SQUARE ENGINEERING

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

Tamarack Land, 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,

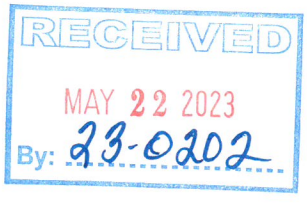
WHEREAS, the DEVELOPER desires to develop and improve said PROJECT; and,

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.

Summit at Carter's Station - Phase 2
PROJECT

Completed by the Developer	*Completed by the City*
Tamarack Land - Carter's Station, LLC DEVELOPER NAME	
Jeff Loore AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
5/10/23 DATE	DATE
512 Vista Blvd STREET	
Waconia, MN 55387 CITY, STATE, ZIP	
201-463-7866 PHONE	
Jeff@TamarackLand.com EMAIL	
Attest	*Attest*
Brayden Hosford ATTEST NAME	ATTEST NAME
Brayden Hosford ATTEST SIGNATURE	ATTEST SIGNATURE
05/10/23 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 on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	Wellwind Road, Columbia, TN		
	TAX MAP: 42	GROUP:	PARCEL: 35.00
SUMMARY OF NATURE OF REQUEST AND WORK	This application is to approve the final plat for the second phase of Summit at Carter's Station.		

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) Summit at Carter's Station ☒ Total Number of Lots 32 ☒ Total acreage 6.77

RECEIVED
MAY 22 2023
By: 23-0202

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	T-Square Engineering	PHONE	615.678.8212
ADDRESS	1329 West Main St., Franklin, TN 37064	EMAIL	Allison.Corolla@T2-Eng.com

PROPERTY OWNER NAME	Tamarack Land - Carters Station, LLC	PHONE	201.463.7866
ADDRESS	712 Vista Blvd. #303 Waconia, MN 55387	EMAIL	Jeff@TamarackLand.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.

Allison Corolla	Allison Corolla	5/8/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
Jeff Leone		5/10/23
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

DOCKET NO.	23-0202	FEE PAID	1,300.00
RECEIPT NO.		REQUESTED AGENDA	

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

BOARD ACTION	


Neapolitan Way
Nashville Pike
Cypress Creek
Cypress Creek Marina Rd
Cypress Creek Rd
Cypress Bend
Andrew Williams Rd
Cypress Creek Dr
Nashville Pike
Cypress Creek Rd
Cypress Creek Dr
Cypress Creek Rd
Cypress Creek Dr
Cypress Creek Rd
Cypress Creek Dr

DOCUMENT PREPARED BY:
Name: Breanna Smith
Company T-Square Engineering

Address: 1329 West Main Street
Franklin, TN

After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 41, Parcel 15.00
Project Name: Independence at Carter's Station, Section 6.4

Recorded by deed in the Register of Deeds Office of Maury County in Deed Book R2403, Page(s) 319.

THIS AGREEMENT, made this _____ day of _____, 20____, by and between Pulte Homes 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,

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By: 23-0203

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: Jeremy Brooks

Title: Director of Land

Signature: _____

Owner: Pulte Homes Tennessee Limited Partnership

Address: 100 Westwood Place

Suite 100

City, State ZIP: Brentwood, TN 37027

STATE OF Tennessee
COUNTY OF Williamson

Before me, Kimberly Maynard of the state and county mentioned, personally appeared Jeremy Brooks, with whom I am personally acquainted and who acknowledged that he/she executed the foregoing instrument of the purposes therein contained.

KIMBERLY MAYNARD
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY
MY COMMISSION EXPIRES 9-8-2025

Witness my hand this the 11th day of May, 2023.

Kimberly Maynard
Notary Public

My Commission Expires: 9-8-2025

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:_____

T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-eng.com

5/08/2023

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

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: INDEPENDENCE AT CARTER'S STATION, SECTION 6, PHASE 4

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- There is one (1) pond in Phase 4, section 6 that is sized to detain the 100-year peak event.
- 1,525 LF of round concrete pipe and 19 storms 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 structure 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 basin 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 mosquitoes.

    d. This maintenance typically includes sediment, floatable, and debris removal from inlets, outlets and skimmers.

e. Pond vegetation needs to be trimmed or harvested as appropriate, grassy areas frequently mowed. Grass should be mowed so that it does not get over 12 inches.

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. 1,525 LF OF RCP AND 19 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

CONSTRUCTION DRAWINGS
FOR
SECTION 6, PHASE 4
INDEPENDENCE AT CARTER'S STATION
3040 CLEBURNE ROAD
COLUMBIA, TN 37174
CITY OF COLUMBIA, WARD #5

DEVELOPER: PULTE GROUP
370 MALLORY STATION ROAD, STE 500
FRANKLIN, TN 37067

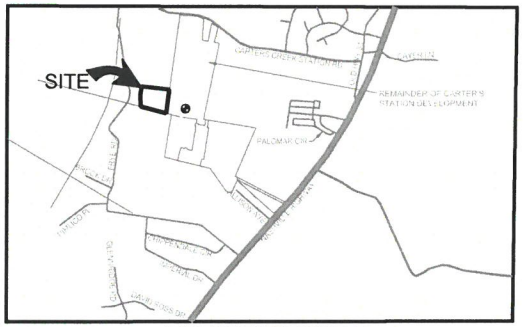
ENGINEER: T-SQUARE ENGINEERING
1329 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: H&H LAND SURVEYING
612A FITZHUGH BLVD
SMYRNA, TN 37167
615-831-0756

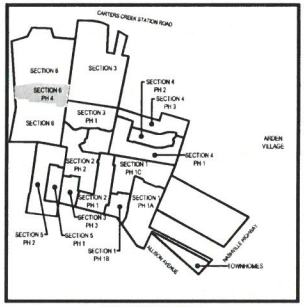
T-SQUARE ENGINEERING AND ITS ASSOCIATES WILL NOT BE HELD RESPONSIBLE FOR ITS ACCURACY OR FOR DESIGN ERRORS OR EMISSIONS RESULTING FROM POTENTIAL SURVEY INACCURACIES.

WATER UTILITY: CPWS
Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS
Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP



KEY MAP

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Existing Conditions
C-2.0	Overall Site Plan
C-2.1	Site Plan
C-3.0	Initial Erosion Control Plan
C-3.1	Temporary Erosion Control Plan
C-3.2	Permanent Erosion Control Plan
C-4.0	Pre Development Plan
C-4.1	Post Development Plan
C-5.0	Grading Plan
C-5.1	Drainage Plan
C-5.2	Inlet Areas
C-6.0	Tucker Trace Plan and Profile
C-6.1	Banner Road Plan and Profile
C-7.0	Utility Plan
C-7.1	Utility Plan Overview
C-8.0	Detail Sheet
C-8.1	Detail Sheet
C-8.2	Detail Sheet
C-8.3	Detail Sheet
C-8.4	Detail Sheet
C-8.5	Detail Sheet

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCS, LLC
DEED BK. H2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

REVISIONS

NO.	DATE	
1	5/17/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	10/31/22	CHANGES PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: TSQUARE
REVIEWER: TET

COVER SHEET
CARTER'S STATION
SECTION 6, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER — REGISTERED ENGINEER — STATE OF TENNESSEE

2/2/23

PROJECT
18-0530

SHEET
C-0.0

INDEPENDENCE AT CARTER'S STATION



N

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

KEY MAP
NTS

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 500 PROPOSED MAJOR CONTOURS
- 496 PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- PROPOSED SPOT ELEVATION
- PROPOSED SLOPE GRADE

8' (TYP.)
2' (TYP.)
1' (TYP.)
TYPICAL SWALE SECTION
N.T.S.

NOTE:
1. BUILDERS SWALES TO BE INSTALLED BETWEEN LOTS.
2. FFE DENOTES THE ELEVATION OF THE HIGH SIDE OF THE DIRT PAD ON EACH LOT.
3. GFE NOTES THE DIRT PAD ELEVATION FOR THE CURB SIDE OF THE LOT.

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA); COMMUNITY PANEL NUMBER 47119C0118GE. REVISED 16 APRIL 2017.

OWNER OF RECORD
PP TCI CCB, LLC DEED BK. R2403 PG. 219, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	10.31.22	CHANGES PER CDHS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

GRADING PLAN

CARTER'S STATION
SECTION 6, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE
2/2/23

PROJECT
18-0530

SHEET
C-5.0

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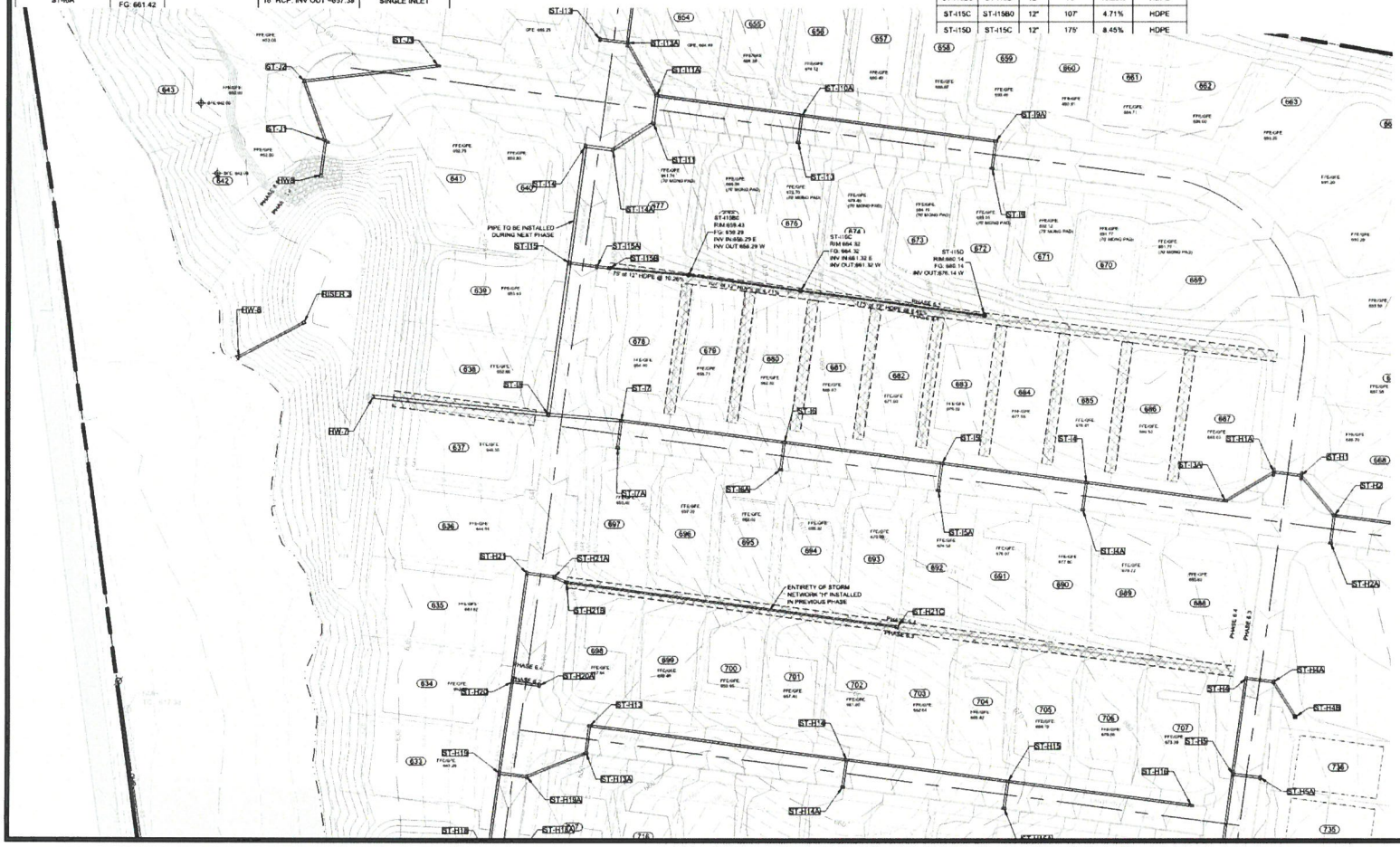
STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
HW-7	RIM = 640.29 FG: 636.00	30" RCP; INV IN =636.00		HEADWALL
HW-8	RIM = 626.65 FG: 626.65	18" RCP; INV IN =624.30		HEADWALL
RISER 3	RIM = 634.00 FG: 628.00		18" RCP; INV OUT =625.00	RISER
ST-I3A	RIM = 680.65 FG: 680.65	18" RCP; INV IN =676.22	18" RCP; INV OUT =678.22	SINGLE INLET
ST-I4	RIM = 676.88 FG: 676.88	18" RCP; INV IN =672.64 18" RCP; INV IN =672.64	18" RCP; INV OUT =672.64	SINGLE INLET
ST-I4A	RIM = 676.88 FG: 676.88		18" RCP; INV OUT =672.90	SINGLE INLET
ST-I5	RIM = 672.21 FG: 672.21	18" RCP; INV IN =668.03 18" RCP; INV IN =668.03	18" RCP; INV OUT =668.03	SINGLE INLET
ST-I5A	RIM = 672.21 FG: 672.21		18" RCP; INV OUT =668.29	SINGLE INLET
ST-I6	RIM = 661.42 FG: 661.42	18" RCP; INV IN =657.13 18" RCP; INV IN =657.13	18" RCP; INV OUT =657.13	SINGLE INLET
ST-I6A	RIM = 661.42 FG: 661.42		18" RCP; INV OUT =657.39	SINGLE INLET

STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
ST-I7	RIM = 650.26 FG: 650.26	18" RCP; INV IN =645.05 18" RCP; INV IN =645.05	24" RCP; INV OUT =645.05	SINGLE INLET
ST-I7A	RIM = 650.26 FG: 650.26		18" RCP; INV OUT =645.50	SINGLE INLET
ST-I8	RIM = 647.91 FG: 647.91	24" RCP; INV IN =642.72 30" RCP; INV IN =642.72	30" RCP; INV OUT =642.72	SINGLE INLET
ST-I15	RIM = 652.08 FG: 652.08	24" RCP; INV IN =647.82 18" RCP; INV IN =647.08	30" RCP; INV OUT =647.08	SINGLE INLET
ST-I15A	RIM = 652.08 FG: 652.08	18" RCP; INV IN =648.08	18" RCP; INV OUT =648.08	SINGLE INLET
ST-I15B	RIM = 652.57 FG: 652.57	12" HDPE; INV IN =648.57	18" RCP; INV OUT =648.57	AREA DRAIN
ST-I15B0	RIM = 659.43 FG: 659.29	12" HDPE; INV IN =656.29	12" HDPE; INV OUT =656.29	10" HPDE AREA DRAIN
ST-I15C	RIM = 664.32 FG: 664.32	12" HDPE; INV IN =661.32	12" HDPE; INV OUT =661.32	10" HDPE AREA DRAIN
ST-I15D	RIM = 680.14 FG: 680.14		12" HDPE; INV OUT =676.14	10" HDPE AREA DRAIN

