



PLANNING COMMISSION WORK SESSION MEETING

Tuesday, April 23, 2024 at 7:00 PM

AGENDA

CALL TO ORDER.

WORK SESSION ITEMS.

1. SUP 2022-05 Warrenton Village Center, the Owners, Jefferson Associates LP and Warrenton Center, LLC with the Applicant, NewCastle Development Group, seek a Special Use Permit for two parcels totaling approximately 29.05 acres to create a mixed use development in the existing Warrenton Village Center. The proposal includes apartments, 2 over 2s, and townhomes with the addition of central plaza, parking garage, enhanced internal road network, and pedestrian infrastructure to promote walkability. The properties are zoned Commercial and designated in the New Town Character District of Plan Warrenton 2040. (GPINs 6985-20-7247 and 6984-29-6753)

Closed Session

COMMENTS FROM THE COMMISSION.

COMMENTS FROM THE STAFF.

ADJOURN.



Community Development
Department

STAFF REPORT

| | |
|---------------------------------|--|
| Commission Meeting Date: | April 16, 2024 |
| Agenda Title: | Special Use Permit 2022-05 Warrenton Village Mixed Use |
| Requested Action: | Hold a Work Session |
| Staff Lead: | Denise Harris, Planning Manager |
| Decision Deadline: | June 27, 2024 Unless Applicant Defers |

EXECUTIVE SUMMARY

On March 19, 2024, the Planning Commission held a Work Session on Special Use Permit (SUP) 2022-04 Warrenton Village Center Mixed Use. The Applicant, Castle Development Partners, is requesting a SUP on approximately 29.05 acres located at Warrenton Village Center (GPINs 6984-20-7247-000/6984-29-6753-000) that is zoned Commercial and located within the New Town Character District of Plan Warrenton 2040. The Applicant proposal calls for a mixed use development with a maximum of 386 residential units consisting of up to 320 apartments, 36 tow over twos, and 30 townhomes. The proposal includes a 10% density bonus and several waiver/modification requests.

The Planning Commission is continuing Work Sessions this month. On April 16, 2024, the Applicant will present to the Planning Commission information related to design of the development. Topics will include affordable dwelling units, waivers and modifications, elevations and building heights, architecture, and economic impacts. On April 23, 2024, the Planning Commission will discuss transportation, schools, and water and sewer impacts.

BACKGROUND

During the March 19, 2024, Planning Commission Work Session, the Applicant for SUP 2022-05 provided a high level overview of the proposal. The Planning Commissioners asked a series of questions related to affordable dwelling units, waivers and modifications, architecture, transportation, economic impacts, water and sewer, density bonuses, walkability, schools, open space, and design. While the Applicant spoke to many of the topics at this meeting, it was agreed upon to hold two more Work Sessions in the month of April to enable the Applicant to provide a deeper analysis on each topic. The application will be scheduled for a Public Hearing once the Work Sessions conclude. Staff reports will be developed and provided based on the Public Hearing materials submitted by the Applicant.

STAFF RECOMMENDATION

Hold a Work Session.

SPECIAL USE PERMIT

FOR WARRENTON VILLAGE CENTER

LOCATION OF SITE
TOWN OF WARRENTON
FAUQUIER COUNTY, VIRGINIA 20186
PARCEL ID'S: 6985-20-7247-000, 6984-29-6753

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

| REVISIONS | | | | |
|-----------|-----------|---------------|------------|----------|
| REV | DATE | COMMENT | CHECKED BY | DRAWN BY |
| 1 | 6/30/2023 | TOWN COMMENTS | DSH | JCW |
| 2 | 2/14/2024 | TOWN COMMENTS | TAL | JCW |

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PROJECT No.: V212141
DRAWN BY: DSH
CHECKED BY: JCW
DATE: 7/8/2022
CAD ID.: SUPP-2

PROJECT:
SPECIAL USE PERMIT
FOR
WARRENTON VILLAGE CENTER
PROPOSED DEVELOPMENT
OAK SPRINGS DRIVE CENTER DISTRICT
TOWN OF WARRENTON, VIRGINIA

BOHLER
28 BLACKWELL PARK LANE, SUITE 201
WARRENTON, VIRGINIA 20186
Phone: (540) 349-4500
Fax: (540) 349-0321
VA@BohlerEng.com

JOHN C. WRIGHT
Lic. No. 046960
2/14/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
COVER SHEET
SHEET NUMBER:
1
REVISION 2 - 2/14/2024

PARCEL IDENTIFICATION TABLE

| PARCEL NUMBER | OWNER | ADDRESS | AREA | CURRENT ZONE | CURRENT PLANNED LAND USE | PROPOSED PLANNED LAND USE |
|------------------|-------------------------|--|-------------|--------------|--------------------------|---------------------------|
| 6985-20-7247-000 | JEFFERSON ASSOCIATES LP | 360 OAK SPRINGS DRIVE WARRENTON, VA 20186 | 6.46 ACRES | C | VACANT | MIXED USE |
| 6984-29-6753-000 | WARRENTON CENTER LLC | 251 W LEE HIGHWAY WARRENTON, VA 20186 | 22.59 ACRES | C | RETAIL | MIXED USE |
| | | | TOTAL AREA | 29.05 ACRES | | |

REFERENCES AND CONTACTS

- REFERENCES**
- **BOUNDARY & TOPOGRAPHIC SURVEY:**
ALTANSPS LAND TITLE SURVEY
*WARRENTON CENTER, 360 OAK SPRINGS DRIVE,
CENTER DISTRICT, TOWN OF WARRENTON,
VIRGINIA
PREPARED BY: BOHLER
DATED: 11/3/21
 - **ARCHITECTURAL PLAN:**
CAD FILE: 2024_0213 WARRENTON VILLAGE UNIT
BLOCK OUT DWG
PREPARED BY: DYNAMIK DESIGN
DATED: 2/13/2024
SEE GENERAL NOTES REFERENCE ON
SHEET 4
- GOVERNING AGENCIES**
- **TOWN OF WARRENTON
COMMUNITY DEVELOPMENT**
21 MAIN STREET
WARRENTON, VA 20186-0341
CONTACT: ROB WALTON, DIRECTOR OF
COMMUNITY DEVELOPMENT
PHONE: (540) 347-2405

*THE ABOVE REFERENCED DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THESE PLANS. HOWEVER, BOHLER ENGINEERING DOES NOT CERTIFY THE ACCURACY OF THE WORK REFERENCED OR DERIVED FROM THESE DOCUMENTS, BY OTHERS.



LOCATION MAP
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SCALE: 1" = 2,000'

OWNER
SEE PARCEL IDENTIFICATION TABLE

DEVELOPER
NEWCASTLE DEVELOPMENT GROUP
100 10TH STREET SE, SUITE 300
CHARLOTTESVILLE, VA 22902
CONTACT: JESS ACHENBACH
PHONE: (434) 280-6628

| SHEET INDEX | |
|------------------------------------|--------------|
| SHEET TITLE | SHEET NUMBER |
| COVER SHEET | 1 |
| EXISTING CONDITIONS PLAN | 2 |
| PARCEL OVERVIEW PLAN | 2A |
| OVERALL SITE DEVELOPMENT PLAN | 3 |
| SITE PLAN DEVELOPMENT PLAN BLOCK 1 | 4 |
| SITE DEVELOPMENT BLOCKS 2 & 3 | 5 |
| OPEN SPACE PLAN | 6 |
| WAIVER INFORMATION | 7 |
| FIRE TRUCK MOVEMENT | 8 |
| LANDSCAPE PLAN | 9-10 |
| BUILDING ELEVATIONS | 11-15 |
| CONCEPTUAL PLAN RENDERING | 16 |
| DETAIL - CENTRAL PLAZA | 17 |
| DETAIL - WEST PLAZA | 18 |
| DETAIL - ALLEY | 19 |
| DETAIL - EAST PLAZA | 20 |
| CONCEPTUAL SIGNAGE PLAN | 21 |
| CONCEPTUAL LIGHTING PLAN | 22 |
| CONCEPTUAL CIRCULATION PLAN | 23 |
| RENDERING | 24-36 |

PREPARED BY

BOHLER

CONTACT: JOHN C. WRIGHT, P.E.



REVISIONS

Table with columns: REV, DATE, COMMENT, DRAWN BY. Contains two revision entries.



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DRAWN BY: DSH
CHECKED BY: JCW
DATE: 7/8/2022
CAD ID: EXST-2

PROJECT:

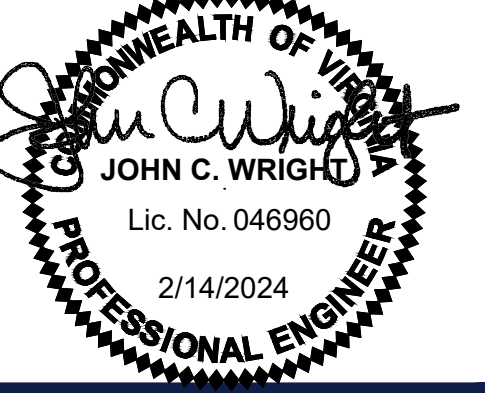
SPECIAL USE PERMIT

FOR WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT OAK SPRINGS DRIVE CENTER DISTRICT TOWN OF WARRENTON, VIRGINIA



28 BLACKWELL PARK LANE, SUITE 201 WARRENTON, VIRGINIA 20186
Phone: (540) 349-4500
Fax: (540) 349-0321
VA@BohlerEng.com

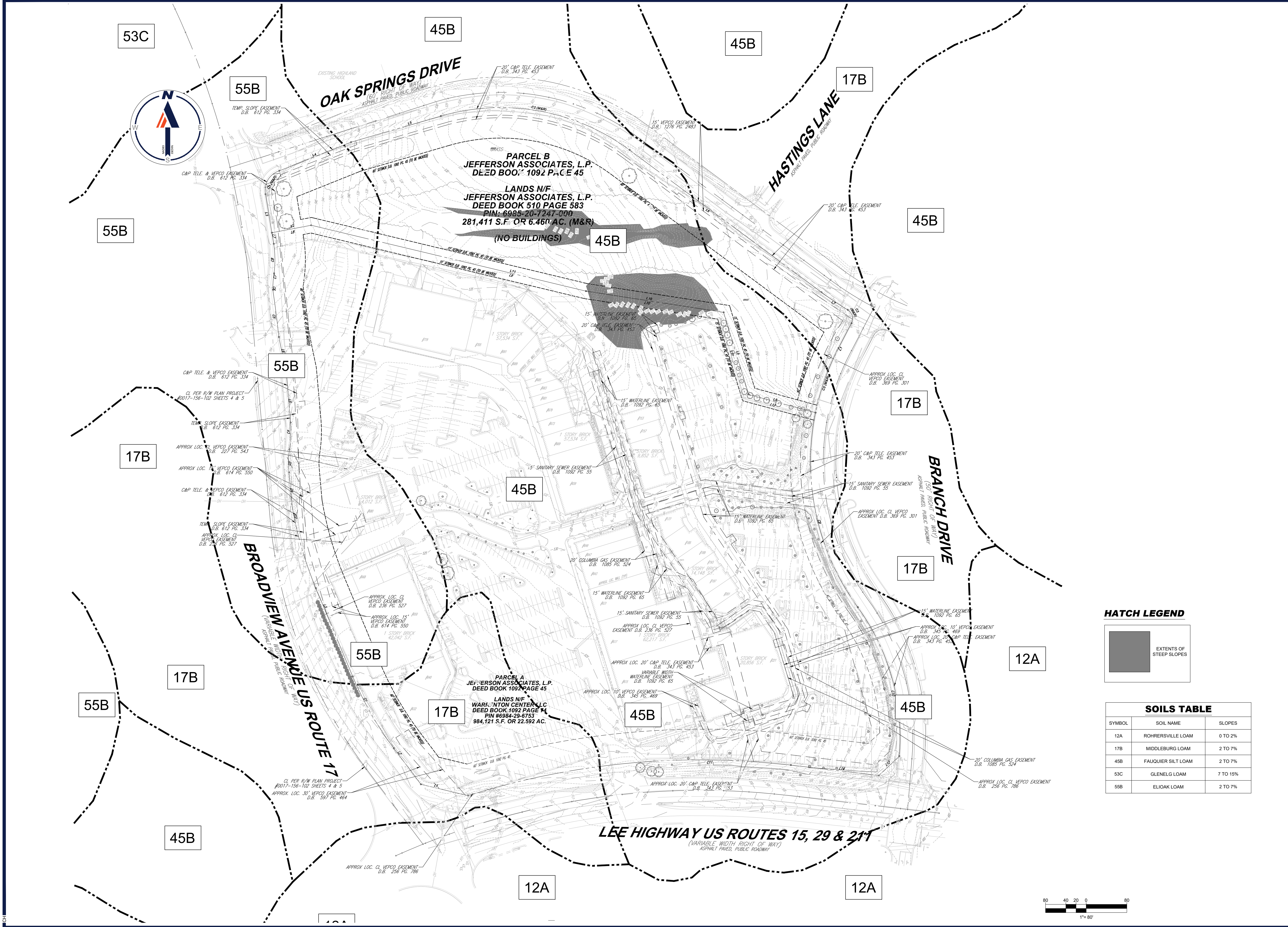


SHEET TITLE:

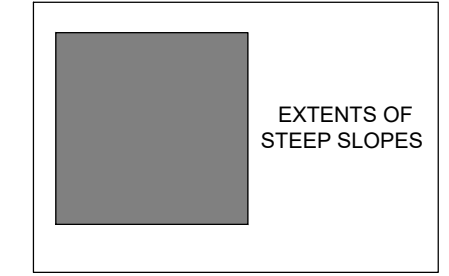
EXISTING CONDITIONS PLAN

SHEET NUMBER: 2

REVISION 2 - 2/14/2024

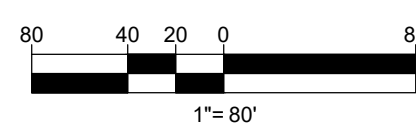


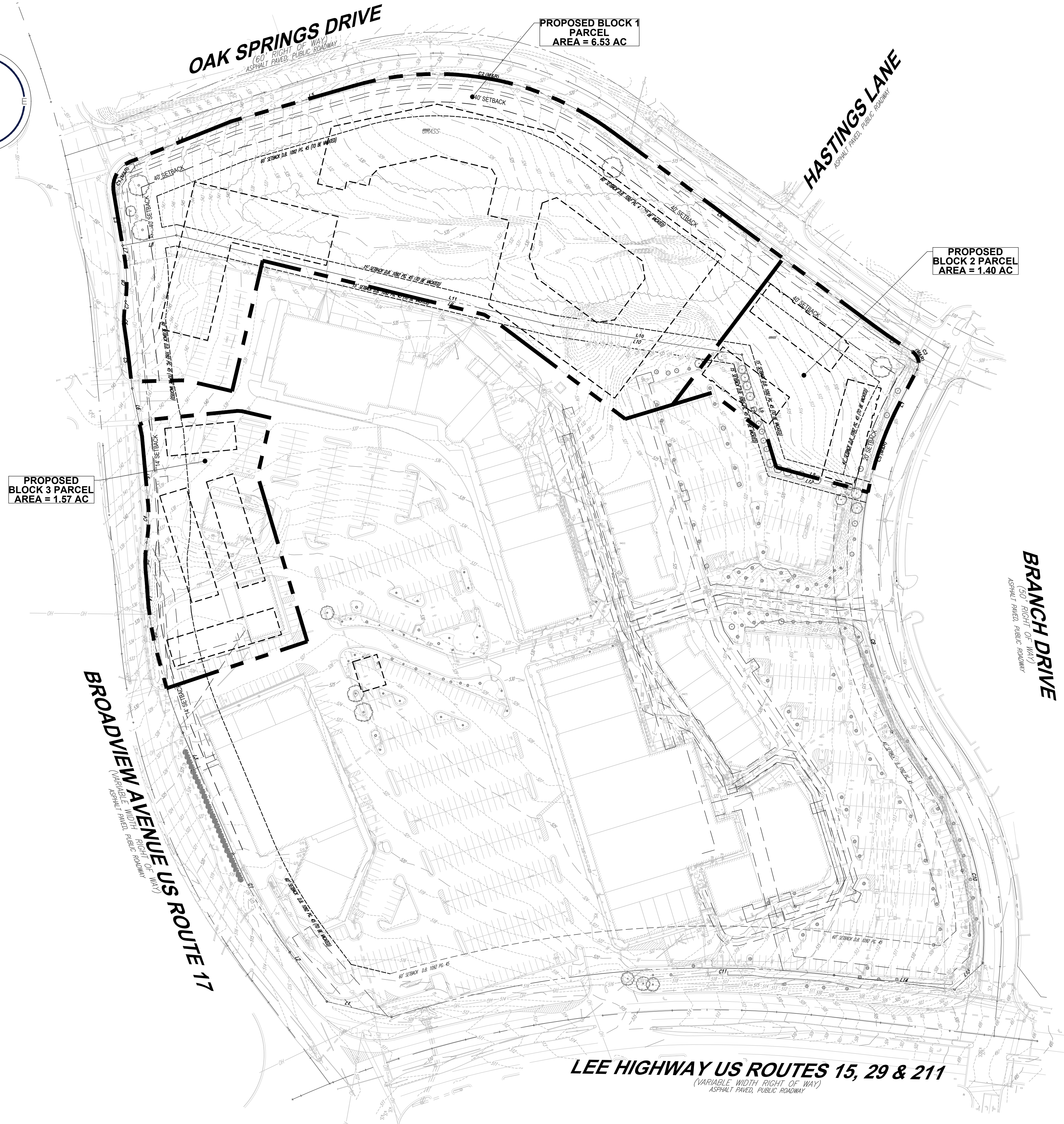
HATCH LEGEND



SOILS TABLE

Table with columns: SYMBOL, SOIL NAME, SLOPES. Lists soil types like ROHRERSVILLE LOAM and MIDDLEBURG LOAM with their respective slope ranges.





Feb 14, 2024
H:\11\12141\CAD\DRAWINGS\PLAN SETS\JUPV212141 - EXST - 1...-JAVOUT - 2A - PARCEL OVERVIEW PLAN

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| CAD ID: | EXST-2 |

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 FOR
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 PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

BOHLER
 28 BLACKWELL PARK LANE, SUITE 201
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 Fax: (540) 349-0321
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PROFESSIONAL SEAL
 JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:
PARCEL OVERVIEW PLAN

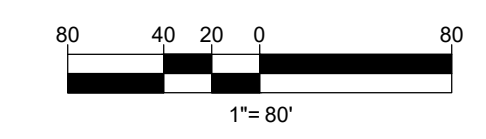
SHEET NUMBER:
2A

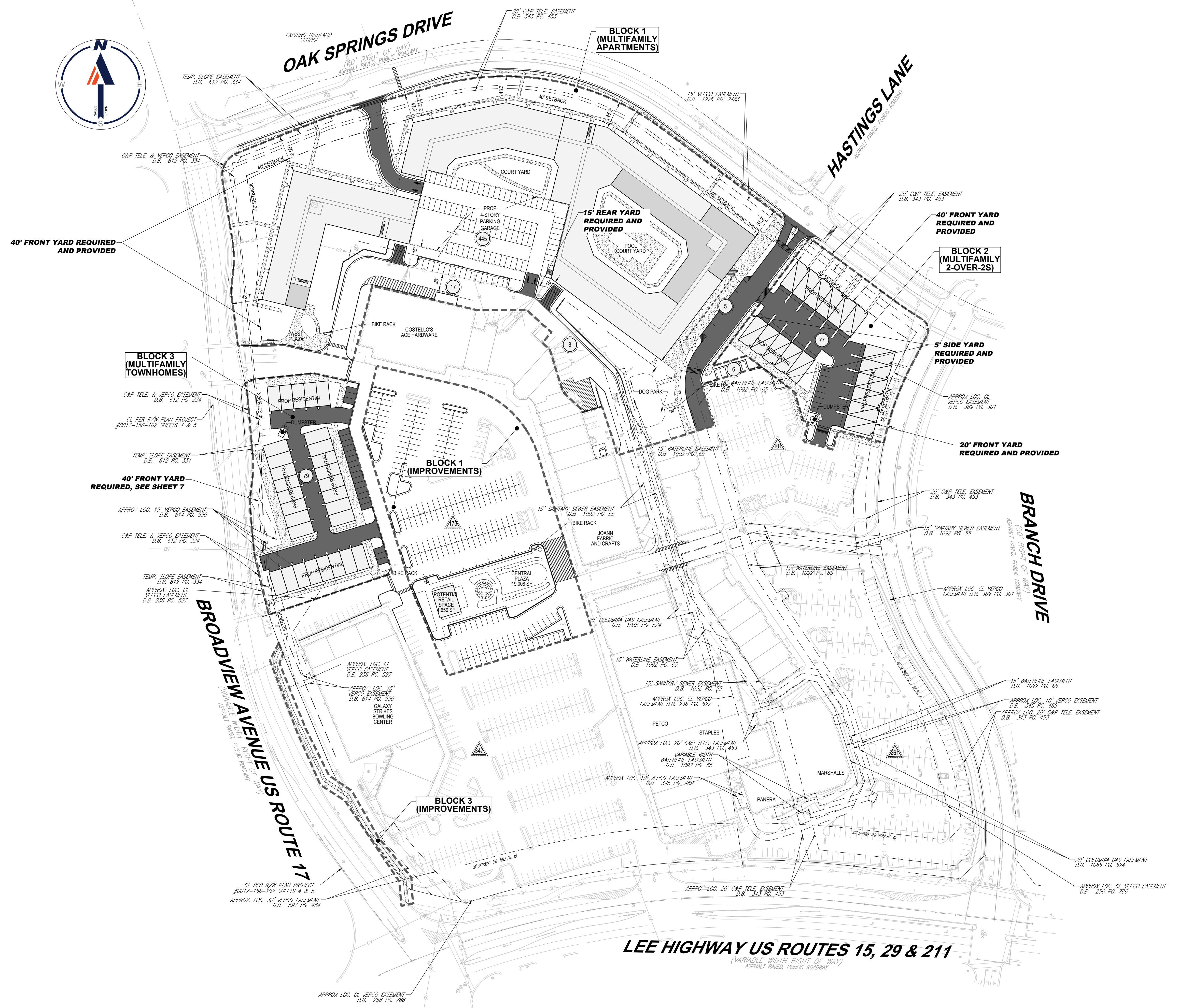
REVISION 2 - 2/14/2024

LEGEND

--- PROPOSED BUILDING OUTLINE

--- PROPOSED BLOCK PARCEL LINE





ZONING TABULATION TABLE:

| LOT SIZE AND YARD SETBACK REQUIREMENTS: | | |
|--|----------|-------------|
| | REQUIRED | PROVIDED |
| MINIMUM LOT SIZE: | 5 ACRES | 29.05 ACRES |
| SETBACK REQUIREMENTS: | | |
| FRONT YARD (OAK SPRINGS, ROW >50') | 40" | 40± |
| FRONT YARD (BRANCH, ROW <50') | 20" | 20± |
| FRONT YARD (BROADVIEW, ROW >50') | 40" | 14± |
| SIDE YARD BUILDING: | | |
| | 5' | 0± |
| SIDE YARD BUILDING: | | |
| | 5' | 48.7± |
| REAR YARD BUILDING: | | |
| | 15' | 15± |
| LOT COVERAGE REQUIREMENTS: | | |
| | MAX | PROVIDED |
| PROPOSED LOT COVERAGE: (IMPERVIOUS SURFACES) | 85% | 83% |

*FRONT YARD MAY BE REDUCED BY 20' IF NO PARKING OR LOADING IS PROPOSED. A REDUCTION IN FRONT/REAR/SIDE SETBACKS IS BEING REQUESTED FROM TOWN COUNCIL AT CERTAIN LOCATIONS - SEE SHEET 7 FOR DETAIL.

REVISIONS

| REV | DATE | COMMENT | CHECKED BY |
|-----|-----------|---------------|------------|
| 1 | 6/30/2023 | TOWN COMMENTS | DSH |
| 2 | 2/14/2024 | TOWN COMMENTS | TAL |
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FOR

WARRENTON VILLAGE CENTER

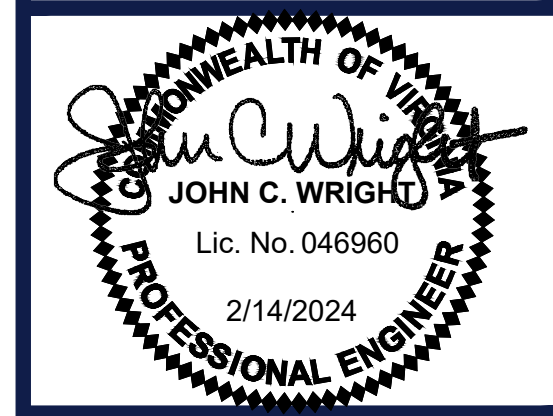
PROPOSED DEVELOPMENT

OAK SPRINGS DRIVE CENTER DISTRICT

TOWN OF WARRENTON, VIRGINIA

BOHLER

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OVERALL SITE DEVELOPMENT PLAN

SHEET NUMBER: **3**

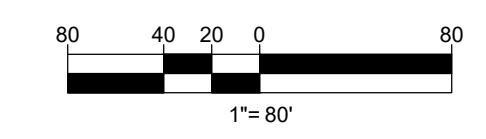
REVISION 2 - 2/14/2024

GENERAL NOTES:

- THIS PLAN IS BASED ON THE FOLLOWING:
SURVEY CAD FILES PREPARED BY BOHLER
DATED: 11/2/2023
BUILDING FOOTPRINT CAD FILES PREPARED BY MV&A ARCHITECTS
DATED: 2/8/2024
- ZONING DATA:
EXISTING ZONE: C - COMMERCIAL
PROPOSED ZONE: COMMERCIAL WITH MIXED USE
- USES:
EXISTING USE: VACANT, RETAIL
PROPOSED USE: MIXED USE
- SITE AREA
PINS: 6985-20-7247-0000 6.46 ACRES
6984-29-6753-0000 22.59 ACRES
- SITE WILL BE SERVICED BY TOWN WATER AND SEWER.
- TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
- THE PROPOSED BUILDING, DIMENSIONAL ELEMENTS, AND OTHER SITE FEATURES, SUCH AS HARDSCAPE AREAS AND PLAZAS SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.
- CURB AND PARKING MODIFICATIONS IN WARRENTON CENTER WILL OCCUR AS PART OF EACH DEVELOPMENT BLOCK.
- A PROPERTY LINE ADJUSTMENT PLAT WILL BE COMPLETED WITH SITE PLAN.
- A TREE SURVEY WILL BE PROVIDED AT TIME OF SITE PLAN.
- A PHOTOMETRIC/LIGHTING PLAN WILL BE PROVIDED AT TIME OF SITE PLAN.
- CONSTRUCTION DETAILS OF ALL SCREENING AND FENCING WILL BE ADDRESSED AT TIME OF SITE PLAN.

HATCH LEGEND

| | | | |
|--|--------------------|--|-----------------------------------|
| | CONCRETE | | PROP BUILDING (SEE ARCH DRAWINGS) |
| | DEVELOPMENT BLOCKS | | ASPHALT |



DEVELOPMENT TABULATION

| BLOCK | BLOCK USE | LAND AREA | EXISTING ZONE | LAND USE | RETAIL | RESIDENTIAL | MAX. ALLOWABLE DENSITY | PROPOSED MAX. | REQUIRED PARKING | PARKING PROVIDED | MAX. BUILDING HEIGHT | MAX. BUILDING HEIGHT PROVIDED |
|---------|------------------------|-----------|---------------|------------------|------------|-------------|------------------------|--|---|---|----------------------|--|
| Block 1 | Multifamily Apartments | 6.58 Ac. | C-Commercial | Mixed Use W/ SUP | 1,650 | 320 | | 320 | ±144 - 1 bed units (1.5 spaces per 1 bed unit) ±144 - 2 bed units (1.5 spaces per 2 bed unit) ±32 - 3 bed units (2 spaces per 3 bed unit) = 320 units, 424 spaces | 481 Spaces (445 Garage + 36 Surface spaces) | 36' | 54' (Oak Springs Drive Frontage) 36' (Broadview Drive Frontage) |
| Block 2 | Multifamily 2-Over-2s | 1.40 Ac. | C-Commercial | Mixed Use W/ SUP | - | 36 | | 36 | 2 spaces per unit = 72 spaces | 77 Spaces (34 garage + 43 Surface spaces) | 36' | 45' |
| Block 3 | Multifamily Townhomes | 1.57 Ac. | C-Commercial | Mixed Use W/ SUP | - | 30 | | 30 | 2 spaces per unit = 60 spaces | 79 Spaces (58 Garage + 21 Surface spaces) | 36' | 36' |
| Retail | Retail | 19.5 Ac. | C-Commercial | Mixed Use W/ SUP | 218,142 SF | N/A | | | Shopping Center: 1/300 GFA for first 12,000 SF + 2 spaces for each 1,000 GFA = 449 spaces | 884 spaces | 45' | 45' |
| TOTALS: | TOTALS: | 29.05 Ac. | C-Commercial | Mixed Use W/ SUP | 219,792 SF | 386 UNITS | 439 Units (See Note 1) | 386 Units or 13.28 Units/Ac. 219,792 SF of Commercial | 1,005 Spaces Required | 1,521 Total Parking Spaces | | (See Note 5) |

- NOTES:**
- FIVE (5) DWELLING UNITS PER ACRE OR 29.05 AC. X 5 = 145.25 UNITS, 1 DWELLING UNITS PER 500 GROSS SF OR NON-RESIDENTIAL FLOOR SPACE OR 219,792 SF/500 SF = 439 UNITS
 - DENSITY BONUS REQUESTED AS 10% OF THE TOTAL NUMBER UNITS WILL BE PROVIDED AS AFFORDABLE HOUSING.
 - 2/2 TOWNHOME UNITS INCLUDE 1 DRIVEWAY SPACE + 1 GARAGE SPACE IN TOTAL PARKING SPACE COUNT.
 - EXISTING COMMERCIAL = 218,142. PROPOSED RETAIL (PLAZA) = 1,650 SF NEW TOTAL = 219,792 SF. NOTE: RETAIL SPACE MAY INCREASE AS EXISTING SPACE IS REDEVELOPED.
 - BUILDING HEIGHT MODIFICATION SECTION 9-25 BEING REQUESTED FROM TOWN COUNCIL TO INCREASE BUILDING HEIGHTS. SEE WAIVER INFORMATION ON SHEET 7.
 - DECKS ARE NOT SHOWN IN FOOTPRINT - STANDARD DECKS PROTRUDE 2' OUT FROM FOOTPRINT.

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CAD ID: SUPP-2

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PROPOSED DEVELOPMENT
OAK SPRINGS DRIVE
CENTER DISTRICT
TOWN OF WARRENTON, VIRGINIA

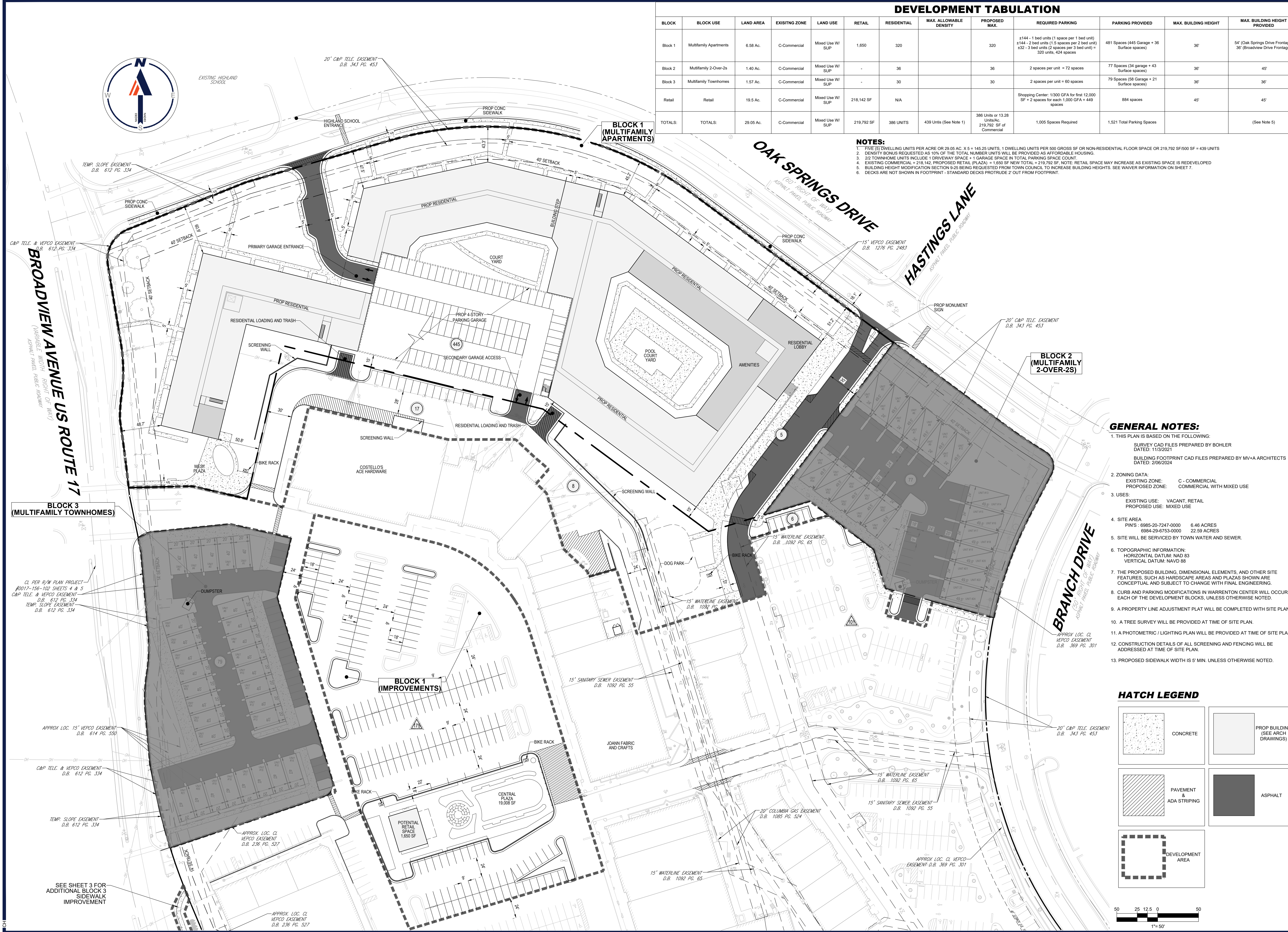
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VA@BohlerEng.com

JOHN C. WRIGHT
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Lic. No. 046960
2/14/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
SITE DEVELOPMENT PLAN BLOCK 1

SHEET NUMBER:
4

REVISION 2 - 2/14/2024



- GENERAL NOTES:**
- THIS PLAN IS BASED ON THE FOLLOWING:
SURVEY CAD FILES PREPARED BY BOHLER
DATED: 11/29/21
BUILDING FOOTPRINT CAD FILES PREPARED BY MVA ARCHITECTS
DATED: 2/06/2024
 - ZONING DATA:
EXISTING ZONE: C - COMMERCIAL
PROPOSED ZONE: COMMERCIAL WITH MIXED USE
 - USES:
EXISTING USE: VACANT, RETAIL
PROPOSED USE: MIXED USE
 - SITE AREA
PINS: 6985-20-7247-0000 6.46 ACRES
6984-29-6753-0000 22.59 ACRES
 - SITE WILL BE SERVICED BY TOWN WATER AND SEWER.
 - TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
 - THE PROPOSED BUILDING, DIMENSIONAL ELEMENTS, AND OTHER SITE FEATURES, SUCH AS HARDSCAPE AREAS AND PLAZAS SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE WITH FINAL ENGINEERING.
 - CURB AND PARKING MODIFICATIONS IN WARRENTON CENTER WILL OCCUR IN EACH OF THE DEVELOPMENT BLOCKS, UNLESS OTHERWISE NOTED.
 - A PROPERTY LINE ADJUSTMENT PLAT WILL BE COMPLETED WITH SITE PLAN.
 - A TREE SURVEY WILL BE PROVIDED AT TIME OF SITE PLAN.
 - A PHOTOMETRIC / LIGHTING PLAN WILL BE PROVIDED AT TIME OF SITE PLAN.
 - CONSTRUCTION DETAILS OF ALL SCREENING AND FENCING WILL BE ADDRESSED AT TIME OF SITE PLAN.
 - PROPOSED SIDEWALK WIDTH IS 5' MIN. UNLESS OTHERWISE NOTED.

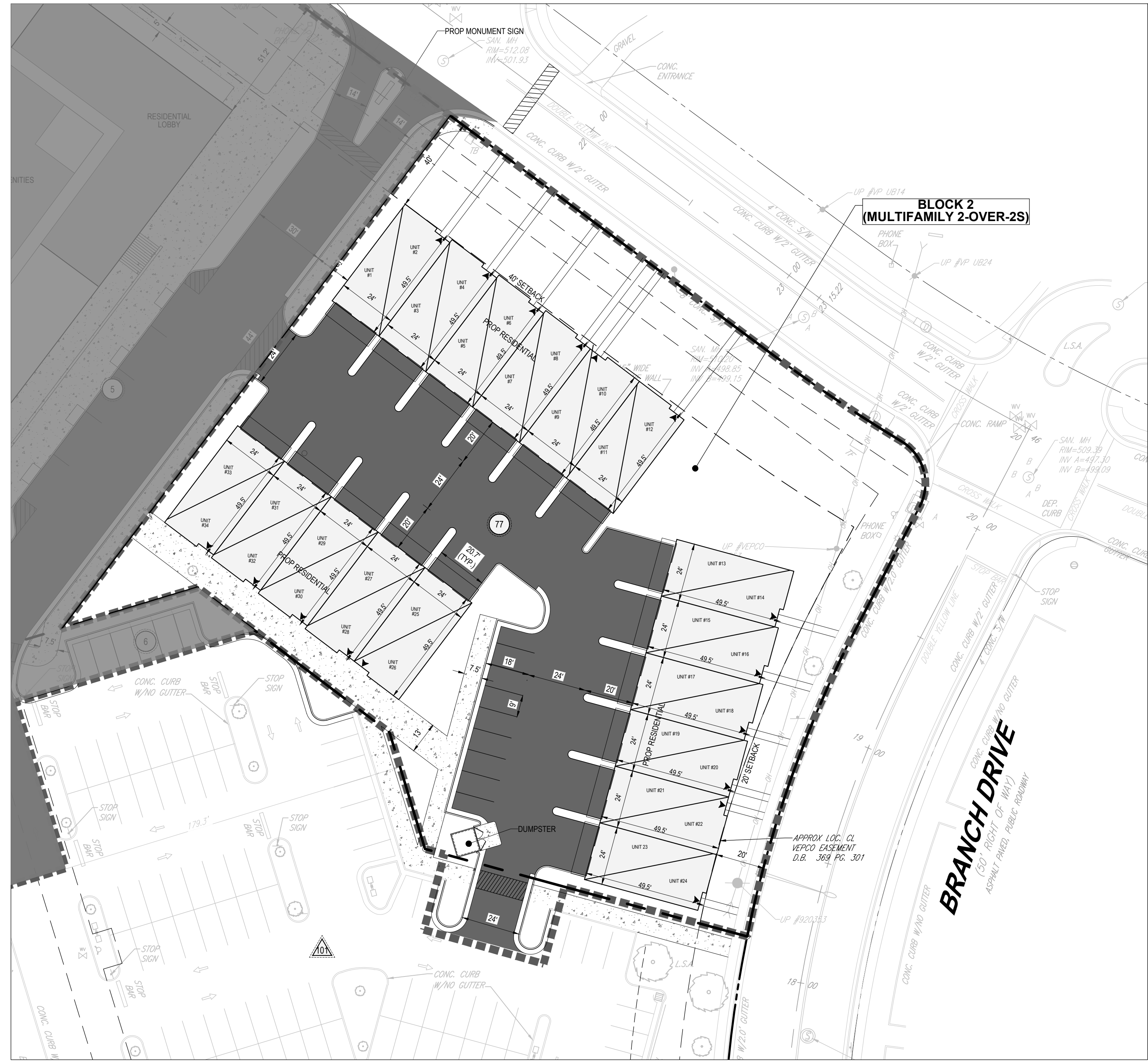
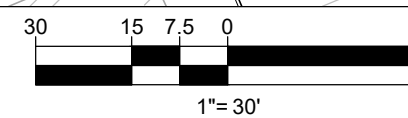
HATCH LEGEND

| | | | |
|--|-------------------------|--|-----------------------------------|
| | CONCRETE | | PROP BUILDING (SEE ARCH DRAWINGS) |
| | PAVEMENT & ADA STRIPING | | ASPHALT |
| | DEVELOPMENT AREA | | |

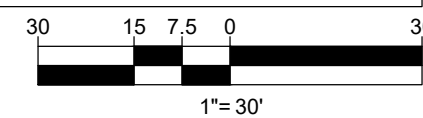
Scale: 1" = 50'



BLOCK 3 (TOWNHOME BLOCK)



BLOCK 2 (2 OVER 2 BLOCK)



HATCH LEGEND

| | | | |
|--|-------------------------------|--|---|
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| | PAVEMENT & ADA STRIPING | | ASPHALT |
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OAK SPRINGS DRIVE
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JOHN C. WRIGHT
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2/14/2024

SHEET TITLE:
SITE DEVELOPMENT PLAN - BLOCKS 2 AND 3
SHEET NUMBER:
5



OAK SPRINGS DRIVE
EXISTING HIGHLAND SCHOOL

HASTINGS LANE
EXISTING HIGHLAND SCHOOL

BROADVIEW AVENUE US ROUTE 17
EXISTING HIGHLAND SCHOOL

LEE HIGHWAY US ROUTES 15, 29 & 211
(VARIABLE WIDTH RIGHT-OF-WAY)
ASPHALT PAVED, PUBLIC ROADWAY

| OPEN SPACE TABULATION | | | | |
|-----------------------|------------|------------------------------|--|---|
| | AREA | OPEN SPACE REQUIRED | OPEN SPACE PROVIDED | NEW IMPROVEMENTS |
| BLOCK 1 | ±6.58 AC. | 10% - 0.66 AC. (±28,750 SF) | A: 1.21 AC. (±52,700 SF) B: 0.84 AC. (±36,590 SF) C: 0.07 AC. (±3,050 SF) TOTAL BLOCK 1: 2.12 AC. (±92,340 SF) (32.2%) | A: RESIDENTIAL PLAZA, BENCH SEATING, BIKE RACK, LANDSCAPING B: LANDSCAPING C: LANDSCAPING |
| BLOCK 2 | ±1.40 AC. | 10% - 0.14 AC. (±6,100 SF) | 34.3% - 0.48 AC. (±20,910 SF) | LANDSCAPING |
| BLOCK 3 | ±1.57 AC. | 10% - 0.16 AC. (±6,970 SF) | 20.8% - 0.33 AC. (±14,375 SF) | LANDSCAPING |
| RETAIL | ±19.5 AC. | 10% - 1.95 AC. (±84,940 SF) | D: 0.34 AC. (±14,810 SF) E: 0.38 AC. (±16,550 SF) F: 0.20 AC. (±8,710 SF) G: 0.44 AC. (±19,160 SF) H: 0.32 AC. (±13,940 SF) LANDSCAPE ISLANDS: 0.42 AC. (±18,300 SF) TOTAL BLOCK RETAIL: 2.10 AC. (±91,470 SF) (10.8%) | D: FENCED DOG PLAY AREA, PICNIC TABLES, BIKE RACK, LANDSCAPING E: BIKE RACK, SPLASH-PAD, LAWN AREA, BENCH SEATING, LANDSCAPING, COMMERCIAL PAD F, G, H: EXISTING CONDITIONS |
| TOTAL | ±29.05 AC. | 10% - 2.91 AC. (±128,760 SF) | 17.3% - 5.03 AC. (±219,100 SF) | |

LEGEND

- OPEN SPACE
- COMMON OPEN SPACE/PARK
- BLOCK AREA FOR OPEN SPACE TABULATION

REVISIONS

| REV | DATE | COMMENT | DRAWN BY | CHECKED BY |
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PROJECT No.: V212141
 DRAWN BY: DSH
 CHECKED BY: JCW
 DATE: 7/8/2022
 CAD ID: SUPP-2

PROJECT:

SPECIAL USE PERMIT

FOR

WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE
 CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA



28 BLACKWELL PARK LANE, SUITE 201
 WARRENTON, VIRGINIA 20186
 Phone: (540) 349-4500
 Fax: (540) 349-0321
 VA@BohlerEng.com



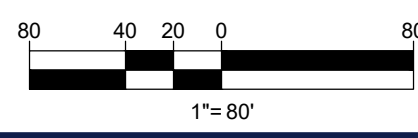
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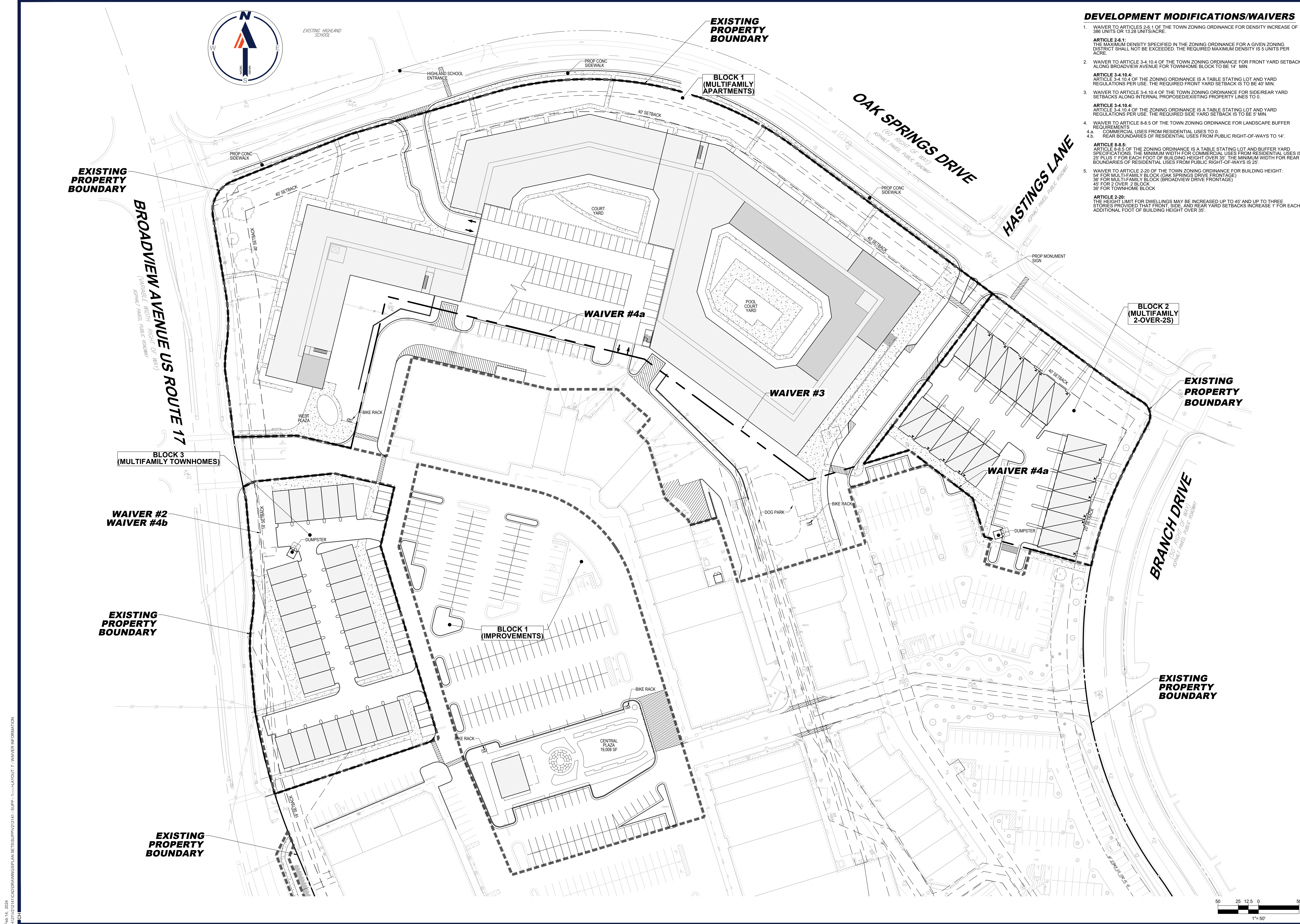
OPEN SPACE PLAN

SHEET NUMBER:

6

REVISION 2 - 2/14/2024





DEVELOPMENT MODIFICATIONS/WAIVERS

1. WAIVER TO ARTICLES 2-6.1 OF THE TOWN ZONING ORDINANCE FOR DENSITY INCREASE OF 386 UNITS OR 13.28 UNITS/ACRE.
ARTICLE 2-6.1:
 THE MAXIMUM DENSITY SPECIFIED IN THE ZONING ORDINANCE FOR A GIVEN ZONING DISTRICT SHALL NOT BE EXCEEDED. THE REQUIRED MAXIMUM DENSITY IS 5 UNITS PER ACRE.
2. WAIVER TO ARTICLE 3-4.10.4 OF THE TOWN ZONING ORDINANCE FOR FRONT YARD SETBACK ALONG BROADVIEW AVENUE FOR TOWNHOME BLOCK TO BE 14' MIN.
ARTICLE 3-4.10.4:
 THE ZONING ORDINANCE IS A TABLE STATING LOT AND YARD REGULATIONS PER USE. THE REQUIRED FRONT YARD SETBACK IS TO BE 40' MIN.
3. WAIVER TO ARTICLE 3-4.10.4 OF THE TOWN ZONING ORDINANCE FOR SIDE/REAR YARD SETBACKS ALONG INTERNAL PROPOSED EXISTING PROPERTY LINES TO 0.
ARTICLE 3-4.10.4:
 THE ZONING ORDINANCE IS A TABLE STATING LOT AND YARD REGULATIONS PER USE. THE REQUIRED SIDE YARD SETBACK IS TO BE 5' MIN.
4. WAIVER TO ARTICLE 8-8.5 OF THE TOWN ZONING ORDINANCE FOR LANDSCAPE BUFFER REQUIREMENTS
 4.a. COMMERCIAL USES FROM RESIDENTIAL USES TO 0.
 4.b. REAR BOUNDARIES OF RESIDENTIAL USES FROM PUBLIC RIGHT-OF-WAYS TO 14'.
ARTICLE 8-8.5:
 THE ZONING ORDINANCE IS A TABLE STATING LOT AND BUFFER YARD SPECIFICATIONS. THE MINIMUM WIDTH FOR COMMERCIAL USES FROM RESIDENTIAL USES IS 25 PLUS 1" FOR EACH FOOT OF BUILDING HEIGHT OVER 35'. THE MINIMUM WIDTH FOR REAR BOUNDARIES OF RESIDENTIAL USES FROM PUBLIC RIGHT-OF-WAYS IS 25'.
5. WAIVER TO ARTICLE 2-20 OF THE TOWN ZONING ORDINANCE FOR BUILDING HEIGHT:
 54' FOR MULTI-FAMILY BLOCK (OAK SPRINGS DRIVE FRONTAGE)
 38' FOR MULTI-FAMILY BLOCK (BROADVIEW DRIVE FRONTAGE)
 45' FOR 2 OVER 2 BLOCK
 38' FOR TOWNHOME BLOCK
ARTICLE 2-20:
 THE HEIGHT LIMIT FOR DWELLINGS MAY BE INCREASED UP TO 45' AND UP TO THREE STORIES PROVIDED THAT FRONT, SIDE, AND REAR YARD SETBACKS INCREASE 1' FOR EACH ADDITIONAL FOOT OF BUILDING HEIGHT OVER 35'.

REVISIONS

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FOR _____
 WARRENTON VILLAGE CENTER
 PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

BOHLER

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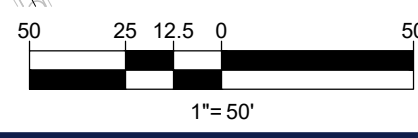


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WAIVER INFORMATION

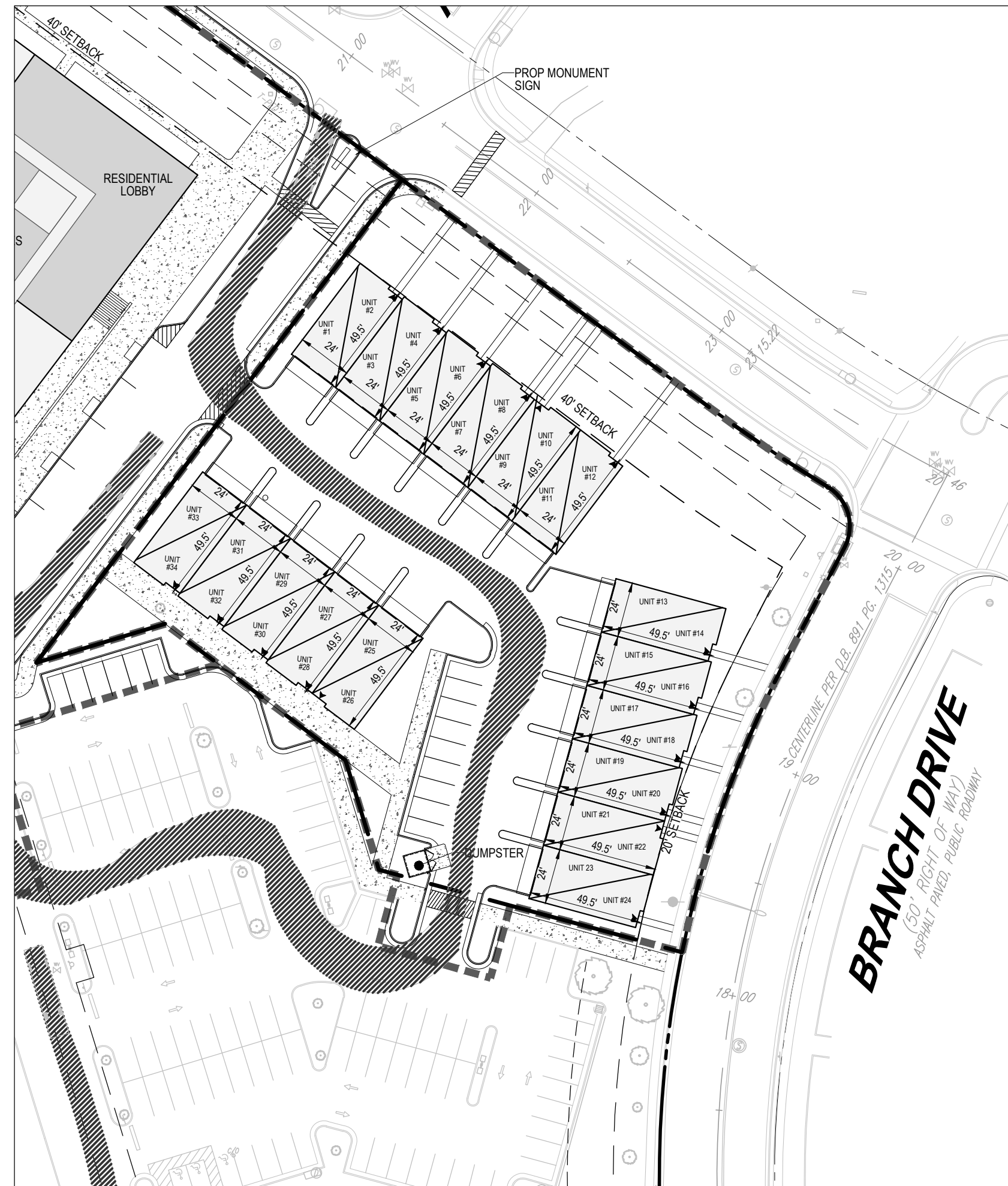
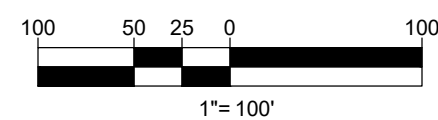
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REVISION 2 - 2/14/2024

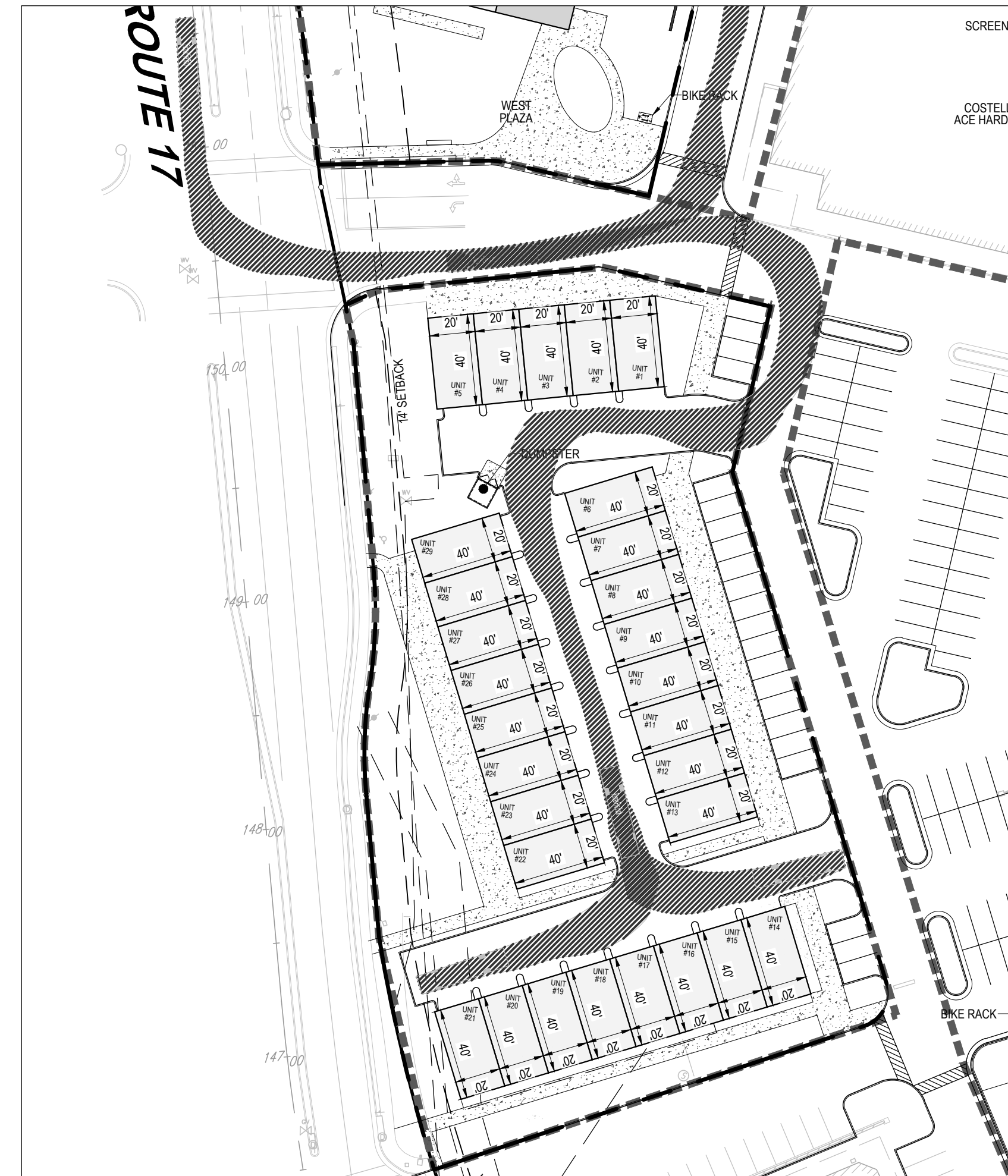
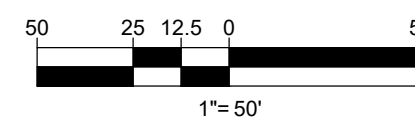




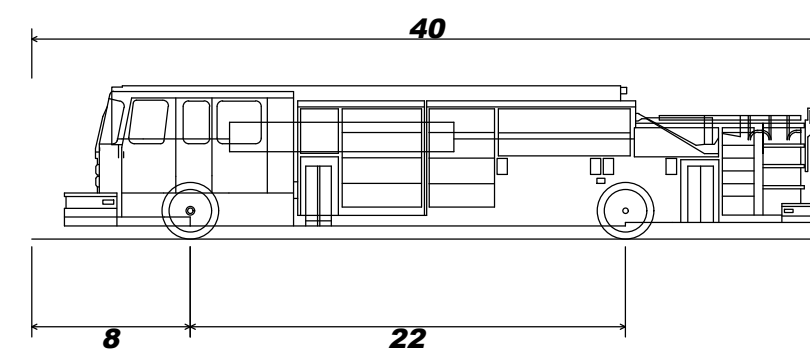
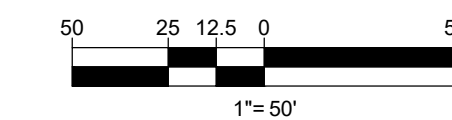
BLOCK 1



BLOCK 2 (2 OVER 2 BLOCK)



BLOCK 3 (TOWNHOME BLOCK)



Pumper Fire Truck
Overall Length 40.000ft
Overall Width 8.167ft
Overall Body Height 7.745ft
Min Body Ground Clearance 0.656ft
Track Width 8.167ft
Lock-to-lock time 5.00s
Max Wheel Angle 45.00°

Item 1

BOHLER
 SITE CIVIL AND CONSULTING ENGINEERING
 PROGRAM MANAGEMENT
 LANDSCAPE ARCHITECTURE
 SUSTAINABLE DESIGN
 PERMITTING SERVICES
 TRANSPORTATION SERVICES

REVISIONS

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FOR

WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE
 CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

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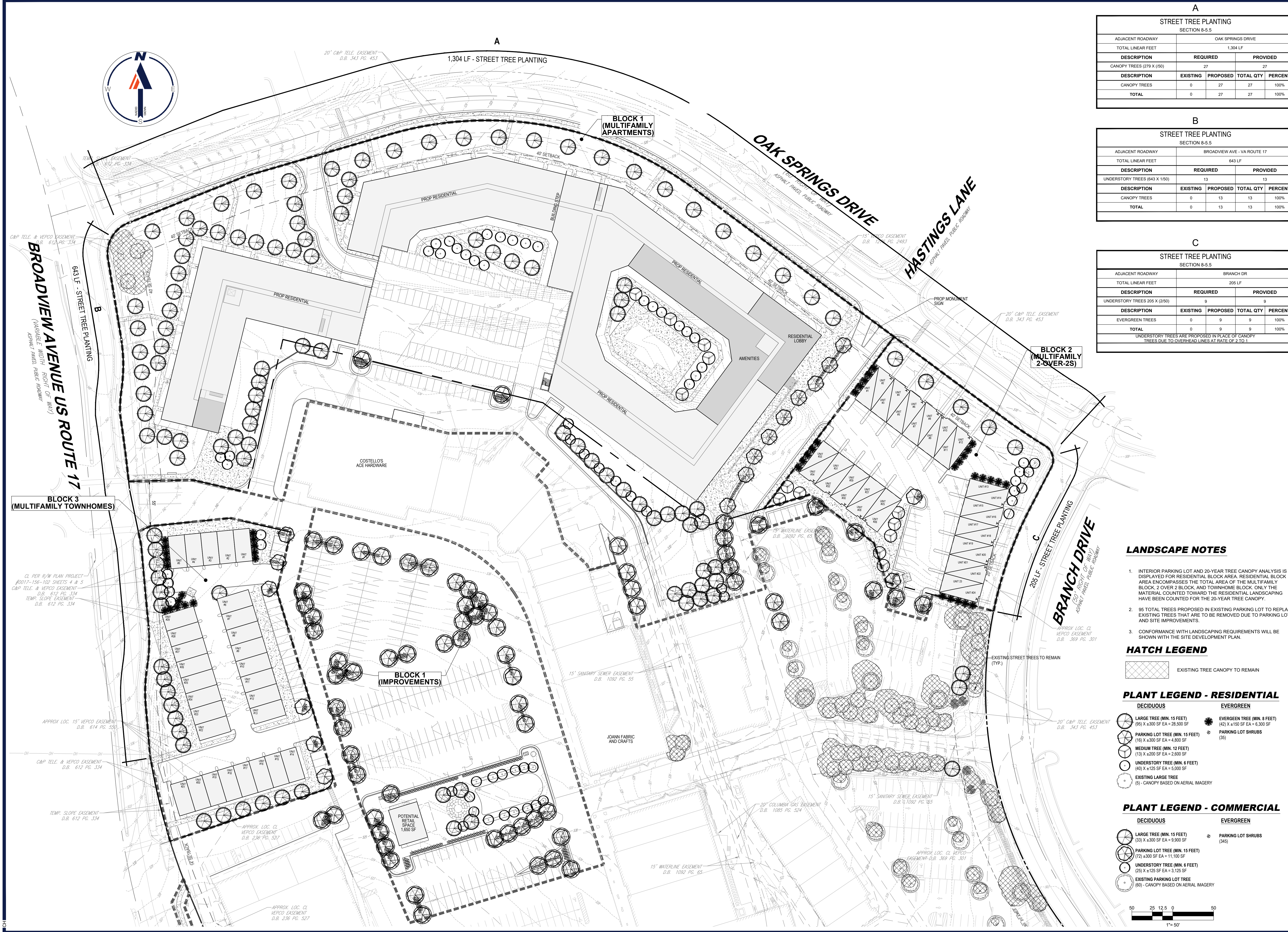
28 BLACKWELL PARK LANE, SUITE 201
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JOHN C. WRIGHT
 JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:
FIRE TRUCK MOVEMENT

SHEET NUMBER:
8

REVISION 2 - 2/14/2024



A

STREET TREE PLANTING
SECTION 8-5.5

| | | | | |
|--------------------------|-------------------|----------|-----------|---------|
| ADJACENT ROADWAY | OAK SPRINGS DRIVE | | | |
| TOTAL LINEAR FEET | 1,304 LF | | | |
| DESCRIPTION | REQUIRED | PROVIDED | | |
| CANOPY TREES (270 X 190) | 27 | 27 | | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY | PERCENT |
| CANOPY TREES | 0 | 27 | 27 | 100% |
| TOTAL | 0 | 27 | 27 | 100% |

B

STREET TREE PLANTING
SECTION 8-5.5

| | | | | |
|------------------------------|-----------------------------|----------|-----------|---------|
| ADJACENT ROADWAY | BROADVIEW AVE - VA ROUTE 17 | | | |
| TOTAL LINEAR FEET | 643 LF | | | |
| DESCRIPTION | REQUIRED | PROVIDED | | |
| UNDERSTORY TREES (843 X 150) | 13 | 13 | | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY | PERCENT |
| CANOPY TREES | 0 | 13 | 13 | 100% |
| TOTAL | 0 | 13 | 13 | 100% |

C

STREET TREE PLANTING
SECTION 8-5.5

| | | | | |
|------------------------------|-----------|----------|-----------|---------|
| ADJACENT ROADWAY | BRANCH DR | | | |
| TOTAL LINEAR FEET | 205 LF | | | |
| DESCRIPTION | REQUIRED | PROVIDED | | |
| UNDERSTORY TREES 205 X (250) | 9 | 9 | | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY | PERCENT |
| EVERGREEN TREES | 0 | 9 | 9 | 100% |
| TOTAL | 0 | 9 | 9 | 100% |

UNDERSTORY TREES ARE PROPOSED IN PLACE OF CANOPY TREES DUE TO OVERHEAD LINES AT RATE OF 2 TO 1.

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SITE CIVIL AND CONSULTING ENGINEERING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

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FOR

WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT
OAK SPRINGS DRIVE CENTER DISTRICT
TOWN OF WARRENTON, VIRGINIA

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2/14/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
LANDSCAPE PLAN

SHEET NUMBER:
9

REVISION 2 - 2/14/2024

LANDSCAPE NOTES

- INTERIOR PARKING LOT AND 20-YEAR TREE CANOPY ANALYSIS IS DISPLAYED FOR RESIDENTIAL BLOCK AREA. RESIDENTIAL BLOCK AREA ENCOMPASSES THE TOTAL AREA OF THE MULTIFAMILY BLOCK, 2 OVER 2 BLOCK, AND TOWNHOME BLOCK. ONLY THE MATERIAL COUNTED TOWARD THE RESIDENTIAL LANDSCAPING HAVE BEEN COUNTED FOR THE 20-YEAR TREE CANOPY.
- 95 TOTAL TREES PROPOSED IN EXISTING PARKING LOT TO REPLACE EXISTING TREES THAT ARE TO BE REMOVED DUE TO PARKING LOT AND SITE IMPROVEMENTS.
- CONFORMANCE WITH LANDSCAPING REQUIREMENTS WILL BE SHOWN WITH THE SITE DEVELOPMENT PLAN.

HATCH LEGEND

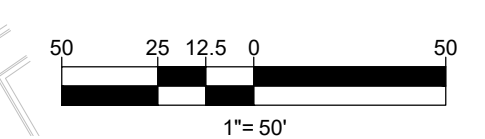
EXISTING TREE CANOPY TO REMAIN

PLANT LEGEND - RESIDENTIAL

- | | |
|---|--|
| DECIDUOUS | EVERGREEN |
| LARGE TREE (MIN. 15 FEET) (95) X ±300 SF EA = 28,500 SF | EVERGREEN TREE (MIN. 8 FEET) (42) X ±150 SF EA = 6,300 SF |
| PARKING LOT TREE (MIN. 15 FEET) (16) X ±300 SF EA = 4,800 SF | PARKING LOT SHRUBS (35) |
| MEDIUM TREE (MIN. 12 FEET) (13) X ±200 SF EA = 2,600 SF | |
| UNDERSTORY TREE (MIN. 6 FEET) (40) X ±125 SF EA = 5,000 SF | |
| EXISTING LARGE TREE (5) - CANOPY BASED ON AERIAL IMAGERY | |

PLANT LEGEND - COMMERCIAL

- | | |
|--|-----------------------------|
| DECIDUOUS | EVERGREEN |
| LARGE TREE (MIN. 15 FEET) (33) X ±300 SF EA = 9,900 SF | PARKING LOT SHRUBS (345) |
| PARKING LOT TREE (MIN. 15 FEET) (72) X ±200 SF EA = 11,100 SF | |
| UNDERSTORY TREE (MIN. 6 FEET) (25) X ±125 SF EA = 3,125 SF | |
| EXISTING PARKING LOT TREE (60) - CANOPY BASED ON AERIAL IMAGERY | |



REVISIONS

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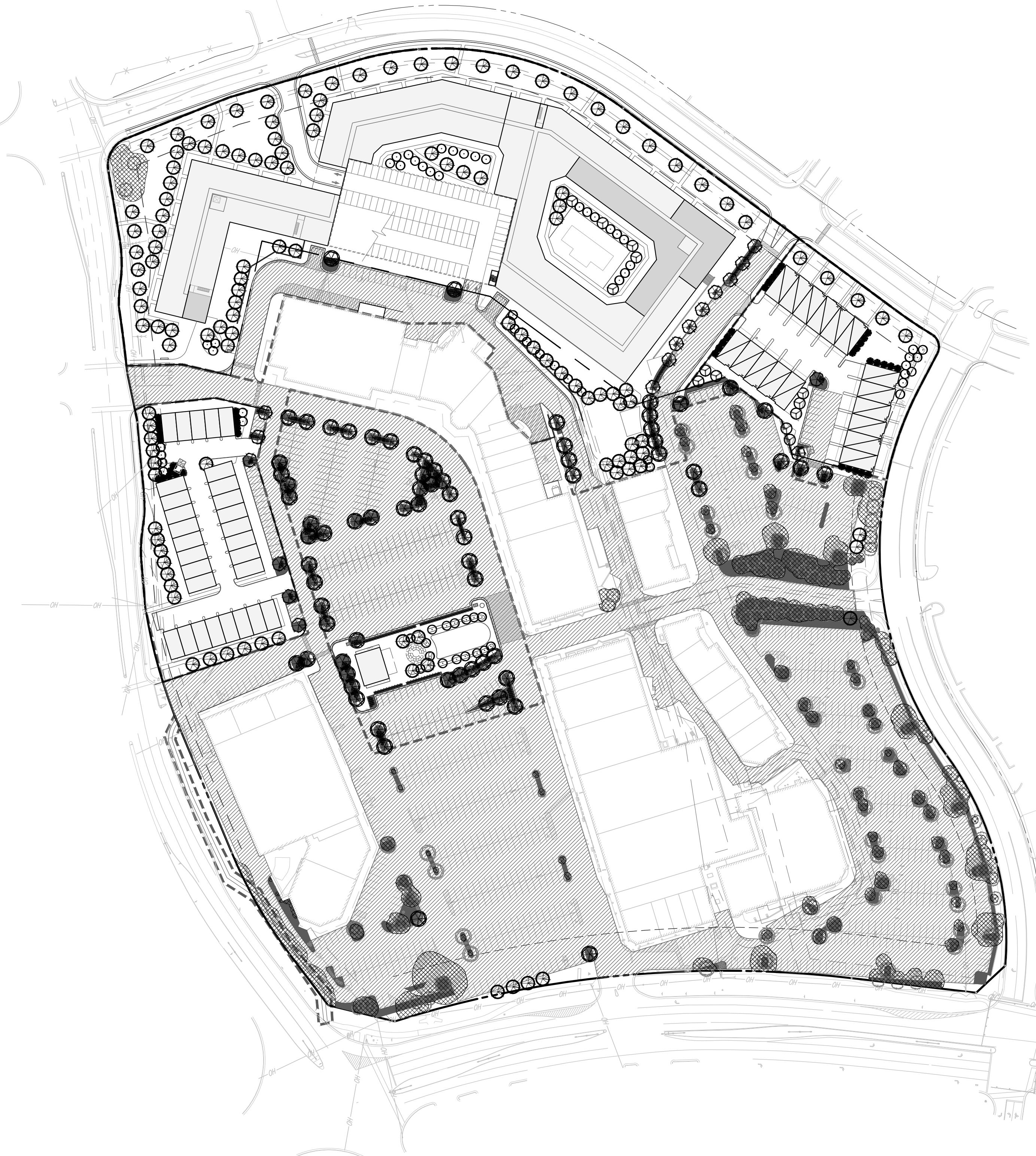
PROJECT No.: V212141
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 DATE: 7/8/2022
 CAD I.D.: LSCP-2

PROJECT:
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 FOR
WARRENTON VILLAGE CENTER
 PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

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SHEET TITLE:
LANDSCAPE PLAN
 SHEET NUMBER:
10
 REVISION 2 - 2/14/2024



LANDSCAPE NOTES

- INTERIOR PARKING LOT AND 20-YEAR TREE CANOPY ANALYSIS IS DISPLAYED FOR RESIDENTIAL BLOCK AREA. RESIDENTIAL BLOCK AREA ENCOMPASSES THE TOTAL AREA OF THE MULTIFAMILY BLOCK, 2 OVER 2 BLOCK, AND TOWNHOME BLOCK. ONLY THE MATERIAL COUNTED TOWARD THE RESIDENTIAL LANDSCAPING HAVE BEEN COUNTED FOR THE 20-YEAR TREE CANOPY.
- 95 TOTAL TREES PROPOSED IN EXISTING PARKING LOT TO REPLACE EXISTING TREES THAT ARE TO BE REMOVED DUE TO PARKING LOT AND SITE IMPROVEMENTS.
- CONFORMANCE WITH LANDSCAPING REQUIREMENTS WILL BE SHOWN WITH THE SITE DEVELOPMENT PLAN.

PLANT LEGEND - RESIDENTIAL

- | DECIDUOUS | EVERGREEN |
|---|--|
| LARGE TREE (MIN. 15 FEET) (95) X ±300 SF EA = 28,500 SF | EVERGREEN TREE (MIN. 8 FEET) (42) X ±150 SF EA = 6,300 SF |
| PARKING LOT TREE (MIN. 15 FEET) (16) X ±300 SF EA = 4,800 SF | PARKING LOT SHRUBS (35) |
| MEDIUM TREE (MIN. 12 FEET) (13) X ±200 SF EA = 2,600 SF | |
| UNDERSTORY TREE (MIN. 6 FEET) (40) X ±125 SF EA = 5,000 SF | |
| EXISTING LARGE TREE (5) - CANOPY BASED ON AERIAL IMAGERY | |

HATCH LEGEND

- EXISTING TREE CANOPY TO REMAIN
 - INTERIOR PARKING LOT AREA
 - INTERIOR PARKING LOT LANDSCAPE AREA
- 1" = 100'

PLANT LEGEND - COMMERCIAL

- | DECIDUOUS | EVERGREEN |
|--|-----------------------------|
| LARGE TREE (MIN. 15 FEET) (23) X ±300 SF EA = 9,900 SF | PARKING LOT SHRUBS (345) |
| PARKING LOT TREE (MIN. 15 FEET) (72) ±300 SF EA = 11,100 SF | |
| UNDERSTORY TREE (MIN. 6 FEET) (25) X ±125 SF EA = 3,125 SF | |
| EXISTING PARKING LOT TREE (60) - CANOPY BASED ON AERIAL IMAGERY | |

INTERIOR PARKING LOT LANDSCAPING - COMMERCIAL
SECTION 8-6.2

| PARKING LOT AREA | 468,346 SF | | |
|------------------------------|------------|--------------------|------------|
| PARKING SPACES | 887 | | |
| DESCRIPTION | REQUIRED | PROVIDED | |
| LANDSCAPE AREA 468,346 X 10% | 46,835 SF | 48,896 SF (10.49%) | |
| SHADE TREES 884 X (1/8) | 111 | 132 | |
| SHRUBS 884 X (3/8) | 332 | 345 | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY |
| CANOPY TREES | 60 | 72 | 132 |
| SHRUBS | 0 | 345 | 345 |
| TOTAL | 60 | 417 | 477 |

TREE CANOPY TABLE - COMMERCIAL
SECTION 8-10.3.2

| | |
|--------------------------------------|---------------------------|
| SITE AREA | 852,304 SF OR 19.566 AC |
| PROPOSED ZONE | COMMERCIAL |
| 20 YEAR CANOPY REQUIREMENT | 10% |
| 20 YEAR CANOPY REQUIRED | 85,230 SF |
| PROPOSED CANOPY | 34,625 SF (4.06%) |
| EXISTING CANOPY CONSERVATION | 51,087 SF (5.99%) |
| TOTAL 20 YEAR CANOPY PROVIDED | 85,712 SF (10.06%) |

INTERIOR PARKING LOT LANDSCAPING - MULTIFAMILY BLOCK 1
SECTION 8-6.2

| PARKING LOT AREA | 8,376 SF | | |
|----------------------------|----------|-------------------|-----------|
| PARKING SPACES | 5 | | |
| DESCRIPTION | REQUIRED | PROVIDED | |
| LANDSCAPE AREA 8,376 X 10% | 838 SF | 1,127 SF (14.99%) | |
| SHADE TREES 9 X (1/8) | 1 | 9 | |
| SHRUBS 9 X (3/8) | 2 | 14 | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY |
| CANOPY TREES | 0 | 9 | 9 |
| SHRUBS | 0 | 14 | 14 |
| TOTAL | 0 | 23 | 23 |

TREE CANOPY TABLE - MULTIFAMILY BLOCK 1
SECTION 8-10.3.2

| | |
|--------------------------------------|---------------------------|
| SITE AREA | 284,592 SF OR 6.533 AC |
| PROPOSED ZONE | RESIDENTIAL |
| 20 YEAR CANOPY REQUIREMENT | 10% (49 UNITS PER ACRE) |
| 20 YEAR CANOPY REQUIRED | 28,459 SF |
| PROPOSED CANOPY | 27,825 SF (9.78%) |
| EXISTING CANOPY CONSERVATION | 3,031 SF (1.07%) |
| TOTAL 20 YEAR CANOPY PROVIDED | 30,856 SF (10.84%) |

INTERIOR PARKING LOT LANDSCAPING - MULTIFAMILY BLOCK 2
SECTION 8-6.2

| PARKING LOT AREA | 3,808 SF | | |
|----------------------------|----------|-----------------|-----------|
| PARKING SPACES | 9 | | |
| DESCRIPTION | REQUIRED | PROVIDED | |
| LANDSCAPE AREA 3,808 X 10% | 381 SF | 569 SF (14.94%) | |
| SHADE TREES 9 X (1/8) | 2 | 2 | |
| SHRUBS 9 X (3/8) | 4 | 6 | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY |
| CANOPY TREES | 0 | 2 | 2 |
| SHRUBS | 0 | 6 | 6 |
| TOTAL | 0 | 8 | 8 |

TREE CANOPY TABLE - MULTIFAMILY BLOCK 2
SECTION 8-10.3.2

| | |
|--------------------------------------|--------------------------|
| SITE AREA | 60,816 SF OR 1.396 AC |
| PROPOSED ZONE | RESIDENTIAL |
| 20 YEAR CANOPY REQUIREMENT | 10% (25 UNITS PER ACRE) |
| 20 YEAR CANOPY REQUIRED | 6,082 SF |
| PROPOSED CANOPY | 8,575 SF (14.10%) |
| EXISTING CANOPY CONSERVATION | 0 SF (0.00%) |
| TOTAL 20 YEAR CANOPY PROVIDED | 8,575 SF (14.10%) |

INTERIOR PARKING LOT LANDSCAPING - MULTIFAMILY BLOCK 3
SECTION 8-6.2

| PARKING LOT AREA | 3,402 SF | | |
|----------------------------|----------|-------------------|-----------|
| PARKING SPACES | 18 | | |
| DESCRIPTION | REQUIRED | PROVIDED | |
| LANDSCAPE AREA 3,402 X 10% | 340 SF | 1,446 SF (42.50%) | |
| SHADE TREES 18 X (1/8) | 3 | 6 | |
| SHRUBS 18 X (3/8) | 7 | 15 | |
| DESCRIPTION | EXISTING | PROPOSED | TOTAL QTY |
| CANOPY TREES | 0 | 6 | 6 |
| SHRUBS | 0 | 15 | 15 |
| TOTAL | 0 | 21 | 21 |

TREE CANOPY TABLE - MULTIFAMILY BLOCK 3
SECTION 8-10.3.2

| | |
|--------------------------------------|---------------------------|
| SITE AREA | 67,822 SF OR 1.557 AC |
| PROPOSED ZONE | RESIDENTIAL |
| 20 YEAR CANOPY REQUIREMENT | 15% (19 UNITS PER ACRE) |
| 20 YEAR CANOPY REQUIRED | 10,173 SF |
| PROPOSED CANOPY | 10,200 SF (15.04%) |
| EXISTING CANOPY CONSERVATION | 0 SF (0.00%) |
| TOTAL 20 YEAR CANOPY PROVIDED | 10,200 SF (15.04%) |



CULTURED STACK STONE DARK GRAY SIDING MASONRY WHITE CEMENTITIOUS PANEL WOOD TONED SIDING CULTURED STACK STONE

ROOF LEVEL 32'-11"

AVERAGE GRADE 0'-0"

MULTIFAMILY ELEVATION- 3 STORY



WARRENTON VILLAGE CENTER
 WARRENTON, VA
 ELEVATION • 02-14-2024
 CST2021-03



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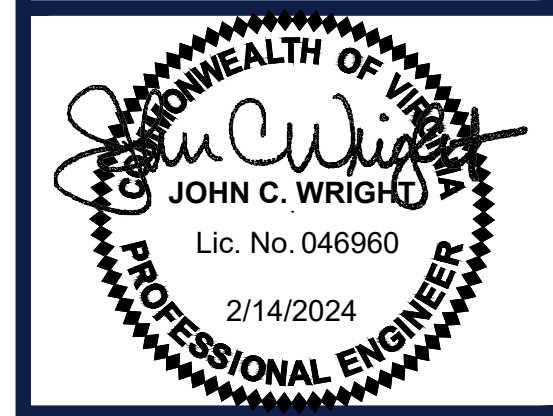
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PROJECT No.: V212141
 DRAWN BY: DSH
 CHECKED BY: JCW
 DATE: 7/8/2022
 CAD ID: SUPP-2

PROJECT:
SPECIAL USE PERMIT
 FOR
WARRENTON VILLAGE CENTER
 PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

BOHLER
 28 BLACKWELL PARK LANE, SUITE 201
 WARRENTON, VIRGINIA 20186
 Phone: (540) 349-4500
 Fax: (540) 349-0321
 VA@BohlerEng.com



SHEET TITLE:
BUILDING ELEVATIONS
 SHEET NUMBER:
13
 REVISION 2 - 2/14/2024



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PROJECT:

SPECIAL USE PERMIT

FOR

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PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE
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 TOWN OF WARRENTON, VIRGINIA

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PROFESSIONAL ENGINEER

JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024

TOWNHOME - 3 STORY ELEVATION



WARRENTON VILLAGE CENTER
 WARRENTON, VA
 ELEVATION • 02-14-2024
 CST2021-03



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SHEET TITLE:

BUILDING ELEVATIONS

SHEET NUMBER:

14

REVISION 2 - 2/14/2024



MASONRY

BLACK
CEMENTITIOUS
PANEL

WOOD TONED
SIDING

BLACK
CEMENTITIOUS
PANEL

MASONRY

WHITE
CEMENTITIOUS
PANEL

MASONRY

BLACK
CEMENTITIOUS
PANEL

ROOF LEVEL 43'-6"

AVERAGE GRADE
0'-0"

TOWNHOME - 4 STORY ELEVATION



WARRENTON VILLAGE CENTER
 WARRENTON, VA
 ELEVATION • 02-14-2024
 CST2021-03



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SPECIAL USE PERMIT

FOR _____

WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE
 CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

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 JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:
BUILDING ELEVATIONS

SHEET NUMBER:
15

REVISION 2 - 2/14/2024

REVISIONS

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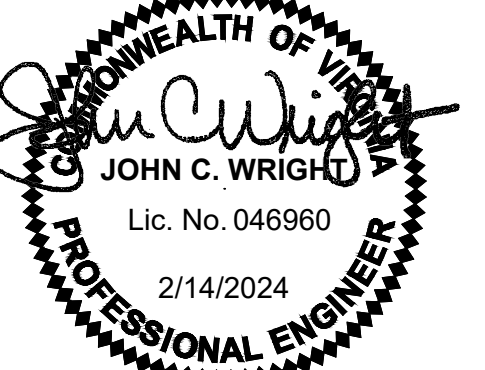


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SHEET TITLE:
CONCEPTUAL PLAN RENDERING

SHEET NUMBER:
16

REVISION 2 - 2/14/2024



LEGEND

- COMMERCIAL
- MULTIFAMILY APARTMENTS
- MULTIFAMILY TOWNHOMES
- MULTIFAMILY 2 OVER 2'S
- PEDESTRIAN CONNECTION

RENDERING - WARRENTON VILLAGE CENTER
 SCALE 1"=80'-0"

Feb 14, 2024
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SHEET TITLE:
DETAIL - CENTRAL PLAZA

SHEET NUMBER:
17

REVISION 2 - 2/14/2024



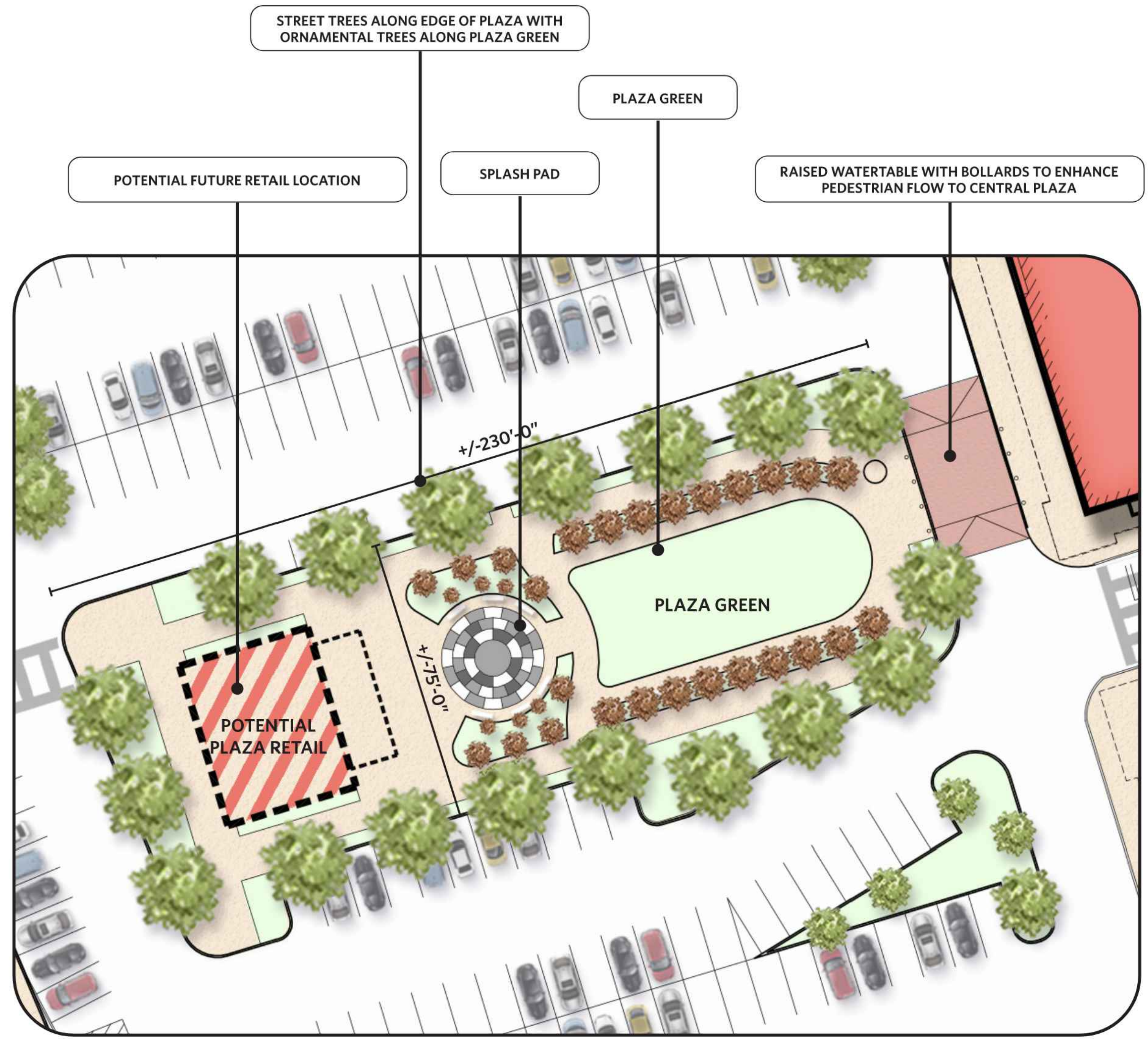
AERIAL VIEW OF CENTRAL PLAZA

NTS



EYE LEVEL VIEW OF CENTRAL PLAZA

NTS

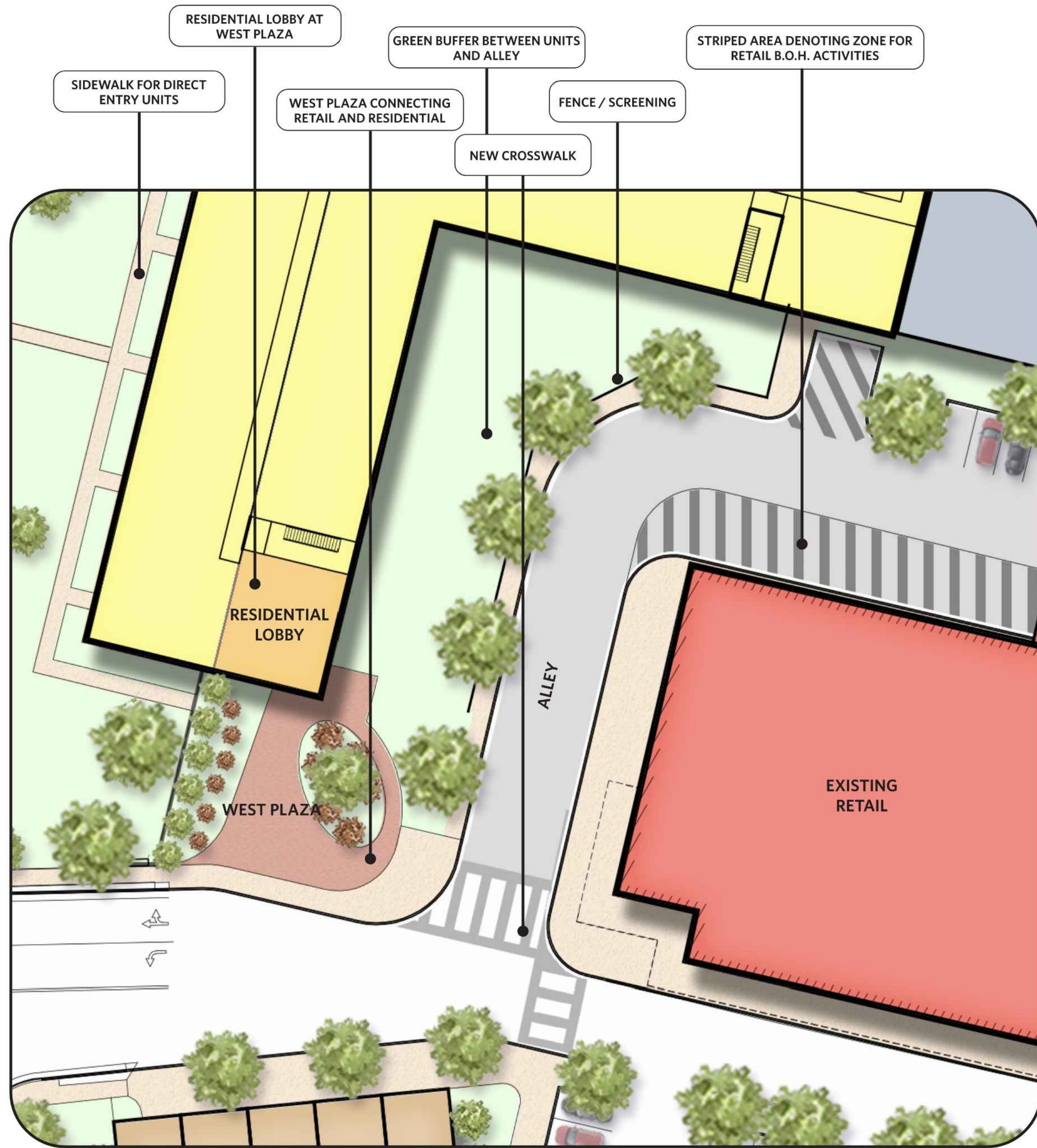


ENLARGED CONCEPTUAL CENTRAL PLAZA PLAN

SCALE 1"=20'-0"

mv+a FEBRUARY 14, 2024

NOTE: Retail building shown in Central Plaza is for conceptual future development purposes only. No retail building is proposed as part of this SUP.



ENLARGED CONCEPTUAL WEST PLAZA PLAN

SCALE 1"=20'-0"

mv+a FEBRUARY 14, 2024



GREEN BUFFER (VARIES) BETWEEN RESIDENTIAL AND ALLEY

ALLEY

SIDEWALK / RETAIL LOADING + TRASH ZONE (VARIES)

TYPICAL SECTION THROUGH ALLEY

SCALE 1/8"=1'-0"



VIEW OF WEST PLAZA AND EXISTING RETAIL BEYOND

NTS

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PROFESSIONAL ENGINEER

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2/14/2024

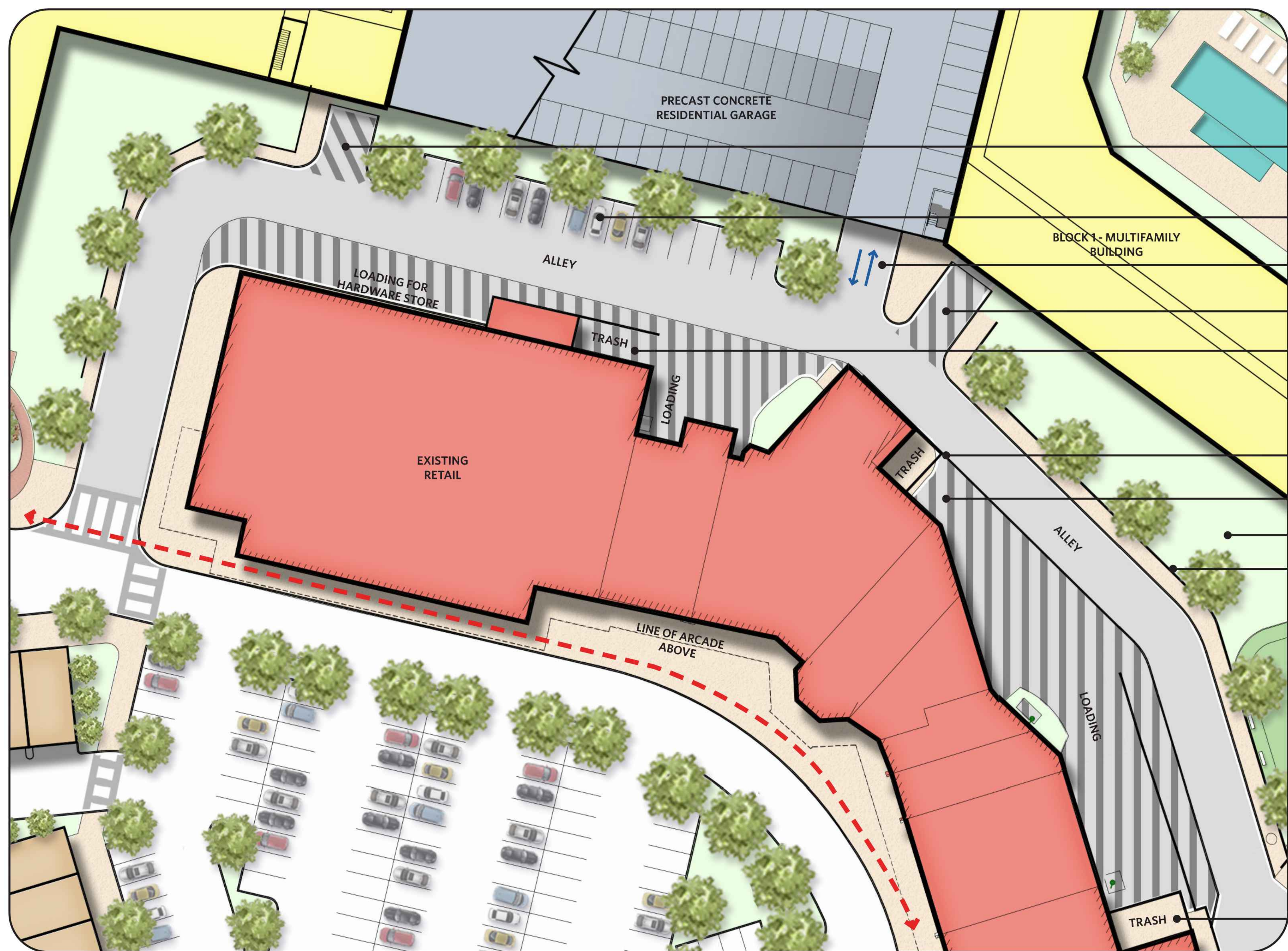
SHEET TITLE:

DETAIL - WEST PLAZA

SHEET NUMBER:

18

REVISION 2 - 2/14/2024



- RESIDENTIAL LOADING AND TRASH
- PARKING FOR RETAIL TENANT OWNERS / EMPLOYEES
- SECONDARY ACCESS TO GARAGE
- RESIDENTIAL LOADING AND TRASH
- SCREENED TRASH AREA FOR HARDWARE STORE
- RECONFIGURED & SCREENED TRASH AREA FOR RETAIL TENANTS
- STRIPED AREA DENOTING RETAIL LOADING AND TRASH ZONE
- GREEN BUFFER ALONG UNITS
- SCREEN/FENCE
- RECONFIGURED & SCREENED TRASH AREA FOR RETAIL TENANTS

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PROFESSIONAL HEALTH OF VIRGINIA
 JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:
DETAIL - ALLEY
 SHEET NUMBER:
19
 REVISION 2 - 2/14/2024

ENLARGED RETAIL AND RESIDENTIAL ALLEY PLAN

SCALE 1"=20'-0"

mv+a FEBRUARY 14, 2024



- SIDEWALK FOR DIRECT ENTRY UNITS
- MONUMENT SIGN
- RESIDENTIAL LOBBY AND LEASING
- EAST PLAZA
- AMENITIES ALONG COURTYARD
- PARKING FOR RESIDENTIAL LOBBY AND LEASING
- TYPICAL URBAN STREET SECTION WITH PARALLEL PARKING
- PARKING AND ACCESS TO BLOCK 2-2 OVER 2'S



VIEW OF NEW ENTRANCE STREET
NTS

ENLARGED PLAN OF NEW ENTRANCE DRIVEWAY
SCALE 1"=20'-0"

mv+a FEBRUARY 14, 2024

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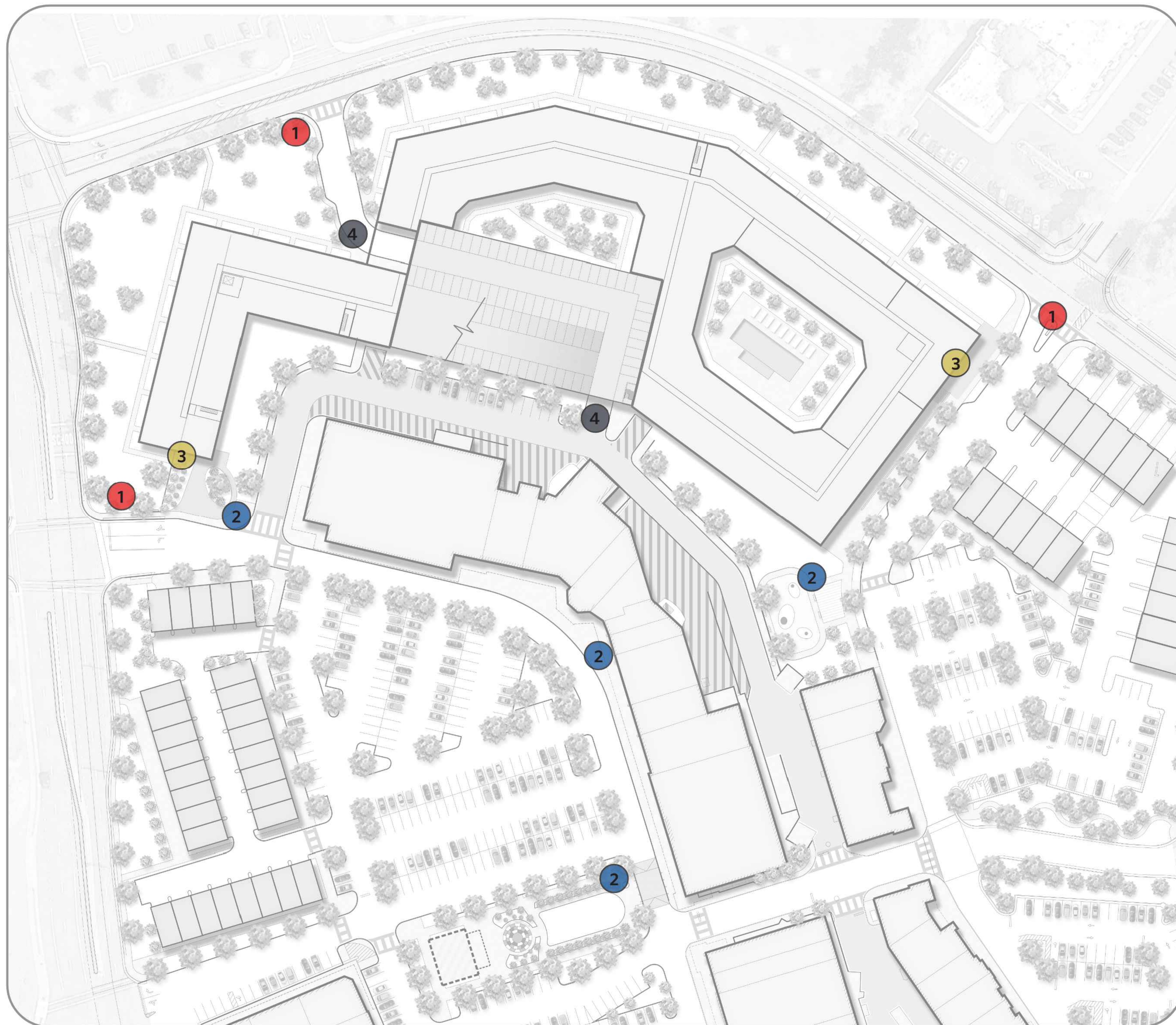
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Professional Engineer
JOHN C. WRIGHT
Lic. No. 046960
2/14/2024

SHEET TITLE:
DETAIL - EAST PLAZA

SHEET NUMBER:
20

REVISION 2 - 2/14/2024



CONCEPTUAL SITE SIGNAGE PLAN

SCALE 1"=50'-0"



FEBRUARY 14, 2024

NOTE: Signage types and location shown here in this plan is conceptual and subject to change with input from stakeholders. All signs to conform to Article 6 - Signage of Zoning Ordinance



1 MONUMENT SIGNAGE
INCLUDES HORIZONTAL OR VERTICAL PYLON SIGNS, EITHER FREE STANDING OR INTEGRATED INTO THE LANDSCAPE, HIGHLIGHTING THE PROJECT/COMMUNITY NAME AND MAJOR TENANTS



2 WAYFINDING SIGNAGE
SUCH SIGNS COULD BE POST SUPPORTED OR ATTACHED TO OTHER ELEMENTS OF THE STREETSCAPE OR WITHIN LANDSCAPING AND ARE MEANT TO PROVIDE PEDESTRIANS WITH DIRECTION TO TENANTS WITHIN THE CENTER.