Pipe Table					
FROM	TO	SIZE	LENGTH	SLOPE	MATERIAL
RISER 3	HW-8	18"	70'	1.00%	RCP
ST-I3A	ST-I4	18"	133'	2.70%	RCP
ST-I4	ST-I5	18"	138'	3.35%	RCP
ST-I4A	ST-I4	18"	26'	1.00%	RCP
ST-I5	ST-I6	18"	150'	7.25%	RCP
ST-I5A	ST-I5	18"	26'	1.00%	RCP
ST-I6	ST-I7	18"	156'	7.78%	RCP
ST-I6A	ST-I6	18"	26'	1.00%	RCP
ST-I7	ST-I8	24"	88'	3.37%	RCP
ST-I7A	ST-I7	18"	26'	1.72%	RCP
ST-I8	HW-7	30"	168'	4.05%	RCP
ST-I15	ST-I8	30"	145'	3.00%	RCP
ST-I15A	ST-I15	18"	26'	3.85%	RCP
ST-I15B	ST-I15A	18"	12'	4.08%	RCP
ST-I15B0	ST-I15B	12"	75'	10.26%	HDPE
ST-I15C	ST-I15B0	12"	107'	4.71%	HDPE
ST-I15D	ST-I15C	12"	175'	8.45%	HDPE



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

KEY MAP
NTS

LEGEND
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED AREA DRAIN
- PROPOSED STORM HEADWALL
- PROPOSED STORM PIPE

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118OE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. R2483 PG. 219, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

REVISIONS		
NO.	DATE	
1	9.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	10.31.22	CHANGES PER CCHS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

DRAINAGE PLAN

CARTER'S STATION
SECTION 6, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE
2/2/23

PROJECT
18-0530

SHEET
C-5.1

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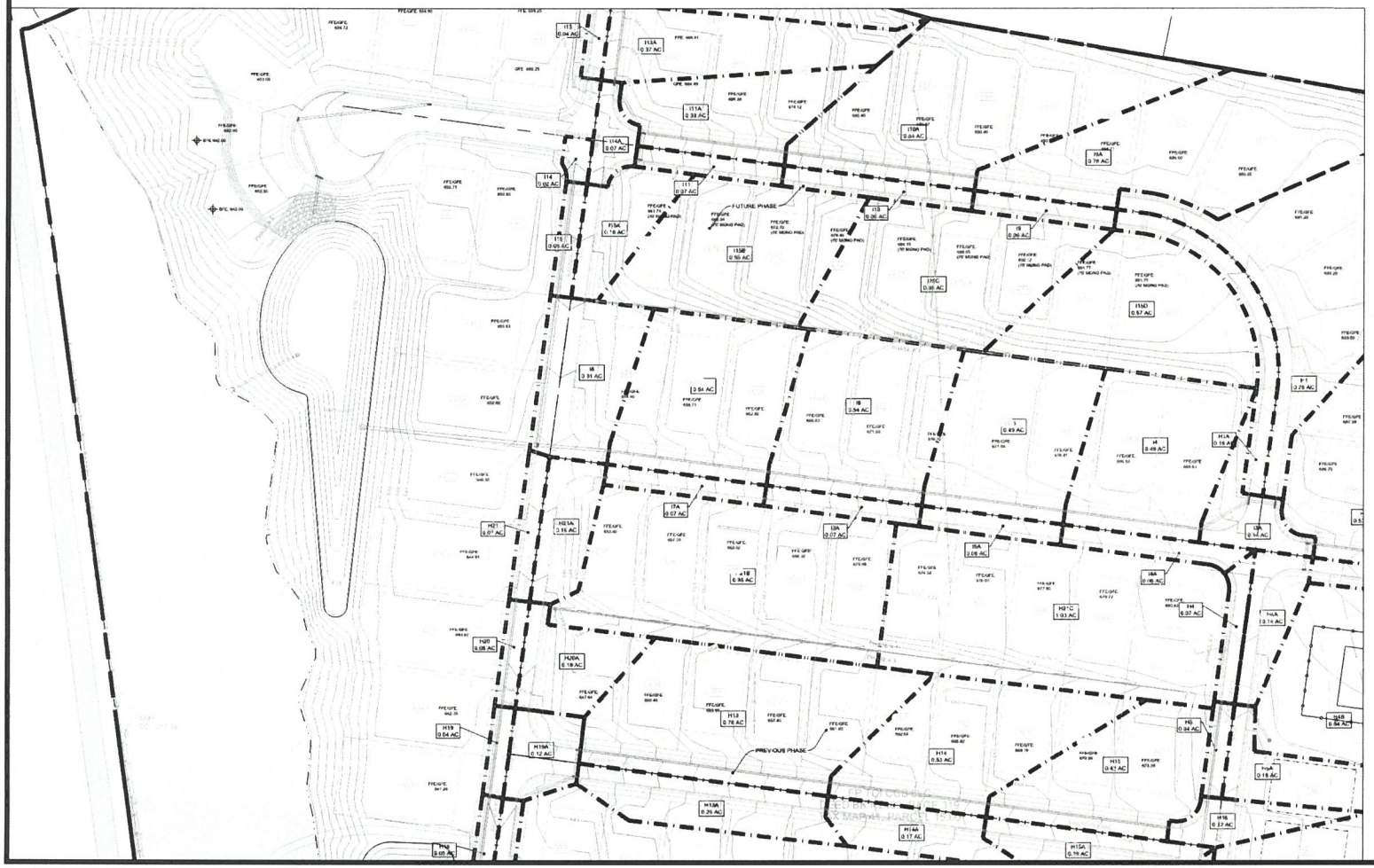

GRAPHIC SCALE
(IN FEET)
Scale: 1" = 50'

KEY MAP
NTS

LEGEND
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- AREA NAME AND ACREAGE
- AREA BOUNDARY

NOTES:
1) ALL ROAD CROWNS TO BE 2%

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5/12/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	10/31/22	CHANGES PER CPNS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

INLET AREAS

CARTER'S STATION
SECTION 6, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

2/2/23

PROJECT
18-0530

SHEET
C-5.2

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Surety Calculation Input

Version 2 Rev. 7/20/2022

Carters Station (Phase 6.4)

Roadway Items

Total Roadway Length	1022	ft.
Total Pavement Area	26617	S.F.
Sidewalk Width	4	ft.
Total Shared Use Path Length	0	ft.

Site and Grading Items

Number of Lots	25	#
Total Area	9.9	ac.
Total Disturbed Area	7.48	ac.
Storm Pond Area	0.59	ac.

Storm Infrastructure

Total Number of Storm Structures	19	#
Storm Pipe Under 24"	1214	ft.
Storm Pipe 30" and 36"	311	ft.
Storm Pipe 42" and above	0	ft.

Traffic Signal

Estimated Total Installation Cost	0	$
Installed?	n	Y/N

Bridges and Culverts

Estimated Total Installation Cost	0	$

Landscaping

Estimated Total Landscaping Buffer Cost	0	$
Number of Street Trees	0	#

Street Lights

Installed?	N	Y/N

Fill in all applicable fields highlighted in gold.
Save spreadsheet as SuretyCalc_SubdivisionName
Email completed spreadsheet to Glenn Harper, gharper@columbiatn.com
Calculated amounts are located on the output sheet.

This completed form shall be emailed to the City Engineer for verification and approval prior to the acceptance of any surety in the above posted amount.

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MAY 22 2023
By: .....

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: [SEE MAP] Banner Road

DATE: 7/12/2022

MODEL BY: Inflo Design Group, LLC

SYS. DEMAND Max Day

DURATION: 1 hrs.

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Independence Section 6.3

MODEL DATA

FLOW HYDRANT(S)	[SEE MAP]	[P-0164]	n/a
GPM:	854	0	0

TOTAL FLOW DURING SIMULATION: 854 GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: [SEE MAP] Tucker Trace

CONDITION 1

STATIC 81 PSI RESIDUAL: 47 PSI

CONDITION 2

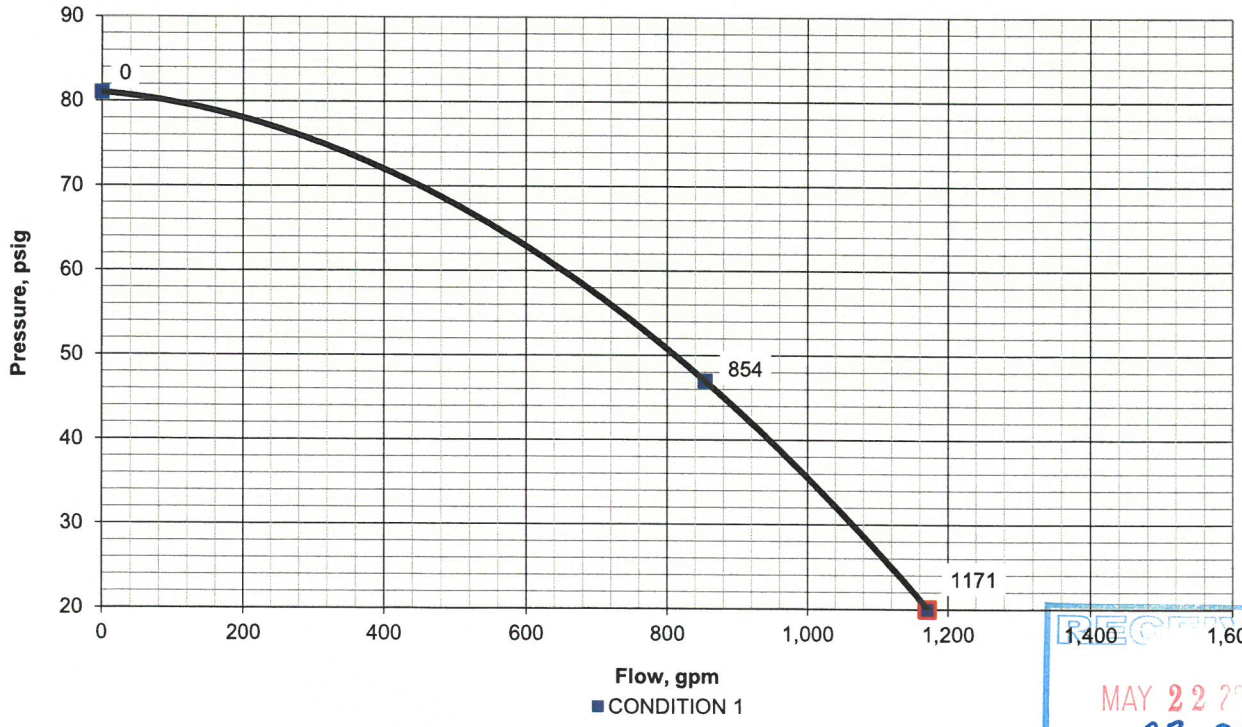
STATIC _____ PSI RESIDUAL: _____ PSI

RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 1171 GPM

CONDITION 2 --- GPM

REMARKS: Performance based on service elevation of 683' and current CPWS water infrastructure.



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Hydrant Analysis Location Map

Independence at Carters Station - Section 6.3

Tax Map 41, Parcel 15.00

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2022

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 0.02 0.04 Mi

0 0.04 0.07 Km

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

Pulte Homes Tennessee Limited Partnership, 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:

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MAY 22 2023
By: 23-0203

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.

Independence at Carter's Station Section 6.4

PROJECT

Completed by the Developer	*Completed by the City*
Pulte Homes Tennessee Limited Partnership	
DEVELOPER NAME	
JEREMY BROOKS	
AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
5/11/2023	
DATE	DATE
100 Westwood Place, Suite 100	
STREET	
Brentwood,TN,37027	
CITY, STATE, ZIP	
615.992.9508	
PHONE	
Jeremy.brooks@pultegroup.com	
EMAIL	
Attest	*Attest*
KEVIN R. CHAPMAN	
ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
5/11/2023	
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 on a USB thumb drive or CD (no multiple applications on one storage device)*
Fold hard copy submittals larger than 8½"x11"

ADDRESS/LOCATION	Independence at Carter's Station, Columbia, TN		
	TAX MAP: 41	GROUP:	PARCEL: 15.00
SUMMARY OF NATURE OF REQUEST AND WORK	This application is to approve the final plat for section 6.4 Independence at Carter's Station.		

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) Independence at Carter's Station Sec 6.4 ☒ Total Number of Lots 25 ☒ Total acreage 9.9

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MAY 22 2023
By: 23-0203

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	T-Square Engineering	PHONE	615.678.8212
ADDRESS	1329 West Main St., Franklin, TN 37064	EMAIL	Breanna.Smith@T2-Eng.com

PROPERTY OWNER NAME	Pulte Homes Tennessee Limited Partnership	PHONE	615.992.9508
ADDRESS	100 Westwood Place, Suite #100 Brentwood, TN 37027	EMAIL	Jeremy.Brooks@PulteGroup.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.

Breanna Smith	Breanna Smith	5/8/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
JEREMY BROOKS		5/11/2023
PROPERTY OWNER NAME	PROPERTY OWNER SIGNATURE	DATE

STAFF USE ONLY

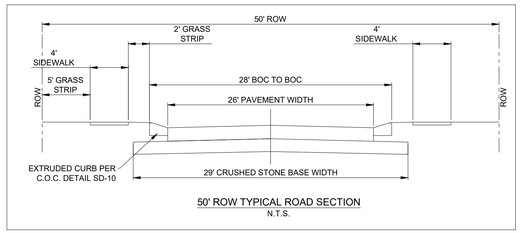
DOCKET NO.	23-0203	FEE PAID	1,125.00
RECEIPT NO.		REQUESTED AGENDA	

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

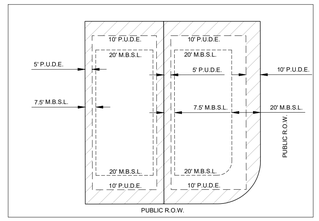
BOARD ACTION	



VICINITY MAP - NOT TO SCALE



50' ROW TYPICAL ROAD SECTION
N.T.S.



TYPICAL LOT (NOT TO SCALE)

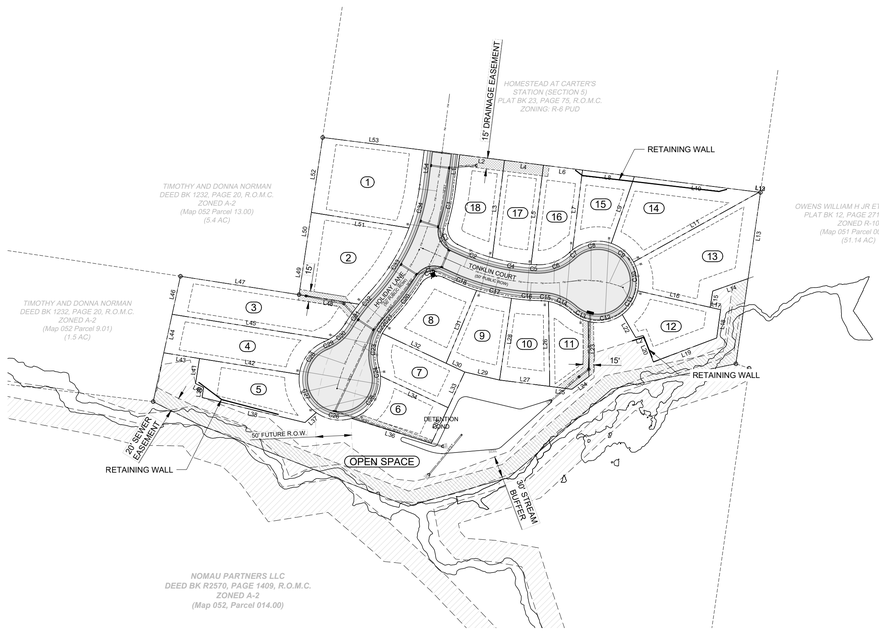
- FIRE HYDRANT
- CATCH BASIN
- HEADWALL
- AREA DRAIN
- STORMWATER MANHOLE
- 8"W — WATER LINE (TYP.)
- 8"SM — SEWER FORCE MAIN (TYP.)
- 18"ST — STORMWATER LINE (TYP.)
- UTILITY EASEMENT
- DRAINAGE EASEMENT

Parcel Area Table	
PARCEL	SQ. FT.
OPEN SPACE	66469.95
1	15475.45
2	13511.00
3	13118.81
4	10980.66
5	8857.02
6	6252.10
7	6599.15
8	8937.78
9	7298.74
10	7134.38
11	5745.30
12	8318.75
13	15119.56
14	12209.82
15	6215.58
16	7244.81
17	7672.68
18	8297.60

Parcel Line Table		
Line #	Length	Direction
L1	48.90	S7° 08' 48.57"W
L2	63.00	N82° 51' 11.43"W
L3	137.28	N7° 08' 48.57"E
L4	55.00	N82° 51' 11.43"W
L5	139.88	N7° 08' 48.57"E
L6	55.00	S82° 51' 11.43"E
L7	112.48	N7° 08' 48.57"E
L8	72.94	S82° 51' 11.43"E
L9	98.73	S19° 05' 13.36"W
L10	175.85	N82° 50' 49.27"W
L11	200.88	N60° 56' 12.16"E
L13	1.80	S83° 27' 17.70"E
L13	121.70	S8° 09' 11.70"W
L14	26.99	S70° 34' 45.20"W
L15	23.05	S9° 10' 03.83"W
L16	103.81	S77° 12' 49.05"E
L17	15.08	S77° 12' 49.05"E
L18	39.88	S7° 54' 27.24"W
L19	94.60	S69° 22' 18.61"W
L20	39.39	N21° 15' 12.49"W
L21	10.64	S74° 34' 06.05"W
L22	37.31	N30° 30' 14.57"W
L23	76.95	S0° 49' 41.81"E
L24	29.87	S53° 17' 37.17"W
L25	31.12	N82° 30' 01.78"W
L26	118.76	N0° 49' 41.81"W
L27	70.69	S82° 51' 28.04"E
L28	115.52	S8° 18' 55.91"W

Parcel Line Table		
Line #	Length	Direction
L29	49.87	N76° 56' 55.02"W
L30	28.82	N64° 54' 20.64"W
L31	110.39	N22° 43' 27.02"E
L32	98.35	S64° 54' 20.64"E
L33	55.00	S25° 05' 39.36"W
L34	104.34	N64° 54' 20.64"W
L35	55.00	S25° 05' 39.36"W
L36	116.75	N72° 39' 31.99"W
L37	21.03	S48° 21' 15.14"W
L38	147.99	N76° 16' 37.46"W
L39	14.17	N8° 37' 06.90"E
L40	12.54	N63° 51' 36.18"W
L41	35.36	N9° 03' 04.28"E
L42	141.27	S80° 56' 55.72"E
L43	50.51	N80° 56' 55.72"W
L44	55.09	N12° 15' 18.40"E
L45	221.99	N80° 56' 55.72"W
L46	54.42	N12° 15' 18.40"E
L47	167.70	S81° 10' 33.31"E
L48	84.81	N80° 56' 55.72"W
L49	61.27	N8° 32' 20.76"E
L50	55.00	N8° 32' 20.73"E
L51	138.17	N80° 56' 55.72"W
L52	105.92	N8° 32' 20.77"E
L53	143.05	S82° 51' 11.43"E
L54	48.71	S7° 08' 48.57"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	48.60	325.00	8.57	S11° 50' 38"W	48.55
C2	52.15	275.00	10.87	S68° 57' 58"E	52.08
C3	34.76	25.00	79.66	S23° 42' 10"E	32.03
C4	55.15	275.14	11.49	S80° 08' 46"E	55.06
C5	7.84	275.03	1.63	N86° 42' 22"W	7.84
C6	50.76	63.00	46.16	S69° 23' 49"W	49.40
C7	5.20	57.00	5.23	S48° 55' 56"W	5.20
C8	57.24	57.00	57.54	S80° 19' 03"W	54.87
C9	41.63	57.00	41.85	S49° 59' 17"E	40.71
C10	41.63	57.00	41.85	N8° 08' 18"W	40.71
C11	40.35	57.00	40.56	N33° 03' 51"E	39.51
C12	50.20	57.00	50.46	S78° 34' 18"W	48.59
C13	27.92	57.00	28.06	S62° 10' 02"E	27.64
C14	34.90	63.00	31.74	S64° 00' 21"E	34.45
C15	10.10	63.00	9.19	N84° 28' 06"W	10.09
C16	41.84	324.65	7.38	N85° 22' 16"W	41.81
C17	50.02	325.00	8.82	S77° 16' 30"E	49.97
C18	49.50	325.00	8.73	N68° 30' 09"W	49.45
C19	36.35	25.00	83.30	S74° 12' 41"W	33.23
C20	59.50	325.00	10.49	S37° 48' 23"W	59.41
C21	16.61	225.00	4.23	S40° 56' 08"W	16.61
C22	11.65	63.00	10.60	S33° 31' 14"W	11.64
C23	49.36	63.00	44.89	N5° 46' 40"E	48.10
C24	11.86	57.00	11.93	N10° 42' 11"W	11.84
C25	77.48	57.00	77.88	N34° 12' 06"E	71.65
C26	52.02	57.00	52.29	N80° 42' 46"W	50.23
C27	61.22	57.00	61.53	S23° 48' 09"E	58.32
C28	60.06	57.00	60.38	S37° 09' 06"W	57.32
C29	7.69	63.00	7.00	S63° 50' 24"W	7.69
C30	31.43	63.00	28.59	S46° 02' 50"W	31.11
C31	33.63	275.00	7.01	S35° 15' 24"W	33.61
C32	20.60	275.00	4.29	S40° 54' 19"W	20.59
C33	107.81	275.00	22.46	S31° 49' 10"W	107.12
C34	62.36	275.00	12.99	S14° 05' 32"W	62.22



SITE DATA	
CURRENT ZONING:	R6
MINIMUM BUILDING SETBACKS:	
FRONT:	20'
REAR:	20'
SIDE:	7.5'
TOTAL PHASE AREA:	6.44 ACRES
NEW ROW:	1.03 ACRES
OPEN SPACE:	1.53 ACRES

GENERAL NOTES

1. THE PURPOSE OF THIS PLAT IS TO SUBDIVIDE THIS PROPERTY INTO 18 LOTS AND 1 OPEN SPACE AND DEDICATE RIGHT-OF-WAY AND EASEMENTS.
2. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
3. SUBJECT PROPERTY IS PARCEL 014.06 AS SHOWN ON MAURY COUNTY TAX MAP 052.
4. DEED REFERENCE: RECORD BOOK R2863, PAGE 364, REGISTER'S OFFICE OF MAURY COUNTY, TN.
5. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS) USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM ZONE 4100, NAD83. DRONE AERIAL PHOTOMETRY WAS ALSO USED TO SURVEY SOME ELEMENTS.
6. NO TITLE REPORT HAS BEEN FURNISHED, THEREFORE THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. THE TOTAL AREA OF THE PHASE SURVEYED IS 6.44 +/- ACRES.
8. THE NEW RIGHT-OF-WAY DEDICATION AREA IS 1.03 +/- ACRES.
9. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN FLOOD ZONE "X", AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0180E WITH AN EFFECTIVE DATE OF 4/16/2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 119C, PANEL NO. 0180 SUFFIX E, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED. SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
10. THIS PROPERTY IS CURRENTLY ZONED CD-3. THE PRELIMINARY PLAT WAS APPROVED UNDER THE PREVIOUS ZONING OF RS-6.
11. THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF A GENERAL PROPERTY SURVEY AND CONFORMS TO THE ACCURACY OF A CATEGORY 1 SURVEY AS CURRENTLY DEFINED AND ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THE RATIO OF PRECISION IS AT LEAST 1:10,000.
12. ALL PLOT AND DEED RECORDATION REFERENCES SHOWN HEREON ARE AS RECORDED IN THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
13. THIS SURVEY HAS BEEN SIGNED AND SEALED DIGITALLY.
14. COLUMBIA POWER AND WATER SYSTEMS IS THE POWER PROVIDER.
15. STORM PIPES TO BE 18" RCP, UNLESS OTHERWISE NOTED.
16. STORM WATER MANAGEMENT OPERATION AND MAINTENANCE WILL BE GOVERNED BY THE INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORM WATER MANAGEMENT FACILITIES, DATED _____, RECORDED IN RECORD BOOK _____, PAGE _____, REGISTER'S OFFICE OF MAURY COUNTY, TN.
17. LOTS 1-18 ARE TO BE ON SANITARY GRINDER PUMPS. EACH HOMEOWNER IS REQUIRED TO OWN AND MAINTAIN THE GRINDER PUMPS IN ACCORDANCE WITH CITY OF COLUMBIA CODES AND COLUMBIA WASTEWATER SPECIFICATIONS AND REGULATIONS.

CERTIFICATE OF COMPLIANCE

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS AND OTHER ADOPTED ORDINANCES AND POLICIES.

_____, 20____ _____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____ _____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT THE WATER SYSTEM OUTLINED OR INDICATED ON THE FINAL SUBDIVISION PLAT ENTITLED "HOMESTEAD SOUTH SUBDIVISION" HAS BEEN INSTALLED IN ACCORDANCE WITH CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS, OR A SUFFICIENT BOND OR SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____ _____
DATE SUPERINTENDENT OF COLUMBIA

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE AND UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE AND UTILITIES DESIGNATED IN "HOMESTEAD SOUTH SUBDIVISION" 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 TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

_____, 20____ _____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL OF SUBDIVISION AND STREET NAMES

SUBDIVISION NAME AND STREET NAMES ARE APPROVED BY THE CITY ENGINEERING DEPARTMENT AND MAURY COUNTY E911.

_____, 20____ _____
DATE MAURY E911

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 SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____ _____
DATE DIRECTOR OF COLUMBIA WASTEWATER DEPARTMENT

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 IN BOOK R2863, PAGE 364, MAURY COUNTY REGISTER'S OFFICE, AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINE, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC WAYS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED.

_____, 20____ _____
DATE OWNER

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CATEGORY I LAND SURVEY AS DEFINED IN TITLE 62, CHAPTER 18, TENNESSEE CODE ANNOTATED, AND THAT THE RATIO OF PRECISION IS LESS THAN OR EQUAL TO 1:10,000.

_____, 20____ _____
DATE SURVEYOR

IF YOU DIG TENNESSEE...
CALL US FIRST!
1-800-351-1111
TENNESSEE ONE CALL
IT'S THE LAW

TN SPCS NAD 83

SCALE 1" = 100'

100 0 50 100 200

OWNER OF RECORD
PULTE HOMES OF TENNESSEE LTD PARTNERSHIP
DEED BK. R2863 PG. 364, MAP 052 PARCEL 014.06
APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

J. MARK CANTRELL
XVI
PROFESSIONAL LAND SURVEYOR
AGRICULTURE
COMMERCE
TENNESSEE NO. 1859

PROJECT
18-0720

SHEET
1 OF 1

HOMESTEAD SOUTH SUBDIVISION

FINAL PLAT
3RD CIVIL DISTRICT
MAURY COUNTY, TENNESSEE
MAP 052, PARCEL 014.06

NO.	DATE	REVISIONS

DATE: 5-19-2023
SCALE: 1" = 100'
DRAWN BY: DSW
REVIEWER:

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

DOCUMENT PREPARED BY:
Name: Breanna Smith
Company T-Square Engineering

Address: 1329 West Main Street
Franklin, TN

After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 52, Parcel 14.00
Project Name: Homestead South

Recorded by deed in the Register of Deeds Office of Maury County in Deed Book R2570, Page(s) 1409.

THIS AGREEMENT, made this _____ day of _____, 20____, by and between Pulte Homes 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,

Rev. 1/17/2017

RECEIVED
MAY 2[illegible] 2023
By: 23-0205

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: JEREMY BROOKS

Title: DIRECTOR OF LAND

Signature: _____

Owner: PULTE HOMES TENNESSEE LIMITED PARTNERSHIP

Address: 100 WESTWOOD PLACE SUITE 100

City, State ZIP: BRENTWOOD, TN 37027

STATE OF Tennessee
COUNTY OF Williamson

Before me, Kimberly Maynard of the state and county mentioned, personally appeared Jeremy Brooks, 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 11th day of May, 2023.

Kimberly Maynard
Notary Public

My Commission Expires: 9-8-2025

KIMBERLY MAYNARD
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY
MY COMMISSION EXPIRES 9-8-2025

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:_____

T-SQUAREENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-eng.com

5/08/2023

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

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: HOMESTEAD SOUTH

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- There is one (1) pond that is sized to detain the 100-year peak event.
- 986 LF of round concrete pipe and 21 storms 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 structure 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 basin 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 mosquitoes.

    d. This maintenance typically includes sediment, floatable, and debris removal from inlets, outlets and skimmers.

    e. Pond vegetation needs to be trimmed or harvested as appropriate, grassy areas frequently mowed. Grass should be mowed so that it does not get over 12 inches.

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. 986 LF OF RCP AND 21 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

CONSTRUCTION PLANS

FOR

FRYE ROAD SUBDIVISION

TAX MAP 52, PARCEL 14.00
1470 FRYE ROAD
COLUMBIA, TN 38401

OWNER/DEVELOPER: NOMAU PARTNERS, LLC
NELSON CROWE & TYLER RING
135 HAMPTON PLACE
NASHVILLE, TN 37215

ENGINEER: T-SQUARE ENGINEERING & SURVEYING
1329 WEST MAIN STREET
FRANKLIN, TN 37064
615.678.8212
Nathan.McVey@t2-eng.com

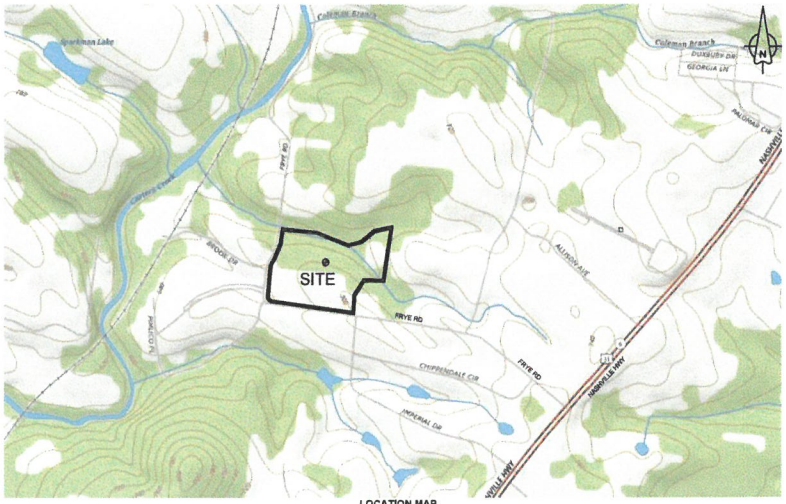
SURVEYORS: H & H LAND SURVEYING, INC.
612A FITZHUGH BLVD
SMYRNA, TN 37167
615.831.0756

JOSEPH HOLLAND, RLS#1645

WATER: COLUMBIA POWER & WATER SYSTEMS (CPWS)
SHANE ANDREWS
201 PICKENS LANE
P.O. BOX 379
COLUMBIA, TN 38402
931.388.4833

POWER: COLUMBIA POWER & WATER SYSTEMS (CPWS)
DOUG BURGESS
201 PICKENS LANE
P.O. BOX 379
COLUMBIA, TN 38402
931.388.4833

SEWER: INDIVIDUAL SEPTIC



LOCATION MAP
N.T.S.