3 CANOPY SIGNAGE
INCLUDES SIGNS THAT MAY BE WALL MOUNTED, CANOPY MOUNTED OR VERTICALLY MOUNTED TO THE FACADE VIA BRACKETS AND TYPICALLY ARE USED TO HIGHLIGHT THE NAME OF THE BUILDING OR THE COMMUNITY.



4 INCIDENTAL SIGNAGE
SIGNS THAT SUPPLEMENT AND PROVIDE NON-TENANT/BRAND IDENTITY INFORMATION USUALLY HIGHLIGHTING OTHER SUPPLEMENTARY PROGRAMS IN A PROJECT.

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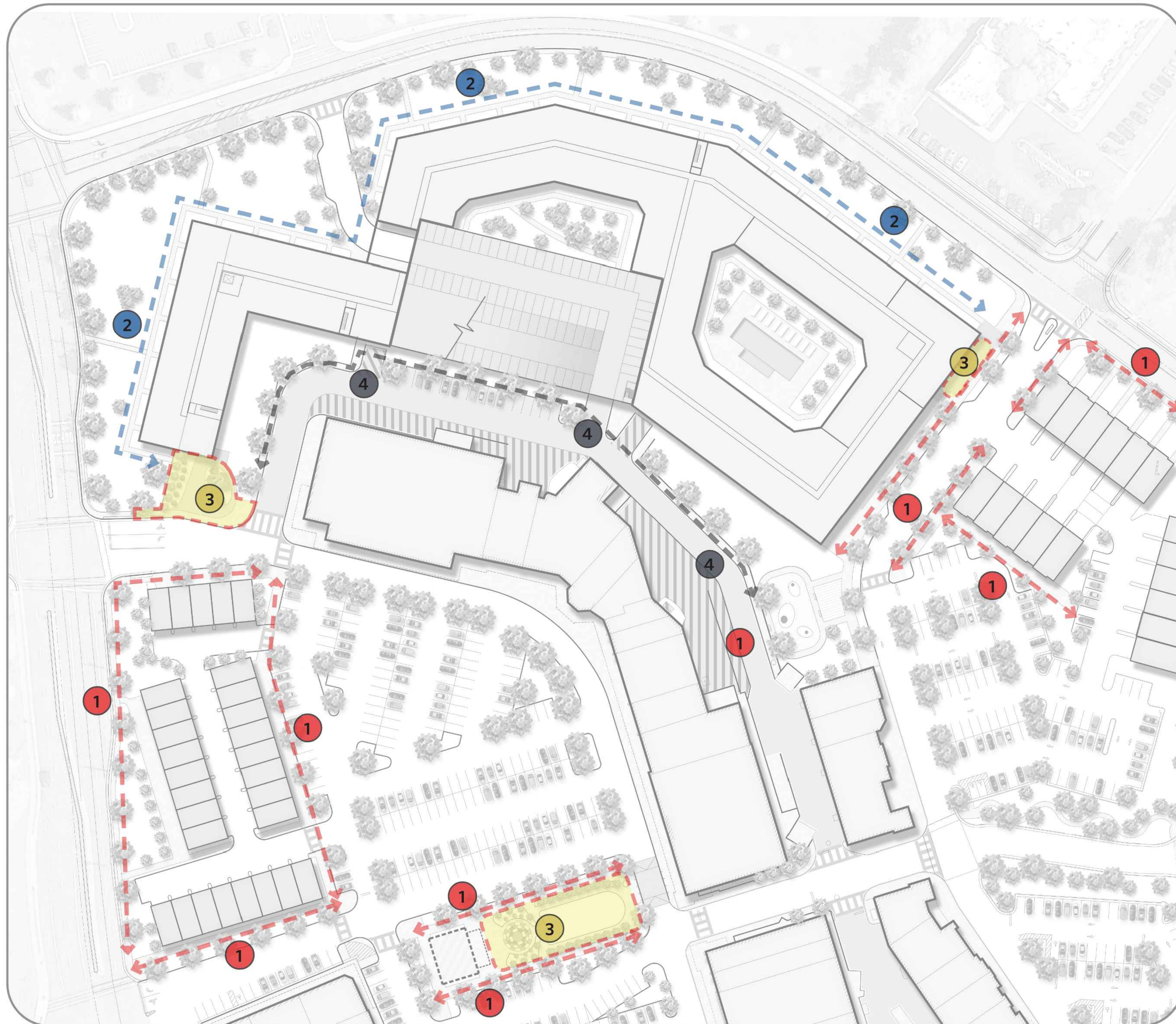
JOHN C. WRIGHT
JOHN C. WRIGHT
Lic. No. 046960
2/14/2024
PROFESSIONAL ENGINEER

SHEET TITLE:
CONCEPTUAL SIGNAGE PLAN

SHEET NUMBER:
21

REVISION 2 - 2/14/2024

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CONCEPTUAL LIGHTING PLAN

SCALE 1"=50'-0"



FEBRUARY 14, 2024

NOTE: Detailed lighting and photometric plan to be provided at site plan. All lighting to conform to Article 9 of Zoning Ordinance.



1 DECORATIVE POST LIGHTING

SUCH LIGHTING ALREADY EXISTS WITHIN SELECTIVE AREAS OF THE SITE. THIS LIGHTING TYPE IS MEANT TO PROVIDE ILLUMINATION ALONG PEDESTRIAN ROUTES/STREETS AND FORMS A NECESSARY COMPONENT OF THE ENTOURAGE THAT MAKES UP URBAN STREETSCAPES.



2 WALL SCONCE LIGHTING

ACCENT LIGHTING MOUNTED ON THE BUILDING ILLUMINATING FEATURES OF THE ARCHITECTURE AS WELL AS PROVIDING UTILITY LIGHTING FOR THE IMMEDIATE SURROUNDINGS/WALKWAYS.



3 ACCENT LIGHTING - BUILDING AND LANDSCAPE

ACCENT LIGHTING UTILIZED TO EMPHASIZE BUILDING ARCHITECTURE/ CANOPY ENTRANCES AS WELL AS LANDSCAPE FEATURES - PLANTING, FURNITURE ELEMENTS, DECORATIVE WALKING PATHS, ETC.



4 UTILITY LIGHTING

POST MOUNTED OR BUILDING MOUNTED LIGHTING THAT IS MEANT TO ILLUMINATE AREAS THAT ARE NOT USUALLY ACCESSED BY PEDESTRIANS OR PART OF THE URBAN STREETSCAPES - ALLEYS, INCIDENTAL PATHS, HIGH VEHICULAR TRAFFIC AREAS



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PROJECT:
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COMMONWEALTH OF VIRGINIA
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 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:
CONCEPTUAL LIGHTING PLAN

SHEET NUMBER:
22

REVISION 2 - 2/14/2024

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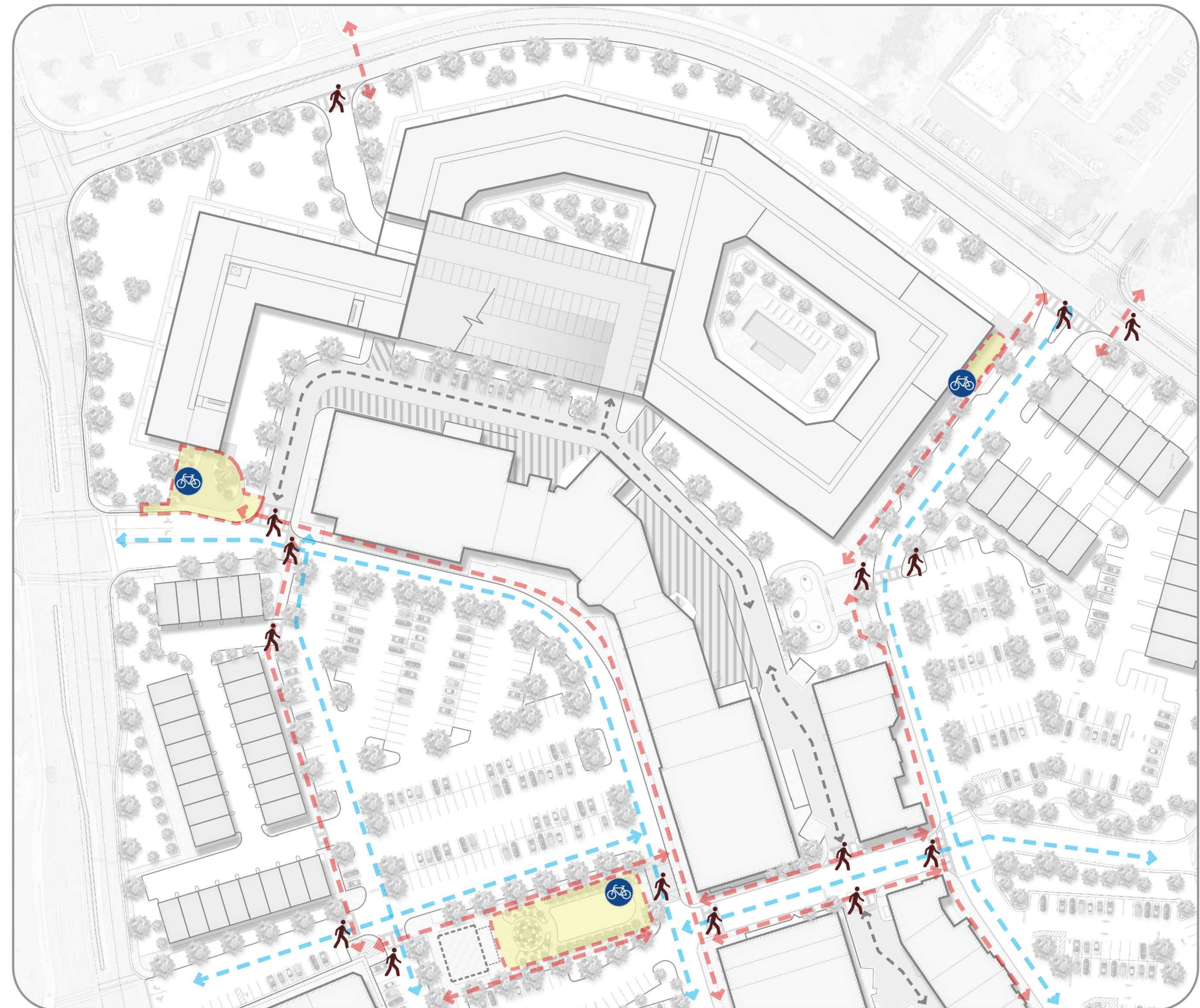
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SHEET TITLE:
CONCEPTUAL CIRCULATION PLAN

SHEET NUMBER:
23

REVISION 2 - 2/14/2024



LEGEND

PLAZA / COMMUNITY AREAS
 THESE COLORED REGIONS REPRESENT THE PUBLIC PLAZAS IN THE PROJECT ANCHORING BOTH RETAIL AS WELL AS RESIDENTIAL PROGRAMS.

PEDESTRIAN CIRCULATION
 THIS DENOTES SOME OF THE MAJOR PEDESTRIAN CIRCULATION ROUTES WITHIN THE CENTER EFFECTIVELY CONNECTING THE NEW RESIDENTIAL PROGRAMS WITH THE EXISTING RETAIL CENTER AND COMMUNITY SPACES/ PLAZAS WITHIN THE PROJECT. CIRCULATION PATHS WILL CONSIST OF MINIMUM 5' WIDTH SIDEWALK AS REQUIRED BY ARTICLE 9-25.1 SUBSECTION G OF THE ZONING CODE.

BICYCLE AND VEHICULAR CIRCULATION
 SHARED CIRCULATION CORRIDORS WITHIN THE PROJECT ON CONNECTOR STREETS - EXISTING AND PROPOSED, AS WELL AS PARKING LOTS, ALL CHARACTERISED BY LOW SPEED LIMITS. REDUCED DRIVE WIDTHS AND RAISED CROSSWALKS IN SELECTED AREAS WILL PROVIDE NECESSARY TRAFFIC CALMING AND A DETERRENT TO UNSAFE DRIVING.

SERVICE AND SECONDARY GARAGE CIRCULATION
 PRIMARY USE FOR THIS CORRIDOR IS LOADING AND TRASH PICKUP FOR BOTH THE RETAIL AND RESIDENTIAL IN THE PROJECT ALONG WITH SECONDARY GARAGE ACCESS FOR BLOCK 1 - MULTIFAMILY BUILDING.

BIKE PARKING AREAS
 BIKE PARKING WILL BE CLUSTERED WITHIN THE CENTRAL, EAST AND WEST PLAZAS FOR USE BY RESIDENTS OR VISITING MEMBERS OF THE COMMUNITY. ADDITIONAL BIKE PARKING WILL BE DISPERSED ALONG THE RETAIL SIDEWALK FOR USE BY RETAIL CUSTOMERS.

CROSSWALKS
 PROPOSED CROSSWALKS PROVIDE ACCESSIBLE MEANS OF CROSSING THE STREET/ALLEYS AS PEDESTRIANS MAKE THEIR WAY BETWEEN THE RESIDENTIAL AND THE RETAIL.

CONCEPTUAL CIRCULATION PLAN

SCALE 1"=50'-0"



FEBRUARY 14, 2024



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 DATE: 7/8/2022
 CAD ID: SUPP-2

PROJECT:

SPECIAL USE PERMIT

FOR

WARRENTON VILLAGE CENTER

PROPOSED DEVELOPMENT
 OAK SPRINGS DRIVE
 CENTER DISTRICT
 TOWN OF WARRENTON, VIRGINIA

BOHLER //

28 BLACKWELL PARK LANE, SUITE 201
 WARRENTON, VIRGINIA 20186
 Phone: (540) 349-4500
 Fax: (540) 349-0321
VA@BohlerEng.com

COMMONWEALTH OF VIRGINIA

John C. Wright

JOHN C. WRIGHT
 Lic. No. 046960
 2/14/2024
 PROFESSIONAL ENGINEER

SHEET TITLE:

RENDERING

SHEET NUMBER:

24

REVISION 2 - 2/14/2024

VIEW OF NEW ENTRANCE ACROSS FROM HASTINGS LANE LOOKING AT BLOCK 1 AND BLOCK 2

Feb 14, 2024
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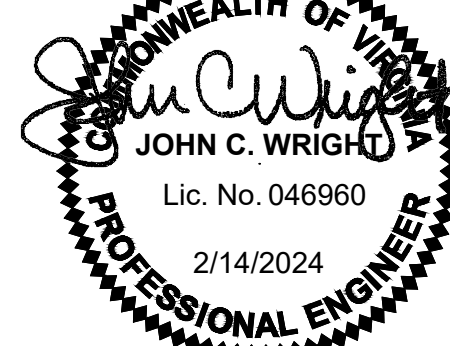
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VIEW ALONG BLOCK 1 MULTIFAMILY APARTMENT BUILDING LOOKING TOWARDS BLOCK 3 TOWNHOMES

mv+a FEBRUARY 14, 2024

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REVISION 2 - 2/14/2024

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AERIAL VIEW OF CENTRAL PLAZA STRETCHING BETWEEN THE RETAIL

mv+a FEBRUARY 14, 2024

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REVISION 2 - 2/14/2024

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REVISION 2 - 2/14/2024

AERIAL VIEW OF CENTRAL PLAZA STRETCHING ACROSS THE RETAIL

NOTE: Retail building shown in Central Plaza is for conceptual future development purposes only. No retail building is proposed as part of this SUP.



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REVISION 2 - 2/14/2024

EYE LEVEL VIEW OF CENTRAL PLAZA STRETCHING ACROSS THE RETAIL

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EYE LEVEL VIEW FROM CENTRAL PLAZA GREEN LOOKING TOWARDS RETAIL AND RESIDENTIAL

Feb 14, 2024
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EYE LEVEL VIEW OF CENTRAL PLAZA AS APPROACHED FROM THE RETAIL

WARRENTON VILLAGE CENTER DESIGN STORY

WARRENTON, VIRGINIA | FEBRUARY 14, 2024



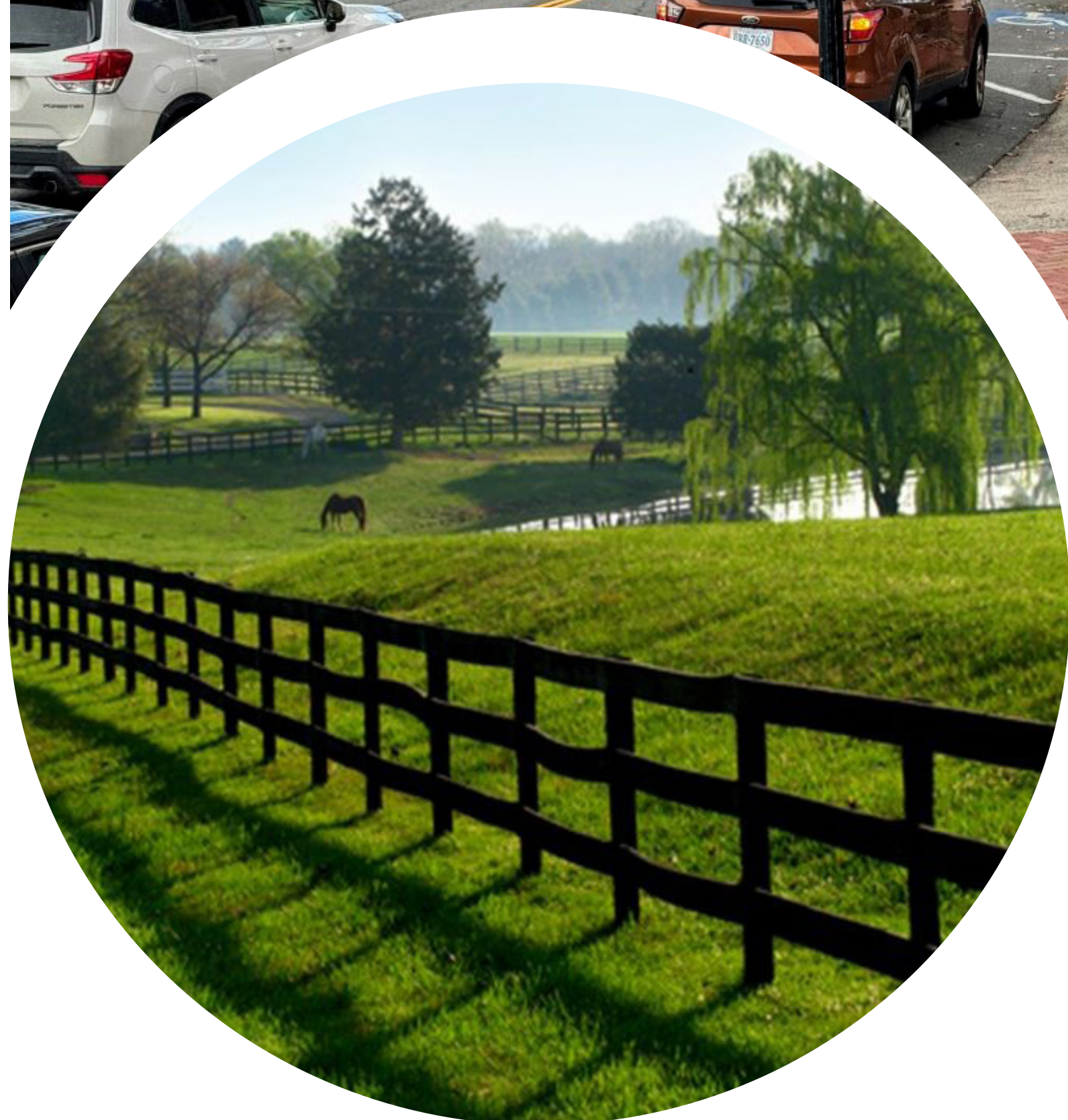
DESIGN OBJECTIVE

To transform the existing Warrenton Village retail center into a thriving, walkable, mixed-use, community destination with a sense of place that celebrates the character of Warrenton, while introducing a new, fresh, modern aesthetic.



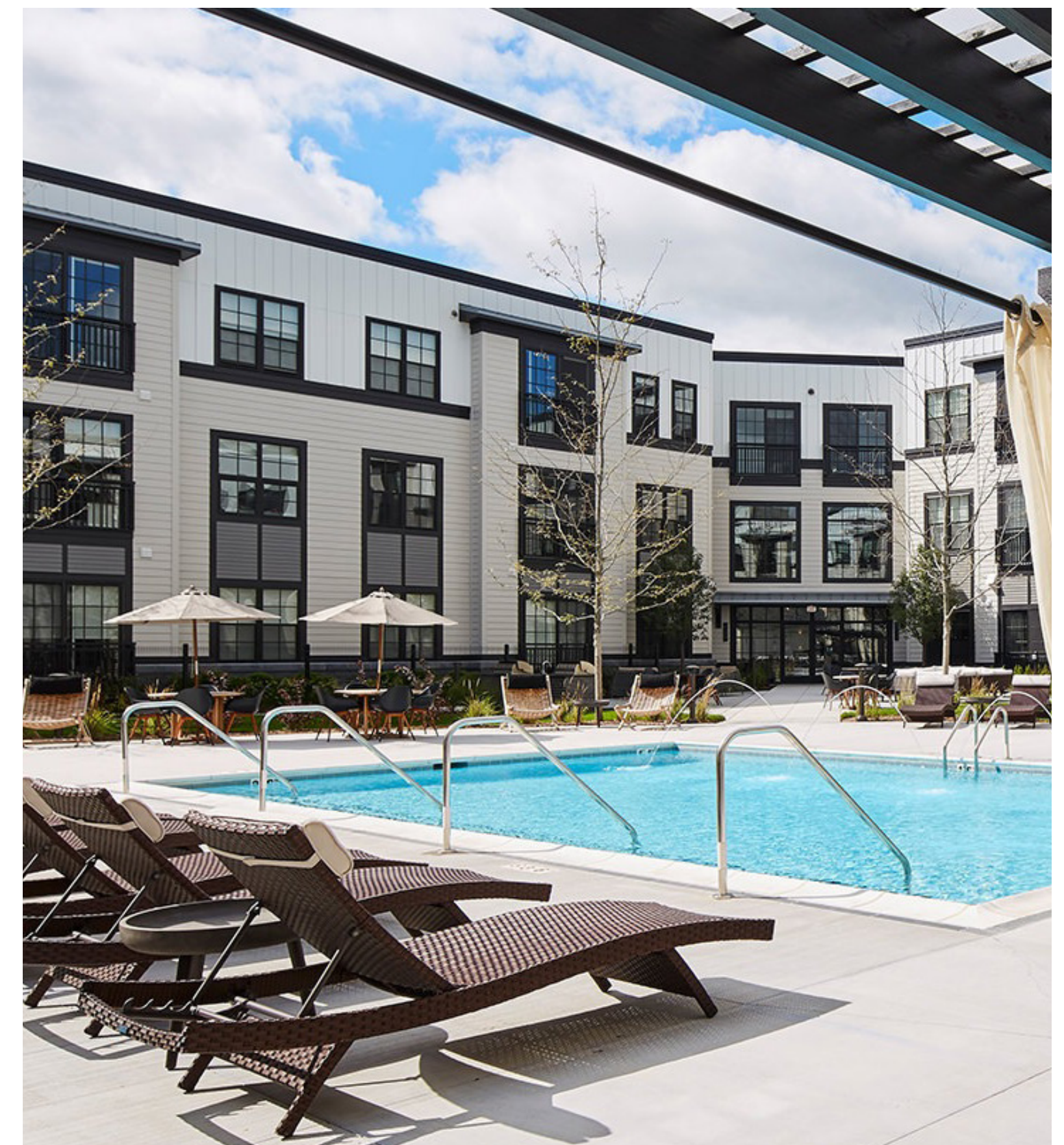
DESIGN IMPLEMENTATION

- Purposeful integration of new buildings to create a Live/Work/Play community in line with the goals of the 2040 Warrenton Plan.
- Revitalization of the existing retail with new public gathering spaces, pedestrian connectivity, reduced vehicles speeds, a new Central Plaza for village events, enhanced green spaces, and activated streetscapes.
- Fusion of a new contemporary aesthetic with the warmth of local and historical design influences.



WARRENTON CONTEXT

- Historical downtown Warrenton provides inspiration with its textures of brick and stone, dark metal accents and awnings, historical lighting fixtures, traditional lap siding, classic masonry banding and detailing, large windows with dark mullions, and pedestrian friendly streetscapes.
- The greater Warrenton area has deep equine and agricultural industry roots, featuring iconic horse farms and celebrated bucolic landscapes. Inspirations include classic equestrian design features, rich colors and textures, dark metal accents, warm woods, and farmhouse inspired lap siding and stone.



DESIGN APPLICATION
Warrenton's past becomes Warrenton's future. The rich palette of historic materials, textures, and architectural details are reclaimed with a fresh perspective and contemporary context.

RESIDENTIAL DESIGN

The three and four story massing of the residential development is designed to emulate the scale of a walkable town center. A clean, light modern aesthetic is grounded with rich masonry and architectural detailing. The street level is activated with resident access, generous sidewalks and rich landscaping. The articulated façade and generous fenestration break down the scale of the buildings and create visual interest for pedestrians.



MATERIALS

- Stacked stone
- Masonry with banding and detailing
- Exterior reveal panel system
- Classic lap siding
- Brick masonry with contemporary color palette
- Wood tones to infuse warmth



ACCENT FEATURES & STREETSCAPE

- Metal accents & awnings
- Equestrian inspired light fixtures
- Large windows with dark mullions and lintels
- Architectural detailing to provide visual interest at pedestrian level
- Residential street level entries activating the sidewalk
- Pedestrian Connectivity
- Walkable Environment



Leasing/Entry



Clubroom



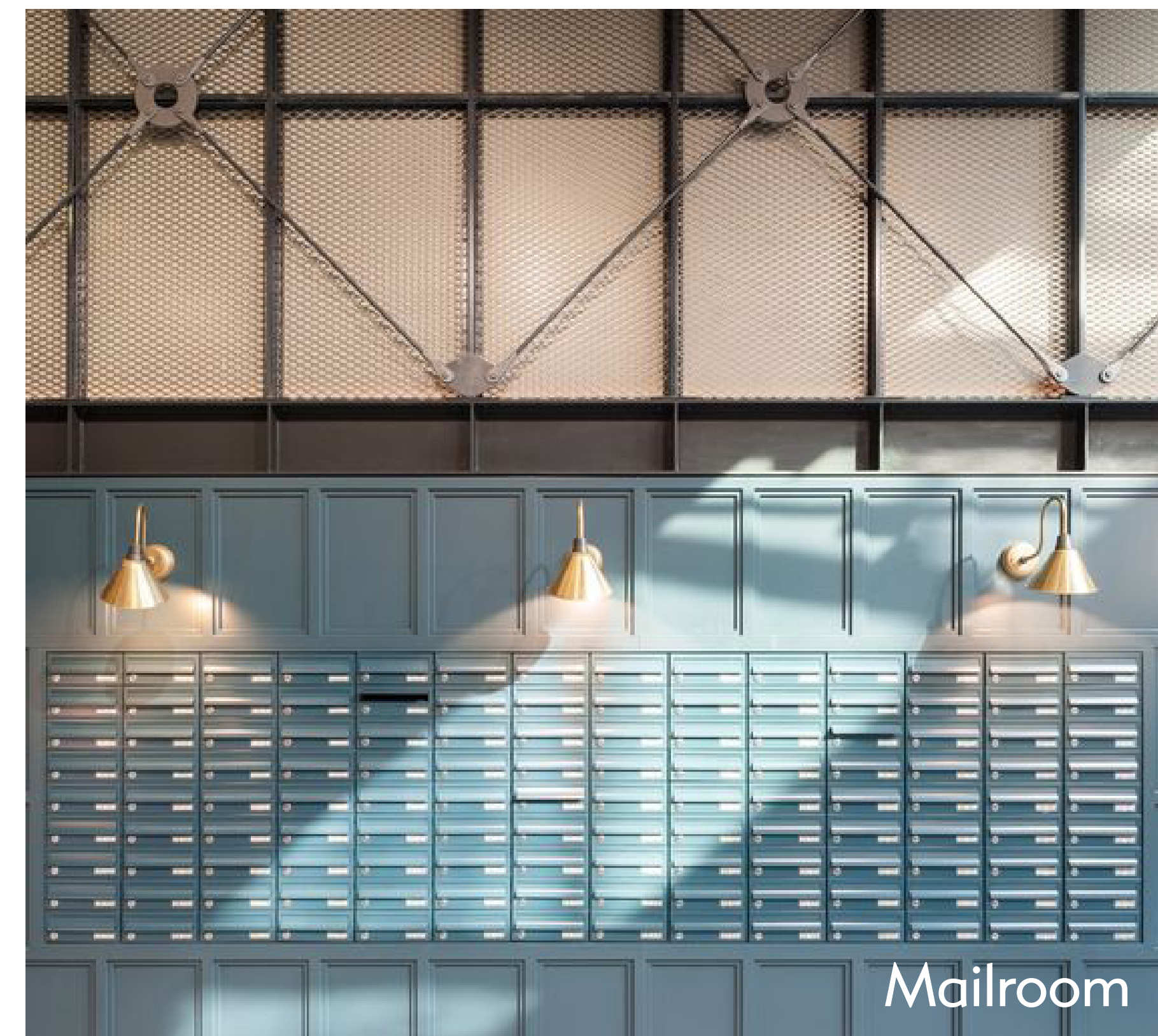
Fitness



Co-Working



Color Palette



Mailroom

INTERIOR DESIGN CONCEPT
Urban Farmhouse aesthetic blends classic, timeless materials and natural textures with crisp, clean lines, neutral color palettes and light, open spaces. Old is blended with the new to provide spaces that are comfortable and approachable with a nod toward the trends of tomorrow.



SIGNAGE

Signage and wayfinding are designed to combine key historical elements or notable community themes with clean, sophisticated materials, fonts and applications, bridging the old and the new.

Comprehensive Plan Future Land Use Analysis

Plan Warrenton 2040 labels this parcel in the Future Land Use Map within the New Town Character District. The New Town designation notes the district “will support the revitalization of the commercial shopping malls with a walkable development pattern that includes a mix of uses.” Plan Warrenton also includes the following applicable goals:

Transportation and Circulation Goals

T-1: Improve multi-modal capacity and safety that encourages trips by walking, bicycling, and transit.

T-3 Promote livability in the Town by creating great places for residents and visitors to feel welcome and safe.

Economic and Fiscal Goals

E-1 Grow a strong, diversified, and resilient economy that supports residents and businesses a like.

E-4 Support Character Districts as unique mixed-use neighborhood centers

| Standard | Analysis |
|--|--|
| <i>Whether the proposed Special Use Permit is consistent with the Comprehensive Plan.</i> | The Applicant’s proposal has been designed to advance the general goals of the Plan and the specific goals set forth for the New Town Character District, which is identified as “a location for signature office/jobs center; with greater intensity of mixed use and strong live, work and play options. A mix of uses could be organized around an internal street network and public amenities, such as civic spaces, parks, green spaces and public gathering areas.” |
| <i>The compatibility of the proposed use with other existing or proposed uses in the neighborhood, and adjacent parcels.</i> | The proposed development is surrounded by a mix of commercial, education and residential: <ul style="list-style-type: none"> • To the north, across Oak Springs Drive, is Highland Private School, Brookside Rehab and Nursing Center and the Cedars of Warrenton town home community. • To the east, across Branch Drive, is Safeway and other commercial businesses included within Warrenton Village Center. |

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| | <ul style="list-style-type: none"> To the south is Warrenton Village Center. To the west, across Broadview Avenue, are standalone commercial and office uses. <p>The proposal is compatible with these uses and proposed uses and the goals of the Comprehensive Plan.</p> |
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Zoning Analysis

The legislative intent of the Commercial District is to simultaneously encourage appropriate and timely land development while assuring suitable design by prohibiting uses that would create undue impacts on the surrounding residential areas.

| Standard | Analysis |
|--|---|
| <i>The level and impact of any noise emanating from the site, including that generated by the proposed use, in relation to the uses in the immediate area.</i> | The proposed use is a mixed-residential and retail. All non-residential uses must meet the noise standards under Article 9-14.2. |
| <i>The proposed location, lighting and type of signs in relation to the proposed use, uses in the area, and the sign requirements of this Ordinance.</i> | All signage shall be permitted in accordance with the Plan as shown and shall comply with any Zoning Ordinance regulations at that time. |
| <i>The location and area footprint with dimensions (all drawn to scale), nature and height of existing or proposed buildings, structures, walls, and fences on the site and in the neighborhood.</i> | The Applicant is seeking a minor modification to the height because it is located between Lee Highway, which allows up to six (6) stories, and Oak Springs Drive which allows up to three (3) stories. The goal of the height recommendations of Plan Warrenton 2040 is to step down towards residential zones. The proposal will achieve this goal in the Transition Zone along Oak Springs Drive. Though a fourth story is proposed by the Applicant for the apartment units, it maintains a step down in scale from the six stories permitted along Lee Highway. |

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| | <p>Additionally, stepping down from six stories to four stories is a more gradual approach and a better design aesthetic than the stark hierarchal contrast of a dramatic drop from six stories down to three stories. From a visual perspective along Oak Springs Drive, maintaining three stories would mean that the structures behind the residential buildings could be twice their size or more with bonus height.</p> |
| <p><i>The nature and extent of existing or proposed landscaping, screening and buffering on the site and in the neighborhood.</i></p> | <p>Applicant acknowledges that landscaping must meet Zoning Ordinance requirements and will be reviewed as part of the Site Development Plan.</p> |
| <p><i>The timing and phasing of the proposed development and the duration of the proposed use.</i></p> | <p>There is no phasing proposed.</p> |
| <p><i>Whether the proposed Special Use Permit at the specified location will contribute to or promote the welfare or convenience of the public.</i></p> | <p>The mixed-use development will promote the welfare of the public by reducing housing costs for renters and promoting a healthier lifestyle by encouraging outdoor activity.</p> |
| <p><i>Whether, in the case of existing structures proposed to be converted to uses requiring a Special Use Permit, the structures meet all code requirements of the Town of Warrenton.</i></p> | <p>No existing structures are being converted</p> |
| <p><i>The location, character, and size of any outdoor storage.</i></p> | <p>No outdoor storage is proposed.</p> |
| <p><i>The location of any major floodplain and steep slopes.</i></p> | <p>Where applicable, all paving that may interact with major floodplains or steep slopes will be done with strict compliance to the flood-proofing and related provisions contained in the Virginia Uniform Statewide Building Code and all other applicable codes and ordinances.</p> |
| <p><i>The location and use of any existing non-conforming uses and structures.</i></p> | <p>There are no non-conforming structures or uses on the site.</p> |
| <p><i>The location and type of any fuel and fuel storage.</i></p> | <p>No fuel storage areas are noted on site.</p> |

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| <i>The location and use of any anticipated accessory uses and structures.</i> | Where applicable, all accessory structure will comply with local codes and ordinances. |
| <i>The area of each proposed use.</i> | Unique housing types are proposed within each block: Block 1: multi-family Block 2: 2-over-2s Block 3: townhomes |
| <i>The location and screening of parking and loading spaces and/or areas.</i> | The Subject Parcel shall meet all parking requirements as outlines in Article 7. Should it be desired to expand the use in any of the buildings located on the Subject Property, the new proposed use shall be required to apply for approvals that meet Zoning Ordinance and additional parking requirements. |
| <i>The location and nature of any proposed security features and provisions.</i> | Not applicable. |
| <i>Any anticipated odors which may be generated by uses on site.</i> | The site must remain in compliance with Article 9-14.5 regarding the control of odors |
| <i>Refuse and service areas.</i> | The Applicant shall maintain Warrenton Village Mixed Use Center in a clean and orderly manner and shall arrange for the pickup of trash, litter and debris on a daily basis through a private refuse collection company. Additionally, trash pickup will be scheduled through the Town of Warrenton’s Public Work’s & Utilities – Refuse Collection. |
| <i>Whether the proposed Special Use Permit will result in the preservation or destruction, loss or damage of any significant topographic or physical, natural, scenic, archaeological or historic feature.</i> | No significant or topographic areas are located on site. |
| <i>The effect of the proposed Special Use Permit on environmentally sensitive land or natural features, wildlife habitat and vegetation, water quality and air quality.</i> | Except where given exceptions by the Special Use Permit, the proposal will comply with any federal, state, or local codes and ordinances regarding wildlife habitats, sensitive land or natural features, vegetation, water quality, and air quality. |

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| <p><i>The glare or light that may be generated by the proposed use in relation to uses in the immediate area.</i></p> | <p>A concept lighting plan has been provided. Fixture details/cut-sheets and new structures will be required to be provided and reviewed as part of the Site Development Plan submission.</p> |
|---|---|

Transportation and Circulation Analysis

The primary transportation and circulation goal for the Town of Warrenton is to “Promote livability in the Town by integrating multi-modal, interconnected transportation solutions with land use development in each mixed-use Character District and applying traffic calming techniques that foster and protect non-vehicular street activities in established residential neighborhoods.” The Transportation and Circulation section of the Comprehensive Plan sets out policies and objectives that work to further this goal. The section includes recommendations addressing improvements for pedestrian use, new street connections, parking and sidewalks, trails, cost sharing, traffic calming techniques, safety, and signage.

| Standard | Analysis |
|--|---|
| <p><i>The traffic expected to be generated by the proposed use, the adequacy of access roads and the vehicular and pedestrian circulation elements (on and off-site) of the proposed use, all in relation to the public's interest in pedestrian and vehicular safety, efficient traffic movement and access in case of fire or catastrophe.</i></p> | <p>Mixed-use development of the property will assist in vehicular safety by reducing the amount that residents are required to drive; Additionally, no vehicles associated with the use shall obstruct the travel ways, fire lanes, adjoining road network or encroach upon landscaped areas as shown on the Special Use Permit Plan. No vehicles shall be located within site entranceways or otherwise impede ingress, egress, and internal circulation. Finally, access to the site is adequate as shown in site plan.</p> |
| <p><i>Whether the proposed use will facilitate orderly and safe road development and transportation.</i></p> | |

Community Facilities and Services Analysis

Public community facilities in the Town are provided by the Town, Fauquier County, and other public groups for the benefit of all residents. The availability and quality of these facilities, that include, schools, libraries, hospitals, parks, police and fire and rescue services, are evaluated when people are considering moving into the Town or nearby area. The provision of these facilities adds to the desirability of living in the Town. The Comprehensive Plan’s primary community facilities and services goals for the Town of Warrenton are:

1. *Foster high-quality, equitable, and accessible community facilities that meet the Town’s service requirements and support a high quality of life for the community.*
2. *Make responsible and strategic community facility investments that support the Town’s vision for a live/work community, sustaining its fiscal well-being and economic resiliency.*
3. *Promote sustainability in all Town-owned facilities.*
4. *Reinforce the role of County community facilities into the Town fabric.*
5. *Promote livability through properly located Town services, schools, libraries, courts, and County administrative functions.*
6. *Support the connection of residential dwellings to public water and sewer.*
7. *Provide a high quality of life to capture economic benefits through diverse businesses, employers, and residences.*

Public services are essential to the community structure and quality of life, as well as to long-term economic vitality. They support existing and planned developments and contribute to the health, safety, education and general welfare of Warrenton residents.

| Standard | Analysis |
|--|--|
| <i>Whether the proposed Special Use Permit will be served adequately by essential public facilities, services and utilities.</i> | The Subject Parcels shall be served by public water and sewer. The Property Owner is responsible for all improvements required in order to meet the demand of the Subject Uses associated with the Property. |
| <i>The location of any existing and/or proposed adequate on and off-site infrastructure.</i> | |

Economic Resources Analysis

An economic goal of Plan Warrenton 2040 is to promote a diverse, equitable stable tax base while preserving the character of the community.

| Standard | Analysis |
|--|---|
| <i>Whether the proposed Special Use Permit use will provide desirable employment and enlarge the tax base by encouraging economic development activities consistent with the Comprehensive Plan.</i> | Residential use will enlarge the tax base by providing increases in property taxes and increasing the local population, allowing more money to be spent at local businesses. Additional retail space will also create new |

| | |
|---|---|
| | employment opportunities for the residents of Warrenton. |
| <i>The number of employees.</i> | No changes anticipated by applicant. |
| <i>The proposed day/hours of operation.</i> | For residential use, not applicable. For retail use, this would be subject to final decisions from the retailers. |

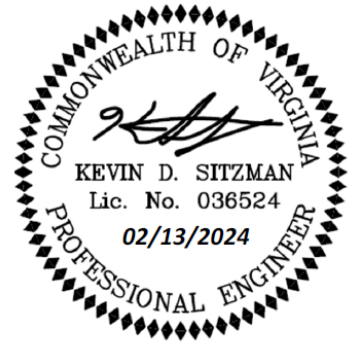
Traffic Impact Analysis

Warrenton Village Center

Town of Warrenton, Virginia

June 30, 2023

Revised February 13, 2024



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TABLE OF CONTENTS

| | |
|--|----|
| Executive Summary | 6 |
| Site Location and Study Area | 6 |
| Description of Proposed Development | 6 |
| Principal Findings and Conclusions | 6 |
| Analysis Components | 6 |
| Analysis Results | 7 |
| Overall Conclusion | 8 |
| Introduction | 9 |
| Background Information: Proposed Development (Site & Nearby) | 10 |
| Description of the Existing Site | 10 |
| Site Location | 10 |
| Location within Jurisdiction and Region | 10 |
| Description of the Parcel | 11 |
| Existing Zoning and Future Land-Use | 12 |
| Descriptions of Geographic Scope of Study and Limits of the Study Area | 13 |
| Existing Roadway Network | 15 |
| Analysis of 2023 Existing Conditions | 16 |
| Existing Roadway Safety Assessment | 16 |
| 2023 Existing Traffic Volumes | 18 |
| Existing Intersection Capacity and Queueing Analysis | 22 |
| Analysis of 2027 Future Conditions Without Development | 27 |
| Future without Development Traffic Volumes | 27 |
| Inherent Regional Growth | 27 |
| Potential Background Development(s) | 27 |
| Potential Roadway Improvement(s) | 27 |
| Future without Development Traffic Volumes | 28 |
| Future without Development Intersection Capacity and Queueing Analysis | 34 |
| Analysis of 2027 Future Conditions with Development | 39 |
| Site Description | 39 |
| Proposed Site Access | 41 |
| Projected Site Trip Generation | 41 |
| Distribution and Assignment of Site Traffic | 41 |
| Future with Development Traffic Volumes | 42 |
| Future with Development Intersection Capacity and Queueing Analysis | 45 |

Preliminary Left and Right Turn Lane Warrant Assessments.....50

Preliminary Access Management Evaluation (Intersection Spacing)51

Preliminary Signal Warrant Analysis52

 Warrant Two: Four-Hour Vehicular Volume52

Bicycle and Pedestrian Accommodations54

Conclusions.....55

 Analysis Components.....55

 Analysis Results.....55

 Overall Conclusion56

LIST OF FIGURES

Figure 1: Regional Location 10

Figure 2: Parcel Map 11

Figure 3: Town of Warrenton Zoning Map 12

Figure 4: Town of Warrenton Future Land Use Map 13

Figure 5: Aerial of Study Boundaries (Study Intersections) 14

Figure 6: Recorded Crash Location Map..... 17

Figure 7: 2023 Existing Conditions – Roadway Network Geometric Configuration and Traffic Control Devices 19

Figure 8: 2023 Existing Conditions – Vehicular Traffic Volumes 20

Figure 9: 2023 Existing Conditions – Pedestrian Volumes 21

Figure 10: 2023 Existing Conditions – Level of Service Results 25

Figure 11: Projected Inherent Regional Growth Traffic Volumes (2023 to 2027) 29

Figure 11: Background Development and Roadway Improvement Map 30

Figure 13: Total Combined Background Development Trips..... 31

Figure 14: 2027 Future Conditions without Development – Roadway Network Geometric Configuration and Traffic Control Devices 32

Figure 15: 2027 Future Conditions without Development – Vehicular Traffic Volumes 33

Figure 16: 2027 Future Conditions without Development – Level of Service Results 37

Figure 17: Conceptual Development Plan..... 40

Figure 18: Global Vehicular Direction of Approach (Site Trip Distribution) 42

Figure 19: Site Generated Trip Assignment 43

Figure 20: 2027 Future Conditions with Development..... 44

Figure 21: 2027 Future Conditions without Development – Level of Service Results 48

Figure 22: Future Intersection Spacing 52

Figure 23: Four-Hour Warrant Analysis – Broadview Avenue at Oak Springs Road (Intersection 8) 53

LIST OF TABLES

| | |
|--|----|
| Table 1: Summary of Existing Road Network..... | 15 |
| Table 2: Historical Crash Data Summary (May 2018 – May 2023) | 16 |
| Table 3: VDOT Crash Data Summary by Type of Collision (May 2018 – May 2023) | 17 |
| Table 4: 2023 Existing Conditions – Intersection Capacity Analysis Results | 23 |
| Table 5: 2027 Future Conditions without Development – Intersection Capacity Analysis Results | 35 |
| Table 6: Site Trip Generation (Peak Hour of the Adjacent Street; ITE 11 th Ed.)..... | 41 |
| Table 7: 2027 Future Conditions without Development – Intersection Capacity Analysis Results | 46 |
| Table 8: Summary of Left Turn Lane Warrants at Site Entrances (2-Lane) – Build 2027 | 50 |
| Table 9: Summary of Right Turn Lane Warrants at Site Entrances (2-Lane) - Build 2027 | 50 |
| Table 10: Summary of Left Turn Lane Warrants at Brach Drive (Study Intersection 4) (4-Lane) - Existing 2023..... | 50 |
| Table 11: Summary of Left Turn Lane Warrants at Brach Drive (Study Intersection 4) (4-Lane) – Build 2027 | 50 |
| Table 12: Future Intersection Spacing..... | 51 |
| Table 13: Volume Projections – Broadview Avenue at Oak Springs Road (Intersection 8)..... | 53 |

Executive Summary

This report presents the findings of a Traffic Impact Analysis (TIA) conducted for the proposed Warrenton Village Center development (the Site / the Development / the Property) situated in the Town of Warrenton, Virginia.

This study was developed in accordance with the Virginia Department of Transportation (VDOT) and the Town of Warrenton (the Town) transportation impact analysis guidelines. The document was prepared in accordance with best professional practices and standards that assess the impact of a proposed development on the transportation system. Traffic operational analyses, as presented in this TIA, involve the evaluation of anticipated roadway conditions with and without the proposed development. The analysis assists public officials and developers to balance the interrelations between efficient traffic movements with necessary lane access. This revised TIA is based on review comments provided by VDOT and the Town.

Site Location and Study Area

The proposed development will be located primarily along the southern frontage of Oak Springs Drive (Town Route 3), east of Broadview Avenue (US Route 17 Business) and west of Branch Drive (Town Route 4) in the Town of Warrenton, Virginia. The vehicular study area includes ten existing intersections along Broadview Avenue, Lee Highway, Branch Drive, and Oak Springs Drive.

Description of Proposed Development

The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #: 6985-20-7247-000, and 6984-29-6753-000, respectively. The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).

The Applicant is proposing to apply for a Special Use Permit (SUP) in order to construct approximately 386 multifamily residential dwelling units (320 multifamily apartments, 36 2-over-2 units, and 30 townhomes) and a parking deck. The site has an anticipated build-out date of 2027.

Access to the site will be provided via one full movement parking deck entry along Oak Springs Drive (Town Route 3) forming the fourth leg of the High School Driveway, one full movement driveway along Oak Springs Drive forming the fourth leg to the existing full-movement intersection of Hastings Lane, and via the existing shopping center accesses to the south.

This report analyzes the trips generated by the Warrenton Village Center Development and its impact on traffic operations on the surrounding road network.

Principal Findings and Conclusions

Discussions regarding the study assumptions and relevant background information were held with VDOT, County, and Town staff during January 2023. The scope details the study assumptions and relevant background information discussed. A copy of the scoping document is included in Appendix A.

The analysis contained herein presents the 2023 Existing Conditions, 2027 Future Conditions without Development, and 2027 Future Conditions with Development:

The analysis presented in this report supports the following assumptions and major findings:

Analysis Components

- 2023 existing volumes were derived via turning movement counts collected at intersections within the study area in February 2023.
- As determined based on review comments from VDOT and the Town, an inherent regional growth of 1.0% per year was applied to the Lee Highway mainline through movements at the intersection of Lee Highway at Broadview Avenue (US

Route 17 Business). The growth volumes were balanced along the road network by increasing the mainline through movements at subsequent study intersections along the road network where applicable for the period between 2023 and 2027 to account for 2027 conditions.

- The trip generation associated with the Site was based on the ITE Trip Generation Manual, 11th Edition publication. The Site in total is expected to generate approximately 154 new trips during the AM peak hour, 197 new trips during the PM peak hour, and 2,602 new daily trips on a typical weekday.
- Intersection capacity and queuing analyses were performed for all analysis scenarios at the study area intersections during the weekday morning (AM) and weekday afternoon (PM) peak hours. *Synchro*, version 11, was used to analyze the study intersections with results based on the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) methodology and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) (version 2). The analysis herein includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.
- The analysis also considers an assessment of historical crash data at all existing study intersections.
- The analysis also includes preliminary access management assessment and turn lane warrant assessments for the Site access points along Oak Springs Drive.

Analysis Results

2023 Existing Conditions

- Based on the capacity analysis of Existing Conditions, the two signalized study intersections operate at an overall level of service D or better during both the AM and PM peak hours.
- Based on the capacity analysis of Existing Conditions, three study intersections have at least one approach that operates at levels of service (LOS E or F) for at least one peak hour. The remaining intersection approaches operate at acceptable levels of service during both peak hours.
- Based on the analysis of the Synchro 95th percentile queue lengths, all turning movements have queue lengths that can be accommodated within the available storage length of the turn bays, except the southbound left turn movement at Study Intersection 1 (Broadview Avenue / Lee Highway at Winchester Street).

2027 Future Conditions without Development

- Based on the capacity analysis of 2027 Future Conditions with Development, the signalized study intersection would operate at an overall level of service D or better during both the AM and PM peak hours.
- The planned roundabout is expected to operate at an overall LOS B or better with all approaches operating at LOS D or better during the AM and PM peak hours.
- Based on the capacity analysis of 2027 Future Conditions without Development, two study intersections have at least one approach that would operate at levels of service (LOS E or F) for at least one peak hour. The remaining intersection approaches would operate at acceptable levels of service during both peak hours.
- Based on the analysis of the Synchro 95th percentile queue lengths, all turning movements have queue lengths that could be accommodated within the available storage length of the turn bays.

2027 Future Conditions with Development

- The Site is expected to generate approximately 154 new total trips during the AM peak hour, 197 new trips during the PM peak hour and 2,602 new trips during a typical weekday.

- Based on the capacity analysis of 2027 Future Conditions with Development, the signalized study intersection would operate at an overall level of service D or better during both the AM and PM peak hours.
- The planned roundabout is expected to operate at an overall LOS B with all approaches operating at LOS D or better during the AM and PM peak hours.
- Based on the capacity analysis of the 2027 Future Conditions with Development, two study intersections have at least one approach that would operate at levels of service (LOS E or F) for at least one peak hour (similar to 2027 Future Conditions without Development) during the AM and PM peak hours. The remaining intersection approaches would operate at acceptable levels of service during both peak hours.
- Based on the queuing analysis performed for the 2027 Future Conditions with Development, all turning movements have queue lengths that could be accommodated within the available storage length of the turn bays.

Overall Conclusion

Based on the capacity and queuing analysis results, the proposed Development will not have a substantial impact to the surrounding transportation and roadway network, assuming that the site is constructed as depicted on the concept plan. No improvements are warranted or recommend to accommodate the proposed Development.

Introduction

This report presents the findings of a Traffic Impact Analysis (TIA) conducted for the proposed Warrenton Village Center (the Site / the Development / the Property) along the southern frontage of Oak Springs Drive (Town Route 3), east of Broadview Avenue (US Route 17 Business) and west of Branch Drive (Town Route 4) in the Town of Warrenton, Virginia

The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #s: 6985-20-7247-000, and 6984-29-6753-000, respectively. The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).

The Applicant is proposing to apply for a Special Use Permit (SUP) in order to construct approximately 386 multifamily residential dwelling units (320 multifamily apartments, 36 2-over-2 units, and 30 townhomes) and a parking deck. The site has an anticipated build-out date of 2027.

Access to the site will be provided via one full movement parking deck entry along Oak Springs Drive (Town Route 3) forming the fourth leg of the High School Driveway, one full movement driveway along Oak Springs Drive forming the fourth leg to the existing full-movement intersection of Hastings Lane, and via the existing shopping center accesses to the south.

The following tasks were completed as part of this study effort:

- A scoping meeting was held on January 3, 2023 with the Virginia Department of Transportation (VDOT), Fauquier County (the County), and the Town of Warrenton (Town) staff to discuss the parameters of this study as well as any relevant background information. A copy of the scoping document is included in Appendix A.
- Review comments of the first TIA submission were provided and addressed in this study submission.
- Existing conditions were observed in the field to verify roadway geometry, pedestrian and bicycle infrastructure, and traffic flow characteristics.
- Signal timings were acquired from VDOT and are provided in Appendix E.
- In order to determine the weekday morning and afternoon peak hour turning movement traffic volumes, traffic counts were conducted in February 2023.
- The 2027 Future Conditions without Development scenario was projected based on the existing traffic volumes, an inherent growth to account for regional growth on the roadway network, two approved background developments, and roadway improvements.
- Proposed site traffic volumes were derived based on the methodology outlined in ITE's Trip Generation Manual, 11th Edition, publication and were assigned to the road network based on the agreed-upon direction of approach discussed during the aforementioned scoping meeting.
- The 2027 Future Conditions with Development scenario was projected based on the existing traffic volumes, regional growth, and the projected trips generated by the proposed development.
- Intersection capacity and queueing analyses were performed for the identified study intersections for the 2023 Existing Conditions, 2027 Future Conditions without Development, and 2027 Future Conditions with Development scenarios during the weekday morning (AM), and weekday afternoon (PM) peak hours.
- Intersection capacity and queueing analyses were performed using *Synchro*, version 11, with LOS and delay results based on the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) 6 methodology and in following VDOT's Traffic Operations and Safety Manual (TOSAM) (version 2).
- The analysis also considers an assessment of historical crash data at all study intersections.

- The analysis also includes preliminary access management assessment and turn lane warrant assessments for the Site access points along Oak Springs Drive.
- The study also includes preliminary discussions on the pedestrian facilities in the study area.

Sources of data for this study include the Institute of Transportation Engineers (ITE), VDOT, the County, the Town and the office files and field reconnaissance efforts of Gorove Slade.

Background Information: Proposed Development (Site & Nearby)

Description of the Existing Site

Site Location

The proposed Development will be located primarily along the southern frontage of Oak Springs Drive (Town Route 3), east of Broadview Avenue (US Route 17 Business) and west of Branch Drive (Town Route 4) in the Town of Warrenton, Virginia. A description of the proposed Development is provided in the *Introduction* section of this report.

Location within Jurisdiction and Region

The Site is located generally on the northern portion of Warrenton approximately 0.5 miles from the north Town line and approximately 1 mile west of the US 17 and US 29 Business interchange. A regional aerial of the Site is provided in **Figure 1**.

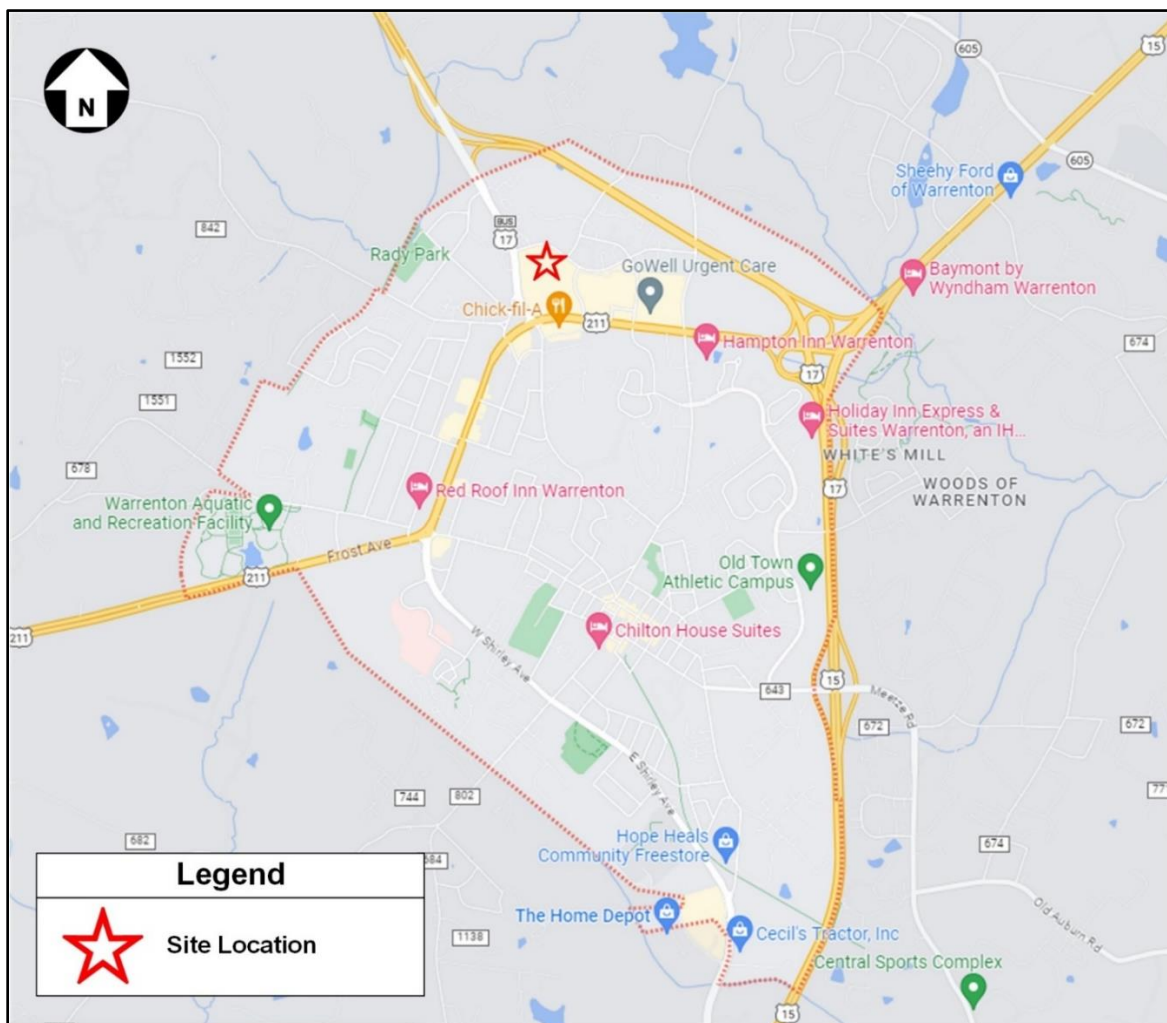


Figure 1: Regional Location

Description of the Parcel

The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #s: 6985-20-7247-000, and 6984-29-6753-000 as illustrated in **Figure 2**.



Figure 2: Parcel Map
(Source: <https://fauquiergis.maps.arcgis.com/>)

Existing Zoning and Future Land-Use

The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).

The existing zoning is presented in Error! Reference source not found.; the Town of Warrenton 2040 Comp Plan future land use is presented in **Figure 4**.

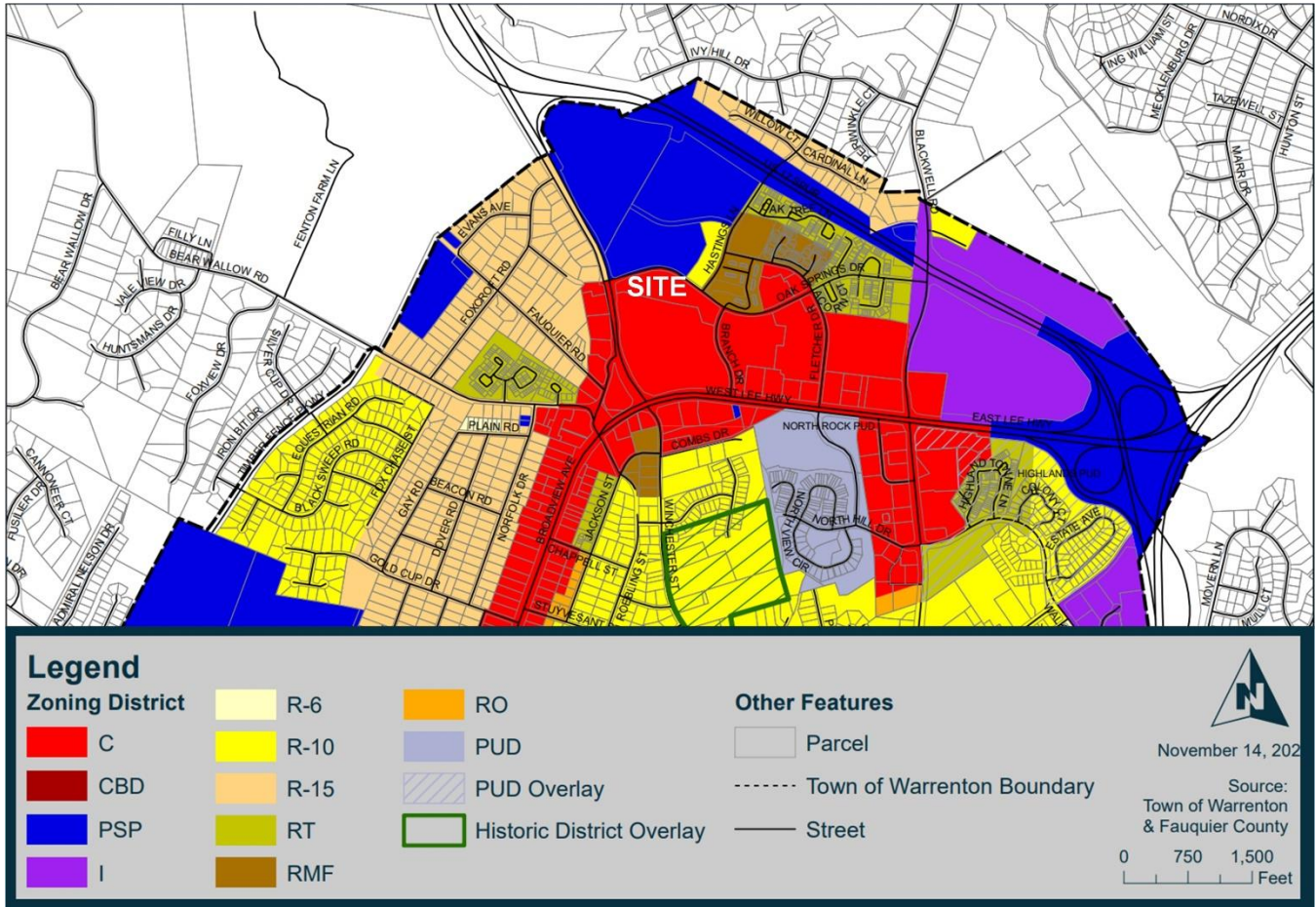


Figure 3: Town of Warrenton Zoning Map

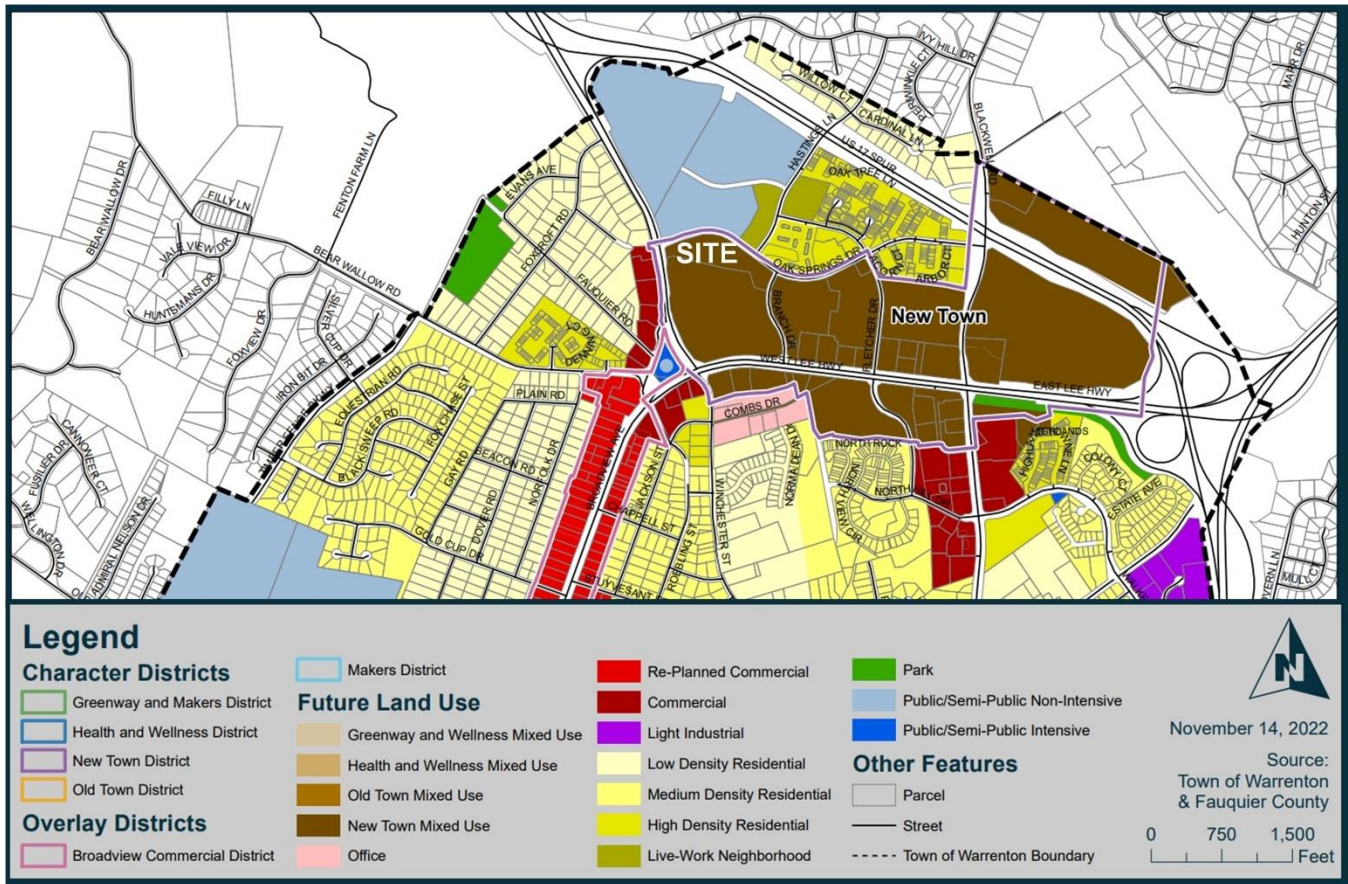


Figure 4: Town of Warrenton Future Land Use Map

Descriptions of Geographic Scope of Study and Limits of the Study Area

The geographic scope of the study area was developed in accordance with VDOT and County guidance. The vehicular study area includes ten existing study intersections. At build out of the Site, the proposed site driveways will form the fourth leg of two existing intersections.

The existing study intersections are as follows:

- Intersection 1:** Broadview Avenue (US Route 17) / Lee Highway at Broadview Avenue / Winchester Street [existing full-movement, signalized],
- Intersection 2:** Lee Highway (US Route 17) at Warrenton Village Center Driveway at Chick-fil-a Driveway [existing full-movement, unsignalized],
- Intersection 3:** Lee Highway (US Route 17) at Branch Drive (Town Route 4) [existing full-movement, signalized],
- Intersection 4:** Branch Drive (Town Route 4) at Warrenton Village Driveway / Safeway Driveway [existing full-movement, unsignalized],
- Intersection 5:** Oak Springs Drive (Town Route 3) at Branch Drive (Town Route 4) / Cedar Crest Drive [existing full-movement, unsignalized],
- Intersection 6:** Oak Springs Drive (Town Route 3) at Hastings Lane / Future Access [existing full-movement, unsignalized, future fourth leg],

- Intersection 7:** Oak Springs Drive (Town Route 3) at Highland School Driveway / Future Garage Access [existing full-movement, unsignalized, future fourth leg],
- Intersection 8:** Broadview Avenue (US Route 17 Business) at Oak Springs Drive (Town Route 3) [existing full-movement, unsignalized],
- Intersection 9:** Broadview Avenue (US Route 17 Business) at Warrenton Village Center South Driveway [existing full-movement, unsignalized],
- Intersection 10:** Broadview Avenue (US Route 17 Business) at Warrenton Village Center North Driveway [existing full-movement, unsignalized].

An aerial of the study intersections is provided in **Figure 5**.



Figure 5: Aerial of Study Boundaries (Study Intersections)

Existing Roadway Network

A description of the major roadways within the immediate vicinity of the Site is presented below in Error! Reference source not found..

Table 1: Summary of Existing Road Network

| Roadway | RTE # | VDOT Classification | Legal/Design Speed Limit (mph) | Lanes | AADT (vpd) | Road Segment Between: | | k-factor |
|-------------------|---------------|--------------------------|--------------------------------|---------|------------|-----------------------|-------------------|----------|
| Broadview Avenue | US 17 Bus | Other Principal Arterial | 35 | 4 Div | 11,000 | Bus US 29 Lee Hwy | NCL Warrenton | 9.7% |
| Oak Springs Drive | Town 3 | Major Collector | 25 | 2 Undiv | 3,100 | Broadview Ave | Branch Dr | 10.3% |
| Branch Drive | Town 4 | Major Collector | 25 | 4 Undiv | 4,300 | Lee Highway | Oak Springs Drive | 11.1% |
| Lee Highway | US 211/29 Bus | Other Principal Arterial | 40 | 4 Div | 26,000 | US 17 Broadview | US 15 Blackwell | 7.7% |

Lee Highway (US Route 211/US Route 29 Business) is generally a four-lane divided Principal Arterial with a posted speed limit of 40 mph within the vicinity of the Site. The 2021 VDOT ADT on Lee Highway is 26,000 vehicles per day (vpd). For the purposes of this analysis, Lee Highway is assumed to be an east-west roadway.

Broadview Avenue (US 17 Business) is a four-lane divided Principal Arterial with a posted speed limit of 35 mph and a 2021 VDOT ADT of approximately 11,000 vpd. For the purposes of this study, Broadview Avenue is assumed to be a north-south roadway.

Branch Drive (Town Route 4) is a four-lane, undivided Major Collector with a posted speed limit of 25 mph and a 2021 VDOT ADT of approximately 4,300 vpd. For the purposes of this study, Branch Drive is assumed to be a north-south roadway.

Oak Springs Drive (Town Route 3) is a two-lane, undivided Major Collector with a posted speed limit of 25 mph and a 2021 VDOT ADT of approximately 3,100 vpd. For the purposes of this study, Oak Springs Drive is assumed to be an east-west roadway.

Analysis of 2023 Existing Conditions

Existing Roadway Safety Assessment

As agreed upon in the aforementioned scoping meeting, existing crash reports for all existing study intersections over a five-year period between May 2018 and May 2023 were provided by VDOT’s Crash Analysis Tool. These reports are summarized in **Table 2** and **Table 3**.

During the five-year period, a total of 88 crashes were recorded at the ten existing study intersections as illustrated in Error! Reference source not found.. Of the 88 recorded crashes, 58 were classified as “Property Damage Only (PDO),” 30 were classified as “Injury Collision (IC), and zero fatalities occurred during the five-year period.

An aerial of the recorded crash locations is provided in **Figure 6**. The crash data by study intersection is provided in Appendix B.

The intersection crash rate was computed for the existing study intersections using the following formula and was calculated as crashes per one million entering vehicles (MEV). The approach average daily traffic volumes (ADT_{approach}) were derived from calculations based on the existing link ADTs.

$$Rate_{intersection} = \frac{1,000,000 * \# \text{ of Crashes}}{\# \text{ of Years} * 365 \left(\frac{\text{days}}{\text{year}}\right) * ADT_{approach}}$$

It should be noted that according to the Institute of Transportation Engineers’ (ITE) Transportation Impact Analysis for Site Development, a crash rate of 1.0 MEV or higher is an indication that further study may be required. A rate over 1.0 MEV does not necessarily mean there is a significant problem at an intersection, but rather it is a threshold used to identify which intersections may have an elevated crash rate due to operational, geometric, or other deficiencies. Based on the crash rates, none of the existing study intersections were considered high crash locations.

The following tables provide detailed reported crash data for all study intersections.

Table 2: Historical Crash Data Summary (May 2018 – May 2023)

| Intersection | Approximate ADT | PDO | IC | Fatality | Total | Crash Rate (Per MEV) |
|---|-----------------|--------------|--------------|-------------|---------------|----------------------|
| 1 Lee Highway (US 211/US 29 BUS) at Broadview Avenue | 29,125 | 28 | 12 | 0 | 40 | 0.75 |
| 2 Lee Highway (US 211/US 29 BUS) at Warrenton Village / | 21,375 | 3 | 2 | 0 | 5 | 0.13 |
| 3 Lee Highway (US 211/US 29 BUS) at Branch Drive | 23035 | 14 | 5 | 0 | 19 | 0.45 |
| 4 Branch Drive at Warrenton Village / Safeway | 4485 | 1 | 1 | 0 | 2 | 0.24 |
| 5 Branch Drive at Oak Springs Drive | 4000 | 2 | 0 | 0 | 2 | 0.27 |
| 6 Oak Springs Drive at Hastings Lane | No Crashes | 0 | 0 | 0 | 0 | 0.00 |
| 7 Oak Springs Drive at Highland School Entrance | No Crashes | 0 | 0 | 0 | 0 | 0.00 |
| 8 Broadview Avenue at Oak Springs Drive | 12010 | 2 | 1 | 0 | 3 | 0.14 |
| 9 Broadview Avenue at Warrenton Village North | 10425 | 2 | 2 | 0 | 4 | 0.21 |
| 10 Broadview Avenue at Warrenton Village South | 13165 | 6 | 7 | 0 | 13 | 0.54 |
| Total Reported Crashes Analyzed | | 58 | 30 | 0 | 88 | - |
| Percentages | | 65.9% | 34.1% | 0.0% | 100.0% | - |

Based on the crash rates, none of the existing study intersections were considered high crash locations, however, Study Intersections 1 and 10 are on the Culpepper District top 100 PSI list. A pipeline study has been conducted and these locations have been identified for construction of roundabouts.

Table 3: VDOT Crash Data Summary by Type of Collision (May 2018 – May 2023)

| Intersection | Fixed Object/Single Vehicle | | Sideswipe (Same Direction) | | Sideswipe (Opposite Direction) | | Rear End | Angle | Backing | Pedestrian | Animal | Other | Total |
|---|-----------------------------|------------|----------------------------|------------|--------------------------------|-------|----------|-------|---------|------------|--------|-------|-------|
| | Head-on | Direction) | Direction) | Direction) | | | | | | | | | |
| 1 Lee Highway (US 211/US 29 BUS) at Broadview Avenue | 0 | 0 | 3 | 0 | 24 | 11 | 0 | 0 | 0 | 0 | 2 | 40 | |
| 2 Lee Highway (US 211/US 29 BUS) at Warrenton Village / | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 5 | |
| 3 Lee Highway (US 211/US 29 BUS) at Branch Drive | 1 | 0 | 1 | 1 | 6 | 8 | 1 | 0 | 0 | 1 | 19 | | |
| 4 Branch Drive at Warrenton Village / Safeway | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | | |
| 5 Branch Drive at Oak Springs Drive | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | | |
| 6 Oak Springs Drive at Hastings Lane | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 7 Oak Springs Drive at Highland School Entrance | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 8 Broadview Avenue at Oak Springs Drive | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | | |
| 9 Broadview Avenue at Warrenton Village North | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 4 | | |
| 10 Broadview Avenue at Warrenton Village South | 0 | 3 | 1 | 0 | 1 | 7 | 0 | 0 | 0 | 1 | 13 | | |
| Total Reported Crashes Analyzed | 3 | 3 | 5 | 1 | 32 | 38 | 1 | 0 | 1 | 4 | 88 | | |
| Percentages | 3.4% | 3.4% | 5.7% | 1.1% | 36.4% | 43.2% | 1.1% | 0.0% | 1.1% | 4.5% | 100.0% | | |

Approximately 43% of the crashes that occurred were classified as angle collisions and approximately 36% were classified as rear end collisions. Rear end and angle collisions are common at congested signalized intersections. Study Intersection 1 has been identified as a location for a potential roundabout.

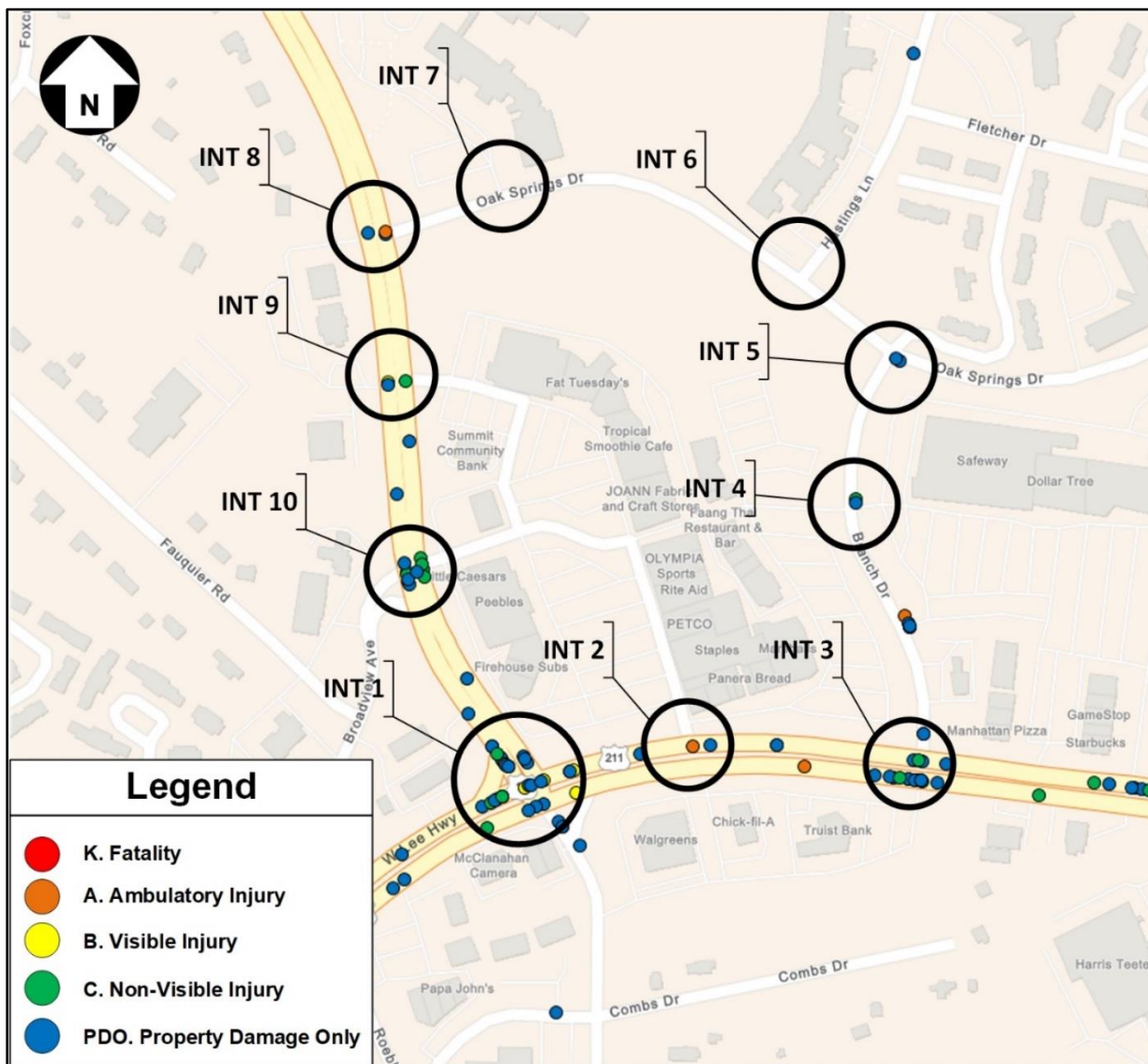


Figure 6: Recorded Crash Location Map

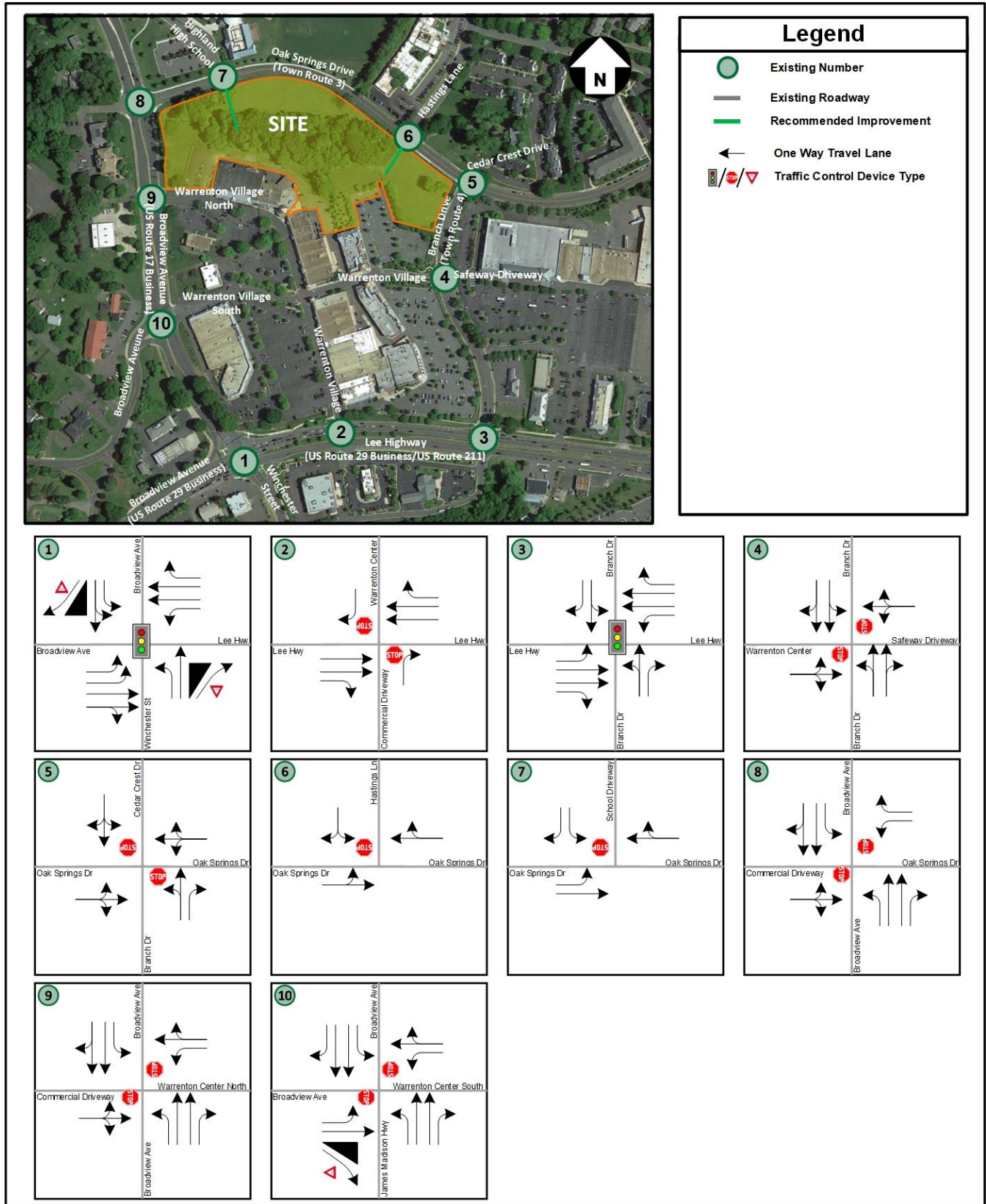
2023 Existing Traffic Volumes

In order to determine the weekday morning (AM) and weekday afternoon (PM) peak hour turning movement traffic volumes, turning movement counts (TMC) were collected at the study intersections in February 2023. The referenced weekday turning movement counts were collected from the hours of 6:00 AM to 9:00 AM and 4:00 PM to 7:00 PM:

- Study Intersection 1: Lee Highway (US 211/US 29 BUS) at Broadview Avenue (US 17 BUS)
- Study Intersection 2: Lee Highway (US 211/US 29 BUS) at Warrenton Village / Chick-fil-a Driveway
- Study Intersection 3: Lee Highway (US 211/US 29 BUS) at Branch Drive
- Study Intersection 4: Branch Drive at Warrenton Village / Safeway
- Study Intersection 5: Branch Drive at Oak Springs Drive
- Study Intersection 6: Oak Springs Drive at Hastings Lane
- Study Intersection 7: Oak Springs Drive at Highland School Entrance
- Study Intersection 8: Broadview Avenue at Oak Springs Drive
- Study Intersection 9: Broadview Avenue at Warrenton Village North
- Study Intersection 10: Broadview Avenue at Warrenton Village South
- From the turning movement counts, the following system peak hours were determined.
 - AM Peak Hour: 7:30 AM to 8:30 AM
 - PM Peak Hour: 4:00 PM to 5:00 PM

The 2023 existing road network configuration is presented in **Figure 7**. The existing AM and PM peak hour traffic volumes for the existing study intersections are shown in **Figure 8**. The ADT volumes, depicted in **Figure 8** and in subsequent volume graphics, were calculated based on VDOT published k-factors from 2021, if available, or assumed k-factors per approach of 0.10 and the PM peak hour volumes. The raw existing traffic count data is provided in Appendix C.

In addition to turning movement volumes, pedestrians crossing data was collected at all study intersections. The peak hour pedestrian crossing data is presented in **Figure 9**.



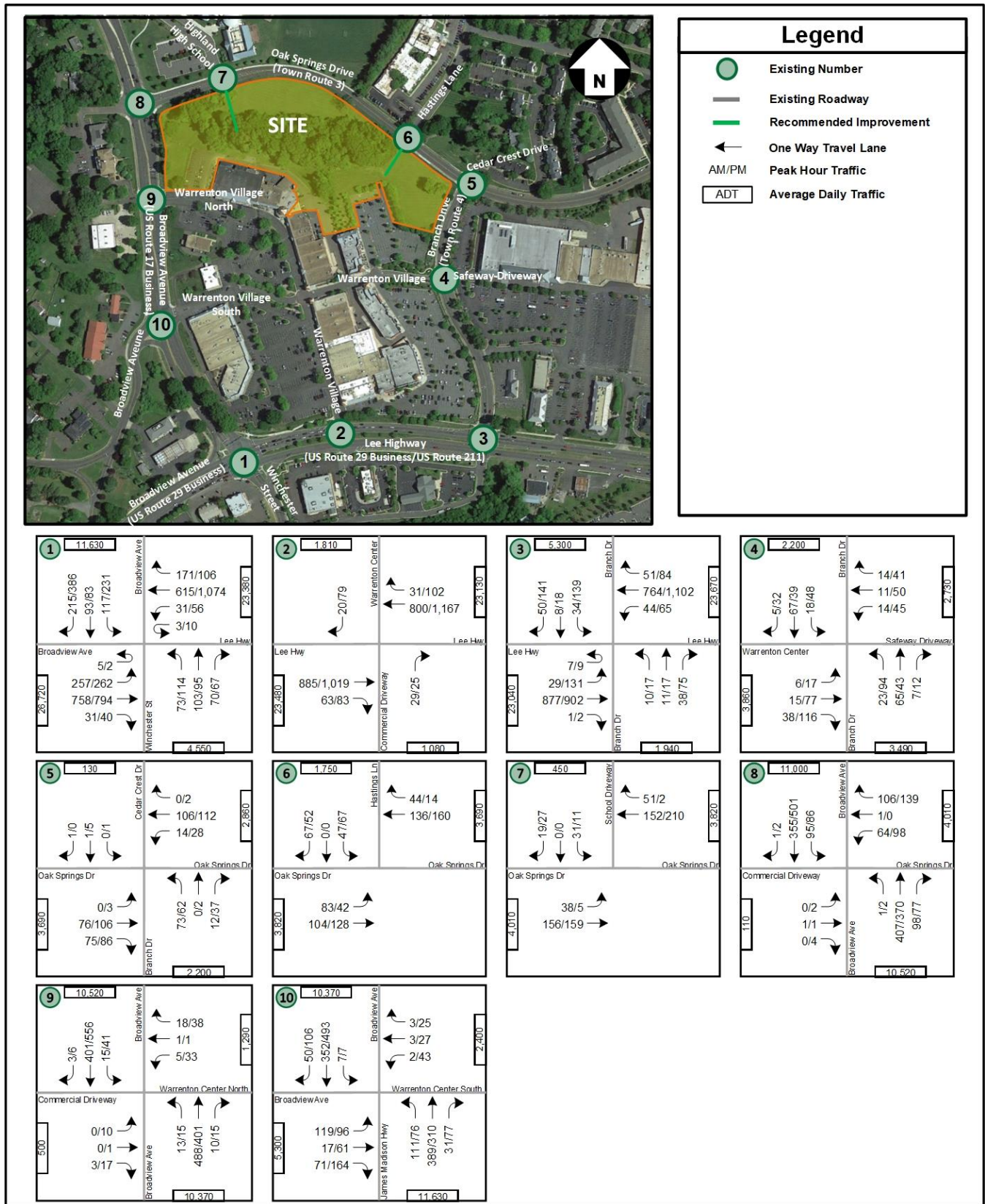
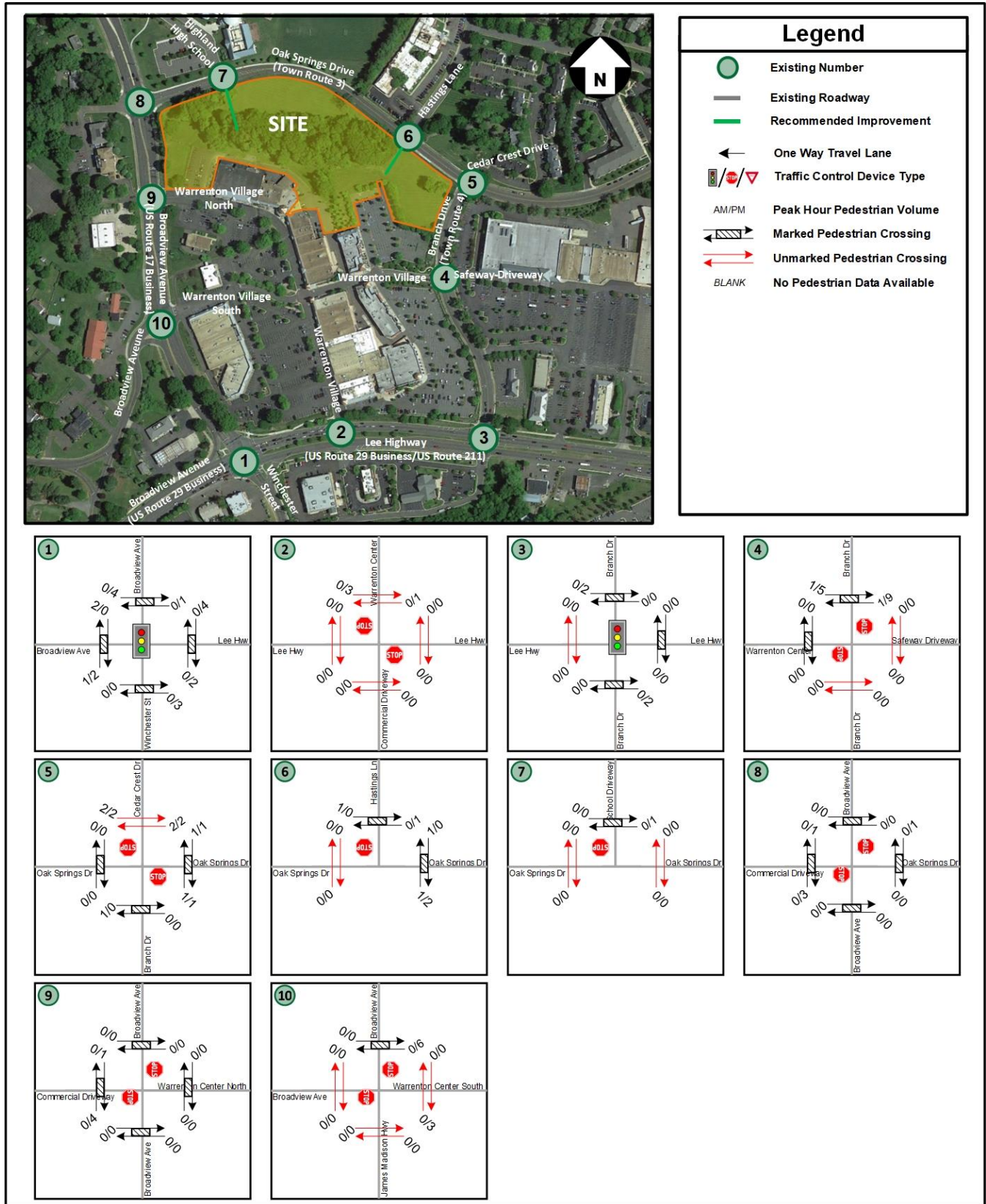


Figure 8: 2023 Existing Conditions – Vehicular Traffic Volumes



Existing Intersection Capacity and Queueing Analysis

Intersection capacity and queueing analyses were performed for the 2023 Existing Conditions scenario at the study area intersections during AM and PM peak hours, in accordance with VDOT's *TOSAM* (version 2) guidelines. *Synchro*, version 11, was used to analyze the study intersections with results based on the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) 6th edition methodology¹ and include level of service (LOS), delay, and queue length comparisons for the turning movements analyzed. Lane configurations at study intersections along the road network were field-verified, and the existing traffic volumes discussed in the aforementioned section as well as other relevant data were entered into the analysis models.

Signal timings were obtained from VDOT and were utilized as a base for the analysis models. Traffic operation conditions as well as lane configurations were field verified. The existing traffic volumes discussed in the aforementioned section as well as other relevant data were entered into the analysis models. For the purposes of this analysis, the existing peak hour factors (PHF) utilized in the analysis of existing conditions were based on the 2023 existing volumes and were modeled in the *Synchro* network on a by-intersection basis. PHF in the range of 0.85 to 1.00 were used for the existing scenario, as agreed to in the scoping document. The heavy vehicle percentages (HV%) utilized per movement were based on the existing traffic counts collected. Pedestrian crossing data utilized per crossing were based on the existing traffic counts collected. Based on *Synchro* guidance and pedestrian count data, all pedestrian calls at both signalized intersections were set to five calls per hour. Note that for analysis purposes, all turning movement counts were coded with a minimum volume of one vehicle in *Synchro*.

Per the scoping meeting with VDOT and Town staff, it would be considered acceptable and/or desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity and queueing analyses from *Synchro* are presented in **Table 4** and graphically in **Figure 10**. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized/all-way stop control intersections and per approach and lane group for all study intersections. Any overall signalized intersection or approach that operates at LOS E or F is displayed in red.

The queue lengths were reported as the 95th percentile queues from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The description of different LOS and delay are included in Appendix D. The signal timing data provided by VDOT is included in Appendix E. The detailed analysis worksheets of 2023 Existing Conditions are contained in Appendix F.

¹ It should be noted that HCM 2000 methodology was used in lieu of HCM 6th if the HCM 6th methodology was not applicable. HCM 6th could not be applicable in such cases as nonstandard National Electrical Manufacturers Association (NEMA) configurations, shared lane configurations, placement of loop detectors, U-turns, etc.