SHEET SCHEDULE

C-0.0 Cover Sheet
C-1.0 Existing Conditions
C-2.0 Site Plan
C-3.0 Initial Erosion Control Plan
C-3.1 Temporary Erosion Control Plan
C-3.2 Permanent Erosion Control Plan
C-4.0 Pre Development Storm Water Plan
C-4.1 Post Development Storm Water Plan
C-5.0 Grading and Drainage Plan
C-6.0 Cross Sections
C-6.1 Cross Sections
C-7.0 Utility Plan
C-8.0 Detail Sheet
C-8.1 Detail Sheet
C-8.2 Detail Sheet

Topographic survey, existing utilities, site topography with spot elevations, outstanding physical features and existing structure locations was provided by the following company:
H & H Land Surveying, Inc.
612A Fitzhugh Blvd
Smyrna, TN 37167
615-831-0756

Boundary survey was provided by the following surveyor:
Joseph Holland, RLS#1645

Tsquare Engineering and its associates will not be held responsible for its accuracy or for design errors or emissions resulting from potential survey inaccuracies.

Maury County Highway Superintendent
Construction Plans Released for Construction
The Developer is responsible for coordinating with and compliance with the requirements of the Maury County Highway Department. The Developer is responsible for the quality of work and performance of the Developer's Contractors and representatives.

Date of Approval & Release for Construction:

_____

By: _____
Van Boshers, Maury County Highway Superintendent
Construction Plans Released for Construction

Construction Plans Released for Construction
The approval review and this Plans Release are for general compliance with the Maury County Subdivision Regulations. This Approval and Release For Construction are also not for reviewing or approving for compliance with Federal, State, Local or Utility Company laws, codes, policies or requirements.
The Developer is responsible for compliance with the Maury County Subdivision Regulations.
The Developer is responsible for the quality of work and performance of the Developer's Contractors and representatives.

_____
Date of Approval & Release For Construction

By: _____
On Behalf of Maury County
Construction Plans Released For Construction

Record Survey Required of Stormwater Pond
"A TN Registered Engineer must certify in writing to the Building and Zoning Office that the detention facilities are constructed in substantial accordance with the design documents. The Certification shall be based upon field-run survey data obtained at the completion of construction. Photographs and a copy of the as-built survey shall be provided with the certification. The field run survey shall be performed by a licensed TN Surveyor. The determination of substantial completion shall be made by the Building and Zoning Office. The developer should anticipate that additional surveying and engineering calculations may be required by the County as part of their determination".

Certificate of Satisfactory Completion
Maury County shall not accept dedication of required public improvements nor shall the Planning Commission release nor reduce a guarantee in lieu of improvements until the appropriate governmental representative submits a written statement stating that all required improvements have been satisfactorily completed, and, until the applicant's engineer or surveyor has recommended to the Planning Commission and the appropriate governmental representative that the public improvements are in substantial accordance with the approved construction plans and any related requirements or conditions for the subdivision. Upon such approval and recommendation, Maury County, thereafter, may accept the dedicated improvements in accordance with the procedures set forth in these Regulations.

Pipe Cover
Per the Subdivision Regulations Appendix "A" 6.3.5 Pipe Cover: All culverts shall have a minimum of 1-ft of cover at subgrade elevation.

APPROVED BY THE MAURY COUNTY REGIONAL PLANNING COMMISSION, WITH EXCEPTIONS OR CONDITIONS AS ARE INDICATED IN THE MINUTES OF THE PLANNING COMMISSION ON 9/26/2022 (DATE).

PRELIMINARY PLAT APPROVAL SHALL NOT CONSTITUTE FINAL APPROVAL FOR RECORDING PURPOSES.

STATE OF TENNESSEE NPDES PERMIT - NOTICE OF COVERAGE
TRACKING NUMBER: _____
DATE _____

FLOOD NOTE
THIS PROPERTY IS LOCATED IN AN AREA DESIGNATED AS "ZONE X" (ARE AS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON FEMA FIRM MAP # 47119C0216E WITH AN EFFECTIVE DATE OF 04/16/2007.

OWNER OF RECORD
NOMAU PARTNERS, LLC (NELSON CROWE, MEMBER & TYLER RING, MEMBER)
135 HAMPTON PLACE
NASHVILLE, TN 37215
DEED BOOK R2673, PAGE 1409

APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

HORIZONTAL DATUM: NAD83
VERTICAL DATUM: NGVD88

T-SQUARE ENGINEERING

NO.	DATE	REVISIONS
1	05/03/2023	REVISED PER COUNTY ENGINEER & MEHD COMMENTS

DATE: 01/04/2023
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

COVER
1470 FRYE ROAD
MAP 52, PARCEL 14.00
MAURY COUNTY, TENNESSEE

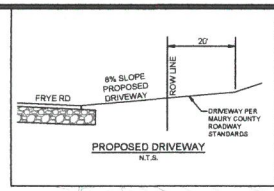
FRYE ROAD SUBDIVISION
CONSTRUCTION PLANS

TIMOTHY E. TURNER
REGISTERED ENGINEER
18175
STATE OF TENNESSEE
5/3/2023

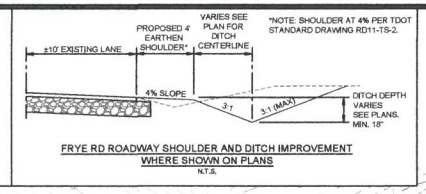
PROJECT
18-0720

SHEET
C-0.0

100-YR FLOOD PLAIN - LOWEST FLOOR ELEVATIONS			
LOT	100-YR WSE FOR LOT	MIN. GROUND ELEV. REQ'D AT LOT (100-YR WSE + 1-FT)	LFE (100-YR WSE + 3-FT)
1	639.1	640.1	642.1
2	642.6	643.6	645.6
11	646.1	647.1	649.1
12	656.0	657.0	659.0



PROPOSED DRIVEWAY
N.T.S.



*NOTE: SHOULDER AT 4% PER TDOT STANDARD DRAWING RD11-TS-2.

FRYE RD ROADWAY SHOULDER AND DITCH IMPROVEMENT WHERE SHOWN ON PLANS
N.T.S.

GRAPHIC SCALE
(IN FEET)
SCALE: 1" = 60'

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED SPOT ELEVATION
- PROPOSED STORM OUTLET STRUCTURE
- PROPOSED STORM HEADWALL
- PROPOSED STORM PIPE

STRUCTURE TABLE DRIVEWAY CULVERTS		
STRUCTURE NAME	DESCRIPTION	PIPE INVERT
HW01A	HEADWALL	INV. = 637.83
HW01B	HEADWALL	INV. = 636.19
HW02A	HEADWALL	INV. = 641.76
HW02B	HEADWALL	INV. = 639.81
HW03A	HEADWALL	INV. = 650.31
HW03B	HEADWALL	INV. = 648.76
HW05A	HEADWALL	INV. = 658.47
HW05B	HEADWALL	INV. = 657.88
HW06A	HEADWALL	INV. = 663.41
HW06B	HEADWALL	INV. = 662.69
HW07A	HEADWALL	INV. = 668.11
HW07B	HEADWALL	INV. = 668.34
HW08/09A	HEADWALL	INV. = 674.35
HW08/09B	HEADWALL	INV. = 673.44
HW10/11A	HEADWALL	INV. = 681.65
HW10/11B	HEADWALL	INV. = 680.57
HW12A	HEADWALL	INV. = 690.86
HW12B	HEADWALL	INV. = 690.10

PIPE TABLE DRIVEWAY CULVERTS			
NAME	SIZE	LENGTH	SLOPE
HW01A TO HW01B	18" RCP	19'	8.8%
HW02A TO HW02B	18" RCP	19'	10.3%
HW03A TO HW03B	18" RCP	18'	8.9%
HW05A TO HW05B	18" RCP	18'	2.7%
HW06A TO HW06B	18" RCP	18'	4.0%
HW07A TO HW07B	18" RCP	18'	4.3%
HW08/09A TO HW08/09B	18" RCP	34'	2.7%
HW10/11A TO HW10/11B	18" RCP	34'	3.2%
HW12A TO HW12B	18" RCP	16'	4.5%

STRUCTURE TABLE DETENTION PONDS				
STRUCTURE NAME	DESCRIPTION	DETAILS	PIPES IN	PIPES OUT
ST-HWP1	HEADWALL		INV. IN = 849.50	
ST-HWP2	HEADWALL		INV. IN = 851.80	
ST-R1	RISER	RIM = 852.50		INV. OUT =850.00
ST-R2	RISER	RIM = 856.50		INV. OUT =853.90

PIPE TABLE DETENTION PONDS			
NAME	SIZE	LENGTH	SLOPE
ST-R1 TO ST-HWP1	18" RCP	37'	1.4%
ST-R2 TO ST-HWP2	18" RCP	32'	8.8%

NOTES
1. ALL DRIVEWAY LOCATIONS ARE TO CORRESPOND WITH THE PROVIDED SIGHT DISTANCE EXHIBITS SUBMITTED TO THE MCHD. SATISFYING SIGHT DISTANCE REQUIREMENTS.
2. DRIVEWAY PIPES SHALL BE A MINIMUM OF 18" RCP WITHIN THE PUBLIC R.O.W. AND SHALL INCLUDE HEADWALLS. THE CULVERT SIZE AND HEADWALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISION OF THE MAURY COUNTY SUBDIVISION REGULATIONS.
3. IN ACCORDANCE WITH THE MAURY COUNTY SUBDIVISION REGULATIONS FOR DRIVEWAYS WITHIN THE PUBLIC R.O.W. SHALL BE PAVED WITH CONCRETE OR ASPHALT. GRAVEL OR DIRT ARE NOT ACCEPTABLE.
4. ALL DRIVEWAYS AND CONNECTIONS TO EXISTING COUNTY ROADS ARE SUBJECT TO THE APPLICABLE PERMITS, FEES, APPROVALS AND STANDARDS/SPECIFICATIONS SET FORTH BY THE MAURY COUNTY SUBDIVISION REGULATIONS AND THE MAURY COUNTY HIGHWAY DEPARTMENT.
5. ANY DAMAGE WITHIN EXISTING R.O.W. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. SUCH DAMAGES WILL BE REPAIRED AT NO COST TO THE COUNTY.

FLOOD NOTE
THE PROPERTY IS LOCATED IN AN AREA DESIGNATED AS "ZONE X" (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON FEMA FIRM MAP # 47119C0236E WITH AN EFFECTIVE DATE OF 04/16/2007.

BENCHMARKS PROVIDED AND FIELD-VERIFIED BY T-SQUARE SURVEYING

STATE OF TENNESSEE NPDES PERMIT - NOTICE OF COVERAGE
TRACKING NUMBER: _____
DATE: _____

OWNER OF RECORD
NOMAU PARTNERS, LLC (NELSON CROWE, MEMBER & TYLER RING, MEMBER)
135 HAMPTON PLACE
NASHVILLE, TN 37215
DEED BOOK R2570, PAGE 1409

APPLICANT
T-SQUARE ENGINEERING
1329 WEST MAIN ST
FRANKLIN, TN 37064
615.678.8212

T-SQUARE ENGINEERING

REVISIONS		
NO.	DATE	
1	05/03/2023	REVISED PER COUNTY ENGINEER & MCHD COMMENTS

DATE: 01/04/2023
SCALE:
DRAWN BY: T-SQUARE
REVIEWER: TET

FRYE ROAD SUBDIVISION
CONSTRUCTION PLANS

GRADING AND DRAINAGE PLAN
1470 FRYE ROAD
MAP 52, PARCEL 14.00
MAURY COUNTY, TENNESSEE

TIMOTHY E. TURNER
REGISTERED
19174
STATE OF TENNESSEE
5/3/2023

PROJECT
18-0720

SHEET
C-5.0

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

Pulte Homes Tennessee Limited Partnership, 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,

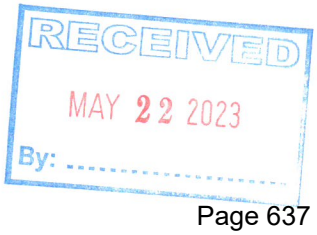
WHEREAS, the DEVELOPER desires to develop and improve said PROJECT; and,

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.

Homestead South
PROJECT

Completed by the Developer	*Completed by the City*
Pulte Homes Tennessee Limited Partnership DEVELOPER NAME	
JEREMY BROOKS AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
5/11/2023 DATE	DATE
100 Westwood Place, Suite 100 STREET	
Brentwood,TN,37027 CITY, STATE, ZIP	
615.992.9508 PHONE	
Jeremy.brooks@pultegroup.com EMAIL	
Attest	*Attest*
KEVIN R. CHAPMAN ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
5/11/2023 DATE	DATE

CPWS
Columbia Power & Water Systems

HYDRANT # & LOCATION: 0962 Hyd 2311 Nashville Hwy DATE: 4/1/2022

TEST BY: CPWS Day or Week: Monday TIME OF DAY: 13:34 MIN. OF FLOW 5

WATER SUPPLIED BY: Water Engineering Device: Little Hose Monster

PURPOSE OF TEST: Customer Request

DATA

FLOW HYDRANT(S)	A1	A2	A3
SIZE OPENING:	2.3		
COEFFICIENT:	0.99		
PITOT READING:	37		
GPM:	950	0	0

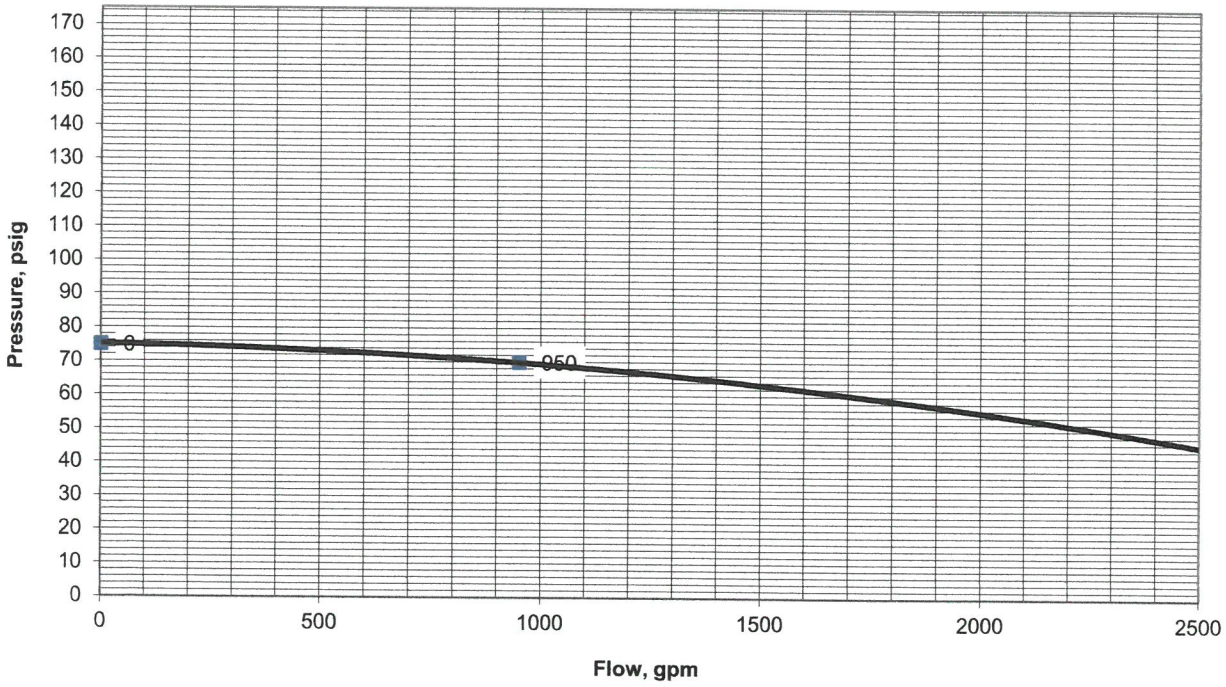
TOTAL FLOW DURING TEST: 950 GPM

STATIC READING: 75 PSI RESIDUAL: 70 PSI

RESULTS: AT 20 PSI RESIDUAL 3469 GPM AT 0 PSI 4101 GPM

ESTIMATED CONSUMPTION: 4751 GAL.

REMARKS:



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	Frye Road		
	TAX MAP: 52	GROUP:	PARCEL: 14.00
SUMMARY OF NATURE OF REQUEST AND WORK	This application is to approve the final plat for Homestead South (18 lots)		

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

SELECT REQUEST	SUBMITTALS SHALL INCLUDE BUT NOT LIMITED TO:
❑ Annexation ❑ Rezoning ❑ Preliminary Plat ☑ Final Plat ❑ PUD Preliminary Master Plan ❑ PUD Final Site Plan ❑ Multi-Family Site Plan ❑ Other: **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) Homestead South ☑ Total Number of Lots 18 ☑ Total acreage 6.47

RECEIVED
MAY 22 2023
By: 23-0205

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	T-Square Engineering	PHONE	615.678.8212
ADDRESS	1329 West Main St., Franklin, TN 37064	EMAIL	Breanna.Smith@T2-Eng.com

PROPERTY OWNER NAME	Pulte Homes Tennessee Limited Partnership	PHONE	615.992.9508
ADDRESS	100 Westwood Place, Suite #100 Brentwood, TN 37027	EMAIL	Jeremy.Brooks@PulteGroup.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.

Breanna Smith	*Breanna Smith*	5/8/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
JEREMY BROOKS		5/11/2023
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	



VICINITY MAP - NOT TO SCALE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING
C1	30.00'	47.52'	42.70'	S 37°01'01" E
C2	30.00'	46.73'	42.15'	N 52°58'59" E

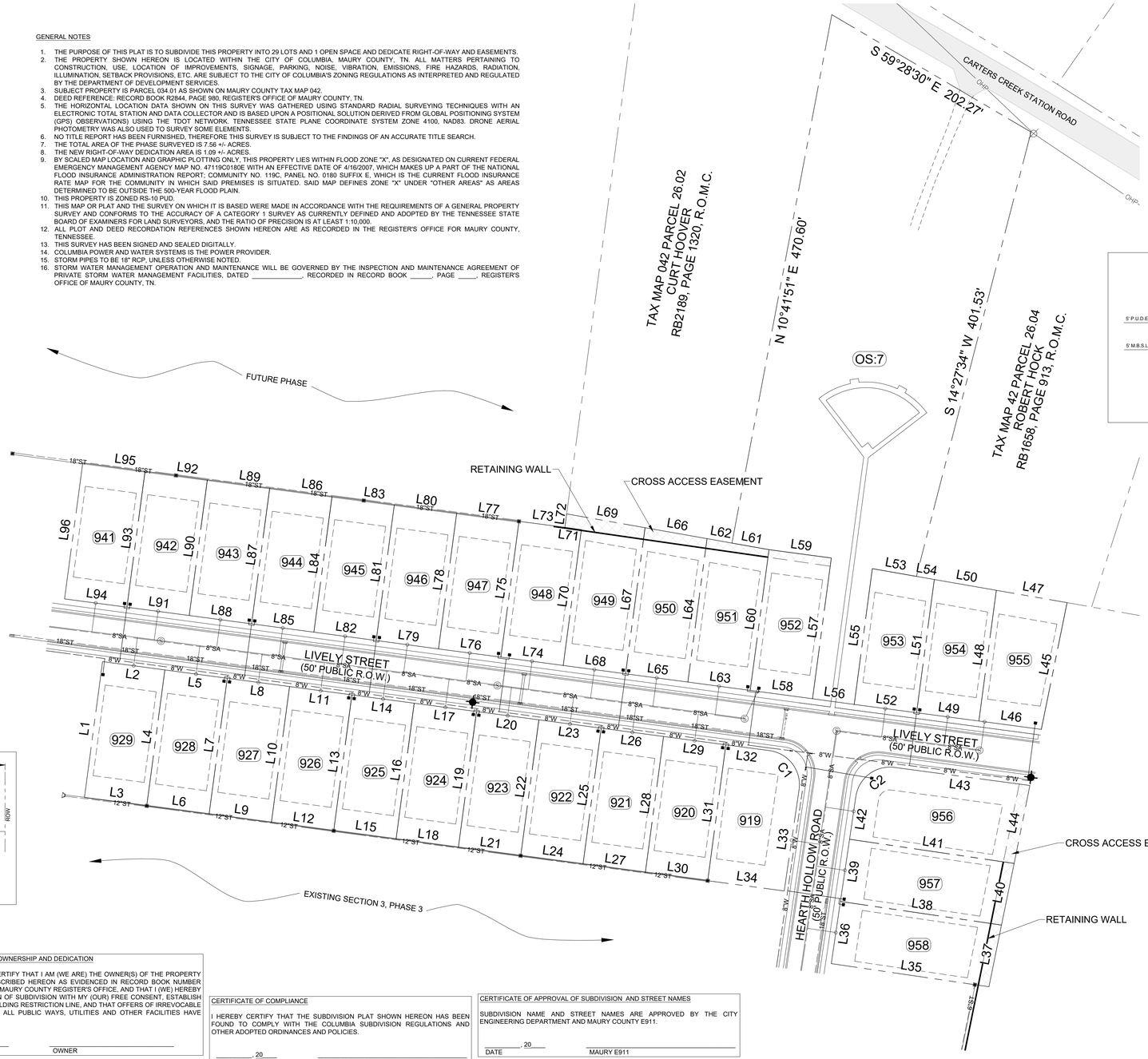
LOT	SQ. FT.
941	6600.0
942	6598.1
943	6597.2
944	6597.2
945	6597.2
946	6597.2
947	6597.2
948	6597.2
949	7324.2
950	7027.6
951	6899.4
952	6834.0
953	6531.2
954	6408.4
955	6731.2
956	9901.8
957	7916.6
958	7747.8
919	7995.6
920	6600.2
921	6600.2
922	6600.2
923	6600.2
924	6600.1
925	6600.1
926	6599.7
927	6600.1
928	6600.4
929	6599.7
OS:7	81975.2

LINE	BEARING	DISTANCE
L1	N 07°36'17" E	120.00'
L2	S 82°23'33" E	55.00'
L3	N 82°23'31" W	54.99'
L4	N 07°36'27" E	120.00'
L5	S 82°23'33" E	55.00'
L6	N 82°23'31" W	55.01'
L7	N 07°36'17" E	120.00'
L8	S 82°23'33" E	55.00'
L9	N 82°23'31" W	55.00'
L10	N 07°36'17" E	120.00'
L11	S 82°23'33" E	55.00'
L12	N 82°23'31" W	54.99'
L13	N 07°36'27" E	120.00'
L14	S 82°23'33" E	55.00'
L15	N 82°23'31" W	55.00'
L16	N 07°36'27" E	120.00'
L17	S 82°23'33" E	55.00'
L18	N 82°23'31" W	55.00'
L19	N 07°36'27" E	120.00'
L20	S 82°23'33" E	55.00'
L21	N 82°23'26" W	55.00'
L22	N 07°36'27" E	120.00'
L23	S 82°23'33" E	55.00'
L24	N 82°23'3" W	55.00'
L25	N 07°36'27" E	120.00'
L26	S 82°23'33" E	55.00'
L27	N 82°23'31" W	55.00'
L28	N 07°36'27" E	120.00'
L29	S 82°23'33" E	55.00'
L30	N 82°23'31" W	55.00'
L31	N 07°36'27" E	120.00'
L32	S 82°23'33" E	38.68'
L33	S 08°21'31" W	89.62'
L34	N 82°23'31" W	67.50'
L35	N 81°38'29" W	139.36'
L36	N 08°21'31" E	55.00'
L37	S 11°29'43" W	55.08'
L38	N 81°38'29" W	142.38'
L39	N 08°21'31" E	55.00'
L40	S 11°36'26" W	55.09'
L41	N 81°38'29" W	145.50'
L42	N 08°21'31" E	37.90'
L43	N 82°23'33" E	119.60'
L44	S 11°24'24" W	69.56'
L45	S 11°29'52" W	113.19'
L46	N 82°22'44" W	55.06'
L47	S 80°07'29" E	62.83'
L48	S 07°35'08" W	115.40'

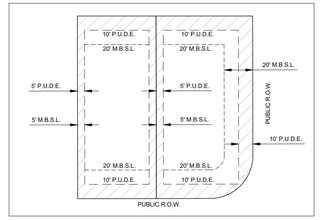
LINE	BEARING	DISTANCE
L49	N 82°24'52" W	55.00'
L50	S 80°05'23" E	55.05'
L51	S 07°35'08" W	117.63'
L52	N 82°24'52" W	55.00'
L53	S 80°05'23" E	39.12'
L54	S 80°05'23" E	15.93'
L55	S 07°35'08" W	119.86'
L56	N 82°11'57" W	36.83'
L57	S 07°36'27" W	124.25'
L58	N 82°23'33" W	55.00'
L59	S 82°23'33" E	55.00'
L60	N 07°36'27" E	124.25'
L61	S 79°54'21" E	32.93'
L62	S 79°58'39" E	22.12'
L63	N 82°23'33" W	55.00'
L64	N 07°36'27" E	126.62'
L65	N 82°23'33" W	55.00'
L66	S 79°58'39" E	55.05'
L67	N 07°36'27" E	128.94'
L68	N 82°23'33" W	55.00'
L69	S 79°58'39" E	69.61'
L70	N 07°36'27" E	119.90'
L71	N 81°59'54" W	14.55'
L72	N 07°36'27" E	11.87'
L73	S 82°32'04" E	40.45'
L74	N 82°23'33" W	55.00'
L75	N 07°36'27" E	119.90'
L76	N 82°29'49" W	55.00'
L77	S 82°23'33" E	55.00'
L78	N 07°36'27" E	120.00'
L79	N 82°17'18" W	55.00'
L80	S 82°23'33" E	55.00'
L81	N 07°36'27" E	119.90'
L82	N 82°23'33" W	55.00'
L83	S 82°14'15" E	37.02'
L84	N 07°36'27" E	119.90'
L85	N 82°23'33" W	55.00'
L86	S 82°14'15" E	37.02'
L87	N 07°36'27" E	119.90'
L88	N 82°23'33" W	55.00'
L89	S 82°14'15" E	37.02'
L90	N 07°36'27" E	119.90'
L91	N 82°23'33" W	55.00'
L92	S 82°14'15" E	37.02'
L93	N 07°36'27" E	120.00'
L94	N 82°23'33" W	55.00'
L95	S 82°23'33" E	37.02'
L96	N 07°36'27" E	120.00'

GENERAL NOTES

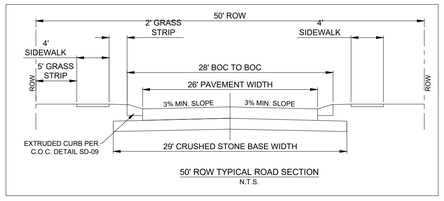
1. THE PURPOSE OF THIS PLAT IS TO SUBDIVIDE THIS PROPERTY INTO 29 LOTS AND 1 OPEN SPACE AND DEDICATE RIGHT-OF-WAY AND EASEMENTS.
2. THE PROPERTY SHOWN HEREON IS LOCATED WITHIN THE CITY OF COLUMBIA, MAURY COUNTY, TN. ALL MATTERS PERTAINING TO CONSTRUCTION, USE, LOCATION OF IMPROVEMENTS, SIGNAGE, PARKING, NOISE, VIBRATION, EMISSIONS, FIRE HAZARDS, RADIATION, ILLUMINATION, SETBACK PROVISIONS, ETC. ARE SUBJECT TO THE CITY OF COLUMBIA'S ZONING REGULATIONS AS INTERPRETED AND REGULATED BY THE DEPARTMENT OF DEVELOPMENT SERVICES.
3. SUBJECT PROPERTY IS PARCEL 034.01 AS SHOWN ON MAURY COUNTY TAX MAP 042.
4. DEED REFERENCE: RECORD BOOK R2844, PAGE 980, REGISTER'S OFFICE OF MAURY COUNTY, TN.
5. THE HORIZONTAL LOCATION DATA SHOWN ON THIS SURVEY WAS GATHERED USING STANDARD RADIAL SURVEYING TECHNIQUES WITH AN ELECTRONIC TOTAL STATION AND DATA COLLECTOR AND IS BASED UPON A POSITIONAL SOLUTION DERIVED FROM GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS) USING THE TDOT NETWORK. TENNESSEE STATE PLANE COORDINATE SYSTEM ZONE 4100, NAD83. DRONE AERIAL PHOTOMETRY WAS ALSO USED TO SURVEY SOME ELEMENTS.
6. NO TITLE REPORT HAS BEEN FURNISHED, THEREFORE THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
7. THE TOTAL AREA OF THE PHASE SURVEYED IS 7.56 +/- ACRES.
8. THE NEW RIGHT-OF-WAY DEDICATION AREA IS 1.09 +/- ACRES.
9. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES WITHIN FLOOD ZONE "X", AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47119C0180E WITH AN EFFECTIVE DATE OF 4/16/2007, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 119C, PANEL NO. 0180 SUFFIX E, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED. SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOOD PLAIN.
10. THIS PROPERTY IS ZONED RS-10 PUD.
11. THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE REQUIREMENTS OF A GENERAL PROPERTY SURVEY AND CONFORMS TO THE ACCURACY OF A CATEGORY 1 SURVEY AS CURRENTLY DEFINED AND ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THE RATIO OF PRECISION IS AT LEAST 1:10,000.
12. ALL PLOT AND DEED RECORDATION REFERENCES SHOWN HEREON ARE AS RECORDED IN THE REGISTER'S OFFICE FOR MAURY COUNTY, TENNESSEE.
13. THIS SURVEY HAS BEEN SIGNED AND SEALED DIGITALLY.
14. COLUMBIA POWER AND WATER SYSTEMS IS THE POWER PROVIDER.
15. STORM PIPES TO BE 18" RCP, UNLESS OTHERWISE NOTED.
16. STORM WATER MANAGEMENT OPERATION AND MAINTENANCE WILL BE GOVERNED BY THE INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORM WATER MANAGEMENT FACILITIES, DATED _____, RECORDED IN RECORD BOOK _____, PAGE ____, REGISTER'S OFFICE OF MAURY COUNTY, TN.



- FIRE HYDRANT
- SANITARY SEWER MANHOLE
- CATCH BASIN
- HEADWALL
- AREA DRAIN
- UTILITY POLE
- 8"W — WATER LINE (TYP.)
- 8"SA — SANITARY SEWER LINE (TYP.)
- 12"ST — STORMWATER LINE (TYP.)
- OHP — OVERHEAD POWER LINE



TYPICAL LOT (NOT TO SCALE)



50' ROW TYPICAL ROAD SECTION
N.T.S.