Table 4: 2023 Existing Conditions – Intersection Capacity Analysis Results

| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|----------------------------|---|--------------------------------|--------------|-----------------|-----------------------------------|--------------|-----------------|-----------------------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) ^[2] | LOS | Delay (sec/veh) | 95th % Queue ^[2] |
| | | | Synchro | | | Synchro | | |
| 1 | Broadview Ave (EW) at Winchester St (NS) | | | | | | | |
| | Overall Intersection (Signalized) | | D | 36.4 | | D | 39.4 | |
| | Eastbound Approach | | C | 34.2 | | D | 40.6 | |
| | Eastbound Left | 250 | E | 64.9 | 186 | E | 72.0 | 193 |
| | Eastbound Thru/Right | | C | 24.0 | 428 | C | 30.6 | 428 |
| | Westbound Approach | | C | 25.5 | | C | 25.9 | |
| | Westbound Left | 130 | F | 89.7 | 78 | F | 93.8 | m119 |
| | Westbound Thru | | B | 19.8 | 143 | C | 22.7 | 192 |
| | Westbound Right | 200 | C | 33.6 | 46 | B | 16.8 | m15 |
| | Northbound Approach | | E | 60.3 | | E | 66.6 | |
| | Northbound Left | 250 | E | 61.7 | 126 | E | 74.8 | 188 |
| | Northbound Thru | | E | 66.5 | 166 | E | 67.3 | 160 |
| | Northbound Right | 125 | D | 49.9 | 0 | D | 51.7 | 17 |
| Southbound Approach | | D | 49.2 | | D | 50.9 | | |
| Southbound Left | 215 | E | 63.1 | 167 | E | 59.2 | 251 | |
| Southbound Left/Thru | | E | 62.0 | 171 | E | 59.0 | 257 | |
| Southbound Right | | D | 36.1 | 95 | D | 44.2 | 417 | |
| 2 | Broadview Ave (EW) at Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy (NS) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Northbound Approach | | B | 12.6 | | B | 13.4 | |
| | Northbound Right | | B | 12.6 | 5 | B | 13.4 | 5 |
| | Southbound Approach | | B | 10.7 | | B | 13.3 | |
| Southbound Right | | B | 10.7 | 3 | B | 13.3 | 15 | |
| 3 | Broadview Ave (EW) at Branch Dr (NS) | | | | | | | |
| | Overall Intersection (Signalized) | | B | 16.2 | | C | 31.6 | |
| | Eastbound Approach | | A | 9.0 | | C | 20.9 | |
| | Eastbound Left | 240 | F | 81.5 | m80 | F | 80.8 | 225 |
| | Eastbound Thru | | A | 6.0 | 133 | B | 11.6 | 226 |
| | Eastbound Right | 330 | A | 9.9 | m0 | B | 13.4 | m0 |
| | Westbound Approach | | B | 15.8 | | C | 28.5 | |
| | Westbound Left | 150 | E | 67.4 | 88 | E | 78.5 | 123 |
| | Westbound Thru | | B | 13.2 | 394 | C | 26.4 | 610 |
| | Westbound Right | 150 | A | 9.8 | 0 | B | 17.3 | 0 |
| | Northbound Approach | | E | 60.3 | | E | 67.0 | |
| | Northbound Left/Thru | | E | 61.0 | 43 | E | 68.6 | 73 |
| | Northbound Right | 60 | E | 59.9 | 0 | E | 66.2 | 0 |
| Southbound Approach | | E | 64.7 | | E | 69.4 | | |
| Southbound Left/Thru | | E | 67.2 | 86 | E | 78.8 | 249 | |
| Southbound Right | | E | 62.7 | 0 | E | 59.0 | 53 | |
| 4 | Warrenton Village Center Dwy/Shopping Center Dwy (EW) at Branch Dr (NS) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | A | 9.4 | | B | 11.8 | |
| | Eastbound Left/Thru/Right | | A | 9.4 | 8 | B | 11.8 | 30 |
| | Westbound Approach | | B | 10.1 | | B | 14.2 | |
| | Westbound Left/Thru/Right | | B | 10.1 | 5 | B | 14.2 | 28 |
| | Northbound Approach | | A | 7.4 | | A | 7.5 | |
| | Northbound Left | | A | 7.4 | 3 | A | 7.5 | 5 |
| Southbound Approach | | A | 7.4 | | A | 7.4 | | |
| Southbound Left | | A | 7.4 | 0 | A | 7.4 | 3 | |
| 5 | Oak Springs Dr (EW) at Branch Dr (NS) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | A | 7.5 | | A | 7.5 | |
| | Eastbound Left | | A | 7.5 | 0 | A | 7.5 | 0 |
| | Westbound Approach | | A | 7.7 | | A | 7.7 | |
| | Westbound Left | | A | 7.7 | 0 | A | 7.7 | 3 |
| | Northbound Approach | | B | 11.2 | | B | 11.4 | |
| | Northbound Left/Thru | | B | 11.6 | 13 | B | 12.6 | 13 |
| Northbound Right | | A | 9.0 | 0 | A | 9.4 | 5 | |
| Southbound Approach | | B | 10.0 | | B | 10.9 | | |
| Southbound Left/Thru/Right | | B | 10.0 | 0 | B | 10.9 | 0 | |

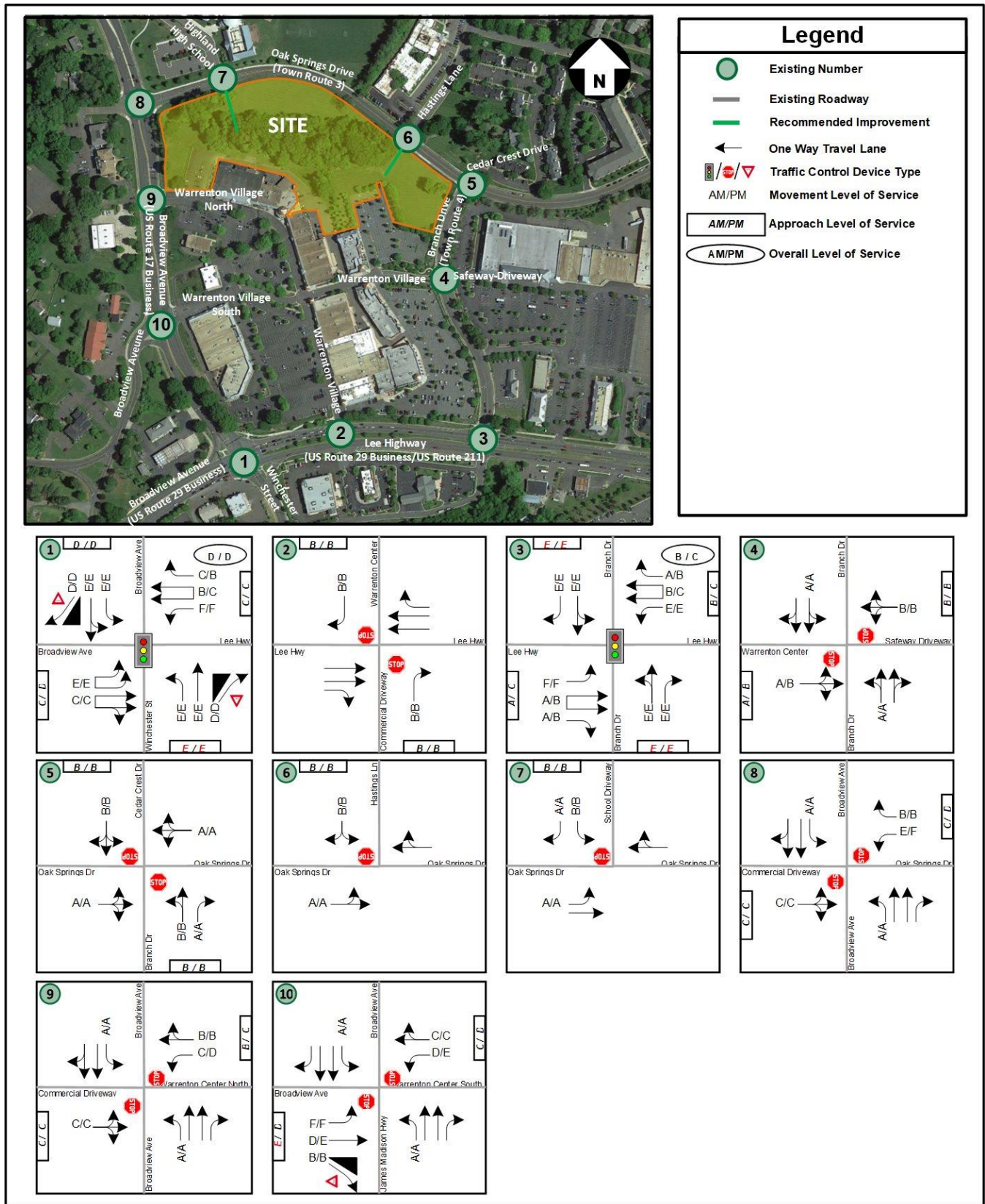
Table 4 (Continued): 2023 Existing Conditions – Intersection Capacity Analysis Results

| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|-----|---|--------------------------------|--------------|-----------------|-----------------------------------|--------------|-----------------|-----------------------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) ^[2] | LOS | Delay (sec/veh) | 95th % Queue ^[2] |
| | | | Synchro | | | Synchro | | |
| 6 | Oak Springs Dr (E/W) at Hastings Ln / Future Access (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | | A | 7.9 | 5 | A | 7.7 | 3 |
| | Southbound Approach | | B | 11.5 | | B | 11.3 | |
| | Southbound Left/Thru/Right | | B | 11.5 | 18 | B | 11.3 | 18 |
| 7 | Oak Springs Dr (E/W) at Highland School Dwy / Future Garage Access (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | 75 | A | 7.8 | 3 | A | 7.7 | 0 |
| | Southbound Approach | | B | 11.2 | | B | 10.2 | |
| | Southbound Left/Thru | | B | 12.3 | 5 | B | 11.5 | 3 |
| | Southbound Right | | A | 9.4 | 3 | A | 9.7 | 3 |
| 8 | Oak Springs Dr (E/W) at Broadview Ave (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | D | 25.2 | | C | 16.8 | |
| | Eastbound Left/Thru/Right | | D | 25.2 | 0 | C | 16.8 | 3 |
| | Westbound Approach | | C | 23.0 | | D | 27.5 | |
| | Westbound Left/Thru | 125 | E | 42.8 | 53 | F | 51.1 | 83 |
| | Westbound Right | | B | 10.8 | 15 | B | 10.8 | 18 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 90 | A | 8.1 | 0 | A | 8.6 | 0 |
| | Southbound Approach | | | | | | | |
| | Southbound Left | 225 | A | 9.3 | 10 | A | 8.7 | 8 |
| 9 | Warrenton Village North Dwy (E/W) at Broadview Ave (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | A | 9.9 | | C | 20.3 | |
| | Eastbound Left/Thru/Right | | A | 9.9 | 0 | C | 20.3 | 10 |
| | Westbound Approach | | B | 13.8 | | C | 18.5 | |
| | Westbound Left | | C | 22.9 | 3 | D | 27.8 | 18 |
| | Westbound Thru/Right | | B | 11.4 | 3 | B | 10.6 | 5 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 150 | A | 8.3 | 0 | A | 8.8 | 3 |
| | Southbound Approach | | | | | | | |
| | Southbound Left | 110 | A | 8.7 | 3 | A | 8.4 | 3 |
| 10 | Warrenton Village South Dwy/Broadview Ave (E/W) at Broadview Ave/Winchester St (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | E | 38.8 | | D | 28.4 | |
| | Eastbound Left | | F | 57.3 | 110 | F | 52.1 | 83 |
| | Eastbound Thru | | D | 29.6 | 10 | E | 36.7 | 40 |
| | Eastbound Right | | B | 10.1 | 8 | B | 11.5 | 25 |
| | Westbound Approach | | C | 21.4 | | D | 33.0 | |
| | Westbound Left | | D | 28.0 | 0 | E | 47.2 | 38 |
| | Westbound Thru/Right | | C | 19.2 | 3 | C | 21.3 | 20 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 160 | A | 8.7 | 10 | A | 9.2 | 8 |
| | Southbound Approach | | | | | | | |
| | Southbound Left | 160 | A | 8.4 | 0 | A | 8.2 | 0 |

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] m: 95th percentile volume and queues (reported from Synchro) are metered by upstream signal.



Based on the capacity analysis of existing conditions, the two signalized study intersections operate at overall levels of service of D or better during both the AM and PM peak hours.

Based on the capacity analysis of existing conditions, the approaches of all study intersections operate at approach levels of service of D or better during both the AM and PM peak hours, except for the following study intersections that have at least one approach that operates at levels of service E or F during at least one peak hour:

- Study Intersection 1: Lee Highway (US 211/US 29 BUS) at Broadview Avenue / Winchester Street
- Study Intersection 3: Lee Highway (US 211/US 29 BUS) at Branch Drive
- Study Intersection 10: Broadview Avenue at Warrenton Village South

Based on the queuing analysis performed for existing conditions, all turning movements at the study intersections have maximum queue lengths that are accommodated within the available storage lengths of the turn bays except for the southbound left turn movement at Study Intersection 1 (Lee Highway at Broadview Avenue / Winchester Street).

Analysis of 2027 Future Conditions Without Development

For the purposes of this study, the Development is anticipated to be constructed by 2027; this scenario analyzes the future without development conditions for the year 2027.

Future without Development Traffic Volumes

The derivation of future without development traffic volumes was based on assumptions and parameters discussed with VDOT and the County during the scoping process for this study. The future conditions include anticipated inherent regional growth, the inclusion of any potential background developments in the pipeline around the vicinity of the Site, and any anticipated roadway improvements.

Inherent Regional Growth

The Development is anticipated to be complete in 2027. In order to account for increased demand on the traffic network between 2023 and 2027, an inherent growth rate was applied to the future scenarios. This “inherent” growth was anticipated to account for regional development within the at-large area, which would ultimately result in increased roadway demand. Furthermore, the inherent growth was anticipated to account for any potential background developments unaccounted for within the vicinity of the study area.

To account for 2027 future conditions, an inherent growth rate of 1.0%, (compounded annually) over a four-year period, between 2023 to 2027 (and totaling 4.06% growth of the existing volumes) was applied to the Lee Highway mainline through movements at the intersection of Lee Highway at Broadview Avenue / Winchester Street. The growth volumes were balanced along the road network by increasing the mainline through movements at subsequent study intersections along the road network where applicable.

The inherent regional growth volumes (for the period between 2023 and 2027) are illustrated in **Figure 11**.

Potential Background Development(s)

In addition to the applied inherent regional growth reflecting increased regional traffic demand, a total of two “background” developments within the vicinity of the Site, with their locations depicted in **Figure 12**, were identified in the meeting with VDOT and Town staff for inclusion in this study. The background developments included are as follows:

1. Waterloo Junction
 - Located in the southeast quadrant of Bear Wallow Road and Norfolk Drive, the Waterloo Junction development is anticipated to include 47 townhomes, 6 apartments, and 3,600 square feet of retail space.
2. Patrick Ryan Way Homes
 - Located along Winchester Street at Patrick Ryan Way, this development is expected to consist of 60 single family homes. This development was partially built out at the time the turning movement counts were collected. For the purposes of this study, it was assumed that 40 of the 60 homes are built and occupied.

The assignment of the total combined background trips to the road network is depicted in **Figure 13**. Additional information, including the trips generated and the assignment of trips for each individual background development are included in Appendix G.

Potential Roadway Improvement(s)

As discussed during the scoping meeting, there is one roadway improvement within the vicinity of the site that is either fully funded or would be completely constructed by 2027.

- Smartscale project to construct a roundabout at the intersection of Lee Highway at Winchester Street / Broadview Avenue (Study Intersection 1)

There is one roadway improvement within the vicinity of the site that was previously identified for construction but was not selected for funding and therefore not included in the analysis:

- Smartscale project to construct a six-leg roundabout at the intersection of Broadview Avenue at Warrenton Village South (Study Intersection 10)

Relevant Smartscale excerpts and information are included in Appendix G.

The anticipated 2027 future road network (without the development) is illustrated in **Figure 14**.

Future without Development Traffic Volumes

In order to forecast future roadway traffic volumes for the year 2027, the 2023 existing traffic volumes were combined with the inherent regional growth traffic volumes and the combined background development trips. The 2027 future conditions without Development traffic volumes are illustrated in **Figure 15**.

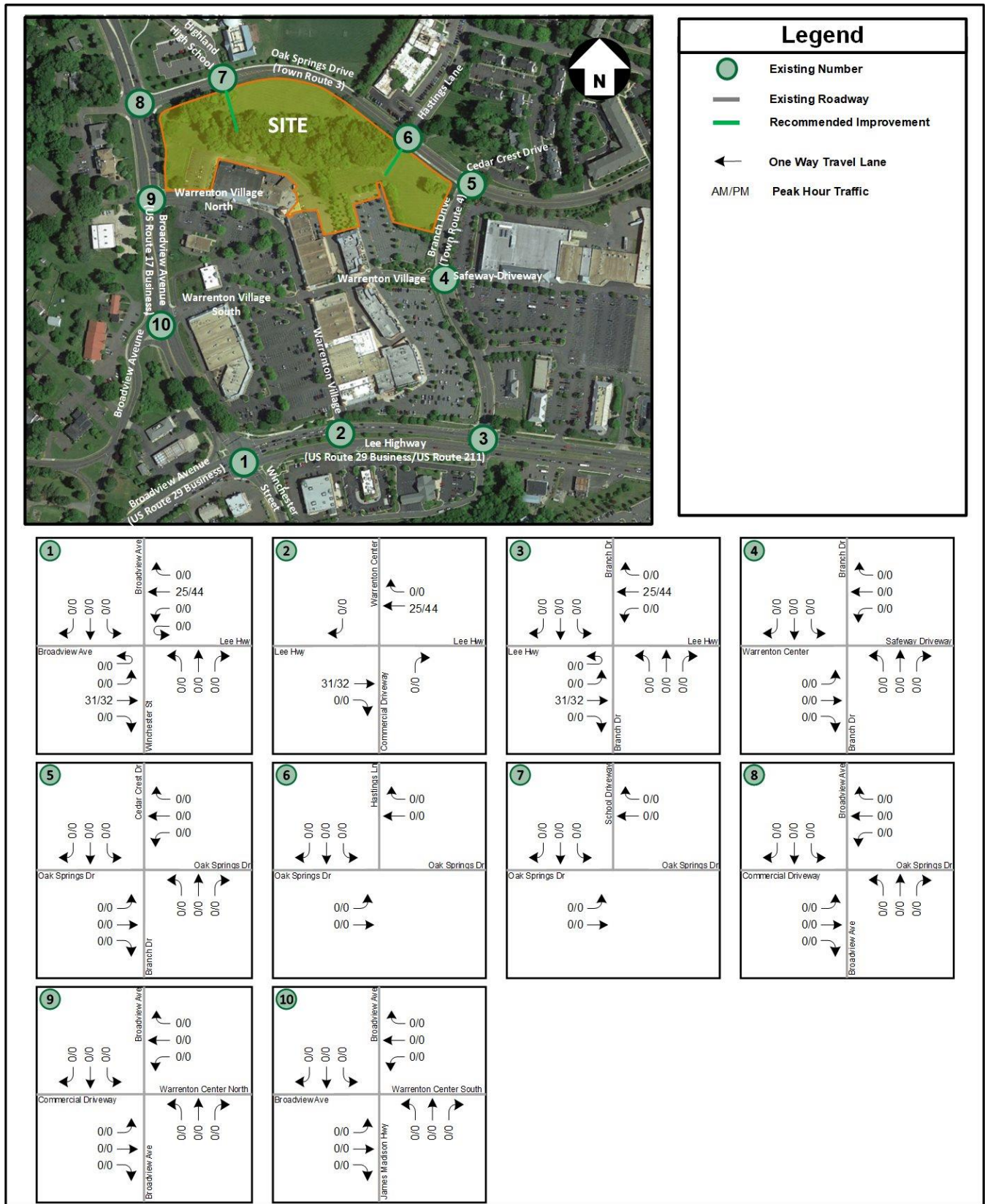


Figure 11: Projected Inherent Regional Growth Traffic Volumes (2023 to 2027)



Figure 12: Background Development and Roadway Improvement Map

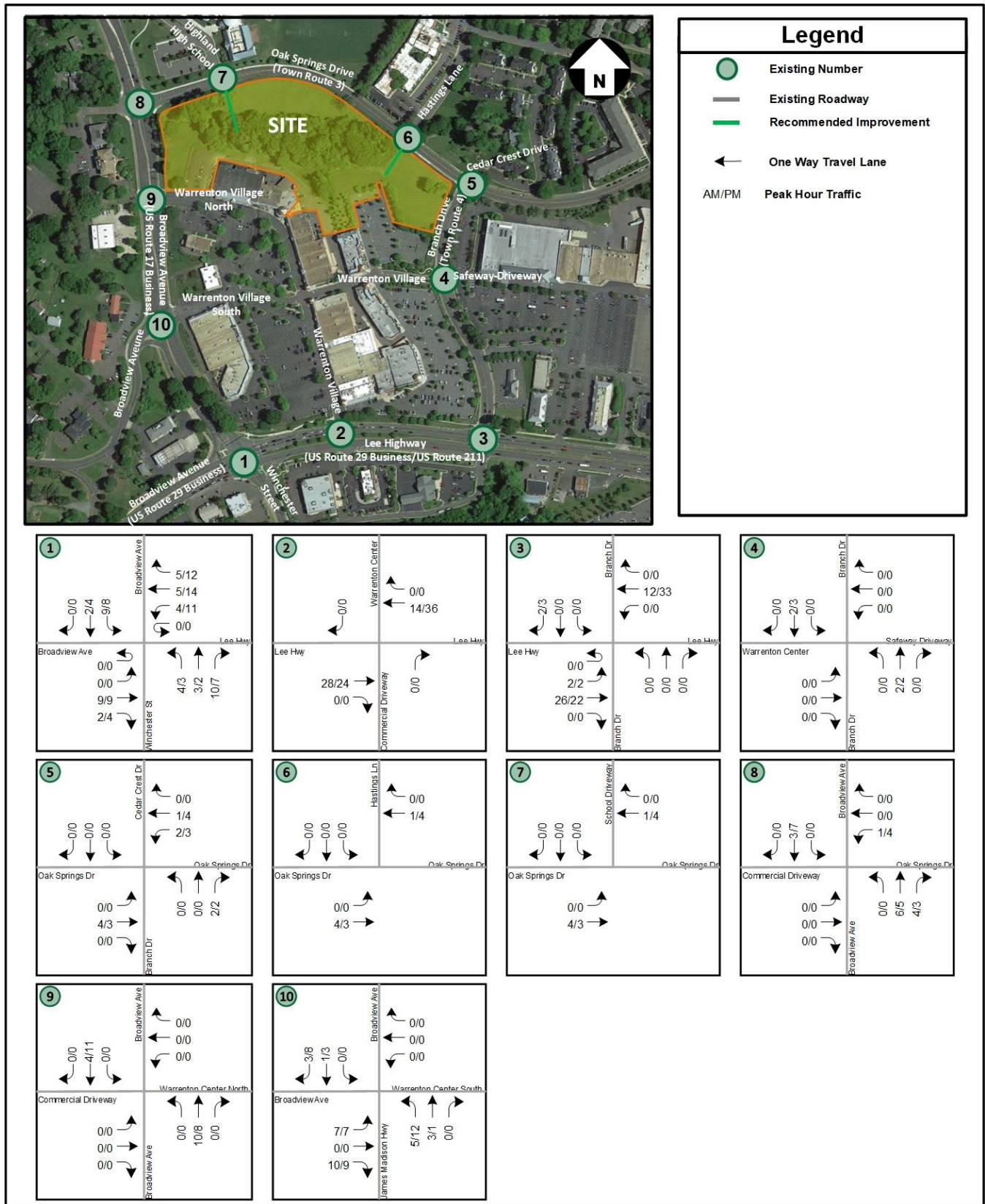


Figure 13: Total Combined Background Development Trips

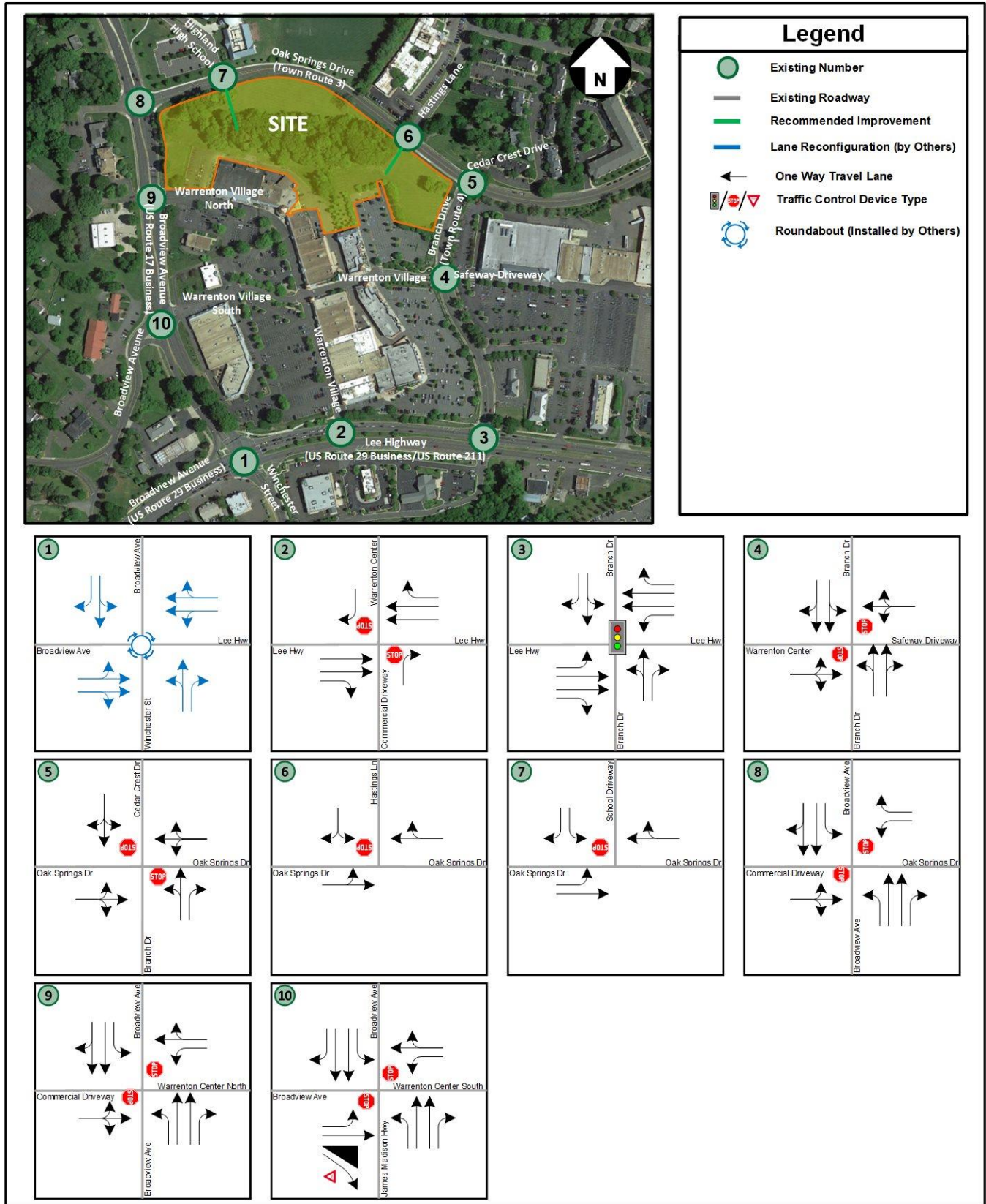
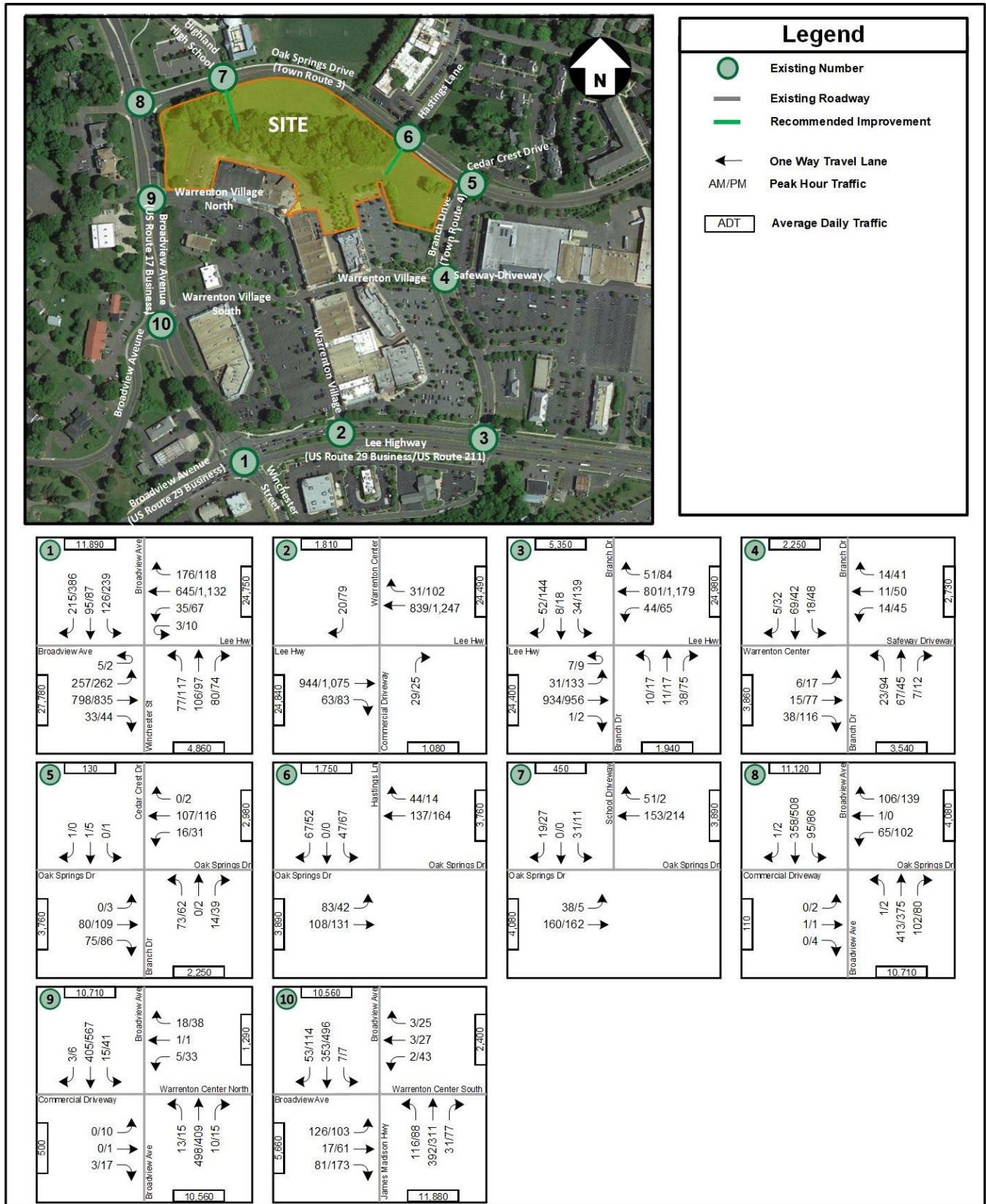


Figure 14: 2027 Future Conditions without Development – Roadway Network Geometric Configuration and Traffic Control Devices



Future without Development Intersection Capacity and Queuing Analysis

Intersection capacity and queuing analyses were performed for the 2027 Future Conditions without Development scenario at the study area intersections during the AM and PM peak hours, in accordance with VDOT's *TOSAM* (version 2) guidelines. *Synchro*, version 11, was used to analyze the study intersections with results based on TRB's HCM 6th methodology and include LOS, delay, and queue length comparisons for the turning movements analyzed. The roundabout was analyzed using *Sidra*, version 9.

For the purposes of this analysis, the intersection PHF utilized in the analysis of future conditions was determined based on the existing traffic counts, with a minimum of 0.92 as agreed to in the scoping document. The HV% were based on the existing conditions scenario. Note that for analysis purposes, all turning movement counts were coded with a minimum volume of one vehicle in *Synchro*.

Per the scoping meeting with VDOT and County staff, it would be considered acceptable and/or desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. The results of the intersection capacity and queuing analyses from *Synchro* are presented in **Table 5** and graphically in **Figure 16**. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections and per approach and lane group for all study intersections. Any overall signalized intersection or approach that operates at LOS E or F is displayed in red.

The queue lengths were reported as the 95th percentile queues determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The detailed analysis worksheets of the 2027 Future Conditions without Development are contained in Appendix H.

Table 5: 2027 Future Conditions without Development – Intersection Capacity Analysis Results

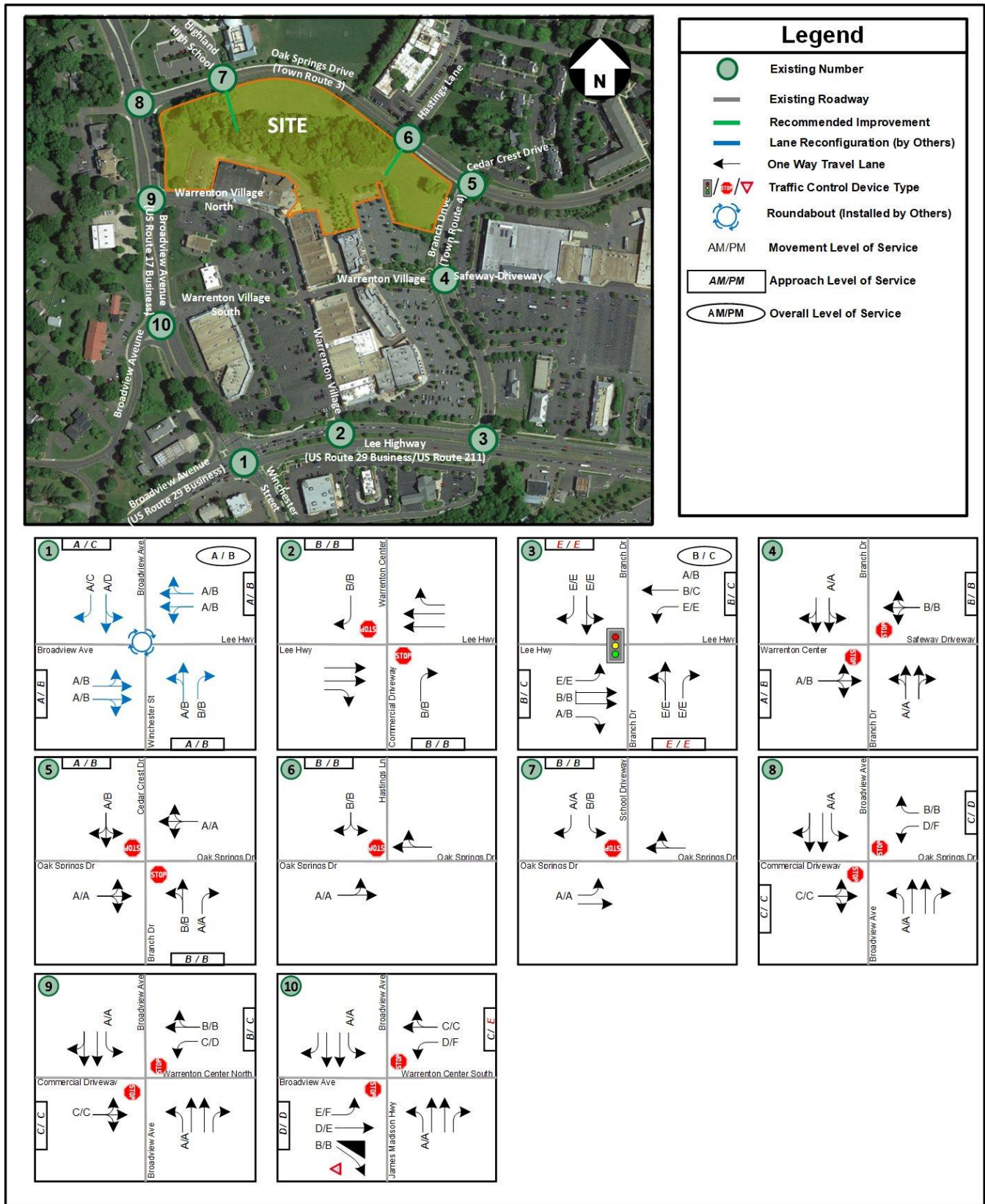
| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|------------------------------------|---|--|--------------|-----------------|--------------------|--------------|-----------------|--------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) | LOS | Delay (sec/veh) | 95th % Queue |
| | | | Synchro | | | Synchro | | |
| 1 | Broadview Ave (E/W) at Winchester St (N/S) | | | | | | | |
| | Overall Intersection (Roundabout) | | A | 8.1 | | B | 17.6 | |
| | Eastbound Approach | | A | 7.6 | | B | 11.1 | |
| | Eastbound Left/Thru | | A | 8.0 | 80 | B | 11.9 | 158 |
| | Eastbound Thru/Right | | A | 7.2 | 83 | B | 10.4 | 158 |
| | Westbound Approach | | A | 7.6 | | B | 15.0 | |
| | Westbound Left/Thru | | A | 8.0 | 78 | B | 16.2 | 252 |
| | Westbound Thru/Right | | A | 7.2 | 81 | B | 14.0 | 268 |
| | Northbound Approach | | A | 9.5 | | B | 12.4 | |
| | Northbound Left/Thru | | A | 9.2 | 36 | B | 12.2 | 56 |
| | Northbound Right | | B | 10.2 | 19 | B | 13.0 | 22 |
| 2 | Broadview Ave (E/W) at Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Northbound Approach | | B | 13.0 | | B | 13.9 | |
| | Northbound Right | | B | 13.0 | 5 | B | 13.9 | 5 |
| | Southbound Approach | | B | 10.8 | | B | 13.9 | |
| 3 | Broadview Ave (E/W) at Branch Dr (N/S) | | | | | | | |
| | Overall Intersection (Signalized) | | B | 19.7 | | C | 34.0 | |
| | Eastbound Approach | | B | 16.4 | | C | 26.4 | |
| | Eastbound Left | 240 | E | 67.0 | 80 | E | 75.4 | 224 |
| | Eastbound Thru | | B | 14.3 | 485 | B | 19.1 | 441 |
| | Eastbound Right | 330 | A | 9.7 | 0 | B | 13.4 | 0 |
| | Westbound Approach | | B | 15.7 | | C | 29.6 | |
| | Westbound Left | 150 | E | 67.4 | 88 | E | 78.5 | 123 |
| | Westbound Thru | | B | 13.3 | 400 | C | 27.8 | 675 |
| | Westbound Right | 150 | A | 9.7 | 0 | B | 17.3 | 0 |
| | 4 | Warrenton Village Center Dwy/Shopping Center Dwy (E/W) at Branch Dr (N/S) | | | | | | |
| Overall Intersection (TWSC) | | | A | 9.3 | | B | 11.8 | |
| Eastbound Approach | | | A | 9.3 | 5 | B | 11.8 | 30 |
| Eastbound Left/Thru/Right | | | A | 9.3 | 5 | B | 11.8 | 30 |
| Westbound Approach | | | B | 10.0 | 5 | B | 14.3 | 28 |
| Westbound Left/Thru/Right | | | B | 10.0 | 5 | B | 14.3 | 28 |
| Northbound Approach | | | A | 7.4 | 3 | A | 7.5 | 5 |
| Northbound Left | | A | 7.4 | 3 | A | 7.5 | 5 | |
| 5 | Oak Springs Dr (E/W) at Branch Dr (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | A | 7.4 | 0 | A | 7.5 | 0 |
| | Eastbound Approach | | A | 7.4 | 0 | A | 7.5 | 0 |
| | Eastbound Left | | A | 7.4 | 0 | A | 7.5 | 0 |
| | Westbound Approach | | A | 7.6 | 0 | A | 7.7 | 3 |
| | Westbound Left | | A | 7.6 | 0 | A | 7.7 | 3 |
| | Northbound Approach | | B | 11.0 | 10 | B | 11.4 | 10 |
| Northbound Left/Thru | | B | 11.4 | 10 | B | 12.6 | 10 | |
| 5 | Northbound Right | | A | 9.0 | 3 | A | 9.4 | 5 |
| | Southbound Approach | | A | 9.9 | 0 | B | 11.0 | 0 |
| | Southbound Left/Thru/Right | | A | 9.9 | 0 | B | 11.0 | 0 |

Table 5 (Continued): 2027 Future Conditions without Development – Intersection Capacity Analysis Results

| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|----------------------------|--|--------------------------------|--------------|-----------------|--------------------|--------------|-----------------|--------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) | LOS | Delay (sec/veh) | 95th % Queue |
| | | | Synchro | | | Synchro | | |
| 6 | Oak Springs Dr (E/W) at Hastings Ln / Future Access (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | | A | 7.9 | 5 | A | 7.7 | 3 |
| 7 | Southbound Approach | | B | 11.1 | | B | 11.0 | |
| | Southbound Left/Right | | B | 11.1 | 15 | B | 11.0 | 15 |
| | Oak Springs Dr (E/W) at Highland School Dwy / Future Garage Access (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| 8 | Eastbound Approach | | | | | | | |
| | Eastbound Left | 75 | A | 7.7 | 3 | A | 7.7 | 0 |
| | Southbound Approach | | B | 10.9 | | B | 10.1 | |
| | Southbound Left | | B | 11.9 | 5 | B | 11.2 | 3 |
| | Southbound Right | | A | 9.3 | 3 | A | 9.6 | 3 |
| | Oak Springs Dr (E/W) at Broadview Ave (N/S) | | | | | | | |
| 9 | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | C | 17.8 | | C | 16.6 | |
| | Eastbound Left/Thru/Right | | C | 17.8 | 0 | C | 16.6 | 3 |
| | Westbound Approach | | C | 19.7 | | D | 27.9 | |
| | Westbound Left/Thru | 125 | D | 34.3 | 40 | F | 51.0 | 85 |
| | Westbound Right | | B | 10.6 | 13 | B | 10.7 | 18 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 90 | A | 8.1 | 0 | A | 8.5 | 0 |
| | Southbound Approach | | | | | | | |
| | Southbound Left | 225 | A | 9.1 | 8 | A | 8.7 | 8 |
| 10 | Warrenton Village North Dwy (E/W) at Broadview Ave (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | C | 15.6 | | C | 20.0 | |
| | Eastbound Left/Thru/Right | | C | 15.6 | 0 | C | 20.0 | 10 |
| | Westbound Approach | | B | 13.2 | | C | 18.3 | |
| | Westbound Left | | C | 21.2 | 3 | D | 27.3 | 15 |
| | Westbound Thru/Right | | B | 11.1 | 3 | B | 10.6 | 5 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 150 | A | 8.2 | 0 | A | 8.8 | 3 |
| | Southbound Approach | | | | | | | |
| Southbound Left | 110 | A | 8.6 | 0 | A | 8.4 | 3 | |
| 10 | Warrenton Village South Dwy/Broadview Ave (E/W) at Broadview Ave/Winchester St (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | D | 30.7 | | D | 31.9 | |
| | Eastbound Left | | E | 44.6 | 90 | F | 62.0 | 98 |
| | Eastbound Thru | | D | 26.5 | 8 | E | 38.5 | 43 |
| | Eastbound Right | | B | 10.0 | 10 | B | 11.6 | 25 |
| | Westbound Approach | | C | 19.7 | | E | 35.5 | |
| | Westbound Left | | D | 25.4 | 0 | F | 51.8 | 40 |
| | Westbound Thru/Right | | C | 17.8 | 3 | C | 22.1 | 20 |
| | Northbound Approach | | | | | | | |
| Northbound Left | 160 | A | 8.6 | 10 | A | 9.3 | 8 | |
| Southbound Approach | | | | | | | | |
| Southbound Left | 160 | A | 8.3 | 0 | A | 8.2 | 0 | |

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.



Study Intersection 1 (Lee Highway at Winchester Street / Broadview Avenue) was approved for a roundabout and received SmartScale funding. As such, this intersection was converted from a signalized intersection to a roundabout in all future conditions.

Based on the capacity analysis of 2027 Future Conditions without Development, the planned roundabout is expected to operate at overall levels of service of B or better during both the AM and PM peak hours.

Based on the capacity analysis of 2027 Future Conditions without Development, the signalized study intersection is expected to operate at overall levels of service of C or better during both the AM and PM peak hours.

Based on the capacity analysis of 2027 Future Conditions without Development, the approaches of all study intersections continue to operate at approach levels of service of D or better during both the AM and PM peak hours, except for the following study intersections that have at least one approach that would operate at level of service E or F during at least one peak hour:

- Study Intersection 3: Lee Highway (US 211/US 29 BUS) at Branch Drive
- Study Intersection 10: Broadview Avenue at Warrenton Village South

Based on the queuing analysis performed for 2027 Future Conditions without Development, all turning movements at the study intersections have maximum queue lengths that are accommodated within the available storage lengths of the turn bays.

Analysis of 2027 Future Conditions with Development

For the purposes of this study, the Development is anticipated to be constructed by 2027; this scenario analyzes the future with development conditions for the year 2027.

Site Description

The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #s: 6985-20-7247-000, and 6984-29-6753-000, respectively. The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).

The Applicant is proposing to apply for a Special Use Permit (SUP) in order to construct approximately 386 multifamily residential dwelling units (320 multifamily apartments, 36 2-over-2 units, and 30 townhomes) and a parking deck. The site has an anticipated build-out date of 2027.

A conceptual plan for the Site is illustrated in **Figure 17**

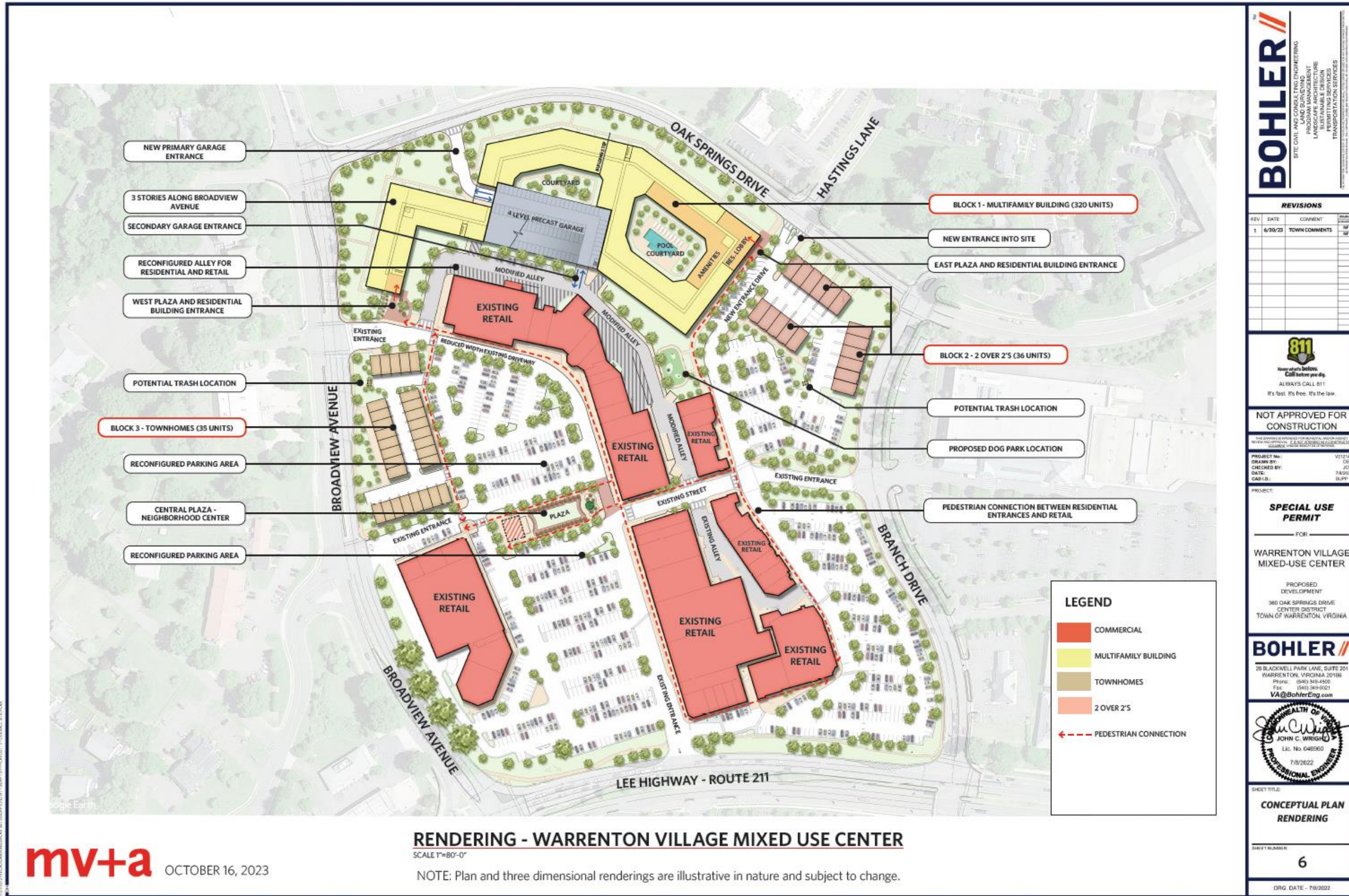


Figure 17: Conceptual Development Plan
Note: Plan provided by Bohler and is for conceptual purposes only.

Proposed Site Access

Access to the site will be provided via one full movement parking deck entry along Oak Springs Drive (Town Route 3) forming the fourth leg of the High School Driveway, one full movement driveway along Oak Springs Drive forming the fourth leg to the existing full-movement intersection of Hastings Lane, and via the existing shopping center accesses to the south.

Projected Site Trip Generation

In order to calculate the trips generated by the proposed Development, the Institute of Transportation Engineers’ (ITE) Trip Generation Manual, 11th Edition, publication was used to determine the total trips going into and out of the subject study site during the AM and PM peak hours as well as the typical number of weekday daily trips. The projected trip generation for the proposed Development is depicted in **Table 6**Table 6. Of note, as agreed to in the scoping document, no internal capture or pass-by trip reductions were assumed with respect to the proposed Development, and therefore are not assumed within the table.

Table 6: Site Trip Generation (Peak Hour of the Adjacent Street; ITE 11th Ed.)

| Land Use | ITE Code | Size | Weekday | | | | | | |
|---------------------|----------|--------|--------------|-----|-------|--------------|-----|-------|-------------|
| | | | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
| | | | In | Out | Total | In | Out | Total | |
| Multifamily Housing | 220 | 386 DU | 37 | 117 | 154 | 124 | 73 | 197 | 2,602 |

As illustrated in the table above, the Site is expected to generate approximately 154 new trips during the AM peak hour, 197 new trips during the PM peak hour, and 2,602 new daily trips on a typical weekday.

Distribution and Assignment of Site Traffic

The distribution and assignment of the site generated trips were based on the existing traffic patterns, engineering judgement, the nature of the proposed Development, and with the guidance and input from the VDOT and the Town staff. The site direction of approach and trip distribution are illustrated in **Figure 18**.

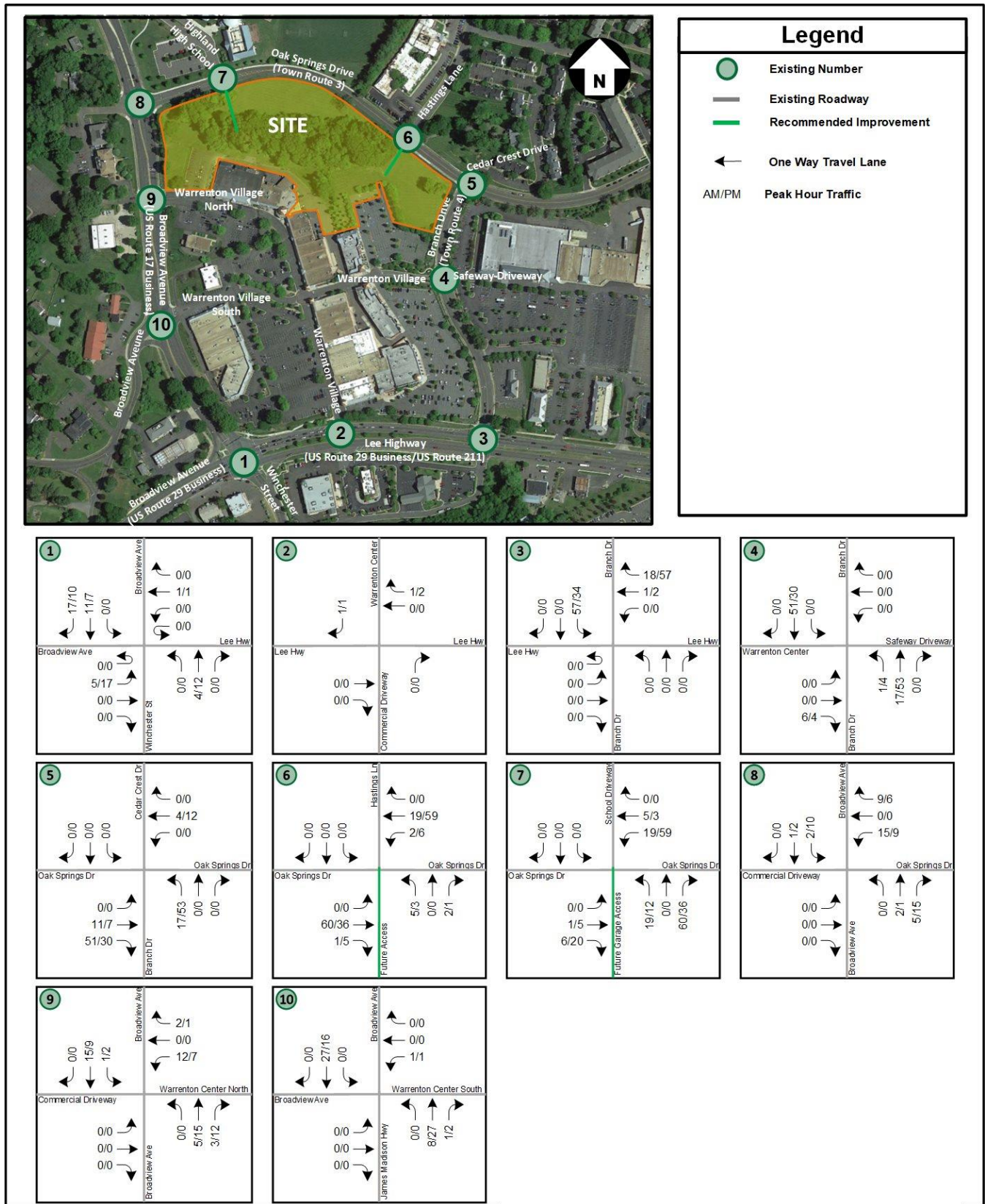


Figure 18: Global Vehicular Direction of Approach (Site Trip Distribution)

Future with Development Traffic Volumes

In order to project future traffic volumes on the roadways in the vicinity of the Development, trips generated from the Development were assigned to the road network based on the previously mentioned direction of approach. The site traffic assignment is illustrated for the AM and PM peak hours in **Figure 19**.

The future with development traffic volumes for were determined by adding the assigned site generated traffic volumes to the 2027 Future Conditions without Development traffic volumes. The 2027 Future Conditions with Development traffic volumes are depicted in **Figure 20**.



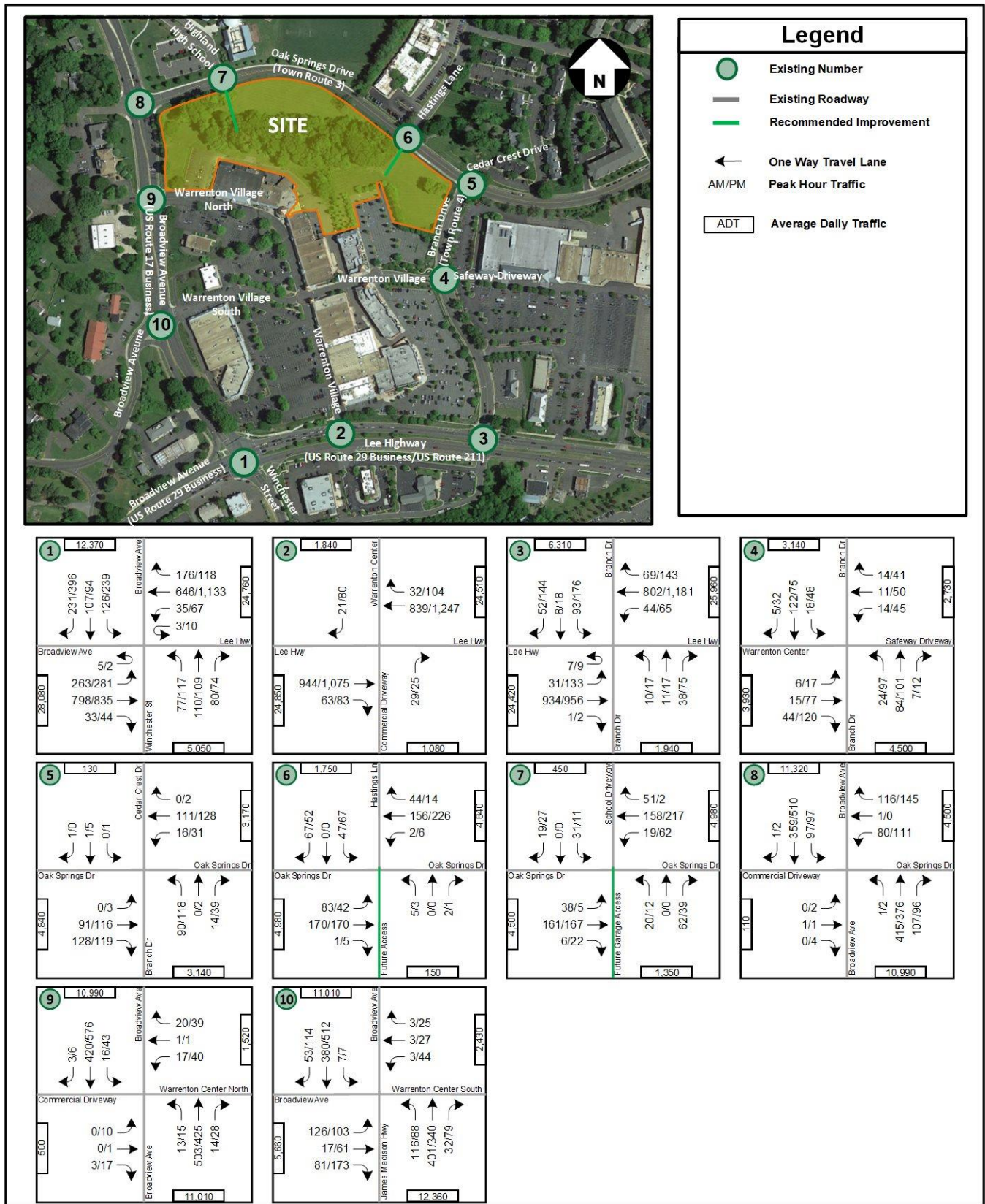


Figure 20: 2027 Future Conditions with Development

Future with Development Intersection Capacity and Queuing Analysis

Intersection capacity and queuing analyses were performed for the 2027 Future Conditions without Development scenario at the study area intersections during the AM and PM peak hours, in accordance with VDOT's *TOSAM* (version 2) guidelines. *Synchro*, version 11, was used to analyze the study intersections with results based on TRB's HCM 6th methodology and include LOS, delay, and queue length comparisons for the turning movements analyzed. Roundabouts were analyzed using *Sidra*, version 9.

For the purposes of this analysis, the intersection PHF utilized in the analysis of future conditions was determined based on the existing traffic counts, with a minimum of 0.92 as agreed to in the scoping document. The HV% were based on the existing conditions scenario, with any new approaches utilizing a default *Synchro* value of 2.0% per movement. Note that for analysis purposes, all turning movement counts were coded with a minimum volume of one vehicle in *Synchro*.

Per the scoping meeting with VDOT and the Town staff, it would be considered acceptable and/or desirable to achieve an approach LOS of D or better for traffic operations using the HCM methodology. The results of the intersection capacity and queuing analyses from *Synchro* are presented in **Table 7** and graphically in **Figure 21**. The results are expressed in LOS and delay (seconds per vehicle) for overall signalized intersections and per approach and lane group for all study intersections. The overall signalized intersections and any approaches that operate at LOS E or F are displayed in red.

The queue lengths were reported as the 95th percentile queues determined from *Synchro* and are expressed in feet. The lane groups where the queue lengths exceeded the available effective storage capacity of existing turn lanes are displayed in red.

The detailed analysis worksheets of the 2027 Future Conditions with Development scenario are contained in Appendix I.

Table 7: 2027 Future Conditions without Development – Intersection Capacity Analysis Results

| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|----------------------------|---|--------------------------------|--------------|-----------------|---------------------------|--------------|-----------------|------------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) [2] | LOS | Delay (sec/veh) | 95th % Queue [2] |
| | | | Synchro | | | Synchro | | |
| 1 | Broadview Ave (E/W) at Winchester St (N/S) | | | | | | | |
| | Overall Intersection (Roundabout) | | B | 10.1 | | B | 19.3 | |
| | Eastbound Approach | | A | 9.4 | | B | 11.5 | |
| | Eastbound Left/Thru | | A | 10.0 | 111 | B | 12.4 | 170 |
| | Eastbound Thru/Right | | A | 8.9 | 116 | B | 10.8 | 172 |
| | Westbound Approach | | B | 10.5 | | B | 16.3 | |
| | Westbound Left/Thru | | A | 11.4 | 116 | B | 17.7 | 272 |
| | Westbound Thru/Right | | B | 9.8 | 117 | B | 15.3 | 291 |
| | Northbound Approach | | B | 11.9 | | B | 13.3 | |
| | Northbound Left/Thru | | B | 11.5 | 47 | B | 13.2 | 62 |
| | Northbound Right | | B | 12.7 | 23 | B | 13.7 | 23 |
| Southbound Approach | | B | 10.1 | | D | 39.6 | | |
| Southbound Left/Thru | | A | 9.5 | 47 | D | 39.5 | 170 | |
| Southbound Right | | B | 10.8 | 53 | D | 39.7 | 172 | |
| 2 | Broadview Ave (E/W) at Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Northbound Approach | | B | 13.0 | | B | 13.9 | |
| | Northbound Right | | B | 13.0 | 5 | B | 13.9 | 5 |
| | Southbound Approach | | B | 10.8 | | B | 13.9 | |
| Southbound Right | | B | 10.8 | 3 | B | 13.9 | 15 | |
| 3 | Broadview Ave (E/W) at Branch Dr (N/S) | | | | | | | |
| | Overall Intersection (Signalized) | | C | 23.0 | | D | 35.8 | |
| | Eastbound Approach | | B | 19.0 | | C | 28.1 | |
| | Eastbound Left | 240 | E | 67.0 | 80 | E | 75.4 | 224 |
| | Eastbound Thru | | B | 17.0 | 485 | C | 21.1 | 441 |
| | Eastbound Right | 330 | B | 11.6 | 0 | B | 14.7 | 0 |
| | Westbound Approach | | B | 18.0 | | C | 31.6 | |
| | Westbound Left | 150 | E | 67.4 | 88 | E | 78.5 | 123 |
| | Westbound Thru | | B | 15.8 | 400 | C | 30.4 | 675 |
| | Westbound Right | 150 | B | 11.6 | 0 | B | 19.3 | 26 |
| | Northbound Approach | | E | 62.1 | | E | 67.0 | |
| | Northbound Left/Thru | | E | 63.0 | 47 | E | 68.6 | 73 |
| | Northbound Right | 60 | E | 61.6 | 0 | E | 66.2 | 0 |
| | Southbound Approach | | E | 63.4 | | E | 68.7 | |
| Southbound Left/Thru | | E | 66.7 | 162 | E | 78.1 | #338 | |
| Southbound Right | | E | 57.2 | 0 | E | 56.4 | 58 | |
| 4 | Warrenton Village Center Dwy/Shopping Center Dwy (E/W) at Branch Dr (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | A | 9.5 | | B | 12.5 | |
| | Eastbound Left/Thru/Right | | A | 9.5 | 8 | B | 12.5 | 35 |
| | Westbound Approach | | B | 10.4 | | C | 16.0 | |
| | Westbound Left/Thru/Right | | B | 10.4 | 5 | C | 16.0 | 33 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | | A | 7.5 | 3 | A | 7.6 | 5 |
| | Southbound Approach | | | | | | | |
| Southbound Left | | A | 7.4 | 0 | A | 7.5 | 3 | |
| 5 | Oak Springs Dr (E/W) at Branch Dr (N/S) | | | | | | | |
| | Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | | A | 0.0 | 0 | A | 7.5 | 0 |
| | Westbound Approach | | | | | | | |
| | Westbound Left | | A | 7.8 | 0 | A | 7.8 | 3 |
| | Northbound Approach | | B | 11.8 | | B | 13.1 | |
| | Northbound Left/Thru | | B | 12.2 | 15 | B | 14.3 | 25 |
| Northbound Right | | A | 9.2 | 3 | A | 9.5 | 5 | |
| Southbound Approach | | B | 10.1 | | B | 11.3 | | |
| Southbound Left/Thru/Right | | B | 10.1 | 0 | B | 11.3 | 0 | |

Table 7 (Continued): 2027 Future Conditions without Development – Intersection Capacity Analysis Results

| No. | Intersection (Movement) | Effective Storage Length (ft.) | AM Peak Hour | | | PM Peak Hour | | |
|----------------------------|---|--------------------------------|--------------|-----------------|-----------------------------------|--------------|-----------------|-----------------------------|
| | | | LOS | Delay (sec/veh) | 95th % Queue (ft.) ^[2] | LOS | Delay (sec/veh) | 95th % Queue ^[2] |
| | | | Synchro | | | Synchro | | |
| 6 | Oak Springs Dr (E/W) at Hastings Ln / Future Access (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | | A | 7.9 | 5 | A | 7.9 | 3 |
| | Westbound Approach | | | | | | | |
| | Westbound Left | | A | 7.6 | 0 | A | 7.6 | 0 |
| | Northbound Approach | | B | 13.6 | | B | 13.1 | |
| Northbound Left/Thru/Right | | B | 13.6 | 3 | B | 13.1 | 0 | |
| Southbound Approach | | B | 12.1 | | B | 12.5 | | |
| Southbound Left/Thru/Right | | B | 12.1 | 18 | B | 12.5 | 20 | |
| 7 | Oak Springs Dr (E/W) at Highland School Dwy / Future Garage Access (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | | | | | | |
| | Eastbound Left | 75 | A | 7.7 | 3 | A | 7.7 | 0 |
| | Westbound Approach | | | | | | | |
| | Westbound Left | | A | 7.6 | 0 | A | 7.8 | 3 |
| | Northbound Approach | | B | 10.8 | | B | 11.0 | |
| Northbound Left/Thru/Right | | B | 10.8 | 10 | B | 11.0 | 8 | |
| Southbound Approach | | B | 12.6 | | B | 11.1 | | |
| Southbound Left/Thru | | B | 14.6 | 8 | B | 14.7 | 3 | |
| Southbound Right | | A | 9.4 | 3 | A | 9.6 | 3 | |
| 8 | Oak Springs Dr (E/W) at Broadview Ave (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | C | 18.1 | | C | 17.1 | |
| | Eastbound Left/Thru/Right | | C | 18.1 | 0 | C | 17.1 | 3 |
| | Westbound Approach | | C | 22.4 | | D | 32.9 | |
| | Westbound Left/Thru | 125 | E | 39.0 | 55 | F | 61.8 | 103 |
| | Westbound Right | | B | 10.7 | 15 | B | 10.8 | 20 |
| Northbound Approach | | | | | | | | |
| Northbound Left | 90 | A | 8.1 | 0 | A | 8.5 | 0 | |
| Southbound Approach | | | | | | | | |
| Southbound Left | 225 | A | 9.1 | 10 | A | 8.8 | 8 | |
| 9 | Warrenton Village North Dwy (E/W) at Broadview Ave (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | C | 16.0 | | C | 20.7 | |
| | Eastbound Left/Thru/Right | | C | 16.0 | 3 | C | 20.7 | 10 |
| | Westbound Approach | | C | 16.3 | | C | 20.3 | |
| | Westbound Left | | C | 22.8 | 8 | D | 30.0 | 23 |
| | Westbound Thru/Right | | B | 11.1 | 3 | B | 10.7 | 5 |
| Northbound Approach | | | | | | | | |
| Northbound Left | 150 | A | 8.3 | 0 | A | 8.8 | 3 | |
| Southbound Approach | | | | | | | | |
| Southbound Left | 110 | A | 8.6 | 3 | A | 8.5 | 3 | |
| 10 | Warrenton Village South Dwy/Broadview Ave (E/W) at Broadview Ave/Winchester St (N/S) Overall Intersection (TWSC) | | | | | | | |
| | Eastbound Approach | | D | 34.4 | | E | 35.6 | |
| | Eastbound Left | | F | 51.0 | 100 | F | 71.7 | 108 |
| | Eastbound Thru | | D | 27.8 | 8 | E | 42.2 | 45 |
| | Eastbound Right | | B | 10.1 | 10 | B | 11.7 | 25 |
| | Westbound Approach | | C | 21.2 | | E | 40.2 | |
| | Westbound Left | | D | 26.6 | 3 | F | 60.0 | 45 |
| | Westbound Thru/Right | | C | 18.5 | 3 | C | 23.5 | 20 |
| | Northbound Approach | | | | | | | |
| | Northbound Left | 160 | A | 8.7 | 10 | A | 9.4 | 8 |
| Southbound Approach | | | | | | | | |
| Southbound Left | 160 | A | 8.3 | 0 | A | 8.3 | 0 | |

NOTES:

[1] Effective storage length is based on the storage length plus one-half of the taper length per TOSAM guidelines.

[2] #: 95th percentile queues (reported from Synchro) exceed capacity; actual queues may be longer. Queues shown are based on the maximum after two cycles.

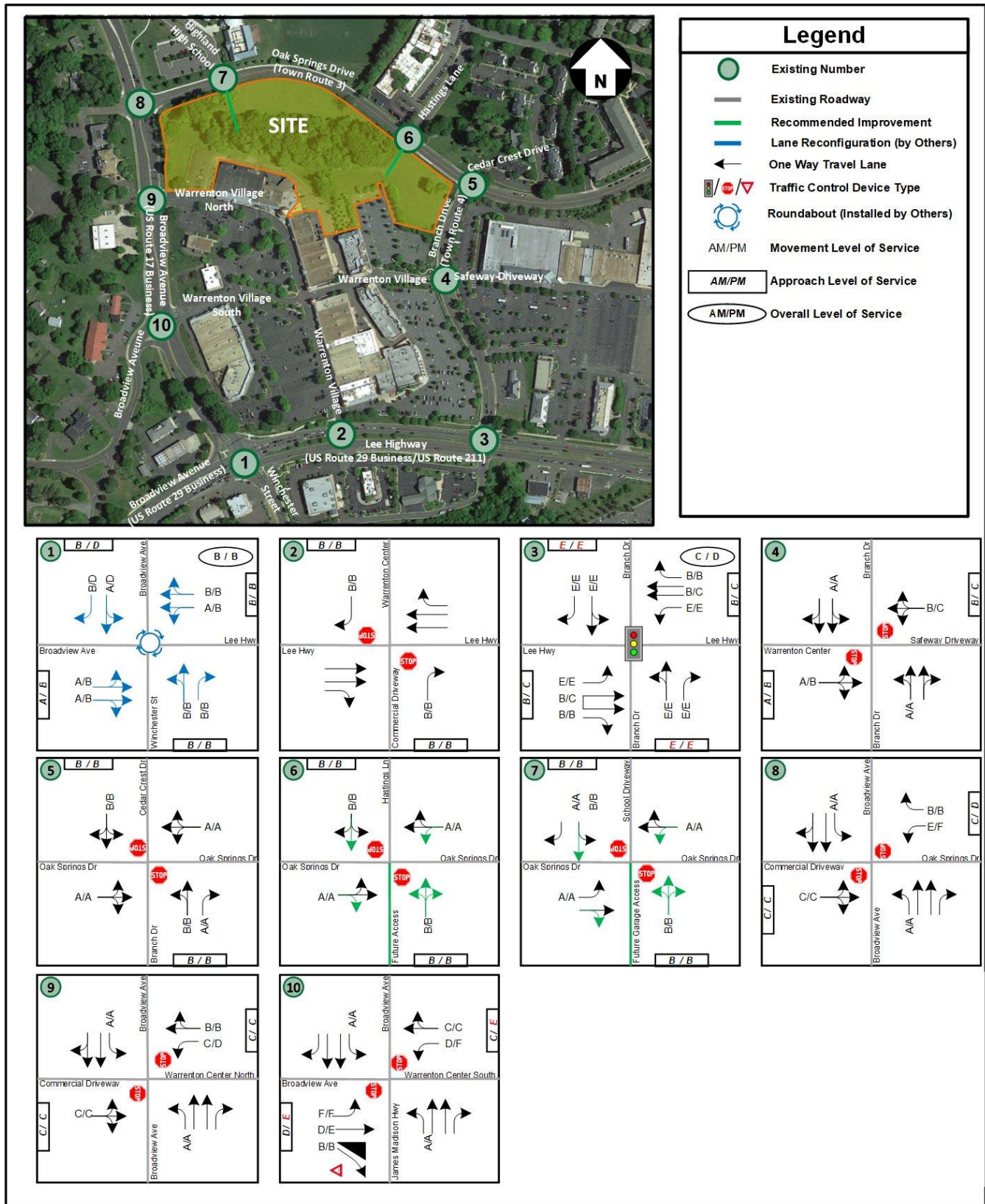


Figure 21: 2027 Future Conditions without Development – Level of Service Results

As mentioned previously, per the agreed upon scoping document, it would be considered desirable to achieve an approach LOS D or better for traffic operations using HCM methodology. Furthermore, if an overall intersection or approach was operating at an unacceptable LOS under future without development conditions, it was assumed acceptable to achieve non-degradation.

The planned roundabout is expected to operate at an overall LOS B with all approaches operating at LOS D or better during the AM and PM peak hours.

Based on the capacity analysis of 2027 Future Conditions without Development, the signalized study intersection is expected to continue to operate at overall levels of service of D or better during both the AM and PM peak hours.

Based on the capacity analysis of 2027 Future Conditions without Development, the approaches of all study intersections continue to operate at approach levels of service of D or better during both the AM and PM peak hours, except for the following study intersections that have at least one approach that would operate at level of service E or F (similar to 2027 Future Conditions without Development) during at least one peak hour:

- Study Intersection 3: Lee Highway (US 211/US 29 BUS) at Branch Drive
- Study Intersection 10: Broadview Avenue at Warrenton Village South

Based on the queuing analysis performed for 2027 Future Conditions without Development, all turning movements at the study intersections have maximum queue lengths that are accommodated within the available storage lengths of the turn bays.

Note that Study Intersection 10 (Broadview Avenue at Warrenton Village South) was previously identified by the Town for construction of a roundabout but was not selected for funding and therefore not included in the analysis. Therefore, no improvements are recommended for construction by the proposed Development.

In general, the signalized intersection would operate with longer vehicular delays for the side-streets and mainline left turning movements. These delays are a result of VDOT prioritization of through traffic on the mainline, as is typical along commuter corridors, to accommodate the largest possible volume of through traffic in the area along the mainlines and therefore have a better overall traffic operation than if all movements were prioritized equally.

No improvements are warranted or recommended as part of the proposed Development.

Preliminary Left and Right Turn Lane Warrant Assessments

Left and right turn lane warrants are based off VDOT’s Road Design Manual (RDM), Appendix F. In order to determine the need for exclusive left and/or right turn lanes or tapers at the study intersections, the traffic data and anticipated development program provided in the 2027 Future Conditions with Development scenario section were utilized.

Warrants for right-turn storage lanes on two- and four-lane highways at intersections are based on Figure 3-26 and Figure 3-27 in Appendix F of VDOT’s RDM. These figures provide a graphical representation for determining the necessity of a right turn lane by comparing the total volumes of a given approach with their respective right turn volumes.

Warrants for left-turn storage lanes on two-lane highways at unsignalized intersections are based on Figure 3-5 to Figure 3-21 in Appendix F of VDOT’s RDM. The figures provide graphical representations for determining the necessity of a left turn lane by comparing the advancing volumes of a given approach and the respective opposing volumes with respect to the percentage of left turning vehicles of the advancing volumes and the design speed of a given roadway.

If the turn lanes and / or tapers are not provided or would not meet the minimum requirements per VDOT’s RDM, turn lane waivers requests would need to be submitted as separate documentation and be approved by VDOT.

A summary of the turn lane warrant analysis is presented in **Table 8** through **Table 11**.

Table 8: Summary of Left Turn Lane Warrants at Site Entrances (2-Lane) – Build 2027

| Study Scenario | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turn Vol. (VPH) | Left Turn % | Minimum Opposing Threshold (VPH) | VDOT RDM F Figure | Treatment |
|--------------------------|---------------------|----------------------|----------------------|-------------|----------------------------------|-------------------|---------------|
| INT 6 - WBL AM - TF 2027 | 254 | 202 | 2 | 0.99% | 1,208 | Fig. 3-4 | Not Warranted |
| INT 6 - WBL PM - TF 2027 | 217 | 246 | 6 | 2.44% | 1,054 | Fig. 3-4 | Not Warranted |
| INT 7 - WBL AM - TF 2027 | 205 | 228 | 19 | 8.33% | 841 | Fig. 3-5 | Not Warranted |
| INT 7 - WBL PM - TF 2027 | 194 | 281 | 62 | 22.06% | 274 | Fig. 3-8 | Not Warranted |

Table 9: Summary of Right Turn Lane Warrants at Site Entrances (2-Lane) - Build 2027

| Study Scenario | Approach Volume | Right Turn Volume | Minimum Right Turn Taper Threshold | Minimum Right Turn Full Lane Threshold | Treatment |
|-------------------------------|-----------------|-------------------|------------------------------------|--|---------------|
| INT 4 - NBR - 2027 TF AM Peak | 95 | 7 | 37 | 90 | Not Warranted |
| INT 4 - NBR - 2027 TF PM Peak | 149 | 12 | 36 | 90 | Not Warranted |
| INT 4 - SBR - 2027 TF AM Peak | 90 | 5 | 37 | 90 | Not Warranted |
| INT 4 - SBR - 2027 TF PM Peak | 119 | 32 | 36 | 90 | Not Warranted |

Table 10: Summary of Left Turn Lane Warrants at Brach Drive (Study Intersection 4) (4-Lane) - Existing 2023

| Study Scenario | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turning Vol. | Left Turn % | Treatment |
|-------------------------------|---------------------|----------------------|-------------------|-------------|--|
| INT 4 - NBL - 2023 EX AM Peak | 90 | 95 | 23 | 24.2% | Not Warranted |
| INT 4 - NBL - 2023 EX PM Peak | 119 | 149 | 94 | 63.1% | Full-width Turn Lane and Taper Warranted (for Undivided and Divided) |
| INT 4 - SBL - 2023 EX AM Peak | 95 | 90 | 18 | 20.0% | Not Warranted |
| INT 4 - SBL - 2023 EX PM Peak | 149 | 119 | 48 | 40.3% | Full-width Turn Lane and Taper Warranted (for Undivided) |

Table 11: Summary of Left Turn Lane Warrants at Brach Drive (Study Intersection 4) (4-Lane) – Build 2027

| Study Scenario | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turning Vol. | Left Turn % | Treatment |
|-------------------------------|---------------------|----------------------|-------------------|-------------|--|
| INT 4 - NBL - 2027 TF AM Peak | 145 | 115 | 24 | 20.9% | Not Warranted |
| INT 4 - NBL - 2027 TF PM Peak | 155 | 210 | 97 | 46.2% | Full-width Turn Lane and Taper Warranted (for Undivided and Divided) |
| INT 4 - SBL - 2027 TF AM Peak | 115 | 145 | 18 | 12.4% | Not Warranted |
| INT 4 - SBL - 2027 TF PM Peak | 210 | 155 | 48 | 31.0% | Full-width Turn Lane and Taper Warranted (for Undivided) |

No turn lanes are warranted at the site entrances. At the request of VDOT and the Town, turn lanes were evaluated at the Study Intersection 4 (Branch Drive at Warrenton Village Driveway / Safeway Driveway). The northbound left turn lane is warranted under Build 2027 conditions, but it is also warranted under existing conditions. Therefore, a northbound left turn

lane on Branch Drive is not recommended to be installed by the proposed Development. Graphics and information regarding the methodology used to determine the turn lane warrants are provided in Appendix J.

Preliminary Access Management Evaluation (Intersection Spacing)

The minimum spacing standards for the Commonwealth of Virginia are specified in VDOT’s Road Design Manual (RDM). Appendix F of the RDM focuses primarily on access management practices. The minimum spacing standard are particularly specified in Table 2-2 through Table 2-4. Table 2-2 provides guidance on the minimum spacing standard for commercial entrances, intersections, and median crossovers, and are based on a roadway’s speed limit and functional classification. Table 2-3 and 2-4 provide guidance for minimum spacing standards for the spacing between interchanges and intersections or commercial entrances.

As mentioned previously, Oak Springs Road is classified by VDOT as “Major Collector,” with a posted speed limit of 25 mph. Based on the applicable intersection spacing requirements (centerline-to-centerline) per RDM Appendix F Table 2-2, **Table 12** lists the summary of the future intersections with corresponding roadway information and the appropriate distance requirements. **Figure 22** shows the approximate proposed distances between the study intersections and the corresponding required distances with the proposed intersections in place for the Site.

Table 12: Future Intersection Spacing

| Functional Classification | Design Speed (See Note 2) | Minimum Spacing (Distance) in Feet | | | |
|---------------------------|---------------------------|------------------------------------|---------------------------------------|---|-------------------------|
| | | Type 1 (Signalized) | Type 2 (Unsignalized/ Full Crossover) | Type 3 (Full Access /Directional Crossover) | Type 4 (Partial Access) |
| Principal Arterial | ≤ 30 mph | 1,050 | 880 | 440 | 250 |
| | 35 to 45 mph | 1,320 | 1,050 | 565 | 305 |
| | ≥ 50 mph | 2,640 | 1,320 | 750 | 495 |
| Minor Arterial | ≤ 30 mph | 880 | 660 | 355 | 200 |
| | 35 to 45 mph | 1,050 | 660 | 470 | 250 |
| | ≥ 50 mph | 1,320 | 1,050 | 555 | 425 |
| Collector | ≤ 30 mph | 660 | 440 | 225 | 200 |
| | 35 to 45 mph | 660 | 440 | 335 | 250 |
| | ≥ 50 mph | 1,050 | 660 | 445 | 360 |
| Local Street | See Note 1 | | | | |

TABLE 2-2 MINIMUM SPACING STANDARDS FOR COMMERCIAL ACCESSES, INTERSECTIONS AND MEDIAN CROSSOVERS

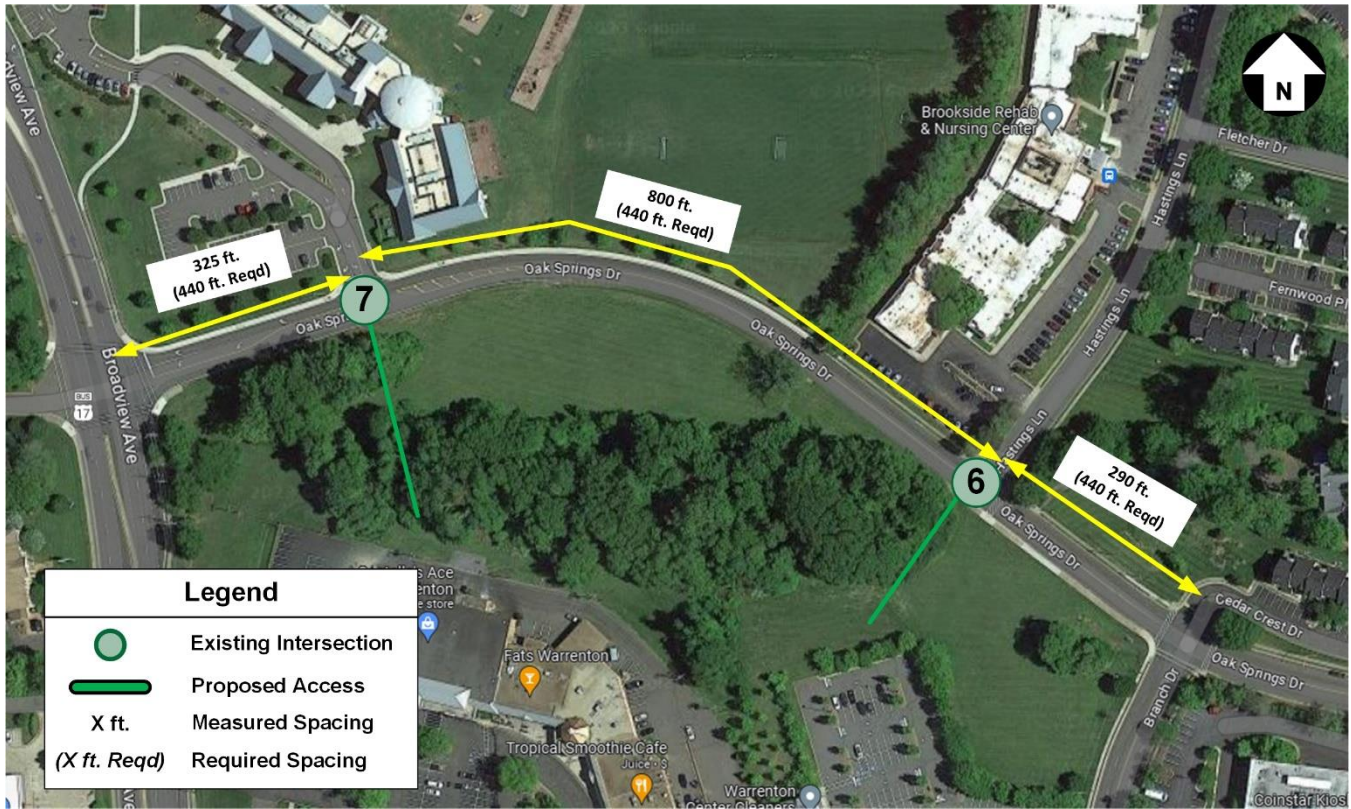


Figure 22: Future Intersection Spacing

As described in

Table 122 and depicted in **Figure 22**, the two proposed entrances do not meet the spacing requirements for unsignalized intersections on a 25 mph Major Collector. However, the entrances are proposed as the fourth leg to existing intersections instead of creating new entrances with offsets. However, Oak Springs Drive does not appear to be a VDOT maintained roadway, so an Access Management Exception (AM-E) request will not be submitted.

Preliminary Signal Warrant Analysis

Signal warrants are based on *Chapter 4C: Traffic Control Signal Needs Studies* of the Federal Highway Administration’s (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition. Chapter 4C discusses nine (9) separate warrants, by which only one warrant needs to be satisfied to justify the installation of a traffic control signal. In order to provide an assessment for the possible signalization of Broadview Avenue at Oak Springs Road (Study Intersection 8) under the build 2027 traffic volumes, Warrant Two (Four-Hour Vehicular Volume) was analyzed, since the warrant usually is a significant factor signalization and is often the warrant that is most readily satisfied for typical conditions.

Portions of the MUTCD used in this analysis are provided in Appendix K.

Warrant Two: Four-Hour Vehicular Volume

Warrant Two is satisfied when the plotted points representing the vehicles per hour (vph) on the major street (total of both approaches and the corresponding vph on the high-volume minor-street approach (one direction only), for each of any four hours of an average day, all fall above either MUTCD Figure 4C-1 or Figure 4C-2 (depending on the applicability) for the future combination of approach lanes.

The traffic volumes utilized to evaluate Warrant Two, using Figure 4C-1 are shown in **Table 13** for the study intersection. It should be noted that the intersection was analyzed as being two lanes on the major approach and one lane on the minor approach. In addition, only two hourly volumes were utilized, the build 2027 AM and PM peak hour volumes, because it is not anticipated that the other hourly volumes would be any higher or more likely to satisfy the conditions than that of the two selected. Lastly, as the capacity analysis of future conditions indicated that 100% of right turners could perform right turn maneuvers on red from the side-street approaches and there are currently exclusive northbound and westbound right turn lanes, a 100% right turn on red (RTOR) reduction was applied to all approaches, as depicted below.

Table 13: Volume Projections – Broadview Avenue at Oak Springs Road (Intersection 8)

| Time Period | Broadview Ave (NB/SB) | Oak Springs Dr (WBL) |
|--------------------|-----------------------|----------------------|
| 7:30AM to 8:30 AM | 872 | 80 |
| 4:00 PM to 5:00 PM | 985 | 110 |

Note: 100% right turn reductions are applied on all approaches

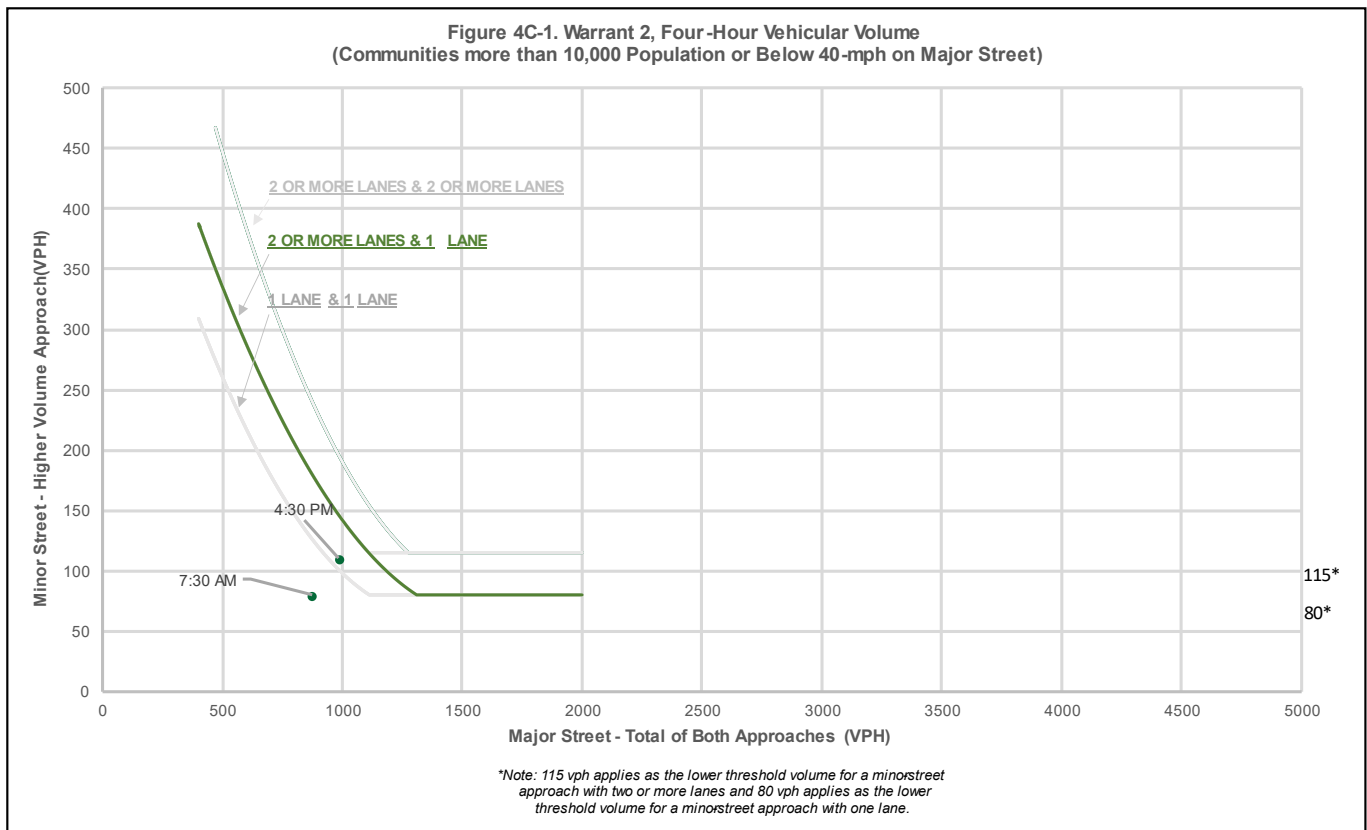


Figure 23: Four-Hour Warrant Analysis – Broadview Avenue at Oak Springs Road (Intersection 8)

As seen in the figure above, the build 2027 peak hour traffic volumes with a 100% RTOR reduction does not meet the threshold for two of the four hours required. As mentioned earlier, it is most likely that the next two hours with the highest traffic volume will generate even lower trips than the AM and PM peak hours. Therefore, based on traffic volumes, a signal would not be warranted at this intersection under this analysis.

The minor street volume is above the minimum threshold of 80 vehicles to warrant a signal; however, the major street volume is not high enough.

Additionally, the capacity analysis in the 2011 TIA shows that all reported movements at this unsignalized study intersection are anticipated to operate at LOS C or better during both AM and PM peak hours. This capacity analysis is acceptable and an indication that there is not an operational need for signalization.

Bicycle and Pedestrian Accommodations

The property currently contains a sidewalk with a buffer across the north side of the Oak Springs frontage. The existing sidewalk will be maintained with the proposed development, and sidewalk will be constructed along the south side of Oak Springs Road across the property frontage. There is at least one crosswalk at every study intersection, with the exception of Study Intersection 2 (Lee Highway at Warrenton Village / Chick-fil-a Driveway).

The school and mixed-use area create opportunities for the proposed Site to create paths and areas for multimodal connectivity. As shown on the concept plan, The Site is proposing a multitude of improvements that will increase pedestrian connectivity throughout the entire area. New sidewalks will be added along the entire perimeter of all residential blocks, including direct sidewalk connectivity to ground floor units. The extension of Hastings Lane and accompanying sidewalks will offer a new pedestrian access point from Oak Springs Drive. The proposed road that will connect the Hastings Lane extension through the existing commercial building and into the heart of the retail center via a new cut-through street that will allow maximum ease to walk from one side of the site to the other.

The unsignalized pedestrian crossings were reviewed as per TE-384.1 and will be submitted as a separate document.

Conclusions

This report presents the findings of a Traffic Impact Analysis (TIA) conducted for the proposed Warrenton Village Center (the Site / the Development / the Property) along the southern frontage of Oak Springs Drive (Town Route 3), east of Broadview Avenue (US Route 17 Business) and west of Branch Drive (Town Route 4) in the Town of Warrenton, Virginia

The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #s: 6985-20-7247-000, and 6984-29-6753-000, respectively. The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).

The Applicant is proposing to apply for a Special Use Permit (SUP) in order to construct approximately 386 multifamily residential dwelling units (320 multifamily apartments, 36 2-over-2 units, and 30 townhomes) and a parking deck. The site has an anticipated build-out date of 2027.

Access to the site will be provided via one full movement parking deck entry along Oak Springs Drive (Town Route 3) forming the fourth leg of the High School Driveway, one full movement driveway along Oak Springs Drive forming the fourth leg to the existing full-movement intersection of Hastings Lane, and via the existing shopping center accesses to the south.

Analysis Components

- 2023 existing volumes were derived via turning movement counts collected at intersections within the study area in February 2023.
- As determined based on review comments from VDOT and the Town, an inherent regional growth of 1.0% per year was applied to the Lee Highway mainline through movements at the intersection of Lee Highway at Broadview Avenue (US Route 17 Business). The growth volumes were balanced along the road network by increasing the mainline through movements at subsequent study intersections along the road network where applicable for the period between 2023 and 2027 to account for 2027 conditions.
- The trip generation associated with the Site was based on the ITE Trip Generation Manual, 11th Edition publication. The Site in total is expected to generate approximately 154 new trips during the AM peak hour, 197 new trips during the PM peak hour, and 2,602 new daily trips on a typical weekday.
- Intersection capacity and queuing analyses were performed for all analysis scenarios at the study area intersections during the weekday morning (AM) and weekday afternoon (PM) peak hours. *Synchro*, version 11, was used to analyze the study intersections with results based on the Transportation Research Board's (TRB) Highway Capacity Manual (HCM) methodology and analysis guidelines provided in VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) (version 2). The analysis herein includes level of service (LOS), delay, and queue length comparisons for the turning movements analyzed.
- The analysis also considers an assessment of historical crash data at all existing study intersections.
- The analysis also includes preliminary access management assessment and turn lane warrant assessments for the Site access points along Oak Springs Drive.

Analysis Results

2023 Existing Conditions

- Based on the capacity analysis of Existing Conditions, the two signalized study intersections operate at an overall level of service D or better during both the AM and PM peak hours.

- Based on the capacity analysis of Existing Conditions, three study intersections have at least one approach that operates at levels of service (LOS E or F) for at least one peak hour. The remaining intersection approaches operate at acceptable levels of service during both peak hours.
- Based on the analysis of the Synchro 95th percentile queue lengths, all turning movements have queue lengths that can be accommodated within the available storage length of the turn bays, except the southbound left turn movement at Study Intersection 1 (Broadview Avenue / Lee Highway at Winchester Street).

2027 Future Conditions without Development

- Based on the capacity analysis of 2027 Future Conditions with Development, the signalized study intersection would operate at an overall level of service D or better during both the AM and PM peak hours.
- The planned roundabout is expected to operate at an overall LOS B or better with all approaches operating at LOS D or better during the AM and PM peak hours.
- Based on the capacity analysis of 2027 Future Conditions without Development, two study intersections have at least one approach that would operate at levels of service (LOS E or F) for at least one peak hour. The remaining intersection approaches would operate at acceptable levels of service during both peak hours.
- Based on the analysis of the Synchro 95th percentile queue lengths, all turning movements have queue lengths that could be accommodated within the available storage length of the turn bays.

2027 Future Conditions with Development

- The Site is expected to generate approximately 154 new total trips during the AM peak hour, 197 new trips during the PM peak hour and 2,602 new trips during a typical weekday.
- Based on the capacity analysis of 2027 Future Conditions with Development, the signalized study intersection would operate at an overall level of service D or better during both the AM and PM peak hours.
- The planned roundabout is expected to operate at an overall LOS B with all approaches operating at LOS D or better during the AM and PM peak hours.
- Based on the capacity analysis of the 2027 Future Conditions with Development, two study intersections have at least one approach that would operate at levels of service (LOS E or F) for at least one peak hour (similar to 2027 Future Conditions without Development) during the AM and PM peak hours. The remaining intersection approaches would operate at acceptable levels of service during both peak hours.
- Based on the queuing analysis performed for the 2027 Future Conditions with Development, all turning movements have queue lengths that could be accommodated within the available storage length of the turn bays.

Overall Conclusion

Based on the capacity and queuing analysis results, the proposed Development will not have a substantial impact to the surrounding transportation and roadway network, assuming that the site is constructed as depicted on the concept plan. No improvements are warranted or recommend to accommodate the proposed Development.