SITE DATA	
CURRENT ZONING:	R-10 PUD
MINIMUM BUILDING SETBACKS:	
FRONT:	20'
REAR:	20'
SIDE:	5'
TOTAL PHASE AREA:	7.56 ACRES
NEW ROW:	1.09 ACRES
OPEN SPACE:	1.88 ACRES

TN SPCS NAD 83

SCALE 1" = 50'

50 0 25 50 100

CERTIFICATE OF APPROVAL OF STREETS, DRAINAGE AND UTILITIES

I HEREBY CERTIFY THAT THE STREETS, DRAINAGE AND UTILITIES DESIGNATED IN INDEPENDENCE AT CARTER'S STATION (SECTION 3, PHASE 4) 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 TO ASSURE COMPLETION OF SUCH IMPROVEMENTS.

_____, 20____ _____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL OF WATER SYSTEM

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____ _____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

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 RECORD BOOK NUMBER R2844, PAGE 980, MAURY COUNTY REGISTER'S OFFICE, AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINE, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC WAYS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED.

_____, 20____ _____
DATE OWNER

CERTIFICATE OF SURVEY ACCURACY

I (WE) HEREBY CERTIFY THAT TO THE BEST OF MY (OUR) KNOWLEDGE AND BELIEF THIS IS A TRUE AND ACCURATE SURVEY OF THE PROPERTY SHOWN HEREON; THAT THIS IS A CATEGORY I LAND SURVEY AS DEFINED IN TITLE 62, CHAPTER 18, TENNESSEE CODE ANNOTATED, AND THAT THE RATIO OF PRECISION IS LESS THAN OR EQUAL TO 1:10,000.

_____, 20____ _____
DATE MARK CANTRELL, R.L.S

CERTIFICATE OF COMPLIANCE

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS AND OTHER ADOPTED ORDINANCES AND POLICIES.

_____, 20____ _____
DATE CITY ENGINEER

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE COLUMBIA SUBDIVISION REGULATIONS WITH THE EXCEPTION OF SUCH VARIANCES, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE COUNTY REGISTER.

_____, 20____ _____
DATE NAME, TITLE, AGENCY OF AUTHORIZED AGENT

CERTIFICATE OF APPROVAL OF SUBDIVISION AND STREET NAMES

SUBDIVISION NAME AND STREET NAMES ARE APPROVED BY THE CITY ENGINEERING DEPARTMENT AND MAURY COUNTY E911.

_____, 20____ _____
DATE MAURY E911

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 SURETY HAS BEEN FILED TO GUARANTEE SAID INSTALLATION.

_____, 20____ _____
DATE DIRECTOR OF COLUMBIA WASTEWATER DEPARTMENT

IF YOU DIG TENNESSEE...
CALL US FIRST!
1-800-351-1111
TENNESSEE ONE CALL
IT'S THE LAW

OWNER OF RECORD
PULTE HOMES OF TENNESSEE LTD PARTNERSHIP DEED BK. R2844 PG. 980, MAP 042 PARCEL 034.01
APPLICANT
T-SQUARE ENGINEERING 1329 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

J. MARK CANTRELL
PROFESSIONAL LAND SURVEYOR
XVI
AGRICULTURE
COMMERCE
TENNESSEE NO. 1859

NO.	DATE	REVISIONS

DATE: 5-15-2023
SCALE: 1" = 50'
DRAWN BY: DSW
REVIEWER:

INDEPENDENCE AT CARTER'S STATION

FINAL PLAT
CARTER'S STATION
SECTION 3, PHASE 4
COLUMBIA, MAURY COUNTY, TENNESSEE

PROJECT
18-0530

SHEET
1 OF 1

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • WWW.T2-ENG.COM

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

Pulte Homes Tennessee Limited Partnership, 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,

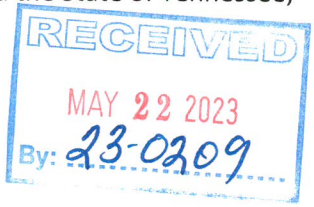
WHEREAS, the DEVELOPER desires to develop and improve said PROJECT; and,

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.

Independence at Carter's Station Section 3.4

PROJECT

Completed by the Developer	*Completed by the City*
Pulte Homes Tennessee Limited Partnership DEVELOPER NAME	
JEREMY BROOKS AUTHORIZED AGENT NAME	CITY ENGINEER
SIGNATURE	SIGNATURE
5/11/2023 DATE	DATE
100 Westwood Place, Suite 100 STREET	
Brentwood,TN,37027 CITY, STATE, ZIP	
615.992.9508 PHONE	
Jeremy.brooks@pultegroup.com EMAIL	
Attest	*Attest*
KEVIN R. CHAPMAN ATTEST NAME	ATTEST NAME
ATTEST SIGNATURE	ATTEST SIGNATURE
5/11/2023 DATE	DATE

T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-ENG.com

5/08/2023

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

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: INDEPENDENCE AT CARTER'S STATION, SECTION 3, PHASE 4

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- 904 LF of round concrete pipe and 11 storms 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. 904 LF OF RCP AND 11 STORM DRAINS
   - These structures will be inspected and cleaned quarterly to ensure pipes and drain inlets do not fill with sediment or trash.

RECEIVED
MAY 22 2023
By: 23-0209

CONSTRUCTION DRAWINGS
FOR
SECTION 3, PHASE 4
INDEPENDENCE AT CARTER'S STATION
3040 CLEBURNE ROAD
COLUMBIA, TN 37174
CITY OF COLUMBIA, WARD #5

DEVELOPER: PULTE GROUP
370 MALLORY STATION ROAD, STE 500
FRANKLIN, TN 37067

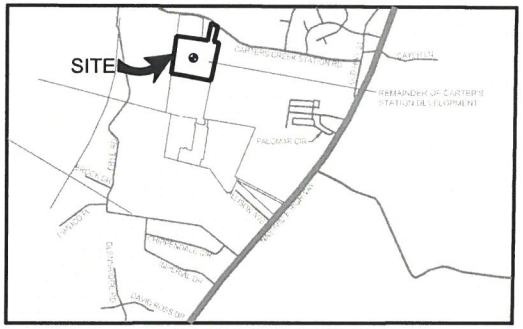
ENGINEER: T-SQUARE ENGINEERING
701 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: H&H LAND SURVEYING
612A FITZHUGH BLVD
SMYRNA, TN 37167
615-831-0756

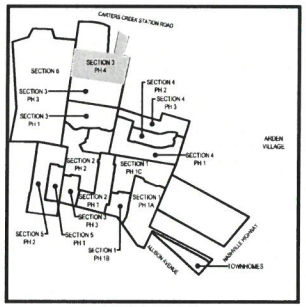
T-SQUARE ENGINEERING AND ITS ASSOCIATES WILL NOT BE HELD RESPONSIBLE FOR ITS ACCURACY OR FOR DESIGN ERRORS OR EMISSIONS RESULTING FROM POTENTIAL SURVEY INACCURACIES.

WATER UTILITY: CPWS
Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS
Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP



KEY MAP

Permits
TDEC: TNR182340 (ACTIVE)

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Overall Existing Conditions
C-1.1	Existing Conditions
C-2.0	Overall Site Plan
C-2.1	Site Plan
C-3.0	Initial Erosion Control Plan
C-3.1	Temporary Erosion Control Plan
C-3.2	Permanent Erosion Control Plan
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C-8.0	Detail Sheet
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C-8.2	Detail Sheet
C-8.3	Detail Sheet
C-8.4	Detail Sheet

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118OE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TO CCS, LLC DEED BK. H2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5/17/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7/25/22	GRADING REVISIONS PER OWNER
3	10/31/22	WATERLINE REVISIONS PER CPWS
4	1/16/23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

COVER SHEET
CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

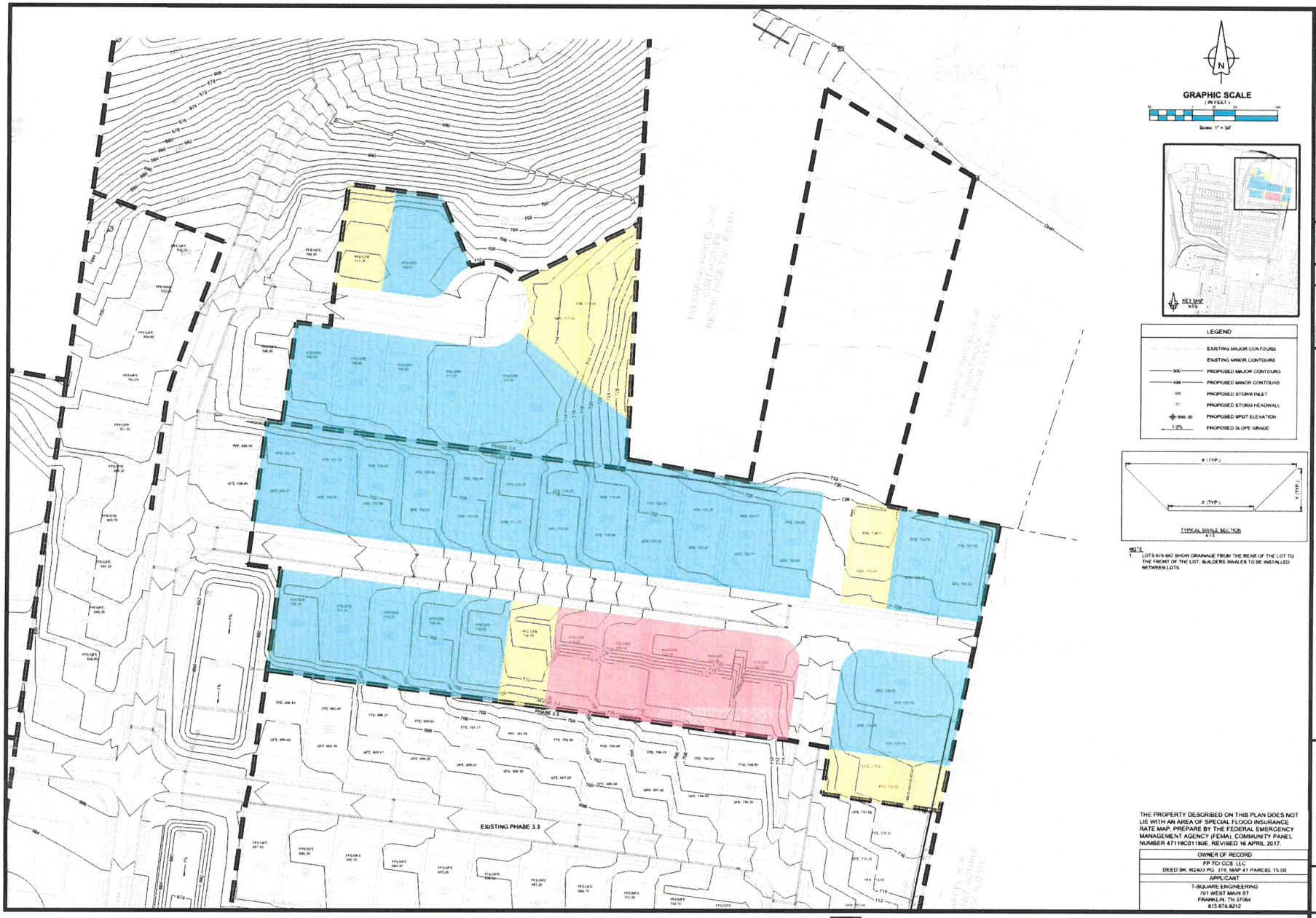
INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-0.0



REVISIONS		
NO.	DATE	
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER DESIGN REQUIREMENTS
2	7.25.22	WATERLINE REVISIONS PER CPWS
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

GRADING PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

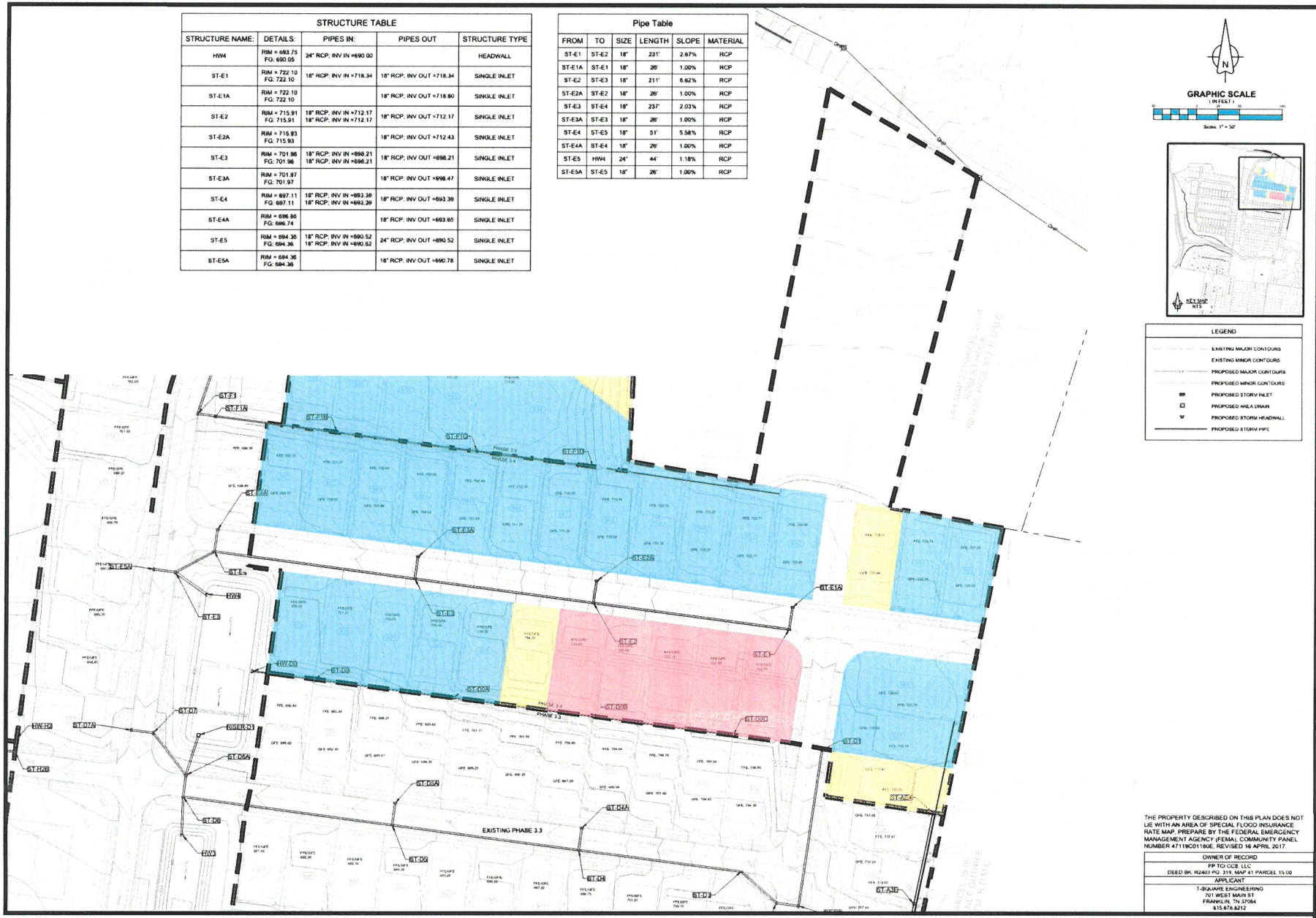
PROJECT
18-0530

SHEET
C-5.0

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
HW4	RIM = 683.75 FG: 680.05	24" RCP; INV IN =680.00		HEADWALL
ST-E1	RIM = 722.10 FG: 722.10	18" RCP; INV IN =718.34	18" RCP; INV OUT =718.34	SINGLE INLET
ST-E1A	RIM = 722.10 FG: 722.10		18" RCP; INV OUT =718.60	SINGLE INLET
ST-E2	RIM = 715.91 FG: 715.91	18" RCP; INV IN =712.17 18" RCP; INV IN =712.17	18" RCP; INV OUT =712.17	SINGLE INLET
ST-E2A	RIM = 715.93 FG: 715.93		18" RCP; INV OUT =712.43	SINGLE INLET
ST-E3	RIM = 701.96 FG: 701.96	18" RCP; INV IN =698.21 18" RCP; INV IN =698.21	18" RCP; INV OUT =698.21	SINGLE INLET
ST-E3A	RIM = 701.97 FG: 701.97		18" RCP; INV OUT =698.47	SINGLE INLET
ST-E4	RIM = 697.11 FG: 697.11	18" RCP; INV IN =693.39 18" RCP; INV IN =693.39	18" RCP; INV OUT =693.39	SINGLE INLET
ST-E4A	RIM = 686.86 FG: 686.74		18" RCP; INV OUT =693.65	SINGLE INLET
ST-E5	RIM = 694.36 FG: 694.36	18" RCP; INV IN =690.52 18" RCP; INV IN =690.52	24" RCP; INV OUT =690.52	SINGLE INLET
ST-E5A	RIM = 694.36 FG: 684.36		18" RCP; INV OUT =690.78	SINGLE INLET