Transportation Technical Appendix

Warrenton Village Center

Town of Warrenton, Virginia

GOROVE SLADE
Transportation Planners and Engineers

TABLE OF CONTENTS

Appendix A – Scoping Document

Appendix B – Crash Data by Study Intersection

Appendix C – Turning Movement Counts Data

Appendix D – HCM Level of Service Definitions

Appendix E – VDOT Signal Timings

Appendix F – 2023 Existing Conditions – Capacity Analysis Worksheets

Appendix G – Background Development and Roadway Improvement Excepts

Appendix H – 2027 Future Conditions without Development – Capacity Analysis Worksheets

Appendix I – 2027 Future Conditions with Development – Capacity Analysis Worksheets

Appendix J – Turn Lane Warrant Tables and Charts

Appendix K – MUTCD 4-Hour Warrant

A. Signed Scoping Document

THIS IS NOT A CHAPTER 870 STUDY

| | |
|---|--|
|  | <p>PRE-SCOPE OF WORK MEETING FORM</p> <p>Information on the Project</p> <p>Traffic Impact Analysis Base Assumptions</p> |
|---|--|

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

| Contact Information | | | | |
|--|---|---|--|------------------------------------|
| Consultant Name: | Kevin Sitzman, Gorove Slade Associates, Inc. | | | |
| Tele: | 703.787.9595 | | | |
| E-mail: | kevin.sitzman@goroveslade.com | | | |
| Developer/Owner Name: | Jess Achenbach | | | |
| Tele: | | | | |
| E-mail: | jachenbach@castledp.com | | | |
| Project Information | | | | |
| Project Name: | Warrenton Village Mixed-Use Center | Locality/County: | Town of Warrenton | |
| Project Location: <small>(Attach regional and site specific location map)</small> | The proposed development will be located primarily along the southern frontage of Oak Springs Drive (Town Route 3), east of Broadview Avenue (US Route 17 Business) and west of Branch Drive (Town Route 4) in the Town of Warrenton, Virginia. (See Figure 1). | | | |
| Submission Type | Comp Plan <input type="checkbox"/> | REZ/SUP <input checked="" type="checkbox"/> | Site Plan <input type="checkbox"/> | Subd Plat <input type="checkbox"/> |
| Project Description: <small>(Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)</small> | <p>The development will be situated on a single parcel of vacant land (approximately 6.46 acres) and a portion of an adjacent developed parcel of land, which can be identified on Fauquier County Tax Maps with the following GPIN #s: 6985-20-7247-000, and 6984-29-6753-000, respectively. The property is currently zoned as C (Commercial District) with a Future Land Use of Mixed Use as part of the New Town Warrenton Character District (Lee Highway Urban Development Area [UDA]).</p> <p>The Applicant is proposing to apply for a Special Use Permit (SUP) in order to construct approximately 376 multifamily residential dwelling units (320 multifamily apartments, 36 2-over-2 units, and 20 townhomes) and a parking deck. The site has an anticipated build-out date of 2027.</p> <p>Access to the site will be provided via one full movement parking deck entry along Oak Springs Drive (Town Route 3) forming the forth leg of the High School Driveway, one full movement driveway along Oak Springs Drive forming the fourth-leg to the existing full-movement intersection of Hastings Lane, and via the existing shopping center accesses to the south.</p> | | | |
| Proposed Use(s): <small>(Check all that apply; attach additional pages as necessary)</small> | Residential <input checked="" type="checkbox"/> | Commercial <input type="checkbox"/> | Mixed Use <input type="checkbox"/> | Other <input type="checkbox"/> |
| | <p>Residential Uses(s)</p> <p>ITE LU Code(s): 220</p> <p>Number of Units: 376</p> <p>Other Use(s)</p> | | <p>Commercial Use(s)</p> <p>ITE LU Code(s):</p> <p>Square Ft or Other Variable:</p> | |

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

| | | | | |
|---|--|--|--|---|
| | ITE LU Code(s): Square Ft or Other Variable: | | | |
| Total Peak Hour Trip Projection: | Less than 100 <input type="checkbox"/> | 100 - 499 <input checked="" type="checkbox"/> | 500 - 999 <input type="checkbox"/> | 1,000 or more <input type="checkbox"/> |
| Traffic Impact Analysis Assumptions | | | | |
| Study Period | Existing Year: 2023 | Build-out Year: 2027 | Design Year: N/A | |
| Study Area Boundaries (Attach map) | North: Oak Springs Drive (Town Route 3) | | South: US Route 211 / 29 Business | |
| | West: Broadview Avenue (US Route 17 Business) | | East: Branch Drive (Town Route 4) | |
| External Factors That Could Affect Project (Planned road improvements, other nearby developments) | Waterloo Junction Single Family homes along Patrick Ryan Way Smart Scale Roundabouts 1. Broadview/Winchester/Lee 2. Roebling/Broadview | | | |
| Consistency With Comprehensive Plan (Land use, transportation plan) | Yes | | | |
| Available Traffic Data (Historical, forecasts) | 2023 TMC's VDOT Historical AADT Data | | | |
| Trip Distribution (Please refer to attached Figure 2 in Supplement) | Road Name: (to/from the North) - N/A | | Road Name: (to/from the South) - N/A | |
| | Road Name: (to/from the West) - N/A | | Road Name: (to/from the East) - N/A | |
| Annual Vehicle Trip Growth Rate: (See Note 2.) | 1.0%/yr. (2023 to 2027) | Peak Period for Study (check all that apply) | <input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> SAT | |
| | | Peak Hour of the Adj. (to be used in study) | AM: 150 / PM: 192 / Daily: 2,534 | |
| Study Intersections and/or Road Segments (Attach additional sheets as necessary) (Please refer to attached Figure 1.) | 1. | Broadview Avenue (US Route 17) / Lee Highway at Broadview Avenue / Winchester Street | 6. | Oak Springs Drive (Town Route 3) at Hastings Lane / Future Access |
| | 2. | Lee Highway (US Route 17) at Warrenton Village Center Driveway at Chick-fil-a Driveway | 7. | Oak Springs Drive (Town Route 3) at Highland School Driveway / Future Garage Access |
| | 3. | Lee Highway (US Route 17) at Branch Drive (Town Route 4) | 8. | Broadview Avenue (US Route 17 Business) at Oak Springs Drive (Town Route 3) |
| | 4. | Branch Drive (Town Route 4) at Warrenton Village Driveway / Safeway Driveway | 9. | Broadview Avenue (US Route 17 Business) at Warrenton Village Center South Driveway |
| | 5. | Oak Springs Drive (Town Route 3) at Branch Drive (Town Route 4) / Cedar Crest Drive | 10. | Broadview Avenue (US Route 17 Business) at Warrenton Village Center North Driveway |

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

| | | |
|--|---|---|
| Trip Adjustment Factors | Internal allowance Reduction: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Pass-by allowance Reduction: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Software Methodology | <input checked="" type="checkbox"/> Synchro <input type="checkbox"/> HCS (v.2000/+) <input checked="" type="checkbox"/> SIDRA <input type="checkbox"/> CORSIM <input type="checkbox"/> Other _____ | |
| Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length) | Existing traffic signals that could be affected: 1. Broadview Avenue (US Route 17) / Lee Highway at Broadview Avenue / Winchester Street 2. Lee Highway (US Route 17) at Branch Drive (Town Route 4) Analysis Software: Synchro version 11 Results: HCM 6 Methodology (See Note 7) Queue Lengths to be Reported: 95 th Percentile | |
| Improvement(s) Assumed or to be Considered | Smart Scale Roundabouts 1. Broadview/Winchester/Lee 2. Roebing/Broadview | |
| Background Traffic Studies Considered | Waterloo Junction Single Family homes along Patrick Ryan Way | |
| Plan Submission | <input type="checkbox"/> Master Development Plan (MDP) <input checked="" type="checkbox"/> Generalized Development Plan (GDP) <input type="checkbox"/> Preliminary/Sketch Plan <input type="checkbox"/> Other Plan type (Final Site, Subd. Plan) | |
| Additional Issues to be Addressed | <input checked="" type="checkbox"/> Queuing analysis <input type="checkbox"/> Actuation/Coordination <input type="checkbox"/> Weaving analysis <input type="checkbox"/> Merge analysis <input checked="" type="checkbox"/> Bike/Ped Accommodations <input checked="" type="checkbox"/> Intersection(s) <input type="checkbox"/> TDM Measures <input type="checkbox"/> Other (_____) | |

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

NOTES on ASSUMPTIONS:

1. The scenarios to be included in the study are Existing Conditions (2023), Future without Development (2027) and Future with Development (2027). The study will analyze AM and PM peak hours.
2. Existing traffic volumes will be based on 2023 traffic count data. In order to project 2027 future conditions, a regional growth of 1.0% per annum will be applied to all turning movements at all study intersections.
3. Existing peak hour factors will be based on the traffic counts and utilized on a by-intersection basis. Peak hours factors by intersection in the range of 0.85 to 1.00 will be used for existing scenario. Peak hour factors of 0.92 will be used for all future scenarios if the existing peak hour factor by intersection is less than 0.92.
4. Heavy vehicle percentages (HV%) will be based on existing counts per movement. For any new leg or intersection, the HV% will be based on a default *Synchro* value of 2.0% per movement.
5. For any approach, a level of service (LOS) D or better would be considered as acceptable/desirable traffic operation condition. For all approaches, the projected future conditions without development LOS and delay will be maintained in the future with development condition. Will show intersection, approach, and movement LOS.
6. 95th percentile queues will be provided from *Synchro*.
7. HCM 6 methodology will be utilized where applicable; HCM 2000 methodology will be utilized if HCM 6 methodology is not applicable.
8. Preliminary access management and turn lane warrant assessments will be conducted for the site entrances.
9. Crash Data obtained from VDOT’s Crash Analysis Tool will be analyzed at existing intersections.

SIGNED:  DATE: 6/30/2023
 Applicant or Consultant

PRINT NAME: Kevin Sitzman
 Applicant or Consultant

SIGNED: _____ DATE: _____
 VDOT Representative

PRINT NAME: _____
 VDOT Representative

SIGNED: _____ DATE: _____
 Local Government Representative

PRINT NAME: _____
 Local Government Representative

Table 1: Historic Growth (Based on VDOT Traffic Data)

| Road Segment: | From: | To: | Published VDOT AADT | | | | | Growth Rate | | | |
|-------------------|-------------------|-------------------|---------------------|--------|--------|--------|--------|-------------|-------------|-------------|-------------|
| | | | 2015 | 2016 | 2017 | 2018 | 2019 | 2015 - 2019 | 2016 - 2019 | 2017 - 2019 | 2018 - 2019 |
| Broadview Avenue | Bus US 29 Lee Hwy | NCL Warrenton | 10,000 | 10,000 | 10,000 | 10,000 | 11,000 | 2% | 3% | 5% | 10% |
| Oak Springs Drive | Broadview Ave | Branch Dr | 3,200 | 3,200 | 3,200 | 3,200 | 3,100 | -1% | -1% | -2% | -3% |
| Branch Drive | Lee Highway | Oak Springs Drive | 3,800 | 4,200 | 4,200 | 4,300 | 4,300 | 3% | 1% | 1% | 0% |



Figure 1: Site Location and Study Intersections



Figure 2: Direction of Approach

Table 2: Trip Generation – Peak Hour of the Adjacent Street (ITE 11th Edition) – To Be Used in Study

| Land Use | ITE Code | Size | ----- Weekday ----- | | | | | | |
|---------------------|----------|--------|---------------------|-----|-------|--------------|-----|-------|-------------|
| | | | AM Peak Hour | | | PM Peak Hour | | | Daily Total |
| | | | In | Out | Total | In | Out | Total | |
| Multifamily Housing | 220 | 376 DU | 36 | 114 | 150 | 121 | 71 | 192 | 2,534 |

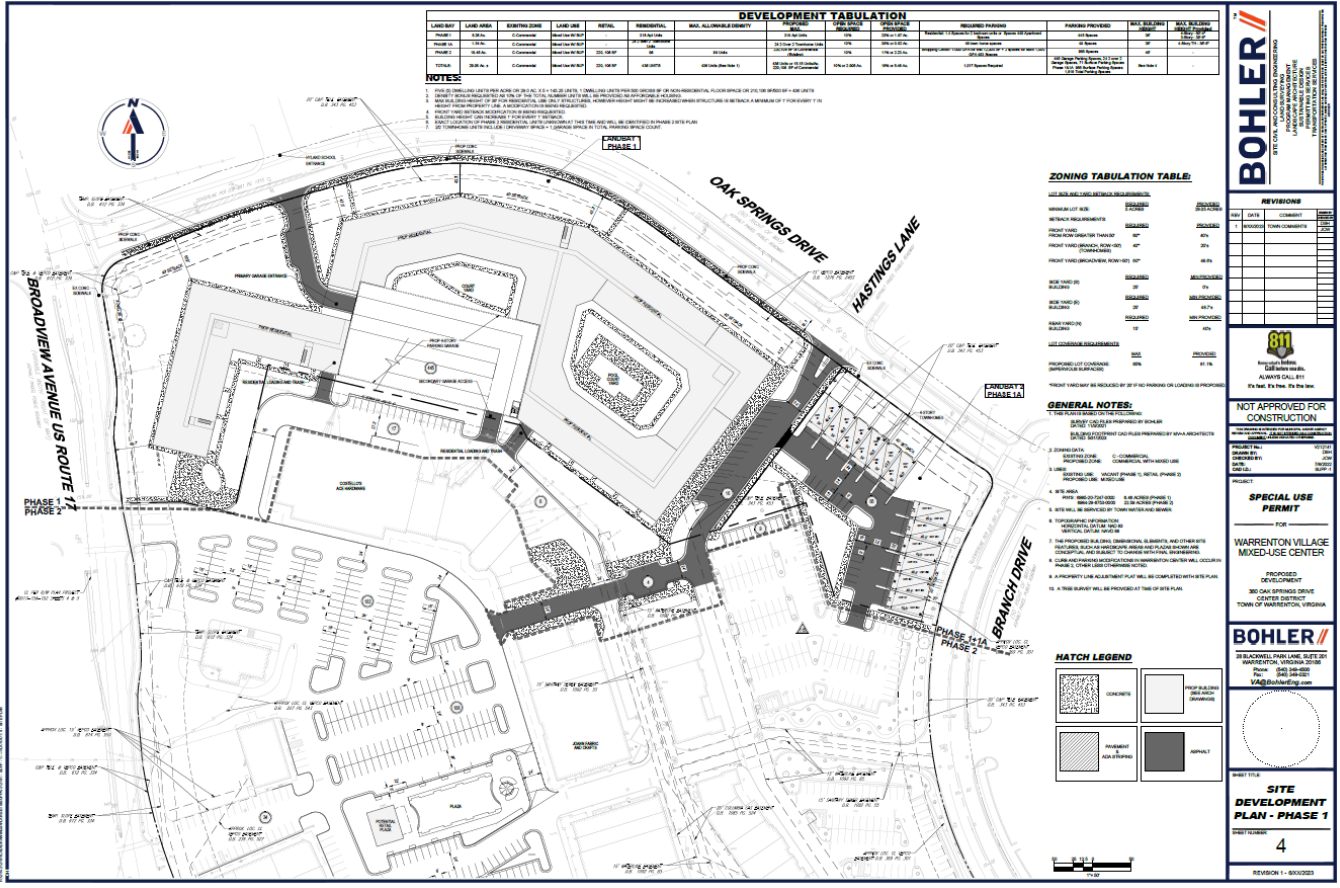


Figure 3: Illustrative Site Plan (Provided by Bohler)
 Note: For conceptual purposes only.

B. Crash Data by Study Intersection

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Broadview Avenue (US 17 BUS) (May 2018 - April 2023) | | | | | | | | |
|--|----------|-----------|----------|----------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | 2 | 6 | 1 | 1 | 2 | | 12 | 30.00% |
| Type A | 1 | | | | | | 1 | |
| Type B | | 2 | | | 2 | | 4 | |
| Type C | 1 | 4 | 1 | 1 | | | 7 | |
| Property Damage Only (Type PDO) | 3 | 8 | 3 | 8 | 6 | | 28 | 70.00% |
| TOTAL* | 5 | 14 | 4 | 9 | 8 | | 40 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | 1 | | | 2 | | 3 | 7.50% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | 3 | 8 | 4 | 5 | 4 | | 24 | 60.00% |
| Angle Collision | 1 | 5 | | 4 | 1 | | 11 | 27.50% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | 1 | | | | 1 | | 2 | 5.00% |
| TOTAL* | 5 | 14 | 4 | 9 | 8 | | 40 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | 1 | | | | | | 1 | 2.50% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | 1 | | | 2 | | 3 | 7.50% |
| Speeding | 2 | | | | | | 2 | 5.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | 1 | 5 | | 2 | | | 8 | 20.00% |
| Off Peak - Daytime (10 AM - 3 PM) | 1 | 5 | 3 | 4 | 4 | | 17 | 42.50% |
| PM Peak Period (3 - 7 PM) | 2 | 3 | 1 | 3 | 2 | | 11 | 27.50% |
| Off Peak - Nighttime (7 PM - 6 AM) | 1 | 1 | | | 2 | | 4 | 10.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.75 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Broadview Avenue (US 17 BUS) (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|-------------------------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 18255077 | 9/11/2018 | A. Severe Injury | 16. Other | 0 | 1 | 0 | | no | no |
| 181915232 | 7/5/2018 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 181845228 | 6/28/2018 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 182415104 | 8/20/2018 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 182885118 | 10/13/2018 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 192075126 | 7/20/2019 | B. Visible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 193445038 | 8/21/2019 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 191415326 | 5/15/2019 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 191685219 | 5/22/2019 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 190705057 | 3/5/2019 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 190935057 | 4/2/2019 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 192325410 | 8/20/2019 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 191895108 | 7/5/2019 | C. Nonvisible Injury | 1. Rear End | 0 | 5 | 0 | | no | no |
| 193445107 | 10/30/2019 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 193445122 | 11/14/2019 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 193445083 | 10/13/2019 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 193445100 | 10/22/2019 | C. Nonvisible Injury | 1. Rear End | 0 | 3 | 0 | | yes | no |
| 193445071 | 9/30/2019 | PDO. Property Damage Only | 4. Sideswipe - Same Direction | 0 | 0 | 0 | | no | no |
| 191295165 | 5/8/2019 | B. Visible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 203495122 | 12/11/2020 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 202175264 | 7/29/2020 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 203175313 | 11/2/2020 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 201635154 | 6/2/2020 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 212215197 | 7/25/2021 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 212285259 | 8/6/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 211945123 | 7/6/2021 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 211535051 | 5/26/2021 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Broadview Avenue (US 17 BUS) (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|-------------------------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 212725106 | 9/20/2021 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 213275307 | 11/17/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 211805101 | 6/21/2021 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 213145192 | 11/6/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 210905134 | 3/20/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 220205117 | 1/12/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 222345164 | 8/21/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 220975211 | 3/18/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 222795285 | 10/6/2022 | B. Visible Injury | 8. Non-Collision | 0 | 1 | 0 | | no | no |
| 222015106 | 7/14/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 221295161 | 5/7/2022 | B. Visible Injury | 4. Sideswipe - Same Direction | 0 | 1 | 0 | | yes | no |
| 220135226 | 1/6/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 222165194 | 7/8/2022 | PDO. Property Damage Only | 4. Sideswipe - Same Direction | 0 | 0 | 0 | | yes | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Warrenton Village / Chick-fil-a Driveway (May 2018 - April 2023) | | | | | | | | |
|---|------|----------|----------|------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | | 1 | | | 1 | | 2 | 40.00% |
| Type A | | 1 | | | 1 | | 2 | |
| Type B | | | | | | | | |
| Type C | | | | | | | | |
| Property Damage Only (Type PDO) | | | 1 | | 2 | | 3 | 60.00% |
| TOTAL* | | 1 | 1 | | 3 | | 5 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | 1 | | 1 | | 2 | 40.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | | | | | | | 0.00% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | | | 1 | | 1 | 20.00% |
| Angle Collision | | 1 | | | 1 | | 2 | 40.00% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | | | | | | | | 0.00% |
| TOTAL* | | 1 | 1 | | 3 | | 5 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | | 1 | | 1 | 20.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | 1 | | | | 1 | 20.00% |
| Speeding | | | | | 1 | | 1 | 20.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | | | | | | | 0.00% |
| Off Peak - Daytime (10 AM - 3 PM) | | | | | 1 | | 1 | 20.00% |
| PM Peak Period (3 - 7 PM) | | 1 | | | 1 | | 2 | 40.00% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | 1 | | 1 | | 2 | 40.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.13 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Warrenton Village / Chick-fil-a Driveway (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|----------------------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 193445020 | 7/26/2019 | A. Severe Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 203025223 | 10/25/2020 | PDO. Property Damage Only | 9. Fixed Object - Off Road | 0 | 0 | 0 | | yes | no |
| 222785213 | 9/17/2022 | A. Severe Injury | 9. Fixed Object - Off Road | 0 | 1 | 0 | | no | no |
| 222135133 | 7/28/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 223325320 | 11/1/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Branch Drive (May 2018 - April 2023) | | | | | | | | |
|--|----------|----------|----------|----------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | 1 | | 2 | 1 | 1 | | 5 | 26.32% |
| Type A | | | | | | | | |
| Type B | | | | | | | | |
| Type C | 1 | | 2 | 1 | 1 | | 5 | |
| Property Damage Only (Type PDO) | 2 | 1 | | 3 | 8 | | 14 | 73.68% |
| TOTAL* | 3 | 1 | 2 | 4 | 9 | | 19 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | 1 | | | 1 | 5.26% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | 1 | | | | | | 1 | 5.26% |
| Sideswipe / Opposite Direction | | | | 1 | | | 1 | 5.26% |
| Rear-End Collision | 2 | | | 1 | 3 | | 6 | 31.58% |
| Angle Collision | | | 2 | 1 | 5 | | 8 | 42.11% |
| Backed Into | | 1 | | | | | 1 | 5.26% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | | | | | 1 | | 1 | 5.26% |
| TOTAL* | 3 | 1 | 2 | 4 | 9 | | 19 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | | | | | 0.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | 2 | 1 | | 3 | 15.79% |
| Speeding | | | 1 | | 1 | | 2 | 10.53% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | 1 | | | 1 | 1 | | 3 | 15.79% |
| Off Peak - Daytime (10 AM - 3 PM) | | | 2 | 2 | 2 | | 6 | 31.58% |
| PM Peak Period (3 - 7 PM) | 2 | 1 | | 1 | 6 | | 10 | 52.63% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | | | | | | 0.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.45 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Lee Highway (US 211/US 29 BUS) and Branch Drive (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|-----------------------------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 190035248 | 12/24/2018 | PDO. Property Damage Only | 4. Sideswipe - Same Direction | 0 | 0 | 0 | | no | no |
| 182955427 | 10/20/2018 | C. Nonvisible Injury | 1. Rear End | 0 | 2 | 0 | | no | no |
| 183655065 | 12/17/2018 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 193445084 | 10/13/2019 | PDO. Property Damage Only | 15. Backed Into | 0 | 0 | 0 | | no | no |
| 201995197 | 7/12/2020 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 201275157 | 4/1/2020 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 211335075 | 5/10/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 212925308 | 10/10/2021 | PDO. Property Damage Only | 9. Fixed Object - Off Road | 0 | 0 | 0 | | yes | no |
| 212705186 | 9/20/2021 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 211935132 | 6/22/2021 | C. Nonvisible Injury | 5. Sideswipe - Opposite Direction | 0 | 2 | 0 | | yes | no |
| 222805102 | 10/6/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 220825133 | 3/21/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 221965176 | 7/9/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | yes | no |
| 221965175 | 6/29/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 221735151 | 6/2/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 222205137 | 8/6/2022 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 222695228 | 9/24/2022 | C. Nonvisible Injury | 1. Rear End | 0 | 1 | 0 | | no | no |
| 220385210 | 2/6/2022 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 222975113 | 10/23/2022 | PDO. Property Damage Only | 16. Other | 0 | 0 | 0 | | no | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Branch Drive and Warrenton Village / Safeway (May 2018 - April 2023) | | | | | | | | |
|---|------|------|------|----------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | | | | | 1 | | 1 | 50.00% |
| Type A | | | | | | | | |
| Type B | | | | | | | | |
| Type C | | | | | 1 | | 1 | |
| Property Damage Only (Type PDO) | | | | 1 | | | 1 | 50.00% |
| TOTAL* | | | | 1 | 1 | | 2 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | | | | | | | 0.00% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | | | | | | 0.00% |
| Angle Collision | | | | 1 | 1 | | 2 | 100.00% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | | | | | | | | 0.00% |
| TOTAL* | | | | 1 | 1 | | 2 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | 1 | | | 1 | 50.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | | 1 | | 1 | 50.00% |
| Speeding | | | | | | | | 0.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | | | | 1 | | 1 | 50.00% |
| Off Peak - Daytime (10 AM - 3 PM) | | | | | | | | 0.00% |
| PM Peak Period (3 - 7 PM) | | | | 1 | | | 1 | 50.00% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | | | | | | 0.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.24 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Branch Drive and Warrenton Village / Safeway (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|----------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 213055189 | 10/15/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 223255325 | 11/11/2022 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | yes | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Branch Drive and Oak Springs Drive (May 2018 - April 2023) | | | | | | | | |
|---|------|------|----------|------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | | | | | | | | 0.00% |
| Type A | | | | | | | | |
| Type B | | | | | | | | |
| Type C | | | | | | | | |
| Property Damage Only (Type PDO) | | | 1 | | 1 | | 2 | 100.00% |
| TOTAL* | | | 1 | | 1 | | 2 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | | | | | | | 0.00% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | | | | | | 0.00% |
| Angle Collision | | | 1 | | 1 | | 2 | 100.00% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | | | | | | | | 0.00% |
| TOTAL* | | | 1 | | 1 | | 2 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | | | | | 0.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | | | | | 0.00% |
| Speeding | | | | | | | | 0.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | | | | | | | 0.00% |
| Off Peak - Daytime (10 AM - 3 PM) | | | | | 1 | | 1 | 50.00% |
| PM Peak Period (3 - 7 PM) | | | 1 | | | | 1 | 50.00% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | | | | | | 0.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.27 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Branch Drive and Oak Springs Drive (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|-----------|---------------------------|----------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 202745301 | 9/18/2020 | PDO, Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 220335106 | 1/31/2022 | PDO, Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Broadview Avenue and Oak Springs Drive (May 2018 - April 2023) | | | | | | | | |
|---|----------|------|----------|------|------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | 1 | | | | | | 1 | 33.33% |
| Type A | 1 | | | | | | 1 | |
| Type B | | | | | | | | |
| Type C | | | | | | | | |
| Property Damage Only (Type PDO) | | | 2 | | | | 2 | 66.67% |
| TOTAL* | 1 | | 2 | | | | 3 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | | | | | | | 0.00% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | | | | | | 0.00% |
| Angle Collision | 1 | | 2 | | | | 3 | 100.00% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | | | | | | | | 0.00% |
| TOTAL* | 1 | | 2 | | | | 3 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | | | | | 0.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | | | | | 0.00% |
| Speeding | | | | | | | | 0.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | | | | | | | 0.00% |
| Off Peak - Daytime (10 AM - 3 PM) | | | 1 | | | | 1 | 33.33% |
| PM Peak Period (3 - 7 PM) | 1 | | 1 | | | | 2 | 66.67% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | | | | | | 0.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.14 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Broadview Avenue and Oak Springs Drive (May 2018 - April 2023) | | | | | | | | | |
|---|-----------|---------------------------|----------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
| 182435282 | 8/23/2018 | A. Severe Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 202585163 | 2/22/2020 | PDU. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 202115210 | 7/15/2020 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Broadview Avenue and Warrenton Village North (May 2018 - April 2023) | | | | | | | | |
|---|------|----------|----------|----------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | | | 1 | | 1 | | 2 | 50.00% |
| Type A | | | | | | | | |
| Type B | | | 1 | | | | 1 | |
| Type C | | | | | 1 | | 1 | |
| Property Damage Only (Type PDO) | | 1 | | 1 | | | 2 | 50.00% |
| TOTAL* | | 1 | 1 | 1 | 1 | | 4 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | | | | | | | | 0.00% |
| Sideswipe / Same Direction | | | | | | | | 0.00% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | | | | | | 0.00% |
| Angle Collision | | | 1 | 1 | 1 | | 3 | 75.00% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | 1 | | | | | 1 | 25.00% |
| Other | | | | | | | | 0.00% |
| TOTAL* | | 1 | 1 | 1 | 1 | | 4 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | | | | | 1 | | 1 | 25.00% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | | 1 | | 1 | 25.00% |
| Speeding | | | | | | | | 0.00% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | 1 | | | | | 1 | 25.00% |
| Off Peak - Daytime (10 AM - 3 PM) | | | | | | | | 0.00% |
| PM Peak Period (3 - 7 PM) | | | 1 | 1 | 1 | | 3 | 75.00% |
| Off Peak - Nighttime (7 PM - 6 AM) | | | | | | | | 0.00% |
| CALCULATED CRASH RATE**** | | | | | | | 0.21 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Broadview Avenue and Warrenton Village North (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|-----------|---------------------------|----------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 192545226 | 9/11/2019 | PDO. Property Damage Only | 10. Deer | 0 | 0 | 0 | | no | no |
| 202765309 | 9/20/2020 | B. Visible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 211665121 | 5/27/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 223465170 | 12/6/2022 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | yes | no |

VDOT Crash Data Summary Table

Item 1.

| Crash Data for the Intersection of Broadview Avenue and Warrenton Village South (May 2018 - April 2023) | | | | | | | | |
|---|----------|------|----------|----------|----------|------|-------------|------------------------|
| Intersection Crash Analysis | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total | Relative Frequency |
| Crash Severity | | | | | | | | |
| Fatal Collision (Type K) | | | | | | | | 0.00% |
| Injury Collision (Type A, B, and C) | 2 | | | 2 | 3 | | 7 | 53.85% |
| Type A | | | | | | | | |
| Type B | | | | | | | | |
| Type C | 2 | | | 2 | 3 | | 7 | |
| Property Damage Only (Type PDO) | 1 | | 2 | 2 | 1 | | 6 | 46.15% |
| TOTAL* | 3 | | 2 | 4 | 4 | | 13 | 100.00% |
| Crash Type | | | | | | | | |
| Fixed Object/ Single-Vehicle Crash | | | | | | | | 0.00% |
| Head-On | 1 | | | | 2 | | 3 | 23.08% |
| Sideswipe / Same Direction | | | | 1 | | | 1 | 7.69% |
| Sideswipe / Opposite Direction | | | | | | | | 0.00% |
| Rear-End Collision | | | 1 | | | | 1 | 7.69% |
| Angle Collision | 1 | | 1 | 3 | 2 | | 7 | 53.85% |
| Backed Into | | | | | | | | 0.00% |
| Pedestrian Collision | | | | | | | | 0.00% |
| Deer/Animal | | | | | | | | 0.00% |
| Other | 1 | | | | | | 1 | 7.69% |
| TOTAL* | 3 | | 2 | 4 | 4 | | 13 | 100.00% |
| Other Factors | | | | | | | | |
| Distracted Driver | | | | | | | | 0.00% |
| Alcohol** | 1 | | | | | | 1 | 7.69% |
| Work-Zone | | | | | | | | 0.00% |
| Inclement Weather (Non-Dry) | | | | | | | | 0.00% |
| Speeding | | | 1 | | | | 1 | 7.69% |
| Pedestrian Injury*** | | | | | | | | N/A |
| Time of Day | | | | | | | | |
| AM Peak Period (6 - 10 AM) | | | | | 1 | | 1 | 7.69% |
| Off Peak - Daytime (10 AM - 3 PM) | 1 | | 2 | 2 | 2 | | 7 | 53.85% |
| PM Peak Period (3 - 7 PM) | 1 | | | 2 | 1 | | 4 | 30.77% |
| Off Peak - Nighttime (7 PM - 6 AM) | 1 | | | | | | 1 | 7.69% |
| CALCULATED CRASH RATE**** | | | | | | | 0.54 | Crashes per MEV |

* It should be noted that an intersection radius of 300 feet was used in this analysis. Crashes also thought to be caused by the intersection may have been added based on the description of the crash and engineering judgement.

** Instances where the event was classified as "Unknown", "Not Known Whether Impaired", "Ability Not Impaired" were classified as alcohol related to provide a more conservative analysis.

*** Pedestrian injuries are based on the number of pedestrians injured and may not be directly be related to the number of crash incidences (i.e., if one crash occurred injuring two pedestrians, the table would show a "2" instead of a "1").

VDOT Crash Data Summary Table

Item 1.

Crash Data for the Intersection of Broadview Avenue and Warrenton Village South (May 2018 - April 2023)

| Document Number | Date | Crash Severity | Collision Type | Pedestrian Injury | Persons Injured | Fatalities | Work Zone Related | Adverse Weather Conditions | Distracted Driver |
|-----------------|------------|---------------------------|-------------------------------|-------------------|-----------------|------------|-------------------|----------------------------|-------------------|
| 182505243 | 9/5/2018 | C. Nonvisible Injury | 6. Fixed Object in Road | 0 | 1 | 0 | | no | no |
| 182835057 | 10/4/2018 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 182135102 | 7/31/2018 | PDO. Property Damage Only | 3. Head On | 0 | 0 | 0 | | no | no |
| 201265208 | 2/25/2020 | PDO. Property Damage Only | 1. Rear End | 0 | 0 | 0 | | no | no |
| 201265233 | 3/12/2020 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 213625118 | 12/15/2021 | C. Nonvisible Injury | 2. Angle | 0 | 2 | 0 | | no | no |
| 213145191 | 11/3/2021 | PDO. Property Damage Only | 2. Angle | 0 | 0 | 0 | | no | no |
| 210135154 | 1/6/2021 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 212425152 | 8/23/2021 | PDO. Property Damage Only | 4. Sideswipe - Same Direction | 0 | 0 | 0 | | no | no |
| 221235227 | 4/29/2022 | C. Nonvisible Injury | 3. Head On | 0 | 1 | 0 | | no | no |
| 221045273 | 3/28/2022 | PDO. Property Damage Only | 3. Head On | 0 | 0 | 0 | | no | no |
| 220945207 | 3/29/2022 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |
| 223325319 | 11/23/2022 | C. Nonvisible Injury | 2. Angle | 0 | 1 | 0 | | no | no |

C. Turning Movement Counts Data

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/Winchester St & US 17/US 211/Broadview Ave
City: Warrenton
Control: Signalized

Project ID: 23-260020-001
Date: 2/9/2023

Data - Total

| NS/EW Streets: | US 17/Winchester St | | | | US 17/Winchester St | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | |
|-------------------------|---------------------|---------|---------|---------|---------------------|-----------|---------|---------|----------------------------|-----------|-----------|---------|----------------------------|---------|---------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 6:00 AM | 5 | 5 | 2 | 0 | 28 | 3 | 15 | 0 | 18 | 155 | 2 | 1 | 2 | 48 | 21 | 1 | 306 |
| 6:15 AM | 7 | 0 | 6 | 0 | 15 | 2 | 19 | 0 | 21 | 167 | 1 | 1 | 0 | 78 | 32 | 1 | 350 |
| 6:30 AM | 7 | 9 | 8 | 0 | 18 | 1 | 31 | 0 | 18 | 179 | 2 | 0 | 0 | 90 | 27 | 0 | 390 |
| 6:45 AM | 12 | 11 | 8 | 0 | 27 | 5 | 45 | 0 | 23 | 163 | 0 | 3 | 6 | 122 | 32 | 0 | 457 |
| 7:00 AM | 13 | 13 | 10 | 0 | 27 | 3 | 97 | 0 | 46 | 171 | 1 | 1 | 7 | 134 | 41 | 0 | 564 |
| 7:15 AM | 20 | 8 | 11 | 0 | 31 | 8 | 89 | 0 | 58 | 208 | 5 | 2 | 6 | 119 | 31 | 1 | 597 |
| 7:30 AM | 15 | 25 | 14 | 0 | 28 | 9 | 34 | 0 | 83 | 220 | 13 | 1 | 6 | 154 | 49 | 0 | 651 |
| 7:45 AM | 27 | 42 | 32 | 0 | 34 | 40 | 61 | 0 | 73 | 169 | 5 | 2 | 5 | 162 | 64 | 1 | 717 |
| 8:00 AM | 14 | 19 | 12 | 0 | 22 | 26 | 61 | 0 | 57 | 204 | 7 | 2 | 9 | 140 | 29 | 1 | 603 |
| 8:15 AM | 17 | 17 | 12 | 0 | 26 | 18 | 59 | 0 | 44 | 165 | 6 | 0 | 11 | 159 | 29 | 1 | 564 |
| 8:30 AM | 24 | 11 | 21 | 0 | 29 | 13 | 61 | 0 | 52 | 159 | 13 | 2 | 11 | 125 | 28 | 3 | 552 |
| 8:45 AM | 16 | 17 | 8 | 0 | 45 | 26 | 54 | 0 | 53 | 170 | 16 | 4 | 4 | 141 | 24 | 3 | 581 |
| TOTAL VOLUMES : | 177 | 177 | 144 | 0 | 330 | 154 | 626 | 0 | 546 | 2130 | 71 | 19 | 67 | 1472 | 407 | 12 | 6332 |
| APPROACH %'s : | 35.54% | 35.54% | 28.92% | 0.00% | 29.73% | 13.87% | 56.40% | 0.00% | 19.74% | 77.01% | 2.57% | 0.69% | 3.42% | 75.18% | 20.79% | 0.61% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 76 | 94 | 69 | 0 | 115 | 83 | 245 | 0 | 271 | 801 | 30 | 7 | 26 | 575 | 173 | 3 | 2568 |
| PEAK HR FACTOR : | 0.704 | 0.560 | 0.539 | 0.000 | 0.846 | 0.519 | 0.688 | 0.000 | 0.816 | 0.910 | 0.577 | 0.875 | 0.722 | 0.887 | 0.676 | 0.750 | 0.895 |
| | | | | | 0.820 | | | | 0.875 | | | | 0.837 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 4:00 PM | 29 | 18 | 21 | 0 | 72 | 18 | 94 | 1 | 51 | 194 | 14 | 0 | 7 | 309 | 23 | 1 | 852 |
| 4:15 PM | 32 | 27 | 15 | 0 | 46 | 23 | 86 | 1 | 69 | 167 | 9 | 1 | 19 | 240 | 40 | 1 | 776 |
| 4:30 PM | 24 | 28 | 16 | 0 | 50 | 23 | 103 | 0 | 71 | 223 | 9 | 1 | 17 | 261 | 24 | 4 | 854 |
| 4:45 PM | 29 | 22 | 15 | 0 | 44 | 19 | 94 | 0 | 67 | 210 | 8 | 0 | 13 | 264 | 19 | 4 | 808 |
| 5:00 PM | 12 | 35 | 13 | 0 | 47 | 14 | 63 | 0 | 68 | 170 | 13 | 2 | 14 | 265 | 23 | 4 | 743 |
| 5:15 PM | 18 | 34 | 18 | 0 | 46 | 18 | 75 | 0 | 60 | 180 | 11 | 1 | 13 | 284 | 28 | 1 | 787 |
| 5:30 PM | 22 | 29 | 15 | 0 | 28 | 19 | 69 | 0 | 44 | 183 | 7 | 4 | 12 | 218 | 40 | 1 | 691 |
| 5:45 PM | 16 | 27 | 16 | 0 | 37 | 23 | 74 | 0 | 47 | 176 | 8 | 1 | 8 | 252 | 25 | 6 | 716 |
| 6:00 PM | 32 | 23 | 15 | 0 | 42 | 14 | 44 | 0 | 54 | 135 | 12 | 1 | 19 | 222 | 23 | 3 | 639 |
| 6:15 PM | 14 | 12 | 17 | 0 | 42 | 19 | 45 | 0 | 47 | 144 | 6 | 1 | 17 | 236 | 34 | 4 | 638 |
| 6:30 PM | 19 | 16 | 20 | 0 | 26 | 13 | 42 | 0 | 49 | 137 | 8 | 0 | 16 | 185 | 22 | 4 | 557 |
| 6:45 PM | 14 | 17 | 20 | 0 | 25 | 10 | 35 | 0 | 43 | 107 | 9 | 1 | 13 | 194 | 24 | 4 | 516 |
| TOTAL VOLUMES : | 261 | 288 | 201 | 0 | 505 | 213 | 824 | 2 | 670 | 2026 | 114 | 13 | 168 | 2930 | 325 | 37 | 8577 |
| APPROACH %'s : | 34.80% | 38.40% | 26.80% | 0.00% | 32.71% | 13.80% | 53.37% | 0.13% | 23.73% | 71.77% | 4.04% | 0.46% | 4.86% | 84.68% | 9.39% | 1.07% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 114 | 95 | 67 | 0 | 212 | 83 | 377 | 2 | 258 | 794 | 40 | 2 | 56 | 1074 | 106 | 10 | 3290 |
| PEAK HR FACTOR : | 0.891 | 0.848 | 0.798 | 0.000 | 0.736 | 0.902 | 0.915 | 0.500 | 0.908 | 0.890 | 0.714 | 0.500 | 0.737 | 0.869 | 0.663 | 0.625 | 0.963 |
| | | | | | 0.911 | | | | 0.900 | | | | 0.916 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/Winchester St & US 17/US 211/Broadview Ave
City: Warrenton
Control: Signalized

Project ID: 23-260020-001
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | US 17/Winchester St | | | | US 17/Winchester St | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | |
|-------------------------|---------------------|---------|---------|---------|---------------------|-----------|---------|---------|----------------------------|-----------|-----------|---------|----------------------------|---------|---------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 6:00 AM | 5 | 5 | 2 | 0 | 27 | 3 | 14 | 0 | 16 | 149 | 2 | 1 | 2 | 48 | 21 | 1 | 296 |
| 6:15 AM | 7 | 0 | 6 | 0 | 15 | 2 | 19 | 0 | 18 | 163 | 1 | 1 | 0 | 74 | 31 | 1 | 338 |
| 6:30 AM | 7 | 9 | 8 | 0 | 17 | 1 | 29 | 0 | 15 | 171 | 1 | 0 | 0 | 87 | 27 | 0 | 372 |
| 6:45 AM | 12 | 11 | 8 | 0 | 27 | 5 | 43 | 0 | 22 | 160 | 0 | 3 | 5 | 112 | 31 | 0 | 439 |
| 7:00 AM | 12 | 13 | 10 | 0 | 26 | 3 | 92 | 0 | 39 | 165 | 1 | 1 | 7 | 127 | 40 | 0 | 536 |
| 7:15 AM | 19 | 7 | 11 | 0 | 28 | 8 | 83 | 0 | 55 | 196 | 5 | 2 | 6 | 112 | 30 | 1 | 563 |
| 7:30 AM | 14 | 25 | 13 | 0 | 25 | 9 | 30 | 0 | 81 | 213 | 13 | 1 | 6 | 146 | 48 | 0 | 624 |
| 7:45 AM | 25 | 42 | 31 | 0 | 33 | 40 | 61 | 0 | 70 | 159 | 5 | 2 | 5 | 155 | 63 | 1 | 692 |
| 8:00 AM | 12 | 18 | 12 | 0 | 22 | 25 | 61 | 0 | 54 | 199 | 6 | 2 | 9 | 131 | 27 | 1 | 579 |
| 8:15 AM | 16 | 16 | 11 | 0 | 24 | 17 | 57 | 0 | 39 | 157 | 6 | 0 | 11 | 136 | 26 | 1 | 517 |
| 8:30 AM | 23 | 9 | 21 | 0 | 27 | 13 | 49 | 0 | 51 | 155 | 12 | 2 | 11 | 108 | 25 | 3 | 509 |
| 8:45 AM | 14 | 17 | 7 | 0 | 43 | 26 | 50 | 0 | 52 | 166 | 16 | 4 | 3 | 125 | 22 | 3 | 548 |
| TOTAL VOLUMES : | 166 | 172 | 140 | 0 | 314 | 152 | 588 | 0 | 512 | 2053 | 68 | 19 | 65 | 1361 | 391 | 12 | 6013 |
| APPROACH %'s : | 34.73% | 35.98% | 29.29% | 0.00% | 29.79% | 14.42% | 55.79% | 0.00% | 19.31% | 77.41% | 2.56% | 0.72% | 3.55% | 74.41% | 21.38% | 0.66% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 70 | 92 | 67 | 0 | 108 | 82 | 235 | 0 | 260 | 767 | 29 | 7 | 26 | 544 | 168 | 3 | 2458 |
| PEAK HR FACTOR : | 0.700 | 0.548 | 0.540 | 0.000 | 0.818 | 0.513 | 0.708 | 0.000 | 0.802 | 0.900 | 0.558 | 0.875 | 0.722 | 0.877 | 0.667 | 0.750 | 0.888 |
| | | | | | 0.793 | | | | 0.863 | | | | 0.827 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 4:00 PM | 29 | 18 | 21 | 0 | 72 | 18 | 90 | 1 | 50 | 190 | 14 | 0 | 7 | 303 | 23 | 1 | 837 |
| 4:15 PM | 32 | 27 | 15 | 0 | 45 | 23 | 79 | 1 | 67 | 164 | 9 | 1 | 19 | 235 | 40 | 1 | 758 |
| 4:30 PM | 24 | 27 | 16 | 0 | 49 | 23 | 101 | 0 | 69 | 220 | 9 | 1 | 17 | 251 | 24 | 4 | 835 |
| 4:45 PM | 29 | 22 | 15 | 0 | 44 | 19 | 91 | 0 | 64 | 205 | 8 | 0 | 13 | 260 | 17 | 4 | 791 |
| 5:00 PM | 12 | 35 | 13 | 0 | 47 | 14 | 61 | 0 | 67 | 168 | 13 | 2 | 13 | 261 | 23 | 4 | 733 |
| 5:15 PM | 18 | 34 | 17 | 0 | 46 | 18 | 74 | 0 | 59 | 177 | 11 | 1 | 13 | 278 | 28 | 1 | 775 |
| 5:30 PM | 22 | 29 | 15 | 0 | 28 | 18 | 67 | 0 | 44 | 181 | 7 | 4 | 12 | 214 | 40 | 1 | 682 |
| 5:45 PM | 16 | 27 | 16 | 0 | 37 | 23 | 72 | 0 | 45 | 172 | 8 | 1 | 7 | 250 | 24 | 6 | 704 |
| 6:00 PM | 31 | 23 | 15 | 0 | 42 | 14 | 44 | 0 | 53 | 132 | 12 | 1 | 19 | 220 | 23 | 3 | 632 |
| 6:15 PM | 14 | 12 | 17 | 0 | 42 | 19 | 44 | 0 | 46 | 141 | 6 | 1 | 17 | 235 | 33 | 4 | 631 |
| 6:30 PM | 19 | 16 | 19 | 0 | 26 | 13 | 42 | 0 | 48 | 137 | 8 | 0 | 16 | 179 | 22 | 4 | 549 |
| 6:45 PM | 14 | 17 | 20 | 0 | 25 | 10 | 35 | 0 | 42 | 104 | 9 | 1 | 13 | 191 | 23 | 4 | 508 |
| TOTAL VOLUMES : | 260 | 287 | 199 | 0 | 503 | 212 | 800 | 2 | 654 | 1991 | 114 | 13 | 166 | 2877 | 320 | 37 | 8435 |
| APPROACH %'s : | 34.85% | 38.47% | 26.68% | 0.00% | 33.16% | 13.97% | 52.74% | 0.13% | 23.59% | 71.83% | 4.11% | 0.47% | 4.88% | 84.62% | 9.41% | 1.09% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 114 | 94 | 67 | 0 | 210 | 83 | 361 | 2 | 250 | 779 | 40 | 2 | 56 | 1049 | 104 | 10 | 3221 |
| PEAK HR FACTOR : | 0.891 | 0.870 | 0.798 | 0.000 | 0.729 | 0.902 | 0.894 | 0.500 | 0.906 | 0.885 | 0.714 | 0.500 | 0.737 | 0.866 | 0.650 | 0.625 | 0.962 |
| | | | | | 0.906 | | | | 0.895 | | | | 0.912 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/Winchester St & US 17/US 211/Broadview Ave
 City: Warrenton
 Control: Signalized

Project ID: 23-260020-001
 Date: 2/9/2023

Data - HT

| NS/EW Streets: | US 17/Winchester St | | | | US 17/Winchester St | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | |
|-------------------------|---------------------|---------|---------|---------|---------------------|-----------|---------|---------|----------------------------|-----------|-----------|---------|----------------------------|---------|---------|---------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 6:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 4 | 1 | 0 | 12 |
| 6:30 AM | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 8 | 1 | 0 | 0 | 3 | 0 | 0 | 18 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 1 | 10 | 1 | 0 | 18 |
| 7:00 AM | 1 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 7 | 6 | 0 | 0 | 0 | 7 | 1 | 0 | 28 |
| 7:15 AM | 1 | 1 | 0 | 0 | 3 | 0 | 6 | 0 | 3 | 12 | 0 | 0 | 0 | 7 | 1 | 0 | 34 |
| 7:30 AM | 1 | 0 | 1 | 0 | 3 | 0 | 4 | 0 | 2 | 7 | 0 | 0 | 0 | 8 | 1 | 0 | 27 |
| 7:45 AM | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 3 | 10 | 0 | 0 | 0 | 7 | 1 | 0 | 25 |
| 8:00 AM | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 5 | 1 | 0 | 0 | 9 | 2 | 0 | 24 |
| 8:15 AM | 1 | 1 | 1 | 0 | 2 | 1 | 2 | 0 | 5 | 8 | 0 | 0 | 0 | 23 | 3 | 0 | 47 |
| 8:30 AM | 1 | 2 | 0 | 0 | 2 | 0 | 12 | 0 | 1 | 4 | 1 | 0 | 0 | 17 | 3 | 0 | 43 |
| 8:45 AM | 2 | 0 | 1 | 0 | 2 | 0 | 4 | 0 | 1 | 4 | 0 | 0 | 1 | 16 | 2 | 0 | 33 |
| TOTAL VOLUMES : | 11 | 5 | 4 | 0 | 16 | 2 | 38 | 0 | 34 | 77 | 3 | 0 | 2 | 111 | 16 | 0 | 319 |
| APPROACH %'s : | 55.00% | 25.00% | 20.00% | 0.00% | 28.57% | 3.57% | 67.86% | 0.00% | 29.82% | 67.54% | 2.63% | 0.00% | 1.55% | 86.05% | 12.40% | 0.00% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 6 | 2 | 2 | 0 | 7 | 1 | 10 | 0 | 11 | 34 | 1 | 0 | 0 | 31 | 5 | 0 | 110 |
| PEAK HR FACTOR : | 0.750 | 0.500 | 0.500 | 0.000 | 0.583 | 0.250 | 0.417 | 0.000 | 0.917 | 0.708 | 0.250 | 0.000 | 0.000 | 0.861 | 0.625 | 0.000 | 0.809 |
| | 0.833 | | | | 0.500 | | | | 0.767 | | | | 0.818 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 4 | 0 | 0 | 0 | 6 | 0 | 0 | 15 |
| 4:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 2 | 3 | 0 | 0 | 0 | 5 | 0 | 0 | 18 |
| 4:30 PM | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 3 | 0 | 0 | 0 | 10 | 0 | 0 | 19 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 5 | 0 | 0 | 0 | 4 | 2 | 0 | 17 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 1 | 4 | 0 | 0 | 10 |
| 5:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 6 | 0 | 0 | 12 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 9 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 4 | 0 | 0 | 1 | 2 | 1 | 0 | 12 |
| 6:00 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 7 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 7 |
| 6:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 8 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 3 | 1 | 0 | 8 |
| TOTAL VOLUMES : | 1 | 1 | 2 | 0 | 2 | 1 | 24 | 0 | 16 | 35 | 0 | 0 | 2 | 53 | 5 | 0 | 142 |
| APPROACH %'s : | 25.00% | 25.00% | 50.00% | 0.00% | 7.41% | 3.70% | 88.89% | 0.00% | 31.37% | 68.63% | 0.00% | 0.00% | 3.33% | 88.33% | 8.33% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 1 | 0 | 0 | 2 | 0 | 16 | 0 | 8 | 15 | 0 | 0 | 0 | 25 | 2 | 0 | 69 |
| PEAK HR FACTOR : | 0.000 | 0.250 | 0.000 | 0.000 | 0.500 | 0.000 | 0.571 | 0.000 | 0.667 | 0.750 | 0.000 | 0.000 | 0.000 | 0.625 | 0.250 | 0.000 | 0.908 |
| | 0.250 | | | | 0.563 | | | | 0.719 | | | | 0.675 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/Winchester St & US 17/US 211/Broadview Ave
 City: Warrenton
 Control: Signalized

Project ID: 23-260020-001
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | US 17/Winchester St | | | | US 17/Winchester St | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | | |
|-------------------------|---------------------|---------|---------|---------|---------------------|-----------|---------|---------|----------------------------|-----------|-----------|---------|----------------------------|---------|---------|---------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
|-------------------------|---------------------|---------|---------|---------|------------|-----------|---------|---------|-----------|-----------|-----------|---------|-----------|---------|---------|---------|-------|-------|
| | 1 NL | 1 NT | 1 NR | 0 NU | 1.5 SL | 0.5 ST | 1 SR | 0 SU | 2 EL | 1.5 ET | 0.5 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | 0.00% | 100.00% | 0.00% | 0.00% | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning** Movement Count

Location: US 17/Winchester St & US 17/US 211/Broadview Ave
City: Warrenton

Project ID: 23-260020-001
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | US 17/Winchester St | | US 17/Winchester St | | US 17/US 211/Broadview Ave | | US 17/US 211/Broadview Ave | | TOTAL |
|-------------------------|---------------------|--------|---------------------|----|----------------------------|----|----------------------------|--------|-------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| 8:30 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:45 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 5 |
| | 50.00% | 50.00% | | | | | 33.33% | 66.67% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

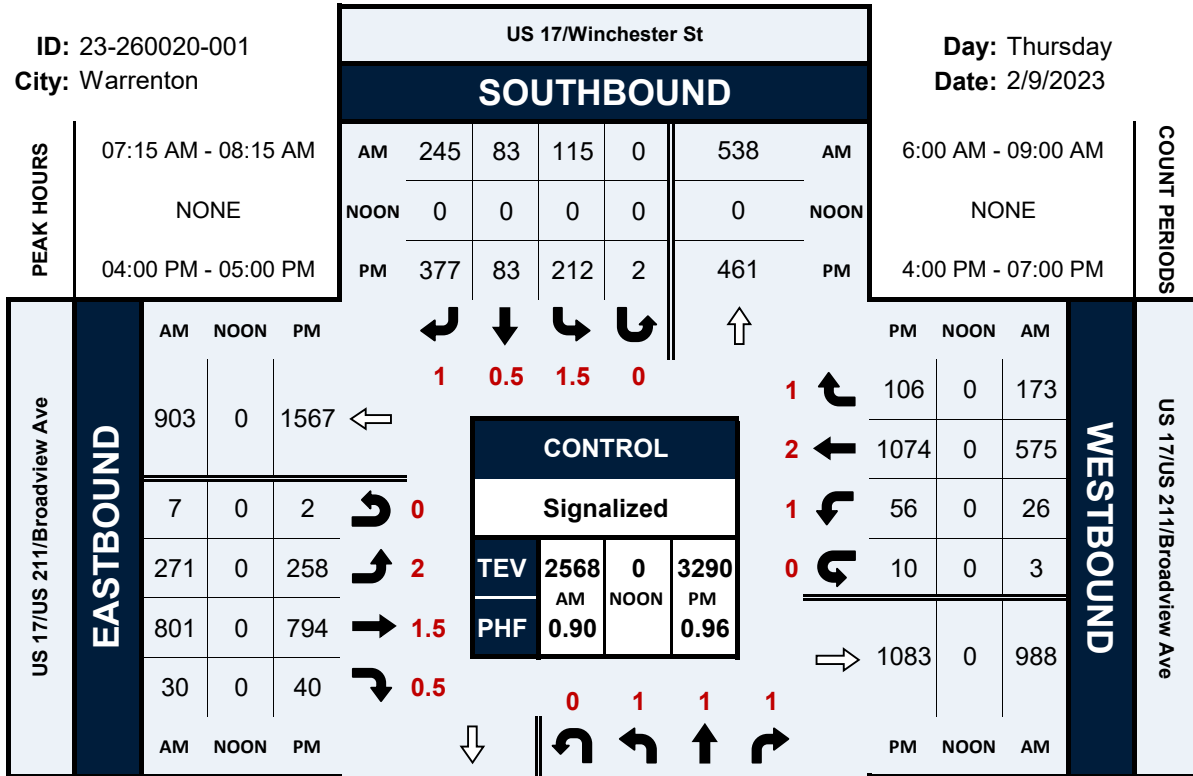
| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|--------|-----------|--------|----------|--------|----------|-------|-------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 4 |
| 4:15 PM | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 5 |
| 4:30 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 6 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 5 |
| 6:15 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 7 | 1 | 1 | 4 | 7 | 8 | 2 | 0 | 30 |
| | 87.50% | 12.50% | 20.00% | 80.00% | 46.67% | 53.33% | 100.00% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 4 | 1 | 0 | 3 | 2 | 4 | 2 | 0 | 16 |
| PEAK HR FACTOR : | 0.500 | 0.250 | | 0.375 | 0.500 | 0.500 | 0.250 | 0.250 | 0.667 |
| | | 0.625 | | 0.375 | | 0.500 | | 0.250 | |

US 17/Winchester St & US 17/US 211/Broadview Ave

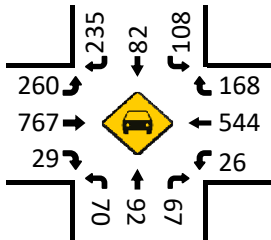
Peak Hour Turning Movement Count

ID: 23-260020-001
City: Warrenton

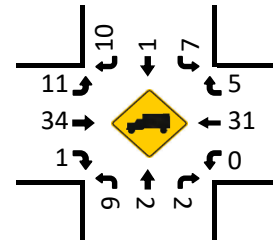
Day: Thursday
Date: 2/9/2023



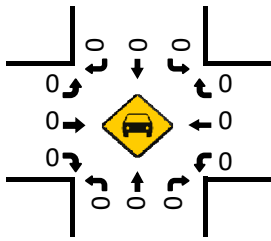
Cars (AM)



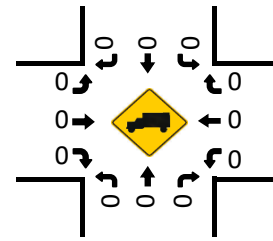
HT (AM)



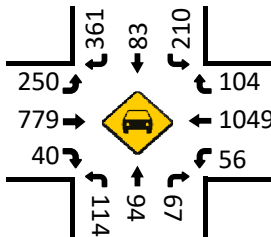
Cars (NOON)



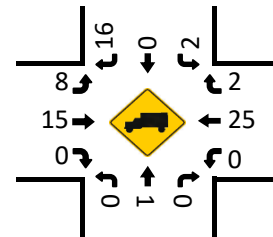
HT (NOON)



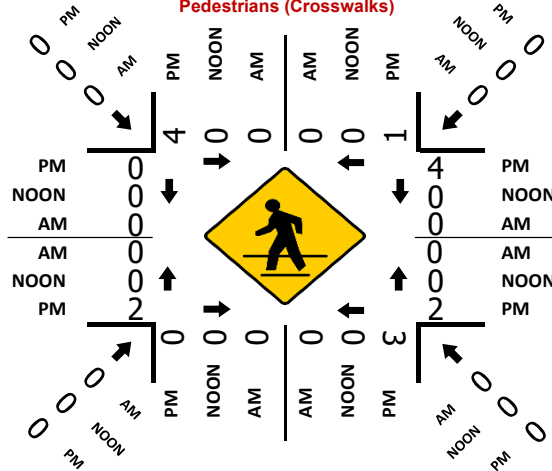
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/US 211/Broadview Ave
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-002
Date: 2/9/2023

Data - Total

| NS/EW Streets: | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | TOTAL |
|-------------------------|---|-------|-------|-------|---|-------|---------|-------|----------------------------|---------|-------|-------|----------------------------|--------|-------|-------|--------------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 183 | 0 | 0 | 0 | 67 | 2 | 0 | 252 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 192 | 0 | 0 | 0 | 115 | 0 | 0 | 307 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 203 | 0 | 0 | 0 | 113 | 2 | 0 | 318 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 196 | 0 | 0 | 0 | 157 | 1 | 0 | 356 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 212 | 0 | 0 | 0 | 185 | 4 | 0 | 402 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 244 | 0 | 0 | 0 | 164 | 3 | 0 | 414 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 269 | 0 | 0 | 0 | 196 | 9 | 0 | 477 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 236 | 0 | 0 | 0 | 234 | 9 | 0 | 487 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 236 | 0 | 0 | 0 | 168 | 6 | 0 | 413 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 207 | 0 | 0 | 0 | 196 | 7 | 0 | 416 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 208 | 0 | 0 | 0 | 159 | 10 | 0 | 383 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 230 | 0 | 0 | 0 | 168 | 23 | 0 | 428 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 2616 | 0 | 0 | 0 | 1922 | 76 | 0 | 4653 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 96.20% | 3.80% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 948 | 0 | 0 | 0 | 794 | 31 | 0 | 1793 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.625 | 0.000 | 0.000 | 0.881 | 0.000 | 0.000 | 0.000 | 0.848 | 0.861 | 0.000 | 0.920 |
| | | | | | | | 0.625 | | | | 0.881 | | | | 0.849 | | |
| PM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 291 | 0 | 0 | 0 | 320 | 25 | 0 | 653 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 227 | 0 | 0 | 0 | 284 | 25 | 0 | 555 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 295 | 0 | 0 | 0 | 286 | 18 | 0 | 616 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 271 | 0 | 0 | 0 | 274 | 34 | 0 | 605 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 236 | 0 | 0 | 0 | 295 | 35 | 0 | 586 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 245 | 0 | 0 | 0 | 302 | 24 | 0 | 597 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 223 | 0 | 0 | 0 | 244 | 16 | 0 | 499 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 239 | 0 | 0 | 0 | 277 | 38 | 0 | 574 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 190 | 0 | 0 | 0 | 250 | 38 | 0 | 507 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 212 | 0 | 0 | 0 | 248 | 42 | 0 | 527 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 185 | 0 | 0 | 0 | 203 | 22 | 0 | 434 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 158 | 0 | 0 | 0 | 219 | 22 | 0 | 420 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 260 | 0 | 0 | 2772 | 0 | 0 | 0 | 3202 | 339 | 0 | 6573 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 90.43% | 9.57% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 0 | 1084 | 0 | 0 | 0 | 1164 | 102 | 0 | 2429 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.760 | 0.000 | 0.000 | 0.919 | 0.000 | 0.000 | 0.000 | 0.909 | 0.750 | 0.000 | 0.930 |
| | | | | | | | 0.760 | | | | 0.919 | | | | 0.917 | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/US 211/Broadview Ave
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-002
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | TOTAL |
|-------------------------|---|-------|-------|-------|---|-------|---------|-------|----------------------------|---------|-------|-------|----------------------------|--------|-------|-------|--------------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 176 | 0 | 0 | 0 | 67 | 2 | 0 | 245 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 188 | 0 | 0 | 0 | 110 | 0 | 0 | 298 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 194 | 0 | 0 | 0 | 110 | 2 | 0 | 306 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 193 | 0 | 0 | 0 | 144 | 1 | 0 | 340 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 205 | 0 | 0 | 0 | 178 | 4 | 0 | 388 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 229 | 0 | 0 | 0 | 156 | 3 | 0 | 390 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 258 | 0 | 0 | 0 | 188 | 9 | 0 | 458 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 224 | 0 | 0 | 0 | 225 | 9 | 0 | 466 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 231 | 0 | 0 | 0 | 156 | 6 | 0 | 396 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 196 | 0 | 0 | 0 | 172 | 7 | 0 | 381 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 204 | 0 | 0 | 0 | 137 | 10 | 0 | 357 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 221 | 0 | 0 | 0 | 151 | 23 | 0 | 402 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 2519 | 0 | 0 | 0 | 1794 | 76 | 0 | 4427 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 95.94% | 4.06% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 909 | 0 | 0 | 0 | 741 | 31 | 0 | 1701 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.625 | 0.000 | 0.000 | 0.881 | 0.000 | 0.000 | 0.000 | 0.823 | 0.861 | 0.000 | 0.913 |
| | | | | | | | 0.625 | | | | | | | | 0.825 | | |
| PM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 286 | 0 | 0 | 0 | 314 | 25 | 0 | 642 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 223 | 0 | 0 | 0 | 277 | 25 | 0 | 544 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 291 | 0 | 0 | 0 | 278 | 18 | 0 | 604 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 266 | 0 | 0 | 0 | 268 | 34 | 0 | 594 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 234 | 0 | 0 | 0 | 291 | 35 | 0 | 579 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 241 | 0 | 0 | 0 | 296 | 24 | 0 | 587 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 221 | 0 | 0 | 0 | 241 | 16 | 0 | 493 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 235 | 0 | 0 | 0 | 273 | 38 | 0 | 566 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 187 | 0 | 0 | 0 | 248 | 38 | 0 | 502 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 209 | 0 | 0 | 0 | 246 | 42 | 0 | 522 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 184 | 0 | 0 | 0 | 197 | 22 | 0 | 427 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 155 | 0 | 0 | 0 | 215 | 22 | 0 | 413 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 258 | 0 | 0 | 2732 | 0 | 0 | 0 | 3144 | 339 | 0 | 6473 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 90.27% | 9.73% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 79 | 0 | 0 | 1066 | 0 | 0 | 0 | 1137 | 102 | 0 | 2384 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.760 | 0.000 | 0.000 | 0.916 | 0.000 | 0.000 | 0.000 | 0.905 | 0.750 | 0.000 | 0.928 |
| | | | | | | | 0.760 | | | | | | | | 0.914 | | |

National Data & Surveying Services Intersection Turning Movement Count

Location: Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/US 211/Broadview Ave
 City: Warrenton
 Control: 1-Way Stop(SB)

Project ID: 23-260020-002
 Date: 2/9/2023

Data - HT

| NS/EW Streets: | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | |
|-------------------------|---|-------|-------|-------|---|-------|---------|-------|----------------------------|---------|-------|-------|----------------------------|---------|-------|-------|--------------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 5 | 0 | 0 | 9 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 3 | 0 | 0 | 12 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 13 | 0 | 0 | 16 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 7 | 0 | 0 | 14 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 15 | 0 | 0 | 0 | 8 | 0 | 0 | 24 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 8 | 0 | 0 | 19 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 9 | 0 | 0 | 21 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 12 | 0 | 0 | 17 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 24 | 0 | 0 | 35 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 22 | 0 | 0 | 26 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 17 | 0 | 0 | 26 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 97 | 0 | 0 | 0 | 128 | 0 | 0 | 226 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 0 | 0 | 0 | 53 | 0 | 0 | 92 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.813 | 0.000 | 0.000 | 0.000 | 0.552 | 0.000 | 0.000 | 0.657 |
| | | | | | | | | | | 0.813 | | | | 0.552 | | | |
| PM | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 6 | 0 | 0 | 11 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 7 | 0 | 0 | 11 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 8 | 0 | 0 | 12 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 6 | 0 | 0 | 11 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 7 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 6 | 0 | 0 | 10 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 6 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 8 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 5 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 5 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 7 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 7 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 40 | 0 | 0 | 0 | 58 | 0 | 0 | 100 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 27 | 0 | 0 | 45 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.900 | 0.000 | 0.000 | 0.000 | 0.844 | 0.000 | 0.000 | 0.938 |
| | | | | | | | | | | 0.900 | | | | 0.844 | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/US 211/Broadview Ave
 City: Warrenton
 Control: 1-Way Stop(SB)

Project ID: 23-260020-002
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy | | | | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | |
|-------------------------|---|-------|-------|-------|---|-------|-------|-------|----------------------------|---------|-------|-------|----------------------------|-------|-------|-------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| APPROACH %'s : | | | | | | | | | 0.00% | 100.00% | 0.00% | 0.00% | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services Intersection Turning Movement Count

Location: Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/L Project ID: 23-260020-002
City: Warrenton Date: 2/9/2023

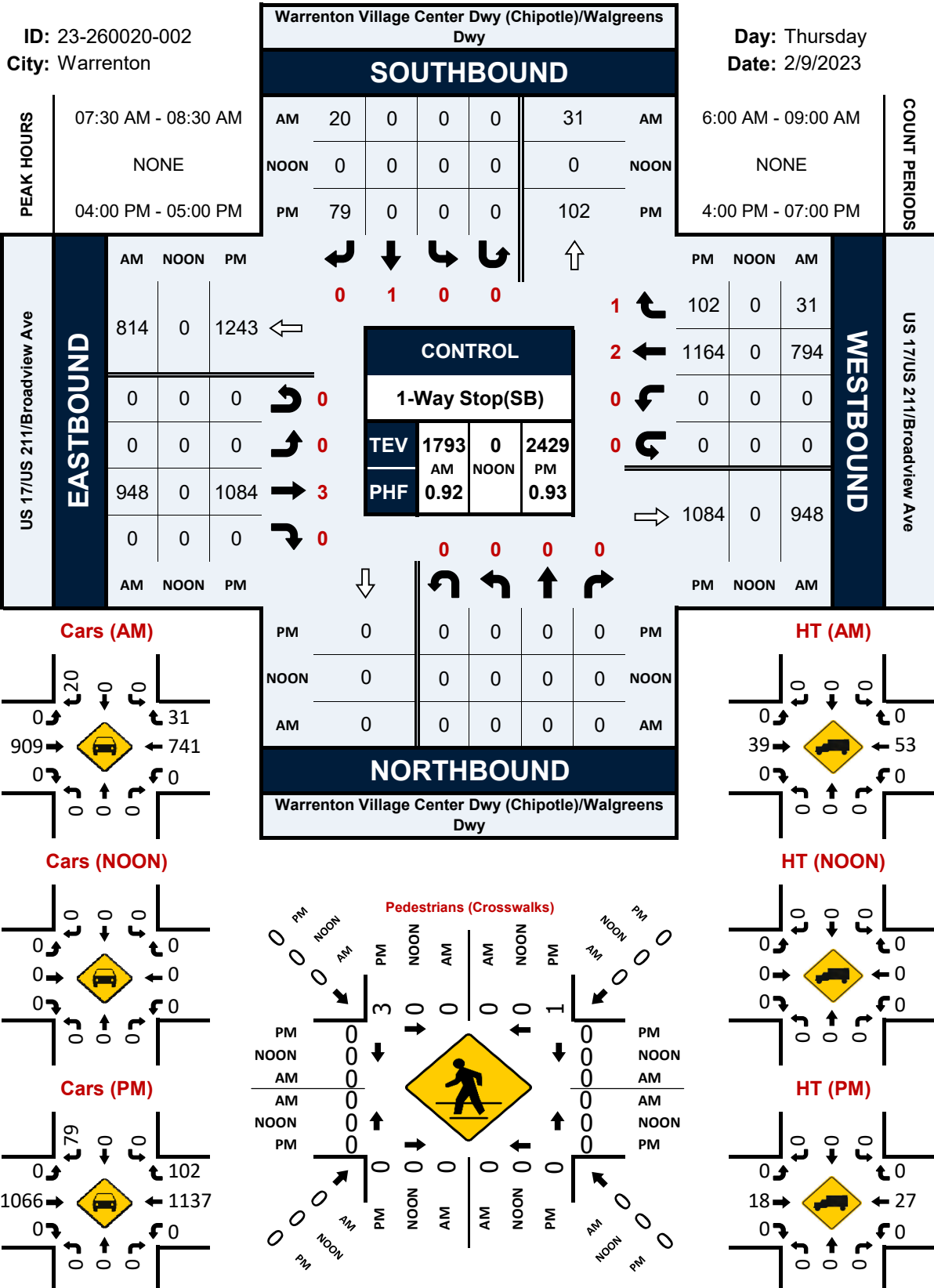
Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Warrenton Village Center Dwy (Chipotle)/Walgreens | Warrenton Village Center Dwy (Chipotle)/Walgreens | US 17/US 211/Broadview Ave | US 17/US 211/Broadview Ave | | | | | |
|-------------------------|--|--|-------------------------------|-------------------------------|----------|---------|----------|---------|------------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 1 | WB 0 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 1 |
| APPROACH %'s : | 100.00% | 0.00% | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|----------|---------|----------|---------|------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:30 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:00 PM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 4 | WB 3 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 7 |
| APPROACH %'s : | 57.14% | 42.86% | | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| PEAK HR FACTOR : | 0.375 | 0.250 | | | | | | | 0.500 |

Warrenton Village Center Dwy (Chipotle)/Walgreens Dwy & US 17/US 211/Broadview Ave

Peak Hour Turning Movement Count



National Data & Surveying Services Intersection Turning Movement Count

Location: Branch Dr & US 211/Lee Hwy/Broadview Ave
City: Warrenton
Control: Signalized

Project ID: 23-260020-003
Date: 2/9/2023

Data - Total

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | US 211/Lee Hwy/Broadview Ave | | | | US 211/Lee Hwy/Broadview Ave | | | | TOTAL |
|-------------------------|----------------------------|--------|--------|-------|------------|--------|--------|-------|------------------------------|--------|-------|-------|------------------------------|--------|-------|-------|--------------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 1 | 0 | 4 | 0 | 3 | 1 | 1 | 0 | 0 | 180 | 0 | 0 | 3 | 69 | 3 | 0 | 265 |
| 6:15 AM | 0 | 0 | 4 | 0 | 2 | 1 | 7 | 0 | 4 | 180 | 0 | 0 | 6 | 106 | 3 | 0 | 313 |
| 6:30 AM | 0 | 0 | 8 | 0 | 1 | 1 | 4 | 0 | 4 | 190 | 0 | 0 | 11 | 114 | 3 | 0 | 336 |
| 6:45 AM | 1 | 1 | 7 | 0 | 2 | 0 | 8 | 0 | 9 | 176 | 0 | 0 | 7 | 152 | 9 | 0 | 372 |
| 7:00 AM | 3 | 0 | 6 | 0 | 1 | 1 | 12 | 0 | 5 | 213 | 1 | 1 | 11 | 167 | 4 | 0 | 425 |
| 7:15 AM | 2 | 0 | 8 | 0 | 5 | 5 | 7 | 0 | 8 | 225 | 0 | 2 | 10 | 158 | 6 | 0 | 436 |
| 7:30 AM | 4 | 4 | 14 | 0 | 3 | 1 | 9 | 0 | 6 | 245 | 0 | 2 | 10 | 192 | 15 | 0 | 505 |
| 7:45 AM | 2 | 5 | 10 | 0 | 11 | 3 | 11 | 0 | 9 | 220 | 0 | 3 | 11 | 223 | 18 | 0 | 526 |
| 8:00 AM | 1 | 2 | 8 | 0 | 10 | 2 | 4 | 0 | 7 | 215 | 0 | 1 | 11 | 172 | 12 | 0 | 445 |
| 8:15 AM | 3 | 0 | 6 | 0 | 10 | 2 | 26 | 0 | 7 | 195 | 1 | 1 | 12 | 169 | 6 | 0 | 438 |
| 8:30 AM | 4 | 3 | 9 | 0 | 12 | 5 | 9 | 0 | 10 | 187 | 0 | 2 | 17 | 156 | 5 | 2 | 421 |
| 8:45 AM | 0 | 3 | 11 | 0 | 11 | 2 | 11 | 0 | 11 | 214 | 2 | 3 | 17 | 176 | 14 | 0 | 475 |
| TOTAL VOLUMES : | 21 | 18 | 95 | 0 | 71 | 24 | 109 | 0 | 80 | 2440 | 4 | 15 | 126 | 1854 | 98 | 2 | 4957 |
| APPROACH %'s : | 15.67% | 13.43% | 70.90% | 0.00% | 34.80% | 11.76% | 53.43% | 0.00% | 3.15% | 96.10% | 0.16% | 0.59% | 6.06% | 89.13% | 4.71% | 0.10% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 10 | 11 | 38 | 0 | 34 | 8 | 50 | 0 | 29 | 875 | 1 | 7 | 44 | 756 | 51 | 0 | 1914 |
| PEAK HR FACTOR : | 0.625 | 0.550 | 0.679 | 0.000 | 0.773 | 0.667 | 0.481 | 0.000 | 0.806 | 0.893 | 0.250 | 0.583 | 0.917 | 0.848 | 0.708 | 0.000 | 0.910 |
| | 0.670 | | | | | | | | | | | | | | | | 0.844 |
| | 0.605 | | | | | | | | | | | | | | | | 0.901 |
| PM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 7 | 4 | 15 | 0 | 40 | 4 | 39 | 0 | 23 | 252 | 1 | 1 | 17 | 275 | 26 | 1 | 705 |
| 4:15 PM | 3 | 4 | 18 | 0 | 39 | 4 | 36 | 0 | 34 | 208 | 1 | 3 | 14 | 272 | 23 | 0 | 659 |
| 4:30 PM | 5 | 7 | 20 | 0 | 34 | 6 | 24 | 0 | 35 | 218 | 0 | 1 | 15 | 269 | 10 | 0 | 644 |
| 4:45 PM | 2 | 2 | 22 | 0 | 26 | 4 | 42 | 0 | 39 | 224 | 0 | 4 | 18 | 277 | 25 | 0 | 685 |
| 5:00 PM | 2 | 3 | 16 | 0 | 30 | 7 | 31 | 0 | 28 | 205 | 1 | 4 | 19 | 298 | 22 | 2 | 668 |
| 5:15 PM | 4 | 8 | 16 | 0 | 26 | 6 | 31 | 0 | 29 | 203 | 0 | 3 | 14 | 266 | 15 | 2 | 623 |
| 5:30 PM | 3 | 4 | 13 | 0 | 30 | 1 | 20 | 0 | 18 | 187 | 0 | 3 | 13 | 241 | 19 | 0 | 552 |
| 5:45 PM | 5 | 2 | 17 | 0 | 31 | 2 | 21 | 0 | 25 | 210 | 0 | 3 | 22 | 279 | 19 | 0 | 636 |
| 6:00 PM | 6 | 2 | 12 | 0 | 44 | 5 | 28 | 0 | 29 | 160 | 1 | 1 | 16 | 262 | 15 | 0 | 581 |
| 6:15 PM | 3 | 5 | 17 | 0 | 30 | 4 | 25 | 0 | 19 | 160 | 0 | 6 | 13 | 247 | 17 | 1 | 547 |
| 6:30 PM | 4 | 4 | 16 | 0 | 32 | 4 | 21 | 0 | 13 | 162 | 0 | 0 | 22 | 202 | 19 | 5 | 504 |
| 6:45 PM | 1 | 1 | 9 | 0 | 27 | 9 | 20 | 0 | 17 | 149 | 0 | 4 | 10 | 214 | 11 | 0 | 472 |
| TOTAL VOLUMES : | 45 | 46 | 191 | 0 | 389 | 56 | 338 | 0 | 309 | 2338 | 4 | 33 | 193 | 3102 | 221 | 11 | 7276 |
| APPROACH %'s : | 15.96% | 16.31% | 67.73% | 0.00% | 49.68% | 7.15% | 43.17% | 0.00% | 11.51% | 87.11% | 0.15% | 1.23% | 5.47% | 87.95% | 6.27% | 0.31% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 17 | 17 | 75 | 0 | 139 | 18 | 141 | 0 | 131 | 902 | 2 | 9 | 64 | 1093 | 84 | 1 | 2693 |
| PEAK HR FACTOR : | 0.607 | 0.607 | 0.852 | 0.000 | 0.869 | 0.750 | 0.839 | 0.000 | 0.840 | 0.895 | 0.500 | 0.563 | 0.889 | 0.986 | 0.808 | 0.250 | 0.955 |
| | 0.852 | | | | | | | | | | | | | | | | 0.970 |
| | 0.898 | | | | | | | | | | | | | | | | 0.942 |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & US 211/Lee Hwy/Broadview Ave
City: Warrenton
Control: Signalized

Project ID: 23-260020-003
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | US 211/Lee Hwy/Broadview Ave | | | | US 211/Lee Hwy/Broadview Ave | | | | TOTAL |
|-------------------------|---------------------|--------|--------|-------|------------|--------|--------|-------|------------------------------|--------|-------|-------|------------------------------|--------|-------|-------|-------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 1 | 0 | 4 | 0 | 3 | 1 | 1 | 0 | 0 | 174 | 0 | 0 | 3 | 69 | 3 | 0 | 259 |
| 6:15 AM | 0 | 0 | 4 | 0 | 2 | 1 | 6 | 0 | 3 | 176 | 0 | 0 | 6 | 102 | 3 | 0 | 303 |
| 6:30 AM | 0 | 0 | 8 | 0 | 1 | 1 | 4 | 0 | 3 | 183 | 0 | 0 | 11 | 111 | 3 | 0 | 325 |
| 6:45 AM | 1 | 1 | 6 | 0 | 1 | 0 | 5 | 0 | 9 | 173 | 0 | 0 | 6 | 142 | 9 | 0 | 353 |
| 7:00 AM | 3 | 0 | 6 | 0 | 1 | 1 | 11 | 0 | 5 | 206 | 1 | 1 | 11 | 161 | 4 | 0 | 411 |
| 7:15 AM | 2 | 0 | 8 | 0 | 4 | 5 | 7 | 0 | 8 | 210 | 0 | 2 | 10 | 150 | 6 | 0 | 412 |
| 7:30 AM | 4 | 4 | 14 | 0 | 3 | 1 | 9 | 0 | 6 | 235 | 0 | 2 | 10 | 184 | 15 | 0 | 487 |
| 7:45 AM | 2 | 5 | 10 | 0 | 11 | 3 | 11 | 0 | 9 | 208 | 0 | 3 | 11 | 214 | 18 | 0 | 505 |
| 8:00 AM | 1 | 2 | 8 | 0 | 9 | 2 | 3 | 0 | 7 | 211 | 0 | 1 | 11 | 161 | 12 | 0 | 428 |
| 8:15 AM | 3 | 0 | 6 | 0 | 10 | 2 | 18 | 0 | 7 | 184 | 1 | 0 | 11 | 154 | 6 | 0 | 402 |
| 8:30 AM | 4 | 3 | 9 | 0 | 11 | 5 | 8 | 0 | 10 | 183 | 0 | 2 | 15 | 135 | 5 | 2 | 392 |
| 8:45 AM | 0 | 2 | 11 | 0 | 10 | 2 | 10 | 0 | 11 | 206 | 2 | 3 | 17 | 159 | 14 | 0 | 447 |
| TOTAL VOLUMES : | 21 | 17 | 94 | 0 | 66 | 24 | 93 | 0 | 78 | 2349 | 4 | 14 | 122 | 1742 | 98 | 2 | 4724 |
| APPROACH %'s : | 15.91% | 12.88% | 71.21% | 0.00% | 36.07% | 13.11% | 50.82% | 0.00% | 3.19% | 96.07% | 0.16% | 0.57% | 6.21% | 88.70% | 4.99% | 0.10% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 10 | 11 | 38 | 0 | 33 | 8 | 41 | 0 | 29 | 838 | 1 | 6 | 43 | 713 | 51 | 0 | 1822 |
| PEAK HR FACTOR : | 0.625 | 0.550 | 0.679 | 0.000 | 0.750 | 0.667 | 0.569 | 0.000 | 0.806 | 0.891 | 0.250 | 0.500 | 0.977 | 0.833 | 0.708 | 0.000 | 0.902 |
| | | | | | 0.683 | | | | 0.899 | | | | 0.830 | | | | |
| PM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 7 | 4 | 15 | 0 | 40 | 4 | 39 | 0 | 23 | 247 | 1 | 1 | 17 | 269 | 25 | 1 | 693 |
| 4:15 PM | 3 | 4 | 18 | 0 | 39 | 4 | 35 | 0 | 34 | 206 | 1 | 3 | 14 | 265 | 23 | 0 | 649 |
| 4:30 PM | 5 | 7 | 20 | 0 | 33 | 6 | 24 | 0 | 35 | 213 | 0 | 1 | 15 | 262 | 10 | 0 | 631 |
| 4:45 PM | 2 | 2 | 22 | 0 | 26 | 4 | 42 | 0 | 39 | 218 | 0 | 4 | 18 | 271 | 25 | 0 | 673 |
| 5:00 PM | 2 | 3 | 15 | 0 | 30 | 7 | 30 | 0 | 28 | 203 | 1 | 4 | 19 | 295 | 21 | 2 | 660 |
| 5:15 PM | 4 | 8 | 16 | 0 | 26 | 6 | 29 | 0 | 29 | 199 | 0 | 3 | 14 | 262 | 14 | 2 | 612 |
| 5:30 PM | 3 | 4 | 13 | 0 | 29 | 1 | 20 | 0 | 18 | 185 | 0 | 3 | 13 | 237 | 19 | 0 | 545 |
| 5:45 PM | 5 | 2 | 17 | 0 | 31 | 2 | 21 | 0 | 25 | 206 | 0 | 3 | 22 | 276 | 19 | 0 | 629 |
| 6:00 PM | 6 | 2 | 12 | 0 | 44 | 5 | 27 | 0 | 29 | 158 | 1 | 1 | 16 | 261 | 15 | 0 | 577 |
| 6:15 PM | 3 | 5 | 17 | 0 | 30 | 4 | 25 | 0 | 19 | 156 | 0 | 6 | 13 | 245 | 17 | 1 | 541 |
| 6:30 PM | 4 | 4 | 16 | 0 | 32 | 4 | 21 | 0 | 13 | 161 | 0 | 0 | 22 | 196 | 19 | 5 | 497 |
| 6:45 PM | 1 | 1 | 9 | 0 | 27 | 9 | 19 | 0 | 17 | 146 | 0 | 4 | 10 | 211 | 11 | 0 | 465 |
| TOTAL VOLUMES : | 45 | 46 | 190 | 0 | 387 | 56 | 332 | 0 | 309 | 2298 | 4 | 33 | 193 | 3050 | 218 | 11 | 7172 |
| APPROACH %'s : | 16.01% | 16.37% | 67.62% | 0.00% | 49.94% | 7.23% | 42.84% | 0.00% | 11.69% | 86.91% | 0.15% | 1.25% | 5.56% | 87.85% | 6.28% | 0.32% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 17 | 17 | 75 | 0 | 138 | 18 | 140 | 0 | 131 | 884 | 2 | 9 | 64 | 1067 | 83 | 1 | 2646 |
| PEAK HR FACTOR : | 0.607 | 0.607 | 0.852 | 0.000 | 0.863 | 0.750 | 0.833 | 0.000 | 0.840 | 0.895 | 0.500 | 0.563 | 0.889 | 0.984 | 0.830 | 0.250 | 0.955 |
| | | | | | 0.852 | | | | 0.892 | | | | 0.967 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & US 211/Lee Hwy/Broadview Ave
City: Warrenton
Control: Signalized

Project ID: 23-260020-003
Date: 2/9/2023

Data - HT

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | US 211/Lee Hwy/Broadview Ave | | | | US 211/Lee Hwy/Broadview Ave | | | | TOTAL |
|-------------------------|----------------------------|--------|---------|-------|------------|-------|--------|-------|------------------------------|---------|-------|-------|------------------------------|--------|-------|-------|--------------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| AM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 10 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 3 | 0 | 0 | 11 |
| 6:45 AM | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 1 | 10 | 0 | 0 | 19 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7 | 0 | 0 | 0 | 6 | 0 | 0 | 14 |
| 7:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 8 | 0 | 0 | 24 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 8 | 0 | 0 | 18 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 9 | 0 | 0 | 21 |
| 8:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 11 | 0 | 0 | 17 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 11 | 0 | 1 | 1 | 15 | 0 | 0 | 36 |
| 8:30 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 2 | 21 | 0 | 0 | 29 |
| 8:45 AM | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 8 | 0 | 0 | 0 | 17 | 0 | 0 | 28 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 0.00% | 50.00% | 50.00% | 0.00% | 23.81% | 0.00% | 76.19% | 0.00% | 2.13% | 96.81% | 0.00% | 1.06% | 3.45% | 96.55% | 0.00% | 0.00% | 233 |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 37 | 0 | 1 | 1 | 43 | 0 | 0 | 92 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.281 | 0.000 | 0.000 | 0.771 | 0.000 | 0.250 | 0.250 | 0.717 | 0.000 | 0.000 | 0.639 |
| | | | | | | | 0.313 | | | | 0.792 | | | | 0.688 | | |
| PM | 0.5 | 0.5 | 1 | 0 | 0.5 | 0.5 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 0 | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 6 | 1 | 0 | 12 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 7 | 0 | 0 | 10 |
| 4:30 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 7 | 0 | 0 | 13 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 12 |
| 5:00 PM | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 1 | 0 | 8 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 1 | 0 | 11 |
| 5:30 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 7 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 7 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 0 | 6 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 7 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 7 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 0.00% | 0.00% | 100.00% | 0.00% | 25.00% | 0.00% | 75.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 94.55% | 5.45% | 0.00% | 104 |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 18 | 0 | 0 | 0 | 26 | 1 | 0 | 47 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.250 | 0.000 | 0.000 | 0.750 | 0.000 | 0.000 | 0.000 | 0.929 | 0.250 | 0.000 | 0.904 |
| | | | | | | | 0.500 | | | | 0.750 | | | | 0.964 | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & US 211/Lee Hwy/Broadview Ave
 City: Warrenton
 Control: Signalized

Project ID: 23-260020-003
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | US 211/Lee Hwy/Broadview Ave | | | | US 211/Lee Hwy/Broadview Ave | | | | | |
|-------------------------|---------------------|-----------|---------|---------|------------|-----------|---------|---------|------------------------------|---------|---------|---------|------------------------------|---------|---------|---------|--------------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 0.5 NL | 0.5 NT | 1 NR | 0 NU | 0.5 SL | 0.5 ST | 1 SR | 0 SU | 1 EL | 2 ET | 1 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | TOTAL | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | 0 |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | 0.000 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
|-------------------------|---------------------|-----------|---------|---------|------------|-----------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|--------------|-------|
| | 0.5 NL | 0.5 NT | 1 NR | 0 NU | 0.5 SL | 0.5 ST | 1 SR | 0 SU | 1 EL | 2 ET | 1 ER | 0 EU | 1 WL | 2 WT | 1 WR | 0 WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | TOTAL | 3 |
| APPROACH %'s : | | | | | | | | | 0.00% | 100.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | 2 |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | | 2 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.000 | | 0.500 |

National Data & Surveying Services **Intersection Turning** Movement Count

Location: Branch Dr & US 211/Lee Hwy/Broadview Ave
City: Warrenton

Project ID: 23-260020-003
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Branch Dr | | Branch Dr | | US 211/Lee Hwy/Broadview Ave | | US 211/Lee Hwy/Broadview Ave | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|------------------------------|---------|------------------------------|---------|------------|
| | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| AM | | | | | | | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 3 | WB 1 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 4 |
| APPROACH %'s : | 75.00% | 25.00% | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|----------|---------|----------|---------|------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| | 4:00 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| 5:00 PM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 2 | WB 2 | EB 1 | WB 2 | NB 0 | SB 1 | NB 0 | SB 0 | TOTAL 8 |
| APPROACH %'s : | 50.00% | 50.00% | 33.33% | 66.67% | 0.00% | 100.00% | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| PEAK HR FACTOR : | 0.500 | 0.500 | 0.250 | 0.250 | | | | | 0.500 |

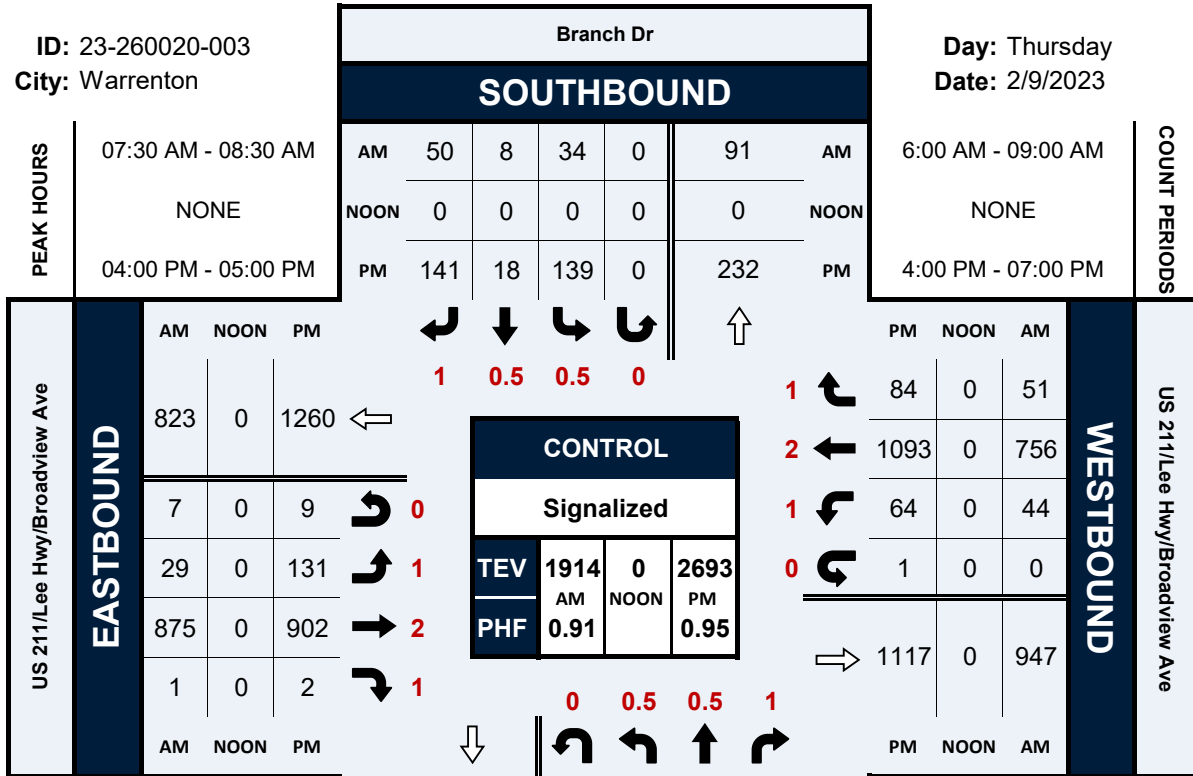
Prepared by National Data & Surveying Services

Branch Dr & US 211/Lee Hwy/Broadview Ave

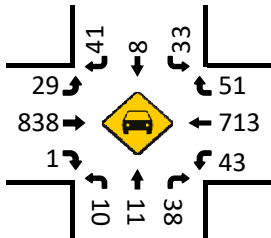
Peak Hour Turning Movement Count

ID: 23-260020-003
City: Warrenton

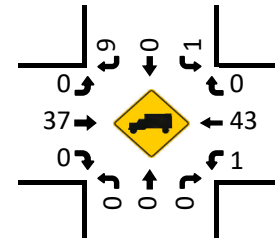
Day: Thursday
Date: 2/9/2023



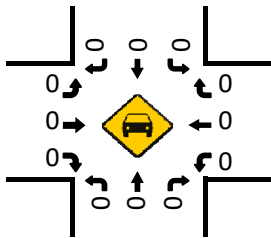
Cars (AM)



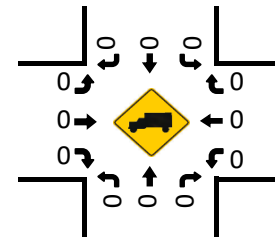
HT (AM)



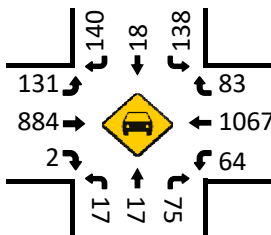
Cars (NOON)



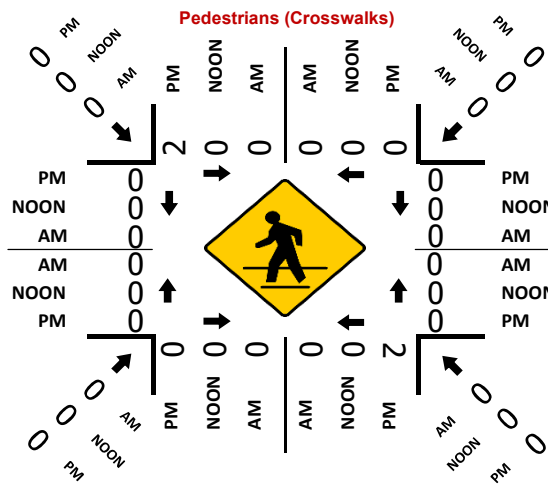
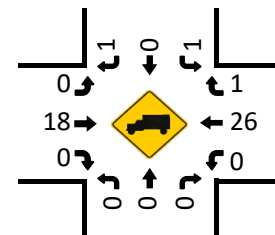
HT (NOON)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-004
Date: 2/9/2023

Data - Total

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | TOTAL | | | |
|-------------------------|---------------------|--------|-------|-------|------------|--------|--------|-------|--|--------|--------|-------|--|--------|--------|-------|-------|---|---|---|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | | | |
| AM | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | | |
| 6:00 AM | 2 | 2 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 4 | 2 | 0 | 1 | 0 | 0 | 0 | 18 | | | |
| 6:15 AM | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 12 | | | |
| 6:30 AM | 1 | 3 | 1 | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 1 | 0 | 0 | 19 | | | |
| 6:45 AM | 7 | 2 | 0 | 0 | 3 | 8 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 25 | | | |
| 7:00 AM | 3 | 6 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 4 | 5 | 0 | 3 | 6 | 1 | 0 | 37 | | | |
| 7:15 AM | 3 | 6 | 1 | 0 | 5 | 8 | 2 | 0 | 1 | 5 | 5 | 0 | 3 | 3 | 5 | 0 | 47 | | | |
| 7:30 AM | 10 | 16 | 0 | 0 | 2 | 10 | 1 | 0 | 0 | 5 | 5 | 0 | 1 | 3 | 5 | 0 | 58 | | | |
| 7:45 AM | 5 | 26 | 3 | 0 | 5 | 21 | 1 | 0 | 4 | 3 | 9 | 0 | 3 | 2 | 3 | 0 | 85 | | | |
| 8:00 AM | 6 | 14 | 3 | 0 | 6 | 16 | 0 | 0 | 1 | 4 | 10 | 0 | 2 | 4 | 2 | 0 | 68 | | | |
| 8:15 AM | 2 | 9 | 1 | 0 | 5 | 20 | 3 | 0 | 1 | 3 | 14 | 0 | 8 | 2 | 4 | 0 | 72 | | | |
| 8:30 AM | 9 | 5 | 0 | 0 | 3 | 17 | 5 | 0 | 3 | 2 | 5 | 0 | 1 | 4 | 3 | 0 | 57 | | | |
| 8:45 AM | 8 | 9 | 1 | 0 | 2 | 14 | 4 | 0 | 1 | 6 | 7 | 0 | 3 | 2 | 0 | 0 | 57 | | | |
| TOTAL VOLUMES : | 56 | 99 | 11 | 0 | 35 | 134 | 16 | 0 | 11 | 41 | 64 | 0 | 34 | 31 | 23 | 0 | 555 | | | |
| APPROACH %'s : | 33.73% | 59.64% | 6.63% | 0.00% | 18.92% | 72.43% | 8.65% | 0.00% | 9.48% | 35.34% | 55.17% | 0.00% | 38.64% | 35.23% | 26.14% | 0.00% | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | | | |
| PEAK HR VOL : | 23 | 65 | 7 | 0 | 18 | 67 | 5 | 0 | 6 | 15 | 38 | 0 | 14 | 11 | 14 | 0 | 283 | | | |
| PEAK HR FACTOR : | 0.575 | 0.625 | 0.583 | 0.000 | 0.750 | 0.798 | 0.417 | 0.000 | 0.375 | 0.750 | 0.679 | 0.000 | 0.438 | 0.688 | 0.700 | 0.000 | 0.832 | | | |
| | | | 0.699 | | | | 0.804 | | | | 0.819 | | | | 0.696 | | | | | |
| PM | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | | |
| 4:00 PM | 32 | 10 | 0 | 0 | 11 | 13 | 8 | 0 | 3 | 22 | 29 | 0 | 14 | 12 | 6 | 0 | 160 | | | |
| 4:15 PM | 19 | 6 | 3 | 0 | 10 | 11 | 8 | 0 | 6 | 22 | 28 | 0 | 10 | 12 | 14 | 0 | 149 | | | |
| 4:30 PM | 15 | 16 | 5 | 0 | 13 | 9 | 10 | 0 | 2 | 20 | 33 | 0 | 7 | 10 | 12 | 0 | 152 | | | |
| 4:45 PM | 28 | 11 | 4 | 0 | 14 | 6 | 6 | 0 | 6 | 13 | 26 | 0 | 14 | 16 | 9 | 0 | 153 | | | |
| 5:00 PM | 28 | 9 | 1 | 0 | 12 | 13 | 10 | 0 | 3 | 12 | 35 | 0 | 7 | 12 | 12 | 0 | 154 | | | |
| 5:15 PM | 25 | 7 | 3 | 0 | 12 | 9 | 9 | 0 | 6 | 12 | 30 | 0 | 11 | 9 | 12 | 0 | 145 | | | |
| 5:30 PM | 27 | 15 | 4 | 0 | 6 | 0 | 10 | 0 | 11 | 26 | 32 | 0 | 6 | 14 | 10 | 0 | 161 | | | |
| 5:45 PM | 28 | 6 | 2 | 0 | 9 | 6 | 8 | 0 | 5 | 22 | 32 | 0 | 12 | 21 | 7 | 0 | 158 | | | |
| 6:00 PM | 29 | 9 | 1 | 0 | 5 | 6 | 9 | 0 | 8 | 22 | 48 | 0 | 10 | 17 | 13 | 0 | 177 | | | |
| 6:15 PM | 20 | 16 | 2 | 0 | 4 | 6 | 6 | 0 | 6 | 17 | 32 | 0 | 8 | 14 | 8 | 0 | 139 | | | |
| 6:30 PM | 18 | 8 | 2 | 0 | 3 | 9 | 4 | 0 | 4 | 10 | 25 | 0 | 10 | 17 | 4 | 0 | 114 | | | |
| 6:45 PM | 10 | 6 | 0 | 0 | 1 | 5 | 7 | 0 | 4 | 9 | 36 | 0 | 4 | 7 | 10 | 0 | 99 | | | |
| TOTAL VOLUMES : | 279 | 119 | 27 | 0 | 100 | 93 | 95 | 0 | 64 | 207 | 386 | 0 | 113 | 161 | 117 | 0 | 1761 | | | |
| APPROACH %'s : | 65.65% | 28.00% | 6.35% | 0.00% | 34.72% | 32.29% | 32.99% | 0.00% | 9.74% | 31.51% | 58.75% | 0.00% | 28.90% | 41.18% | 29.92% | 0.00% | | | | |
| PEAK HR : | 05:15 PM - 06:15 PM | | | | | | | | | | | | | | | | TOTAL | | | |
| PEAK HR VOL : | 109 | 37 | 10 | 0 | 32 | 21 | 36 | 0 | 30 | 82 | 142 | 0 | 39 | 61 | 42 | 0 | 641 | | | |
| PEAK HR FACTOR : | 0.940 | 0.617 | 0.625 | 0.000 | 0.667 | 0.583 | 0.900 | 0.000 | 0.682 | 0.788 | 0.740 | 0.000 | 0.813 | 0.726 | 0.808 | 0.000 | 0.905 | | | |
| | | | 0.848 | | | | 0.742 | | | | 0.814 | | | | 0.888 | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-004
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | | |
|-------------------------|---------------------|--------|-------|-------|------------|--------|--------|-------|--|--------|--------|-------|--|--------|--------|-------|--------------|----|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| 6:00 AM | 2 | 2 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 18 |
| 6:15 AM | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 10 |
| 6:30 AM | 1 | 3 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 1 | 0 | 3 | 1 | 0 | 0 | 17 | |
| 6:45 AM | 6 | 2 | 0 | 0 | 3 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 20 | |
| 7:00 AM | 3 | 6 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 4 | 5 | 0 | 3 | 5 | 1 | 0 | 35 | |
| 7:15 AM | 3 | 6 | 1 | 0 | 4 | 8 | 1 | 0 | 1 | 5 | 4 | 0 | 3 | 3 | 5 | 0 | 44 | |
| 7:30 AM | 10 | 16 | 0 | 0 | 2 | 10 | 1 | 0 | 0 | 5 | 5 | 0 | 1 | 3 | 5 | 0 | 58 | |
| 7:45 AM | 5 | 26 | 3 | 0 | 5 | 21 | 1 | 0 | 4 | 3 | 9 | 0 | 3 | 1 | 3 | 0 | 84 | |
| 8:00 AM | 6 | 14 | 3 | 0 | 6 | 13 | 0 | 0 | 1 | 4 | 10 | 0 | 2 | 4 | 2 | 0 | 65 | |
| 8:15 AM | 2 | 9 | 1 | 0 | 5 | 14 | 3 | 0 | 1 | 3 | 14 | 0 | 8 | 2 | 4 | 0 | 66 | |
| 8:30 AM | 9 | 5 | 0 | 0 | 3 | 16 | 5 | 0 | 3 | 2 | 4 | 0 | 1 | 3 | 3 | 0 | 54 | |
| 8:45 AM | 8 | 9 | 1 | 0 | 2 | 13 | 4 | 0 | 1 | 6 | 7 | 0 | 1 | 2 | 0 | 0 | 54 | |
| TOTAL VOLUMES : | 55 | 98 | 10 | 0 | 34 | 120 | 15 | 0 | 11 | 41 | 61 | 0 | 30 | 27 | 23 | 0 | 525 | |
| APPROACH %'s : | 33.74% | 60.12% | 6.13% | 0.00% | 20.12% | 71.01% | 8.88% | 0.00% | 9.73% | 36.28% | 53.98% | 0.00% | 37.50% | 33.75% | 28.75% | 0.00% | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 23 | 65 | 7 | 0 | 18 | 58 | 5 | 0 | 6 | 15 | 38 | 0 | 14 | 10 | 14 | 0 | 273 | |
| PEAK HR FACTOR : | 0.575 | 0.625 | 0.583 | 0.000 | 0.750 | 0.690 | 0.417 | 0.000 | 0.375 | 0.750 | 0.679 | 0.000 | 0.438 | 0.625 | 0.700 | 0.000 | 0.813 | |
| | | | 0.699 | | | 0.750 | | | | 0.819 | | | | 0.679 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| 4:00 PM | 32 | 9 | 0 | 0 | 11 | 13 | 8 | 0 | 3 | 22 | 29 | 0 | 14 | 12 | 6 | 0 | 159 | |
| 4:15 PM | 19 | 6 | 3 | 0 | 10 | 10 | 8 | 0 | 6 | 22 | 27 | 0 | 10 | 11 | 13 | 0 | 145 | |
| 4:30 PM | 15 | 16 | 5 | 0 | 13 | 9 | 10 | 0 | 2 | 20 | 32 | 0 | 7 | 10 | 11 | 0 | 150 | |
| 4:45 PM | 28 | 11 | 4 | 0 | 14 | 6 | 6 | 0 | 6 | 13 | 26 | 0 | 14 | 16 | 9 | 0 | 153 | |
| 5:00 PM | 28 | 9 | 1 | 0 | 12 | 12 | 10 | 0 | 3 | 12 | 35 | 0 | 7 | 11 | 12 | 0 | 152 | |
| 5:15 PM | 25 | 7 | 3 | 0 | 12 | 7 | 9 | 0 | 6 | 12 | 30 | 0 | 11 | 9 | 12 | 0 | 143 | |
| 5:30 PM | 27 | 15 | 4 | 0 | 6 | 0 | 10 | 0 | 11 | 26 | 32 | 0 | 6 | 14 | 10 | 0 | 161 | |
| 5:45 PM | 28 | 6 | 2 | 0 | 9 | 6 | 8 | 0 | 5 | 22 | 32 | 0 | 12 | 20 | 7 | 0 | 157 | |
| 6:00 PM | 29 | 9 | 1 | 0 | 5 | 5 | 9 | 0 | 8 | 22 | 48 | 0 | 10 | 17 | 13 | 0 | 176 | |
| 6:15 PM | 20 | 16 | 2 | 0 | 4 | 6 | 6 | 0 | 6 | 17 | 32 | 0 | 8 | 14 | 8 | 0 | 139 | |
| 6:30 PM | 18 | 8 | 2 | 0 | 3 | 9 | 4 | 0 | 4 | 10 | 25 | 0 | 10 | 16 | 4 | 0 | 113 | |
| 6:45 PM | 10 | 6 | 0 | 0 | 1 | 4 | 7 | 0 | 4 | 9 | 36 | 0 | 3 | 7 | 10 | 0 | 97 | |
| TOTAL VOLUMES : | 279 | 118 | 27 | 0 | 100 | 87 | 95 | 0 | 64 | 207 | 384 | 0 | 112 | 157 | 115 | 0 | 1745 | |
| APPROACH %'s : | 65.80% | 27.83% | 6.37% | 0.00% | 35.46% | 30.85% | 33.69% | 0.00% | 9.77% | 31.60% | 58.63% | 0.00% | 29.17% | 40.89% | 29.95% | 0.00% | | |
| PEAK HR : | 05:15 PM - 06:15 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 109 | 37 | 10 | 0 | 32 | 18 | 36 | 0 | 30 | 82 | 142 | 0 | 39 | 60 | 42 | 0 | 637 | |
| PEAK HR FACTOR : | 0.940 | 0.617 | 0.625 | 0.000 | 0.667 | 0.643 | 0.900 | 0.000 | 0.682 | 0.788 | 0.740 | 0.000 | 0.813 | 0.750 | 0.808 | 0.000 | 0.905 | |
| | | | 0.848 | | | 0.768 | | | | 0.814 | | | | 0.881 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-004
Date: 2/9/2023

Data - HT

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | | | |
|-------------------------|---------------------|---------|--------|-------|------------|---------|-------|-------|--|-------|---------|-------|--|--------|--------|-------|-------|---|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 1 | 1 | 1 | 0 | 1 | 14 | 1 | 0 | 0 | 0 | 3 | 0 | 4 | 4 | 0 | 0 | | | 30 |
| APPROACH %'s : | 33.33% | 33.33% | 33.33% | 0.00% | 6.25% | 87.50% | 6.25% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 50.00% | 50.00% | 0.00% | 0.00% | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 10 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.375 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.000 | | | 0.417 |
| | | | | | 0.375 | | | | | | | | | | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 4 | 2 | 0 | | | 16 |
| APPROACH %'s : | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 14.29% | 57.14% | 28.57% | 0.00% | | | |
| PEAK HR : | 05:15 PM - 06:15 PM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | | 4 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.375 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.000 | | | 0.500 |
| | | | | | 0.375 | | | | | | | | | | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-004
Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | Warrenton Village Center Dwy/Shopping Center Dwy | | | | | |
|-------------------------|---------------------|-------|-------|-------|------------|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|--------------|---|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | TOTAL | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | TOTAL | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | 0 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | |
|-------------------------|---------------------|-------|-------|-------|------------|-------|---------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|--------------|-------|
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | TOTAL | 3 |
| APPROACH %'s : | | | | | 0.00% | 0.00% | 100.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | | | | | | |
| PEAK HR : | 05:15 PM - 06:15 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | TOTAL | 2 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.250 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | 0.250 |

National Data & Surveying Services Intersection Turning Movement Count

Location: Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy Project ID: 23-260020-004
City: Warrenton Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Branch Dr | | Branch Dr | | Warrenton Village Center Dwy/Shopping Center | | Warrenton Village Center Dwy/Shopping Center | | |
|-------------------------|---------------------|---------|-----------|---------|--|---------|--|---------|------------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 3 | WB 3 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 6 |
| APPROACH %'s : | 50.00% | 50.00% | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| PEAK HR FACTOR : | 0.250 | 0.250 | | | | | | | 0.500 |

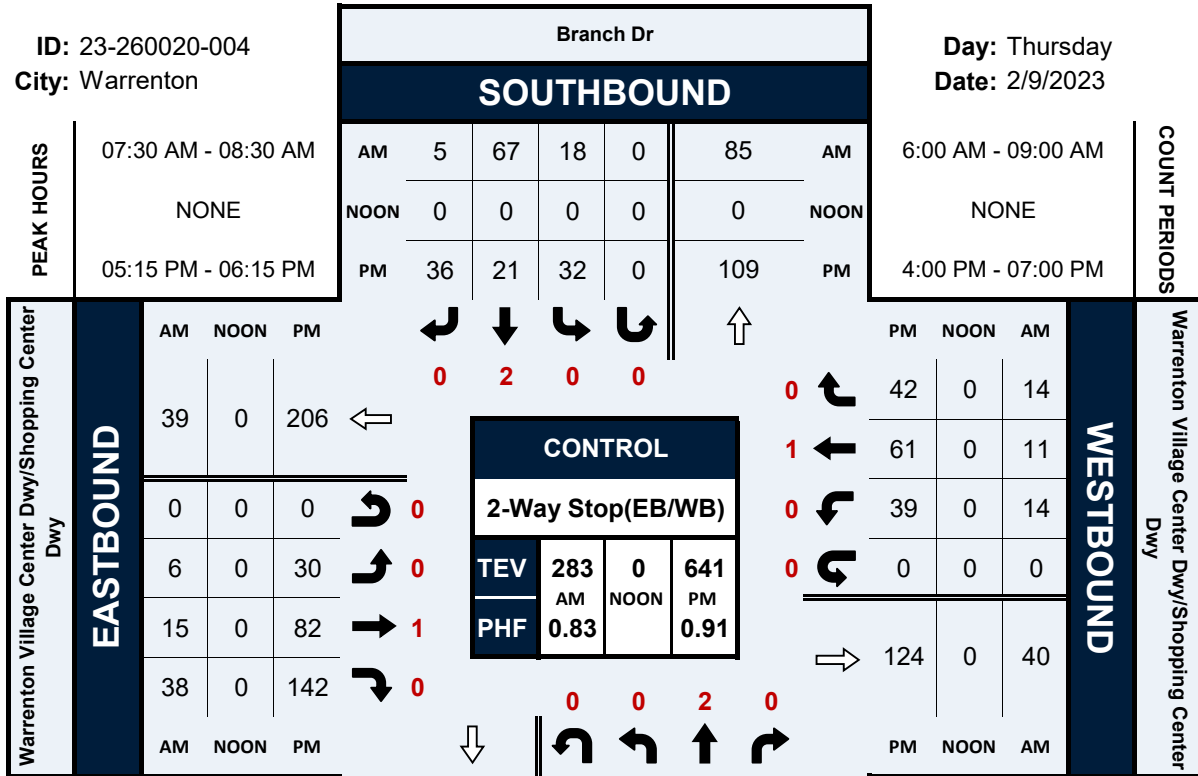
| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|----------|-----------|---------|----------|---------|----------|---------|-------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 4:15 PM | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 4:30 PM | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 4:45 PM | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:30 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| TOTAL VOLUMES : | EB 10 | WB 13 | EB 0 | WB 0 | NB 1 | SB 1 | NB 0 | SB 0 | TOTAL 25 |
| APPROACH %'s : | 43.48% | 56.52% | | | 50.00% | 50.00% | | | |
| PEAK HR : | 05:15 PM - 06:15 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| PEAK HR FACTOR : | 0.625 | 0.500 | | | | | | | 0.583 |

Branch Dr & Warrenton Village Center Dwy/Shopping Center Dwy

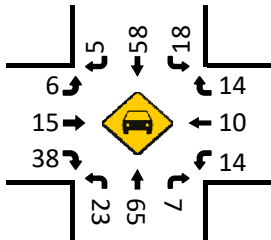
Peak Hour Turning Movement Count

ID: 23-260020-004
City: Warrenton

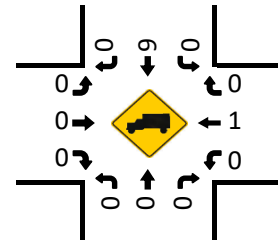
Day: Thursday
Date: 2/9/2023



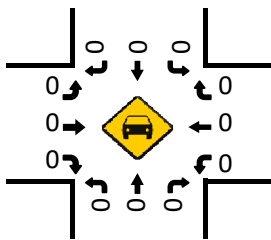
Cars (AM)



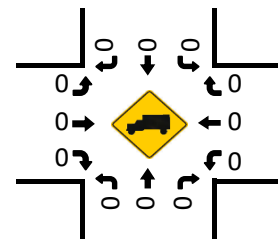
HT (AM)



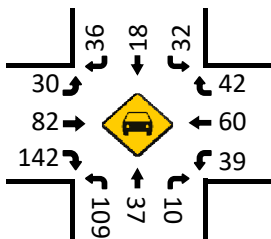
Cars (NOON)



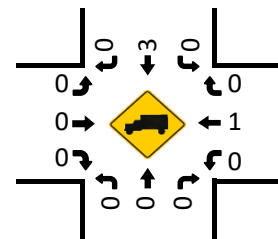
HT (NOON)



Cars (PM)



HT (PM)

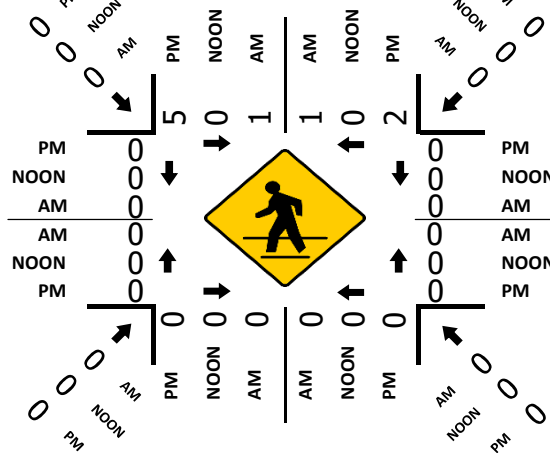


NORTHBOUND

| | | | | | | |
|------|-----|---|-----|----|----|------|
| PM | 202 | 0 | 109 | 37 | 10 | PM |
| NOON | 0 | 0 | 0 | 0 | 0 | NOON |
| AM | 119 | 0 | 23 | 65 | 7 | AM |

Branch Dr

Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Location: Branch Dr & Oak Springs Dr
 City: Warrenton
 Control: 2-Way Stop(NB/SB)

Project ID: 23-260020-005
 Date: 2/9/2023

Data - Total

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | |
|-------------------------|---------------------|-------|--------|-------|------------|--------|--------|-------|----------------|--------|--------|-------|----------------|--------|-------|-------|------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 | 0 | 1 | 0 | 0 | 0 | 12 |
| 6:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 4 | 0 | 0 | 10 |
| 6:30 AM | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 4 | 0 | 0 | 6 | 0 | 0 | 17 |
| 6:45 AM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 9 | 0 | 2 | 6 | 1 | 0 | 24 |
| 7:00 AM | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 3 | 12 | 0 | 0 | 33 |
| 7:15 AM | 12 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 15 | 9 | 0 | 4 | 10 | 0 | 0 | 53 |
| 7:30 AM | 17 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 15 | 7 | 0 | 5 | 18 | 0 | 0 | 65 |
| 7:45 AM | 31 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 20 | 23 | 0 | 4 | 49 | 0 | 0 | 132 |
| 8:00 AM | 14 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 21 | 0 | 1 | 22 | 0 | 0 | 75 |
| 8:15 AM | 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 24 | 0 | 4 | 17 | 0 | 0 | 86 |
| 8:30 AM | 9 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 17 | 18 | 0 | 7 | 19 | 0 | 0 | 73 |
| 8:45 AM | 7 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 1 | 26 | 15 | 0 | 3 | 19 | 0 | 0 | 77 |
| TOTAL VOLUMES : | NL 114 | NT 0 | NR 19 | NU 0 | SL 1 | ST 6 | SR 3 | SU 0 | EL 2 | ET 150 | ER 145 | EU 0 | WL 34 | WT 182 | WR 1 | WU 0 | TOTAL 657 |
| APPROACH %'s : | 85.71% | 0.00% | 14.29% | 0.00% | 10.00% | 60.00% | 30.00% | 0.00% | 0.67% | 50.51% | 48.82% | 0.00% | 15.67% | 83.87% | 0.46% | 0.00% | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 65 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 78 | 86 | 0 | 16 | 107 | 0 | 0 | 366 |
| PEAK HR FACTOR : | 0.524 | 0.000 | 0.750 | 0.000 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.722 | 0.896 | 0.000 | 0.571 | 0.546 | 0.000 | 0.000 | 0.693 |
| | | | 0.550 | | | 0.500 | | | | 0.804 | | | | 0.580 | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 15 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 1 | 34 | 21 | 0 | 9 | 25 | 1 | 0 | 112 |
| 4:15 PM | 13 | 2 | 10 | 1 | 0 | 2 | 0 | 0 | 2 | 21 | 20 | 0 | 6 | 25 | 1 | 0 | 103 |
| 4:30 PM | 19 | 0 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 30 | 26 | 0 | 5 | 33 | 0 | 0 | 125 |
| 4:45 PM | 14 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 20 | 19 | 0 | 8 | 29 | 0 | 0 | 103 |
| 5:00 PM | 18 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 22 | 20 | 0 | 12 | 27 | 0 | 0 | 106 |
| 5:15 PM | 19 | 1 | 6 | 0 | 0 | 3 | 0 | 0 | 1 | 12 | 21 | 0 | 6 | 29 | 0 | 0 | 98 |
| 5:30 PM | 26 | 1 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 12 | 0 | 4 | 26 | 1 | 0 | 102 |
| 5:45 PM | 12 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 15 | 0 | 8 | 20 | 2 | 0 | 84 |
| 6:00 PM | 22 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 0 | 8 | 14 | 1 | 0 | 81 |
| 6:15 PM | 18 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 10 | 0 | 5 | 5 | 1 | 0 | 67 |
| 6:30 PM | 10 | 3 | 4 | 0 | 1 | 2 | 1 | 0 | 0 | 15 | 7 | 0 | 7 | 9 | 0 | 0 | 59 |
| 6:45 PM | 13 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 5 | 0 | 8 | 3 | 1 | 0 | 48 |
| TOTAL VOLUMES : | NL 199 | NT 12 | NR 87 | NU 1 | SL 3 | ST 11 | SR 1 | SU 0 | EL 6 | ET 240 | ER 189 | EU 0 | WL 86 | WT 245 | WR 8 | WU 0 | TOTAL 1088 |
| APPROACH %'s : | 66.56% | 4.01% | 29.10% | 0.33% | 20.00% | 73.33% | 6.67% | 0.00% | 1.38% | 55.17% | 43.45% | 0.00% | 25.37% | 72.27% | 2.36% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 61 | 2 | 37 | 1 | 1 | 5 | 0 | 0 | 3 | 105 | 86 | 0 | 28 | 112 | 2 | 0 | 443 |
| PEAK HR FACTOR : | 0.803 | 0.250 | 0.771 | 0.250 | 0.250 | 0.625 | 0.000 | 0.000 | 0.375 | 0.772 | 0.827 | 0.000 | 0.778 | 0.848 | 0.500 | 0.000 | 0.886 |
| | | | 0.842 | | | 0.750 | | | | 0.866 | | | | 0.934 | | | |

National Data & Surveying Services Intersection Turning Movement Count

Location: Branch Dr & Oak Springs Dr
 City: Warrenton
 Control: 2-Way Stop(NB/SB)

Project ID: 23-260020-005
 Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | |
|-------------------------|---------------------|-------|--------|-------|------------|--------|--------|-------|----------------|--------|--------|-------|----------------|--------|-------|-------|-------|-----|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 6:00 AM | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12 |
| 6:15 AM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 9 |
| 6:30 AM | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 16 |
| 6:45 AM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 8 | 0 | 1 | 6 | 1 | 0 | 0 | 22 |
| 7:00 AM | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 3 | 12 | 0 | 0 | 0 | 30 |
| 7:15 AM | 12 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 15 | 8 | 0 | 3 | 10 | 0 | 0 | 0 | 51 |
| 7:30 AM | 17 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 15 | 7 | 0 | 5 | 18 | 0 | 0 | 0 | 65 |
| 7:45 AM | 31 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 20 | 23 | 0 | 4 | 48 | 0 | 0 | 0 | 131 |
| 8:00 AM | 14 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 19 | 0 | 0 | 22 | 0 | 0 | 0 | 71 |
| 8:15 AM | 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 18 | 0 | 4 | 17 | 0 | 0 | 0 | 80 |
| 8:30 AM | 9 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 16 | 18 | 0 | 6 | 19 | 0 | 0 | 0 | 71 |
| 8:45 AM | 7 | 0 | 3 | 0 | 0 | 2 | 1 | 0 | 1 | 26 | 14 | 0 | 3 | 19 | 0 | 0 | 0 | 76 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| APPROACH %'s : | 86.36% | 0.00% | 13.64% | 0.00% | 10.00% | 60.00% | 30.00% | 0.00% | 0.71% | 51.79% | 47.50% | 0.00% | 14.15% | 85.38% | 0.47% | 0.00% | 634 | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 65 | 0 | 12 | 0 | 0 | 0 | 2 | 0 | 0 | 76 | 78 | 0 | 14 | 106 | 0 | 0 | 353 | |
| PEAK HR FACTOR : | 0.524 | 0.000 | 0.750 | 0.000 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.704 | 0.848 | 0.000 | 0.583 | 0.552 | 0.000 | 0.000 | 0.674 | |
| | | | 0.550 | | | 0.500 | | | | 0.856 | | | | 0.577 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 4:00 PM | 14 | 0 | 4 | 0 | 1 | 1 | 0 | 0 | 1 | 34 | 21 | 0 | 9 | 25 | 1 | 0 | 111 | |
| 4:15 PM | 13 | 2 | 9 | 1 | 0 | 2 | 0 | 0 | 2 | 20 | 20 | 0 | 5 | 25 | 1 | 0 | 100 | |
| 4:30 PM | 18 | 0 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 29 | 26 | 0 | 5 | 33 | 0 | 0 | 123 | |
| 4:45 PM | 14 | 0 | 12 | 0 | 0 | 1 | 0 | 0 | 0 | 19 | 19 | 0 | 8 | 28 | 0 | 0 | 101 | |
| 5:00 PM | 18 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 22 | 20 | 0 | 11 | 26 | 0 | 0 | 104 | |
| 5:15 PM | 19 | 1 | 6 | 0 | 0 | 3 | 0 | 0 | 1 | 12 | 20 | 0 | 5 | 29 | 0 | 0 | 96 | |
| 5:30 PM | 26 | 1 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 12 | 0 | 4 | 26 | 1 | 0 | 102 | |
| 5:45 PM | 12 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 15 | 0 | 8 | 20 | 2 | 0 | 84 | |
| 6:00 PM | 22 | 2 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 0 | 7 | 14 | 1 | 0 | 80 | |
| 6:15 PM | 18 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 16 | 10 | 0 | 5 | 5 | 1 | 0 | 67 | |
| 6:30 PM | 10 | 3 | 4 | 0 | 1 | 2 | 1 | 0 | 0 | 15 | 7 | 0 | 7 | 9 | 0 | 0 | 59 | |
| 6:45 PM | 13 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 5 | 0 | 7 | 3 | 1 | 0 | 47 | |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL | |
| APPROACH %'s : | 66.55% | 4.05% | 29.05% | 0.34% | 20.00% | 73.33% | 6.67% | 0.00% | 1.39% | 54.99% | 43.62% | 0.00% | 24.40% | 73.19% | 2.41% | 0.00% | 1074 | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 59 | 2 | 36 | 1 | 1 | 5 | 0 | 0 | 3 | 102 | 86 | 0 | 27 | 111 | 2 | 0 | 435 | |
| PEAK HR FACTOR : | 0.819 | 0.250 | 0.750 | 0.250 | 0.250 | 0.625 | 0.000 | 0.000 | 0.375 | 0.750 | 0.827 | 0.000 | 0.750 | 0.841 | 0.500 | 0.000 | 0.884 | |
| | | | 0.845 | | | 0.750 | | | | 0.853 | | | | 0.921 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & Oak Springs Dr
City: Warrenton
Control: 2-Way Stop(NB/SB)

Project ID: 23-260020-005
Date: 2/9/2023

Data - HT

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|---------------------|-------|---------|-------|------------|-------|-------|-------|----------------|--------|--------|-------|----------------|--------|-------|-------|--------------|--------------|----|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 6:00 AM | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 12 | 0 | 0 | 4 | 1 | 0 | 0 | TOTAL | 23 |
| APPROACH %'s : | 0.00% | 0.00% | 100.00% | 0.00% | | | | | 0.00% | 29.41% | 70.59% | 0.00% | 80.00% | 20.00% | 0.00% | 0.00% | | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 2 | 1 | 0 | 0 | TOTAL | 13 | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 0.333 | 0.000 | 0.500 | 0.250 | 0.000 | 0.000 | TOTAL | 0.542 | |
| | | | | | | | | | | 0.417 | | | | 0.750 | | | | | |

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|---------------------|-------|--------|-------|------------|-------|-------|-------|----------------|--------|--------|-------|----------------|--------|-------|-------|--------------|--------------|----|
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 4:00 PM | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 4:30 PM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 5 | 2 | 0 | 0 | TOTAL | 14 |
| APPROACH %'s : | 66.67% | 0.00% | 33.33% | 0.00% | | | | | 0.00% | 75.00% | 25.00% | 0.00% | 71.43% | 28.57% | 0.00% | 0.00% | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | TOTAL | 8 | |
| PEAK HR FACTOR : | 0.500 | 0.000 | 0.250 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.750 | 0.000 | 0.000 | 0.250 | 0.250 | 0.000 | 0.000 | TOTAL | 0.667 | |
| | | | | | | | | | | 0.750 | | | | 0.500 | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Branch Dr & Oak Springs Dr
City: Warrenton
Control: 2-Way Stop(NB/SB)

Project ID: 23-260020-005
Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Branch Dr | | | | Branch Dr | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | |
|-------------------------|---------------------|---------|-------|-------|------------|---------|-------|-------|----------------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | | | | | | | | | | | | | | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| APPROACH %'s : | 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% | 0.00% | 0.00% |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: Branch Dr & Oak Springs Dr
City: Warrenton

Project ID: 23-260020-005
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Branch Dr | | Branch Dr | | Oak Springs Dr | | Oak Springs Dr | | |
|-------------------------|---------------------|--------|-----------|--------|----------------|--------|----------------|---------|-------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 3 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 8:15 AM | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 4 |
| 8:30 AM | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 5 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 6 | 5 | 1 | 0 | 3 | 1 | 0 | 1 | 17 |
| | 54.55% | 45.45% | 100.00% | 0.00% | 75.00% | 25.00% | 0.00% | 100.00% | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 4 | 3 | 1 | 0 | 2 | 1 | 0 | 0 | 11 |
| PEAK HR FACTOR : | 0.500 | 0.375 | 0.250 | 0.250 | 0.500 | 0.250 | 0.375 | 0.375 | 0.550 |
| | 0.438 | | | | | | | | |
| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4:30 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 4:45 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:15 PM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| 6:00 PM | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 6 |
| 6:15 PM | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 6:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:45 PM | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 6 | 7 | 1 | 1 | 3 | 4 | 0 | 0 | 22 |
| | 46.15% | 53.85% | 50.00% | 50.00% | 42.86% | 57.14% | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 6 |
| PEAK HR FACTOR : | 0.250 | 0.500 | 0.250 | 0.250 | 0.250 | 0.250 | 0.500 | 0.500 | 0.750 |
| | 0.500 | | | | | | | | |

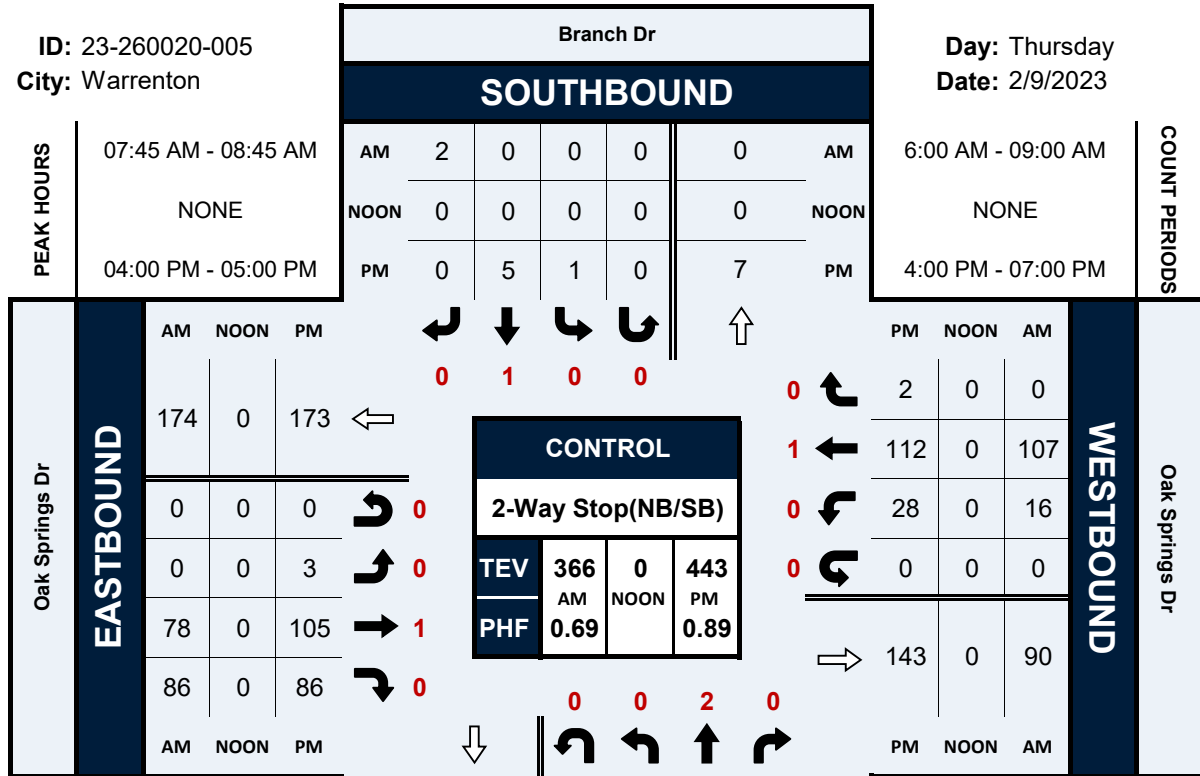
Prepared by National Data & Surveying Services

Branch Dr & Oak Springs Dr

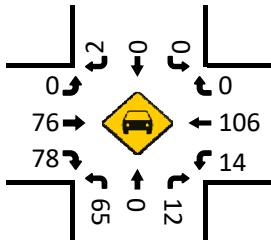
Peak Hour Turning Movement Count

ID: 23-260020-005
City: Warrenton

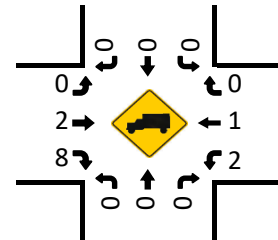
Day: Thursday
Date: 2/9/2023



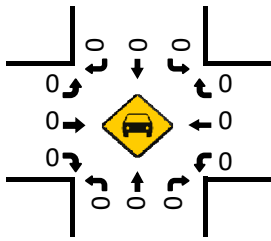
Cars (AM)



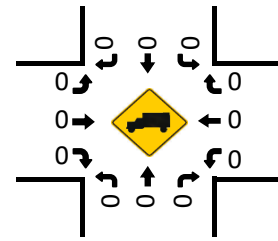
HT (AM)



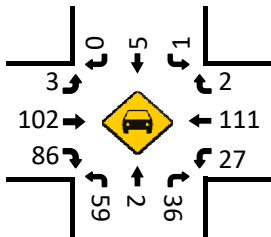
Cars (NOON)



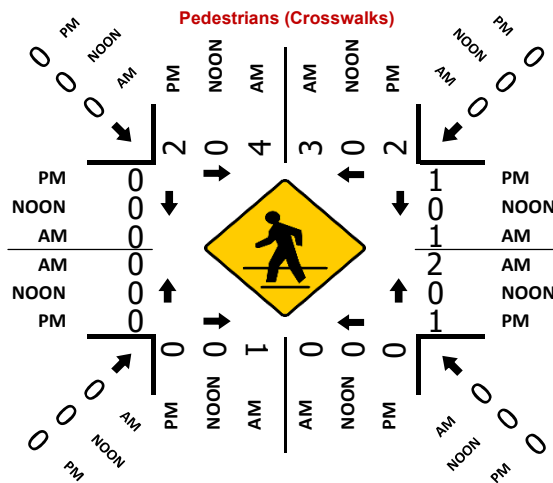
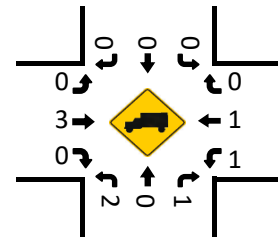
HT (NOON)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Hastings Ln & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-006
Date: 2/9/2023

Data - Total

| NS/EW Streets: | Hastings Ln | | | | Hastings Ln | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | | |
|-------------------------|----------------------------|-------|-------|-------|-------------|-------|--------|-------|----------------|--------|-------|-------|----------------|--------|--------|-------|-------|---|-----|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 13 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 3 | 5 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 24 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 4 | 0 | 8 | 0 | 0 | 6 | 9 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 35 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 14 | 4 | 0 | 0 | 42 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 5 | 0 | 16 | 0 | 0 | 11 | 18 | 0 | 0 | 0 | 16 | 6 | 0 | 0 | 72 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 0 | 17 | 20 | 0 | 0 | 0 | 24 | 10 | 0 | 0 | 86 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 18 | 39 | 0 | 0 | 0 | 68 | 12 | 0 | 0 | 148 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 14 | 0 | 20 | 0 | 0 | 24 | 20 | 0 | 0 | 0 | 27 | 10 | 0 | 0 | 115 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 26 | 0 | 28 | 0 | 0 | 24 | 25 | 0 | 0 | 0 | 17 | 12 | 0 | 0 | 132 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 16 | 0 | 20 | 0 | 0 | 8 | 19 | 0 | 0 | 0 | 21 | 7 | 0 | 0 | 91 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 0 | 0 | 9 | 41 | 0 | 0 | 0 | 21 | 7 | 0 | 0 | 87 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 88 | 0 | 131 | 0 | 0 | 129 | 210 | 0 | 0 | 0 | 226 | 73 | 0 | 0 | 857 | |
| APPROACH %'s : | | | | | 40.18% | 0.00% | 59.82% | 0.00% | 38.05% | 61.95% | 0.00% | 0.00% | 0.00% | 75.59% | 24.41% | 0.00% | | | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 61 | 0 | 74 | 0 | 74 | 103 | 0 | 0 | 0 | 133 | 41 | 0 | | | | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.587 | 0.000 | 0.661 | 0.000 | 0.771 | 0.660 | 0.000 | 0.000 | 0.000 | 0.489 | 0.854 | 0.000 | | | | |
| | | | | | | | 0.625 | | | | 0.776 | | | | 0.544 | | | | | 0.821 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | | |
|-------------------------|----------------------------|-------|-------|-------|------------|-------|--------|-------|-----------|--------|-------|-------|-----------|--------|--------|-------|-------|---|------|-------|
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 24 | 0 | 12 | 0 | 0 | 7 | 32 | 0 | 0 | 0 | 39 | 1 | 0 | 0 | 115 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 15 | 0 | 9 | 0 | 0 | 12 | 29 | 0 | 0 | 0 | 35 | 3 | 0 | 0 | 103 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 21 | 0 | 14 | 0 | 0 | 12 | 36 | 0 | 0 | 0 | 46 | 6 | 0 | 0 | 135 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 7 | 0 | 17 | 0 | 0 | 11 | 31 | 0 | 0 | 0 | 40 | 2 | 0 | 0 | 108 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 13 | 0 | 2 | 0 | 0 | 16 | 30 | 0 | 0 | 0 | 43 | 3 | 0 | 0 | 107 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 11 | 0 | 10 | 0 | 0 | 12 | 23 | 0 | 0 | 0 | 40 | 8 | 0 | 0 | 104 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 2 | 0 | 11 | 0 | 0 | 14 | 32 | 0 | 0 | 0 | 43 | 8 | 0 | 0 | 110 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 7 | 0 | 10 | 0 | 0 | 6 | 28 | 0 | 0 | 0 | 28 | 5 | 0 | 0 | 84 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 15 | 0 | 6 | 0 | 0 | 8 | 14 | 0 | 0 | 0 | 31 | 5 | 0 | 0 | 79 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 0 | 0 | 6 | 18 | 0 | 0 | 0 | 15 | 7 | 0 | 0 | 60 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 4 | 18 | 0 | 0 | 0 | 16 | 5 | 0 | 0 | 52 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 0 | 4 | 12 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 41 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 132 | 0 | 106 | 0 | 0 | 112 | 303 | 0 | 0 | 0 | 384 | 61 | 0 | 0 | 1098 | |
| APPROACH %'s : | | | | | 55.46% | 0.00% | 44.54% | 0.00% | 26.99% | 73.01% | 0.00% | 0.00% | 0.00% | 86.29% | 13.71% | 0.00% | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 67 | 0 | 52 | 0 | 42 | 128 | 0 | 0 | 0 | 160 | 12 | 0 | | | | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.698 | 0.000 | 0.765 | 0.000 | 0.875 | 0.889 | 0.000 | 0.000 | 0.000 | 0.870 | 0.500 | 0.000 | | | | |
| | | | | | | | 0.826 | | | | 0.885 | | | | 0.827 | | | | | 0.854 |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Hastings Ln & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-006
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Hastings Ln | | | | Hastings Ln | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|---------------------|-------|-------|-------|-------------|-------|--------|-------|----------------|--------|-------|-------|----------------|--------|--------|-------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12 |
| 6:15 AM | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 13 |
| 6:30 AM | 0 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 0 | 22 |
| 6:45 AM | 0 | 0 | 0 | 0 | 3 | 0 | 8 | 0 | 5 | 9 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 33 |
| 7:00 AM | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 7 | 5 | 0 | 0 | 0 | 0 | 14 | 4 | 0 | 0 | 39 |
| 7:15 AM | 0 | 0 | 0 | 0 | 5 | 0 | 16 | 0 | 11 | 17 | 0 | 0 | 0 | 0 | 16 | 6 | 0 | 0 | 71 |
| 7:30 AM | 0 | 0 | 0 | 0 | 2 | 0 | 13 | 0 | 17 | 20 | 0 | 0 | 0 | 0 | 24 | 10 | 0 | 0 | 86 |
| 7:45 AM | 0 | 0 | 0 | 0 | 5 | 0 | 6 | 0 | 15 | 39 | 0 | 0 | 0 | 0 | 67 | 12 | 0 | 0 | 144 |
| 8:00 AM | 0 | 0 | 0 | 0 | 12 | 0 | 20 | 0 | 22 | 19 | 0 | 0 | 0 | 0 | 27 | 10 | 0 | 0 | 110 |
| 8:15 AM | 0 | 0 | 0 | 0 | 20 | 0 | 28 | 0 | 24 | 25 | 0 | 0 | 0 | 0 | 17 | 12 | 0 | 0 | 126 |
| 8:30 AM | 0 | 0 | 0 | 0 | 16 | 0 | 20 | 0 | 8 | 18 | 0 | 0 | 0 | 0 | 21 | 7 | 0 | 0 | 90 |
| 8:45 AM | 0 | 0 | 0 | 0 | 2 | 0 | 7 | 0 | 9 | 40 | 0 | 0 | 0 | 0 | 21 | 7 | 0 | 0 | 86 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 78 | 0 | 131 | 0 | 122 | 203 | 0 | 0 | 0 | 0 | 225 | 73 | 0 | 0 | 832 |
| APPROACH %'s : | | | | | 37.32% | 0.00% | 62.68% | 0.00% | 37.54% | 62.46% | 0.00% | 0.00% | 0.00% | 75.50% | 24.50% | 0.00% | 0.00% | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 53 | 0 | 74 | 0 | 69 | 101 | 0 | 0 | 0 | 132 | 41 | 0 | 0 | 470 | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.663 | 0.000 | 0.661 | 0.000 | 0.719 | 0.647 | 0.000 | 0.000 | 0.000 | 0.493 | 0.854 | 0.000 | 0.000 | 0.816 | |
| | | | | | | 0.661 | | | | 0.787 | | | | 0.547 | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 24 | 0 | 12 | 0 | 7 | 32 | 0 | 0 | 0 | 38 | 1 | 0 | 0 | 114 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 15 | 0 | 8 | 0 | 11 | 28 | 0 | 0 | 0 | 35 | 3 | 0 | 0 | 100 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 21 | 0 | 14 | 0 | 12 | 35 | 0 | 0 | 0 | 45 | 6 | 0 | 0 | 133 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 7 | 0 | 17 | 0 | 11 | 30 | 0 | 0 | 0 | 39 | 2 | 0 | 0 | 106 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 12 | 0 | 2 | 0 | 15 | 30 | 0 | 0 | 0 | 42 | 3 | 0 | 0 | 104 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 11 | 0 | 10 | 0 | 12 | 23 | 0 | 0 | 0 | 40 | 8 | 0 | 0 | 104 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 2 | 0 | 11 | 0 | 14 | 32 | 0 | 0 | 0 | 43 | 8 | 0 | 0 | 110 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 7 | 0 | 10 | 0 | 5 | 28 | 0 | 0 | 0 | 28 | 5 | 0 | 0 | 83 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 15 | 0 | 6 | 0 | 8 | 14 | 0 | 0 | 0 | 31 | 5 | 0 | 0 | 79 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 8 | 0 | 6 | 0 | 6 | 18 | 0 | 0 | 0 | 15 | 7 | 0 | 0 | 60 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 3 | 18 | 0 | 0 | 0 | 16 | 5 | 0 | 0 | 51 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 4 | 0 | 5 | 0 | 4 | 12 | 0 | 0 | 0 | 8 | 8 | 0 | 0 | 41 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 131 | 0 | 105 | 0 | 108 | 300 | 0 | 0 | 0 | 380 | 61 | 0 | 0 | 1085 | |
| APPROACH %'s : | | | | | 55.51% | 0.00% | 44.49% | 0.00% | 26.47% | 73.53% | 0.00% | 0.00% | 0.00% | 86.17% | 13.83% | 0.00% | 0.00% | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 67 | 0 | 51 | 0 | 41 | 125 | 0 | 0 | 0 | 157 | 12 | 0 | 0 | 453 | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.698 | 0.000 | 0.750 | 0.000 | 0.854 | 0.893 | 0.000 | 0.000 | 0.000 | 0.872 | 0.500 | 0.000 | 0.000 | 0.852 | |
| | | | | | | 0.819 | | | | 0.883 | | | | 0.828 | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Hastings Ln & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-006
Date: 2/9/2023

Data - HT

| NS/EW Streets: | Hastings Ln | | | | Hastings Ln | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|----------------------------|-------|-------|-------|-------------|-------|--------|-------|----------------|--------|--------|-------|----------------|-------|---------|---------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 7:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 8:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 8:15 AM | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 5 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 25 |
| APPROACH %'s : | | | | | 100.00% | 0.00% | 0.00% | 0.00% | | 50.00% | 50.00% | 0.00% | 0.00% | | 0.00% | 100.00% | 0.00% | 0.00% | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 16 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.333 | 0.000 | 0.000 | 0.000 | | 0.417 | 0.500 | 0.000 | 0.000 | | 0.000 | 0.250 | 0.000 | 0.000 | 0.667 |
| | | | | | | 0.333 | | | | | 0.583 | | | | 0.250 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | TOTAL | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 13 | |
| APPROACH %'s : | | | | | 50.00% | 0.00% | 50.00% | 0.00% | 57.14% | 42.86% | 0.00% | 0.00% | | 0.00% | 100.00% | 0.00% | 0.00% | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 8 | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.250 | 0.750 | 0.000 | 0.000 | | 0.000 | 0.750 | 0.000 | 0.000 | 0.667 | |
| | | | | | | 0.250 | | | | 0.500 | | | | | 0.750 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Hastings Ln & Oak Springs Dr
 City: Warrenton
 Control: 1-Way Stop(SB)

Project ID: 23-260020-006
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Hastings Ln | | | | Hastings Ln | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | |
|-------------------------|---------------------|-------|-------|-------|-------------|-------|-------|-------|----------------|-------|-------|-------|----------------|-------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: Hastings Ln & Oak Springs Dr
City: Warrenton

Project ID: 23-260020-006
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Hastings Ln | | Hastings Ln | | Oak Springs Dr | | Oak Springs Dr | | |
|-------------------------|---------------------|---------|-------------|---------|----------------|---------|----------------|---------|-------------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:00 AM | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 8:15 AM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 8:30 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB 4 | WB 3 | EB 0 | WB 0 | NB 1 | SB 2 | NB 0 | SB 0 | TOTAL 10 |
| APPROACH %'s : | 57.14% | 42.86% | | | 33.33% | 66.67% | | | |
| PEAK HR : | 07:45 AM - 08:45 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 4 |
| PEAK HR FACTOR : | 0.250 | 0.250 | | | 0.250 | 0.250 | | | 0.500 |

| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|----------|---------|----------|---------|------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB 2 | WB 2 | EB 0 | WB 0 | NB 2 | SB 1 | NB 0 | SB 0 | TOTAL 7 |
| APPROACH %'s : | 50.00% | 50.00% | | | 66.67% | 33.33% | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 3 |
| PEAK HR FACTOR : | | 0.250 | | | 0.250 | | | | 0.375 |

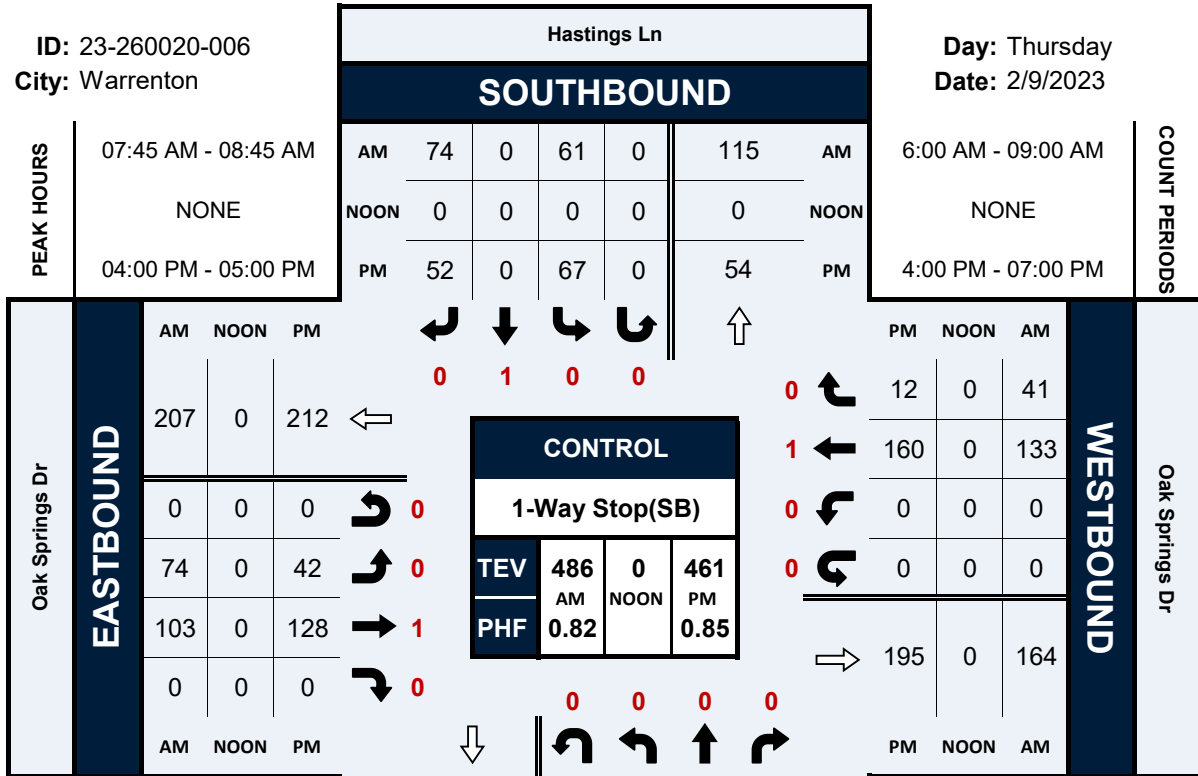
Prepared by National Data & Surveying Services

Hastings Ln & Oak Springs Dr

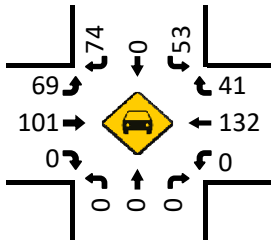
Peak Hour Turning Movement Count

ID: 23-260020-006
City: Warrenton

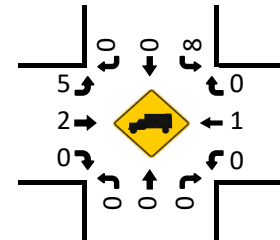
Day: Thursday
Date: 2/9/2023



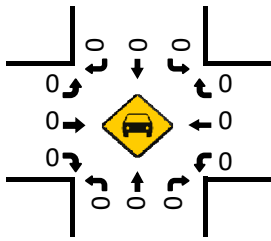
Cars (AM)



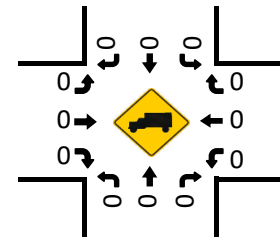
HT (AM)



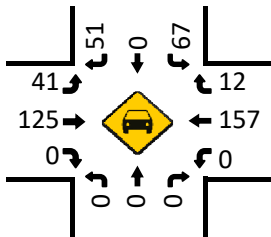
Cars (NOON)



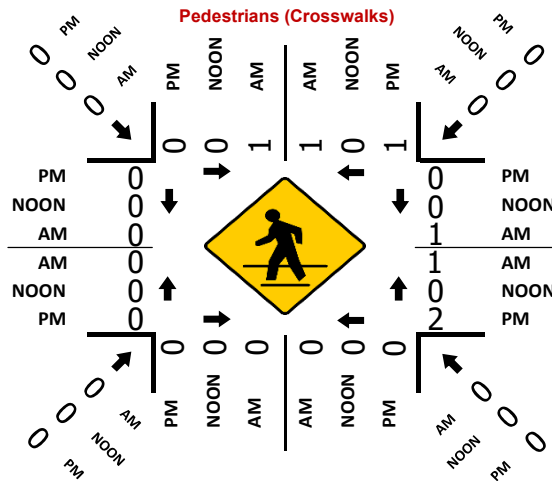
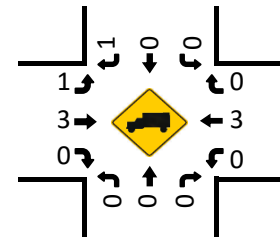
HT (NOON)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Highland School Dwy & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-007
Date: 2/9/2023

Data - Total

| NS/EW Streets: | Highland School Dwy | | | | Highland School Dwy | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | |
|-------------------------|----------------------------|-------|-------|-------|---------------------|-------|--------|-------|----------------|--------|-------|-------|----------------|--------|--------|-------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 6:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 7 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 7 | 0 | 0 | 11 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 11 | 0 | 0 | 18 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 14 | 0 | 0 | 29 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 15 | 0 | 0 | 0 | 16 | 4 | 0 | 37 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 28 | 0 | 0 | 0 | 30 | 2 | 0 | 63 |
| 7:30 AM | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 0 | 13 | 34 | 0 | 0 | 0 | 25 | 10 | 0 | 89 |
| 7:45 AM | 0 | 0 | 0 | 0 | 25 | 0 | 8 | 0 | 19 | 32 | 0 | 0 | 0 | 43 | 33 | 0 | 160 |
| 8:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 5 | 43 | 0 | 0 | 0 | 42 | 5 | 0 | 103 |
| 8:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 47 | 0 | 0 | 0 | 42 | 3 | 0 | 95 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 28 | 0 | 0 | 0 | 32 | 7 | 0 | 75 |
| 8:45 AM | 0 | 0 | 0 | 0 | 19 | 0 | 4 | 0 | 20 | 30 | 0 | 0 | 0 | 17 | 13 | 0 | 113 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 50 | 0 | 38 | 0 | 66 | 289 | 0 | 0 | 0 | 280 | 77 | 0 | 800 |
| APPROACH %'s : | | | | | 56.82% | 0.00% | 43.18% | 0.00% | 18.59% | 81.41% | 0.00% | 0.00% | 0.00% | 78.43% | 21.57% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 31 | 0 | 19 | 0 | 38 | 156 | 0 | 0 | 0 | 152 | 51 | 0 | 447 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.310 | 0.000 | 0.594 | 0.000 | 0.500 | 0.830 | 0.000 | 0.000 | 0.000 | 0.884 | 0.386 | 0.000 | 0.698 |
| | | | | | 0.379 | | | | 0.951 | | | | 0.668 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| 4:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 35 | 0 | 0 | 0 | 50 | 1 | 0 | 91 |
| 4:15 PM | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 2 | 39 | 0 | 0 | 0 | 44 | 0 | 0 | 93 |
| 4:30 PM | 0 | 0 | 0 | 0 | 4 | 0 | 17 | 0 | 1 | 44 | 0 | 0 | 0 | 59 | 1 | 0 | 126 |
| 4:45 PM | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 41 | 0 | 0 | 0 | 57 | 0 | 0 | 102 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 | 0 | 0 | 44 | 1 | 0 | 91 |
| 5:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 49 | 1 | 0 | 85 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 47 | 0 | 0 | 0 | 54 | 0 | 0 | 102 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 33 | 0 | 0 | 0 | 37 | 0 | 0 | 72 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 38 | 0 | 0 | 60 |
| 6:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 21 | 0 | 0 | 45 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 22 | 0 | 0 | 0 | 20 | 0 | 0 | 43 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 13 | 0 | 0 | 29 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 11 | 0 | 30 | 0 | 6 | 402 | 0 | 0 | 0 | 486 | 4 | 0 | 939 |
| APPROACH %'s : | | | | | 26.83% | 0.00% | 73.17% | 0.00% | 1.47% | 98.53% | 0.00% | 0.00% | 0.00% | 99.18% | 0.82% | 0.00% | |
| PEAK HR : | 04:15 PM - 05:15 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 7 | 0 | 26 | 0 | 3 | 170 | 0 | 0 | 0 | 204 | 2 | 0 | 412 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.438 | 0.000 | 0.382 | 0.000 | 0.375 | 0.924 | 0.000 | 0.000 | 0.000 | 0.864 | 0.500 | 0.000 | 0.817 |
| | | | | | 0.393 | | | | 0.940 | | | | 0.858 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Highland School Dwy & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-007
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | Highland School Dwy | | | | Highland School Dwy | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | |
|-------------------------|----------------------------|-------|-------|-------|---------------------|-------|--------|-------|----------------|--------|-------|-------|----------------|--------|--------|-------|-------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 11 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 16 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 28 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 13 | 0 | 0 | 0 | 16 | 4 | 0 | 0 | 35 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 27 | 0 | 0 | 0 | 30 | 2 | 0 | 0 | 62 |
| 7:30 AM | 0 | 0 | 0 | 0 | 3 | 0 | 4 | 0 | 13 | 34 | 0 | 0 | 0 | 25 | 10 | 0 | 0 | 89 |
| 7:45 AM | 0 | 0 | 0 | 0 | 25 | 0 | 8 | 0 | 19 | 29 | 0 | 0 | 0 | 42 | 33 | 0 | 0 | 156 |
| 8:00 AM | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 5 | 40 | 0 | 0 | 0 | 42 | 5 | 0 | 0 | 100 |
| 8:15 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 47 | 0 | 0 | 0 | 42 | 3 | 0 | 0 | 95 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 27 | 0 | 0 | 0 | 32 | 7 | 0 | 0 | 74 |
| 8:45 AM | 0 | 0 | 0 | 0 | 19 | 0 | 14 | 0 | 20 | 29 | 0 | 0 | 0 | 17 | 13 | 0 | 0 | 112 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 50 | 0 | 38 | 0 | 66 | 275 | 0 | 0 | 0 | 0 | 279 | 77 | 0 | 785 |
| APPROACH %'s : | | | | | 56.82% | 0.00% | 43.18% | 0.00% | 19.35% | 80.65% | 0.00% | 0.00% | 0.00% | 78.37% | 21.63% | 0.00% | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 31 | 0 | 19 | 0 | 38 | 150 | 0 | 0 | 0 | 0 | 151 | 51 | 0 | 440 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.310 | 0.000 | 0.594 | 0.000 | 0.500 | 0.798 | 0.000 | 0.000 | 0.000 | 0.000 | 0.899 | 0.386 | 0.000 | 0.705 |
| | | | | | 0.379 | | | | 0.979 | | | | 0.673 | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 35 | 0 | 0 | 0 | 49 | 1 | 0 | 0 | 90 |
| 4:15 PM | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 0 | 2 | 37 | 0 | 0 | 0 | 43 | 0 | 0 | 0 | 90 |
| 4:30 PM | 0 | 0 | 0 | 0 | 4 | 0 | 17 | 0 | 1 | 43 | 0 | 0 | 0 | 58 | 1 | 0 | 0 | 124 |
| 4:45 PM | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 40 | 0 | 0 | 0 | 56 | 0 | 0 | 0 | 100 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 43 | 1 | 0 | 0 | 89 |
| 5:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | 49 | 1 | 0 | 0 | 85 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 47 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 102 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 32 | 0 | 0 | 0 | 37 | 0 | 0 | 0 | 71 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 60 |
| 6:15 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 45 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 21 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 42 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 29 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 11 | 0 | 30 | 0 | 6 | 395 | 0 | 0 | 0 | 0 | 481 | 4 | 0 | 927 |
| APPROACH %'s : | | | | | 26.83% | 0.00% | 73.17% | 0.00% | 1.50% | 98.50% | 0.00% | 0.00% | 0.00% | 99.18% | 0.82% | 0.00% | | |
| PEAK HR : | 04:15 PM - 05:15 PM | | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 7 | 0 | 26 | 0 | 3 | 165 | 0 | 0 | 0 | 0 | 200 | 2 | 0 | 403 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.438 | 0.000 | 0.382 | 0.000 | 0.375 | 0.917 | 0.000 | 0.000 | 0.000 | 0.000 | 0.862 | 0.500 | 0.000 | 0.813 |
| | | | | | 0.393 | | | | 0.933 | | | | 0.856 | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Highland School Dwy & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-007
Date: 2/9/2023

Data - HT

| NS/EW Streets: | Highland School Dwy | | | | Highland School Dwy | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | |
|------------------|---------------------|-------|-------|-------|---------------------|-------|-------|-------|----------------|---------|-------|-------|----------------|---------|-------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 1 | 0 | 0 | TOTAL | 15 |
| APPROACH %'s : | | | | | | | | | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | 7 |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.000 | | 0.438 |
| | | | | | | | | | | | | | | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 5 | 0 | 0 | TOTAL | 12 |
| APPROACH %'s : | | | | | | | | | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | | |
| PEAK HR : | 04:15 PM - 05:15 PM | | | | | | | | | | | | | | | | TOTAL | 9 |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 4 | 0 | 0 | | |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.625 | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.000 | | 0.750 |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: Highland School Dwy & Oak Springs Dr
City: Warrenton
Control: 1-Way Stop(SB)

Project ID: 23-260020-007
Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | Highland School Dwy | | | | Highland School Dwy | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|---------------------|-------|-------|-------|---------------------|-------|-------|-------|----------------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| NS/EW Streets: | Highland School Dwy | | | | Highland School Dwy | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | | |
|-------------------------|---------------------|-------|-------|-------|---------------------|-------|-------|-------|----------------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | | |
| | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR : | 04:15 PM - 05:15 PM | | | | | | | | | | | | | | | | TOTAL | | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: Highland School Dwy & Oak Springs Dr
City: Warrenton

Project ID: 23-260020-007
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | Highland School Dwy | | Highland School Dwy | | Oak Springs Dr | | Oak Springs Dr | | TOTAL |
|-------------------------|---------------------|---------|---------------------|---------|----------------|---------|----------------|---------|------------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB 1 | WB 0 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 1 |
| APPROACH %'s : | 100.00% | 0.00% | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|----------|---------|----------|---------|------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:15 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 0 | WB 3 | EB 0 | WB 0 | NB 0 | SB 0 | NB 0 | SB 0 | TOTAL 3 |
| APPROACH %'s : | 0.00% | 100.00% | | | | | | | |
| PEAK HR : | 04:15 PM - 05:15 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| PEAK HR FACTOR : | | 0.500 | | | | | | | 0.500 |

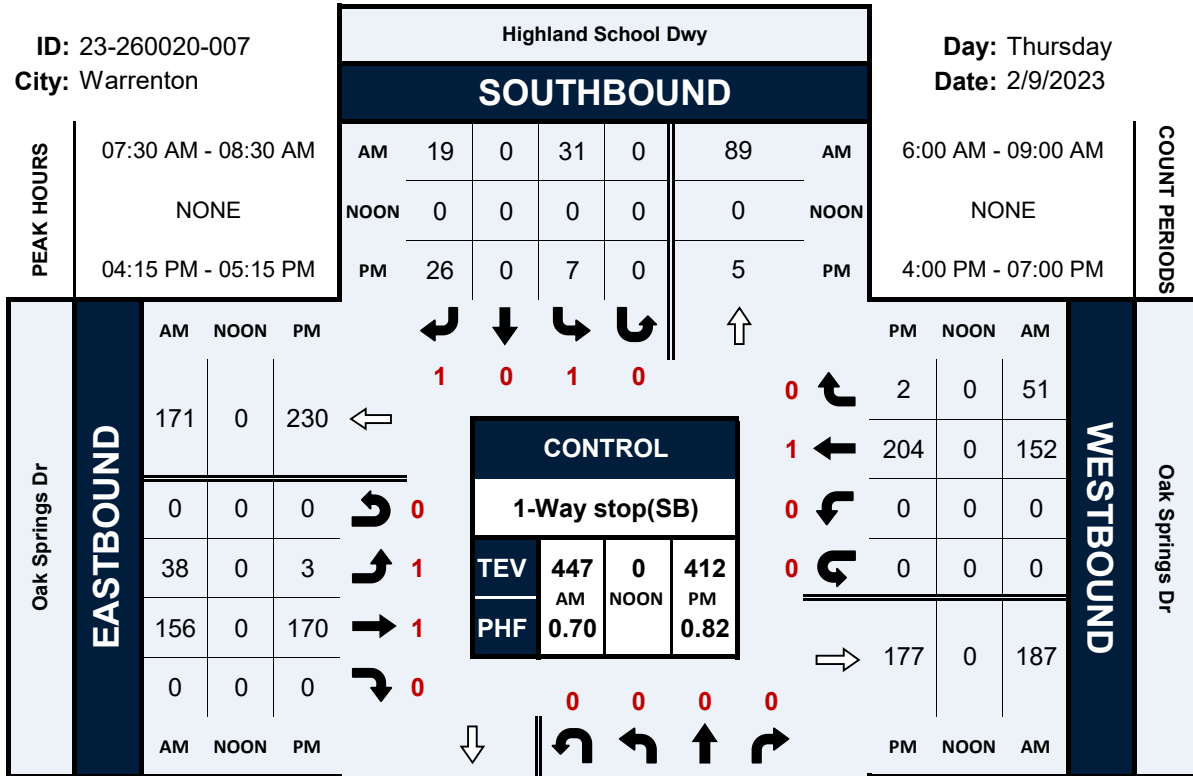
Prepared by National Data & Surveying Services

Highland School Dwy & Oak Springs Dr

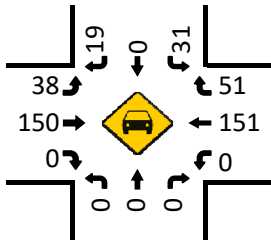
Peak Hour Turning Movement Count

ID: 23-260020-007
City: Warrenton

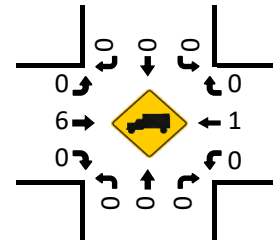
Day: Thursday
Date: 2/9/2023



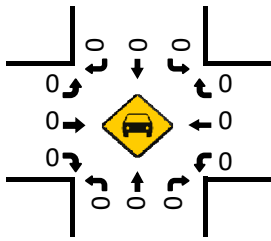
Cars (AM)



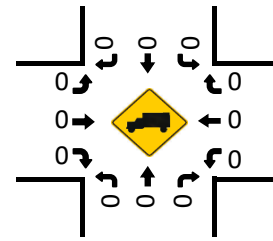
HT (AM)



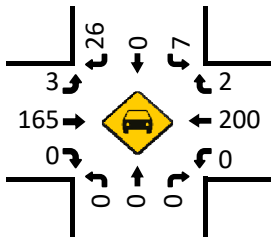
Cars (NOON)



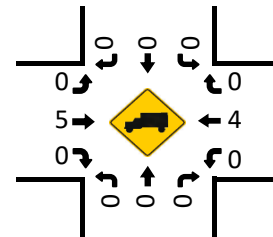
HT (NOON)



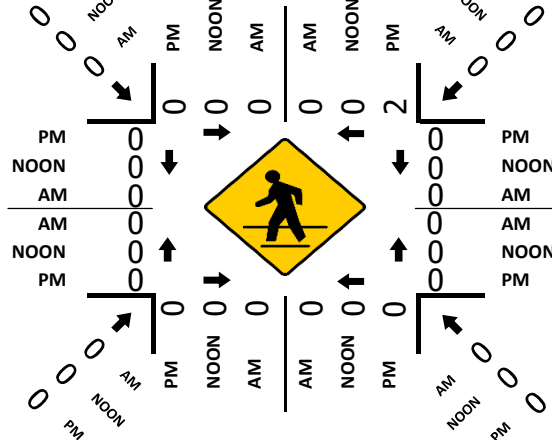
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/US 211/Broadview Ave & Oak Springs Dr
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-008
Date: 2/9/2023

Data - Total

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|----------------|---------|---------|---------|----------------|---------|---------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | |
| 6:00 AM | 0 | 38 | 1 | 0 | 5 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 74 |
| 6:15 AM | 0 | 38 | 2 | 0 | 2 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | 76 |
| 6:30 AM | 0 | 49 | 3 | 0 | 4 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | 106 |
| 6:45 AM | 0 | 48 | 5 | 0 | 10 | 59 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 7 | 0 | 135 |
| 7:00 AM | 1 | 65 | 13 | 0 | 5 | 113 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 4 | 0 | 215 |
| 7:15 AM | 0 | 71 | 15 | 0 | 13 | 88 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 14 | 0 | 220 |
| 7:30 AM | 1 | 121 | 29 | 0 | 17 | 79 | 1 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 18 | 0 | 276 |
| 7:45 AM | 0 | 152 | 27 | 0 | 24 | 108 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 41 | 0 | 364 |
| 8:00 AM | 0 | 73 | 21 | 0 | 28 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 26 | 0 | 258 |
| 8:15 AM | 0 | 59 | 21 | 0 | 26 | 78 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 20 | 0 | 227 |
| 8:30 AM | 0 | 60 | 18 | 0 | 19 | 74 | 1 | 0 | 0 | 0 | 0 | 0 | 23 | 1 | 12 | 0 | 208 |
| 8:45 AM | 1 | 61 | 31 | 1 | 15 | 93 | 2 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 10 | 0 | 236 |
| TOTAL VOLUMES : | 3 | 835 | 186 | 1 | 168 | 877 | 5 | 0 | 0 | 1 | 1 | 0 | 154 | 2 | 162 | 0 | 2395 |
| APPROACH %'s : | 0.29% | 81.46% | 18.15% | 0.10% | 16.00% | 83.52% | 0.48% | 0.00% | 0.00% | 50.00% | 50.00% | 0.00% | 48.43% | 0.63% | 50.94% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 1 | 405 | 98 | 0 | 95 | 355 | 1 | 0 | 0 | 1 | 0 | 0 | 63 | 1 | 105 | 0 | 1125 |
| PEAK HR FACTOR : | 0.250 | 0.666 | 0.845 | 0.000 | 0.848 | 0.822 | 0.250 | 0.000 | 0.000 | 0.250 | 0.000 | 0.000 | 0.716 | 0.250 | 0.640 | 0.000 | 0.773 |
| | 0.704 | | | | 0.854 | | | | 0.250 | | | | 0.797 | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | |
| 4:00 PM | 1 | 81 | 19 | 0 | 19 | 128 | 0 | 0 | 1 | 0 | 1 | 0 | 20 | 0 | 32 | 0 | 302 |
| 4:15 PM | 0 | 95 | 24 | 0 | 16 | 142 | 0 | 0 | 1 | 0 | 0 | 0 | 13 | 0 | 34 | 0 | 325 |
| 4:30 PM | 0 | 119 | 16 | 0 | 30 | 108 | 0 | 0 | 0 | 0 | 2 | 0 | 40 | 0 | 39 | 0 | 354 |
| 4:45 PM | 1 | 75 | 18 | 0 | 21 | 119 | 2 | 0 | 0 | 1 | 1 | 0 | 24 | 0 | 34 | 0 | 296 |
| 5:00 PM | 1 | 94 | 19 | 0 | 27 | 107 | 0 | 0 | 0 | 1 | 1 | 0 | 13 | 0 | 33 | 0 | 296 |
| 5:15 PM | 0 | 85 | 14 | 0 | 19 | 116 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 31 | 0 | 284 |
| 5:30 PM | 1 | 68 | 21 | 0 | 26 | 93 | 0 | 0 | 0 | 1 | 0 | 0 | 25 | 0 | 28 | 0 | 263 |
| 5:45 PM | 0 | 83 | 9 | 0 | 24 | 106 | 1 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 18 | 0 | 263 |
| 6:00 PM | 0 | 66 | 11 | 0 | 13 | 64 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 0 | 23 | 0 | 191 |
| 6:15 PM | 0 | 66 | 11 | 0 | 10 | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 14 | 0 | 196 |
| 6:30 PM | 0 | 56 | 12 | 0 | 10 | 54 | 0 | 0 | 1 | 0 | 1 | 0 | 9 | 0 | 13 | 0 | 156 |
| 6:45 PM | 0 | 52 | 8 | 0 | 8 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 8 | 0 | 133 |
| TOTAL VOLUMES : | 4 | 940 | 182 | 0 | 223 | 1177 | 3 | 0 | 3 | 3 | 8 | 0 | 208 | 1 | 307 | 0 | 3059 |
| APPROACH %'s : | 0.36% | 83.48% | 16.16% | 0.00% | 15.89% | 83.89% | 0.21% | 0.00% | 21.43% | 21.43% | 57.14% | 0.00% | 40.31% | 0.19% | 59.50% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 2 | 370 | 77 | 0 | 86 | 497 | 2 | 0 | 2 | 1 | 4 | 0 | 97 | 0 | 139 | 0 | 1277 |
| PEAK HR FACTOR : | 0.500 | 0.777 | 0.802 | 0.000 | 0.717 | 0.875 | 0.250 | 0.000 | 0.500 | 0.250 | 0.500 | 0.000 | 0.606 | 0.000 | 0.891 | 0.000 | 0.902 |
| | 0.831 | | | | 0.926 | | | | 0.875 | | | | 0.747 | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave & Oak Springs Dr
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-008
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|----------------|---------|---------|---------|----------------|---------|---------|---------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | |
| 6:00 AM | 0 | 35 | 1 | 0 | 5 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | |
| 6:15 AM | 0 | 35 | 2 | 0 | 2 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 | 0 | |
| 6:30 AM | 0 | 47 | 2 | 0 | 3 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 | 0 | |
| 6:45 AM | 0 | 45 | 5 | 0 | 9 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 7 | 0 | |
| 7:00 AM | 1 | 57 | 11 | 0 | 5 | 106 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 4 | 0 | |
| 7:15 AM | 0 | 67 | 15 | 0 | 12 | 81 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 14 | 0 | |
| 7:30 AM | 1 | 117 | 29 | 0 | 17 | 71 | 1 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 18 | 0 | |
| 7:45 AM | 0 | 146 | 26 | 0 | 22 | 107 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 40 | 0 | |
| 8:00 AM | 0 | 67 | 21 | 0 | 25 | 89 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 26 | 0 | |
| 8:15 AM | 0 | 52 | 21 | 0 | 26 | 72 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 1 | 20 | 0 | |
| 8:30 AM | 0 | 56 | 17 | 0 | 19 | 59 | 1 | 0 | 0 | 0 | 0 | 0 | 23 | 1 | 12 | 0 | |
| 8:45 AM | 1 | 58 | 17 | 1 | 14 | 88 | 2 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 10 | 0 | |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 3 | 782 | 181 | 1 | 159 | 821 | 4 | 0 | 0 | 1 | 1 | 0 | 154 | 2 | 161 | 0 | 2270 |
| | 0.31% | 80.87% | 18.72% | 0.10% | 16.16% | 83.43% | 0.41% | 0.00% | 0.00% | 50.00% | 50.00% | 0.00% | 48.58% | 0.63% | 50.79% | 0.00% | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 1 | 382 | 97 | 0 | 90 | 339 | 1 | 0 | 0 | 1 | 0 | 0 | 63 | 1 | 104 | 0 | 1079 |
| PEAK HR FACTOR : | 0.250 | 0.654 | 0.836 | 0.000 | 0.865 | 0.792 | 0.250 | 0.000 | 0.000 | 0.250 | 0.000 | 0.000 | 0.716 | 0.250 | 0.650 | 0.000 | 0.764 |
| | | 0.698 | | | | 0.833 | | | | 0.250 | | | | 0.808 | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | |
| 4:00 PM | 1 | 80 | 19 | 0 | 19 | 124 | 0 | 0 | 1 | 0 | 1 | 0 | 20 | 0 | 31 | 0 | |
| 4:15 PM | 0 | 93 | 22 | 0 | 16 | 134 | 0 | 0 | 1 | 0 | 0 | 0 | 12 | 0 | 34 | 0 | |
| 4:30 PM | 0 | 115 | 15 | 0 | 30 | 105 | 0 | 0 | 0 | 0 | 2 | 0 | 40 | 0 | 38 | 0 | |
| 4:45 PM | 1 | 71 | 18 | 0 | 20 | 116 | 2 | 0 | 0 | 1 | 1 | 0 | 24 | 0 | 33 | 0 | |
| 5:00 PM | 1 | 93 | 18 | 0 | 27 | 105 | 0 | 0 | 0 | 1 | 1 | 0 | 13 | 0 | 32 | 0 | |
| 5:15 PM | 0 | 83 | 14 | 0 | 19 | 115 | 0 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 31 | 0 | |
| 5:30 PM | 1 | 68 | 21 | 0 | 26 | 92 | 0 | 0 | 0 | 1 | 0 | 0 | 25 | 0 | 28 | 0 | |
| 5:45 PM | 0 | 82 | 8 | 0 | 24 | 105 | 1 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 18 | 0 | |
| 6:00 PM | 0 | 65 | 11 | 0 | 13 | 64 | 0 | 0 | 0 | 0 | 1 | 0 | 13 | 0 | 23 | 0 | |
| 6:15 PM | 0 | 66 | 11 | 0 | 10 | 86 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 14 | 0 | |
| 6:30 PM | 0 | 56 | 11 | 0 | 10 | 53 | 0 | 0 | 1 | 0 | 1 | 0 | 9 | 0 | 13 | 0 | |
| 6:45 PM | 0 | 51 | 8 | 0 | 8 | 52 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 8 | 0 | |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 4 | 923 | 176 | 0 | 222 | 1151 | 3 | 0 | 3 | 3 | 8 | 0 | 207 | 1 | 303 | 0 | 3004 |
| | 0.36% | 83.68% | 15.96% | 0.00% | 16.13% | 83.65% | 0.22% | 0.00% | 21.43% | 21.43% | 57.14% | 0.00% | 40.51% | 0.20% | 59.30% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 2 | 359 | 74 | 0 | 85 | 479 | 2 | 0 | 2 | 1 | 4 | 0 | 96 | 0 | 136 | 0 | 1240 |
| PEAK HR FACTOR : | 0.500 | 0.780 | 0.841 | 0.000 | 0.708 | 0.894 | 0.250 | 0.000 | 0.500 | 0.250 | 0.500 | 0.000 | 0.600 | 0.000 | 0.895 | 0.000 | 0.899 |
| | | 0.837 | | | | 0.943 | | | | 0.875 | | | | 0.744 | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave & Oak Springs Dr
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-008
Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Oak Springs Dr | | | | Oak Springs Dr | | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|----------------|---------|---------|---------|----------------|---------|---------|---------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
|-------------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|-------|-------|
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0 WT | 1 WR | 0 WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: US 17/US 211/Broadview Ave & Oak Springs Dr
City: Warrenton

Project ID: 23-260020-008
Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | US 17/US 211/Broadview Ave | | US 17/US 211/Broadview Ave | | Oak Springs Dr | | Oak Springs Dr | | TOTAL |
|-------------------------|----------------------------|----|----------------------------|----|----------------|----|----------------|----|-------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 3 |
| PEAK HR : | 07:30 AM - 08:30 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

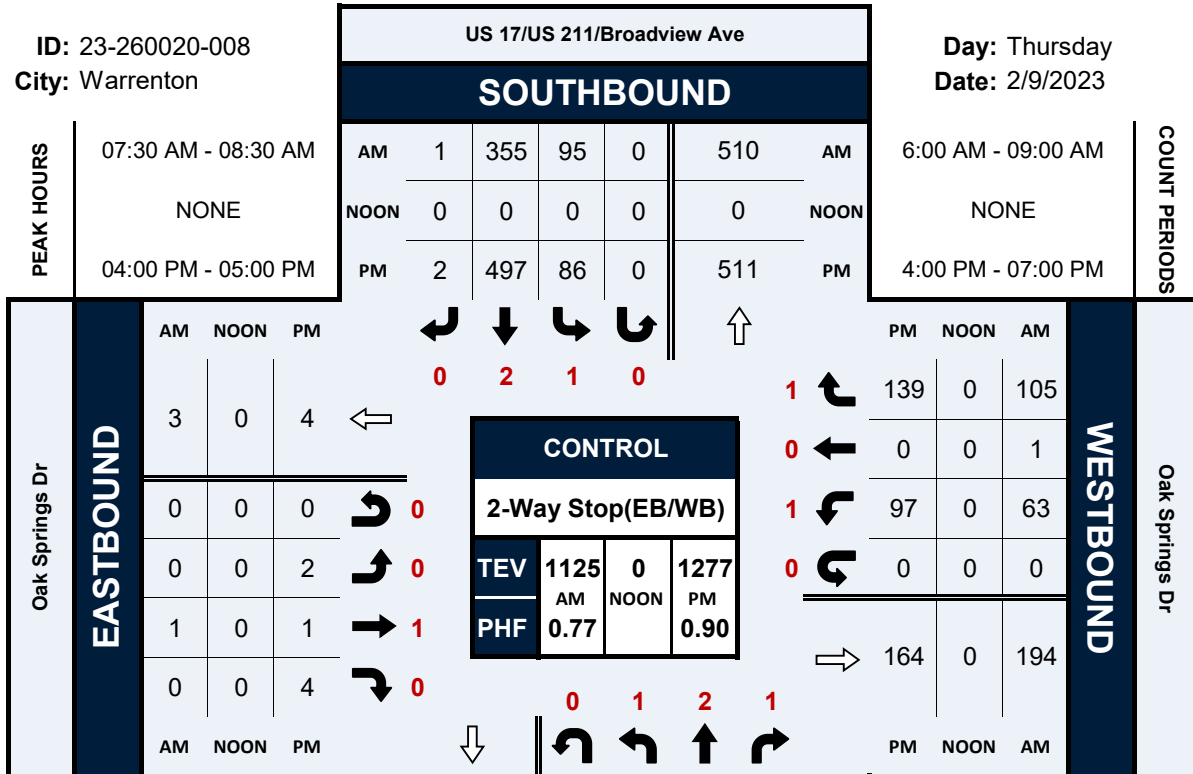
| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|----|-----------|----|----------|-------|----------|-------|-------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6:00 PM | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 3 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 0 | 1 | 0 | 0 | 3 | 1 | 5 | 2 | 12 |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 5 |
| PEAK HR FACTOR : | | | | | | 0.250 | 0.375 | 0.250 | 0.417 |

US 17/US 211/Broadview Ave & Oak Springs Dr

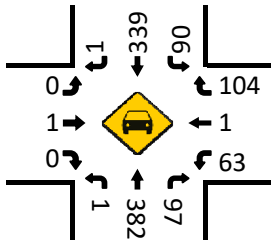
Peak Hour Turning Movement Count

ID: 23-260020-008
City: Warrenton

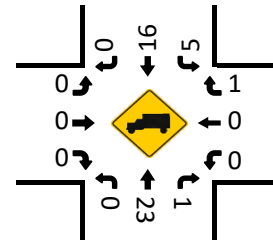
Day: Thursday
Date: 2/9/2023



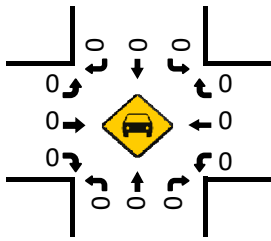
Cars (AM)



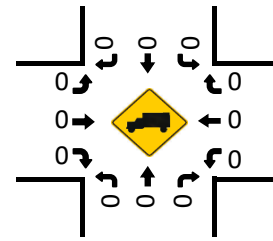
HT (AM)



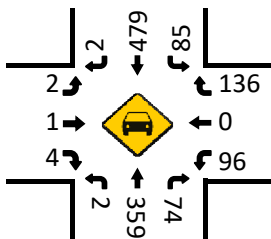
Cars (NOON)



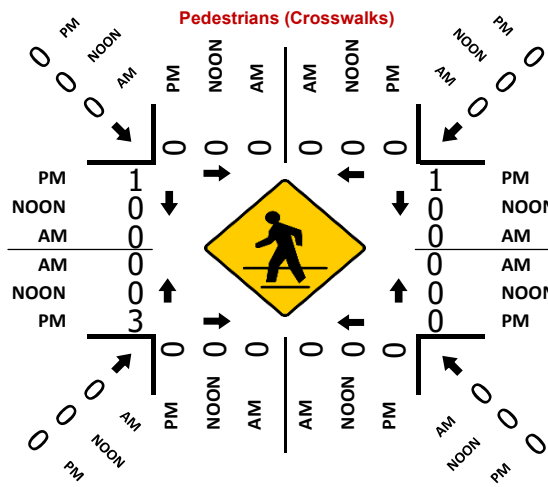
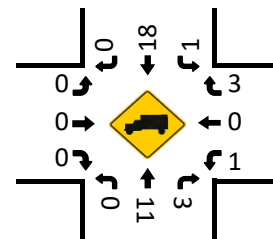
HT (NOON)



Cars (PM)



HT (PM)



National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/US 211/Broadview Ave & Warrenton Village North Dwy
 City: Warrenton
 Control: 1-Way stop(WB)

Project ID: 23-260020-009
 Date: 2/9/2023

Data - Total

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Warrenton Village North Dwy | | | | Warrenton Village North Dwy | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|-----------|-----------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 6:00 AM | 0 | 38 | 1 | 0 | 0 | 28 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 70 |
| 6:15 AM | 0 | 41 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 72 |
| 6:30 AM | 0 | 51 | 0 | 0 | 1 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 95 |
| 6:45 AM | 0 | 52 | 0 | 0 | 1 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 118 |
| 7:00 AM | 6 | 78 | 0 | 0 | 2 | 123 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | 214 |
| 7:15 AM | 1 | 84 | 1 | 0 | 0 | 107 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 195 |
| 7:30 AM | 2 | 153 | 1 | 0 | 3 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 242 |
| 7:45 AM | 7 | 169 | 2 | 0 | 4 | 118 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8 | 0 | 310 |
| 8:00 AM | 3 | 89 | 5 | 0 | 4 | 106 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 216 |
| 8:15 AM | 1 | 77 | 2 | 0 | 4 | 95 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 5 | 0 | 189 |
| 8:30 AM | 4 | 75 | 4 | 0 | 3 | 92 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 188 |
| 8:45 AM | 8 | 83 | 1 | 0 | 1 | 116 | 0 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 5 | 0 | 224 |
| TOTAL VOLUMES : | 32 | 990 | 17 | 0 | 23 | 1005 | 5 | 0 | 2 | 0 | 12 | 0 | 14 | 1 | 32 | 0 | 2133 |
| APPROACH %'s : | 3.08% | 95.28% | 1.64% | 0.00% | 2.23% | 97.29% | 0.48% | 0.00% | 14.29% | 0.00% | 85.71% | 0.00% | 29.79% | 2.13% | 68.09% | 0.00% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 13 | 495 | 9 | 0 | 11 | 413 | 2 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 14 | 0 | 963 |
| PEAK HR FACTOR : | 0.464 | 0.732 | 0.450 | 0.000 | 0.688 | 0.875 | 0.500 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.333 | 0.250 | 0.438 | 0.000 | 0.777 |
| | | | 0.726 | | | | 0.866 | | | | 0.250 | | | | 0.528 | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 4:00 PM | 3 | 87 | 6 | 0 | 17 | 131 | 2 | 0 | 2 | 0 | 4 | 0 | 11 | 1 | 11 | 0 | 275 |
| 4:15 PM | 5 | 104 | 1 | 1 | 8 | 146 | 1 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 13 | 0 | 287 |
| 4:30 PM | 2 | 124 | 8 | 1 | 8 | 140 | 1 | 0 | 4 | 1 | 5 | 0 | 10 | 0 | 8 | 0 | 312 |
| 4:45 PM | 3 | 85 | 0 | 0 | 7 | 135 | 2 | 1 | 2 | 0 | 5 | 0 | 9 | 0 | 5 | 0 | 254 |
| 5:00 PM | 5 | 102 | 2 | 0 | 9 | 108 | 4 | 0 | 3 | 1 | 6 | 0 | 6 | 0 | 9 | 0 | 255 |
| 5:15 PM | 8 | 91 | 1 | 0 | 12 | 121 | 1 | 0 | 1 | 1 | 6 | 0 | 9 | 0 | 7 | 0 | 258 |
| 5:30 PM | 5 | 83 | 3 | 0 | 5 | 114 | 0 | 0 | 0 | 1 | 3 | 0 | 8 | 0 | 8 | 0 | 230 |
| 5:45 PM | 2 | 81 | 3 | 0 | 13 | 113 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 10 | 0 | 226 |
| 6:00 PM | 5 | 70 | 3 | 0 | 10 | 68 | 1 | 0 | 2 | 1 | 5 | 0 | 2 | 0 | 5 | 0 | 172 |
| 6:15 PM | 1 | 62 | 0 | 0 | 7 | 88 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 15 | 0 | 184 |
| 6:30 PM | 0 | 60 | 3 | 0 | 4 | 59 | 1 | 0 | 1 | 0 | 2 | 0 | 9 | 0 | 7 | 0 | 146 |
| 6:45 PM | 3 | 59 | 1 | 0 | 8 | 48 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 1 | 1 | 0 | 129 |
| TOTAL VOLUMES : | 42 | 1008 | 31 | 2 | 108 | 1271 | 14 | 1 | 17 | 5 | 47 | 0 | 81 | 2 | 99 | 0 | 2728 |
| APPROACH %'s : | 3.88% | 93.07% | 2.86% | 0.18% | 7.75% | 91.18% | 1.00% | 0.07% | 24.64% | 7.25% | 68.12% | 0.00% | 44.51% | 1.10% | 54.40% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 13 | 400 | 15 | 2 | 40 | 552 | 6 | 1 | 10 | 1 | 17 | 0 | 33 | 1 | 37 | 0 | 1128 |
| PEAK HR FACTOR : | 0.650 | 0.806 | 0.469 | 0.500 | 0.588 | 0.945 | 0.750 | 0.250 | 0.625 | 0.250 | 0.850 | 0.000 | 0.750 | 0.250 | 0.712 | 0.000 | 0.904 |
| | | | 0.796 | | | | 0.966 | | | | 0.700 | | | | 0.772 | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave & Warrenton Village North Dwy
City: Warrenton
Control: 1-Way stop(WB)

Project ID: 23-260020-009
Date: 2/9/2023

Data - Cars

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Warrenton Village North Dwy | | | | Warrenton Village North Dwy | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|-----------|-----------|---------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 6:00 AM | 0 | 35 | 1 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 65 |
| 6:15 AM | 0 | 38 | 0 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 69 |
| 6:30 AM | 0 | 48 | 0 | 0 | 1 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90 |
| 6:45 AM | 0 | 50 | 0 | 0 | 0 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 112 |
| 7:00 AM | 6 | 68 | 0 | 0 | 2 | 117 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 197 |
| 7:15 AM | 1 | 80 | 1 | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 183 |
| 7:30 AM | 2 | 149 | 1 | 0 | 3 | 74 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 230 |
| 7:45 AM | 7 | 163 | 2 | 0 | 4 | 117 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 0 | 302 |
| 8:00 AM | 3 | 83 | 5 | 0 | 4 | 105 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 209 |
| 8:15 AM | 1 | 70 | 2 | 0 | 4 | 89 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 5 | 0 | 176 |
| 8:30 AM | 4 | 71 | 2 | 0 | 3 | 77 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 4 | 0 | 166 |
| 8:45 AM | 8 | 81 | 1 | 0 | 1 | 111 | 0 | 0 | 2 | 0 | 4 | 0 | 4 | 0 | 4 | 0 | 216 |
| TOTAL VOLUMES : | 32 | 936 | 15 | 0 | 22 | 951 | 4 | 0 | 2 | 0 | 10 | 0 | 14 | 1 | 28 | 0 | 2015 |
| APPROACH %'s : | 3.26% | 95.22% | 1.53% | 0.00% | 2.25% | 97.34% | 0.41% | 0.00% | 16.67% | 0.00% | 83.33% | 0.00% | 32.56% | 2.33% | 65.12% | 0.00% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 13 | 475 | 9 | 0 | 11 | 395 | 2 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 13 | 0 | 924 |
| PEAK HR FACTOR : | 0.464 | 0.729 | 0.450 | 0.000 | 0.688 | 0.844 | 0.500 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.333 | 0.250 | 0.464 | 0.000 | 0.765 |
| | | | 0.722 | | | 0.836 | | | | 0.250 | | | | 0.563 | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 4:00 PM | 3 | 86 | 6 | 0 | 17 | 127 | 2 | 0 | 2 | 0 | 4 | 0 | 11 | 1 | 11 | 0 | 270 |
| 4:15 PM | 5 | 102 | 1 | 1 | 8 | 137 | 1 | 0 | 2 | 0 | 3 | 0 | 3 | 0 | 11 | 0 | 274 |
| 4:30 PM | 2 | 119 | 8 | 1 | 8 | 137 | 1 | 0 | 4 | 1 | 5 | 0 | 10 | 0 | 8 | 0 | 304 |
| 4:45 PM | 3 | 81 | 0 | 0 | 7 | 132 | 2 | 1 | 2 | 0 | 5 | 0 | 9 | 0 | 5 | 0 | 247 |
| 5:00 PM | 5 | 101 | 2 | 0 | 9 | 106 | 4 | 0 | 3 | 1 | 6 | 0 | 6 | 0 | 8 | 0 | 251 |
| 5:15 PM | 8 | 89 | 1 | 0 | 12 | 120 | 1 | 0 | 1 | 1 | 6 | 0 | 9 | 0 | 7 | 0 | 255 |
| 5:30 PM | 4 | 83 | 3 | 0 | 5 | 113 | 0 | 0 | 0 | 1 | 2 | 0 | 8 | 0 | 8 | 0 | 227 |
| 5:45 PM | 2 | 80 | 3 | 0 | 13 | 112 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 9 | 0 | 223 |
| 6:00 PM | 4 | 69 | 3 | 0 | 10 | 68 | 1 | 0 | 2 | 1 | 5 | 0 | 2 | 0 | 5 | 0 | 170 |
| 6:15 PM | 1 | 62 | 0 | 0 | 7 | 87 | 0 | 0 | 0 | 0 | 2 | 0 | 9 | 0 | 15 | 0 | 183 |
| 6:30 PM | 0 | 60 | 3 | 0 | 3 | 59 | 1 | 0 | 1 | 0 | 2 | 0 | 9 | 0 | 6 | 0 | 144 |
| 6:45 PM | 3 | 58 | 1 | 0 | 8 | 47 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 1 | 1 | 0 | 127 |
| TOTAL VOLUMES : | 40 | 990 | 31 | 2 | 107 | 1245 | 14 | 1 | 17 | 5 | 46 | 0 | 81 | 2 | 94 | 0 | 2675 |
| APPROACH %'s : | 3.76% | 93.13% | 2.92% | 0.19% | 7.83% | 91.08% | 1.02% | 0.07% | 25.00% | 7.35% | 67.65% | 0.00% | 45.76% | 1.13% | 53.11% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 13 | 388 | 15 | 2 | 40 | 533 | 6 | 1 | 10 | 1 | 17 | 0 | 33 | 1 | 35 | 0 | 1095 |
| PEAK HR FACTOR : | 0.650 | 0.815 | 0.469 | 0.500 | 0.588 | 0.973 | 0.750 | 0.250 | 0.625 | 0.250 | 0.850 | 0.000 | 0.750 | 0.250 | 0.795 | 0.000 | 0.900 |
| | | | 0.804 | | | 0.993 | | | | 0.700 | | | | 0.750 | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave & Warrenton Village North Dwy
 City: Warrenton
 Control: 1-Way stop(WB)

Project ID: 23-260020-009
 Date: 2/9/2023

Data - HT

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Warrenton Village North Dwy | | | | Warrenton Village North Dwy | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|-----------|-----------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 6:00 AM | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| 6:15 AM | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| 6:30 AM | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 6:45 AM | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 |
| 7:00 AM | 0 | 10 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 17 |
| 7:15 AM | 0 | 4 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 7:30 AM | 0 | 4 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 7:45 AM | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| 8:00 AM | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 8:15 AM | 0 | 7 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| 8:30 AM | 0 | 4 | 2 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 22 |
| 8:45 AM | 0 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 8 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 0 | 54 | 2 | 0 | 1 | 54 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 118 |
| | 0.00% | 96.43% | 3.57% | 0.00% | 1.79% | 96.43% | 1.79% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 20 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 39 |
| PEAK HR FACTOR : | 0.000 | 0.833 | 0.000 | 0.000 | 0.000 | 0.563 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.813 |
| | 0.833 | | | | | | | | | | | | | | | | |
| | 0.563 | | | | | | | | | | | | | | | | |
| | 0.250 | | | | | | | | | | | | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 4:15 PM | 0 | 2 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 13 |
| 4:30 PM | 0 | 5 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 4:45 PM | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 5:15 PM | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:30 PM | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 5:45 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| 6:00 PM | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:30 PM | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 6:45 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 2 | 18 | 0 | 0 | 1 | 26 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 0 | 53 |
| | 10.00% | 90.00% | 0.00% | 0.00% | 3.70% | 96.30% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | 0.00% | 0.00% | 100.00% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 12 | 0 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 33 |
| PEAK HR FACTOR : | 0.000 | 0.600 | 0.000 | 0.000 | 0.000 | 0.528 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.250 | 0.000 | 0.635 |
| | 0.600 | | | | | | | | | | | | | | | | |
| | 0.528 | | | | | | | | | | | | | | | | |
| | 0.250 | | | | | | | | | | | | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave & Warrenton Village North Dwy
 City: Warrenton
 Control: 1-Way stop(WB)

Project ID: 23-260020-009
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | US 17/US 211/Broadview Ave | | | | US 17/US 211/Broadview Ave | | | | Warrenton Village North Dwy | | | | Warrenton Village North Dwy | | | | | |
|-------------------------|----------------------------|---------|---------|---------|----------------------------|---------|---------|---------|-----------------------------|---------|---------|---------|-----------------------------|-----------|-----------|---------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 0 SR | 0 SU | 0 EL | 1 ET | 0 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: US 17/US 211/Broadview Ave & Warrenton Village North Dwy Project ID: 23-260020-009
 City: Warrenton Date: 2/9/2023

Data - Pedestrians (Crosswalks)

| NS/EW Streets: | US 17/US 211/Broadview Ave | | US 17/US 211/Broadview Ave | | Warrenton Village North Dwy | | Warrenton Village North Dwy | | |
|-------------------------|----------------------------|-------|----------------------------|----|-----------------------------|----|-----------------------------|--------|-------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| | 100.00% | 0.00% | | | | | 50.00% | 50.00% | |
| PEAK HR : | 07:15 AM - 08:15 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

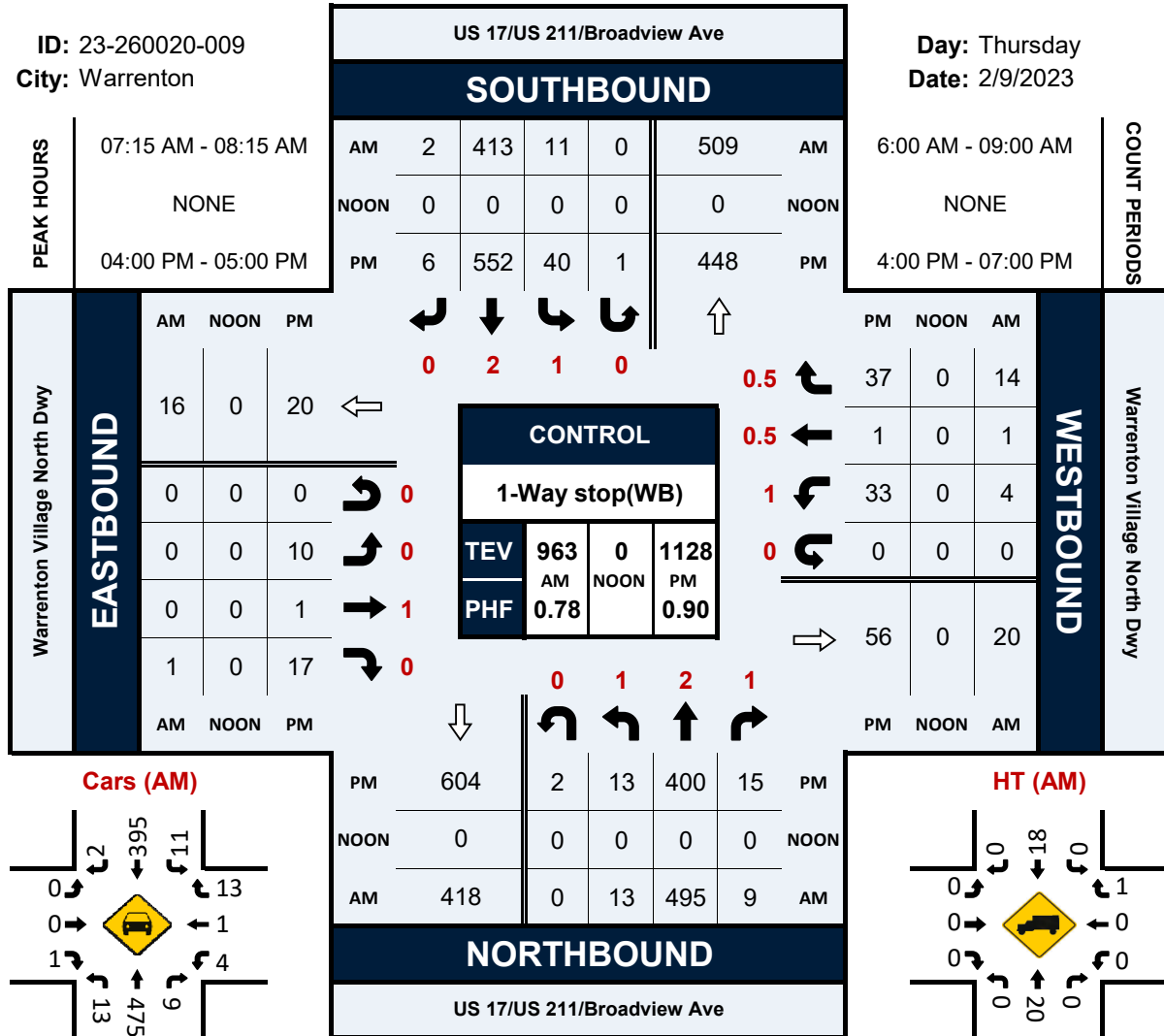
| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|----|-----------|-------|----------|-------|----------|--------|-------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| 5:00 PM | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 3 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB | WB | EB | WB | NB | SB | NB | SB | TOTAL |
| APPROACH %'s : | 0 | 0 | 2 | 0 | 2 | 0 | 4 | 2 | 10 |
| | | | 100.00% | 0.00% | 100.00% | 0.00% | 66.67% | 33.33% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 5 |
| PEAK HR FACTOR : | | | | | | | 0.333 | 0.250 | 0.417 |

US 17/US 211/Broadview Ave & Warrenton Village North Dwy

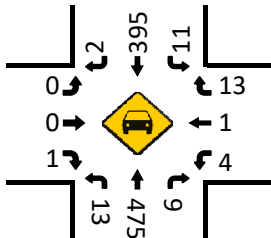
Peak Hour Turning Movement Count

ID: 23-260020-009
City: Warrenton

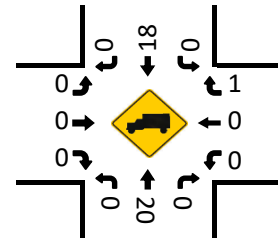
Day: Thursday
Date: 2/9/2023



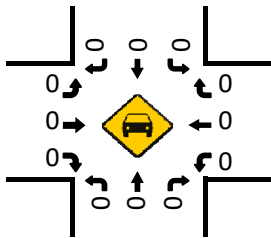
Cars (AM)



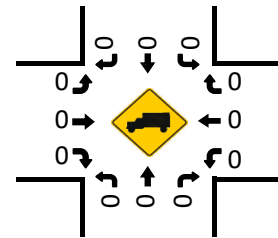
HT (AM)