Pipe Table					
FROM	TO	SIZE	LENGTH	SLOPE	MATERIAL
ST-E1	ST-E2	18"	231'	2.97%	RCP
ST-E1A	ST-E1	18"	26'	1.00%	RCP
ST-E2	ST-E3	18"	211'	6.62%	RCP
ST-E2A	ST-E2	18"	26'	1.00%	RCP
ST-E3	ST-E4	18"	237'	2.03%	RCP
ST-E3A	ST-E3	18"	26'	1.00%	RCP
ST-E4	ST-E5	18"	51'	5.58%	RCP
ST-E4A	ST-E4	18"	26'	1.00%	RCP
ST-E5	HW4	24"	44'	1.18%	RCP
ST-E5A	ST-E5	18"	26'	1.00%	RCP



THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0119DE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI OCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

REVISIONS		
NO.	DATE	
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER OWNER
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

DRAINAGE PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.1

T-SQUARE ENGINEERING
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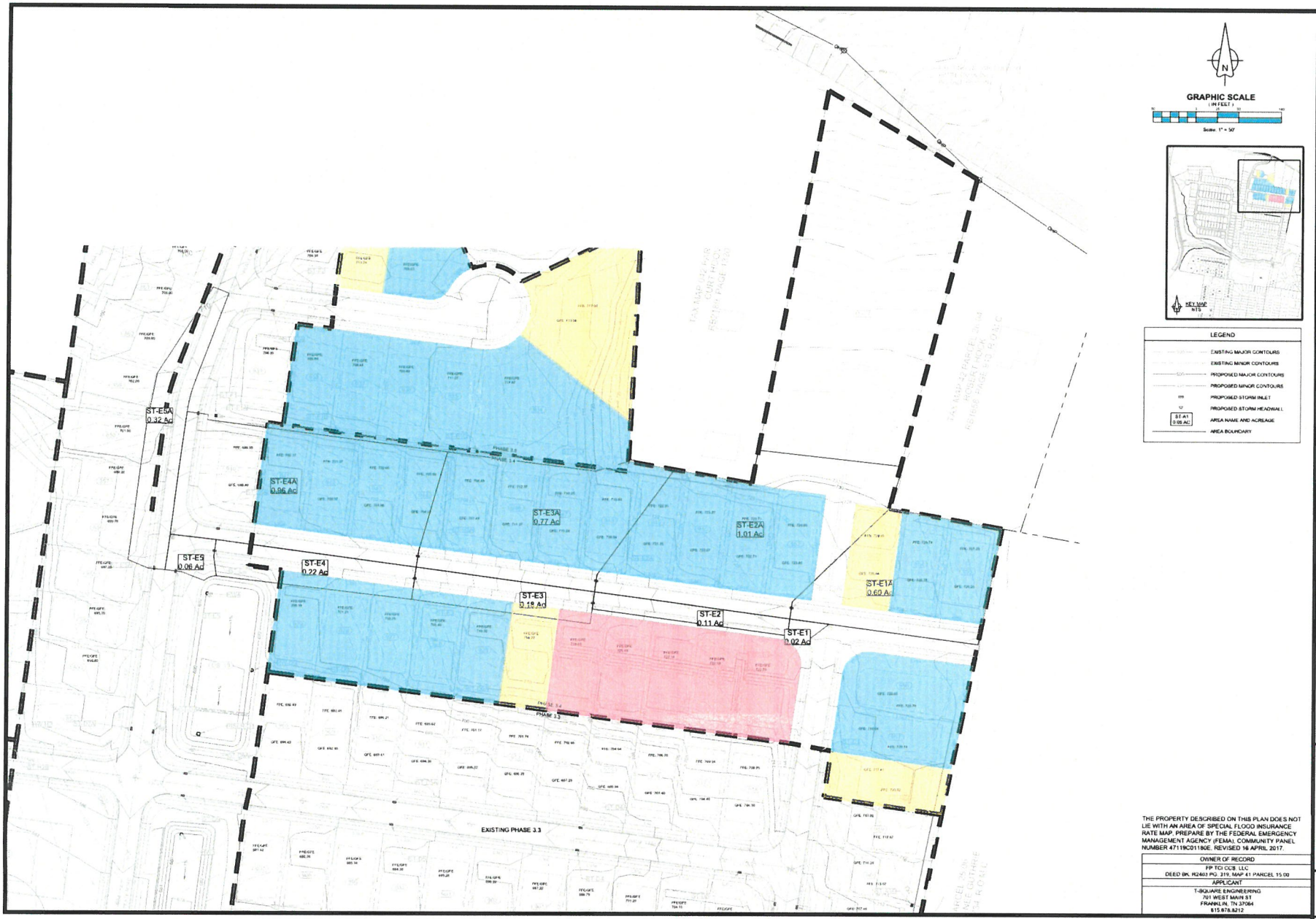

N

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

KEY MAP
NTS

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- ST-A1 / 0.05 Ac — AREA NAME AND ACREAGE
- AREA BOUNDARY

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA); COMMUNITY PANEL NUMBER 47119C0118GE, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
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4	1/16/23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

INLET AREA PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER — STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.2

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

DOCUMENT PREPARED BY:
Name: Breanna Smith
Company T-Square Engineering

Address: 1329 West Main Street
Franklin, TN

After recording return copy to City of Columbia, Development Services

INSPECTION AND MAINTENANCE AGREEMENT OF PRIVATE STORMWATER MANAGEMENT FACILITIES

Map & Parcel Number: Map 41, Parcel 15.00
Project Name: Independence at Carter's Station, Section 3.4

Recorded by deed in the Register of Deeds Office of Maury County in Deed Book R2403, Page(s) 319.

THIS AGREEMENT, made this _____ day of _____, 20____, by and between Pulte Homes 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,

RECEIVED
MAY 22 2023
By 23-0209

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: JEREMY BROOKS

Title: DIRECTOR OF LAND

Signature: _____

Owner: PULTE HOMES TENNESSEE LIMITED PARTNERSHIP

Address: 100 WESTWOOD PLACE SUITE 100

City, State ZIP: BRENTWOOD, TN 37027

STATE OF Tennessee
COUNTY OF Williamson

Before me, Kimberly Maynard of the state and county mentioned, personally appeared Jeremy Brooks, 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 11th day of May, 2023.

Kimberly Maynard
Notary Public

My Commission Expires: 9-8-2025

KIMBERLY MAYNARD NOTARY PUBLIC STATE OF TENNESSEE NOTARY PUBLIC DAVIDSON COUNTY MY COMMISSION EXPIRES 9-8-2025

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:_____

Rev. 1/17/2017

T-SQUARE ENGINEERING
CIVIL-SITE | TRAFFIC | WASTEWATER

701 West Main Street
Franklin, TN 37064
615.678.8212
www.T2-ENG.com

5/08/2023

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

POST CONSTRUCTION LONG TERM MAINTENANCE PLAN
PROJECT NAME: INDEPENDENCE AT CARTER'S STATION, SECTION 3, PHASE 4

SYSTEM DESCRIPTION:

The site consists of stormwater conveyances through piped channel and detention ponds.

- 904 LF of round concrete pipe and 11 storms inlets.

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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.

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CONSTRUCTION DRAWINGS
FOR
SECTION 3, PHASE 4
INDEPENDENCE AT CARTER'S STATION
3040 CLEBURNE ROAD
COLUMBIA, TN 37174
CITY OF COLUMBIA, WARD #5

DEVELOPER: PULTE GROUP
370 MALLORY STATION ROAD, STE 500
FRANKLIN, TN 37067

ENGINEER: T-SQUARE ENGINEERING
701 WEST MAIN STREET
FRANKLIN, TN 37064
615-678-8212

SURVEYOR: H&H LAND SURVEYING
612A FITZHUGH BLVD
SMYRNA, TN 37167
615-831-0756

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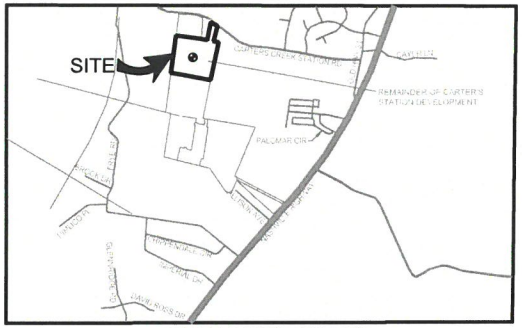
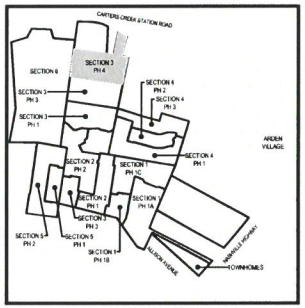
WATER UTILITY: CPWS Shane Andrews
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833

POWER UTILITY: CPWS Doug Burgess
CPWS
201 Pickens Lane
PO Box 379
Columbia, TN 38402
931-388-4833



SITE VICINITY MAP



KEY MAP

Sheet Schedule

C-0.0	Cover Sheet
C-1.0	Overall Existing Conditions
C-1.1	Existing Conditions
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Permits
TDEC: TNR182340 (ACTIVE)

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OWNER OF RECORD
FP TG CCS, LLC DEED BK. H2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5/17/22	CHANGES PER COC OF COLUMBIA WASTEWATER
2	7/25/22	GRADING REVISIONS PER OWNER
3	10/31/22	WATERLINE REVISIONS PER CPWS
4	1/16/23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

COVER SHEET
CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER 101172 STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-0.0



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

KEY MAP
NTS

LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- 500 PROPOSED MAJOR CONTOURS
- 498 PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED STORM HEADWALL
- 866.30 PROPOSED SPOT ELEVATION
- PROPOSED SLOPE GRADE

B (TYP.)
Z (TYP.)
1 (TYP.)
TYPICAL SWALE SECTION
N.T.S.

NOTE
1. LOTS 678-687 SHOW DRAINAGE FROM THE REAR OF THE LOT TO THE FRONT OF THE LOT; BUILDERS SWALES TO BE INSTALLED BETWEEN LOTS.

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118GE, REVISED 16 APRIL 2017.

OWNER OF RECORD
PP TO GCB, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 707 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

NO.	DATE	REVISIONS
1	5.17.22	CHANGES PER CITY OF COLUMBIA WASTEWATER
2	7.25.22	GRADING REVISIONS PER COLUMBIA
3	10.31.22	WATERLINE REVISIONS PER CPWS
4	1.16.23	WATERLINE REVISIONS PER CPWS