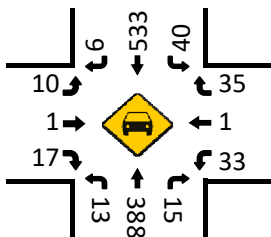
Cars (NOON)



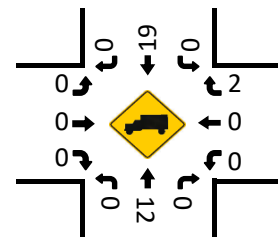
HT (NOON)



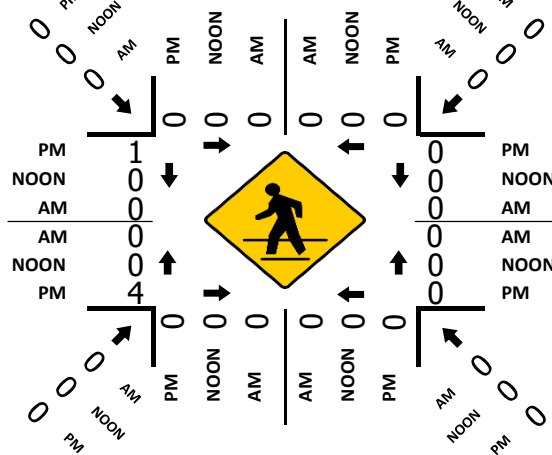
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/US 211/Broadview Ave/Winchester St & Warrenton Village South Dwy/Broadview Ave
 City: Warrenton
 Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-010
 Date: 2/9/2023

Data - Total

| NS/EW Streets: | US 17/US 211/Broadview Ave/Winchester St | | | | US 17/US 211/Broadview Ave/Winchester St | | | | Warrenton Village South Dwy/Broadview Ave | | | | Warrenton Village South Dwy/Broadview Ave | | | | |
|-------------------------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|---|-----------|-----------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 6:00 AM | 25 | 17 | 2 | 0 | 0 | 20 | 8 | 0 | 22 | 4 | 24 | 0 | 0 | 1 | 0 | 0 | 123 |
| 6:15 AM | 29 | 21 | 2 | 0 | 0 | 26 | 7 | 0 | 20 | 1 | 13 | 0 | 0 | 2 | 0 | 0 | 121 |
| 6:30 AM | 27 | 26 | 1 | 1 | 0 | 35 | 8 | 0 | 26 | 2 | 12 | 0 | 0 | 3 | 0 | 0 | 141 |
| 6:45 AM | 32 | 31 | 3 | 0 | 0 | 57 | 7 | 0 | 20 | 2 | 21 | 0 | 0 | 2 | 0 | 0 | 175 |
| 7:00 AM | 32 | 58 | 7 | 1 | 1 | 117 | 7 | 0 | 24 | 5 | 16 | 0 | 3 | 1 | 2 | 0 | 274 |
| 7:15 AM | 26 | 66 | 6 | 0 | 0 | 98 | 11 | 0 | 26 | 8 | 19 | 0 | 1 | 0 | 0 | 0 | 261 |
| 7:30 AM | 30 | 120 | 8 | 0 | 4 | 59 | 19 | 0 | 30 | 5 | 13 | 0 | 0 | 3 | 3 | 0 | 294 |
| 7:45 AM | 34 | 136 | 7 | 0 | 1 | 106 | 11 | 0 | 39 | 4 | 25 | 0 | 1 | 0 | 0 | 0 | 364 |
| 8:00 AM | 20 | 78 | 9 | 0 | 1 | 98 | 11 | 0 | 22 | 4 | 20 | 0 | 0 | 0 | 0 | 0 | 263 |
| 8:15 AM | 26 | 55 | 7 | 1 | 1 | 89 | 7 | 0 | 23 | 4 | 13 | 0 | 1 | 0 | 0 | 0 | 227 |
| 8:30 AM | 20 | 65 | 7 | 0 | 0 | 91 | 7 | 0 | 17 | 1 | 16 | 0 | 0 | 5 | 0 | 0 | 229 |
| 8:45 AM | 14 | 71 | 9 | 0 | 0 | 108 | 15 | 0 | 20 | 8 | 19 | 0 | 0 | 1 | 2 | 0 | 267 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 315 | 744 | 68 | 3 | 8 | 904 | 118 | 0 | 289 | 48 | 211 | 0 | 6 | 18 | 7 | 0 | 2739 |
| | 27.88% | 65.84% | 6.02% | 0.27% | 0.78% | 87.77% | 11.46% | 0.00% | 52.74% | 8.76% | 38.50% | 0.00% | 19.35% | 58.06% | 22.58% | 0.00% | |
| PEAK HR : | 07:00 AM - 08:00 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 122 | 380 | 28 | 1 | 6 | 380 | 48 | 0 | 119 | 22 | 73 | 0 | 5 | 4 | 5 | 0 | 1193 |
| PEAK HR FACTOR : | 0.897 | 0.699 | 0.875 | 0.250 | 0.375 | 0.812 | 0.632 | 0.000 | 0.763 | 0.688 | 0.730 | 0.000 | 0.417 | 0.333 | 0.417 | 0.000 | 0.819 |
| | 0.750 | | | | | | | | | | | | | | | | |
| | 0.868 | | | | | | | | | | | | | | | | |
| | 0.787 | | | | | | | | | | | | | | | | |
| | 0.583 | | | | | | | | | | | | | | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 4:00 PM | 15 | 66 | 12 | 0 | 3 | 124 | 21 | 0 | 21 | 10 | 46 | 0 | 14 | 7 | 9 | 0 | 348 |
| 4:15 PM | 28 | 93 | 18 | 0 | 2 | 124 | 27 | 0 | 20 | 12 | 39 | 0 | 6 | 3 | 2 | 0 | 374 |
| 4:30 PM | 14 | 87 | 20 | 0 | 0 | 121 | 33 | 0 | 34 | 27 | 44 | 0 | 9 | 7 | 10 | 0 | 406 |
| 4:45 PM | 19 | 64 | 27 | 0 | 2 | 124 | 25 | 0 | 21 | 12 | 35 | 0 | 14 | 10 | 4 | 0 | 357 |
| 5:00 PM | 17 | 86 | 18 | 0 | 6 | 88 | 26 | 0 | 18 | 11 | 23 | 0 | 9 | 15 | 4 | 0 | 321 |
| 5:15 PM | 17 | 77 | 32 | 1 | 4 | 100 | 31 | 0 | 13 | 10 | 30 | 0 | 13 | 10 | 10 | 0 | 348 |
| 5:30 PM | 34 | 54 | 23 | 0 | 2 | 96 | 28 | 0 | 32 | 16 | 16 | 0 | 10 | 11 | 6 | 0 | 328 |
| 5:45 PM | 16 | 64 | 21 | 0 | 5 | 97 | 14 | 0 | 10 | 9 | 27 | 0 | 7 | 9 | 12 | 0 | 291 |
| 6:00 PM | 14 | 57 | 27 | 0 | 1 | 60 | 13 | 0 | 15 | 14 | 35 | 0 | 10 | 14 | 7 | 0 | 267 |
| 6:15 PM | 20 | 49 | 25 | 1 | 7 | 72 | 21 | 0 | 8 | 16 | 22 | 0 | 8 | 7 | 5 | 0 | 261 |
| 6:30 PM | 15 | 46 | 22 | 3 | 2 | 55 | 13 | 0 | 9 | 11 | 16 | 0 | 8 | 11 | 7 | 0 | 218 |
| 6:45 PM | 21 | 37 | 27 | 0 | 2 | 48 | 6 | 0 | 17 | 11 | 10 | 0 | 14 | 4 | 9 | 0 | 206 |
| TOTAL VOLUMES : | NL | NT | NR | NU | SL | ST | SR | SU | EL | ET | ER | EU | WL | WT | WR | WU | TOTAL |
| APPROACH %'s : | 230 | 780 | 272 | 5 | 36 | 1109 | 258 | 0 | 218 | 159 | 343 | 0 | 122 | 108 | 85 | 0 | 3725 |
| | 17.87% | 60.61% | 21.13% | 0.39% | 2.57% | 79.04% | 18.39% | 0.00% | 30.28% | 22.08% | 47.64% | 0.00% | 38.73% | 34.29% | 26.98% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 76 | 310 | 77 | 0 | 7 | 493 | 106 | 0 | 96 | 61 | 164 | 0 | 43 | 27 | 25 | 0 | 1485 |
| PEAK HR FACTOR : | 0.679 | 0.833 | 0.713 | 0.000 | 0.583 | 0.994 | 0.803 | 0.000 | 0.706 | 0.565 | 0.891 | 0.000 | 0.768 | 0.675 | 0.625 | 0.000 | 0.914 |
| | 0.833 | | | | | | | | | | | | | | | | |
| | 0.984 | | | | | | | | | | | | | | | | |
| | 0.764 | | | | | | | | | | | | | | | | |
| | 0.792 | | | | | | | | | | | | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/US 211/Broadview Ave/Winchester St & Warrenton Village South Dwy/Broadview Ave
 City: Warrenton
 Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-010
 Date: 2/9/2023

Data - Cars

| NS/EW Streets: | US 17/US 211/Broadview Ave/Winchester St | | | | US 17/US 211/Broadview Ave/Winchester St | | | | Warrenton Village South Dwy/Broadview Ave | | | | Warrenton Village South Dwy/Broadview Ave | | | | |
|-------------------------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|---|-----------|-----------|---------|--------------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 6:00 AM | 25 | 15 | 2 | 0 | 0 | 19 | 8 | 0 | 21 | 4 | 23 | 0 | 0 | 1 | 0 | 0 | 118 |
| 6:15 AM | 29 | 18 | 1 | 0 | 0 | 26 | 7 | 0 | 20 | 1 | 13 | 0 | 0 | 2 | 0 | 0 | 117 |
| 6:30 AM | 27 | 23 | 1 | 1 | 0 | 33 | 8 | 0 | 26 | 2 | 11 | 0 | 0 | 3 | 0 | 0 | 135 |
| 6:45 AM | 32 | 29 | 3 | 0 | 0 | 55 | 7 | 0 | 20 | 2 | 21 | 0 | 0 | 2 | 0 | 0 | 171 |
| 7:00 AM | 32 | 50 | 7 | 1 | 1 | 111 | 6 | 0 | 23 | 5 | 15 | 0 | 3 | 1 | 1 | 0 | 256 |
| 7:15 AM | 25 | 62 | 6 | 0 | 0 | 91 | 10 | 0 | 26 | 8 | 19 | 0 | 0 | 0 | 0 | 0 | 247 |
| 7:30 AM | 30 | 117 | 8 | 0 | 4 | 53 | 17 | 0 | 30 | 5 | 12 | 0 | 0 | 3 | 2 | 0 | 281 |
| 7:45 AM | 34 | 132 | 7 | 0 | 1 | 106 | 10 | 0 | 37 | 4 | 24 | 0 | 1 | 0 | 0 | 0 | 356 |
| 8:00 AM | 20 | 72 | 9 | 0 | 1 | 97 | 11 | 0 | 22 | 4 | 20 | 0 | 0 | 0 | 0 | 0 | 256 |
| 8:15 AM | 25 | 48 | 7 | 1 | 1 | 84 | 6 | 0 | 23 | 4 | 13 | 0 | 1 | 0 | 0 | 0 | 213 |
| 8:30 AM | 19 | 59 | 7 | 0 | 0 | 77 | 6 | 0 | 17 | 1 | 15 | 0 | 0 | 5 | 0 | 0 | 206 |
| 8:45 AM | 13 | 69 | 9 | 0 | 0 | 104 | 14 | 0 | 20 | 8 | 18 | 0 | 0 | 1 | 2 | 0 | 258 |
| TOTAL VOLUMES : | 311 | 694 | 67 | 3 | 8 | 856 | 110 | 0 | 285 | 48 | 204 | 0 | 5 | 18 | 5 | 0 | 2614 |
| APPROACH %'s : | 28.93% | 64.56% | 6.23% | 0.28% | 0.82% | 87.89% | 11.29% | 0.00% | 53.07% | 8.94% | 37.99% | 0.00% | 17.86% | 64.29% | 17.86% | 0.00% | |
| PEAK HR : | 07:00 AM - 08:00 AM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 121 | 361 | 28 | 1 | 6 | 361 | 43 | 0 | 116 | 22 | 70 | 0 | 4 | 4 | 3 | 0 | 1140 |
| PEAK HR FACTOR : | 0.890 | 0.684 | 0.875 | 0.250 | 0.375 | 0.813 | 0.632 | 0.000 | 0.784 | 0.688 | 0.729 | 0.000 | 0.333 | 0.333 | 0.375 | 0.000 | 0.801 |
| | | | 0.738 | | | 0.869 | | | | 0.800 | | | | 0.550 | | | |
| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | |
| 4:00 PM | 15 | 65 | 12 | 0 | 3 | 120 | 21 | 0 | 21 | 10 | 46 | 0 | 14 | 7 | 9 | 0 | 343 |
| 4:15 PM | 28 | 91 | 18 | 0 | 2 | 116 | 26 | 0 | 20 | 12 | 39 | 0 | 6 | 3 | 2 | 0 | 363 |
| 4:30 PM | 14 | 84 | 20 | 0 | 0 | 118 | 33 | 0 | 32 | 27 | 43 | 0 | 9 | 7 | 10 | 0 | 397 |
| 4:45 PM | 18 | 60 | 27 | 0 | 2 | 121 | 25 | 0 | 21 | 12 | 35 | 0 | 14 | 10 | 4 | 0 | 349 |
| 5:00 PM | 17 | 85 | 18 | 0 | 6 | 86 | 26 | 0 | 18 | 11 | 23 | 0 | 9 | 14 | 4 | 0 | 317 |
| 5:15 PM | 17 | 76 | 32 | 1 | 4 | 99 | 31 | 0 | 13 | 10 | 30 | 0 | 13 | 10 | 9 | 0 | 345 |
| 5:30 PM | 34 | 54 | 23 | 0 | 2 | 94 | 28 | 0 | 31 | 16 | 16 | 0 | 9 | 11 | 6 | 0 | 324 |
| 5:45 PM | 16 | 62 | 20 | 0 | 5 | 96 | 14 | 0 | 10 | 9 | 27 | 0 | 7 | 9 | 12 | 0 | 287 |
| 6:00 PM | 14 | 56 | 27 | 0 | 1 | 60 | 13 | 0 | 15 | 14 | 35 | 0 | 10 | 14 | 7 | 0 | 266 |
| 6:15 PM | 19 | 49 | 24 | 1 | 7 | 71 | 21 | 0 | 8 | 16 | 22 | 0 | 8 | 7 | 5 | 0 | 258 |
| 6:30 PM | 15 | 46 | 21 | 3 | 2 | 55 | 13 | 0 | 9 | 11 | 16 | 0 | 8 | 11 | 7 | 0 | 217 |
| 6:45 PM | 21 | 36 | 26 | 0 | 2 | 47 | 6 | 0 | 17 | 11 | 10 | 0 | 14 | 4 | 9 | 0 | 203 |
| TOTAL VOLUMES : | 228 | 764 | 268 | 5 | 36 | 1083 | 257 | 0 | 215 | 159 | 342 | 0 | 121 | 107 | 84 | 0 | 3669 |
| APPROACH %'s : | 18.02% | 60.40% | 21.19% | 0.40% | 2.62% | 78.71% | 18.68% | 0.00% | 30.03% | 22.21% | 47.77% | 0.00% | 38.78% | 34.29% | 26.92% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL |
| PEAK HR VOL : | 75 | 300 | 77 | 0 | 7 | 475 | 105 | 0 | 94 | 61 | 163 | 0 | 43 | 27 | 25 | 0 | 1452 |
| PEAK HR FACTOR : | 0.670 | 0.824 | 0.713 | 0.000 | 0.583 | 0.981 | 0.795 | 0.000 | 0.734 | 0.565 | 0.886 | 0.000 | 0.768 | 0.675 | 0.625 | 0.000 | 0.914 |
| | | | 0.825 | | | 0.972 | | | | 0.779 | | | | 0.792 | | | |

National Data & Surveying Services Intersection Turning Movement Count

Location: US 17/US 211/Broadview Ave/Winchester St & Warrenton Village South Dwy/Broadview Ave
City: Warrenton
Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-010
Date: 2/9/2023

Data - HT

| NS/EW Streets: | US 17/US 211/Broadview Ave/Winchester St | | | | US 17/US 211/Broadview Ave/Winchester St | | | | Warrenton Village South Dwy/Broadview Ave | | | | Warrenton Village South Dwy/Broadview Ave | | | | TOTAL | |
|-------------------------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|---|-----------|-----------|---------|---------|-------|
| | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | | |
| AM | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WR | 0 WU | |
| 6:00 AM | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 6:15 AM | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 6:30 AM | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 6:45 AM | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 7:00 AM | 0 | 8 | 0 | 0 | 0 | 6 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 18 |
| 7:15 AM | 1 | 4 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 14 |
| 7:30 AM | 0 | 3 | 0 | 0 | 0 | 6 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 13 |
| 7:45 AM | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 8:00 AM | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| 8:15 AM | 1 | 7 | 0 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 8:30 AM | 1 | 6 | 0 | 0 | 0 | 14 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 23 |
| 8:45 AM | 1 | 2 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| TOTAL VOLUMES : | 4 | 50 | 1 | 0 | 0 | 48 | 8 | 0 | 4 | 0 | 7 | 0 | 1 | 0 | 2 | 0 | 0 | 125 |
| APPROACH %'s : | 7.27% | 90.91% | 1.82% | 0.00% | 0.00% | 85.71% | 14.29% | 0.00% | 36.36% | 0.00% | 63.64% | 0.00% | 33.33% | 0.00% | 66.67% | 0.00% | 0.00% | |
| PEAK HR : | 07:00 AM - 08:00 AM | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 1 | 19 | 0 | 0 | 0 | 19 | 5 | 0 | 3 | 0 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 53 |
| PEAK HR FACTOR : | 0.250 | 0.594 | 0.000 | 0.000 | 0.000 | 0.679 | 0.625 | 0.000 | 0.375 | 0.000 | 0.750 | 0.000 | 0.250 | 0.000 | 0.500 | 0.000 | 0.000 | 0.736 |
| | | | 0.625 | | | | 0.750 | | | | 0.500 | | | | 0.750 | | | |
| PM | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WR | 0 WU | |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 4:15 PM | 0 | 2 | 0 | 0 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 4:30 PM | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 4:45 PM | 1 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 5:00 PM | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 5:15 PM | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| 5:45 PM | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 6:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:15 PM | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 6:30 PM | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:45 PM | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| TOTAL VOLUMES : | 2 | 16 | 4 | 0 | 0 | 26 | 1 | 0 | 3 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 56 |
| APPROACH %'s : | 9.09% | 72.73% | 18.18% | 0.00% | 0.00% | 96.30% | 3.70% | 0.00% | 75.00% | 0.00% | 25.00% | 0.00% | 33.33% | 33.33% | 33.33% | 0.00% | 0.00% | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | | |
| PEAK HR VOL : | 1 | 10 | 0 | 0 | 0 | 18 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 33 |
| PEAK HR FACTOR : | 0.250 | 0.625 | 0.000 | 0.000 | 0.000 | 0.563 | 0.250 | 0.000 | 0.250 | 0.000 | 0.250 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.750 |
| | | | 0.550 | | | | 0.528 | | | | 0.250 | | | | | | | |

National Data & Surveying Services Intersection Turning Movement Count

Item 1.

Location: US 17/US 211/Broadview Ave/Winchester St & Warrenton Village South Dwy/Broadview Ave
 City: Warrenton
 Control: 2-Way Stop(EB/WB)

Project ID: 23-260020-010
 Date: 2/9/2023

Data - Bikes

| NS/EW Streets: | US 17/US 211/Broadview Ave/Winchester St | | | | US 17/US 211/Broadview Ave/Winchester St | | | | Warrenton Village South Dwy/Broadview Ave | | | | Warrenton Village South Dwy/Broadview Ave | | | | | |
|-------------------------|--|---------|---------|---------|--|---------|---------|---------|---|---------|---------|---------|---|-----------|-----------|---------|-------|-------|
| AM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 07:00 AM - 08:00 AM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| PM | NORTHBOUND | | | | SOUTHBOUND | | | | EASTBOUND | | | | WESTBOUND | | | | TOTAL | |
|-------------------------|---------------------|---------|---------|---------|------------|---------|---------|---------|-----------|---------|---------|---------|-----------|-----------|-----------|---------|-------|-------|
| | 1 NL | 2 NT | 1 NR | 0 NU | 1 SL | 2 ST | 1 SR | 0 SU | 1 EL | 1 ET | 1 ER | 0 EU | 1 WL | 0.5 WT | 0.5 WR | 0 WU | | |
| 4:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOTAL VOLUMES : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| APPROACH %'s : | | | | | | | | | | | | | | | | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | | | | | | | | | TOTAL | |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

National Data & Surveying Services **Intersection Turning Movement Count**

Location: US 17/US 211/Broadview Ave/Winchester St & Warrenton Village Sc **Project ID:** 23-260020-010
 City: Warrenton **Date:** 2/9/2023

Data - Pedestrians (Crosswalks)

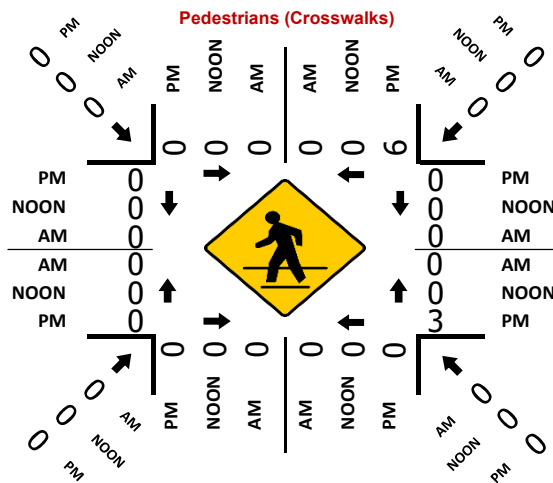
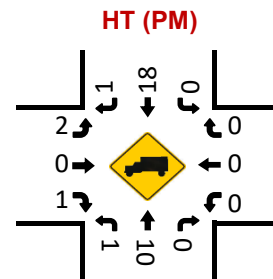
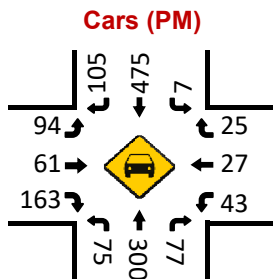
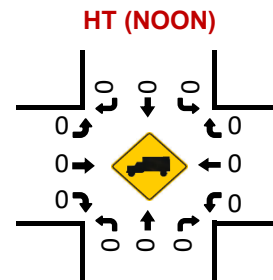
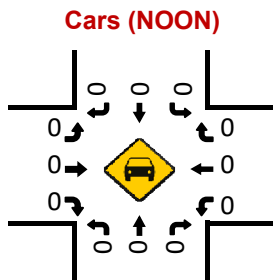
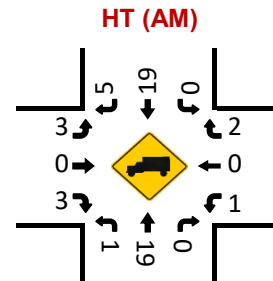
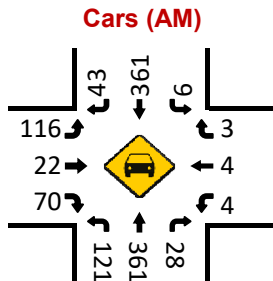
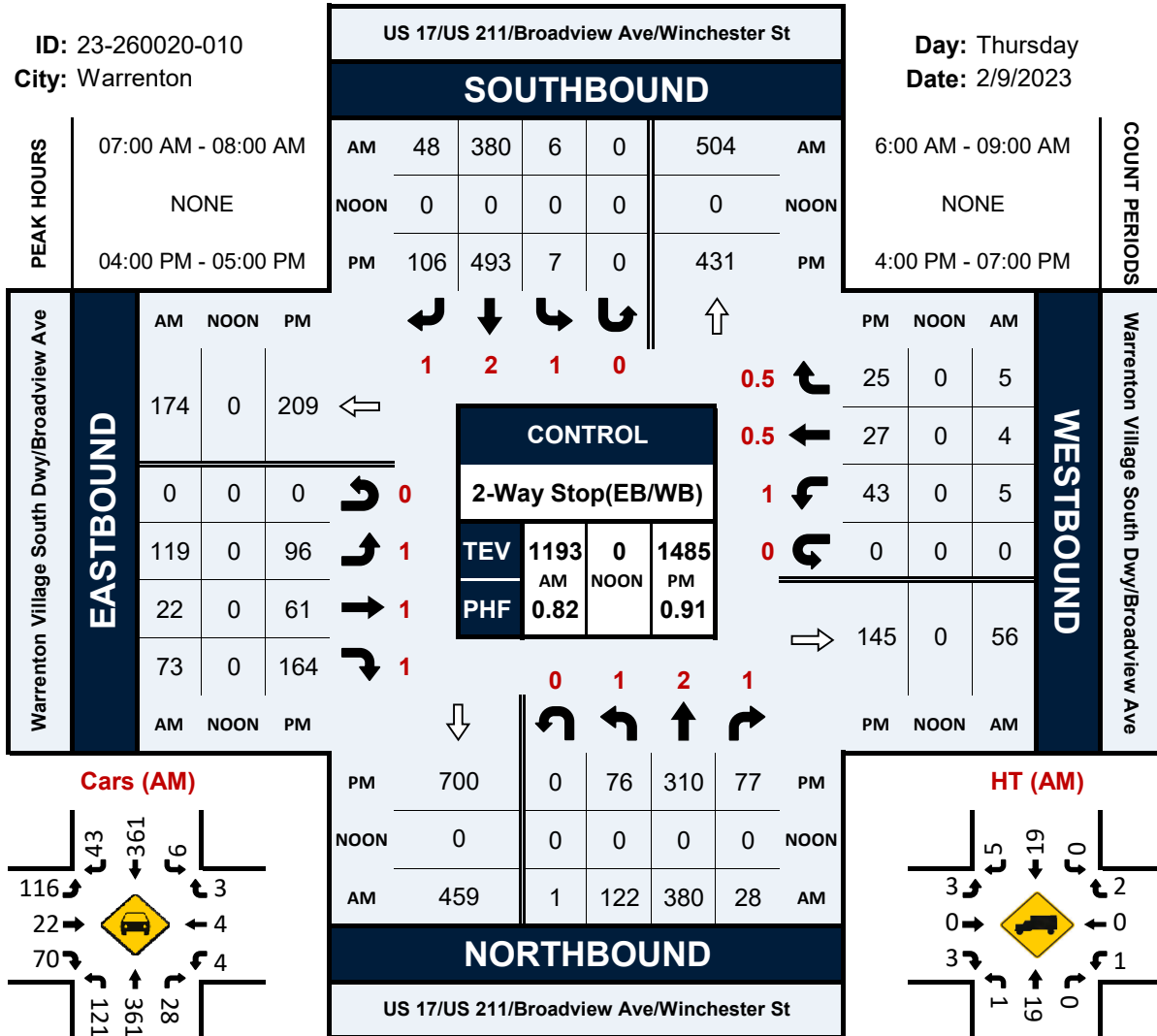
| NS/EW Streets: | US 17/US 211/Broadview Ave/Winchester St | US 17/US 211/Broadview Ave/Winchester St | Warrenton Village South Dwy/Broadview Ave | Warrenton Village South Dwy/Broadview Ave | | | | | |
|-------------------------|--|--|---|---|----------|---------|----------|---------|------------|
| AM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 6:00 AM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 6:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 AM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 0 | WB 1 | EB 0 | WB 0 | NB 0 | SB 2 | NB 0 | SB 0 | TOTAL 3 |
| APPROACH %'s : | 0.00% | 100.00% | | | 0.00% | 100.00% | | | |
| PEAK HR : | 07:00 AM - 08:00 AM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEAK HR FACTOR : | | | | | | | | | |

| PM | NORTH LEG | | SOUTH LEG | | EAST LEG | | WEST LEG | | TOTAL |
|-------------------------|---------------------|---------|-----------|---------|----------|---------|----------|---------|------------|
| | EB | WB | EB | WB | NB | SB | NB | SB | |
| 4:00 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:15 PM | 0 | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 7 |
| 4:30 PM | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL VOLUMES : | EB 0 | WB 6 | EB 0 | WB 0 | NB 3 | SB 0 | NB 0 | SB 0 | TOTAL 9 |
| APPROACH %'s : | 0.00% | 100.00% | | | 100.00% | 0.00% | | | |
| PEAK HR : | 04:00 PM - 05:00 PM | | | | | | | | TOTAL |
| PEAK HR VOL : | 0 | 6 | 0 | 0 | 3 | 0 | 0 | 0 | 9 |
| PEAK HR FACTOR : | 0.375 | | | | 0.250 | 0.250 | | | 0.321 |

Peak Hour Turning Movement Count

ID: 23-260020-010
City: Warrenton

Day: Thursday
Date: 2/9/2023



D. HCM Level of Service Definitions

TECHNICAL MEMORANDUM

Subject: Level of Service Definitions

Introduction

The purpose of this memorandum is to define the level of service (LOS) metric that commonly used as a measure of effectiveness (MOE) for traffic operations.

All capacity analyses are based on the procedures specified by the Transportation Research Board's (TRB) Highway Capacity Manual (HCM), which is currently on its sixth edition. Level of service ranges from A to F. A brief description of each level of service for signalized and unsignalized intersections is provided below.

Signalized Intersections

Level of service is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The levels of service for signalized intersections are defined below:

- **Level of Service A** describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.
- **Level of Service B** describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
- **Level of Service C** describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable level of service in rural areas.
- **Level of Service D** describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable level of service in urban areas.
- **Level of Service E** describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.
- **Level of Service F** describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the capacity of the intersection. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

Unsignalized Intersections

At an unsignalized intersection, the major street through traffic and right-turns are assumed to operate unimpeded and therefore receive no level of service rating. The level of service for the minor street and the major street left-turn traffic is dependent on the volume and capacity of the available lanes, and, the number and frequency of acceptable gaps in the major street traffic to make a conflicting turn. The level of service grade is provided for each conflicting movement at an unsignalized intersection and is based on the total average delay experienced by each vehicle. The delay includes the time it takes a vehicle to move from the back of a queue through the intersection.

The unsignalized intersection level of service analysis does not account for variations in driver behavior or the effects of nearby traffic signals. Therefore, the results from this analysis usually indicate worse levels of service than may be experienced in the field. The unsignalized intersection level of service descriptions are provided below:

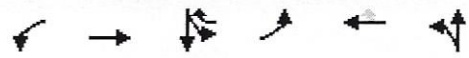
- **Level of Service A** describes operations where there is very little to no conflicting traffic for a minor side street movement, i.e., an average total delay of less than 10.0 seconds per vehicle.
- **Level of Service B** describes operations with average total delay in the range of 10.1 to 15.0 seconds per vehicle.
- **Level of Service C** describes operations with average total delay in the range of 15.1 to 25.0 second per vehicle.
- **Level of Service D** describes operations with average total delay in the range of 25.1 to 35.0 seconds per vehicle.
- **Level of Service E** describes operations with average total delay in the range of 35.1 to 50.0 seconds per vehicle.
- **Level of Service F** describes operations with average total delay of 50 seconds per vehicle. LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through or enter a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal driver behavior.

E. VDOT Signal Timings

Plan 1

Timing Report, Sorted By Phase

4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B 01/02/2020

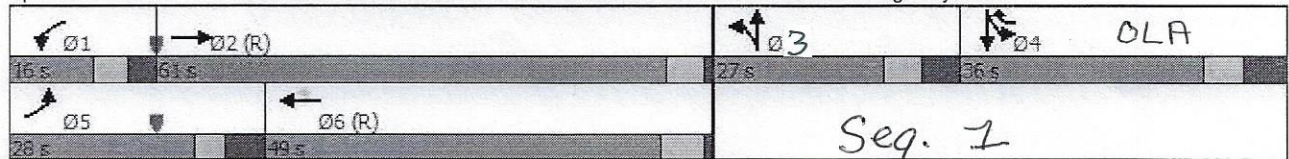


| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | WBL | EBT | SBTL | EBL | WBT | NBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 16 | 61 | 36 | 28 | 49 | 27 |
| Maximum Split (%) | 11.4% | 43.6% | 25.7% | 20.0% | 35.0% | 19.3% |
| Minimum Split (s) | 12.9 | 27.2 | 15.4 | 13.8 | 32.8 | 14.2 |
| Yellow Time (s) | 3.8 | 4.2 | 4.5 | 3.4 | 4.8 | 4.1 |
| All-Red Time (s) | 3.1 | 1 | 4.9 | 4.4 | 1 | 4.2 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | 7 |
| Flash Dont Walk (s) | | 15 | 24 | | 20 | 29 |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 112 | 128 | 76 | 112 | 0 | 49 |
| End Time (s) | 128 | 49 | 112 | 0 | 49 | 76 |
| Yield/Force Off (s) | 121.1 | 43.8 | 102.6 | 132.2 | 43.2 | 67.7 |
| Yield/Force Off 170(s) | 121.1 | 28.8 | 78.6 | 132.2 | 23.2 | 39.7 |
| Local Start Time (s) | 124 | 0 | 88 | 124 | 12 | 61 |
| Local Yield (s) | 133.1 | 55.8 | 114.6 | 4.2 | 55.2 | 79.7 |
| Local Yield 170(s) | 133.1 | 40.8 | 90.6 | 4.2 | 35.2 | 51.7 |
| MAX | 40 | 40 | 25 | 25 | 40 | 25 |

Intersection Summary

| | |
|--|----------------------|
| Cycle Length | 140 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 80 |
| Offset: 128 (91%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green | |

Splits and Phases: 4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B



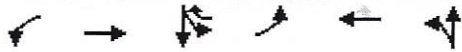
Seq. 1

OLA + 4

Plan 2

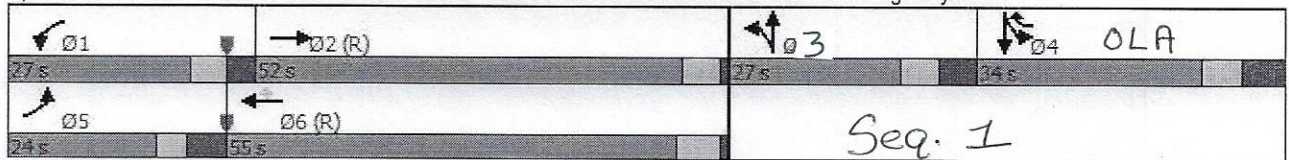
Timing Report, Sorted By Phase

4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B 01/02/2020



| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|---|----------------------|-------|-------|-------|-------|-------|
| Movement | WBL | EBT | SBTL | EBL | WBT | NBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 27 | 52 | 34 | 24 | 55 | 27 |
| Maximum Split (%) | 19.3% | 37.1% | 24.3% | 17.1% | 39.3% | 19.3% |
| Minimum Split (s) | 12.9 | 27.2 | 15.4 | 13.8 | 32.8 | 14.3 |
| Yellow Time (s) | 3.8 | 4.2 | 4.5 | 3.4 | 4.8 | 4.1 |
| All-Red Time (s) | 3.1 | 1 | 4.9 | 4.4 | 1 | 4.2 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | 7 |
| Flash Dont Walk (s) | | 15 | 24 | | 20 | 29 |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 121 | 8 | 87 | 121 | 5 | 60 |
| End Time (s) | 8 | 60 | 121 | 5 | 60 | 87 |
| Yield/Force Off (s) | 1.1 | 54.8 | 111.6 | 137.2 | 54.2 | 78.7 |
| Yield/Force Off 170(s) | 1.1 | 39.8 | 87.6 | 137.2 | 34.2 | 50.7 |
| Local Start Time (s) | 116 | 3 | 82 | 116 | 0 | 55 |
| Local Yield (s) | 136.1 | 49.8 | 106.6 | 132.2 | 49.2 | 73.7 |
| Local Yield 170(s) | 136.1 | 34.8 | 82.6 | 132.2 | 29.2 | 45.7 |
| max 1 | 40 | 40 | 25 | 25 | 40 | 25 |
| Intersection Summary | | | | | | |
| Cycle Length | 140 | | | | | |
| Control Type | Actuated-Coordinated | | | | | |
| Natural Cycle | 80 | | | | | |
| Offset: 5 (4%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green | | | | | | |

Splits and Phases: 4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B



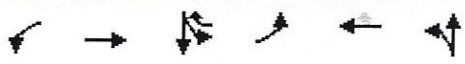
Seq. 1

OLA + 4

Plan 3

Timing Report, Sorted By Phase

4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B01/03/2020

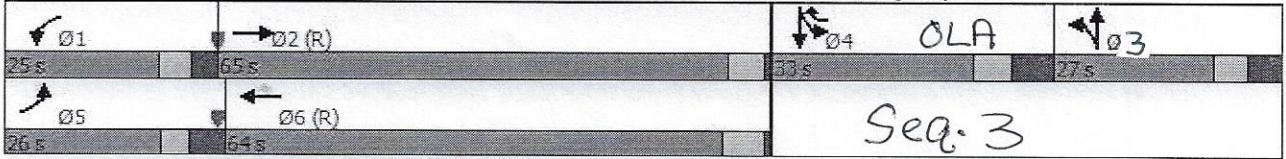


| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | WBL | EBT | SBTL | EBL | WBT | NBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 25 | 65 | 33 | 26 | 64 | 27 |
| Maximum Split (%) | 16.7% | 43.3% | 22.0% | 17.3% | 42.7% | 18.0% |
| Minimum Split (s) | 14.9 | 27.2 | 15.4 | 13.8 | 32.8 | 14.3 |
| Yellow Time (s) | 3.8 | 4.2 | 4.5 | 3.4 | 4.8 | 4.1 |
| All-Red Time (s) | 3.1 | 1 | 4.9 | 4.4 | 1 | 4.2 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | 7 |
| Flash Dont Walk (s) | | 15 | 24 | | 20 | 29 |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 31 | 56 | 121 | 31 | 57 | 4 |
| End Time (s) | 56 | 121 | 4 | 57 | 121 | 31 |
| Yield/Force Off (s) | 49.1 | 115.8 | 144.6 | 49.2 | 115.2 | 22.7 |
| Yield/Force Off 170(s) | 49.1 | 100.8 | 120.6 | 49.2 | 95.2 | 144.7 |
| Local Start Time (s) | 125 | 0 | 65 | 125 | 1 | 98 |
| Local Yield (s) | 143.1 | 59.8 | 88.6 | 143.2 | 59.2 | 116.7 |
| Local Yield 170(s) | 143.1 | 44.8 | 64.6 | 143.2 | 39.2 | 88.7 |
| MAX L | 40 | 46 | 25 | 25 | 40 | 25 |

Intersection Summary

| | |
|---|----------------------|
| Cycle Length | 150 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 90 |
| Offset: 56 (37%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green | |

Splits and Phases: 4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B



OLA + 4

Plan 4

Timing Report, Sorted By Phase

4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B 01/03/2020



| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | WBL | EBT | SBTL | EBL | WBT | NBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 22 | 47 | 29 | 23 | 46 | 22 |
| Maximum Split (%) | 18.3% | 39.2% | 24.2% | 19.2% | 38.3% | 18.3% |
| Minimum Split (s) | 12.9 | 27.2 | 15.4 | 13.8 | 32.8 | 14.3 |
| Yellow Time (s) | 3.8 | 4.2 | 4.5 | 3.4 | 4.8 | 4.1 |
| All-Red Time (s) | 3.1 | 1 | 4.9 | 4.4 | 1 | 4.2 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | 7 |
| Flash Dont Walk (s) | | 15 | 24 | | 20 | 29 |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 115 | 17 | 86 | 115 | 18 | 64 |
| End Time (s) | 17 | 64 | 115 | 18 | 64 | 86 |
| Yield/Force Off (s) | 10.1 | 58.8 | 105.6 | 10.2 | 58.2 | 77.7 |
| Yield/Force Off 170(s) | 10.1 | 43.8 | 81.6 | 10.2 | 38.2 | 49.7 |
| Local Start Time (s) | 98 | 0 | 69 | 98 | 1 | 47 |
| Local Yield (s) | 113.1 | 41.8 | 88.6 | 113.2 | 41.2 | 60.7 |
| Local Yield 170(s) | 113.1 | 26.8 | 64.6 | 113.2 | 21.2 | 32.7 |
| MAX I | 40 | 40 | 25 | 25 | 40 | 25 |

Intersection Summary

| | |
|---|----------------------|
| Cycle Length | 120 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 80 |
| Offset: 17 (14%), Referenced to phase 2:EBT and 6:WBT, Start of 1st Green | |

Splits and Phases: 4: Winchester Street/Broadview Avenue & Broadview Avenue #29B/Lee Highway #29B

| | | | |
|----------|----------|----------|----------|
| 22 s | 47 s | 22 s | 29 s |
| 23 s | 46 s | Seq. 1 | |

OLA + 4

Timing Report, Sorted By Phase
3: Branch Drive & Lee Highway #29B

Plan 1

01/02/2020

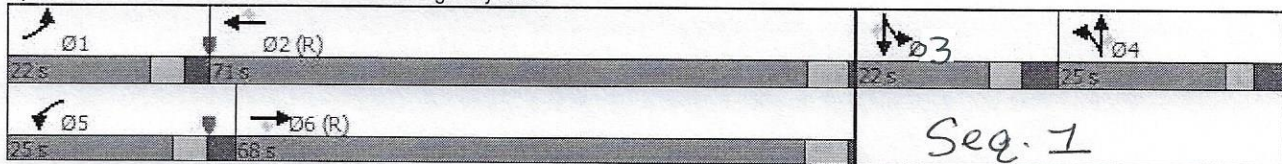


| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | EBL | WBT | NBTL | WBL | EBT | SBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 22 | 71 | 25 | 25 | 68 | 22 |
| Maximum Split (%) | 15.7% | 50.7% | 17.9% | 17.9% | 48.6% | 15.7% |
| Minimum Split (s) | 12.4 | 27.6 | 12.6 | 12.8 | 27.7 | 13.5 |
| Yellow Time (s) | 3.7 | 4.6 | 3 | 3.7 | 4.7 | 3.5 |
| All-Red Time (s) | 2.7 | 1 | 3 | 3.1 | 1 | 4 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | |
| Flash Dont Walk (s) | | 17 | 27 | | 12 | |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | yes | yes | yes | yes | yes | yes |
| Start Time (s) | 119 | 1 | 94 | 119 | 4 | 72 |
| End Time (s) | 1 | 72 | 119 | 4 | 72 | 94 |
| Yield/Force Off (s) | 134.6 | 66.4 | 112.4 | 137.2 | 66.3 | 86.5 |
| Yield/Force Off 170(s) | 134.6 | 51.4 | 84.4 | 137.2 | 51.3 | 86.5 |
| Local Start Time (s) | 118 | 0 | 93 | 118 | 3 | 71 |
| Local Yield (s) | 133.6 | 65.4 | 111.4 | 136.2 | 65.3 | 85.5 |
| Local Yield 170(s) | 133.6 | 50.4 | 83.4 | 136.2 | 50.3 | 85.5 |
| Max I | 18 | 45 | 35 | 18 | 45 | 35 |

Intersection Summary

| | |
|---|----------------------|
| Cycle Length | 140 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 70 |
| Offset: 1 (1%), Referenced to phase 2:WBT and 6:EBT, Start of 1st Green | |

Splits and Phases: 3: Branch Drive & Lee Highway #29B



Timing Report, Sorted By Phase
3: Branch Drive & Lee Highway #29B

Plan 2

01/02/2020

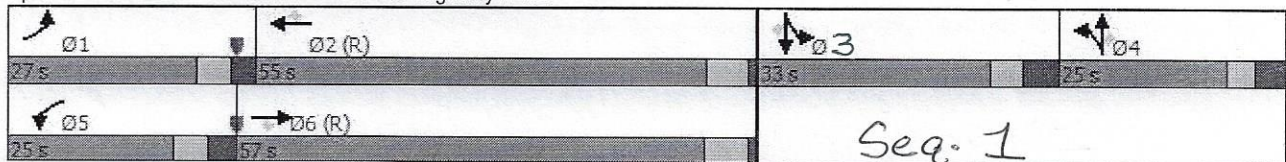


| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | EBL | WBT | NBTL | WBL | EBT | SBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 27 | 55 | 25 | 25 | 57 | 33 |
| Maximum Split (%) | 19.3% | 39.3% | 17.9% | 17.9% | 40.7% | 23.6% |
| Minimum Split (s) | 12.4 | 27.6 | 12.6 | 12.8 | 27.7 | 13.5 |
| Yellow Time (s) | 3.7 | 4.6 | 3 | 3.7 | 4.7 | 3.5 |
| All-Red Time (s) | 2.7 | 1 | 3.6 | 3.1 | 1 | 4 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | |
| Flash Dont Walk (s) | | 17 | 27 | | 12 | |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 125 | 12 | 100 | 125 | 10 | 67 |
| End Time (s) | 12 | 67 | 125 | 10 | 67 | 100 |
| Yield/Force Off (s) | 5.6 | 61.4 | 118.4 | 3.2 | 61.3 | 92.5 |
| Yield/Force Off 170(s) | 5.6 | 46.4 | 90.4 | 3.2 | 46.3 | 92.5 |
| Local Start Time (s) | 115 | 2 | 90 | 115 | 0 | 57 |
| Local Yield (s) | 135.6 | 51.4 | 108.4 | 133.2 | 51.3 | 82.5 |
| Local Yield 170(s) | 135.6 | 36.4 | 80.4 | 133.2 | 36.3 | 82.5 |
| MAX 1 | 13 | 45 | 35 | 19 | 45 | 35 |

Intersection Summary

| | |
|--|----------------------|
| Cycle Length | 140 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 80 |
| Offset: 10 (7%), Referenced to phase 2:WBT and 6:EBT, Start of 1st Green | |

Splits and Phases: 3: Branch Drive & Lee Highway #29B



Timing Report, Sorted By Phase
 3: Branch Drive & Lee Highway #29B

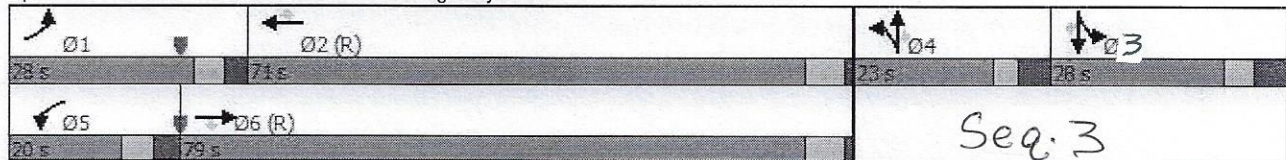
Plan 3

01/03/2020



| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|---|----------------------|-------|-------|-------|-------|-------|
| Movement | EBL | WBT | NBTL | WBL | EBT | SBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 28 | 71 | 23 | 20 | 79 | 28 |
| Maximum Split (%) | 18.7% | 47.3% | 15.3% | 13.3% | 52.7% | 18.7% |
| Minimum Split (s) | 12.4 | 27.6 | 12.6 | 12.8 | 27.7 | 13.5 |
| Yellow Time (s) | 3.7 | 4.6 | 3 | 3.7 | 4.7 | 3.5 |
| All-Red Time (s) | 2.7 | 1 | 3.6 | 3.1 | 1 | 4 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | |
| Flash Dont Walk (s) | | 17 | 27 | | 12 | |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | Yes | Yes | Yes | Yes | Yes | Yes |
| Start Time (s) | 26 | 54 | 125 | 26 | 46 | 148 |
| End Time (s) | 54 | 125 | 148 | 46 | 125 | 26 |
| Yield/Force Off (s) | 47.6 | 119.4 | 141.4 | 39.2 | 119.3 | 18.5 |
| Yield/Force Off 170(s) | 47.6 | 104.4 | 113.4 | 39.2 | 104.3 | 18.5 |
| Local Start Time (s) | 130 | 8 | 79 | 130 | 0 | 102 |
| Local Yield (s) | 1.6 | 73.4 | 95.4 | 143.2 | 73.3 | 122.5 |
| Local Yield 170(s) | 1.6 | 58.4 | 67.4 | 143.2 | 58.3 | 122.5 |
| MAX I | 18 | 45 | 35 | 18 | 45 | 35 |
| Intersection Summary | | | | | | |
| Cycle Length | 150 | | | | | |
| Control Type | Actuated-Coordinated | | | | | |
| Natural Cycle | 80 | | | | | |
| Offset: 46 (31%), Referenced to phase 2:WBT and 6:EBT, Start of 1st Green | | | | | | |

Splits and Phases: 3: Branch Drive & Lee Highway #29B



Timing Report, Sorted By Phase
 3: Branch Drive & Lee Highway #29B

Plan 4

01/03/2020

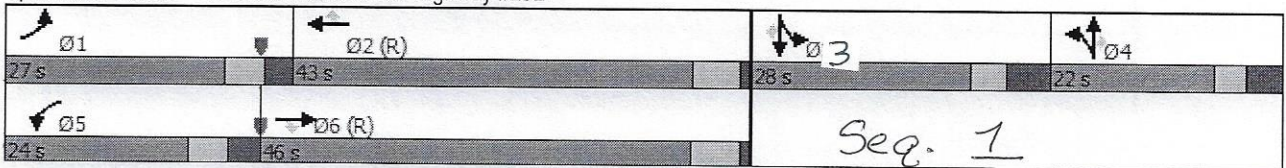


| Phase Number | 1 | 2 | 4 | 5 | 6 | 3 |
|------------------------|-------|-------|-------|-------|-------|-------|
| Movement | EBL | WBT | NBTL | WBL | EBT | SBTL |
| Lead/Lag | Lead | Lag | | Lead | Lag | |
| Lead-Lag Optimize | | | | | | |
| Recall Mode | None | C-Min | None | None | C-Min | None |
| Maximum Split (s) | 27 | 43 | 22 | 24 | 46 | 28 |
| Maximum Split (%) | 22.5% | 35.8% | 18.3% | 20.0% | 38.3% | 23.3% |
| Minimum Split (s) | 12.4 | 27.6 | 12.6 | 12.8 | 27.7 | 13.5 |
| Yellow Time (s) | 3.7 | 4.6 | 3 | 3.7 | 4.7 | 3.5 |
| All-Red Time (s) | 2.7 | 1 | 3.6 | 3.1 | 1 | 4 |
| Minimum Initial (s) | 6 | 15 | 6 | 6 | 15 | 6 |
| Vehicle Extension (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Minimum Gap (s) | 3 | 3 | 3 | 3 | 3 | 3 |
| Time Before Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Time To Reduce (s) | 0 | 0 | 0 | 0 | 0 | 0 |
| Walk Time (s) | | 7 | 7 | | 7 | |
| Flash Dont Walk (s) | | 17 | 27 | | 12 | |
| Dual Entry | No | Yes | No | No | Yes | No |
| Inhibit Max | yes | yes | yes | yes | yes | yes |
| Start Time (s) | 100 | 7 | 78 | 100 | 4 | 50 |
| End Time (s) | 7 | 50 | 100 | 4 | 50 | 78 |
| Yield/Force Off (s) | 0.6 | 44.4 | 93.4 | 117.2 | 44.3 | 70.5 |
| Yield/Force Off 170(s) | 0.6 | 29.4 | 65.4 | 117.2 | 29.3 | 70.5 |
| Local Start Time (s) | 96 | 3 | 74 | 96 | 0 | 46 |
| Local Yield (s) | 116.6 | 40.4 | 89.4 | 113.2 | 40.3 | 66.5 |
| Local Yield 170(s) | 116.6 | 25.4 | 61.4 | 113.2 | 25.3 | 66.5 |
| MAX I | 18 | 45 | 35 | 18 | 45 | 35 |

Intersection Summary

| | |
|---|----------------------|
| Cycle Length | 120 |
| Control Type | Actuated-Coordinated |
| Natural Cycle | 75 |
| Offset: 4 (3%), Referenced to phase 2:WBT and 6:EBT, Start of 1st Green | |

Splits and Phases: 3: Branch Drive & Lee Highway #29B



F. 2023 Existing Conditions – Capacity Analysis Worksheets

Queues

1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY

2023 Existing AM



| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 298 | 896 | 38 | 699 | 194 | 83 | 117 | 80 | 117 | 122 | 244 |
| v/c Ratio | 0.72 | 0.51 | 0.37 | 0.48 | 0.21 | 0.49 | 0.62 | 0.21 | 0.59 | 0.58 | 0.41 |
| Control Delay | 69.1 | 26.2 | 96.7 | 21.6 | 3.5 | 68.2 | 73.8 | 1.2 | 69.4 | 67.7 | 11.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 69.1 | 26.2 | 96.7 | 21.6 | 3.5 | 68.2 | 73.8 | 1.2 | 69.4 | 67.7 | 11.1 |
| Queue Length 50th (ft) | 141 | 287 | 38 | 249 | 32 | 76 | 108 | 0 | 112 | 116 | 41 |
| Queue Length 95th (ft) | 186 | 428 | 78 | 143 | 46 | 126 | 166 | 0 | 167 | 171 | 95 |
| Internal Link Dist (ft) | | 1315 | | 334 | | | 509 | | | 538 | |
| Turn Bay Length (ft) | 250 | | 130 | | 200 | 250 | | 125 | 215 | | |
| Base Capacity (vph) | 481 | 1758 | 118 | 1450 | 1006 | 224 | 249 | 447 | 313 | 335 | 621 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.62 | 0.51 | 0.32 | 0.48 | 0.19 | 0.37 | 0.47 | 0.18 | 0.37 | 0.36 | 0.39 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis
 1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY

Warrenton Village Center Item 1.
 2023 Existing AM



| Movement | EBU | EBL | EBT | EBR | WBU | WBL | WBT | WBR | NBL | NBT | NBR | SBL | |
|-----------------------------------|------|-------|-------|------|------|------|---------------------------|-------|-------|------|--------|-------|-------|
| Lane Configurations | | ↔↔ | ↕↕ | | | ↔↔ | ↕↕ | ↔ | ↕ | ↕ | ↔ | ↕ | |
| Traffic Volume (vph) | 5 | 257 | 758 | 31 | 3 | 31 | 615 | 171 | 73 | 103 | 70 | 117 | |
| Future Volume (vph) | 5 | 257 | 758 | 31 | 3 | 31 | 615 | 171 | 73 | 103 | 70 | 117 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Grade (%) | | | 0% | | | | -1% | | | 2% | | | |
| Total Lost time (s) | | 7.8 | 5.2 | | | | 6.9 | 5.8 | 9.4 | 8.3 | 8.3 | 6.9 | 9.4 |
| Lane Util. Factor | | 0.97 | 0.95 | | | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | |
| Frbp, ped/bikes | | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | | 1.00 | 0.99 | | | | 1.00 | 1.00 | 0.85 | 1.00 | 0.85 | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | |
| Satd. Flow (prot) | | 3338 | 3452 | | | | 1814 | 3359 | 1561 | 1655 | 1844 | 1537 | 1649 |
| Flt Permitted | | 0.95 | 1.00 | | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.95 | |
| Satd. Flow (perm) | | 3338 | 3452 | | | | 1814 | 3359 | 1561 | 1655 | 1844 | 1537 | 1649 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | |
| Adj. Flow (vph) | 6 | 292 | 861 | 35 | 3 | 35 | 699 | 194 | 83 | 117 | 80 | 133 | |
| RTOR Reduction (vph) | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 87 | 0 | 0 | 67 | 0 | |
| Lane Group Flow (vph) | 0 | 298 | 895 | 0 | 0 | 38 | 699 | 107 | 83 | 117 | 13 | 117 | |
| Confl. Peds. (#/hr) | | | | | | | | | | | | | |
| Heavy Vehicles (%) | 0% | 5% | 4% | 3% | 0% | 0% | 8% | 4% | 8% | 2% | 4% | 5% | |
| Turn Type | Prot | Prot | NA | | Prot | Prot | NA | pm+ov | Split | NA | custom | Split | |
| Protected Phases | 5 | 5 | 2 | | 1 | 1 | 6 | 4 | 3 | 3 | | 4 | |
| Permitted Phases | | | | | | | | 6 | | | | 13 | |
| Actuated Green, G (s) | | 17.4 | 71.0 | | | | 8.1 | 60.2 | 77.0 | 14.3 | 14.3 | 22.4 | 16.8 |
| Effective Green, g (s) | | 17.4 | 71.0 | | | | 8.1 | 60.2 | 77.0 | 14.3 | 14.3 | 22.4 | 16.8 |
| Actuated g/C Ratio | | 0.12 | 0.51 | | | | 0.06 | 0.43 | 0.55 | 0.10 | 0.10 | 0.16 | 0.12 |
| Clearance Time (s) | | 7.8 | 5.2 | | | | 6.9 | 5.8 | 9.4 | 8.3 | 8.3 | | 9.4 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 414 | 1750 | | | | 104 | 1444 | 858 | 169 | 188 | 245 | 197 |
| v/s Ratio Prot | | c0.09 | c0.26 | | | | 0.02 | 0.21 | 0.01 | 0.05 | c0.06 | | c0.07 |
| v/s Ratio Perm | | | | | | | | | 0.05 | | | 0.01 | |
| v/c Ratio | | 0.72 | 0.51 | | | | 0.37 | 0.48 | 0.12 | 0.49 | 0.62 | 0.05 | 0.59 |
| Uniform Delay, d1 | | 59.0 | 23.0 | | | | 63.5 | 28.7 | 15.2 | 59.4 | 60.3 | 49.8 | 58.4 |
| Progression Factor | | 1.00 | 1.00 | | | | 1.38 | 0.65 | 2.21 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 5.9 | 1.1 | | | | 2.1 | 1.1 | 0.1 | 2.2 | 6.3 | 0.1 | 4.7 |
| Delay (s) | | 64.9 | 24.0 | | | | 89.7 | 19.8 | 33.6 | 61.7 | 66.5 | 49.9 | 63.1 |
| Level of Service | | E | C | | | | F | B | C | E | E | D | E |
| Approach Delay (s) | | | 34.2 | | | | 25.5 | | | 60.3 | | | |
| Approach LOS | | | C | | | | C | | | E | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 36.4 | | | | HCM 2000 Level of Service | | | D | | | |
| HCM 2000 Volume to Capacity ratio | | | 0.59 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | | | Sum of lost time (s) | | | 31.3 | | | |
| Intersection Capacity Utilization | | | 70.8% | | | | ICU Level of Service | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
 1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY



| Movement | SBT | SBR |
|-----------------------------|------|--------|
| Lane Configurations | ↕ | ↗ |
| Traffic Volume (vph) | 93 | 215 |
| Future Volume (vph) | 93 | 215 |
| Ideal Flow (vphpl) | 1900 | 1900 |
| Grade (%) | -2% | |
| Total Lost time (s) | 9.4 | 9.4 |
| Lane Util. Factor | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 |
| Flt Protected | 0.99 | 1.00 |
| Satd. Flow (prot) | 1769 | 1558 |
| Flt Permitted | 0.99 | 1.00 |
| Satd. Flow (perm) | 1769 | 1558 |
| Peak-hour factor, PHF | 0.88 | 0.88 |
| Adj. Flow (vph) | 106 | 244 |
| RTOR Reduction (vph) | 0 | 127 |
| Lane Group Flow (vph) | 122 | 117 |
| Confl. Peds. (#/hr) | | 3 |
| Heavy Vehicles (%) | 2% | 3% |
| Turn Type | NA | custom |
| Protected Phases | 4 | |
| Permitted Phases | | 4 5 |
| Actuated Green, G (s) | 16.8 | 43.6 |
| Effective Green, g (s) | 16.8 | 43.6 |
| Actuated g/C Ratio | 0.12 | 0.31 |
| Clearance Time (s) | 9.4 | |
| Vehicle Extension (s) | 3.0 | |
| Lane Grp Cap (vph) | 212 | 485 |
| v/s Ratio Prot | 0.07 | |
| v/s Ratio Perm | | 0.07 |
| v/c Ratio | 0.58 | 0.24 |
| Uniform Delay, d1 | 58.2 | 35.9 |
| Progression Factor | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.7 | 0.3 |
| Delay (s) | 62.0 | 36.1 |
| Level of Service | E | D |
| Approach Delay (s) | 49.2 | |
| Approach LOS | D | |
| Intersection Summary | | |

HCM 6th Edition methodology expects strict NEMA phasing.

HCM 6th TWSC
 2: COMMERCIAL DRIVEWAY/WARRENTON CENTER & LEE HWY

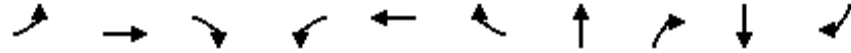
| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 885 | 63 | 0 | 800 | 31 | 0 | 0 | 29 | 0 | 0 | 20 |
| Future Vol, veh/h | 0 | 885 | 63 | 0 | 800 | 31 | 0 | 0 | 29 | 0 | 0 | 20 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 4 | 3 | 0 | 7 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 962 | 68 | 0 | 870 | 34 | 0 | 0 | 32 | 0 | 0 | 22 |

| Major/Minor | Major1 | | Major2 | | Minor1 | | Minor2 | | | | | |
|----------------------|--------|---|--------|---|--------|---|--------|---|------|---|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 481 | - | - | 435 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.26 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.33 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 508 | 0 | 0 | 656 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 508 | - | - | 656 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|------|------|
| HCM Control Delay, s | 0 | 0 | 12.6 | 10.7 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 508 | - | - | - | - | 656 |
| HCM Lane V/C Ratio | 0.062 | - | - | - | - | 0.033 |
| HCM Control Delay (s) | 12.6 | - | - | - | - | 10.7 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.1 |

Queues
3: BRANCH DR & LEE HWY



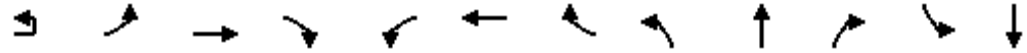
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 40 | 964 | 1 | 48 | 840 | 56 | 23 | 42 | 46 | 55 |
| v/c Ratio | 0.36 | 0.41 | 0.00 | 0.41 | 0.37 | 0.05 | 0.15 | 0.16 | 0.40 | 0.28 |
| Control Delay | 84.6 | 7.2 | 0.0 | 72.4 | 16.2 | 0.1 | 56.4 | 1.4 | 71.9 | 3.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 84.6 | 7.2 | 0.0 | 72.4 | 16.2 | 0.1 | 56.4 | 1.4 | 71.9 | 3.4 |
| Queue Length 50th (ft) | 40 | 127 | 0 | 44 | 188 | 0 | 21 | 0 | 43 | 0 |
| Queue Length 95th (ft) | m80 | 133 | m0 | 88 | 394 | 0 | 43 | 0 | 86 | 0 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 199 | 2364 | 1143 | 227 | 2284 | 1125 | 286 | 358 | 185 | 248 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.20 | 0.41 | 0.00 | 0.21 | 0.37 | 0.05 | 0.08 | 0.12 | 0.25 | 0.22 |

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

HCM Signalized Intersection Capacity Analysis

3: BRANCH DR & LEE HWY

Warrenton Village Center Item 1.
2023 Existing AM



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT |
|------------------------|------|------|-------|------|-------|------|------|-------|-------|------|-------|-------|
| Lane Configurations | | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ | | ↕ | ↕ | | ↕ |
| Traffic Volume (vph) | 7 | 29 | 877 | 1 | 44 | 764 | 51 | 10 | 11 | 38 | 34 | 8 |
| Future Volume (vph) | 7 | 29 | 877 | 1 | 44 | 764 | 51 | 10 | 11 | 38 | 34 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (prot) | | 1791 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1792 |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (perm) | | 1791 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1792 |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 8 | 32 | 964 | 1 | 48 | 840 | 56 | 11 | 12 | 42 | 37 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 39 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 40 | 964 | 1 | 48 | 840 | 35 | 0 | 23 | 3 | 0 | 46 |
| Heavy Vehicles (%) | 14% | 0% | 4% | 0% | 2% | 6% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | |
| Actuated Green, G (s) | | 7.5 | 87.3 | 87.3 | 8.1 | 88.4 | 88.4 | | 10.7 | 10.7 | | 7.9 |
| Effective Green, g (s) | | 7.5 | 87.3 | 87.3 | 8.1 | 88.4 | 88.4 | | 10.7 | 10.7 | | 7.9 |
| Actuated g/C Ratio | | 0.05 | 0.62 | 0.62 | 0.06 | 0.63 | 0.63 | | 0.08 | 0.08 | | 0.06 |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 95 | 2208 | 1027 | 101 | 2129 | 1009 | | 141 | 123 | | 101 |
| v/s Ratio Prot | | 0.02 | c0.27 | | c0.03 | 0.25 | | | c0.01 | | | c0.03 |
| v/s Ratio Perm | | | | 0.00 | | | 0.02 | | | 0.00 | | |
| v/c Ratio | | 0.42 | 0.44 | 0.00 | 0.48 | 0.39 | 0.04 | | 0.16 | 0.03 | | 0.46 |
| Uniform Delay, d1 | | 64.1 | 13.6 | 9.9 | 63.9 | 12.7 | 9.7 | | 60.5 | 59.8 | | 64.0 |
| Progression Factor | | 1.23 | 0.40 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 2.7 | 0.6 | 0.0 | 3.5 | 0.5 | 0.1 | | 0.5 | 0.1 | | 3.2 |
| Delay (s) | | 81.5 | 6.0 | 9.9 | 67.4 | 13.2 | 9.8 | | 61.0 | 59.9 | | 67.2 |
| Level of Service | | F | A | A | E | B | A | | E | E | | E |
| Approach Delay (s) | | | 9.0 | | | 15.8 | | | 60.3 | | | 64.7 |
| Approach LOS | | | A | | | B | | | E | | | E |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 16.2 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.41 | B |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 57.4% | 26.0 |
| Analysis Period (min) | 15 | ICU Level of Service |
| | | B |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: BRANCH DR & LEE HWY

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 50 |
| Future Volume (vph) | 50 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1375 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1375 |
| Peak-hour factor, PHF | 0.91 |
| Adj. Flow (vph) | 55 |
| RTOR Reduction (vph) | 52 |
| Lane Group Flow (vph) | 3 |
| Heavy Vehicles (%) | 18% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 7.9 |
| Effective Green, g (s) | 7.9 |
| Actuated g/C Ratio | 0.06 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 77 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.00 |
| v/c Ratio | 0.04 |
| Uniform Delay, d1 | 62.5 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.2 |
| Delay (s) | 62.7 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

Intersection

Int Delay, s/veh 4.4

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 6 | 15 | 38 | 14 | 11 | 14 | 23 | 65 | 7 | 18 | 67 | 5 |
| Future Vol, veh/h | 6 | 15 | 38 | 14 | 11 | 14 | 23 | 65 | 7 | 18 | 67 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 2 | 2 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 13 | 0 |
| Mvmt Flow | 7 | 18 | 45 | 16 | 13 | 16 | 27 | 76 | 8 | 21 | 79 | 6 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-----|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 223 | 262 | 45 | 227 | 261 | 42 | 85 | 0 | 0 | 84 | 0 | 0 |
| Stage 1 | 124 | 124 | - | 134 | 134 | - | - | - | - | - | - | - |
| Stage 2 | 99 | 138 | - | 93 | 127 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.1 | 7.1 | 6.28 | 6.7 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4.09 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 794 | 726 | 1032 | 733 | 645 | 1028 | 1524 | - | - | 1526 | - | - |
| Stage 1 | 922 | 842 | - | 874 | 780 | - | - | - | - | - | - | - |
| Stage 2 | 943 | 836 | - | 919 | 785 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 750 | 702 | 1030 | 669 | 624 | 1028 | 1524 | - | - | 1526 | - | - |
| Mov Cap-2 Maneuver | 750 | 702 | - | 669 | 624 | - | - | - | - | - | - | - |
| Stage 1 | 904 | 830 | - | 857 | 765 | - | - | - | - | - | - | - |
| Stage 2 | 895 | 820 | - | 847 | 774 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|-----|------|-----|-----|
| HCM Control Delay, s | 9.4 | 10.1 | 1.8 | 1.5 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1524 | - | - | 890 | 748 | 1526 | - | - |
| HCM Lane V/C Ratio | 0.018 | - | - | 0.078 | 0.061 | 0.014 | - | - |
| HCM Control Delay (s) | 7.4 | 0 | - | 9.4 | 10.1 | 7.4 | 0 | - |
| HCM Lane LOS | A | A | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.3 | 0.2 | 0 | - | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 1 | 76 | 75 | 14 | 106 | 1 | 73 | 1 | 12 | 1 | 1 | 1 |
| Future Vol, veh/h | 1 | 76 | 75 | 14 | 106 | 1 | 73 | 1 | 12 | 1 | 1 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 1 | 11 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 89 | 88 | 16 | 125 | 1 | 86 | 1 | 14 | 1 | 1 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 130 | 0 | 0 | 178 | 0 | 0 | 295 | 298 | 136 | 307 | 342 | 130 |
| Stage 1 | - | - | - | - | - | - | 136 | 136 | - | 162 | 162 | - |
| Stage 2 | - | - | - | - | - | - | 159 | 162 | - | 145 | 180 | - |
| Critical Hdwy | 4.1 | - | - | 4.17 | - | - | 7.5 | 6.9 | 6.4 | 6.1 | 5.5 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.263 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 1468 | - | - | 1368 | - | - | 640 | 597 | 911 | 707 | 642 | 942 |
| Stage 1 | - | - | - | - | - | - | 859 | 776 | - | 884 | 803 | - |
| Stage 2 | - | - | - | - | - | - | 833 | 754 | - | 898 | 793 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1463 | - | - | 1367 | - | - | 631 | 586 | 909 | 684 | 630 | 939 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 631 | 586 | - | 684 | 630 | - |
| Stage 1 | - | - | - | - | - | - | 857 | 774 | - | 880 | 790 | - |
| Stage 2 | - | - | - | - | - | - | 820 | 742 | - | 880 | 791 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0 | 0.9 | 11.2 | 10 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 630 | 909 | 1463 | - | - | 1367 | - | - | 729 |
| HCM Lane V/C Ratio | 0.138 | 0.016 | 0.001 | - | - | 0.012 | - | - | 0.005 |
| HCM Control Delay (s) | 11.6 | 9 | 7.5 | 0 | - | 7.7 | 0 | - | 10 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.5 | 0 | 0 | - | - | 0 | - | - | 0 |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 4.1 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↑ | ↑ | | ↑ | |
| Traffic Vol, veh/h | 83 | 104 | 136 | 44 | 47 | 67 |
| Future Vol, veh/h | 83 | 104 | 136 | 44 | 47 | 67 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -3 | 1 | - | -5 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 6 | 1 | 1 | 0 | 17 | 0 |
| Mvmt Flow | 98 | 122 | 160 | 52 | 55 | 79 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|-----------|
| Conflicting Flow All | 213 | 0 | - | 0 | 505 189 |
| Stage 1 | - | - | - | - | 187 - |
| Stage 2 | - | - | - | - | 318 - |
| Critical Hdwy | 4.16 | - | - | - | 5.57 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | 4.57 - |
| Critical Hdwy Stg 2 | - | - | - | - | 4.57 - |
| Follow-up Hdwy | 2.254 | - | - | - | 3.653 3.3 |
| Pot Cap-1 Maneuver | 1334 | - | - | - | 577 881 |
| Stage 1 | - | - | - | - | 853 - |
| Stage 2 | - | - | - | - | 770 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1333 | - | - | - | 530 879 |
| Mov Cap-2 Maneuver | - | - | - | - | 530 - |
| Stage 1 | - | - | - | - | 785 - |
| Stage 2 | - | - | - | - | 769 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 3.5 | 0 | 11.5 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1333 | - | - | - | 691 |
| HCM Lane V/C Ratio | 0.073 | - | - | - | 0.194 |
| HCM Control Delay (s) | 7.9 | - | - | - | 11.5 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 0.7 |

Intersection

Int Delay, s/veh 1.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations | ↘ | ↗ | ↗ | | ↘ | ↘ |
| Traffic Vol, veh/h | 38 | 156 | 152 | 51 | 31 | 19 |
| Future Vol, veh/h | 38 | 156 | 152 | 51 | 31 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | - | - | - | 0 | 50 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -5 | 3 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 4 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 45 | 184 | 179 | 60 | 36 | 22 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 239 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.1 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 2.2 | - | - |
| Pot Cap-1 Maneuver | 1340 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | | - | - |
| Mov Cap-1 Maneuver | 1340 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.5 | 0 | 11.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1340 | - | - | - | 527 | 836 |
| HCM Lane V/C Ratio | 0.033 | - | - | - | 0.069 | 0.027 |
| HCM Control Delay (s) | 7.8 | - | - | - | 12.3 | 9.4 |
| HCM Lane LOS | A | - | - | - | B | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.2 | 0.1 |

Intersection

Int Delay, s/veh 4.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ | ↔ |
| Traffic Vol, veh/h | 1 | 1 | 1 | 64 | 1 | 106 | 1 | 407 | 98 | 95 | 355 | 1 |
| Future Vol, veh/h | 1 | 1 | 1 | 64 | 1 | 106 | 1 | 407 | 98 | 95 | 355 | 1 |
| 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 | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 5 | 5 | 0 |
| Mvmt Flow | 1 | 1 | 1 | 75 | 1 | 125 | 1 | 479 | 115 | 112 | 418 | 1 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|-----|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 885 | 1239 | 210 | 915 | 1124 | 240 | 419 | 0 | 0 | 594 | 0 | 0 |
| Stage 1 | 643 | 643 | - | 481 | 481 | - | - | - | - | - | - | - |
| Stage 2 | 242 | 596 | - | 434 | 643 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.3 | 7.3 | 7.32 | 4.1 | - | - | 4.2 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.31 | 2.2 | - | - | 2.25 | - | - |
| Pot Cap-1 Maneuver | 268 | 203 | 811 | 188 | 161 | 744 | 1151 | - | - | 958 | - | - |
| Stage 1 | 465 | 506 | - | 486 | 501 | - | - | - | - | - | - | - |
| Stage 2 | 766 | 529 | - | 523 | 409 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 202 | 179 | 811 | 170 | 142 | 744 | 1151 | - | - | 958 | - | - |
| Mov Cap-2 Maneuver | 202 | 179 | - | 170 | 142 | - | - | - | - | - | - | - |
| Stage 1 | 465 | 447 | - | 486 | 500 | - | - | - | - | - | - | - |
| Stage 2 | 636 | 528 | - | 460 | 361 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|----|--|----|--|-----|--|
| HCM Control Delay, s | 19.3 | | 23 | | 0 | | 1.9 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1151 | - | - | 255 | 169 | 744 | 958 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.014 | 0.452 | 0.168 | 0.117 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 19.3 | 42.8 | 10.8 | 9.3 | - | - |
| HCM Lane LOS | A | - | - | C | E | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 2.1 | 0.6 | 0.4 | - | - |

9: BROADVIEW AVE & COMMERCIAL DRIVEWAY/WARRENTON NORTH DRIVEWAY 2023 Existing AM

Intersection

Int Delay, s/veh 0.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | ↕ | ↕ | | ↕ | ↑↑ | ↕ | ↕ | ↑↑ | |
| Traffic Vol, veh/h | 1 | 1 | 3 | 5 | 1 | 18 | 13 | 488 | 10 | 15 | 401 | 3 |
| Future Vol, veh/h | 1 | 1 | 3 | 5 | 1 | 18 | 13 | 488 | 10 | 15 | 401 | 3 |
| 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 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 1 | 1 | 4 | 6 | 1 | 21 | 15 | 574 | 12 | 18 | 472 | 4 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|-----|---|---|
| Conflicting Flow All | 828 | 1126 | 238 | 877 | 1116 | 287 | 476 | 0 | 0 | 586 | 0 | 0 |
| Stage 1 | 510 | 510 | - | 604 | 604 | - | - | - | - | - | - | - |
| Stage 2 | 318 | 616 | - | 273 | 512 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.32 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.36 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 212 | 151 | 744 | 212 | 174 | 681 | 1097 | - | - | 999 | - | - |
| Stage 1 | 451 | 469 | - | 413 | 444 | - | - | - | - | - | - | - |
| Stage 2 | 616 | 409 | - | 684 | 496 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 199 | 146 | 744 | 205 | 168 | 681 | 1097 | - | - | 999 | - | - |
| Mov Cap-2 Maneuver | 199 | 146 | - | 205 | 168 | - | - | - | - | - | - | - |
| Stage 1 | 445 | 461 | - | 407 | 438 | - | - | - | - | - | - | - |
| Stage 2 | 587 | 403 | - | 667 | 487 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 16.7 | | 13.8 | | 0.2 | | 0.3 | |
| HCM LOS | C | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1097 | - | - | 314 | 205 | 587 | 999 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | - | 0.019 | 0.029 | 0.038 | 0.018 | - | - |
| HCM Control Delay (s) | 8.3 | - | - | 16.7 | 23.1 | 11.4 | 8.7 | - | - |
| HCM Lane LOS | A | - | - | C | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0.1 | 0.1 | - | - |

Intersection

Int Delay, s/veh 8

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 119 | 17 | 71 | 2 | 3 | 3 | 111 | 389 | 31 | 7 | 352 | 50 |
| Future Vol, veh/h | 119 | 17 | 71 | 2 | 3 | 3 | 111 | 389 | 31 | 7 | 352 | 50 |
| 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 | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 2 | 0 | 3 | 0 | 0 | 33 | 1 | 5 | 0 | 0 | 3 | 8 |
| Mvmt Flow | 140 | 20 | 84 | 2 | 4 | 4 | 131 | 458 | 36 | 8 | 414 | 59 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 923 | 1186 | 207 | 953 | 1209 | 229 | 473 | 0 | 0 | 494 | 0 | 0 |
| Stage 1 | 430 | 430 | - | 720 | 720 | - | - | - | - | - | - | - |
| Stage 2 | 493 | 756 | - | 233 | 489 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.96 | 7.5 | 6.5 | 7.56 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.33 | 3.5 | 4 | 3.63 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 225 | 190 | 796 | 217 | 184 | 687 | 1092 | - | - | 1080 | - | - |
| Stage 1 | 574 | 587 | - | 390 | 435 | - | - | - | - | - | - | - |
| Stage 2 | 526 | 419 | - | 755 | 553 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 199 | 166 | 796 | 159 | 161 | 687 | 1092 | - | - | 1080 | - | - |
| Mov Cap-2 Maneuver | 199 | 166 | - | 159 | 161 | - | - | - | - | - | - | - |
| Stage 1 | 505 | 583 | - | 343 | 383 | - | - | - | - | - | - | - |
| Stage 2 | 456 | 369 | - | 648 | 549 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 38.8 | | 21.4 | | 1.8 | | 0.1 | |
| HCM LOS | E | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1092 | - | - | 199 | 166 | 796 | 159 | 261 | 1080 | - | - |
| HCM Lane V/C Ratio | 0.12 | - | - | 0.704 | 0.12 | 0.105 | 0.015 | 0.027 | 0.008 | - | - |
| HCM Control Delay (s) | 8.7 | - | - | 57.3 | 29.6 | 10.1 | 28 | 19.2 | 8.4 | - | - |
| HCM Lane LOS | A | - | - | F | D | B | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 4.4 | 0.4 | 0.3 | 0 | 0.1 | 0 | - | - |

Queues

1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY

2023 Existing PM



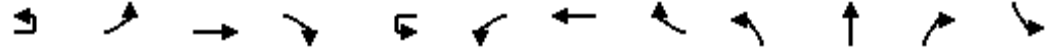
| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|-------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 275 | 869 | 68 | 1119 | 110 | 119 | 99 | 70 | 161 | 166 | 402 |
| v/c Ratio | 0.74 | 0.54 | 0.51 | 0.77 | 0.12 | 0.67 | 0.54 | 0.19 | 0.55 | 0.55 | 0.70 |
| Control Delay | 76.6 | 31.9 | 101.5 | 23.6 | 3.3 | 83.1 | 74.3 | 3.8 | 64.7 | 64.4 | 40.0 |
| 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 | 76.6 | 31.9 | 101.5 | 23.6 | 3.3 | 83.1 | 74.3 | 3.8 | 64.7 | 64.4 | 40.0 |
| Queue Length 50th (ft) | 140 | 356 | 58 | 582 | 38 | 119 | 97 | 0 | 152 | 156 | 257 |
| Queue Length 95th (ft) | 193 | 428 | m119 | 192 | m15 | 188 | 160 | 17 | 251 | 257 | 417 |
| Internal Link Dist (ft) | | 1315 | | 334 | | | 509 | | | 538 | |
| Turn Bay Length (ft) | 250 | | 130 | | 200 | 250 | | 125 | 215 | | |
| Base Capacity (vph) | 412 | 1607 | 218 | 1486 | 922 | 222 | 232 | 465 | 301 | 311 | 581 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.67 | 0.54 | 0.31 | 0.75 | 0.12 | 0.54 | 0.43 | 0.15 | 0.53 | 0.53 | 0.69 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY

Warrenton Village Center Item 1.
 2023 Existing PM



| Movement | EBU | EBL | EBT | EBR | WBU | WBL | WBT | WBR | NBL | NBT | NBR | SBL |
|------------------------|------|------|-------|------|------|------|-------|-------|-------|------|--------|-------|
| Lane Configurations | | ↔↔ | ↕↕ | | | ↔↔ | ↕↕ | ↔↔ | ↕↕ | ↕ | ↔↔ | ↕↕ |
| Traffic Volume (vph) | 2 | 262 | 794 | 40 | 10 | 56 | 1074 | 106 | 114 | 95 | 67 | 231 |
| Future Volume (vph) | 2 | 262 | 794 | 40 | 10 | 56 | 1074 | 106 | 114 | 95 | 67 | 231 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Grade (%) | | | 0% | | | | -1% | | | 2% | | |
| Total Lost time (s) | | 7.8 | 5.2 | | | 6.9 | 5.8 | 9.4 | 8.3 | 8.3 | 6.9 | 9.4 |
| Lane Util. Factor | | 0.97 | 0.95 | | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 |
| Frbp, ped/bikes | | 1.00 | 1.00 | | | 1.00 | 1.00 | 0.99 | 1.00 | 1.00 | 0.98 | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 1.00 | 0.99 | | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 |
| Flt Protected | | 0.95 | 1.00 | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 |
| Satd. Flow (prot) | | 3400 | 3512 | | | 1814 | 3557 | 1570 | 1787 | 1862 | 1563 | 1715 |
| Flt Permitted | | 0.95 | 1.00 | | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 |
| Satd. Flow (perm) | | 3400 | 3512 | | | 1814 | 3557 | 1570 | 1787 | 1862 | 1563 | 1715 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 2 | 273 | 827 | 42 | 10 | 58 | 1119 | 110 | 119 | 99 | 70 | 241 |
| RTOR Reduction (vph) | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 58 | 0 |
| Lane Group Flow (vph) | 0 | 275 | 867 | 0 | 0 | 68 | 1119 | 73 | 119 | 99 | 12 | 161 |
| Confl. Peds. (#/hr) | | | | 3 | | | | 5 | 2 | | 6 | 6 |
| Heavy Vehicles (%) | 0% | 3% | 2% | 0% | 0% | 0% | 2% | 2% | 0% | 1% | 0% | 1% |
| Turn Type | Prot | Prot | NA | | Prot | Prot | NA | pm+ov | Split | NA | custom | Split |
| Protected Phases | 5 | 5 | 2 | | 1 | 1 | 6 | 4 | 3 | 3 | | 4 |
| Permitted Phases | | | | | | | | 6 | | | 13 | |
| Actuated Green, G (s) | | 16.5 | 68.6 | | | 11.1 | 61.7 | 87.3 | 14.9 | 14.9 | 26.0 | 25.6 |
| Effective Green, g (s) | | 16.5 | 68.6 | | | 11.1 | 61.7 | 87.3 | 14.9 | 14.9 | 26.0 | 25.6 |
| Actuated g/C Ratio | | 0.11 | 0.46 | | | 0.07 | 0.41 | 0.58 | 0.10 | 0.10 | 0.17 | 0.17 |
| Clearance Time (s) | | 7.8 | 5.2 | | | 6.9 | 5.8 | 9.4 | 8.3 | 8.3 | | 9.4 |
| Vehicle Extension (s) | | 3.0 | 3.0 | | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 374 | 1606 | | | 134 | 1463 | 913 | 177 | 184 | 270 | 292 |
| v/s Ratio Prot | | 0.08 | c0.25 | | | 0.04 | c0.31 | 0.01 | c0.07 | 0.05 | | 0.09 |
| v/s Ratio Perm | | | | | | | | 0.03 | | | 0.01 | |
| v/c Ratio | | 0.74 | 0.54 | | | 0.51 | 0.76 | 0.08 | 0.67 | 0.54 | 0.04 | 0.55 |
| Uniform Delay, d1 | | 64.6 | 29.3 | | | 66.8 | 37.9 | 13.7 | 65.2 | 64.3 | 51.7 | 56.9 |
| Progression Factor | | 1.00 | 1.00 | | | 1.36 | 0.51 | 1.22 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | | 7.3 | 1.3 | | | 2.6 | 3.3 | 0.0 | 9.6 | 3.0 | 0.1 | 2.2 |
| Delay (s) | | 72.0 | 30.6 | | | 93.8 | 22.7 | 16.8 | 74.8 | 67.3 | 51.7 | 59.2 |
| Level of Service | | E | C | | | F | C | B | E | E | D | E |
| Approach Delay (s) | | | 40.6 | | | 25.9 | | | | 66.6 | | |
| Approach LOS | | | D | | | C | | | | E | | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 39.4 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.77 | D |
| Actuated Cycle Length (s) | 150.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 98.1% | 31.3 |
| Analysis Period (min) | 15 | ICU Level of Service |
| | | F |
| c Critical Lane Group | | |

HCM Signalized Intersection Capacity Analysis
 1: WINCHESTER ST & JAMES MADISON HWY & LEE HWY



| Movement | SBT | SBR |
|-----------------------------|------|--------|
| Lane Configurations | ↕ | ↗ |
| Traffic Volume (vph) | 83 | 386 |
| Future Volume (vph) | 83 | 386 |
| Ideal Flow (vphpl) | 1900 | 1900 |
| Grade (%) | -2% | |
| Total Lost time (s) | 9.4 | 9.4 |
| Lane Util. Factor | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 0.99 |
| Flpb, ped/bikes | 1.00 | 1.00 |
| Frt | 1.00 | 0.85 |
| Flt Protected | 0.98 | 1.00 |
| Satd. Flow (prot) | 1772 | 1545 |
| Flt Permitted | 0.98 | 1.00 |
| Satd. Flow (perm) | 1772 | 1545 |
| Peak-hour factor, PHF | 0.96 | 0.96 |
| Adj. Flow (vph) | 86 | 402 |
| RTOR Reduction (vph) | 0 | 60 |
| Lane Group Flow (vph) | 166 | 342 |
| Confl. Peds. (#/hr) | | 2 |
| Heavy Vehicles (%) | 0% | 4% |
| Turn Type | NA | custom |
| Protected Phases | 4 | |
| Permitted Phases | | 4 5 |
| Actuated Green, G (s) | 25.6 | 51.5 |
| Effective Green, g (s) | 25.6 | 51.5 |
| Actuated g/C Ratio | 0.17 | 0.34 |
| Clearance Time (s) | 9.4 | |
| Vehicle Extension (s) | 3.0 | |
| Lane Grp Cap (vph) | 302 | 530 |
| v/s Ratio Prot | 0.09 | |
| v/s Ratio Perm | | c0.22 |
| v/c Ratio | 0.55 | 0.64 |
| Uniform Delay, d1 | 56.9 | 41.5 |
| Progression Factor | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 2.7 |
| Delay (s) | 59.0 | 44.2 |
| Level of Service | E | D |
| Approach Delay (s) | 50.9 | |
| Approach LOS | D | |
| Intersection Summary | | |

HCM 6th Edition methodology expects strict NEMA phasing.

HCM 6th TWSC
 2: COMMERCIAL DRIVEWAY/WARRENTON CENTER & LEE HWY

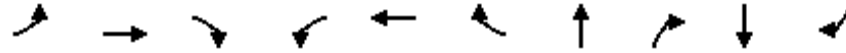
| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 1019 | 83 | 0 | 1167 | 102 | 0 | 0 | 25 | 0 | 0 | 79 |
| Future Vol, veh/h | 0 | 1019 | 83 | 0 | 1167 | 102 | 0 | 0 | 25 | 0 | 0 | 79 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 1096 | 89 | 0 | 1255 | 110 | 0 | 0 | 27 | 0 | 0 | 85 |

| Major/Minor | Major1 | | Major2 | | Minor1 | | Minor2 | | | | | |
|----------------------|--------|---|--------|---|--------|---|--------|---|------|---|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 548 | - | - | 632 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.28 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.34 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 454 | 0 | 0 | 519 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 454 | - | - | 517 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|------|------|
| HCM Control Delay, s | 0 | 0 | 13.4 | 13.3 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 454 | - | - | - | - | 517 |
| HCM Lane V/C Ratio | 0.059 | - | - | - | - | 0.164 |
| HCM Control Delay (s) | 13.4 | - | - | - | - | 13.3 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.6 |

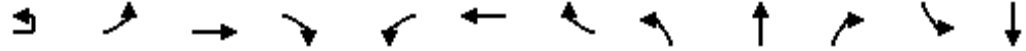
Queues
3: BRANCH DR & LEE HWY



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 147 | 949 | 2 | 68 | 1160 | 88 | 36 | 79 | 165 | 148 |
| v/c Ratio | 0.72 | 0.44 | 0.00 | 0.54 | 0.63 | 0.10 | 0.31 | 0.30 | 0.76 | 0.44 |
| Control Delay | 87.4 | 12.5 | 0.0 | 82.0 | 28.6 | 0.2 | 72.2 | 3.0 | 85.8 | 10.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 87.4 | 12.5 | 0.0 | 82.0 | 28.6 | 0.2 | 72.2 | 3.0 | 85.8 | 10.0 |
| Queue Length 50th (ft) | 157 | 212 | 0 | 68 | 427 | 0 | 36 | 0 | 164 | 0 |
| Queue Length 95th (ft) | 225 | 226 | m0 | 123 | 610 | 0 | 73 | 0 | 249 | 53 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 260 | 2159 | 993 | 157 | 1853 | 907 | 202 | 327 | 250 | 363 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.57 | 0.44 | 0.00 | 0.43 | 0.63 | 0.10 | 0.18 | 0.24 | 0.66 | 0.41 |

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

HCM Signalized Intersection Capacity Analysis
3: BRANCH DR & LEE HWY



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT |
|-----------------------------------|------|-------|-------|------|------|---------------------------|------|-------|-------|------|-------|-------|
| Lane Configurations | | ↔ | ↕ | ↗ | ↖ | ↕ | ↗ | | ↖ | ↗ | | ↖ |
| Traffic Volume (vph) | 9 | 131 | 902 | 2 | 65 | 1102 | 84 | 17 | 17 | 75 | 139 | 18 |
| Future Volume (vph) | 9 | 131 | 902 | 2 | 65 | 1102 | 84 | 17 | 17 | 75 | 139 | 18 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Frbp, ped/bikes | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (prot) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1813 |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (perm) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1813 |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Adj. Flow (vph) | 9 | 138 | 949 | 2 | 68 | 1160 | 88 | 18 | 18 | 79 | 146 | 19 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 1 | 0 | 0 | 41 | 0 | 0 | 74 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 147 | 949 | 1 | 68 | 1160 | 47 | 0 | 36 | 5 | 0 | 165 |
| Confl. Peds. (#/hr) | | | | 2 | | | 2 | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 2% | 1% | 0% | 0% | 0% | 1% | 0% |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | |
| Actuated Green, G (s) | | 17.1 | 86.7 | 86.7 | 9.3 | 79.4 | 79.4 | | 9.5 | 9.5 | | 17.9 |
| Effective Green, g (s) | | 17.1 | 86.7 | 86.7 | 9.3 | 79.4 | 79.4 | | 9.5 | 9.5 | | 17.9 |
| Actuated g/C Ratio | | 0.11 | 0.58 | 0.58 | 0.06 | 0.53 | 0.53 | | 0.06 | 0.06 | | 0.12 |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 205 | 2128 | 925 | 110 | 1854 | 824 | | 117 | 102 | | 216 |
| v/s Ratio Prot | | c0.08 | 0.26 | | 0.04 | c0.33 | | | c0.02 | | | c0.09 |
| v/s Ratio Perm | | | | 0.00 | | | 0.03 | | | 0.00 | | |
| v/c Ratio | | 0.72 | 0.45 | 0.00 | 0.62 | 0.63 | 0.06 | | 0.31 | 0.05 | | 0.76 |
| Uniform Delay, d1 | | 64.1 | 18.0 | 13.4 | 68.6 | 24.8 | 17.1 | | 67.1 | 66.0 | | 64.0 |
| Progression Factor | | 1.10 | 0.61 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 10.2 | 0.6 | 0.0 | 9.9 | 1.6 | 0.1 | | 1.5 | 0.2 | | 14.8 |
| Delay (s) | | 80.8 | 11.6 | 13.4 | 78.5 | 26.4 | 17.3 | | 68.6 | 66.2 | | 78.8 |
| Level of Service | | F | B | B | E | C | B | | E | E | | E |
| Approach Delay (s) | | | 20.9 | | | 28.5 | | | 67.0 | | | 69.4 |
| Approach LOS | | | C | | | C | | | E | | | E |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 31.6 | | | HCM 2000 Level of Service | | | | C | | |
| HCM 2000 Volume to Capacity ratio | | | 0.64 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | Sum of lost time (s) | | | | 26.6 | | |
| Intersection Capacity Utilization | | | 73.7% | | | ICU Level of Service | | | | D | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
 3: BRANCH DR & LEE HWY

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 141 |
| Future Volume (vph) | 141 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frbp, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1607 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1607 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 148 |
| RTOR Reduction (vph) | 130 |
| Lane Group Flow (vph) | 18 |
| Confl. Peds. (#/hr) | |
| Heavy Vehicles (%) | 1% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 17.9 |
| Effective Green, g (s) | 17.9 |
| Actuated g/C Ratio | 0.12 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 191 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.01 |
| v/c Ratio | 0.09 |
| Uniform Delay, d1 | 58.8 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.2 |
| Delay (s) | 59.0 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

Intersection

Int Delay, s/veh 8.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 17 | 77 | 116 | 45 | 50 | 41 | 94 | 43 | 12 | 48 | 39 | 32 |
| Future Vol, veh/h | 17 | 77 | 116 | 45 | 50 | 41 | 94 | 43 | 12 | 48 | 39 | 32 |
| Conflicting Peds, #/hr | 0 | 0 | 14 | 14 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 0 | 2 | 0 | 2 | 5 | 0 | 2 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 18 | 80 | 121 | 47 | 52 | 43 | 98 | 45 | 13 | 50 | 41 | 33 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-----|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 403 | 412 | 51 | 423 | 422 | 29 | 74 | 0 | 0 | 58 | 0 | 0 |
| Stage 1 | 158 | 158 | - | 248 | 248 | - | - | - | - | - | - | - |
| Stage 2 | 245 | 254 | - | 175 | 174 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.14 | 7.1 | 6.14 | 6.8 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.32 | 3.5 | 4.02 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 642 | 640 | 1018 | 545 | 547 | 1031 | 1538 | - | - | 1559 | - | - |
| Stage 1 | 895 | 827 | - | 760 | 720 | - | - | - | - | - | - | - |
| Stage 2 | 828 | 784 | - | 832 | 769 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 524 | 577 | 1006 | 392 | 493 | 1031 | 1538 | - | - | 1559 | - | - |
| Mov Cap-2 Maneuver | 524 | 577 | - | 392 | 493 | - | - | - | - | - | - | - |
| Stage 1 | 836 | 799 | - | 710 | 672 | - | - | - | - | - | - | - |
| Stage 2 | 684 | 732 | - | 629 | 743 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|----|--|
| HCM Control Delay, s | 11.8 | | 14.2 | | 4.7 | | 3 | |
| HCM LOS | B | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1538 | - | - | 747 | 531 | 1559 | - | - |
| HCM Lane V/C Ratio | 0.064 | - | - | 0.293 | 0.267 | 0.032 | - | - |
| HCM Control Delay (s) | 7.5 | 0 | - | 11.8 | 14.2 | 7.4 | 0 | - |
| HCM Lane LOS | A | A | - | B | B | A | A | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.2 | 1.1 | 0.1 | - | - |

Intersection

Int Delay, s/veh 3.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 3 | 106 | 86 | 28 | 112 | 2 | 62 | 2 | 37 | 1 | 5 | 1 |
| Future Vol, veh/h | 3 | 106 | 86 | 28 | 112 | 2 | 62 | 2 | 37 | 1 | 5 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 0 | 3 | 0 | 4 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 119 | 97 | 31 | 126 | 2 | 70 | 2 | 42 | 1 | 6 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-------|--------|-----|-----|
| Conflicting Flow All | 132 | 0 | 0 | 216 | 0 | 0 | 367 | 368 | 170 | 391 | 415 | 131 |
| Stage 1 | - | - | - | - | - | - | 174 | 174 | - | 193 | 193 | - |
| Stage 2 | - | - | - | - | - | - | 193 | 194 | - | 198 | 222 | - |
| Critical Hdwy | 4.1 | - | - | 4.14 | - | - | 7.53 | 6.9 | 6.43 | 6.1 | 5.5 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.53 | 5.9 | - | 5.1 | 4.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.9 | - | 5.1 | 4.5 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.236 | - | - | 3.527 | 4 | 3.327 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 1466 | - | - | 1342 | - | - | 564 | 542 | 863 | 637 | 596 | 941 |
| Stage 1 | - | - | - | - | - | - | 810 | 744 | - | 858 | 786 | - |
| Stage 2 | - | - | - | - | - | - | 789 | 728 | - | 854 | 769 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1461 | - | - | 1342 | - | - | 548 | 526 | 862 | 589 | 578 | 938 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 548 | 526 | - | 589 | 578 | - |
| Stage 1 | - | - | - | - | - | - | 808 | 743 | - | 854 | 764 | - |
| Stage 2 | - | - | - | - | - | - | 763 | 708 | - | 807 | 767 | - |

| Approach | EB | | | WB | | | NB | | | SB | | |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 0.1 | | | 1.5 | | | 11.4 | | | 10.9 | | |
| HCM LOS | | | | | | | B | | | B | | |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 547 | 862 | 1461 | - | - | 1342 | - | - | 613 |
| HCM Lane V/C Ratio | 0.131 | 0.048 | 0.002 | - | - | 0.023 | - | - | 0.013 |
| HCM Control Delay (s) | 12.6 | 9.4 | 7.5 | 0 | - | 7.7 | 0 | - | 10.9 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.5 | 0.2 | 0 | - | - | 0.1 | - | - | 0 |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.6 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↑ | ↑ | | ↑ | |
| Traffic Vol, veh/h | 42 | 128 | 160 | 14 | 67 | 52 |
| Future Vol, veh/h | 42 | 128 | 160 | 14 | 67 | 52 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 2 | 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, % | - | -3 | 1 | - | -5 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 2 | 2 | 2 | 0 | 0 | 2 |
| Mvmt Flow | 49 | 151 | 188 | 16 | 79 | 61 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|-----------|
| Conflicting Flow All | 205 | 0 | - | 0 | 448 197 |
| Stage 1 | - | - | - | - | 197 - |
| Stage 2 | - | - | - | - | 251 - |
| Critical Hdwy | 4.12 | - | - | - | 5.4 5.72 |
| Critical Hdwy Stg 1 | - | - | - | - | 4.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 4.4 - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.5 3.318 |
| Pot Cap-1 Maneuver | 1366 | - | - | - | 648 868 |
| Stage 1 | - | - | - | - | 888 - |
| Stage 2 | - | - | - | - | 853 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1365 | - | - | - | 621 867 |
| Mov Cap-2 Maneuver | - | - | - | - | 621 - |
| Stage 1 | - | - | - | - | 852 - |
| Stage 2 | - | - | - | - | 852 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.9 | 0 | 11.3 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1365 | - | - | - | 709 |
| HCM Lane V/C Ratio | 0.036 | - | - | - | 0.197 |
| HCM Control Delay (s) | 7.7 | - | - | - | 11.3 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.7 |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | ↘ | ↗ | ↗ | | ↘ | ↗ |
| Traffic Vol, veh/h | 5 | 159 | 210 | 2 | 11 | 27 |
| Future Vol, veh/h | 5 | 159 | 210 | 2 | 11 | 27 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | - | - | - | 0 | 50 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -5 | 3 | - | 0 | - |
| Peak Hour Factor | 85 | 85 | 85 | 85 | 85 | 85 |
| Heavy Vehicles, % | 0 | 3 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 6 | 187 | 247 | 2 | 13 | 32 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 250 | 0 | - | 0 | 448 249 |
| Stage 1 | - | - | - | - | 249 - |
| Stage 2 | - | - | - | - | 199 - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1327 | - | - | - | 572 795 |
| Stage 1 | - | - | - | - | 797 - |
| Stage 2 | - | - | - | - | 839 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1326 | - | - | - | 568 794 |
| Mov Cap-2 Maneuver | - | - | - | - | 568 - |
| Stage 1 | - | - | - | - | 792 - |
| Stage 2 | - | - | - | - | 838 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 0.2 | 0 | 10.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1326 | - | - | - | 568 | 794 |
| HCM Lane V/C Ratio | 0.004 | - | - | - | 0.023 | 0.04 |
| HCM Control Delay (s) | 7.7 | - | - | - | 11.5 | 9.7 |
| HCM Lane LOS | A | - | - | - | B | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 | 0.1 |

Intersection

Int Delay, s/veh 5.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | ↔ | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 2 | 1 | 4 | 98 | 1 | 139 | 2 | 370 | 77 | 86 | 501 | 2 |
| Future Vol, veh/h | 2 | 1 | 4 | 98 | 1 | 139 | 2 | 370 | 77 | 86 | 501 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 4 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 4 | 1 | 4 | 0 |
| Mvmt Flow | 2 | 1 | 4 | 109 | 1 | 154 | 2 | 411 | 86 | 96 | 557 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 964 | 1256 | 284 | 887 | 1171 | 207 | 563 | 0 | 0 | 498 | 0 | 0 |
| Stage 1 | 754 | 754 | - | 416 | 416 | - | - | - | - | - | - | - |
| Stage 2 | 210 | 502 | - | 471 | 755 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.32 | 7.3 | 7.34 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.51 | 4 | 3.32 | 2.2 | - | - | 2.21 | - | - |
| Pot Cap-1 Maneuver | 237 | 199 | 730 | 197 | 150 | 781 | 1019 | - | - | 1069 | - | - |
| Stage 1 | 404 | 457 | - | 535 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 797 | 577 | - | 491 | 355 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 175 | 180 | 728 | 181 | 136 | 780 | 1016 | - | - | 1068 | - | - |
| Mov Cap-2 Maneuver | 175 | 180 | - | 181 | 136 | - | - | - | - | - | - | - |
| Stage 1 | 402 | 414 | - | 533 | 541 | - | - | - | - | - | - | - |
| Stage 2 | 637 | 575 | - | 443 | 322 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|----|----|-----|
| HCM Control Delay, s | 16.9 | 28 | 0 | 1.3 |
| HCM LOS | C | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1016 | - | - | 311 | 180 | 780 | 1068 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.025 | 0.611 | 0.198 | 0.089 | - | - |
| HCM Control Delay (s) | 8.6 | - | - | 16.9 | 52.2 | 10.8 | 8.7 | - | - |
| HCM Lane LOS | A | - | - | C | F | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 3.4 | 0.7 | 0.3 | - | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | ↕ | ↕ | | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 10 | 1 | 17 | 33 | 1 | 38 | 15 | 401 | 15 | 41 | 556 | 6 |
| Future Vol, veh/h | 10 | 1 | 17 | 33 | 1 | 38 | 15 | 401 | 15 | 41 | 556 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 5 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 1 | 19 | 37 | 1 | 42 | 17 | 446 | 17 | 46 | 618 | 7 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 977 | 1216 | 318 | 882 | 1202 | 223 | 630 | 0 | 0 | 463 | 0 | 0 |
| Stage 1 | 719 | 719 | - | 480 | 480 | - | - | - | - | - | - | - |
| Stage 2 | 258 | 497 | - | 402 | 722 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.3 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 159 | 130 | 654 | 211 | 152 | 757 | 962 | - | - | 1109 | - | - |
| Stage 1 | 320 | 357 | - | 499 | 515 | - | - | - | - | - | - | - |
| Stage 2 | 679 | 477 | - | 562 | 385 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 142 | 122 | 651 | 194 | 143 | 757 | 958 | - | - | 1109 | - | - |
| Mov Cap-2 Maneuver | 142 | 122 | - | 194 | 143 | - | - | - | - | - | - | - |
| Stage 1 | 313 | 341 | - | 490 | 506 | - | - | - | - | - | - | - |
| Stage 2 | 628 | 468 | - | 521 | 368 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 20.3 | | 18.5 | | 0.3 | | 0.6 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 958 | - | - | 267 | 194 | 682 | 1109 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.117 | 0.189 | 0.064 | 0.041 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 20.3 | 27.8 | 10.6 | 8.4 | - | - |
| HCM Lane LOS | A | - | - | C | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.4 | 0.7 | 0.2 | 0.1 | - | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 8.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 96 | 61 | 164 | 43 | 27 | 25 | 76 | 310 | 77 | 7 | 493 | 106 |
| Future Vol, veh/h | 96 | 61 | 164 | 43 | 27 | 25 | 76 | 310 | 77 | 7 | 493 | 106 |
| Conflicting Peds, #/hr | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 4 | 1 |
| Mvmt Flow | 105 | 67 | 180 | 47 | 30 | 27 | 84 | 341 | 85 | 8 | 542 | 116 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|-----|--------|-----|------|--------|---|------|---|---|
| Conflicting Flow All | 918 | 1155 | 271 | 833 | 1186 | 180 | 658 | 0 | 0 | 429 | 0 | 0 |
| Stage 1 | 558 | 558 | - | 512 | 512 | - | - | - | - | - | - | - |
| Stage 2 | 360 | 597 | - | 321 | 674 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.92 | 7.5 | 6.5 | 6.9 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.31 | 3.5 | 4 | 3.3 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 227 | 199 | 730 | 265 | 190 | 838 | 932 | - | - | 1141 | - | - |
| Stage 1 | 482 | 515 | - | 518 | 540 | - | - | - | - | - | - | - |
| Stage 2 | 631 | 495 | - | 671 | 457 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 176 | 179 | 730 | 131 | 171 | 832 | 932 | - | - | 1138 | - | - |
| Mov Cap-2 Maneuver | 176 | 179 | - | 131 | 171 | - | - | - | - | - | - | - |
| Stage 1 | 439 | 511 | - | 470 | 490 | - | - | - | - | - | - | - |
| Stage 2 | 519 | 449 | - | 436 | 454 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | | SB | | |
|----------------------|------|--|----|--|-----|--|--|-----|--|--|
| HCM Control Delay, s | 28.4 | | 33 | | 1.5 | | | 0.1 | | |
| HCM LOS | D | | D | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 932 | - | - | 176 | 179 | 730 | 131 | 277 | 1138 | - | - |
| HCM Lane V/C Ratio | 0.09 | - | - | 0.599 | 0.374 | 0.247 | 0.361 | 0.206 | 0.007 | - | - |
| HCM Control Delay (s) | 9.2 | - | - | 52.1 | 36.7 | 11.5 | 47.2 | 21.3 | 8.2 | - | - |
| HCM Lane LOS | A | - | - | F | E | B | E | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 3.3 | 1.6 | 1 | 1.5 | 0.8 | 0 | - | - |

G. Background Development and Roadway Improvement Excerpts



TOWN OF WARRENTON CAPITAL IMPROVEMENT PROGRAM 2023 - 2028

TABLE OF CONTENTS

- 1. Capital Improvements Program Information**
 - b. Introduction
 - c. Policy
 - d. Benefits
 - e. Defining Capital Improvement Projects
 - f. Defining Capital Asset Projects
 - g. Classifications
 - h. Summary
- 2. Capital Improvement Projects**
 - a. Five-Year Funding Summary
 - b. FY22 Project Funding by Source
 - c. Five-Year Estimated Projects Summary
- 3. Individual Project Sheets**
 - a. Economic Development & Tourism (E)
 - b. General Government (G)
 - c. Public Safety (P)
 - d. Recreation & Quality of Life (R)
 - e. Transportation & Walkability (T)
 - f. Stormwater & Utilities (U)

Mission Statement

In Cooperation With, And For Our Citizens...