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

GRADING PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

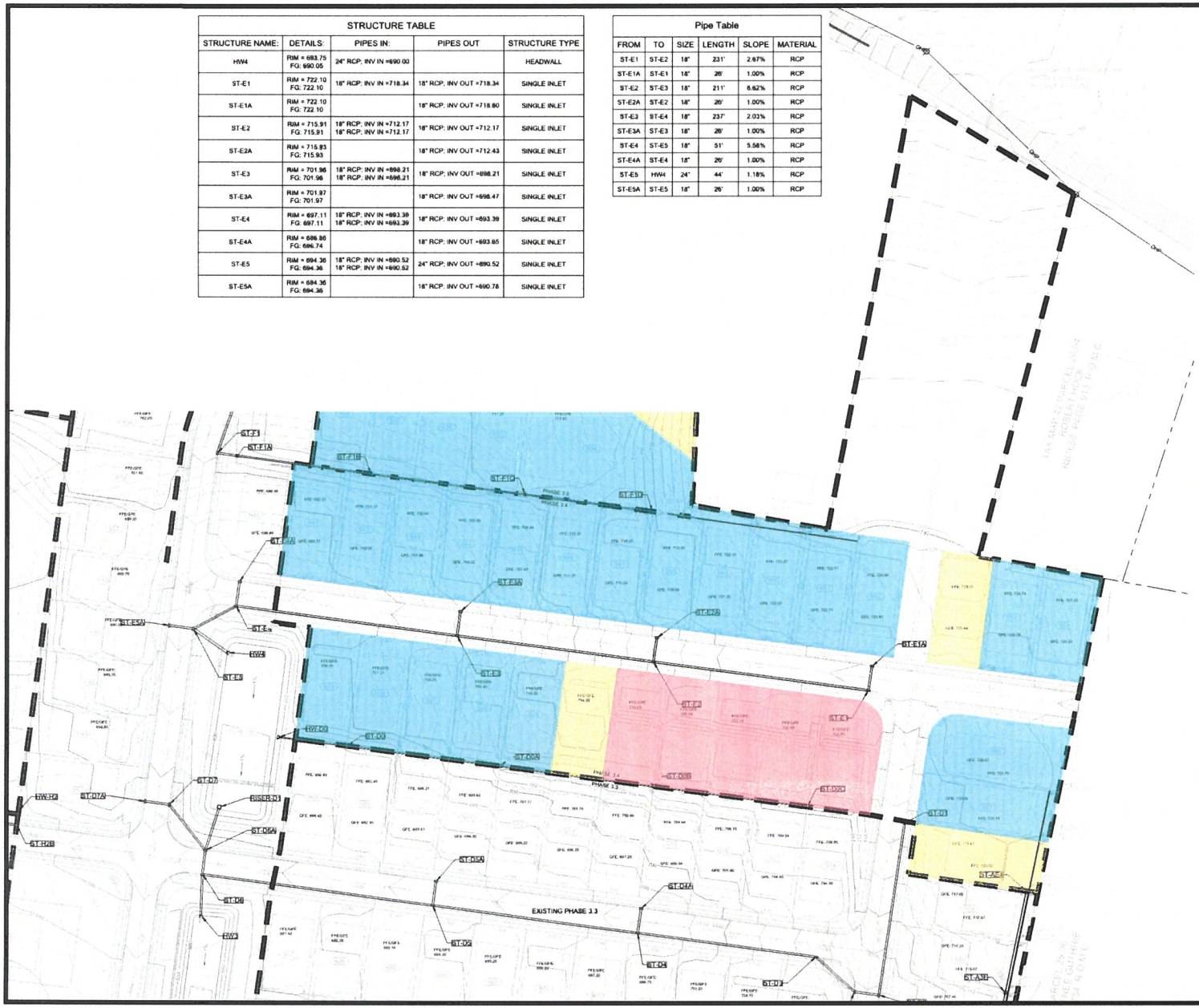
PROJECT
18-0530

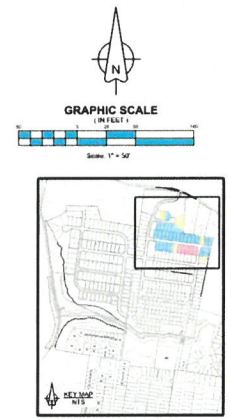
SHEET
C-5.0

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • www.T2-ENG.COM

STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT	STRUCTURE TYPE
HW4	RIM = 683.75 FG: 680.05	24" RCP; INV IN =680.00		HEADWALL
ST-E1	RIM = 722.10 FG: 722.10	18" RCP; INV IN =718.34	18" RCP; INV OUT =718.34	SINGLE INLET
ST-E1A	RIM = 722.10 FG: 722.10		18" RCP; INV OUT =718.80	SINGLE INLET
ST-E2	RIM = 715.91 FG: 715.91	18" RCP; INV IN =712.17 18" RCP; INV IN =712.17	18" RCP; INV OUT =712.17	SINGLE INLET
ST-E2A	RIM = 715.93 FG: 715.93		18" RCP; INV OUT =712.43	SINGLE INLET
ST-E3	RIM = 701.96 FG: 701.96	18" RCP; INV IN =698.21 18" RCP; INV IN =698.21	18" RCP; INV OUT =698.21	SINGLE INLET
ST-E3A	RIM = 701.97 FG: 701.97		18" RCP; INV OUT =698.47	SINGLE INLET
ST-E4	RIM = 697.11 FG: 697.11	18" RCP; INV IN =693.39 18" RCP; INV IN =693.39	18" RCP; INV OUT =693.39	SINGLE INLET
ST-E4A	RIM = 686.86 FG: 686.74		18" RCP; INV OUT =693.85	SINGLE INLET
ST-E5	RIM = 694.36 FG: 694.36	18" RCP; INV IN =690.52 18" RCP; INV IN =690.52	24" RCP; INV OUT =690.52	SINGLE INLET
ST-E5A	RIM = 694.36 FG: 694.36		18" RCP; INV OUT =690.78	SINGLE INLET

Pipe Table					
FROM	TO	SIZE	LENGTH	SLOPE	MATERIAL
ST-E1	ST-E2	18"	231'	2.97%	RCP
ST-E1A	ST-E1	18"	26'	1.00%	RCP
ST-E2	ST-E3	18"	211'	6.62%	RCP
ST-E2A	ST-E2	18"	26'	1.00%	RCP
ST-E3	ST-E4	18"	237'	2.03%	RCP
ST-E3A	ST-E3	18"	26'	1.00%	RCP
ST-E4	ST-E5	18"	51'	5.58%	RCP
ST-E4A	ST-E4	18"	26'	1.00%	RCP
ST-E5	HW4	24"	44'	1.18%	RCP
ST-E5A	ST-E5	18"	26'	1.00%	RCP





LEGEND

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM INLET
- PROPOSED AREA DRAIN
- PROPOSED STORM HEADWALL
- PROPOSED STORM PIPE

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C0118E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCB, LLC DEED BK. 2403 PG. 219, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

REVISIONS			
NO.	DATE	CHANGES PER DTE OF COLUMBIA WASTEWATER	
1	5.17.22	GRADING REVISIONS PER OWNER	
2	7.25.22	WATERLINE REVISIONS PER CPWS	
3	10.31.22	WATERLINE REVISIONS PER CPWS	
4	1.16.23		

DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INDEPENDENCE AT CARTER'S STATION

DRAINAGE PLAN

CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

TIMOTHY E. TURNER — STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.1

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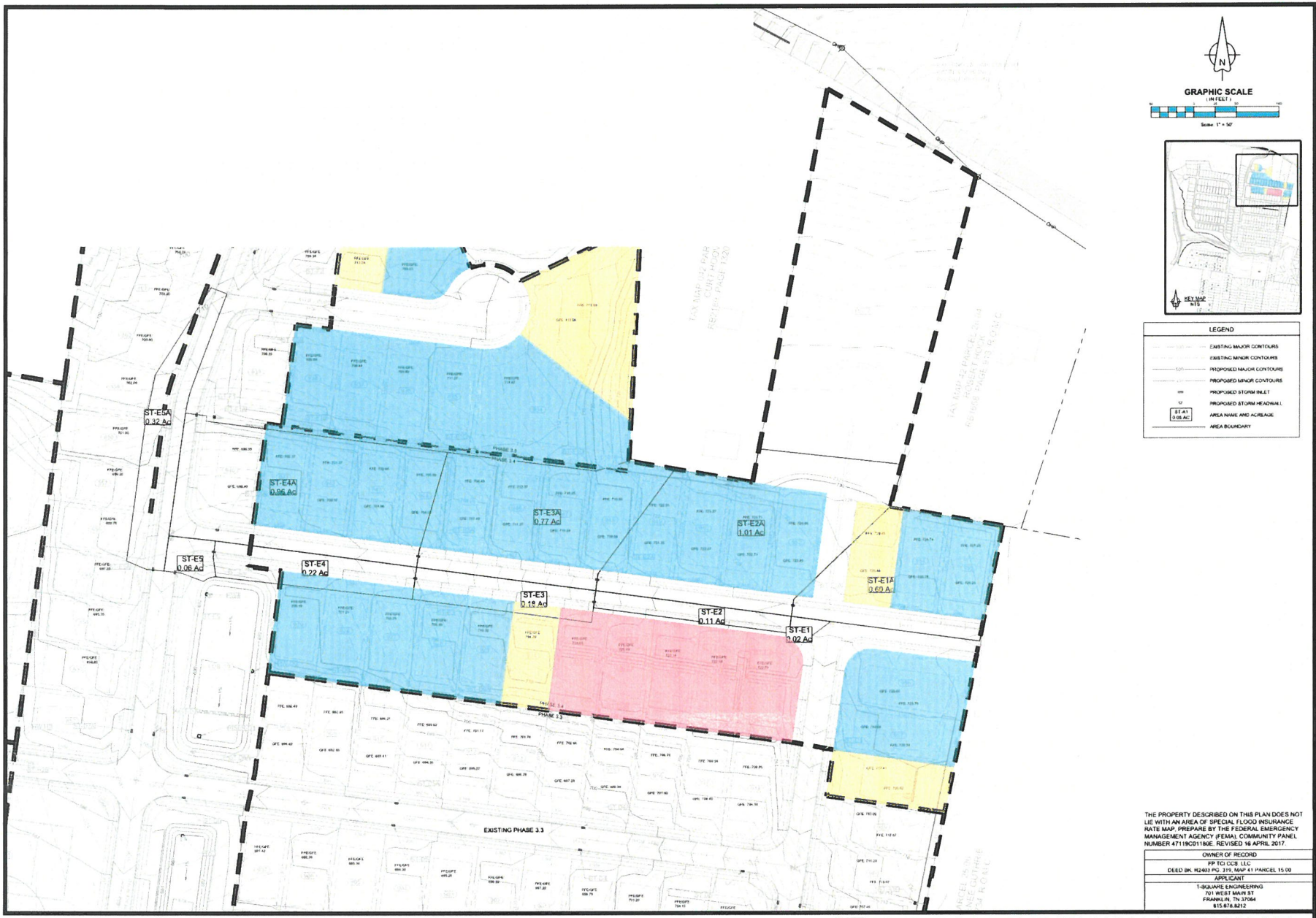

THE PROPERTY DESCRIBED ON THIS PLAN DOES NOT LIE WITH AN AREA OF SPECIAL FLOOD INSURANCE RATE MAP, PREPARE BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), COMMUNITY PANEL NUMBER 47119C01180E, REVISED 16 APRIL 2017.

OWNER OF RECORD
FP TCI CCS, LLC DEED BK. R2403 PG. 319, MAP 41 PARCEL 15.00
APPLICANT
T-SQUARE ENGINEERING 701 WEST MAIN ST FRANKLIN, TN 37064 615.678.8212

T-SQUARE ENGINEERING
1329 WEST MAIN STREET • FRANKLIN, TN • 615-678-8212 • WWW.T2-ENG.COM

REVISIONS

NO.	DATE	
1	5/17/22	CHANGES PER CITY OF COLUMBIA WASTEWATER
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DATE: 5-11-22
SCALE: AS SHOWN
DRAWN BY: T-SQUARE
REVIEWER: TET

INLET AREA PLAN
CARTER'S STATION
SECTION 3, PHASE 4
MAURY COUNTY, COLUMBIA TENNESSEE

INDEPENDENCE AT CARTER'S STATION

TIMOTHY E. TURNER
REGISTERED ENGINEER
STATE OF TENNESSEE

1/30/2023

PROJECT
18-0530

SHEET
C-5.2

HYDRANT FLOW ANALYSIS

HYDRANT # & LOCATION: [SEE MAP] Banner Road

DATE: 7/12/2022

MODEL BY: Inflo Design Group, LLC

SYS. DEMAND Max Day

DURATION: 1 hrs.

WATER SUPPLIED BY: Columbia Power and Water Systems

PURPOSE OF TEST: Independence Section 6.3

MODEL DATA

FLOW HYDRANT(S)	[SEE MAP]	[P-0164]	n/a
GPM:	**854**	0	0

TOTAL FLOW DURING SIMULATION: **854** GPM

GAUGE HYDRANT

HYDRANT # & LOCATION: [SEE MAP] Tucker Trace

CONDITION 1

STATIC 81 PSI RESIDUAL: 47 PSI

CONDITION 2

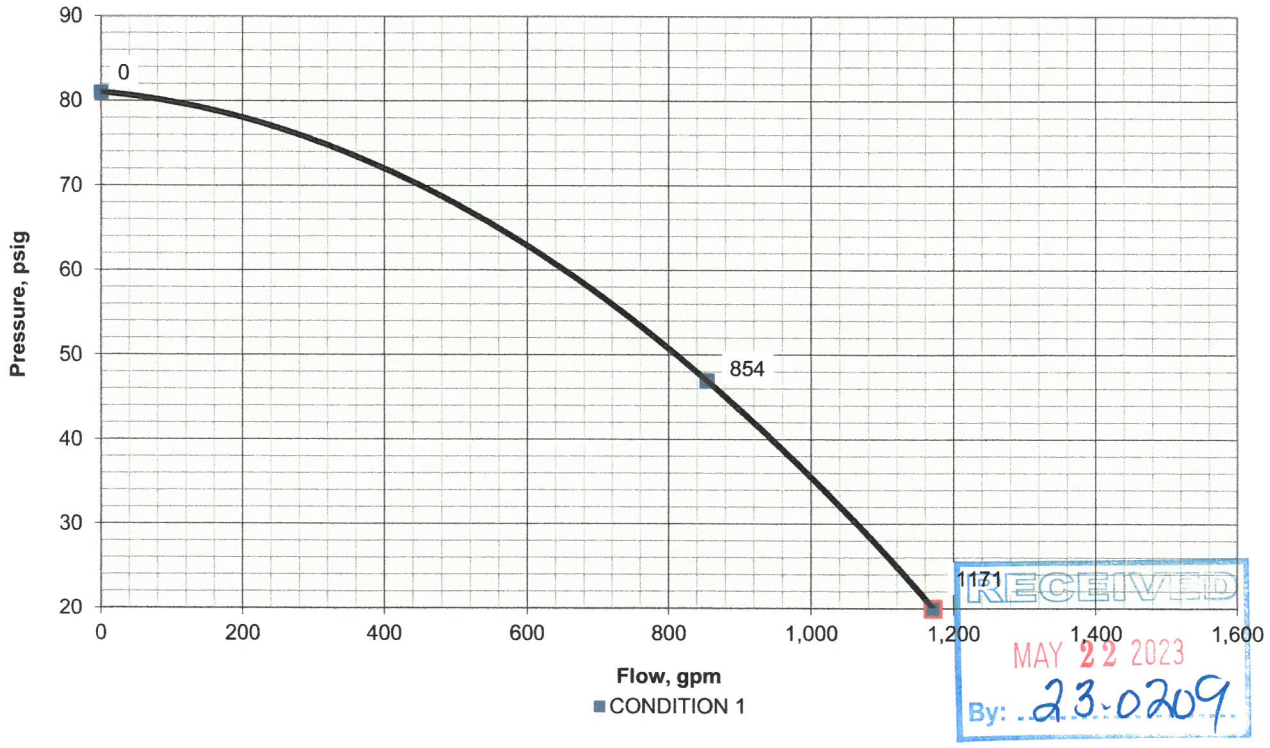
STATIC _____ PSI RESIDUAL: _____ PSI

RESULTS: AT 20 PSI RESIDUAL

CONDITION 1 **1171** GPM

CONDITION 2 **---** GPM

REMARKS: Performance based on service elevation of 683' and current CPWS water infrastructure.



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MAY 22 2023
By: 23-0209



Hydrant Analysis Location Map

Independence at Carters Station - Section 6.3

Tax Map 41, Parcel 15.00

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2022

Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet

N

0 0.02 0.04 Mi

0 0.04 0.07 Km

Surety Calculation Output

Version 2 Rev. 7/20/2022

Carters Station (Phase 3.4)

Roadway Items		
Binder and Subgrade	$	8,842
Roadway Topping	$	45,213
Curbing	$	3,528
Sidewalk	$	50,400
Shared Use Path	$	-
Grading and Site		
General Grading and Stabilization	$	7,288
Storm Pond	$	2,500
Storm Infrastructure		
Storm Structures	$	5,500
Storm Pipe 18" to 24"	$	11,300
Storm Pipe 30" to 36"	$	-
Storm Pipe 42" and above	$	-
Other Improvements		
Traffic Signal	$	-
Bridges and Culverts	$	-
Landscaping	$	-
Street Trees	$	-
Street Lights	$	5,040
Total	$	139,610
Surety Amount	**$**	**140,000**

This completed form shall be emailed to the City Engineer for verification and approval prior to the acceptance of any surety in the above posted amount.

RECEIVED
MAY 22 2023
By: 23-0209

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	Independence at Carter's Station, Columbia, TN		
	TAX MAP: 41	GROUP:	PARCEL: 15.00
SUMMARY OF NATURE OF REQUEST AND WORK	This application is to approve the final plat for section 3.4 Independence at Carter's Station.		

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 [4] 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:** [4] Project Name (include Sections & Phases) Independence at Carter's Station Sec 3.4 [4] Total Number of Lots 29 [4] Total acreage 7.61

RECEIVED
MAY 22 2023
By: 23-0209

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	T-Square Engineering	PHONE	615.678.8212
ADDRESS	1329 West Main St., Franklin, TN 37064	EMAIL	Breanna.Smith@T2-Eng.com

PROPERTY OWNER NAME	Pulte Homes Tennessee Limited Partnership	PHONE	615.992.9508
ADDRESS	100 Westwood Place, Suite #100 Brentwood, TN 37027	EMAIL	Jeremy.Brooks@PulteGroup.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.

Breanna Smith	Breanna Smith	5/8/2023
APPLICANT NAME	APPLICANT SIGNATURE	DATE
JEREMY BROOKS		5/11/2023
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	