...The Mayor, Town Council and the Staff of Warrenton are dedicated to providing public safety, economic opportunity, and quality public services in an attractive, well-planned community with historic character for the benefit, enjoyment and accessibility of all.

**Affirmed by Town Council
August 28, 2018**

Vision and Value Statement

To Achieve Our Mission, We Strive To...

...

Provide high level services in a cost-effective manner; display honesty, respectfulness, and fairness in all relationships; support the health and economic well-being of our citizens and businesses; preserve our historic small-town character; encourage opportunities, services and infrastructure that allow people of all means to live, work and visit here; and address public concerns and opportunities promptly and effectively.

We recognize our Mission can be achieved only by the exchange of information and that through teamwork we can maintain an environment in which we can maximize our potential.

Affirmed by Town Council August 28, 2018

INTRODUCTION

Item 1.

The Capital Improvement Program (CIP) provides for an orderly implementation of short and long-term plans for construction of Capital Improvement Projects and Land Acquisition. It further provides for the scheduling of the associated expenditures over a period of many years. The first year of the program represents the proposed Capital Budget for the Fiscal Year. In addition, consideration is given to the project's relations to other improvements and plans, and the Town's current and anticipated financial capabilities. The CIP is updated annually, at which time the schedule and the projects are reevaluated, new or deferred projects are added, and the time frame is extended by one additional fiscal year.

The Town of Warrenton continues to enhance the structure of the budget and provide a greater understanding of funding commitments. Projects are presented under topical categories to help the community understand the investments that are being proposed and the tie in to priorities of the Town. Next, a Capital Asset Replacement Program (CARP) includes projects that cover standard operating and maintenance items. Unlike items listed in the capital project and acquisition program, these are items necessary for the ongoing operations of the Town and its facilities. Finally, the Town created dedicated Utilities and Stormwater Funds. These modifications to the CIP help move it towards a clearer document that works in conjunction with the budget and stated needs of the community.

POLICY

The following policies guide the development of the CIP:

1. The CIP should be realistic relative to the projected source of revenue.
2. A reserve fund should be established, as required, to reduce the fiscal impact of major projects in a single year.
3. Projects undertaken in the Enterprise Fund and Stormwater Fund are to be considered separate from the general Fund.

BENEFITS

A carefully planned CIP will enable the Town to realize several benefits:

1. Major improvements can be anticipated in advance, rather than addressed at the time the need arises.
2. The implementation strategy of the Comprehensive Plan is used as a guide for future needs and investments.
3. The Town Council and Planning Commission are better able to evaluate the needs of the entire community, instead of special projects.
4. Projects can be scheduled when revenue is available and when the community's anticipated ability to finance is determined.
5. Capital programming improves the Town's ability to vitalize state and federal aid. Applications can be timed to fit the development schedule.

DEFINING CAPITAL IMPROVEMENT PROJECTS

A capital improvement is defined as a major expenditure, beyond maintenance and operating costs, for the acquisition or construction of a needed facility. Salaries, supplies and other overhead expenditures are considered maintenance and operating costs, not provided for the CIP. Capital improvements include such things as utility systems, public buildings, land acquisitions, streets and sidewalks. The improvements are items that will have a significant impact on the community and are too expensive to be financed in the annual operating budget. Cost and frequency are two criteria that will be used to distinguish between a capital expenditure and a capital asset.

1. COST - A capital improvement project shall be \$10,000 or more.
2. FREQUENCY - Capital improvement projects should be non-recurring. An interval of three years between expenditures is recommended.

DEFINING CAPITAL ASSET REPLACEMENT PROGRAM (CARP)

Capital assets, which include property, plant, equipment, and infrastructure assets, are assets with an individual cost of more than \$5,000 and a useful life of more than one year. Infrastructure assets capitalized have an original cost of \$25,000 or more. Such assets are recorded at historical cost or estimated historical cost if purchased or constructed. Donated capital assets are recorded at acquisition value at the date of donation. The costs of normal maintenance and repairs that do not add to the value of the asset or materially extend asset lives are not capitalized.

* *Development of planning and regulatory documents are typically captured in a budget's operating expense; however, Warrenton recognizes these types of documents here as they do not occur annually and can have a substantial impact on the budget.*

CATEGORIES

Starting the FY22, CIP projects are being classified around stated priorities of the Town. Projects are numbered under specific topical areas. The CIP further states how projects meet the Comprehensive Plan goals and objectives within the individual project sheets. Below is a general description of the categories.

The CIP programs are coded using the following information:

Economic Development and Tourism (E) – Economic development and tourism projects position Warrenton to leverage and promote the location of jobs, revenue-generating businesses, and attracting tourism through complementary place-based economic development that encourages local economic growth.

General Government (G) – General government projects relate to ensuring the efficiency and needs to run a government that meets the needs of its citizens in a responsive, safe, and transparent fashion.

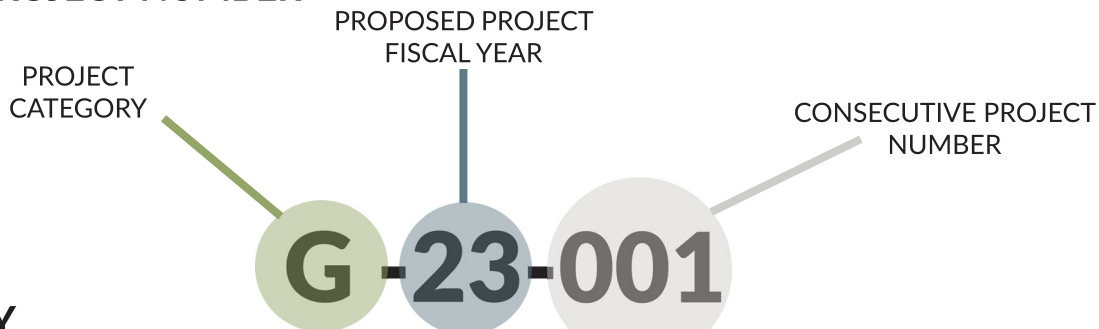
Public Safety (P) - Public safety projects relate to the Town of Warrenton's Police Department and Warrenton Volunteer Fire Company needs to ensure the ongoing safety and security of the community.

Recreation and Quality of Life (R) – Recreation and quality of life projects are recognized as opportunities for additional cultural, arts, and recreational activities in the Town. These type of investments are an important factor for long term economic sustainability.

Transportation and Walkability (T) – Transportation and walkability projects provide for improved multimodal safety by enacting access management strategies, incorporating pedestrian and bike friendly strategies, and deconflicting through-travel and local traffic movements.

Utilities and Stormwater (U) – Utilities and stormwater projects locate, maintain, and build community facilities to ensure the service needs of the Town and Federal and state mandates are met.

EXAMPLE PROJECT NUMBER



SUMMARY

The CIP is a planning and scheduling document. It does not represent authorization to expend Town funds. It does provide an orderly implementation of proposed short and long range plans for land acquisition and construction. Projects are authorized for implementation only after Town Council adopts and appropriates the Capital Budget. The impact of FY23 capital projects, for both improvement and asset projects, on the Town of Warrenton General Fund is \$1,281,289. The impact of FY23 capital projects, for both improvement and asset projects, on the Town of Warrenton Water and Sewer Fund is \$4,111,102. The impact of the FY23 capital projects on the Stormwater Utility Fund is \$94,918. The Town is also using \$976,500 in ARPA funds on projects in FY23. The CIP is an annual process and requires close review by both the Planning Commission and the Town Council.

CAPITAL IMPROVEMENT PROJECTS

PROJECT SHEETS

TRANSPORTATION & WALKABILITY

PROJECT NUMBER: T-28-003 **PROJECT TITLE:** Inters. Improv.: Broadview/W. Lee Hwy/Winchester

| | | | |
|---|--|---|--|
| CATEGORY (check one): | | PROGRAM TYPE (check one): | |
| <input type="checkbox"/> Economic Development & Tourism (E) | <input type="checkbox"/> Recreation & Quality of Life (R) | <input type="checkbox"/> CARP | |
| <input type="checkbox"/> General Government (G) | <input type="checkbox"/> Stormwater & Utilities (U) | <input checked="" type="checkbox"/> CIP | |
| <input type="checkbox"/> Public Safety (P) | <input checked="" type="checkbox"/> Transportation & Walkability (T) | | |

PROGRAM DESCRIPTION

The Town of Warrenton is interested in creating an improvement plan for this important transportation connection between two key arterial corridors. It is also key to the economic development potential of the surrounding area. Therefore, the Town is working with VDOT on a "pipeline project" for the Lee Highway corridor. This project will be updated upon completion of the study in spring 2022.



GOAL ADDRESSED

Plan Warrenton 2040 Transportation and Circulation Near Turn Recommendations page 38.

| | FY23 2022-23 | FY24 2023-24 | FY25 2024-25 | FY26 2025-26 | FY27 2026-27 | FY28 & Beyond | Total |
|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|
| ESTIMATED COSTS | | | | | | | |
| Land Acquisition | | | | | | \$2,325,000 | \$2,325,000 |
| Architecture/Engineering | | | | | | \$1,299,486 | \$1,299,486 |
| Construction/Purchase | | | | | | \$3,641,809 | \$3,641,809 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,266,295 | \$7,266,295 |

FUNDING SOURCES

| | | | | | | | |
|----------------------|------------|------------|------------|------------|------------|--------------------|--------------------|
| General Fund | | | | | | \$7,266,295 | \$7,266,295 |
| Water and Sewer Fund | | | | | | | \$0 |
| Stormwater Fund | | | | | | | \$0 |
| ARPA | | | | | | | \$0 |
| Grant- Federal | | | | | | | \$0 |
| Proffer | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,266,295 | \$7,266,295 |

OPERATING IMPACT

| | | | | | | | |
|---------------------|------------|------------|------------|------------|------------|------------|------------|
| Ongoing maintenance | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT NUMBER: T-28-004 **PROJECT TITLE:** Route 17 (Broadview) Roebling Roundabout

| CATEGORY (check one): | PROGRAM TYPE (check one): |
|---|--|
| <input type="checkbox"/> Economic Development & Tourism (E) <input type="checkbox"/> Recreation & Quality of Life (R) <input type="checkbox"/> General Government (G) <input type="checkbox"/> Stormwater & Utilities (U) <input type="checkbox"/> Public Safety (P) <input checked="" type="checkbox"/> Transportation & Walkability (T) | <input type="checkbox"/> CARP <input checked="" type="checkbox"/> CIP |

PROGRAM DESCRIPTION

The intersection at Route 17 (Broadview Avenue) and Roebling Street is subjected to safety issues. As the area around it redevelops, the intersection will need improvements. In 2020 the Town applied for an unsuccessful VDOT SmartScale grant. This application included an assessment of costs associated with a roundabout included below. Therefore, the Town is working with VDOT on a "pipeline project" for the Lee Highway corridor. This project will be updated upon completion of the study in spring of 2022.



GOAL ADDRESSED

Plan Warrenton 2040 Transportation and Circulation Near Turn Recommendations page 38.

| ESTIMATED COSTS | FY23 2022-23 | FY24 2023-24 | FY25 2024-25 | FY26 2025-26 | FY27 2026-27 | FY28 & Beyond | Total |
|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|
| Land Acquisition | | | | | | \$1,987,500 | \$1,987,500 |
| Architecture/Engineering | | | | | | \$1,291,020 | \$1,291,020 |
| Construction/Purchase | | | | | | \$3,921,045 | \$3,921,045 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,199,565 | \$7,199,565 |

FUNDING SOURCES

| | | | | | | | |
|----------------------|------------|------------|------------|------------|------------|--------------------|--------------------|
| General Fund | | | | | | \$7,199,565 | \$7,199,565 |
| Water and Sewer Fund | | | | | | | \$0 |
| Stormwater Fund | | | | | | | \$0 |
| ARPA | | | | | | | \$0 |
| Grant- Commonwealth | | | | | | | \$0 |
| Proffer | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$7,199,565 | \$7,199,565 |

OPERATING IMPACT

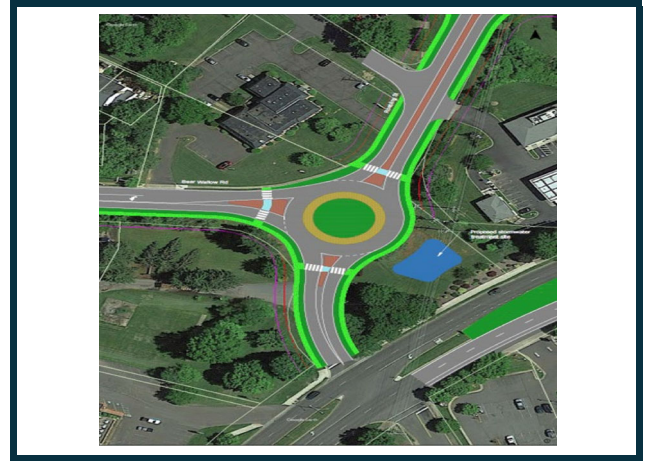
| | | | | | | | |
|---------------------|------------|------------|------------|------------|------------|------------|------------|
| Ongoing maintenance | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

PROJECT NUMBER: T-28-005 **PROJECT TITLE:** Bear Wallow Road/ Roebling Intersection

| CATEGORY (check one): | | PROGRAM TYPE (check one): | |
|---|--|-------------------------------|---|
| <input type="checkbox"/> Economic Development & Tourism (E) | <input type="checkbox"/> Recreation & Quality of Life (R) | <input type="checkbox"/> CARP | <input checked="" type="checkbox"/> CIP |
| <input type="checkbox"/> General Government (G) | <input type="checkbox"/> Stormwater & Utilities (U) | | |
| <input type="checkbox"/> Public Safety (P) | <input checked="" type="checkbox"/> Transportation & Walkability (T) | | |

PROGRAM DESCRIPTION

The intersection at Bear Wallow Road and Roebling Street is subjected to safety issues and an awkward configuration. As the area around it redevelops, the intersection will need improvements. In 2020 the Town applied for an unsuccessful VDOT Smartscale grant. This application included an assessment of costs associated with a roundabout included below.



GOAL ADDRESSED

Plan Warrenton 2040 Transportation and Circulation Near Turn Recommendations page 38.

| ESTIMATED COSTS | FY23 2022-23 | FY24 2023-24 | FY25 2024-25 | FY26 2025-26 | FY27 2026-27 | FY28 & Beyond | Total |
|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|
| Land Acquisition | | | | | | \$1,200,000 | \$1,200,000 |
| Architecture/Engineering | | | | | | \$1,200,000 | \$1,200,000 |
| Construction/Purchase | | | | | | \$3,600,000 | \$3,600,000 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$6,000,000 | \$6,000,000 |

FUNDING SOURCES

| | | | | | | | |
|----------------------|------------|------------|------------|------------|------------|--------------------|--------------------|
| General Fund | | | | | | \$6,000,000 | \$6,000,000 |
| Water and Sewer Fund | | | | | | | \$0 |
| Stormwater Fund | | | | | | | \$0 |
| ARPA | | | | | | | \$0 |
| Grant- Commonwealth | | | | | | | \$0 |
| Proffer | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$6,000,000 | \$6,000,000 |

OPERATING IMPACT

| | | | | | | | |
|---------------------|------------|------------|------------|------------|------------|------------|------------|
| Ongoing maintenance | | | | | | | \$0 |
| Other | | | | | | | \$0 |
| TOTAL | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 |

https://www.fauquiernow.com/news/business/warrenton-town-council-greenlights-mixed-use-development-next-to-obriens-pub/article_5e6c8aca-611c-11ed-8421-2751bb1fb016.html

FEATURED

Warrenton Town Council greenlights mixed-use development next to O'Brien's Pub

James Jarvis, jjarvis@FauquierNow.com

Nov 10, 2022



Rendering of a proposed mixed-use development, dubbed Waterloo Junction, that would be built between Broadview Avenue and Bear Wallow Road.

Farrish Properties & Acquisitions LLC

The Warrenton Town Council voted unanimously Wednesday to approve the construction of a mixed-use development -- including 47 townhomes, six apartments, one retail building and a small park -- on the corner of Lee Highway and Broadview Avenue. Item 1.

The 4.81-acre development, dubbed Waterloo Junction, will consist of 47 1,800-square-foot townhomes, 3,600 square feet of new retail space, six apartments, parking and a small park with a community play area and benches. One townhome and five apartments -- 10% of the proposed units -- will be designated as affordable housing for individuals or families whose gross annual income does not exceed 80% of the current Fauquier County area median family income.



Rendering of proposed 47 townhomes that could be built as part of the Waterloo Junction development. Each townhome would be 1,800 square-foot and 45 feet high.

Dan Ryan Builders

According to the application, the townhomes will not exceed the town's zoning ordinance of 45 feet. They'll be priced somewhere between \$400,000 and \$500,000.

For the project to move forward, the council had to approve a zoning map amendment, special-use permit and Comprehensive Plan amendment.

The Warrenton Planning Commission previously voted 5-1 recommending the council approve the project. Commissioner Ali Zarabi cast the only dissenting vote, noting concerns about traffic mitigation, among other issues. Item 1.

During the council meeting, Ward 2 representative William Semple urged his colleagues to delay the project. Semple said that while he supported the creation of more affordable housing, he argued it may create a “precedent” in which other developers would be incentivized to propose similar projects along Broadview Avenue that do not align with the 2040 Comprehensive Plan guidelines which the council approved in April 2021.

“I think that we should consider those issues before we adopt this one, because this is going to be what I call the lead horse in a variety of potential development down the road,” Semple said.

The Comprehensive Plan states the Experience Broadview District “will allow for mixed-use residential at lower density, but nodal development with mixed-use anchors and improved edges to adjacent single-family neighborhoods. Current commercial uses will be maintained.”

Semple moved to table the project, but it was rejected 6-1, with Semple casting the only supporting vote.

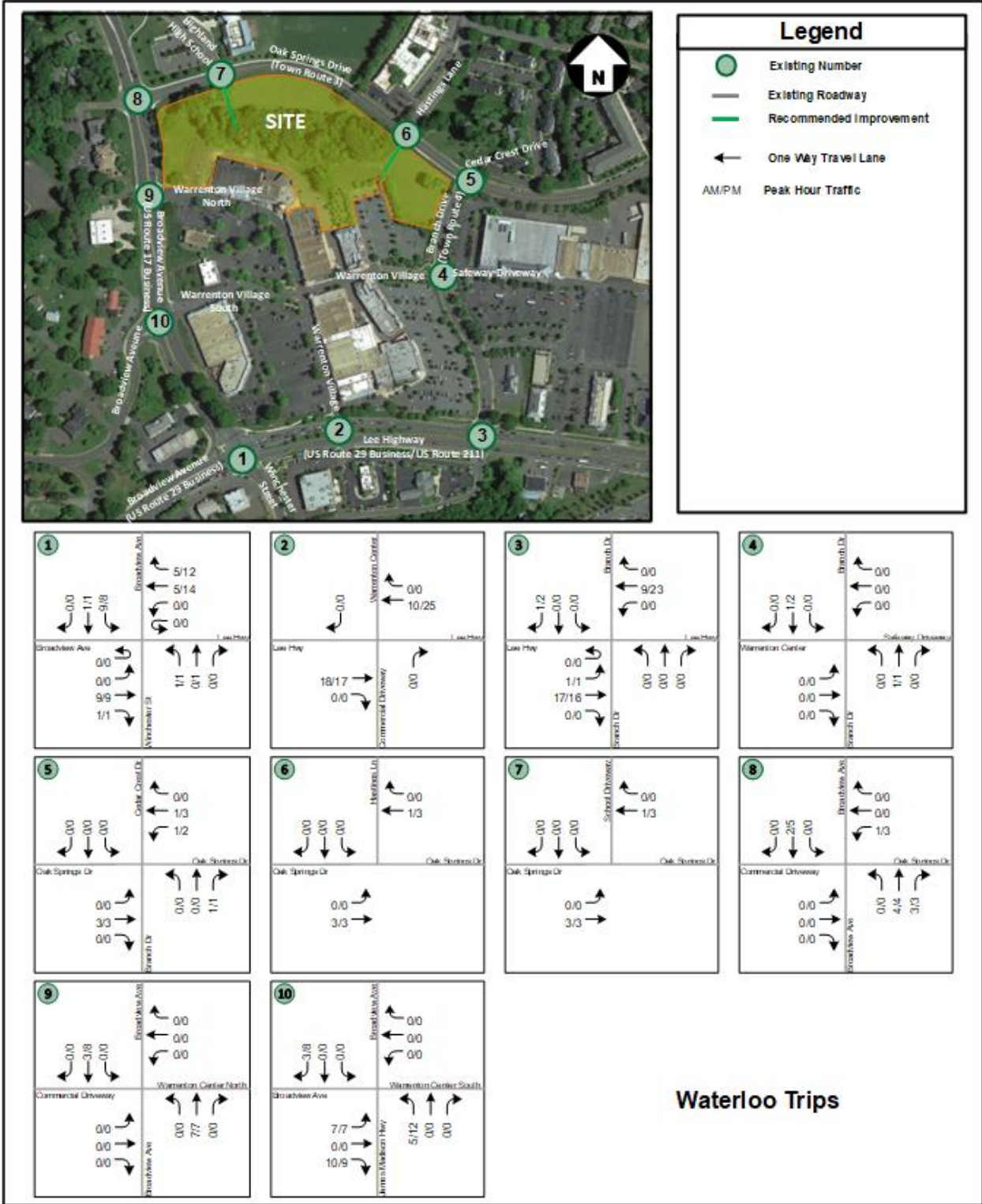
The rest of the council, including Mayor Carter Nevill, praised the project, saying it will be a positive addition to the town.

“I think this has been pointed out that the importance of ... bringing people into residential spaces that are close to commercial and entertainment spaces ... it recreates the same sense of community that you see in downtown, where you have people ... walking to restaurants, walking to shops, and I think the more we are able to bring that closer to our neighborhoods, the better we create our built environment to better serve the well-being of our residents,” Nevill said.

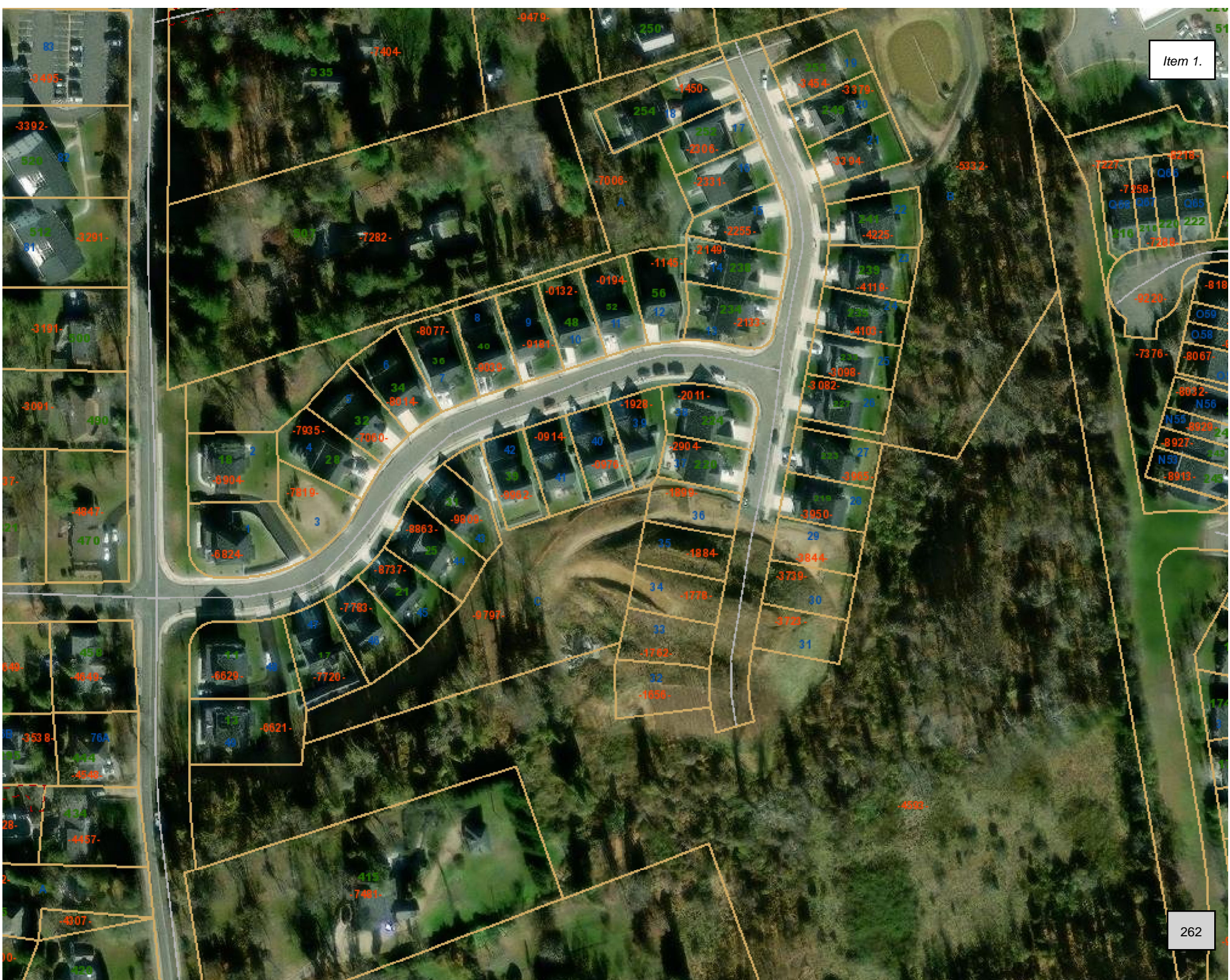
Item 1.

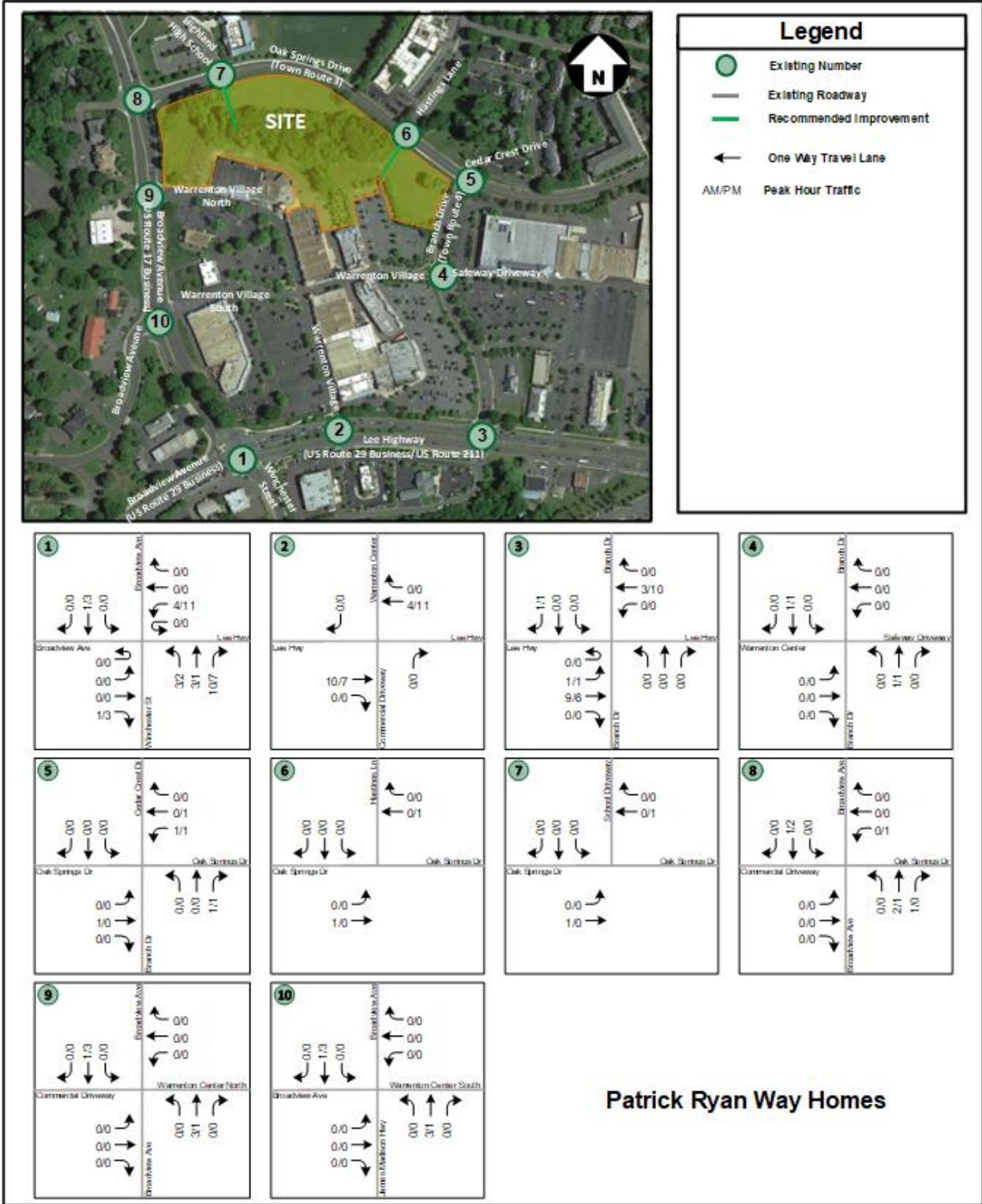
The renovation of O'Brien's and the apartments above the restaurant – currently vacant – is estimated to take four months. The townhome construction could be completed within 18 months.

James Jarvis



Item 1.





H. 2027 Future Conditions without Development – Capacity Analysis Worksheet

LANE LEVEL OF SERVICE

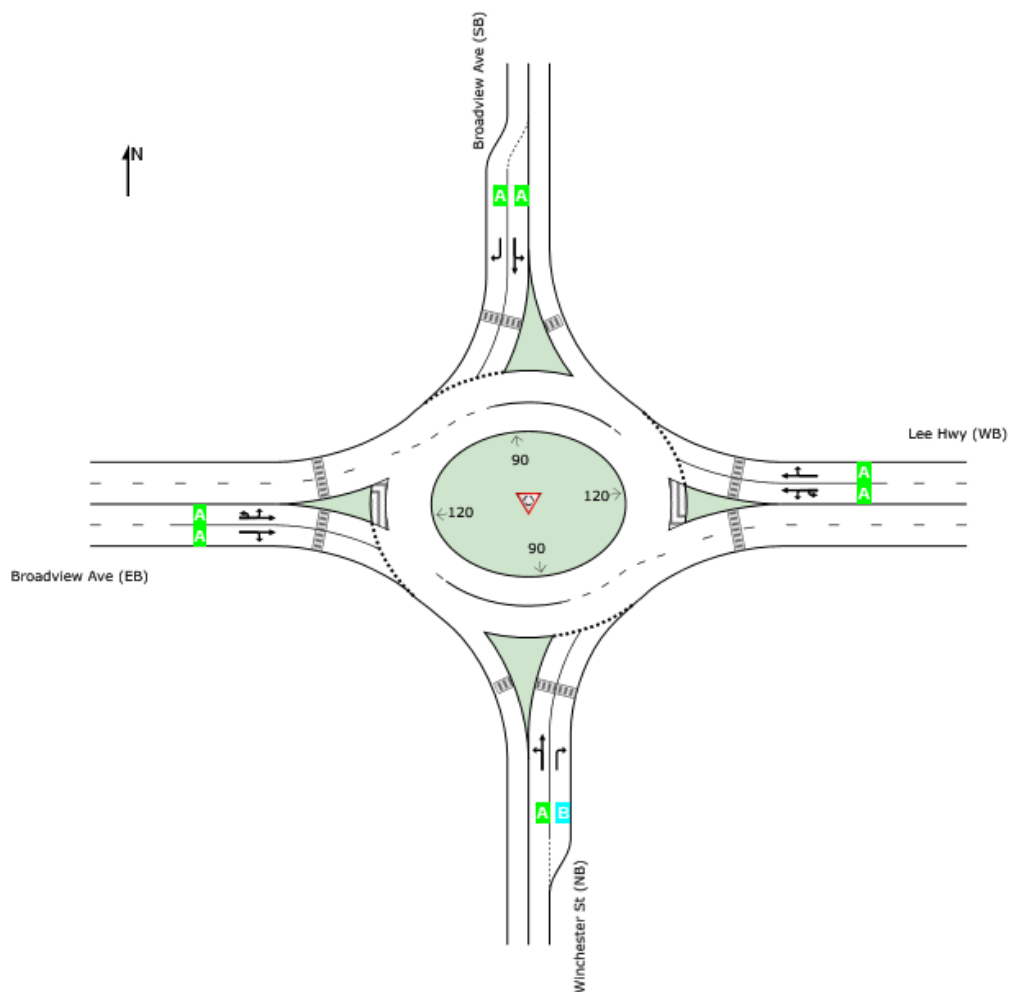
Lane Level of Service

Site: 101 [Broadview/Winchester/Lee - 2027 FB AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
 2027 Future Background Conditions
 AM Peak Hour
 Site Category: (None)
 Roundabout

| LOS | Approaches | | | | Intersection |
|-----|------------|------|-------|------|--------------|
| | South | East | North | West | |
| A | A | A | A | A | A |



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Roundabout LOS Method: Same as Signalised Intersections.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Stoptline Delay: Geometric Delay is not included).

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Organisation: GOROVE SLADE | Licence: PLUS / 1PC | Processed: Monday, February 12, 2024 2:04:14 AM
Project: U:\3243\001. Warrenton Village Center\Analysis\Sidra\2nd Submission\2027 TF.sip9

LANE SUMMARY

Site: 101 [Broadview/Winchester/Lee - 2027 FB AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
2027 Future Background Conditions
AM Peak Hour
Site Category: (None)
Roundabout

| Lane Use and Performance | | | | | | | | | | | | | | | | |
|---------------------------|---------------|------|---------------|------|------|-----------|------------|-------------|------------------|-------------------|--------|-------------|-------------|-----------|--------------|----|
| | Demand Flows | | Arrival Flows | | Cap. | Deg. Satn | Lane Util. | Aver. Delay | Level of Service | 95% Back Of Queue | | Lane Config | Lane Length | Cap. Adj. | Prob. Block. | |
| | [Total veh/h | HV % | [Total veh/h | HV % | | | | | | [Veh | Dist] | | | | | ft |
| South: Winchester St (NB) | | | | | | | | | | | | | | | | |
| Lane 1 ^d | 199 | 4.5 | 199 | 4.5 | 664 | 0.300 | 100 | 9.2 | LOS A | 1.4 | 35.5 | Full | 1600 | 0.0 | 0.0 | |
| Lane 2 | 87 | 4.0 | 87 | 4.0 | 475 | 0.183 | 100 | 10.2 | LOS B | 0.7 | 18.8 | Short | 250 | 0.0 | NA | |
| Approach | 286 | 4.4 | 286 | 4.4 | | 0.300 | | 9.5 | LOS A | 1.4 | 35.5 | | | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | | | | | | |
| Lane 1 | 430 | 7.2 | 430 | 7.2 | 1024 | 0.420 | 100 | 8.0 | LOS A | 3.0 | 78.4 | Full | 1600 | 0.0 | 0.0 | |
| Lane 2 ^d | 504 | 6.5 | 504 | 6.5 | 1201 | 0.420 | 100 | 7.2 | LOS A | 3.1 | 80.8 | Full | 1600 | 0.0 | 0.0 | |
| Approach | 934 | 6.8 | 934 | 6.8 | | 0.420 | | 7.6 | LOS A | 3.1 | 80.8 | | | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | | | | | | |
| Lane 1 ^d | 240 | 3.7 | 240 | 3.7 | 750 | 0.320 | 100 | 8.6 | LOS A | 1.5 | 39.3 | Short | 215 | 0.0 | NA | |
| Lane 2 | 234 | 3.0 | 234 | 3.0 | 682 | 0.343 | 100 | 9.7 | LOS A | 1.7 | 42.6 | Full | 1600 | 0.0 | 0.0 | |
| Approach | 474 | 3.4 | 474 | 3.4 | | 0.343 | | 9.1 | LOS A | 1.7 | 42.6 | | | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | | | | | | |
| Lane 1 | 448 | 4.1 | 448 | 4.1 | 1048 | 0.427 | 100 | 8.0 | LOS A | 3.1 | 79.7 | Full | 1600 | 0.0 | 0.0 | |
| Lane 2 ^d | 523 | 3.9 | 523 | 3.9 | 1224 | 0.427 | 100 | 7.2 | LOS A | 3.2 | 82.8 | Full | 1600 | 0.0 | 0.0 | |
| Approach | 971 | 4.0 | 971 | 4.0 | | 0.427 | | 7.6 | LOS A | 3.2 | 82.8 | | | | | |
| All Vehicles | 2664 | 4.9 | 2664 | 4.9 | | 0.427 | | 8.1 | LOS A | 3.2 | 82.8 | | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) | | | | | | | | | | | | |
|-----------------------------|----|----|----|-------|-----|-------|------|-------|-------|-----|------|-----|
| South: Winchester St (NB) | | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | | | | | | |
| From S | | | | | | Cap. | Deg. | Lane | Prob. | Ov. | | |
| To Exit: | W | N | E | | | veh/h | v/c | Util. | SL | Ov. | Lane | No. |
| | | | | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------------|------|-----|-----|-------|-------|-----|-------|-------|-------|--------|------|
| Lane 1 | 84 | 115 | - | 199 | 4.5 | | 664 | 0.300 | 100 | NA | NA |
| Lane 2 | - | - | 87 | 87 | 4.0 | | 475 | 0.183 | 100 | 0.0 | 1 |
| Approach | 84 | 115 | 87 | 286 | 4.4 | | | 0.300 | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
| From E | | | | | | | Cap. | Satn | Util. | SL Ov. | Lane |
| To Exit: | E | S | W | N | | | veh/h | v/c | % | % | No. |
| Lane 1 | 3 | 38 | 389 | - | 430 | 7.2 | 1024 | 0.420 | 100 | NA | NA |
| Lane 2 | - | - | 313 | 191 | 504 | 6.5 | 1201 | 0.420 | 100 | NA | NA |
| Approach | 3 | 38 | 701 | 191 | 934 | 6.8 | | 0.420 | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | | Deg. | Lane | Prob. | Ov. |
| From N | | | | | | | Cap. | Satn | Util. | SL Ov. | Lane |
| To Exit: | E | S | W | | | | veh/h | v/c | % | % | No. |
| Lane 1 | 137 | 103 | - | 240 | 3.7 | | 750 | 0.320 | 100 | 0.0 | 2 |
| Lane 2 | - | - | 234 | 234 | 3.0 | | 682 | 0.343 | 100 | NA | NA |
| Approach | 137 | 103 | 234 | 474 | 3.4 | | | 0.343 | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. | Lane | Prob. | Ov. |
| From W | | | | | | | Cap. | Satn | Util. | SL Ov. | Lane |
| To Exit: | W | N | E | S | | | veh/h | v/c | % | % | No. |
| Lane 1 | 5 | 62 | 380 | - | 448 | 4.1 | 1048 | 0.427 | 100 | NA | NA |
| Lane 2 | - | - | 487 | 36 | 523 | 3.9 | 1224 | 0.427 | 100 | NA | NA |
| Approach | 5 | 62 | 867 | 36 | 971 | 4.0 | | 0.427 | | | |
| Total %HV Deg.Satn (v/c) | | | | | | | | | | | |
| All Vehicles | 2664 | 4.9 | | 0.427 | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis | | | | | | | | | | | | |
|--|------------------|----------------------|------------------------|--------------------------|------------------|-----------------------|----------------------|----------------|---------------|----------------|-----------------|--|
| | Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec | |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

| Variable Demand Analysis | | | | |
|----------------------------------|---------------------------|----------------------------|---------------------------------------|--------------------------|
| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
| South: Winchester St (NB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Lee Hwy (WB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Broadview Ave (SB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|--------------------------|-----|-----|-----|-----|
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Broadview Ave (EB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: U:\3243\001. Warrenton Village Center\Analysis\Sidra\2nd Submission\2027 TF.sip9

HCM 6th TWSC
 2: COMMERCIAL DRIVEWAY/WARRENTON CENTER & LEE HWY

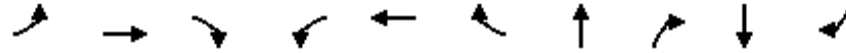
| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 944 | 63 | 0 | 839 | 31 | 0 | 0 | 29 | 0 | 0 | 20 |
| Future Vol, veh/h | 0 | 944 | 63 | 0 | 839 | 31 | 0 | 0 | 29 | 0 | 0 | 20 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 4 | 3 | 0 | 7 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 1026 | 68 | 0 | 912 | 34 | 0 | 0 | 32 | 0 | 0 | 22 |

| Major/Minor | Major1 | | Major2 | | Minor1 | | Minor2 | | | | | |
|----------------------|--------|---|--------|---|--------|---|--------|---|------|---|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 513 | - | - | 456 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.26 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.33 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 483 | 0 | 0 | 640 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 483 | - | - | 640 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 13 | 10.8 |
| HCM LOS | | | B | B |

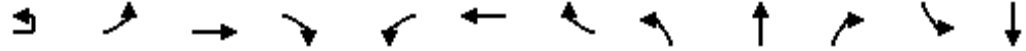
| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 483 | - | - | - | - | 640 |
| HCM Lane V/C Ratio | 0.065 | - | - | - | - | 0.034 |
| HCM Control Delay (s) | 13 | - | - | - | - | 10.8 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.1 |

Queues
3: BRANCH DR & LEE HWY



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 42 | 1015 | 1 | 48 | 871 | 55 | 23 | 41 | 46 | 57 |
| v/c Ratio | 0.37 | 0.43 | 0.00 | 0.41 | 0.39 | 0.05 | 0.15 | 0.16 | 0.40 | 0.29 |
| Control Delay | 71.3 | 17.3 | 0.0 | 72.4 | 16.0 | 0.1 | 57.5 | 1.4 | 71.9 | 3.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 71.3 | 17.3 | 0.0 | 72.4 | 16.0 | 0.1 | 57.5 | 1.4 | 71.9 | 3.6 |
| Queue Length 50th (ft) | 39 | 246 | 0 | 44 | 198 | 0 | 21 | 0 | 43 | 0 |
| Queue Length 95th (ft) | 80 | 485 | 0 | 88 | 400 | 0 | 44 | 0 | 86 | 0 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 199 | 2364 | 1143 | 227 | 2281 | 1124 | 279 | 352 | 185 | 248 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.21 | 0.43 | 0.00 | 0.21 | 0.38 | 0.05 | 0.08 | 0.12 | 0.25 | 0.23 |
| Intersection Summary | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
3: BRANCH DR & LEE HWY



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT |
|-----------------------------------|------|------|-------|------|-------|---------------------------|------|-------|-------|------|-------|-------|
| Lane Configurations | | ↔ | ↕ | ↗ | ↖ | ↕ | ↗ | | ↖ | ↗ | | ↖ |
| Traffic Volume (vph) | 7 | 31 | 934 | 1 | 44 | 801 | 51 | 10 | 11 | 38 | 34 | 8 |
| Future Volume (vph) | 7 | 31 | 934 | 1 | 44 | 801 | 51 | 10 | 11 | 38 | 34 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (prot) | | 1793 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1792 |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (perm) | | 1793 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1792 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 8 | 34 | 1015 | 1 | 48 | 871 | 55 | 11 | 12 | 41 | 37 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 38 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 42 | 1015 | 1 | 48 | 871 | 35 | 0 | 23 | 3 | 0 | 46 |
| Heavy Vehicles (%) | 14% | 0% | 4% | 0% | 2% | 6% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | |
| Actuated Green, G (s) | | 7.7 | 87.8 | 87.8 | 8.1 | 88.7 | 88.7 | | 10.2 | 10.2 | | 7.9 |
| Effective Green, g (s) | | 7.7 | 87.8 | 87.8 | 8.1 | 88.7 | 88.7 | | 10.2 | 10.2 | | 7.9 |
| Actuated g/C Ratio | | 0.06 | 0.63 | 0.63 | 0.06 | 0.63 | 0.63 | | 0.07 | 0.07 | | 0.06 |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 98 | 2220 | 1032 | 101 | 2136 | 1013 | | 135 | 117 | | 101 |
| v/s Ratio Prot | | 0.02 | c0.29 | | c0.03 | 0.26 | | | c0.01 | | | c0.03 |
| v/s Ratio Perm | | | | 0.00 | | | 0.02 | | | 0.00 | | |
| v/c Ratio | | 0.43 | 0.46 | 0.00 | 0.48 | 0.41 | 0.03 | | 0.17 | 0.03 | | 0.46 |
| Uniform Delay, d1 | | 64.0 | 13.6 | 9.7 | 63.9 | 12.7 | 9.6 | | 60.9 | 60.3 | | 64.0 |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 3.0 | 0.7 | 0.0 | 3.5 | 0.6 | 0.1 | | 0.6 | 0.1 | | 3.2 |
| Delay (s) | | 67.0 | 14.3 | 9.7 | 67.4 | 13.3 | 9.7 | | 61.5 | 60.4 | | 67.2 |
| Level of Service | | E | B | A | E | B | A | | E | E | | E |
| Approach Delay (s) | | | 16.4 | | | 15.7 | | | 60.8 | | | 64.7 |
| Approach LOS | | | B | | | B | | | E | | | E |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 19.7 | | | HCM 2000 Level of Service | | | | | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 140.0 | | | Sum of lost time (s) | | | | | 26.0 | |
| Intersection Capacity Utilization | | | 58.4% | | | ICU Level of Service | | | | | B | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 52 |
| Future Volume (vph) | 52 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1375 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1375 |
| Peak-hour factor, PHF | 0.92 |
| Adj. Flow (vph) | 57 |
| RTOR Reduction (vph) | 54 |
| Lane Group Flow (vph) | 3 |
| Heavy Vehicles (%) | 18% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 7.9 |
| Effective Green, g (s) | 7.9 |
| Actuated g/C Ratio | 0.06 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 77 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.00 |
| v/c Ratio | 0.04 |
| Uniform Delay, d1 | 62.5 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.2 |
| Delay (s) | 62.7 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

4: BRANCH DR & WARRENTON VILLAGE CENTER/SAFEWAY DRIVEWAY 2027 Future Background

Intersection

Int Delay, s/veh 4.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 6 | 15 | 38 | 14 | 11 | 14 | 23 | 67 | 7 | 18 | 69 | 5 |
| Future Vol, veh/h | 6 | 15 | 38 | 14 | 11 | 14 | 23 | 67 | 7 | 18 | 69 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 2 | 2 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 13 | 0 |
| Mvmt Flow | 7 | 16 | 41 | 15 | 12 | 15 | 25 | 73 | 8 | 20 | 75 | 5 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|-----|--------|-----|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 211 | 249 | 42 | 215 | 247 | 41 | 80 | 0 | 0 | 81 | 0 | 0 |
| Stage 1 | 118 | 118 | - | 127 | 127 | - | - | - | - | - | - | - |
| Stage 2 | 93 | 131 | - | 88 | 120 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.1 | 7.1 | 6.28 | 6.7 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4.09 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 805 | 734 | 1036 | 746 | 656 | 1030 | 1531 | - | - | 1529 | - | - |
| Stage 1 | 927 | 845 | - | 882 | 785 | - | - | - | - | - | - | - |
| Stage 2 | 948 | 839 | - | 925 | 790 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 763 | 711 | 1034 | 686 | 636 | 1030 | 1531 | - | - | 1529 | - | - |
| Mov Cap-2 Maneuver | 763 | 711 | - | 686 | 636 | - | - | - | - | - | - | - |
| Stage 1 | 911 | 833 | - | 867 | 772 | - | - | - | - | - | - | - |
| Stage 2 | 904 | 825 | - | 857 | 779 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|-----|----|-----|-----|
| HCM Control Delay, s | 9.3 | 10 | 1.8 | 1.4 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1531 | - | - | 898 | 760 | 1529 | - | - |
| HCM Lane V/C Ratio | 0.016 | - | - | 0.071 | 0.056 | 0.013 | - | - |
| HCM Control Delay (s) | 7.4 | 0 | - | 9.3 | 10 | 7.4 | 0 | - |
| HCM Lane LOS | A | A | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.2 | 0.2 | 0 | - | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 1 | 80 | 75 | 16 | 107 | 1 | 73 | 1 | 14 | 1 | 1 | 1 |
| Future Vol, veh/h | 1 | 80 | 75 | 16 | 107 | 1 | 73 | 1 | 14 | 1 | 1 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 1 | 11 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 87 | 82 | 17 | 116 | 1 | 79 | 1 | 15 | 1 | 1 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 121 | 0 | 0 | 170 | 0 | 0 | 283 | 286 | 131 | 295 | 327 | 121 |
| Stage 1 | - | - | - | - | - | - | 131 | 131 | - | 155 | 155 | - |
| Stage 2 | - | - | - | - | - | - | 152 | 155 | - | 140 | 172 | - |
| Critical Hdwy | 4.1 | - | - | 4.17 | - | - | 7.5 | 6.9 | 6.4 | 6.1 | 5.5 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.263 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 1479 | - | - | 1378 | - | - | 652 | 607 | 917 | 718 | 651 | 952 |
| Stage 1 | - | - | - | - | - | - | 865 | 780 | - | 890 | 807 | - |
| Stage 2 | - | - | - | - | - | - | 841 | 760 | - | 902 | 797 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1474 | - | - | 1377 | - | - | 643 | 596 | 915 | 694 | 639 | 949 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 643 | 596 | - | 694 | 639 | - |
| Stage 1 | - | - | - | - | - | - | 863 | 778 | - | 886 | 794 | - |
| Stage 2 | - | - | - | - | - | - | 828 | 748 | - | 883 | 795 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|-----|
| HCM Control Delay, s | 0 | 1 | 11 | 9.9 |
| HCM LOS | | | B | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 642 | 915 | 1474 | - | - | 1377 | - | - | 739 |
| HCM Lane V/C Ratio | 0.125 | 0.017 | 0.001 | - | - | 0.013 | - | - | 0.004 |
| HCM Control Delay (s) | 11.4 | 9 | 7.4 | 0 | - | 7.6 | 0 | - | 9.9 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | A |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | 0 | - | - | 0 | - | - | 0 |

Intersection

Int Delay, s/veh 3.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | ↑ | | ↑ | |
| Traffic Vol, veh/h | 83 | 108 | 137 | 44 | 47 | 67 |
| Future Vol, veh/h | 83 | 108 | 137 | 44 | 47 | 67 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -3 | 1 | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 6 | 1 | 1 | 0 | 17 | 0 |
| Mvmt Flow | 90 | 117 | 149 | 48 | 51 | 73 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 198 | 0 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | 4.16 | - | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | 2.254 | - | - |
| Pot Cap-1 Maneuver | 1351 | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1350 | - | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 3.4 | 0 | 11.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1350 | - | - | - | 713 |
| HCM Lane V/C Ratio | 0.067 | - | - | - | 0.174 |
| HCM Control Delay (s) | 7.9 | - | - | - | 11.1 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | 0.6 |

Intersection

Int Delay, s/veh 1.9

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|--------------------------|------|------|------|------|------|------|
| Lane Configurations | ↘ | ↗ | ↗ | | ↘ | ↘ |
| Traffic Vol, veh/h | 38 | 160 | 153 | 51 | 31 | 19 |
| Future Vol, veh/h | 38 | 160 | 153 | 51 | 31 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | - | - | - | 0 | 50 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -5 | 3 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 4 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 41 | 174 | 166 | 55 | 34 | 21 |

| Major/Minor | Major1 | Major2 | Minor2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | 221 | 0 | 450 |
| Stage 1 | - | - | 194 |
| Stage 2 | - | - | 256 |
| Critical Hdwy | 4.1 | - | 6.4 |
| Critical Hdwy Stg 1 | - | - | 5.4 |
| Critical Hdwy Stg 2 | - | - | 5.4 |
| Follow-up Hdwy | 2.2 | - | 3.5 |
| Pot Cap-1 Maneuver | 1360 | - | 853 |
| Stage 1 | - | - | 844 |
| Stage 2 | - | - | 791 |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | 1360 | - | 853 |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | 819 |
| Stage 2 | - | - | 791 |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 1.5 | 0 | 10.9 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1360 | - | - | - | 554 | 853 |
| HCM Lane V/C Ratio | 0.03 | - | - | - | 0.061 | 0.024 |
| HCM Control Delay (s) | 7.7 | - | - | - | 11.9 | 9.3 |
| HCM Lane LOS | A | - | - | - | B | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.2 | 0.1 |

Intersection

Int Delay, s/veh 3.8

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | ↔ | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 1 | 1 | 1 | 65 | 1 | 106 | 1 | 413 | 102 | 95 | 358 | 1 |
| Future Vol, veh/h | 1 | 1 | 1 | 65 | 1 | 106 | 1 | 413 | 102 | 95 | 358 | 1 |
| 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 | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 5 | 5 | 0 |
| Mvmt Flow | 1 | 1 | 1 | 71 | 1 | 115 | 1 | 449 | 111 | 103 | 389 | 1 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 823 | 1158 | 195 | 852 | 1047 | 225 | 390 | 0 | 0 | 560 | 0 | 0 |
| Stage 1 | 596 | 596 | - | 451 | 451 | - | - | - | - | - | - | - |
| Stage 2 | 227 | 562 | - | 401 | 596 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.3 | 7.3 | 7.32 | 4.1 | - | - | 4.2 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.31 | 2.2 | - | - | 2.25 | - | - |
| Pot Cap-1 Maneuver | 295 | 225 | 829 | 212 | 182 | 762 | 1180 | - | - | 987 | - | - |
| Stage 1 | 494 | 529 | - | 509 | 520 | - | - | - | - | - | - | - |
| Stage 2 | 780 | 546 | - | 551 | 434 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 229 | 201 | 829 | 194 | 163 | 762 | 1180 | - | - | 987 | - | - |
| Mov Cap-2 Maneuver | 229 | 201 | - | 194 | 163 | - | - | - | - | - | - | - |
| Stage 1 | 494 | 474 | - | 508 | 519 | - | - | - | - | - | - | - |
| Stage 2 | 660 | 545 | - | 492 | 389 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 17.8 | | 19.7 | | 0 | | 1.9 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1180 | - | - | 284 | 193 | 762 | 987 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.011 | 0.372 | 0.151 | 0.105 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 17.8 | 34.3 | 10.6 | 9.1 | - | - |
| HCM Lane LOS | A | - | - | C | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 1.6 | 0.5 | 0.3 | - | - |

9: BROADVIEW AVE & COMMERCIAL DRIVEWAY/WARRENTON NORTH DRIVEWAY Background

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | ↕ | ↕ | | ↕ | ↑↑ | ↕ | ↕ | ↑↑ | |
| Traffic Vol, veh/h | 1 | 1 | 3 | 5 | 1 | 18 | 13 | 498 | 10 | 15 | 405 | 3 |
| Future Vol, veh/h | 1 | 1 | 3 | 5 | 1 | 18 | 13 | 498 | 10 | 15 | 405 | 3 |
| 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 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 1 | 1 | 3 | 5 | 1 | 20 | 14 | 541 | 11 | 16 | 440 | 3 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 773 | 1054 | 222 | 822 | 1044 | 271 | 443 | 0 | 0 | 552 | 0 | 0 |
| Stage 1 | 474 | 474 | - | 569 | 569 | - | - | - | - | - | - | - |
| Stage 2 | 299 | 580 | - | 253 | 475 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.32 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.36 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 236 | 170 | 764 | 235 | 194 | 699 | 1128 | - | - | 1028 | - | - |
| Stage 1 | 478 | 492 | - | 436 | 463 | - | - | - | - | - | - | - |
| Stage 2 | 636 | 428 | - | 704 | 518 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 223 | 165 | 764 | 228 | 189 | 699 | 1128 | - | - | 1028 | - | - |
| Mov Cap-2 Maneuver | 223 | 165 | - | 228 | 189 | - | - | - | - | - | - | - |
| Stage 1 | 472 | 484 | - | 431 | 457 | - | - | - | - | - | - | - |
| Stage 2 | 609 | 423 | - | 689 | 510 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 15.6 | | 13.2 | | 0.2 | | 0.3 | |
| HCM LOS | C | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1128 | - | - | 346 | 228 | 612 | 1028 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | - | 0.016 | 0.024 | 0.034 | 0.016 | - | - |
| HCM Control Delay (s) | 8.2 | - | - | 15.6 | 21.2 | 11.1 | 8.6 | - | - |
| HCM Lane LOS | A | - | - | C | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 0.1 | 0.1 | 0 | - | - |

10: JAMES MADISON HWY & BROADVIEW AVE & WARRENTON SOUTH DRIVE

Intersection

| Int Delay, s/veh | 6.8 | | | | | | | | | | | |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 126 | 17 | 81 | 2 | 3 | 3 | 116 | 392 | 31 | 7 | 353 | 53 |
| Future Vol, veh/h | 126 | 17 | 81 | 2 | 3 | 3 | 116 | 392 | 31 | 7 | 353 | 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 | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 0 | 3 | 0 | 0 | 33 | 1 | 5 | 0 | 0 | 3 | 8 |
| Mvmt Flow | 137 | 18 | 88 | 2 | 3 | 3 | 126 | 426 | 34 | 8 | 384 | 58 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|-----|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 867 | 1112 | 192 | 895 | 1136 | 213 | 442 | 0 | 0 | 460 | 0 | 0 |
| Stage 1 | 400 | 400 | - | 678 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 467 | 712 | - | 217 | 458 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.96 | 7.5 | 6.5 | 7.56 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.33 | 3.5 | 4 | 3.63 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 247 | 211 | 814 | 239 | 204 | 705 | 1122 | - | - | 1112 | - | - |
| Stage 1 | 597 | 605 | - | 413 | 455 | - | - | - | - | - | - | - |
| Stage 2 | 545 | 439 | - | 771 | 570 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 221 | 186 | 814 | 179 | 180 | 705 | 1122 | - | - | 1112 | - | - |
| Mov Cap-2 Maneuver | 221 | 186 | - | 179 | 180 | - | - | - | - | - | - | - |
| Stage 1 | 530 | 601 | - | 367 | 404 | - | - | - | - | - | - | - |
| Stage 2 | 478 | 390 | - | 662 | 566 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 30.7 | | 19.7 | | 1.9 | | 0.1 | |
| HCM LOS | D | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1122 | - | - | 221 | 186 | 814 | 179 | 287 | 1112 | - | - |
| HCM Lane V/C Ratio | 0.112 | - | - | 0.62 | 0.099 | 0.108 | 0.012 | 0.023 | 0.007 | - | - |
| HCM Control Delay (s) | 8.6 | - | - | 44.6 | 26.5 | 10 | 25.4 | 17.8 | 8.3 | - | - |
| HCM Lane LOS | A | - | - | E | D | B | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 3.6 | 0.3 | 0.4 | 0 | 0.1 | 0 | - | - |

LANE SUMMARY

Site: 101 [Broadview/Winchester/Lee - 2027 FB PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
2027 Future Background Conditions
PM Peak Hour
Site Category: (None)
Roundabout

| Lane Use and Performance | | | | | | | | | | | | | | | |
|---------------------------|---------------|------|---------------|------|------|-----------|------------|-------------|------------------|-------------------|-----------|-------------|-------------|-----------|--------------|
| | Demand Flows | | Arrival Flows | | Cap. | Deg. Satn | Lane Util. | Aver. Delay | Level of Service | 95% Back Of Queue | | Lane Config | Lane Length | Cap. Adj. | Prob. Block. |
| | [Total veh/h | HV % | [Total veh/h | HV % | | | | | | [Veh | Dist] ft | | | | |
| South: Winchester St (NB) | | | | | | | | | | | | | | | |
| Lane 1 ^d | 223 | 0.5 | 223 | 0.5 | 570 | 0.391 | 100 | 12.2 | LOS B | 2.2 | 55.7 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 77 | 0.0 | 77 | 0.0 | 376 | 0.205 | 100 | 13.0 | LOS B | 0.9 | 22.4 | Short | 250 | 0.0 | NA |
| Approach | 300 | 0.3 | 300 | 0.3 | | 0.391 | | 12.4 | LOS B | 2.2 | 55.7 | | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | | | | | |
| Lane 1 | 625 | 1.7 | 625 | 1.7 | 888 | 0.703 | 100 | 16.2 | LOS B | 10.0 | 252.3 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 758 | 2.0 | 758 | 2.0 | 1078 | 0.703 | 100 | 14.0 | LOS B | 10.5 | 267.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1382 | 1.9 | 1382 | 1.9 | | 0.703 | | 15.0 | LOS B | 10.5 | 267.5 | | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | | | | | |
| Lane 1 | 340 | 0.7 | 340 | 0.7 | 435 | 0.780 | 100 | 35.1 | LOS D | 6.4 | 161.1 | Short | 215 | 0.0 | NA |
| Lane 2 ^d | 402 | 4.0 | 402 | 4.0 | 498 | 0.808 | 100 | 34.4 | LOS C | 7.4 | 190.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 742 | 2.5 | 742 | 2.5 | | 0.808 | | 34.7 | LOS C | 7.4 | 190.7 | | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | | | | | |
| Lane 1 | 538 | 2.5 | 538 | 2.5 | 923 | 0.583 | 100 | 11.9 | LOS B | 6.2 | 158.2 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 652 | 1.9 | 652 | 1.9 | 1118 | 0.583 | 100 | 10.4 | LOS B | 6.2 | 158.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1191 | 2.1 | 1191 | 2.1 | | 0.583 | | 11.1 | LOS B | 6.2 | 158.3 | | | | |
| All Vehicles | 3615 | 2.0 | 3615 | 2.0 | | 0.808 | | 17.6 | LOS B | 10.5 | 267.5 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) | | | | | | | | | | | |
|-----------------------------|----|----|----|-------|-----|-------|------|-------|-------|-----|------|
| South: Winchester St (NB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | | | | | |
| From S | | | | | | Cap. | Deg. | Lane | Prob. | Ov. | |
| To Exit: | W | N | E | | | veh/h | v/c | Util. | SL | Ov. | Lane |
| | | | | | | | | % | % | % | No. |
| | | | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------------|------|-----|------|-------|-------|-----|------------|------------|--------------|--------------|--------------|
| Lane 1 | 122 | 101 | - | 223 | 0.5 | | 570 | 0.391 | 100 | NA | NA |
| Lane 2 | - | - | 77 | 77 | 0.0 | | 376 | 0.205 | 100 | 0.0 | 1 |
| Approach | 122 | 101 | 77 | 300 | 0.3 | | | 0.391 | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From E To Exit: | E | S | W | N | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 10 | 70 | 544 | - | 625 | 1.7 | 888 | 0.703 | 100 | NA | NA |
| Lane 2 | - | - | 635 | 123 | 758 | 2.0 | 1078 | 0.703 | 100 | NA | NA |
| Approach | 10 | 70 | 1179 | 123 | 1382 | 1.9 | | 0.703 | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. | |
| From N To Exit: | E | S | W | | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 249 | 91 | - | 340 | 0.7 | | 435 | 0.780 | 100 | 0.0 | 2 |
| Lane 2 | - | - | 402 | 402 | 4.0 | | 498 | 0.808 | 100 | NA | NA |
| Approach | 249 | 91 | 402 | 742 | 2.5 | | | 0.808 | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From W To Exit: | W | N | E | S | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 2 | 273 | 263 | - | 538 | 2.5 | 923 | 0.583 | 100 | NA | NA |
| Lane 2 | - | - | 606 | 46 | 652 | 1.9 | 1118 | 0.583 | 100 | NA | NA |
| Approach | 2 | 273 | 870 | 46 | 1191 | 2.1 | | 0.583 | | | |
| Total %HV Deg.Satn (v/c) | | | | | | | | | | | |
| All Vehicles | 3615 | 2.0 | | 0.808 | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis | | | | | | | | | | | | |
|--|----------------------|------------------------|--------------------------|------------------|-----------------------|----------------------|----------------|---------------|----------------|-----------------|--|--|
| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec | | |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

| Variable Demand Analysis | | | | |
|----------------------------------|---------------------------|----------------------------|---------------------------------------|--------------------------|
| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
| South: Winchester St (NB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Lee Hwy (WB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Broadview Ave (SB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|--------------------------|-----|-----|-----|-----|
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Broadview Ave (EB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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LANE LEVEL OF SERVICE

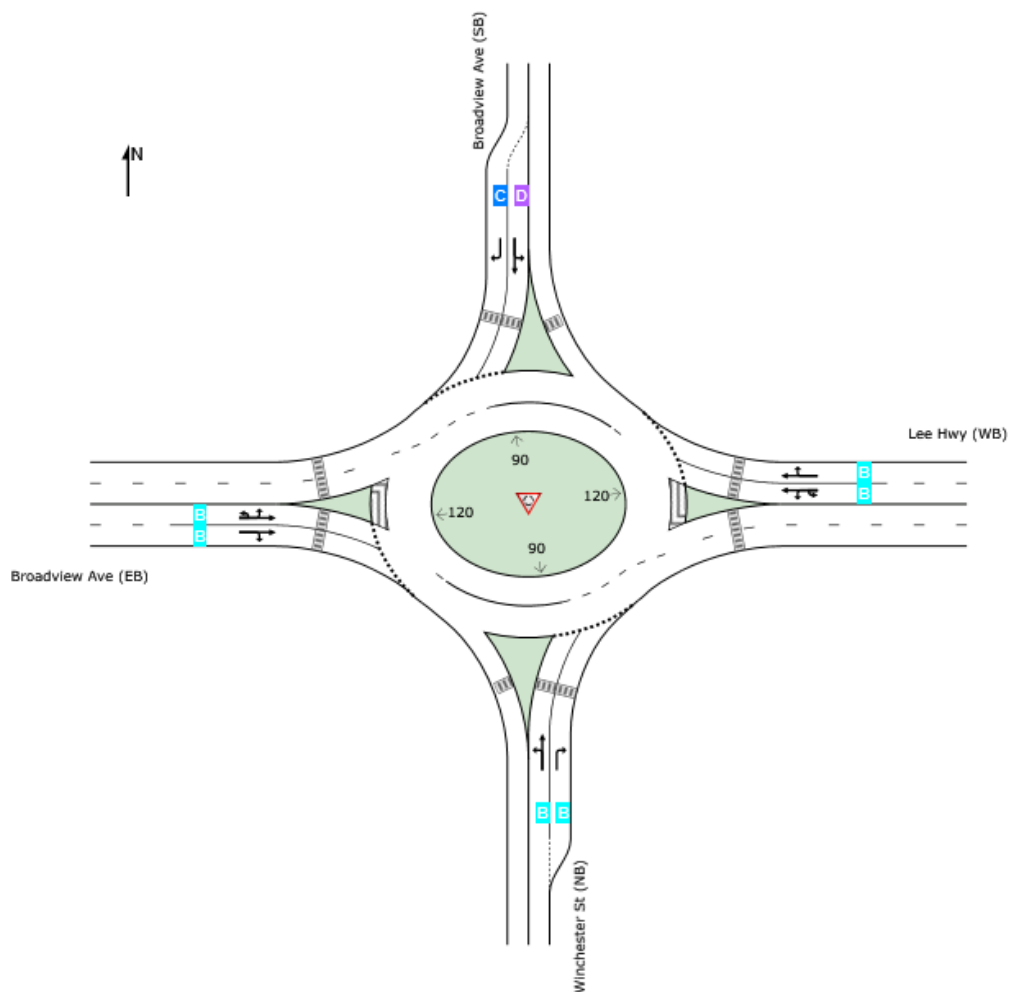
Lane Level of Service

Site: 101 [Broadview/Winchester/Lee - 2027 FB PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
 2027 Future Background Conditions
 PM Peak Hour
 Site Category: (None)
 Roundabout

| | Approaches | | | | Intersection |
|-----|------------|------|-------|------|--------------|
| | South | East | North | West | |
| LOS | B | B | C | B | B |



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Roundabout LOS Method: Same as Signalised Intersections.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Stoptline Delay: Geometric Delay is not included).

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| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 1075 | 83 | 0 | 1247 | 102 | 0 | 0 | 25 | 0 | 0 | 79 |
| Future Vol, veh/h | 0 | 1075 | 83 | 0 | 1247 | 102 | 0 | 0 | 25 | 0 | 0 | 79 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 1156 | 89 | 0 | 1341 | 110 | 0 | 0 | 27 | 0 | 0 | 85 |

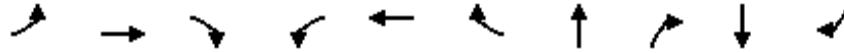
| Major/Minor | Major1 | | Major2 | | Minor1 | | Minor2 | | | | | |
|----------------------|--------|---|--------|---|--------|---|--------|---|------|---|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 578 | - | - | 675 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.28 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.34 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 433 | 0 | 0 | 493 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 433 | - | - | 491 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|------|------|
| HCM Control Delay, s | 0 | 0 | 13.9 | 13.9 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 433 | - | - | - | - | 491 |
| HCM Lane V/C Ratio | 0.062 | - | - | - | - | 0.173 |
| HCM Control Delay (s) | 13.9 | - | - | - | - | 13.9 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.6 |

Queues

3: BRANCH DR & LEE HWY



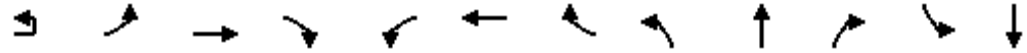
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 149 | 1006 | 2 | 68 | 1241 | 88 | 36 | 79 | 165 | 152 |
| v/c Ratio | 0.72 | 0.47 | 0.00 | 0.54 | 0.67 | 0.10 | 0.31 | 0.30 | 0.76 | 0.45 |
| Control Delay | 82.8 | 20.6 | 0.0 | 82.0 | 30.0 | 0.2 | 72.2 | 3.0 | 85.8 | 10.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 82.8 | 20.6 | 0.0 | 82.0 | 30.0 | 0.2 | 72.2 | 3.0 | 85.8 | 10.8 |
| Queue Length 50th (ft) | 148 | 310 | 0 | 68 | 475 | 0 | 36 | 0 | 164 | 0 |
| Queue Length 95th (ft) | 224 | 441 | 0 | 123 | 675 | 0 | 73 | 0 | 249 | 58 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 260 | 2159 | 993 | 157 | 1850 | 906 | 202 | 327 | 250 | 363 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.57 | 0.47 | 0.00 | 0.43 | 0.67 | 0.10 | 0.18 | 0.24 | 0.66 | 0.42 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

3: BRANCH DR & LEE HWY

Warrenton Village Center Item 1.
2027 Future Background



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | |
|-----------------------------------|------|-------|-------|------|------|-------|------|-------|-------|------|-------|---------------------------|------|
| Lane Configurations | | ↔ | ↕ | ↗ | ↖ | ↕ | ↗ | | ↖ | ↗ | | ↖ | |
| Traffic Volume (vph) | 9 | 133 | 956 | 2 | 65 | 1179 | 84 | 17 | 17 | 75 | 139 | 18 | |
| Future Volume (vph) | 9 | 133 | 956 | 2 | 65 | 1179 | 84 | 17 | 17 | 75 | 139 | 18 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% | |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 | |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frbp, ped/bikes | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 | |
| Satd. Flow (prot) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1813 | |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 | |
| Satd. Flow (perm) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1813 | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | |
| Adj. Flow (vph) | 9 | 140 | 1006 | 2 | 68 | 1241 | 88 | 18 | 18 | 79 | 146 | 19 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 1 | 0 | 0 | 41 | 0 | 0 | 74 | 0 | 0 | |
| Lane Group Flow (vph) | 0 | 149 | 1006 | 1 | 68 | 1241 | 47 | 0 | 36 | 5 | 0 | 165 | |
| Confl. Peds. (#/hr) | | | | 2 | | | 2 | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 2% | 1% | 0% | 0% | 0% | 1% | 0% | |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA | |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 | |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | | |
| Actuated Green, G (s) | | 17.2 | 86.7 | 86.7 | 9.3 | 79.3 | 79.3 | | 9.5 | 9.5 | | 17.9 | |
| Effective Green, g (s) | | 17.2 | 86.7 | 86.7 | 9.3 | 79.3 | 79.3 | | 9.5 | 9.5 | | 17.9 | |
| Actuated g/C Ratio | | 0.11 | 0.58 | 0.58 | 0.06 | 0.53 | 0.53 | | 0.06 | 0.06 | | 0.12 | |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | |
| Lane Grp Cap (vph) | | 207 | 2128 | 925 | 110 | 1852 | 823 | | 117 | 102 | | 216 | |
| v/s Ratio Prot | | c0.08 | 0.27 | | 0.04 | c0.35 | | | c0.02 | | | c0.09 | |
| v/s Ratio Perm | | | | 0.00 | | | 0.03 | | | 0.00 | | | |
| v/c Ratio | | 0.72 | 0.47 | 0.00 | 0.62 | 0.67 | 0.06 | | 0.31 | 0.05 | | 0.76 | |
| Uniform Delay, d1 | | 64.1 | 18.4 | 13.4 | 68.6 | 25.8 | 17.2 | | 67.1 | 66.0 | | 64.0 | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 11.4 | 0.8 | 0.0 | 9.9 | 1.9 | 0.1 | | 1.5 | 0.2 | | 14.8 | |
| Delay (s) | | 75.4 | 19.1 | 13.4 | 78.5 | 27.8 | 17.3 | | 68.6 | 66.2 | | 78.8 | |
| Level of Service | | E | B | B | E | C | B | | E | E | | E | |
| Approach Delay (s) | | | 26.4 | | | 29.6 | | | 67.0 | | | 69.3 | |
| Approach LOS | | | C | | | C | | | E | | | E | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 34.0 | | | | | | | | | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | | | 0.66 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | | | | | | | Sum of lost time (s) | 26.6 |
| Intersection Capacity Utilization | | | 76.1% | | | | | | | | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
 3: BRANCH DR & LEE HWY

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 144 |
| Future Volume (vph) | 144 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frbp, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1607 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1607 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 152 |
| RTOR Reduction (vph) | 134 |
| Lane Group Flow (vph) | 18 |
| Confl. Peds. (#/hr) | |
| Heavy Vehicles (%) | 1% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 17.9 |
| Effective Green, g (s) | 17.9 |
| Actuated g/C Ratio | 0.12 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 191 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.01 |
| v/c Ratio | 0.09 |
| Uniform Delay, d1 | 58.8 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.2 |
| Delay (s) | 59.1 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

4: BRANCH DR & WARRENTON VILLAGE CENTER/SAFEWAY DRIVEWAY 2027 Future Background

Intersection

Int Delay, s/veh 8.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 17 | 77 | 116 | 45 | 50 | 41 | 94 | 45 | 12 | 48 | 42 | 32 |
| Future Vol, veh/h | 17 | 77 | 116 | 45 | 50 | 41 | 94 | 45 | 12 | 48 | 42 | 32 |
| Conflicting Peds, #/hr | 0 | 0 | 14 | 14 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 0 | 2 | 0 | 2 | 5 | 0 | 2 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 18 | 80 | 121 | 47 | 52 | 43 | 98 | 47 | 13 | 50 | 44 | 33 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-----|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 407 | 417 | 53 | 426 | 427 | 30 | 77 | 0 | 0 | 60 | 0 | 0 |
| Stage 1 | 161 | 161 | - | 250 | 250 | - | - | - | - | - | - | - |
| Stage 2 | 246 | 256 | - | 176 | 177 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.14 | 7.1 | 6.14 | 6.8 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.32 | 3.5 | 4.02 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 639 | 637 | 1015 | 542 | 544 | 1030 | 1535 | - | - | 1556 | - | - |
| Stage 1 | 893 | 826 | - | 759 | 718 | - | - | - | - | - | - | - |
| Stage 2 | 827 | 784 | - | 831 | 767 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 521 | 575 | 1003 | 390 | 491 | 1030 | 1535 | - | - | 1556 | - | - |
| Mov Cap-2 Maneuver | 521 | 575 | - | 390 | 491 | - | - | - | - | - | - | - |
| Stage 1 | 834 | 798 | - | 709 | 671 | - | - | - | - | - | - | - |
| Stage 2 | 683 | 732 | - | 628 | 741 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 11.8 | | 14.3 | | 4.7 | | 2.9 | |
| HCM LOS | B | | B | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1535 | - | - | 744 | 529 | 1556 | - | - |
| HCM Lane V/C Ratio | 0.064 | - | - | 0.294 | 0.268 | 0.032 | - | - |
| HCM Control Delay (s) | 7.5 | 0 | - | 11.8 | 14.3 | 7.4 | 0 | - |
| HCM Lane LOS | A | A | - | B | B | A | A | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.2 | 1.1 | 0.1 | - | - |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 3 | 109 | 86 | 31 | 116 | 2 | 62 | 2 | 39 | 1 | 5 | 1 |
| Future Vol, veh/h | 3 | 109 | 86 | 31 | 116 | 2 | 62 | 2 | 39 | 1 | 5 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 3 | 0 | 4 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 118 | 93 | 34 | 126 | 2 | 67 | 2 | 42 | 1 | 5 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-------|--------|-----|-----|
| Conflicting Flow All | 132 | 0 | 0 | 211 | 0 | 0 | 369 | 371 | 167 | 394 | 416 | 131 |
| Stage 1 | - | - | - | - | - | - | 171 | 171 | - | 199 | 199 | - |
| Stage 2 | - | - | - | - | - | - | 198 | 200 | - | 195 | 217 | - |
| Critical Hdwy | 4.1 | - | - | 4.14 | - | - | 7.53 | 6.9 | 6.43 | 6.1 | 5.5 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.53 | 5.9 | - | 5.1 | 4.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.53 | 5.9 | - | 5.1 | 4.5 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.236 | - | - | 3.527 | 4 | 3.327 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 1466 | - | - | 1348 | - | - | 562 | 539 | 867 | 635 | 595 | 941 |
| Stage 1 | - | - | - | - | - | - | 813 | 747 | - | 853 | 782 | - |
| Stage 2 | - | - | - | - | - | - | 784 | 723 | - | 857 | 772 | - |
| Platoon blocked, % | | - | - | - | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1461 | - | - | 1348 | - | - | 545 | 522 | 866 | 585 | 576 | 938 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 545 | 522 | - | 585 | 576 | - |
| Stage 1 | - | - | - | - | - | - | 811 | 746 | - | 849 | 759 | - |
| Stage 2 | - | - | - | - | - | - | 756 | 701 | - | 810 | 770 | - |

| Approach | EB | | | WB | | | NB | | | SB | | |
|----------------------|-----|--|--|-----|--|--|------|--|--|----|--|--|
| HCM Control Delay, s | 0.1 | | | 1.6 | | | 11.4 | | | 11 | | |
| HCM LOS | | | | | | | B | | | B | | |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 544 | 866 | 1461 | - | - | 1348 | - | - | 611 |
| HCM Lane V/C Ratio | 0.128 | 0.049 | 0.002 | - | - | 0.025 | - | - | 0.012 |
| HCM Control Delay (s) | 12.6 | 9.4 | 7.5 | 0 | - | 7.7 | 0 | - | 11 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.4 | 0.2 | 0 | - | - | 0.1 | - | - | 0 |

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.5 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | | ↑ | ↑ | | ↑ | |
| Traffic Vol, veh/h | 42 | 131 | 164 | 14 | 67 | 52 |
| Future Vol, veh/h | 42 | 131 | 164 | 14 | 67 | 52 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 2 | 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, % | - | -3 | 1 | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 0 | 0 | 2 |
| Mvmt Flow | 46 | 142 | 178 | 15 | 73 | 57 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|-----------|
| Conflicting Flow All | 194 | 0 | - | 0 | 423 187 |
| Stage 1 | - | - | - | - | 187 - |
| Stage 2 | - | - | - | - | 236 - |
| Critical Hdwy | 4.12 | - | - | - | 5.4 5.72 |
| Critical Hdwy Stg 1 | - | - | - | - | 4.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 4.4 - |
| Follow-up Hdwy | 2.218 | - | - | - | 3.5 3.318 |
| Pot Cap-1 Maneuver | 1379 | - | - | - | 665 878 |
| Stage 1 | - | - | - | - | 895 - |
| Stage 2 | - | - | - | - | 863 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1378 | - | - | - | 640 877 |
| Mov Cap-2 Maneuver | - | - | - | - | 640 - |
| Stage 1 | - | - | - | - | 862 - |
| Stage 2 | - | - | - | - | 862 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|----|
| HCM Control Delay, s | 1.9 | 0 | 11 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-------|
| Capacity (veh/h) | 1378 | - | - | - | 726 |
| HCM Lane V/C Ratio | 0.033 | - | - | - | 0.178 |
| HCM Control Delay (s) | 7.7 | - | - | - | 11 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.6 |

HCM 6th TWSC
7: OAK SPRINGS DR & SCHOOL DRIVEWAY

| Intersection | | | | | | |
|--------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 1 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | ↘ | ↗ | ↗ | | ↘ | ↘ |
| Traffic Vol, veh/h | 5 | 162 | 214 | 2 | 11 | 27 |
| Future Vol, veh/h | 5 | 162 | 214 | 2 | 11 | 27 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 1 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 75 | - | - | - | 0 | 50 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | -5 | 3 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 3 | 2 | 0 | 0 | 0 |
| Mvmt Flow | 5 | 176 | 233 | 2 | 12 | 29 |

| Major/Minor | Major1 | Major2 | Minor2 | | |
|----------------------|--------|--------|--------|---|---------|
| Conflicting Flow All | 236 | 0 | - | 0 | 421 235 |
| Stage 1 | - | - | - | - | 235 - |
| Stage 2 | - | - | - | - | 186 - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 3.3 |
| Pot Cap-1 Maneuver | 1343 | - | - | - | 593 809 |
| Stage 1 | - | - | - | - | 809 - |
| Stage 2 | - | - | - | - | 851 - |
| Platoon blocked, % | | - | - | - | |
| Mov Cap-1 Maneuver | 1342 | - | - | - | 589 808 |
| Mov Cap-2 Maneuver | - | - | - | - | 589 - |
| Stage 1 | - | - | - | - | 805 - |
| Stage 2 | - | - | - | - | 850 - |

| Approach | EB | WB | SB |
|----------------------|-----|----|------|
| HCM Control Delay, s | 0.2 | 0 | 10.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-----|-----|-----|-------|-------|
| Capacity (veh/h) | 1342 | - | - | - | 589 | 808 |
| HCM Lane V/C Ratio | 0.004 | - | - | - | 0.02 | 0.036 |
| HCM Control Delay (s) | 7.7 | - | - | - | 11.2 | 9.6 |
| HCM Lane LOS | A | - | - | - | B | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 | 0.1 |

Intersection

Int Delay, s/veh 5.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | ↗ | ↖ | ↗ | ↖ | ↖ | ↗ | ↗ |
| Traffic Vol, veh/h | 2 | 1 | 4 | 102 | 1 | 139 | 2 | 375 | 80 | 86 | 508 | 2 |
| Future Vol, veh/h | 2 | 1 | 4 | 102 | 1 | 139 | 2 | 375 | 80 | 86 | 508 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 4 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 4 | 1 | 4 | 0 |
| Mvmt Flow | 2 | 1 | 4 | 111 | 1 | 151 | 2 | 408 | 87 | 93 | 552 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 952 | 1243 | 281 | 876 | 1157 | 205 | 558 | 0 | 0 | 496 | 0 | 0 |
| Stage 1 | 743 | 743 | - | 413 | 413 | - | - | - | - | - | - | - |
| Stage 2 | 209 | 500 | - | 463 | 744 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.32 | 7.3 | 7.34 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.51 | 4 | 3.32 | 2.2 | - | - | 2.21 | - | - |
| Pot Cap-1 Maneuver | 241 | 202 | 733 | 201 | 153 | 784 | 1023 | - | - | 1071 | - | - |
| Stage 1 | 410 | 461 | - | 538 | 545 | - | - | - | - | - | - | - |
| Stage 2 | 798 | 578 | - | 497 | 360 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 180 | 183 | 731 | 185 | 139 | 783 | 1020 | - | - | 1070 | - | - |
| Mov Cap-2 Maneuver | 180 | 183 | - | 185 | 139 | - | - | - | - | - | - | - |
| Stage 1 | 408 | 420 | - | 536 | 543 | - | - | - | - | - | - | - |
| Stage 2 | 641 | 576 | - | 450 | 328 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 16.6 | 27.9 | 0 | 1.3 |
| HCM LOS | C | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1020 | - | - | 317 | 184 | 783 | 1070 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.024 | 0.608 | 0.193 | 0.087 | - | - |
| HCM Control Delay (s) | 8.5 | - | - | 16.6 | 51 | 10.7 | 8.7 | - | - |
| HCM Lane LOS | A | - | - | C | F | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 3.4 | 0.7 | 0.3 | - | - |

9: BROADVIEW AVE & COMMERCIAL DRIVEWAY/WARRENTON NORTH DRIVEWAY Background

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 2.1 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | ↕ | ↕ | | ↕ | ↕ | ↕ | ↕ | ↕ | ↕ |
| Traffic Vol, veh/h | 10 | 1 | 17 | 33 | 1 | 38 | 15 | 409 | 15 | 41 | 567 | 6 |
| Future Vol, veh/h | 10 | 1 | 17 | 33 | 1 | 38 | 15 | 409 | 15 | 41 | 567 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 5 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 1 | 18 | 36 | 1 | 41 | 16 | 445 | 16 | 45 | 616 | 7 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|-----|--------|------|-----|--------|---|------|---|---|
| Conflicting Flow All | 970 | 1208 | 317 | 876 | 1195 | 223 | 628 | 0 | 0 | 461 | 0 | 0 |
| Stage 1 | 715 | 715 | - | 477 | 477 | - | - | - | - | - | - | - |
| Stage 2 | 255 | 493 | - | 399 | 718 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.3 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 161 | 132 | 655 | 213 | 154 | 757 | 964 | - | - | 1111 | - | - |
| Stage 1 | 322 | 359 | - | 502 | 517 | - | - | - | - | - | - | - |
| Stage 2 | 683 | 480 | - | 565 | 387 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 144 | 124 | 652 | 197 | 145 | 757 | 960 | - | - | 1111 | - | - |
| Mov Cap-2 Maneuver | 144 | 124 | - | 197 | 145 | - | - | - | - | - | - | - |
| Stage 1 | 315 | 343 | - | 493 | 508 | - | - | - | - | - | - | - |
| Stage 2 | 634 | 472 | - | 525 | 370 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|----|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 20 | | 18.3 | | 0.3 | | 0.6 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|------|-----|-----|
| Capacity (veh/h) | 960 | - | - | 270 | 197 | 683 | 1111 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.113 | 0.182 | 0.062 | 0.04 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 20 | 27.3 | 10.6 | 8.4 | - | - |
| HCM Lane LOS | A | - | - | C | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.4 | 0.6 | 0.2 | 0.1 | - | - |

10: JAMES MADISON HWY & BROADVIEW AVE & WARRENTON SOUTH DRIVE

Intersection

| Int Delay, s/veh | 9.8 | | | | | | | | | | | |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 103 | 61 | 173 | 43 | 27 | 25 | 88 | 311 | 77 | 7 | 496 | 114 |
| Future Vol, veh/h | 103 | 61 | 173 | 43 | 27 | 25 | 88 | 311 | 77 | 7 | 496 | 114 |
| Conflicting Peds, #/hr | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 4 | 1 |
| Mvmt Flow | 112 | 66 | 188 | 47 | 29 | 27 | 96 | 338 | 84 | 8 | 539 | 124 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|-----|--------|-----|------|--------|---|------|---|---|
| Conflicting Flow All | 937 | 1172 | 270 | 852 | 1212 | 178 | 663 | 0 | 0 | 425 | 0 | 0 |
| Stage 1 | 555 | 555 | - | 533 | 533 | - | - | - | - | - | - | - |
| Stage 2 | 382 | 617 | - | 319 | 679 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.92 | 7.5 | 6.5 | 6.9 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.31 | 3.5 | 4 | 3.3 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 219 | 194 | 731 | 256 | 184 | 841 | 928 | - | - | 1145 | - | - |
| Stage 1 | 484 | 516 | - | 503 | 528 | - | - | - | - | - | - | - |
| Stage 2 | 612 | 484 | - | 673 | 454 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 167 | 172 | 731 | 122 | 164 | 835 | 928 | - | - | 1142 | - | - |
| Mov Cap-2 Maneuver | 167 | 172 | - | 122 | 164 | - | - | - | - | - | - | - |
| Stage 1 | 434 | 512 | - | 450 | 473 | - | - | - | - | - | - | - |
| Stage 2 | 495 | 433 | - | 432 | 451 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 31.9 | | 35.5 | | 1.7 | | 0.1 | |
| HCM LOS | D | | E | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 928 | - | - | 167 | 172 | 731 | 122 | 267 | 1142 | - | - |
| HCM Lane V/C Ratio | 0.103 | - | - | 0.67 | 0.385 | 0.257 | 0.383 | 0.212 | 0.007 | - | - |
| HCM Control Delay (s) | 9.3 | - | - | 62 | 38.5 | 11.6 | 51.8 | 22.1 | 8.2 | - | - |
| HCM Lane LOS | A | - | - | F | E | B | F | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 3.9 | 1.7 | 1 | 1.6 | 0.8 | 0 | - | - |

I. 2027 Future Conditions with Development – Capacity Analysis Worksheets

LANE SUMMARY

Site: 101 [Broadview/Winchester/Lee - 2027 TF AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
 2027 Future with Development
 AM Peak Hour
 Site Category: (None)
 Roundabout

| Lane Use and Performance | | | | | | | | | | | | | | | |
|---------------------------|---------------|------|---------------|------|------|-----------|------------|-------------|------------------|-------------------|-----------|-------------|-------------|-----------|--------------|
| | Demand Flows | | Arrival Flows | | Cap. | Deg. Satn | Lane Util. | Aver. Delay | Level of Service | 95% Back Of Queue | | Lane Config | Lane Length | Cap. Adj. | Prob. Block. |
| | [Total veh/h | HV % | [Total veh/h | HV % | | | | | | [Veh | Dist] ft | | | | |
| South: Winchester St (NB) | | | | | | | | | | | | | | | |
| Lane 1 ^d | 203 | 4.5 | 203 | 4.5 | 569 | 0.357 | 100 | 11.5 | LOS B | 1.8 | 46.7 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 87 | 4.0 | 87 | 4.0 | 397 | 0.219 | 100 | 12.7 | LOS B | 0.9 | 22.9 | Short | 250 | 0.0 | NA |
| Approach | 290 | 4.3 | 290 | 4.3 | | 0.357 | | 11.9 | LOS B | 1.8 | 46.7 | | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | | | | | |
| Lane 1 | 418 | 7.2 | 418 | 7.2 | 813 | 0.514 | 100 | 11.4 | LOS B | 4.4 | 115.6 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 517 | 6.5 | 517 | 6.5 | 1005 | 0.514 | 100 | 9.8 | LOS A | 4.5 | 117.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 935 | 6.8 | 935 | 6.8 | | 0.514 | | 10.5 | LOS B | 4.5 | 117.1 | | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | | | | | |
| Lane 1 ^d | 253 | 3.6 | 253 | 3.6 | 717 | 0.353 | 100 | 9.5 | LOS A | 1.8 | 47.0 | Short | 215 | 0.0 | NA |
| Lane 2 | 251 | 3.0 | 251 | 3.0 | 653 | 0.385 | 100 | 10.8 | LOS B | 2.1 | 52.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 504 | 3.3 | 504 | 3.3 | | 0.385 | | 10.1 | LOS B | 2.1 | 52.8 | | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | | | | | |
| Lane 1 | 549 | 4.5 | 549 | 4.5 | 1025 | 0.535 | 100 | 10.0 | LOS A | 4.3 | 111.1 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 646 | 3.9 | 646 | 3.9 | 1207 | 0.535 | 100 | 8.9 | LOS A | 4.5 | 115.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1195 | 4.2 | 1195 | 4.2 | | 0.535 | | 9.4 | LOS A | 4.5 | 115.6 | | | | |
| All Vehicles | 2924 | 4.9 | 2924 | 4.9 | | 0.535 | | 10.1 | LOS B | 4.5 | 117.1 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Roundabout LOS Method: Same as Signalised Intersections.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Roundabout Capacity Model: SIDRA HCM.
 Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) | | | | | | | | | | |
|-----------------------------|----|----|----|-------|-----|-------|------|-------|-------|------|
| South: Winchester St (NB) | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | Cap. | Deg. | Lane | Prob. | Ov. |
| From S | | | | | | veh/h | Satn | Util. | SL | Lane |
| To Exit: | W | N | E | | | | v/c | % | % | No. |
| | | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------------|------|-----|-----|-------|-------|-----|------------|------------|--------------|--------------|--------------|
| Lane 1 | 84 | 120 | - | 203 | 4.5 | 569 | 0.357 | 100 | NA | NA | |
| Lane 2 | - | - | 87 | 87 | 4.0 | 397 | 0.219 | 100 | 0.0 | 1 | |
| Approach | 84 | 120 | 87 | 290 | 4.3 | | 0.357 | | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From E To Exit: | E | S | W | N | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 3 | 38 | 377 | - | 418 | 7.2 | 813 | 0.514 | 100 | NA | NA |
| Lane 2 | - | - | 326 | 191 | 517 | 6.5 | 1005 | 0.514 | 100 | NA | NA |
| Approach | 3 | 38 | 702 | 191 | 935 | 6.8 | | 0.514 | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. | |
| From N To Exit: | E | S | W | | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 137 | 116 | - | 253 | 3.6 | 717 | 0.353 | 100 | 0.0 | 2 | |
| Lane 2 | - | - | 251 | 251 | 3.0 | 653 | 0.385 | 100 | NA | NA | |
| Approach | 137 | 116 | 251 | 504 | 3.3 | | 0.385 | | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From W To Exit: | W | N | E | S | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 5 | 286 | 257 | - | 549 | 4.5 | 1025 | 0.535 | 100 | NA | NA |
| Lane 2 | - | - | 610 | 36 | 646 | 3.9 | 1207 | 0.535 | 100 | NA | NA |
| Approach | 5 | 286 | 867 | 36 | 1195 | 4.2 | | 0.535 | | | |
| Total %HV Deg.Satn (v/c) | | | | | | | | | | | |
| All Vehicles | 2924 | 4.9 | | 0.535 | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis | | | | | | | | | | | | |
|--|----------------------|------------------------|-----------------|--------------------------|------------------|-----------------------|----------------------|----------------|---------------|----------------|-----------------|--|
| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Flow Rate veh/h | Opposing Flow Rate pcu/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec | |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

| Variable Demand Analysis | | | | |
|----------------------------------|---------------------------|----------------------------|---------------------------------------|--------------------------|
| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
| South: Winchester St (NB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Lee Hwy (WB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Broadview Ave (SB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|--------------------------|-----|-----|-----|-----|
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Broadview Ave (EB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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LANE LEVEL OF SERVICE

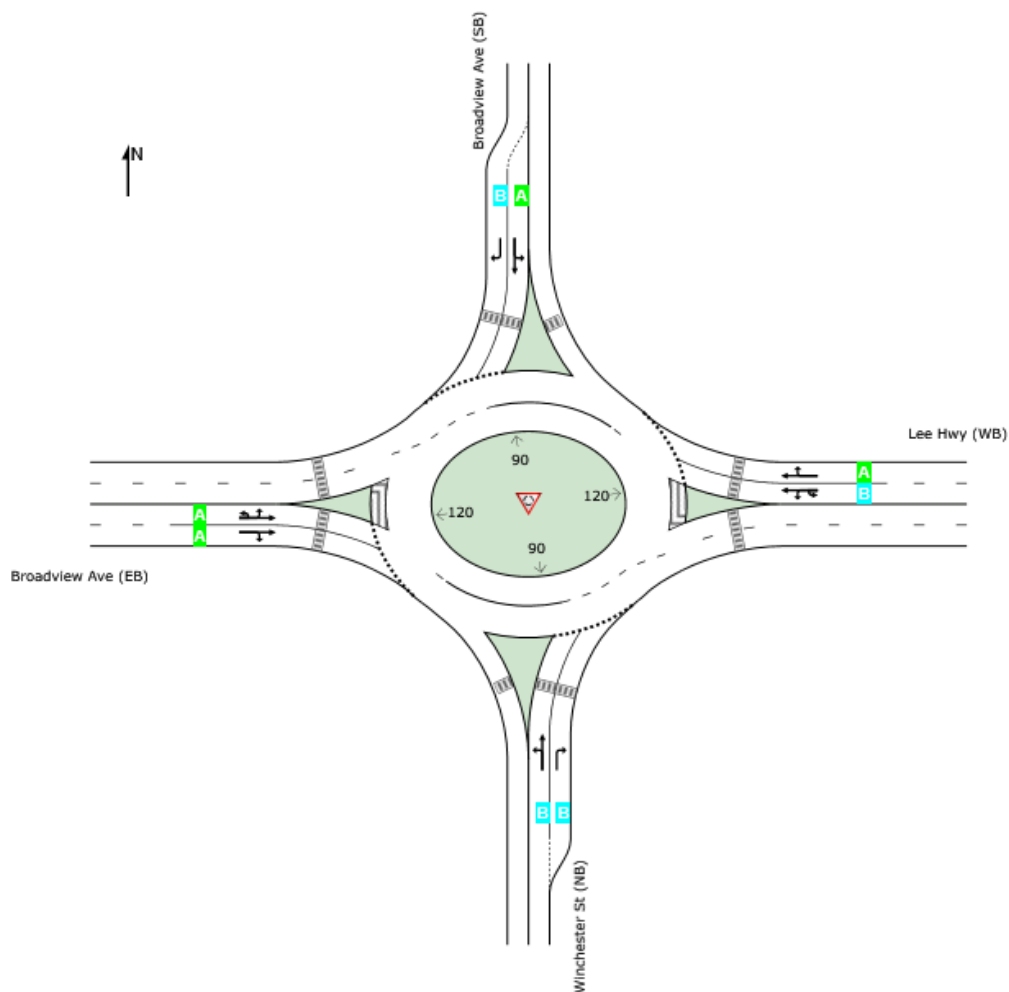
Lane Level of Service

Site: 101 [Broadview/Winchester/Lee - 2027 TF AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
 2027 Future with Development
 AM Peak Hour
 Site Category: (None)
 Roundabout

| LOS | Approaches | | | | Intersection |
|-----|------------|------|-------|------|--------------|
| | South | East | North | West | |
| B | B | B | B | A | B |



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Roundabout LOS Method: Same as Signalised Intersections.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Stoptline Delay: Geometric Delay is not included).

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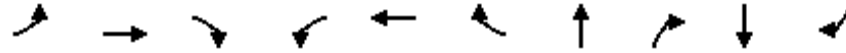
| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 944 | 63 | 0 | 839 | 32 | 0 | 0 | 29 | 0 | 0 | 21 |
| Future Vol, veh/h | 0 | 944 | 63 | 0 | 839 | 32 | 0 | 0 | 29 | 0 | 0 | 21 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 4 | 3 | 0 | 7 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 1026 | 68 | 0 | 912 | 35 | 0 | 0 | 32 | 0 | 0 | 23 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|---|------|--------|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 513 | - | - | 456 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.26 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.33 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 483 | 0 | 0 | 640 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 483 | - | - | 640 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|----|------|
| HCM Control Delay, s | 0 | 0 | 13 | 10.8 |
| HCM LOS | | | B | B |

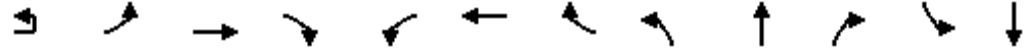
| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 483 | - | - | - | - | 640 |
| HCM Lane V/C Ratio | 0.065 | - | - | - | - | 0.036 |
| HCM Control Delay (s) | 13 | - | - | - | - | 10.8 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.1 |

Queues
3: BRANCH DR & LEE HWY



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 42 | 1015 | 1 | 48 | 872 | 75 | 23 | 41 | 110 | 57 |
| v/c Ratio | 0.37 | 0.47 | 0.00 | 0.41 | 0.42 | 0.07 | 0.17 | 0.17 | 0.62 | 0.23 |
| Control Delay | 71.3 | 19.4 | 0.0 | 72.4 | 18.1 | 0.1 | 60.7 | 1.6 | 74.9 | 2.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 71.3 | 19.4 | 0.0 | 72.4 | 18.1 | 0.1 | 60.7 | 1.6 | 74.9 | 2.2 |
| Queue Length 50th (ft) | 39 | 273 | 0 | 44 | 221 | 0 | 21 | 0 | 102 | 0 |
| Queue Length 95th (ft) | 80 | 485 | 0 | 88 | 400 | 0 | 47 | 0 | 163 | 0 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 199 | 2178 | 1063 | 227 | 2104 | 1047 | 261 | 338 | 200 | 259 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.21 | 0.47 | 0.00 | 0.21 | 0.41 | 0.07 | 0.09 | 0.12 | 0.55 | 0.22 |
| Intersection Summary | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
3: BRANCH DR & LEE HWY



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT |
|------------------------|------|------|-------|------|-------|------|------|-------|-------|------|-------|-------|
| Lane Configurations | | ↔ | ↕ | ↕ | ↕ | ↕ | ↕ | | ↕ | ↕ | | ↕ |
| Traffic Volume (vph) | 7 | 31 | 934 | 1 | 44 | 802 | 69 | 10 | 11 | 38 | 93 | 8 |
| Future Volume (vph) | 7 | 31 | 934 | 1 | 44 | 802 | 69 | 10 | 11 | 38 | 93 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (prot) | | 1793 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1777 |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 |
| Satd. Flow (perm) | | 1793 | 3541 | 1647 | 1752 | 3372 | 1599 | | 1856 | 1615 | | 1777 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 8 | 34 | 1015 | 1 | 48 | 872 | 75 | 11 | 12 | 41 | 101 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 38 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 42 | 1015 | 1 | 48 | 872 | 45 | 0 | 23 | 3 | 0 | 110 |
| Heavy Vehicles (%) | 14% | 0% | 4% | 0% | 2% | 6% | 0% | 0% | 0% | 0% | 3% | 0% |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | |
| Actuated Green, G (s) | | 7.7 | 83.0 | 83.0 | 8.1 | 83.9 | 83.9 | | 8.9 | 8.9 | | 14.0 |
| Effective Green, g (s) | | 7.7 | 83.0 | 83.0 | 8.1 | 83.9 | 83.9 | | 8.9 | 8.9 | | 14.0 |
| Actuated g/C Ratio | | 0.06 | 0.59 | 0.59 | 0.06 | 0.60 | 0.60 | | 0.06 | 0.06 | | 0.10 |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.0 | 6.0 | | 7.5 |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 |
| Lane Grp Cap (vph) | | 98 | 2099 | 976 | 101 | 2020 | 958 | | 117 | 102 | | 177 |
| v/s Ratio Prot | | 0.02 | c0.29 | | c0.03 | 0.26 | | | c0.01 | | | c0.06 |
| v/s Ratio Perm | | | | 0.00 | | | 0.03 | | | 0.00 | | |
| v/c Ratio | | 0.43 | 0.48 | 0.00 | 0.48 | 0.43 | 0.05 | | 0.20 | 0.03 | | 0.62 |
| Uniform Delay, d1 | | 64.0 | 16.3 | 11.6 | 63.9 | 15.2 | 11.6 | | 62.2 | 61.5 | | 60.5 |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Incremental Delay, d2 | | 3.0 | 0.8 | 0.0 | 3.5 | 0.7 | 0.1 | | 0.8 | 0.1 | | 6.6 |
| Delay (s) | | 67.0 | 17.1 | 11.6 | 67.4 | 15.8 | 11.7 | | 63.0 | 61.6 | | 67.1 |
| Level of Service | | E | B | B | E | B | B | | E | E | | E |
| Approach Delay (s) | | | 19.0 | | | 18.0 | | | 62.1 | | | 63.7 |
| Approach LOS | | | B | | | B | | | E | | | E |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 23.1 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.48 | C |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 59.7% | 26.0 |
| Analysis Period (min) | 15 | ICU Level of Service |
| | | B |

c Critical Lane Group

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 52 |
| Future Volume (vph) | 52 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1375 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1375 |
| Peak-hour factor, PHF | 0.92 |
| Adj. Flow (vph) | 57 |
| RTOR Reduction (vph) | 51 |
| Lane Group Flow (vph) | 6 |
| Heavy Vehicles (%) | 18% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 14.0 |
| Effective Green, g (s) | 14.0 |
| Actuated g/C Ratio | 0.10 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 137 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.00 |
| v/c Ratio | 0.04 |
| Uniform Delay, d1 | 56.9 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.1 |
| Delay (s) | 57.1 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

Intersection

Int Delay, s/veh 3.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 6 | 15 | 44 | 14 | 11 | 14 | 24 | 84 | 7 | 18 | 122 | 5 |
| Future Vol, veh/h | 6 | 15 | 44 | 14 | 11 | 14 | 24 | 84 | 7 | 18 | 122 | 5 |
| Conflicting Peds, #/hr | 0 | 0 | 2 | 2 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 13 | 0 |
| Mvmt Flow | 7 | 16 | 48 | 15 | 12 | 15 | 26 | 91 | 8 | 20 | 133 | 5 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-----|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 280 | 327 | 71 | 264 | 325 | 50 | 138 | 0 | 0 | 99 | 0 | 0 |
| Stage 1 | 176 | 176 | - | 147 | 147 | - | - | - | - | - | - | - |
| Stage 2 | 104 | 151 | - | 117 | 178 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.1 | 7.1 | 6.28 | 6.7 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.28 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4.09 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 743 | 688 | 999 | 693 | 597 | 1017 | 1458 | - | - | 1507 | - | - |
| Stage 1 | 881 | 819 | - | 860 | 770 | - | - | - | - | - | - | - |
| Stage 2 | 939 | 830 | - | 892 | 749 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 702 | 665 | 997 | 630 | 577 | 1017 | 1458 | - | - | 1507 | - | - |
| Mov Cap-2 Maneuver | 702 | 665 | - | 630 | 577 | - | - | - | - | - | - | - |
| Stage 1 | 864 | 808 | - | 844 | 755 | - | - | - | - | - | - | - |
| Stage 2 | 893 | 814 | - | 819 | 739 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|-----|------|-----|-----|
| HCM Control Delay, s | 9.5 | 10.4 | 1.6 | 0.9 |
| HCM LOS | A | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1458 | - | - | 864 | 708 | 1507 | - | - |
| HCM Lane V/C Ratio | 0.018 | - | - | 0.082 | 0.06 | 0.013 | - | - |
| HCM Control Delay (s) | 7.5 | 0 | - | 9.5 | 10.4 | 7.4 | 0 | - |
| HCM Lane LOS | A | A | - | A | B | A | A | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.3 | 0.2 | 0 | - | - |

Intersection

Int Delay, s/veh 3.1

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 1 | 91 | 128 | 16 | 111 | 1 | 90 | 1 | 14 | 1 | 1 | 1 |
| Future Vol, veh/h | 1 | 91 | 128 | 16 | 111 | 1 | 90 | 1 | 14 | 1 | 1 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 1 | 11 | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 99 | 139 | 17 | 121 | 1 | 98 | 1 | 15 | 1 | 1 | 1 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-----|-----|--------|-----|-----|
| Conflicting Flow All | 126 | 0 | 0 | 239 | 0 | 0 | 329 | 332 | 172 | 341 | 401 | 126 |
| Stage 1 | - | - | - | - | - | - | 172 | 172 | - | 160 | 160 | - |
| Stage 2 | - | - | - | - | - | - | 157 | 160 | - | 181 | 241 | - |
| Critical Hdwy | 4.1 | - | - | 4.17 | - | - | 7.5 | 6.9 | 6.4 | 6.1 | 5.5 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.5 | 5.9 | - | 5.1 | 4.5 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.263 | - | - | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 |
| Pot Cap-1 Maneuver | 1473 | - | - | 1299 | - | - | 606 | 570 | 869 | 678 | 604 | 946 |
| Stage 1 | - | - | - | - | - | - | 819 | 746 | - | 885 | 804 | - |
| Stage 2 | - | - | - | - | - | - | 835 | 756 | - | 868 | 759 | - |
| Platoon blocked, % | | - | - | - | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1468 | - | - | 1298 | - | - | 597 | 559 | 867 | 654 | 593 | 943 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 597 | 559 | - | 654 | 593 | - |
| Stage 1 | - | - | - | - | - | - | 817 | 745 | - | 881 | 790 | - |
| Stage 2 | - | - | - | - | - | - | 821 | 743 | - | 849 | 757 | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|------|------|
| HCM Control Delay, s | 0 | 1 | 11.8 | 10.2 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 597 | 867 | 1468 | - | - | 1298 | - | - | 702 |
| HCM Lane V/C Ratio | 0.166 | 0.018 | 0.001 | - | - | 0.013 | - | - | 0.005 |
| HCM Control Delay (s) | 12.2 | 9.2 | 7.5 | 0 | - | 7.8 | 0 | - | 10.2 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.6 | 0.1 | 0 | - | - | 0 | - | - | 0 |

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 3.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 83 | 170 | 1 | 2 | 156 | 44 | 5 | 1 | 2 | 47 | 1 | 67 |
| Future Vol, veh/h | 83 | 170 | 1 | 2 | 156 | 44 | 5 | 1 | 2 | 47 | 1 | 67 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -3 | - | - | 1 | - | - | 0 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 6 | 1 | 2 | 2 | 1 | 0 | 2 | 2 | 2 | 17 | 2 | 0 |
| Mvmt Flow | 90 | 185 | 1 | 2 | 170 | 48 | 5 | 1 | 2 | 51 | 1 | 73 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-----|
| Conflicting Flow All | 219 | 0 | 0 | 186 | 0 | 0 | 603 | 589 | 186 | 566 | 565 | 197 |
| Stage 1 | - | - | - | - | - | - | 366 | 366 | - | 199 | 199 | - |
| Stage 2 | - | - | - | - | - | - | 237 | 223 | - | 367 | 366 | - |
| Critical Hdwy | 4.16 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 6.27 | 5.52 | 5.7 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 5.27 | 4.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 5.27 | 4.52 | - |
| Follow-up Hdwy | 2.254 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.653 | 4.018 | 3.3 |
| Pot Cap-1 Maneuver | 1327 | - | - | 1388 | - | - | 411 | 421 | 856 | 483 | 508 | 873 |
| Stage 1 | - | - | - | - | - | - | 653 | 623 | - | 813 | 778 | - |
| Stage 2 | - | - | - | - | - | - | 766 | 719 | - | 690 | 689 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | 1326 | - | - | 1388 | - | - | 353 | 388 | 856 | 452 | 468 | 871 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 353 | 388 | - | 452 | 468 | - |
| Stage 1 | - | - | - | - | - | - | 603 | 576 | - | 750 | 776 | - |
| Stage 2 | - | - | - | - | - | - | 698 | 717 | - | 635 | 637 | - |

| Approach | EB | | | WB | | | NB | | | SB | | |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 2.6 | | | 0.1 | | | 13.8 | | | 12.2 | | |
| HCM LOS | | | | | | | B | | | B | | |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 419 | 1326 | - | - | 1388 | - | - | 628 |
| HCM Lane V/C Ratio | 0.021 | 0.068 | - | - | 0.002 | - | - | 0.199 |
| HCM Control Delay (s) | 13.8 | 7.9 | 0 | - | 7.6 | 0 | - | 12.2 |
| HCM Lane LOS | B | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0.1 | 0.2 | - | - | 0 | - | - | 0.7 |

Intersection

Int Delay, s/veh 3.5

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 38 | 161 | 6 | 19 | 158 | 51 | 20 | 1 | 62 | 31 | 1 | 19 |
| Future Vol, veh/h | 38 | 161 | 6 | 19 | 158 | 51 | 20 | 1 | 62 | 31 | 1 | 19 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | - | - | - | - | - | - | - | - | 50 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -5 | - | - | 3 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 4 | 2 | 2 | 1 | 0 | 2 | 2 | 2 | 0 | 2 | 0 |
| Mvmt Flow | 41 | 175 | 7 | 21 | 172 | 55 | 22 | 1 | 67 | 34 | 1 | 21 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-----|
| Conflicting Flow All | 227 | 0 | 0 | 182 | 0 | 0 | 514 | 530 | 179 | 537 | 506 | 200 |
| Stage 1 | - | - | - | - | - | - | 261 | 261 | - | 242 | 242 | - |
| Stage 2 | - | - | - | - | - | - | 253 | 269 | - | 295 | 264 | - |
| Critical Hdwy | 4.1 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.1 | 6.52 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.52 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4.018 | 3.3 |
| Pot Cap-1 Maneuver | 1353 | - | - | 1393 | - | - | 471 | 455 | 864 | 458 | 469 | 846 |
| Stage 1 | - | - | - | - | - | - | 744 | 692 | - | 766 | 705 | - |
| Stage 2 | - | - | - | - | - | - | 751 | 687 | - | 718 | 690 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1353 | - | - | 1393 | - | - | 442 | 434 | 864 | 406 | 447 | 846 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 442 | 434 | - | 406 | 447 | - |
| Stage 1 | - | - | - | - | - | - | 722 | 671 | - | 743 | 693 | - |
| Stage 2 | - | - | - | - | - | - | 719 | 675 | - | 641 | 669 | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|-----|--|-----|--|------|--|------|--|
| HCM Control Delay, s | 1.4 | | 0.6 | | 10.9 | | 12.7 | |
| HCM LOS | | | | | B | | B | |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h) | 696 | 1353 | - | - | 1393 | - | - | 407 | 846 |
| HCM Lane V/C Ratio | 0.13 | 0.031 | - | - | 0.015 | - | - | 0.085 | 0.024 |
| HCM Control Delay (s) | 10.9 | 7.7 | - | - | 7.6 | 0 | - | 14.7 | 9.4 |
| HCM Lane LOS | B | A | - | - | A | A | - | B | A |
| HCM 95th %tile Q(veh) | 0.4 | 0.1 | - | - | 0 | - | - | 0.3 | 0.1 |

Intersection

Int Delay, s/veh 4.5

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕↔ | | | ↕↔ | ↕↔ | ↕↔ | ↕↔ | ↕↔ | ↕↔ | ↕↔ | ↕↔ |
| Traffic Vol, veh/h | 1 | 1 | 1 | 80 | 1 | 116 | 1 | 415 | 107 | 97 | 359 | 1 |
| Future Vol, veh/h | 1 | 1 | 1 | 80 | 1 | 116 | 1 | 415 | 107 | 97 | 359 | 1 |
| 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 | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 5 | 5 | 0 |
| Mvmt Flow | 1 | 1 | 1 | 87 | 1 | 126 | 1 | 451 | 116 | 105 | 390 | 1 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 829 | 1170 | 196 | 859 | 1054 | 226 | 391 | 0 | 0 | 567 | 0 | 0 |
| Stage 1 | 601 | 601 | - | 453 | 453 | - | - | - | - | - | - | - |
| Stage 2 | 228 | 569 | - | 406 | 601 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.3 | 7.3 | 7.32 | 4.1 | - | - | 4.2 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.3 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.31 | 2.2 | - | - | 2.25 | - | - |
| Pot Cap-1 Maneuver | 292 | 222 | 828 | 209 | 180 | 761 | 1179 | - | - | 981 | - | - |
| Stage 1 | 491 | 527 | - | 507 | 518 | - | - | - | - | - | - | - |
| Stage 2 | 779 | 542 | - | 546 | 431 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 223 | 198 | 828 | 191 | 161 | 761 | 1179 | - | - | 981 | - | - |
| Mov Cap-2 Maneuver | 223 | 198 | - | 191 | 161 | - | - | - | - | - | - | - |
| Stage 1 | 491 | 471 | - | 506 | 517 | - | - | - | - | - | - | - |
| Stage 2 | 648 | 541 | - | 486 | 385 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|----|--|-----|--|
| HCM Control Delay, s | 18.1 | | 22.3 | | 0 | | 1.9 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1179 | - | - | 279 | 191 | 761 | 981 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.012 | 0.461 | 0.166 | 0.107 | - | - |
| HCM Control Delay (s) | 8.1 | - | - | 18.1 | 39 | 10.7 | 9.1 | - | - |
| HCM Lane LOS | A | - | - | C | E | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0 | 2.2 | 0.6 | 0.4 | - | - |

9: BROADVIEW AVE & COMMERCIAL DRIVEWAY/WARRENTON NORTH DRIVEWAY 2027 Total Future

Intersection

Int Delay, s/veh 0.9

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | ↵ | ↵ | | ↵ | ↑↑ | ↵ | ↵ | ↑↑ | |
| Traffic Vol, veh/h | 1 | 1 | 3 | 17 | 1 | 20 | 13 | 503 | 14 | 16 | 420 | 3 |
| Future Vol, veh/h | 1 | 1 | 3 | 17 | 1 | 20 | 13 | 503 | 14 | 16 | 420 | 3 |
| 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 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 5 | 0 | 0 | 4 | 0 |
| Mvmt Flow | 1 | 1 | 3 | 18 | 1 | 22 | 14 | 547 | 15 | 17 | 457 | 3 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 795 | 1083 | 230 | 838 | 1069 | 274 | 460 | 0 | 0 | 562 | 0 | 0 |
| Stage 1 | 493 | 493 | - | 575 | 575 | - | - | - | - | - | - | - |
| Stage 2 | 302 | 590 | - | 263 | 494 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.32 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.36 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 226 | 162 | 754 | 228 | 187 | 696 | 1112 | - | - | 1019 | - | - |
| Stage 1 | 464 | 480 | - | 432 | 460 | - | - | - | - | - | - | - |
| Stage 2 | 633 | 423 | - | 694 | 506 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 213 | 157 | 754 | 221 | 181 | 696 | 1112 | - | - | 1019 | - | - |
| Mov Cap-2 Maneuver | 213 | 157 | - | 221 | 181 | - | - | - | - | - | - | - |
| Stage 1 | 458 | 472 | - | 426 | 454 | - | - | - | - | - | - | - |
| Stage 2 | 604 | 418 | - | 678 | 497 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|------|-----|-----|
| HCM Control Delay, s | 16 | 16.3 | 0.2 | 0.3 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1112 | - | - | 332 | 221 | 613 | 1019 | - | - |
| HCM Lane V/C Ratio | 0.013 | - | - | 0.016 | 0.084 | 0.037 | 0.017 | - | - |
| HCM Control Delay (s) | 8.3 | - | - | 16 | 22.8 | 11.1 | 8.6 | - | - |
| HCM Lane LOS | A | - | - | C | C | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.3 | 0.1 | 0.1 | - | - |

10: JAMES MADISON HWY & BROADVIEW AVE & WARRENTON SOUTH DRIVEWAY EWA Final Future

Intersection

Int Delay, s/veh 7.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 126 | 17 | 81 | 3 | 3 | 3 | 116 | 401 | 32 | 7 | 380 | 53 |
| Future Vol, veh/h | 126 | 17 | 81 | 3 | 3 | 3 | 116 | 401 | 32 | 7 | 380 | 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 | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 0 | 3 | 0 | 0 | 33 | 1 | 5 | 0 | 0 | 3 | 8 |
| Mvmt Flow | 137 | 18 | 88 | 3 | 3 | 3 | 126 | 436 | 35 | 8 | 413 | 58 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 901 | 1152 | 207 | 920 | 1175 | 218 | 471 | 0 | 0 | 471 | 0 | 0 |
| Stage 1 | 429 | 429 | - | 688 | 688 | - | - | - | - | - | - | - |
| Stage 2 | 472 | 723 | - | 232 | 487 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.96 | 7.5 | 6.5 | 7.56 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.33 | 3.5 | 4 | 3.63 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 233 | 199 | 796 | 229 | 193 | 699 | 1094 | - | - | 1101 | - | - |
| Stage 1 | 574 | 587 | - | 407 | 450 | - | - | - | - | - | - | - |
| Stage 2 | 542 | 434 | - | 756 | 554 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 207 | 175 | 796 | 170 | 170 | 699 | 1094 | - | - | 1101 | - | - |
| Mov Cap-2 Maneuver | 207 | 175 | - | 170 | 170 | - | - | - | - | - | - | - |
| Stage 1 | 508 | 583 | - | 360 | 398 | - | - | - | - | - | - | - |
| Stage 2 | 473 | 384 | - | 646 | 550 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 34.5 | | 21.2 | | 1.8 | | 0.1 | |
| HCM LOS | D | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1094 | - | - | 207 | 175 | 796 | 170 | 273 | 1101 | - | - |
| HCM Lane V/C Ratio | 0.115 | - | - | 0.662 | 0.106 | 0.111 | 0.019 | 0.024 | 0.007 | - | - |
| HCM Control Delay (s) | 8.7 | - | - | 51 | 28 | 10.1 | 26.6 | 18.5 | 8.3 | - | - |
| HCM Lane LOS | A | - | - | F | D | B | D | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 4 | 0.3 | 0.4 | 0.1 | 0.1 | 0 | - | - |

LANE LEVEL OF SERVICE

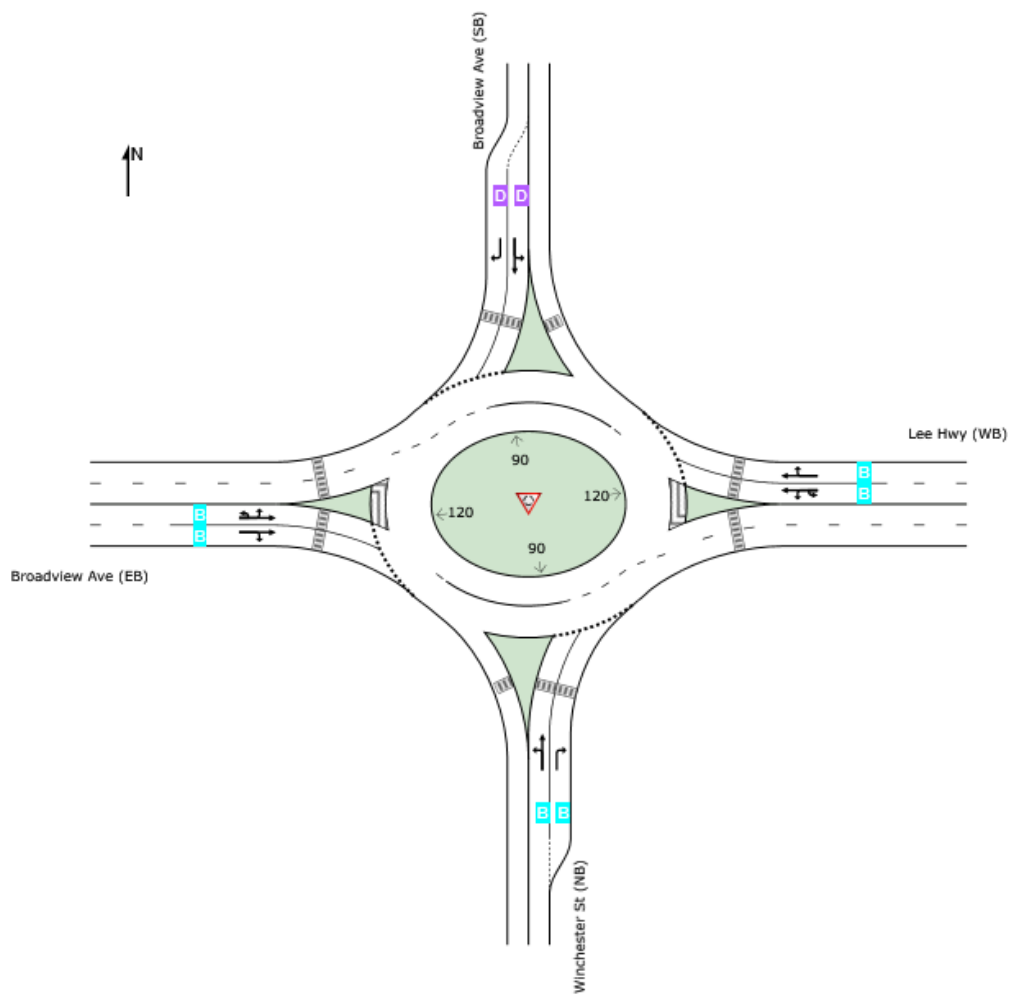
Lane Level of Service

Site: 101 [Broadview/Winchester/Lee - 2027 TF PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
 2027 Future with Development
 PM Peak Hour
 Site Category: (None)
 Roundabout

| | Approaches | | | | Intersection |
|-----|------------|------|-------|------|--------------|
| | South | East | North | West | |
| LOS | B | B | D | B | B |



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
 Roundabout LOS Method: Same as Signalised Intersections.
 Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
 LOS F will result if $v/c > 1$ irrespective of lane delay value (does not apply for approaches and intersection).
 Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
 Delay Model: HCM Delay Formula (Stoptline Delay: Geometric Delay is not included).

SIDRA INTERSECTION 9.1 | Copyright © 2000-2022 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: GOROVE SLADE | Licence: PLUS / 1PC | Processed: Monday, February 12, 2024 1:51:53 AM
Project: U:\3243\001. Warrenton Village Center\Analysis\Sidra\2nd Submission\2027 TF.sip9

LANE SUMMARY

Site: 101 [Broadview/Winchester/Lee - 2027 TF PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Warrenton Village Center
2027 Future with Development
PM Peak Hour
Site Category: (None)
Roundabout

| Lane Use and Performance | | | | | | | | | | | | | | | |
|---------------------------|---------------|------|---------------|------|------|-----------|------------|-------------|------------------|-------------------|-----------|-------------|-------------|-----------|--------------|
| | Demand Flows | | Arrival Flows | | Cap. | Deg. Satn | Lane Util. | Aver. Delay | Level of Service | 95% Back Of Queue | | Lane Config | Lane Length | Cap. Adj. | Prob. Block. |
| | [Total veh/h | HV % | [Total veh/h | HV % | | | | | | [Veh | Dist] ft | | | | |
| South: Winchester St (NB) | | | | | | | | | | | | | | | |
| Lane 1 ^d | 235 | 0.5 | 235 | 0.5 | 556 | 0.423 | 100 | 13.2 | LOS B | 2.5 | 62.1 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 | 77 | 0.0 | 77 | 0.0 | 361 | 0.214 | 100 | 13.7 | LOS B | 0.9 | 23.2 | Short | 250 | 0.0 | NA |
| Approach | 313 | 0.4 | 313 | 0.4 | | 0.423 | | 13.3 | LOS B | 2.5 | 62.1 | | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | | | | | |
| Lane 1 | 623 | 1.7 | 623 | 1.7 | 857 | 0.726 | 100 | 17.7 | LOS B | 10.7 | 271.5 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 761 | 2.0 | 761 | 2.0 | 1047 | 0.726 | 100 | 15.3 | LOS B | 11.5 | 291.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1383 | 1.9 | 1383 | 1.9 | | 0.726 | | 16.3 | LOS B | 11.5 | 291.4 | | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | | | | | |
| Lane 1 | 347 | 0.7 | 347 | 0.7 | 426 | 0.815 | 100 | 39.5 | LOS D | 7.1 | 177.8 | Short | 215 | 0.0 | NA |
| Lane 2 ^d | 413 | 4.0 | 413 | 4.0 | 487 | 0.848 | 100 | 39.7 | LOS D | 8.4 | 216.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 759 | 2.5 | 759 | 2.5 | | 0.848 | | 39.6 | LOS D | 8.4 | 216.0 | | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | | | | | |
| Lane 1 | 547 | 2.5 | 547 | 2.5 | 913 | 0.599 | 100 | 12.4 | LOS B | 6.7 | 169.7 | Full | 1600 | 0.0 | 0.0 |
| Lane 2 ^d | 664 | 1.9 | 664 | 1.9 | 1108 | 0.599 | 100 | 10.8 | LOS B | 6.8 | 171.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 1210 | 2.2 | 1210 | 2.2 | | 0.599 | | 11.5 | LOS B | 6.8 | 171.5 | | | | |
| All Vehicles | 3666 | 2.0 | 3666 | 2.0 | | 0.848 | | 19.3 | LOS B | 11.5 | 291.4 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Signalised Intersections.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA HCM.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

| Approach Lane Flows (veh/h) | | | | | | | | | | | |
|-----------------------------|----|----|----|-------|-----|-------|------|-------|-------|-----|------|
| South: Winchester St (NB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | | | | | |
| From S | | | | | | Cap. | Deg. | Lane | Prob. | Ov. | |
| To Exit: | W | N | E | | | veh/h | v/c | Util. | SL | Ov. | Lane |
| | | | | | | | | % | % | % | No. |
| | | | | | | | | | | | |

| | | | | | | | | | | | |
|----------------------------------|------|-----|------|-------|-------|-----|------------|------------|--------------|--------------|--------------|
| Lane 1 | 122 | 114 | - | 235 | 0.5 | | 556 | 0.423 | 100 | NA | NA |
| Lane 2 | - | - | 77 | 77 | 0.0 | | 361 | 0.214 | 100 | 0.0 | 1 |
| Approach | 122 | 114 | 77 | 313 | 0.4 | | | 0.423 | | | |
| East: Lee Hwy (WB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From E To Exit: | E | S | W | N | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 10 | 70 | 543 | - | 623 | 1.7 | 857 | 0.726 | 100 | NA | NA |
| Lane 2 | - | - | 638 | 123 | 761 | 2.0 | 1047 | 0.726 | 100 | NA | NA |
| Approach | 10 | 70 | 1180 | 123 | 1383 | 1.9 | | 0.726 | | | |
| North: Broadview Ave (SB) | | | | | | | | | | | |
| Mov. | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. | |
| From N To Exit: | E | S | W | | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 249 | 98 | - | 347 | 0.7 | | 426 | 0.815 | 100 | 0.0 | 2 |
| Lane 2 | - | - | 413 | 413 | 4.0 | | 487 | 0.848 | 100 | NA | NA |
| Approach | 249 | 98 | 413 | 759 | 2.5 | | | 0.848 | | | |
| West: Broadview Ave (EB) | | | | | | | | | | | |
| Mov. | U | L2 | T1 | R2 | Total | %HV | | Deg. Satn | Lane Util. | Prob. SL Ov. | Ov. Lane No. |
| From W To Exit: | W | N | E | S | | | Cap. veh/h | v/c | % | % | |
| Lane 1 | 2 | 293 | 252 | - | 547 | 2.5 | 913 | 0.599 | 100 | NA | NA |
| Lane 2 | - | - | 618 | 46 | 664 | 1.9 | 1108 | 0.599 | 100 | NA | NA |
| Approach | 2 | 293 | 870 | 46 | 1210 | 2.2 | | 0.599 | | | |
| Total %HV Deg.Satn (v/c) | | | | | | | | | | | |
| All Vehicles | 3666 | 2.0 | | 0.848 | | | | | | | |

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

| Merge Analysis | | | | | | | | | | | | |
|--|----------------------|------------------------|--------------------------|------------------|-----------------------|----------------------|----------------|---------------|----------------|-----------------|--|--|
| Exit Lane Number | Short Lane Length ft | Percent Opng in Lane % | Opposing Flow Rate veh/h | Critical Gap sec | Follow-up Headway sec | Lane Flow Rate veh/h | Capacity veh/h | Deg. Satn v/c | Min. Delay sec | Merge Delay sec | | |
| There are no Exit Short Lanes for Merge Analysis at this Site. | | | | | | | | | | | | |

| Variable Demand Analysis | | | | |
|----------------------------------|---------------------------|----------------------------|---------------------------------------|--------------------------|
| | Initial Queued Demand veh | Residual Queued Demand veh | Time for Residual Demand to Clear sec | Duration of Oversatn sec |
| South: Winchester St (NB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| East: Lee Hwy (WB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| North: Broadview Ave (SB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |

| | | | | |
|--------------------------|-----|-----|-----|-----|
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |
| West: Broadview Ave (EB) | | | | |
| Lane 1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane 2 | 0.0 | 0.0 | 0.0 | 0.0 |

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Project: U:\3243\001. Warrenton Village Center\Analysis\Sidra\2nd Submission\2027 TF.sip9

HCM 6th TWSC
 2: COMMERCIAL DRIVEWAY/WARRENTON CENTER & LEE HWY

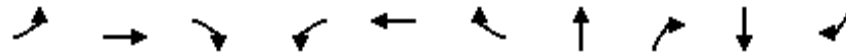
| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.6 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↑↑ | ↑ | | ↑↑ | ↑ | | | ↑ | | | ↑ |
| Traffic Vol, veh/h | 0 | 1075 | 83 | 0 | 1247 | 104 | 0 | 0 | 25 | 0 | 0 | 80 |
| Future Vol, veh/h | 0 | 1075 | 83 | 0 | 1247 | 104 | 0 | 0 | 25 | 0 | 0 | 80 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | 110 | - | - | 300 | - | - | 0 | - | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 1 | - | - | 3 | - | - | 3 | - | - | -11 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 1156 | 89 | 0 | 1341 | 112 | 0 | 0 | 27 | 0 | 0 | 86 |

| Major/Minor | Major1 | | Major2 | | Minor1 | | Minor2 | | | | | |
|----------------------|--------|---|--------|---|--------|---|--------|---|------|---|---|-----|
| Conflicting Flow All | - | 0 | 0 | - | - | 0 | - | - | 578 | - | - | 675 |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy | - | - | - | - | - | - | - | - | 7.28 | - | - | 5.8 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Follow-up Hdwy | - | - | - | - | - | - | - | - | 3.34 | - | - | 3.3 |
| Pot Cap-1 Maneuver | 0 | - | - | 0 | - | - | 0 | 0 | 433 | 0 | 0 | 493 |
| Stage 1 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Stage 2 | 0 | - | - | 0 | - | - | 0 | 0 | - | 0 | 0 | - |
| Platoon blocked, % | - | - | - | - | - | - | - | - | - | - | - | - |
| Mov Cap-1 Maneuver | - | - | - | - | - | - | - | - | 433 | - | - | 491 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|----|------|------|
| HCM Control Delay, s | 0 | 0 | 13.9 | 13.9 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT | WBR | SBLn1 |
|-----------------------|-------|-----|-----|-----|-----|-------|
| Capacity (veh/h) | 433 | - | - | - | - | 491 |
| HCM Lane V/C Ratio | 0.062 | - | - | - | - | 0.175 |
| HCM Control Delay (s) | 13.9 | - | - | - | - | 13.9 |
| HCM Lane LOS | B | - | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - | - | 0.6 |

Queues
3: BRANCH DR & LEE HWY

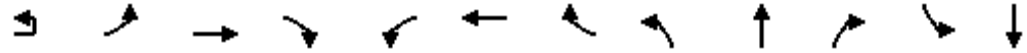


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBT | NBR | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 149 | 1006 | 2 | 68 | 1243 | 151 | 36 | 79 | 204 | 152 |
| v/c Ratio | 0.72 | 0.48 | 0.00 | 0.54 | 0.70 | 0.17 | 0.31 | 0.30 | 0.80 | 0.41 |
| Control Delay | 82.8 | 22.5 | 0.0 | 82.0 | 32.7 | 2.3 | 72.2 | 3.0 | 83.9 | 9.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 82.8 | 22.5 | 0.0 | 82.0 | 32.7 | 2.3 | 72.2 | 3.0 | 83.9 | 9.8 |
| Queue Length 50th (ft) | 148 | 333 | 0 | 68 | 508 | 0 | 36 | 0 | 201 | 0 |
| Queue Length 95th (ft) | 224 | 441 | 0 | 123 | 675 | 28 | 73 | 0 | #344 | 58 |
| Internal Link Dist (ft) | | 457 | | | 1504 | | 131 | | 565 | |
| Turn Bay Length (ft) | 240 | | 330 | 150 | | 150 | | 60 | | |
| Base Capacity (vph) | 260 | 2078 | 960 | 157 | 1773 | 876 | 202 | 327 | 268 | 377 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.57 | 0.48 | 0.00 | 0.43 | 0.70 | 0.17 | 0.18 | 0.24 | 0.76 | 0.40 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
3: BRANCH DR & LEE HWY



| Movement | EBU | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | | |
|-----------------------------------|------|-------|-------|------|------|-------|------|-------|-------|------|-------|---------------------------|----------------------|---|
| Lane Configurations | | ↔ | ↕ | ↗ | ↖ | ↕ | ↗ | | ↖ | ↗ | | ↖ | | |
| Traffic Volume (vph) | 9 | 133 | 956 | 2 | 65 | 1181 | 143 | 17 | 17 | 75 | 176 | 18 | | |
| Future Volume (vph) | 9 | 133 | 956 | 2 | 65 | 1181 | 143 | 17 | 17 | 75 | 176 | 18 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Grade (%) | | | -4% | | | 2% | | | 0% | | | -1% | | |
| Total Lost time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 | | |
| Lane Util. Factor | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 1.00 | 1.00 | | 1.00 | | |
| Frbp, ped/bikes | | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | |
| Frt | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 | | 1.00 | | |
| Flt Protected | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 | | |
| Satd. Flow (prot) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1810 | | |
| Flt Permitted | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.96 | | |
| Satd. Flow (perm) | | 1807 | 3682 | 1602 | 1787 | 3504 | 1558 | | 1854 | 1615 | | 1810 | | |
| Peak-hour factor, PHF | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | | |
| Adj. Flow (vph) | 9 | 140 | 1006 | 2 | 68 | 1243 | 151 | 18 | 18 | 79 | 185 | 19 | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 1 | 0 | 0 | 74 | 0 | 0 | 74 | 0 | 0 | | |
| Lane Group Flow (vph) | 0 | 149 | 1006 | 1 | 68 | 1243 | 77 | 0 | 36 | 5 | 0 | 204 | | |
| Confl. Peds. (#/hr) | | | | 2 | | | 2 | | | | | | | |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 0% | 2% | 1% | 0% | 0% | 0% | 1% | 0% | | |
| Turn Type | Prot | Prot | NA | Perm | Prot | NA | Perm | Split | NA | Perm | Split | NA | | |
| Protected Phases | 1 | 1 | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 | | |
| Permitted Phases | | | | 6 | | | 2 | | | 4 | | | | |
| Actuated Green, G (s) | | 17.2 | 83.4 | 83.4 | 9.3 | 76.0 | 76.0 | | 9.5 | 9.5 | | 21.2 | | |
| Effective Green, g (s) | | 17.2 | 83.4 | 83.4 | 9.3 | 76.0 | 76.0 | | 9.5 | 9.5 | | 21.2 | | |
| Actuated g/C Ratio | | 0.11 | 0.56 | 0.56 | 0.06 | 0.51 | 0.51 | | 0.06 | 0.06 | | 0.14 | | |
| Clearance Time (s) | | 6.4 | 5.7 | 5.7 | 6.8 | 5.6 | 5.6 | | 6.6 | 6.6 | | 7.5 | | |
| Vehicle Extension (s) | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | |
| Lane Grp Cap (vph) | | 207 | 2047 | 890 | 110 | 1775 | 789 | | 117 | 102 | | 255 | | |
| v/s Ratio Prot | | c0.08 | 0.27 | | 0.04 | c0.35 | | | c0.02 | | | c0.11 | | |
| v/s Ratio Perm | | | | 0.00 | | | 0.05 | | | 0.00 | | | | |
| v/c Ratio | | 0.72 | 0.49 | 0.00 | 0.62 | 0.70 | 0.10 | | 0.31 | 0.05 | | 0.80 | | |
| Uniform Delay, d1 | | 64.1 | 20.3 | 14.8 | 68.6 | 28.3 | 19.2 | | 67.1 | 66.0 | | 62.3 | | |
| Progression Factor | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | |
| Incremental Delay, d2 | | 11.4 | 0.8 | 0.0 | 9.9 | 2.3 | 0.2 | | 1.5 | 0.2 | | 16.3 | | |
| Delay (s) | | 75.4 | 21.2 | 14.8 | 78.5 | 30.6 | 19.4 | | 68.6 | 66.2 | | 78.6 | | |
| Level of Service | | E | C | B | E | C | B | | E | E | | E | | |
| Approach Delay (s) | | | 28.2 | | | 31.7 | | | 67.0 | | | 69.1 | | |
| Approach LOS | | | C | | | C | | | E | | | E | | |
| Intersection Summary | | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 36.0 | | | | | | | | | HCM 2000 Level of Service | D | |
| HCM 2000 Volume to Capacity ratio | | | 0.69 | | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | | | | 26.6 | | | | | |
| Intersection Capacity Utilization | | | 76.2% | | | | | | | | | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | | |

| | |
|-----------------------------|------|
| Movement | SBR |
| Lane Configurations | 7 |
| Traffic Volume (vph) | 144 |
| Future Volume (vph) | 144 |
| Ideal Flow (vphpl) | 1900 |
| Grade (%) | |
| Total Lost time (s) | 7.5 |
| Lane Util. Factor | 1.00 |
| Frbp, ped/bikes | 1.00 |
| Flpb, ped/bikes | 1.00 |
| Frt | 0.85 |
| Flt Protected | 1.00 |
| Satd. Flow (prot) | 1607 |
| Flt Permitted | 1.00 |
| Satd. Flow (perm) | 1607 |
| Peak-hour factor, PHF | 0.95 |
| Adj. Flow (vph) | 152 |
| RTOR Reduction (vph) | 131 |
| Lane Group Flow (vph) | 21 |
| Confl. Peds. (#/hr) | |
| Heavy Vehicles (%) | 1% |
| Turn Type | Perm |
| Protected Phases | |
| Permitted Phases | 3 |
| Actuated Green, G (s) | 21.2 |
| Effective Green, g (s) | 21.2 |
| Actuated g/C Ratio | 0.14 |
| Clearance Time (s) | 7.5 |
| Vehicle Extension (s) | 3.0 |
| Lane Grp Cap (vph) | 227 |
| v/s Ratio Prot | |
| v/s Ratio Perm | 0.01 |
| v/c Ratio | 0.09 |
| Uniform Delay, d1 | 56.0 |
| Progression Factor | 1.00 |
| Incremental Delay, d2 | 0.2 |
| Delay (s) | 56.2 |
| Level of Service | E |
| Approach Delay (s) | |
| Approach LOS | |
| Intersection Summary | |

HCM 6th Edition methodology expects strict NEMA phasing.

Intersection

Int Delay, s/veh 8.4

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 17 | 77 | 120 | 45 | 50 | 41 | 97 | 101 | 12 | 48 | 75 | 32 |
| Future Vol, veh/h | 17 | 77 | 120 | 45 | 50 | 41 | 97 | 101 | 12 | 48 | 75 | 32 |
| Conflicting Peds, #/hr | 0 | 0 | 14 | 14 | 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 | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -8 | - | - | -2 | - | - | 1 | - | - | -1 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 0 | 0 | 2 | 0 | 2 | 5 | 0 | 2 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 18 | 80 | 125 | 47 | 52 | 43 | 101 | 105 | 13 | 50 | 78 | 33 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|-----|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 476 | 515 | 70 | 507 | 525 | 59 | 111 | 0 | 0 | 118 | 0 | 0 |
| Stage 1 | 195 | 195 | - | 314 | 314 | - | - | - | - | - | - | - |
| Stage 2 | 281 | 320 | - | 193 | 211 | - | - | - | - | - | - | - |
| Critical Hdwy | 5.9 | 4.9 | 6.14 | 7.1 | 6.14 | 6.8 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 4.9 | 3.9 | - | 6.1 | 5.14 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.32 | 3.5 | 4.02 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 589 | 586 | 994 | 479 | 483 | 988 | 1492 | - | - | 1483 | - | - |
| Stage 1 | 866 | 810 | - | 701 | 678 | - | - | - | - | - | - | - |
| Stage 2 | 802 | 756 | - | 813 | 744 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 471 | 524 | 982 | 336 | 432 | 988 | 1492 | - | - | 1483 | - | - |
| Mov Cap-2 Maneuver | 471 | 524 | - | 336 | 432 | - | - | - | - | - | - | - |
| Stage 1 | 803 | 781 | - | 650 | 629 | - | - | - | - | - | - | - |
| Stage 2 | 652 | 701 | - | 607 | 717 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|----|--|-----|--|-----|--|
| HCM Control Delay, s | 12.5 | | 16 | | 3.6 | | 2.4 | |
| HCM LOS | B | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 1492 | - | - | 701 | 467 | 1483 | - | - |
| HCM Lane V/C Ratio | 0.068 | - | - | 0.318 | 0.303 | 0.034 | - | - |
| HCM Control Delay (s) | 7.6 | 0.1 | - | 12.5 | 16 | 7.5 | 0.1 | - |
| HCM Lane LOS | A | A | - | B | C | A | A | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.4 | 1.3 | 0.1 | - | - |

Intersection

Int Delay, s/veh 4.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | ↕ | | ↕ | |
| Traffic Vol, veh/h | 3 | 116 | 119 | 31 | 128 | 2 | 118 | 2 | 39 | 1 | 5 | 1 |
| Future Vol, veh/h | 3 | 116 | 119 | 31 | 128 | 2 | 118 | 2 | 39 | 1 | 5 | 1 |
| Conflicting Peds, #/hr | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | 0 | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 1 | - | - | 2 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 3 | 0 | 4 | 1 | 0 | 3 | 0 | 3 | 0 | 0 | 0 |
| Mvmt Flow | 3 | 126 | 129 | 34 | 139 | 2 | 128 | 2 | 42 | 1 | 5 | 1 |

| Major/Minor | Major1 | Major2 | Minor1 | Minor2 |
|----------------------|--------|--------|--------|--------|
| Conflicting Flow All | 145 | 0 | 0 | 255 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Critical Hdwy | 4.1 | - | - | 4.14 |
| Critical Hdwy Stg 1 | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - |
| Follow-up Hdwy | 2.2 | - | - | 2.236 |
| Pot Cap-1 Maneuver | 1450 | - | - | 1298 |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |
| Platoon blocked, % | | - | - | - |
| Mov Cap-1 Maneuver | 1445 | - | - | 1298 |
| Mov Cap-2 Maneuver | - | - | - | - |
| Stage 1 | - | - | - | - |
| Stage 2 | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|-----|-----|------|------|
| HCM Control Delay, s | 0.1 | 1.5 | 13.2 | 11.3 |
| HCM LOS | | | B | B |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 511 | 836 | 1445 | - | - | 1298 | - | - | 579 |
| HCM Lane V/C Ratio | 0.255 | 0.051 | 0.002 | - | - | 0.026 | - | - | 0.013 |
| HCM Control Delay (s) | 14.4 | 9.5 | 7.5 | 0 | - | 7.8 | 0 | - | 11.3 |
| HCM Lane LOS | B | A | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 1 | 0.2 | 0 | - | - | 0.1 | - | - | 0 |

HCM 6th TWSC
6: SITE DRIVEWAY/HASTINGS LN & OAK SPRINGS DR

Intersection

Int Delay, s/veh 3.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 42 | 170 | 5 | 6 | 226 | 14 | 3 | 1 | 1 | 67 | 1 | 52 |
| Future Vol, veh/h | 42 | 170 | 5 | 6 | 226 | 14 | 3 | 1 | 1 | 67 | 1 | 52 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -3 | - | - | 1 | - | - | 0 | - | - | -5 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 2 | 0 | 2 | 2 |
| Mvmt Flow | 46 | 185 | 5 | 7 | 246 | 15 | 3 | 1 | 1 | 73 | 1 | 57 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-------|
| Conflicting Flow All | 262 | 0 | 0 | 190 | 0 | 0 | 577 | 556 | 190 | 552 | 551 | 255 |
| Stage 1 | - | - | - | - | - | - | 280 | 280 | - | 269 | 269 | - |
| Stage 2 | - | - | - | - | - | - | 297 | 276 | - | 283 | 282 | - |
| Critical Hdwy | 4.12 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 6.1 | 5.52 | 5.72 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 5.1 | 4.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 5.1 | 4.52 | - |
| Follow-up Hdwy | 2.218 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1302 | - | - | 1384 | - | - | 428 | 439 | 852 | 522 | 515 | 812 |
| Stage 1 | - | - | - | - | - | - | 727 | 679 | - | 799 | 740 | - |
| Stage 2 | - | - | - | - | - | - | 712 | 682 | - | 788 | 733 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1301 | - | - | 1384 | - | - | 383 | 418 | 851 | 501 | 491 | 811 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 383 | 418 | - | 501 | 491 | - |
| Stage 1 | - | - | - | - | - | - | 698 | 652 | - | 766 | 735 | - |
| Stage 2 | - | - | - | - | - | - | 657 | 677 | - | 753 | 704 | - |

| Approach | EB | | | WB | | | NB | | | SB | | |
|----------------------|-----|--|--|-----|--|--|------|--|--|------|--|--|
| HCM Control Delay, s | 1.5 | | | 0.2 | | | 13.3 | | | 12.7 | | |
| HCM LOS | | | | | | | B | | | B | | |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h) | 439 | 1301 | - | - | 1384 | - | - | 600 |
| HCM Lane V/C Ratio | 0.012 | 0.035 | - | - | 0.005 | - | - | 0.217 |
| HCM Control Delay (s) | 13.3 | 7.9 | 0 | - | 7.6 | 0 | - | 12.7 |
| HCM Lane LOS | B | A | A | - | A | A | - | B |
| HCM 95th %tile Q(veh) | 0 | 0.1 | - | - | 0 | - | - | 0.8 |

Intersection

Int Delay, s/veh 2.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 167 | 22 | 62 | 217 | 2 | 12 | 1 | 39 | 11 | 1 | 27 |
| Future Vol, veh/h | 5 | 167 | 22 | 62 | 217 | 2 | 12 | 1 | 39 | 11 | 1 | 27 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 75 | - | - | - | - | - | - | - | - | - | - | 50 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -5 | - | - | 3 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 3 | 2 | 2 | 2 | 0 | 2 | 2 | 2 | 0 | 2 | 0 |
| Mvmt Flow | 5 | 182 | 24 | 67 | 236 | 2 | 13 | 1 | 42 | 12 | 1 | 29 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|----------------------|--------|---|---|--------|---|---|--------|-------|-------|--------|-------|-----|
| Conflicting Flow All | 239 | 0 | 0 | 206 | 0 | 0 | 590 | 577 | 194 | 598 | 588 | 238 |
| Stage 1 | - | - | - | - | - | - | 204 | 204 | - | 372 | 372 | - |
| Stage 2 | - | - | - | - | - | - | 386 | 373 | - | 226 | 216 | - |
| Critical Hdwy | 4.1 | - | - | 4.12 | - | - | 7.12 | 6.52 | 6.22 | 7.1 | 6.52 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.52 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.12 | 5.52 | - | 6.1 | 5.52 | - |
| Follow-up Hdwy | 2.2 | - | - | 2.218 | - | - | 3.518 | 4.018 | 3.318 | 3.5 | 4.018 | 3.3 |
| Pot Cap-1 Maneuver | 1340 | - | - | 1365 | - | - | 419 | 427 | 847 | 417 | 421 | 806 |
| Stage 1 | - | - | - | - | - | - | 798 | 733 | - | 653 | 619 | - |
| Stage 2 | - | - | - | - | - | - | 637 | 618 | - | 781 | 724 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 1339 | - | - | 1365 | - | - | 384 | 401 | 847 | 377 | 395 | 805 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 384 | 401 | - | 377 | 395 | - |
| Stage 1 | - | - | - | - | - | - | 795 | 730 | - | 650 | 583 | - |
| Stage 2 | - | - | - | - | - | - | 578 | 582 | - | 738 | 721 | - |

| Approach | EB | | | WB | | | NB | | | SB | | |
|----------------------|-----|--|--|-----|--|--|----|--|--|------|--|--|
| HCM Control Delay, s | 0.2 | | | 1.7 | | | 11 | | | 11.2 | | |
| HCM LOS | | | | | | | B | | | B | | |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 | SBLn2 |
|-----------------------|-------|-------|-----|-----|-------|-----|-----|-------|-------|
| Capacity (veh/h) | 652 | 1339 | - | - | 1365 | - | - | 378 | 805 |
| HCM Lane V/C Ratio | 0.087 | 0.004 | - | - | 0.049 | - | - | 0.035 | 0.036 |
| HCM Control Delay (s) | 11 | 7.7 | - | - | 7.8 | 0 | - | 14.9 | 9.6 |
| HCM Lane LOS | B | A | - | - | A | A | - | B | A |
| HCM 95th %tile Q(veh) | 0.3 | 0 | - | - | 0.2 | - | - | 0.1 | 0.1 |

Intersection

Int Delay, s/veh 7.2

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | ↗ | ↖ | ↗ | ↖ | ↖ | ↗ | ↗ |
| Traffic Vol, veh/h | 2 | 1 | 4 | 111 | 1 | 145 | 2 | 376 | 96 | 97 | 510 | 2 |
| Future Vol, veh/h | 2 | 1 | 4 | 111 | 1 | 145 | 2 | 376 | 96 | 97 | 510 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 4 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 100 | - | 0 | 90 | - | 130 | 225 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | -2 | - | - | 4 | - | - | 2 | - | - | 3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 4 | 1 | 4 | 0 |
| Mvmt Flow | 2 | 1 | 4 | 121 | 1 | 158 | 2 | 409 | 104 | 105 | 554 | 2 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | | Major2 | | | | |
|----------------------|--------|------|--------|------|--------|------|------|--------|---|------|---|---|
| Conflicting Flow All | 978 | 1287 | 282 | 902 | 1184 | 206 | 560 | 0 | 0 | 514 | 0 | 0 |
| Stage 1 | 769 | 769 | - | 414 | 414 | - | - | - | - | - | - | - |
| Stage 2 | 209 | 518 | - | 488 | 770 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.1 | 6.7 | 8.32 | 7.3 | 7.34 | 4.1 | - | - | 4.12 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.1 | - | 7.32 | 6.3 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.51 | 4 | 3.32 | 2.2 | - | - | 2.21 | - | - |
| Pot Cap-1 Maneuver | 232 | 191 | 732 | 192 | 147 | 782 | 1021 | - | - | 1055 | - | - |
| Stage 1 | 397 | 450 | - | 537 | 544 | - | - | - | - | - | - | - |
| Stage 2 | 798 | 568 | - | 478 | 348 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 169 | 171 | 730 | 175 | 132 | 781 | 1018 | - | - | 1054 | - | - |
| Mov Cap-2 Maneuver | 169 | 171 | - | 175 | 132 | - | - | - | - | - | - | - |
| Stage 1 | 395 | 404 | - | 535 | 542 | - | - | - | - | - | - | - |
| Stage 2 | 634 | 566 | - | 427 | 312 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | | SB | | |
|----------------------|------|--|------|--|----|--|--|-----|--|--|
| HCM Control Delay, s | 17.2 | | 33.7 | | 0 | | | 1.4 | | |
| HCM LOS | C | | D | | | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|------|-----|-----|
| Capacity (veh/h) | 1018 | - | - | 302 | 174 | 781 | 1054 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | 0.025 | 0.7 | 0.202 | 0.1 | - | - |
| HCM Control Delay (s) | 8.5 | - | - | 17.2 | 63.4 | 10.8 | 8.8 | - | - |
| HCM Lane LOS | A | - | - | C | F | B | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 4.2 | 0.8 | 0.3 | - | - |

9: BROADVIEW AVE & COMMERCIAL DRIVEWAY/WARRENTON NORTH DRIVEWAY 2027 Total Future

Intersection

Int Delay, s/veh 2.3

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | ↕ | ↕ | | ↕ | ↕ | ↕ | ↕ | ↕ | |
| Traffic Vol, veh/h | 10 | 1 | 17 | 40 | 1 | 39 | 15 | 425 | 28 | 43 | 576 | 6 |
| Future Vol, veh/h | 10 | 1 | 17 | 40 | 1 | 39 | 15 | 425 | 28 | 43 | 576 | 6 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 5 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 0 | - | - | 150 | - | 135 | 110 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 5 | - | - | 3 | - | - | 4 | - | - | -2 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 3 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 1 | 18 | 43 | 1 | 42 | 16 | 462 | 30 | 47 | 626 | 7 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|------|--------|---|---|------|---|---|
| Conflicting Flow All | 993 | 1253 | 322 | 902 | 1226 | 231 | 638 | 0 | 0 | 492 | 0 | 0 |
| Stage 1 | 729 | 729 | - | 494 | 494 | - | - | - | - | - | - | - |
| Stage 2 | 264 | 524 | - | 408 | 732 | - | - | - | - | - | - | - |
| Critical Hdwy | 8.5 | 7.5 | 7.4 | 8.1 | 7.1 | 7.3 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 7.5 | 6.5 | - | 7.1 | 6.1 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.35 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 154 | 123 | 650 | 203 | 147 | 748 | 956 | - | - | 1082 | - | - |
| Stage 1 | 314 | 352 | - | 489 | 506 | - | - | - | - | - | - | - |
| Stage 2 | 673 | 461 | - | 557 | 380 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 137 | 115 | 647 | 187 | 138 | 748 | 952 | - | - | 1082 | - | - |
| Mov Cap-2 Maneuver | 137 | 115 | - | 187 | 138 | - | - | - | - | - | - | - |
| Stage 1 | 307 | 335 | - | 481 | 497 | - | - | - | - | - | - | - |
| Stage 2 | 623 | 453 | - | 516 | 362 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 20.7 | | 20.3 | | 0.3 | | 0.6 | |
| HCM LOS | C | | C | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 952 | - | - | 259 | 187 | 674 | 1082 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.118 | 0.233 | 0.065 | 0.043 | - | - |
| HCM Control Delay (s) | 8.8 | - | - | 20.7 | 30 | 10.7 | 8.5 | - | - |
| HCM Lane LOS | A | - | - | C | D | B | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.4 | 0.9 | 0.2 | 0.1 | - | - |

10: JAMES MADISON HWY & BROADVIEW AVE & WARRENTON SOUTH DRIVEWAY Total Future

Intersection

Int Delay, s/veh 10.7

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↙ | ↑ | ↗ | ↙ | ↗ | | ↙ | ↑↑ | ↗ | ↙ | ↑↑ | ↗ |
| Traffic Vol, veh/h | 103 | 61 | 173 | 44 | 27 | 25 | 88 | 340 | 79 | 7 | 512 | 114 |
| Future Vol, veh/h | 103 | 61 | 173 | 44 | 27 | 25 | 88 | 340 | 79 | 7 | 512 | 114 |
| Conflicting Peds, #/hr | 6 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 3 | 3 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | Yield | - | - | None | - | - | None | - | - | None |
| Storage Length | 100 | - | 230 | 0 | - | - | 160 | - | 175 | 160 | - | 125 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 3 | - | - | -3 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 4 | 1 |
| Mvmt Flow | 112 | 66 | 188 | 48 | 29 | 27 | 96 | 370 | 86 | 8 | 557 | 124 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|-----|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 971 | 1224 | 279 | 893 | 1262 | 194 | 681 | 0 | 0 | 459 | 0 | 0 |
| Stage 1 | 573 | 573 | - | 565 | 565 | - | - | - | - | - | - | - |
| Stage 2 | 398 | 651 | - | 328 | 697 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.54 | 6.5 | 6.92 | 7.5 | 6.5 | 6.9 | 4.12 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.54 | 5.5 | - | 6.5 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.52 | 4 | 3.31 | 3.5 | 4 | 3.3 | 2.21 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 207 | 181 | 721 | 239 | 171 | 821 | 914 | - | - | 1113 | - | - |
| Stage 1 | 472 | 507 | - | 482 | 511 | - | - | - | - | - | - | - |
| Stage 2 | 599 | 468 | - | 664 | 446 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 155 | 161 | 721 | 110 | 152 | 815 | 914 | - | - | 1110 | - | - |
| Mov Cap-2 Maneuver | 155 | 161 | - | 110 | 152 | - | - | - | - | - | - | - |
| Stage 1 | 422 | 503 | - | 430 | 456 | - | - | - | - | - | - | - |
| Stage 2 | 482 | 418 | - | 423 | 443 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 35.9 | | 40.7 | | 1.6 | | 0.1 | |
| HCM LOS | E | | E | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | EBLn2 | EBLn3 | WBLn1 | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h) | 914 | - | - | 155 | 161 | 721 | 110 | 250 | 1110 | - | - |
| HCM Lane V/C Ratio | 0.105 | - | - | 0.722 | 0.412 | 0.261 | 0.435 | 0.226 | 0.007 | - | - |
| HCM Control Delay (s) | 9.4 | - | - | 72.8 | 42.2 | 11.7 | 60.8 | 23.6 | 8.3 | - | - |
| HCM Lane LOS | A | - | - | F | E | B | F | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 4.3 | 1.8 | 1 | 1.9 | 0.8 | 0 | - | - |

J. Turn Lane Warrant Tables and Charts

Left Turn Lane Warrant Assessment

Two-Lane Highways

Based on AASHTO / VDOT RDM Appendix F

Background:

Warrants for left-turn storage lanes on two-lane highways at unsignalized intersections are based on Figure 3-4 to Figure 3-21 in Appendix F of the Virginia Department of Transportation's (VDOT) *Road Design Manual* (RDM). The figures provide a graphical representation for determining the necessity of a left turn lane by comparing the advancing volumes of a given approach and the respective opposing volumes and are differentiated by design speed and percent left turning volume.

Project Information:

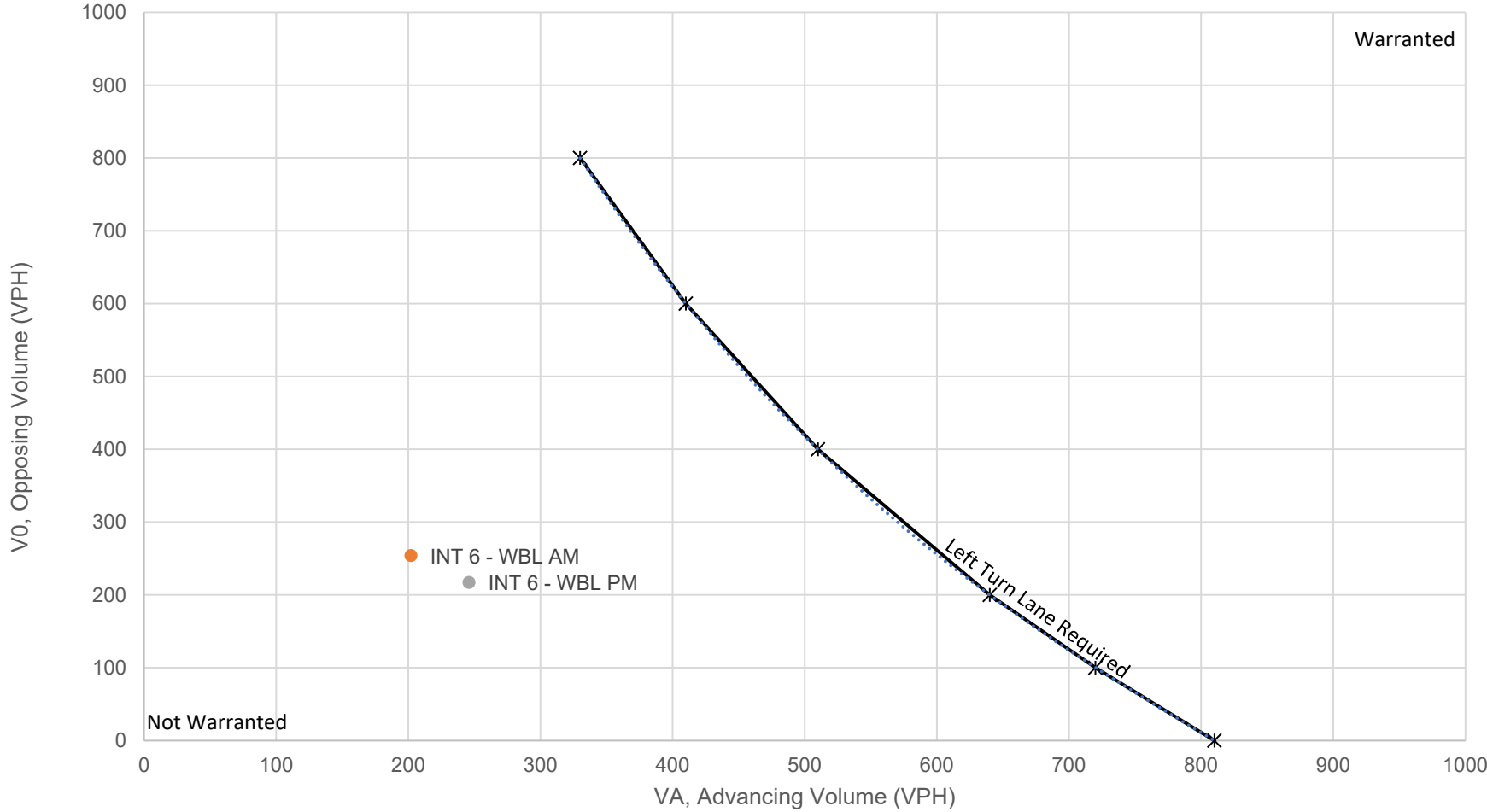
| | |
|---|--|
| Project: | Warrenton Village |
| Project ID: | |
| Intersection(s) and Movement(s): | 6 - Oak Springs Drive at Hastings Lane / Future Access (WB) 7 - Oak Springs Drive at High School Driveway / Future Garage Access (WB) |
| Scenario: | 2027 Future Conditions with Development |
| Analysis: | Gorove Slade |

Design Speed (mph): (40, 50, or 60?)

Assessment Summary:

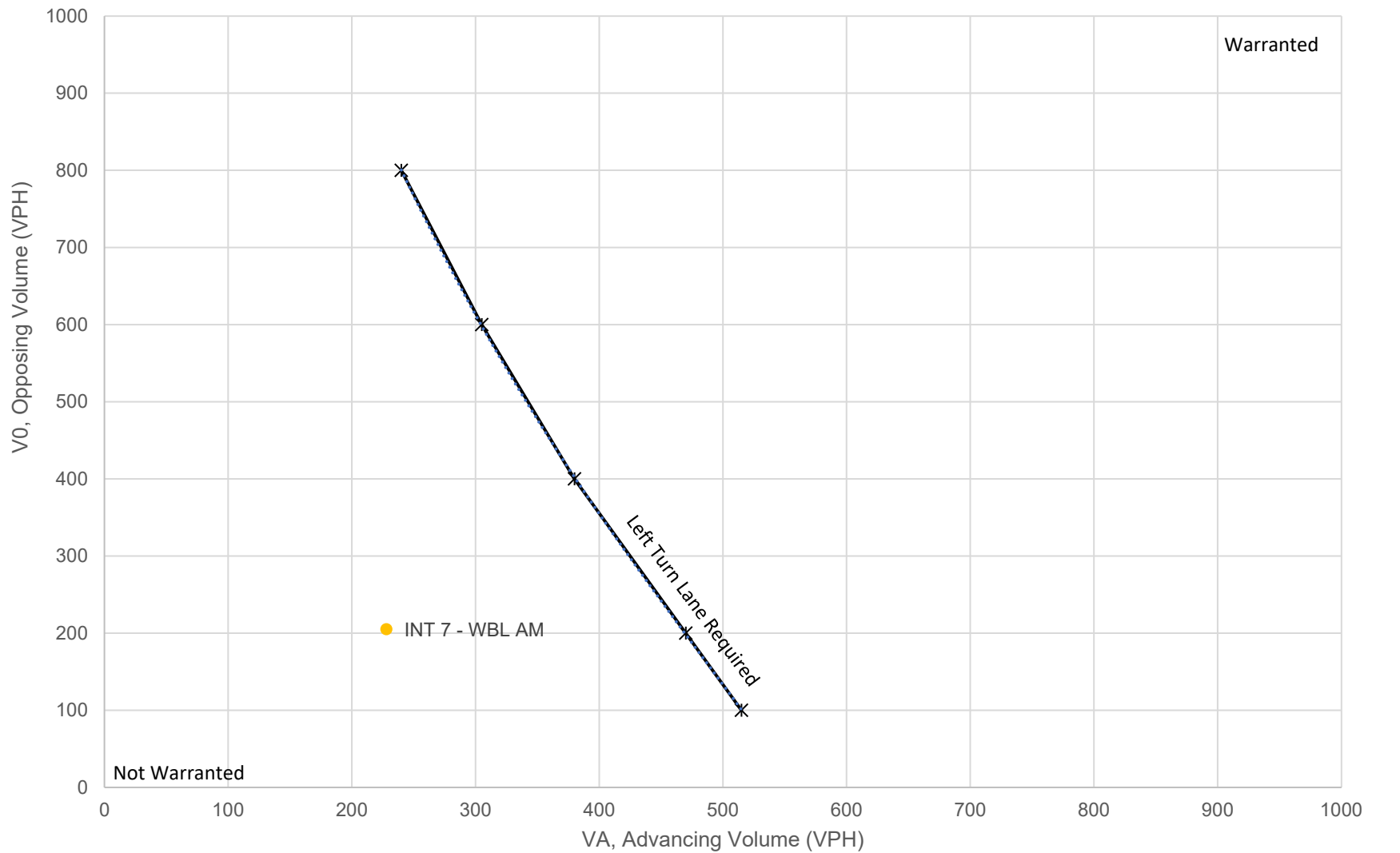
| Study Scenario | Input | | | VDOT Calculated Thesholds | | | |
|----------------|---------------------|----------------------|----------------------|---------------------------|----------------------------------|-------------------|---------------|
| | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turn Vol. (VPH) | Left Turn % | Minimum Opposing Threshold (VPH) | VDOT RDM F Figure | Treatment |
| INT 6 - WBL AM | 254 | 202 | 2 | 0.99% | 1,208 | Fig. 3-4 | Not Warranted |
| INT 6 - WBL PM | 217 | 246 | 6 | 2.44% | 1,054 | Fig. 3-4 | Not Warranted |
| INT 7 - WBL AM | 205 | 228 | 19 | 8.33% | 841 | Fig. 3-5 | Not Warranted |
| INT 7 - WBL PM | 194 | 281 | 62 | 22.06% | 274 | Fig. 3-8 | Not Warranted |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

VDOT RDM-F Figure 3-4 Warrant for Left Turn Storage Lanes on 2-Lane Highways at 40-mph & 5% Left Turns



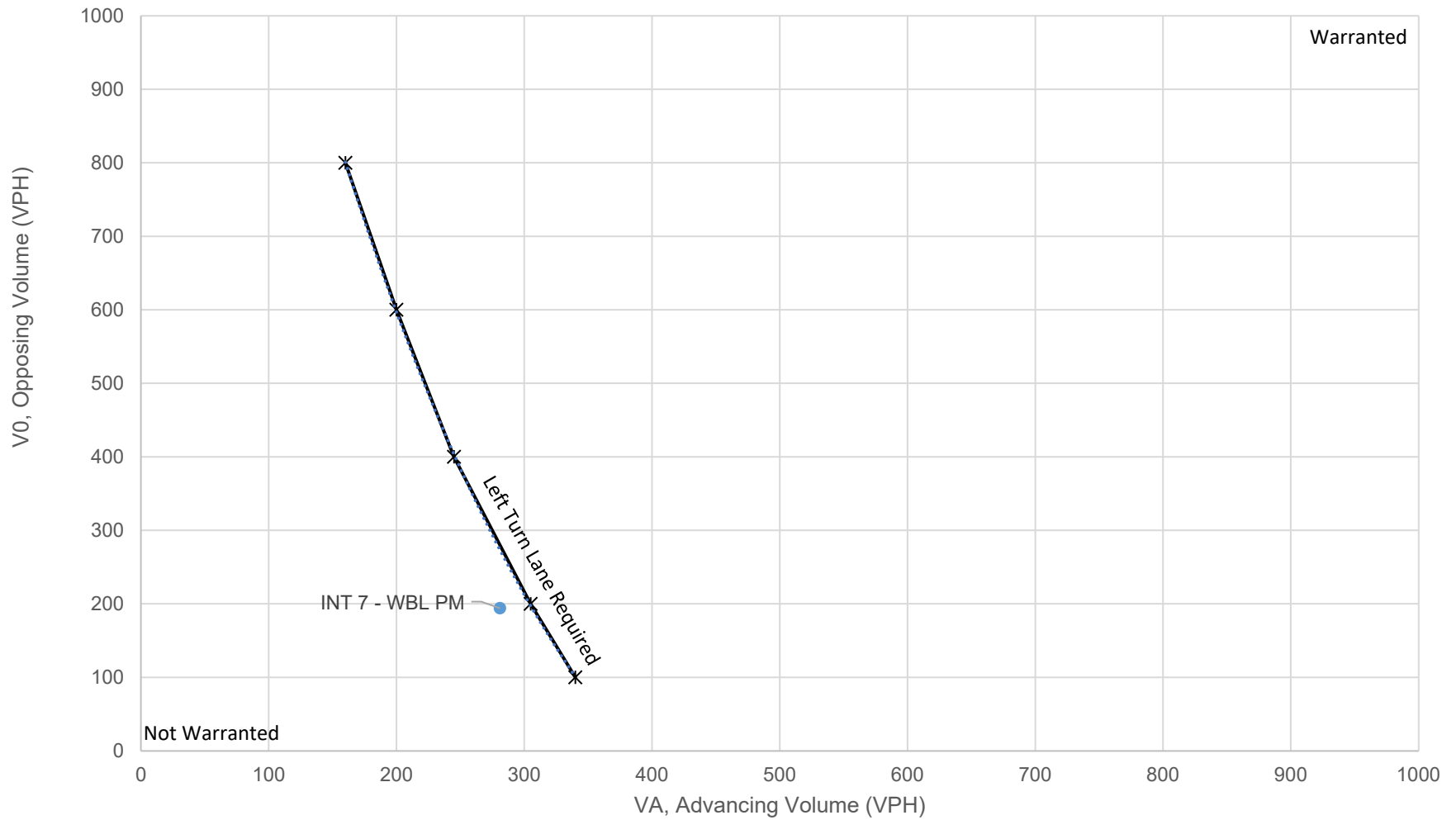
$$y = -2E-06x^3 + 0.0053x^2 - 5.5692x + 2132.8$$
$$R^2 = 1$$

VDOT RDM-F Figure 3-5 Warrant for Left Turn Storage Lanes on 2-Lane Highways at 40-mph & 10% Left Turns



$$y = -6E-06x^3 + 0.0094x^2 - 6.8063x + 1981.6$$
$$R^2 = 1$$

VDOT RDM-F Figure 3-8 Warrant for Left Turn Storage Lanes on 2-Lane Highways at 40-mph & 30% Left Turns



$$y = -8E-06x^3 + 0.0143x^2 - 9.4443x + 1979.9$$
$$R^2 = 0.9999$$

Left Turn Lane Warrant Assessment

Four-Lane Highways

Background:

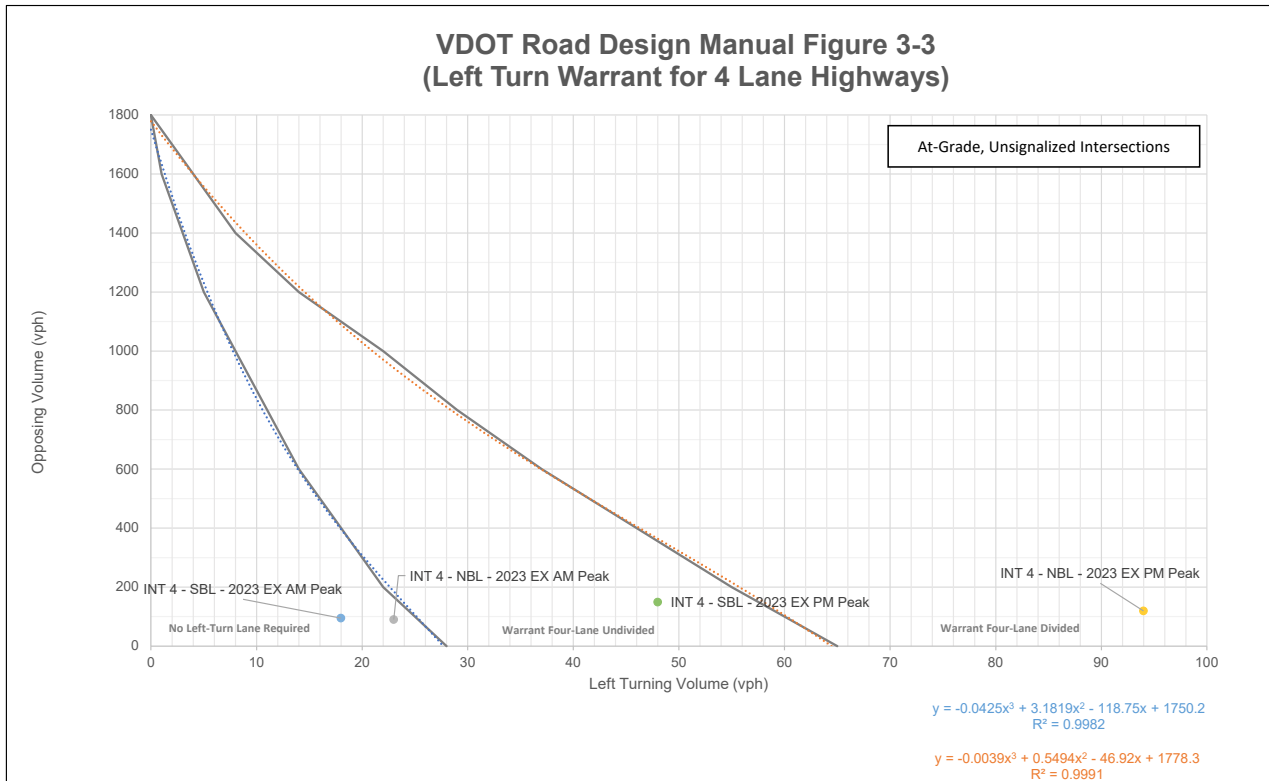
Warrants for left-turn storage lanes on four-lane highways at unsignalized intersections are based on Figure 3-3 in Appendix F of the Virginia Department of Transportation's (VDOT) *Road Design Manual* (RDM). The figure provides a graphical representation for determining the necessity of a left turn lane for divided and undivided roadway conditions by comparing the left turning volumes of a given approach and the respective opposing traffic volume.

Project Information:

| | |
|---|--|
| Project: | |
| Project ID: | |
| Intersection(s) and Movement(s): | 4 - Branch Drive at Warrenton Village Center Driveway / Safeway Driveway (NBL & SBL) |
| Scenario: | 2023 Existing Conditions |
| Analysis: | Gorve Slade |

Assessment Summary:

| Input | | | | Result | |
|-------------------------------|---------------------|----------------------|-------------------------|-------------|--|
| Study Scenario | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turning Vol. (VPH) | Left Turn % | Treatment |
| INT 4 - NBL - 2023 EX AM Peak | 90 | 95 | 23 | 24.2% | Not Warranted |
| INT 4 - NBL - 2023 EX PM Peak | 119 | 149 | 94 | 63.1% | Full-width Turn Lane and Taper Warranted (for Undivided and Divided) |
| INT 4 - SBL - 2023 EX AM Peak | 95 | 90 | 18 | 20.0% | Not Warranted |
| INT 4 - SBL - 2023 EX PM Peak | 149 | 119 | 48 | 40.3% | Full-width Turn Lane and Taper Warranted (for Undivided) |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |



Left Turn Lane Warrant Assessment

Four-Lane Highways

Background:

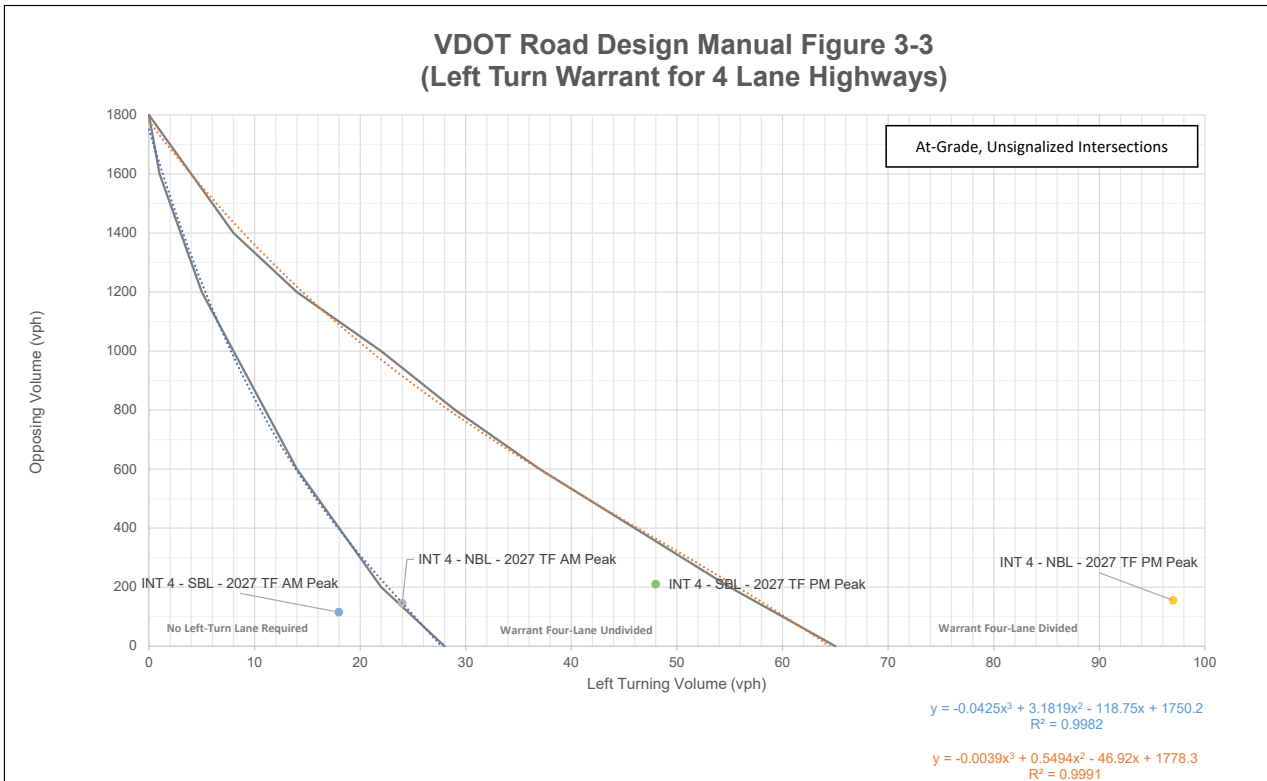
Warrants for left-turn storage lanes on four-lane highways at unsignalized intersections are based on Figure 3-3 in Appendix F of the Virginia Department of Transportation's (VDOT) *Road Design Manual* (RDM). The figure provides a graphical representation for determining the necessity of a left turn lane for divided and undivided roadway conditions by comparing the left turning volumes of a given approach and the respective opposing traffic volume.

Project Information:

| | |
|---|--|
| Project: | Warrenton Village Center |
| Project ID: | |
| Intersection(s) and Movement(s): | 4 - Branch Drive at Warrenton Village Center Driveway / Safeway Driveway (NBL & SBL) |
| Scenario: | 2027 Future Conditions with Development |
| Analysis: | Gorove Slade |

Assessment Summary:

| Input | | | | Result | |
|-------------------------------|---------------------|----------------------|-------------------------|-------------|--|
| Study Scenario | Opposing Vol. (VPH) | Advancing Vol. (VPH) | Left Turning Vol. (VPH) | Left Turn % | Treatment |
| INT 4 - NBL - 2027 TF AM Peak | 145 | 115 | 24 | 20.9% | Not Warranted |
| INT 4 - NBL - 2027 TF PM Peak | 155 | 210 | 97 | 46.2% | Full-width Turn Lane and Taper Warranted (for Undivided and Divided) |
| INT 4 - SBL - 2027 TF AM Peak | 115 | 145 | 18 | 12.4% | Not Warranted |
| INT 4 - SBL - 2027 TF PM Peak | 210 | 155 | 48 | 31.0% | Full-width Turn Lane and Taper Warranted (for Undivided) |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |



Right Turn Lane Warrant Assessment

Two-Lane Highways

Based on NCHRP Report 279 / VDOT RDM Appendix F
"Intersection Channelization Guide"

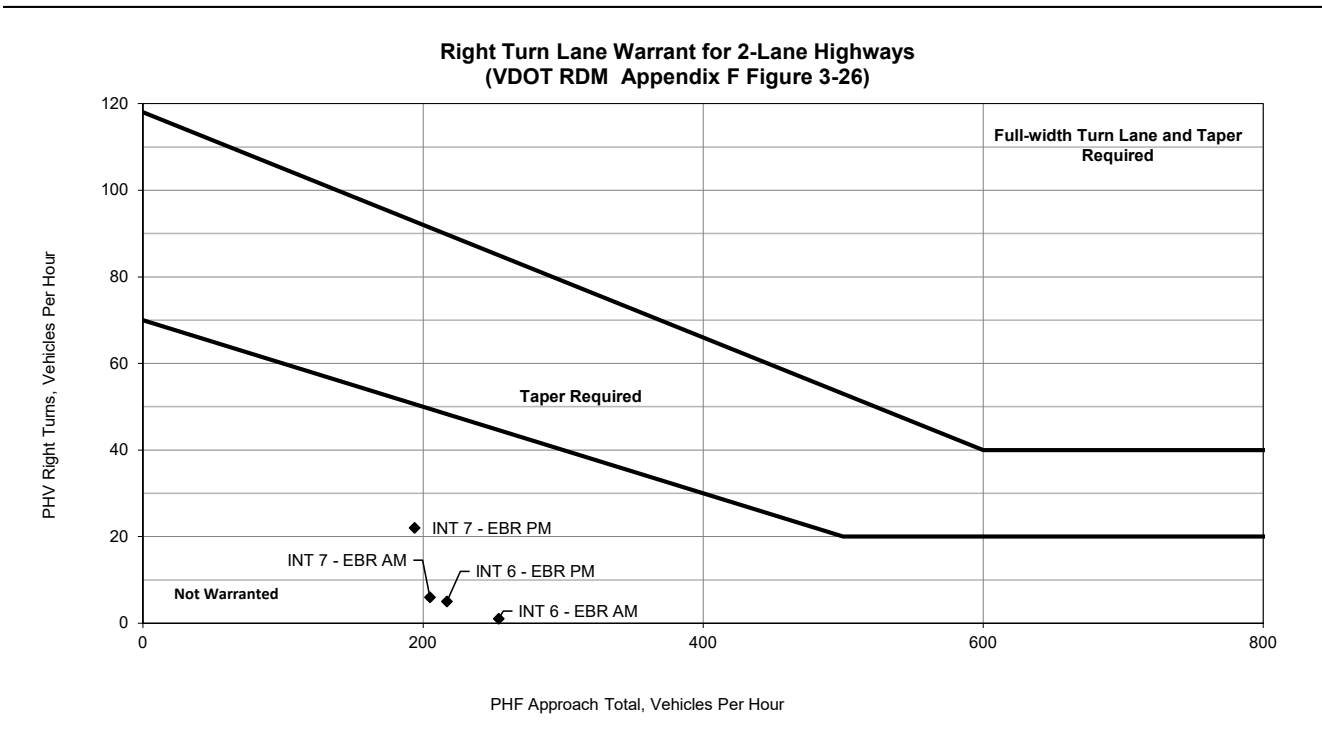
Background:

Warrants for right-turn storage lanes on two-lane highways at unsignalized intersections are based on Figure 3-26 in Appendix F of the Virginia Department of Transportation's (VDOT) *Road Design Manual* (RDM). This figure provides a graphical representation for determining the necessity of a right turn lane and / or taper by comparing the total volumes of a given approach with their respective right turn volumes.

Project Information:

| | |
|---|--|
| Project: | Warrenton Village Center |
| Project ID: | |
| Intersection(s) and Movement(s): | 6 - Oak Springs Drive at Hastings Lane / Future Access (EB) 7 - Oak Springs Drive at High School Driveway / Future Garage Access (EB) |
| Scenario: | 2027 Future Conditions with Development |
| Analyst: | Gorove Slade |

| Study Scenario | Approach Volume | Right Turn Volume | Minimum Right Turn Taper Threshold | Minimum Right Turn Full Lane Threshold | Treatment |
|----------------|-----------------|-------------------|------------------------------------|--|---------------|
| INT 6 - EBR AM | 254 | 1 | 45 | 85 | Not Warranted |
| INT 6 - EBR PM | 217 | 5 | 48 | 90 | Not Warranted |
| INT 7 - EBR AM | 205 | 6 | 50 | 91 | Not Warranted |
| INT 7 - EBR PM | 194 | 22 | 51 | 93 | Not Warranted |
| | | | | | |
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| | | | | | |



Right Turn Lane Warrant Assessment

Four-Lane Highways

Based on NCHRP Report 279 / VDOT RDM Appendix F
 "Intersection Channelization Guide"

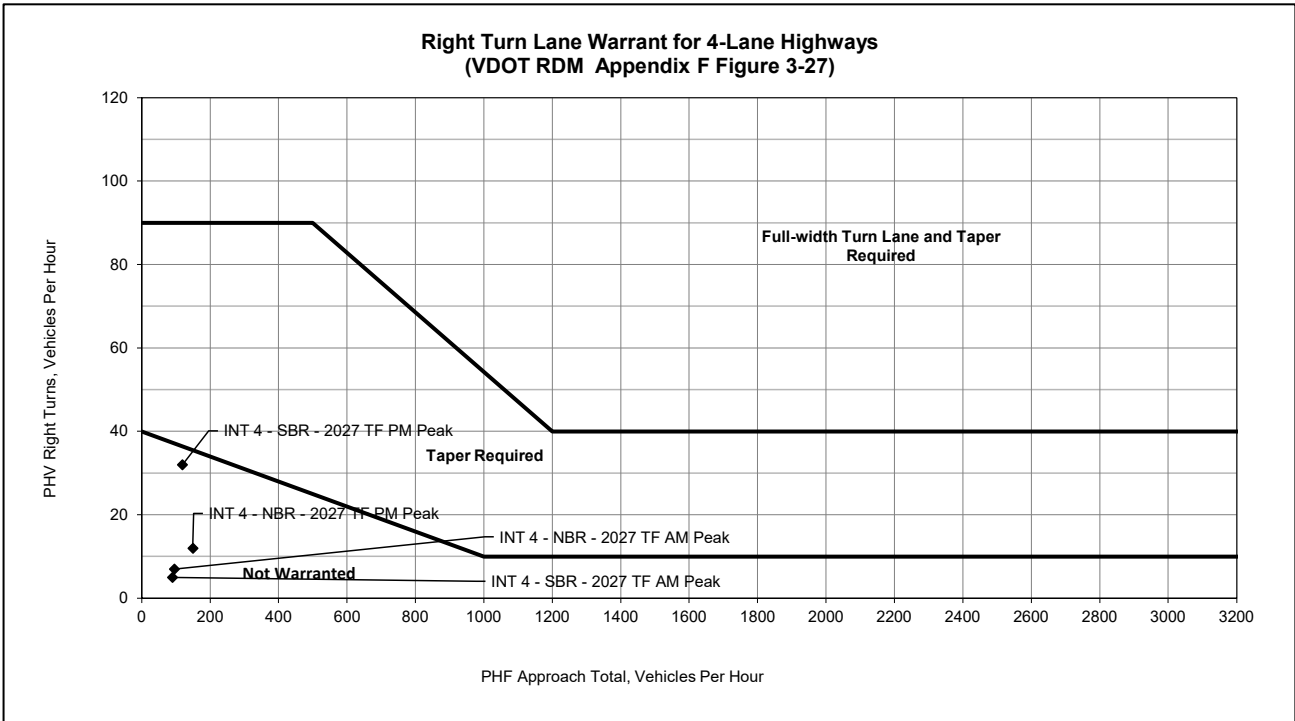
Background:

Warrants for right-turn storage lanes on four-lane highways at unsignalized intersections are based on Figure 3-27 in Appendix F of the Virginia Department of Transportation's (VDOT) *Road Design Manual* (RDM). This figure provides a graphical representation for determining the necessity of a right turn lane and / or taper by comparing the total volumes of a given approach with their respective right turn volumes.

Project Information:

| | |
|---|--|
| Project: | |
| Project ID: | |
| Intersection(s) and Movement(s): 4 -Branch Drive at Warrenton Village Center Driveway / Safeway Driveway (NBR & SBR) | |
| | |
| | |
| Scenario: 2027 Future Conditions with Development | |
| Analyst: Grove Slade | |

| Study Scenario | Approach Volume | Right Turn Volume | Minimum Right Turn Taper Threshold | Minimum Right Turn Full Lane Threshold | Treatment |
|-------------------------------|-----------------|-------------------|------------------------------------|--|---------------|
| INT 4 - NBR - 2027 TF AM Peak | 95 | 7 | 37 | 90 | Not Warranted |
| INT 4 - NBR - 2027 TF PM Peak | 149 | 12 | 36 | 90 | Not Warranted |
| INT 4 - SBR - 2027 TF AM Peak | 90 | 5 | 37 | 90 | Not Warranted |
| INT 4 - SBR - 2027 TF PM Peak | 119 | 32 | 36 | 90 | Not Warranted |
| | | | | | |
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| | | | | | |
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| | | | | | |



K. MUTCD 4-Hour Warrant

CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

Section 4C.01 Studies and Factors for Justifying Traffic Control Signals

Standard:

- 01 **An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location.**
- 02 **The investigation of the need for a traffic control signal shall include an analysis of factors related to the existing operation and safety at the study location and the potential to improve these conditions, and the applicable factors contained in the following traffic signal warrants:**
- Warrant 1, Eight-Hour Vehicular Volume**
 - Warrant 2, Four-Hour Vehicular Volume**
 - Warrant 3, Peak Hour**
 - Warrant 4, Pedestrian Volume**
 - Warrant 5, School Crossing**
 - Warrant 6, Coordinated Signal System**
 - Warrant 7, Crash Experience**
 - Warrant 8, Roadway Network**
 - Warrant 9, Intersection Near a Grade Crossing**
- 03 **The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.**

Support:

- 04 Sections 8C.09 and 8C.10 contain information regarding the use of traffic control signals instead of gates and/or flashing-light signals at highway-rail grade crossings and highway-light rail transit grade crossings, respectively.
- Guidance:*
- 05 *A traffic control signal should not be installed unless one or more of the factors described in this Chapter are met.*
- 06 *A traffic control signal should not be installed unless an engineering study indicates that installing a traffic control signal will improve the overall safety and/or operation of the intersection.*
- 07 *A traffic control signal should not be installed if it will seriously disrupt progressive traffic flow.*
- 08 *The study should consider the effects of the right-turn vehicles from the minor-street approaches. Engineering judgment should be used to determine what, if any, portion of the right-turn traffic is subtracted from the minor-street traffic count when evaluating the count against the signal warrants listed in Paragraph 2.*
- 09 *Engineering judgment should also be used in applying various traffic signal warrants to cases where approaches consist of one lane plus one left-turn or right-turn lane. The site-specific traffic characteristics should dictate whether an approach is considered as one lane or two lanes. For example, for an approach with one lane for through and right-turning traffic plus a left-turn lane, if engineering judgment indicates that it should be considered a one-lane approach because the traffic using the left-turn lane is minor, the total traffic volume approaching the intersection should be applied against the signal warrants as a one-lane approach. The approach should be considered two lanes if approximately half of the traffic on the approach turns left and the left-turn lane is of sufficient length to accommodate all left-turn vehicles.*
- 10 *Similar engineering judgment and rationale should be applied to a street approach with one through/left-turn lane plus a right-turn lane. In this case, the degree of conflict of minor-street right-turn traffic with traffic on the major street should be considered. Thus, right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. The approach should be evaluated as a one-lane approach with only the traffic volume in the through/left-turn lane considered.*
- 11 *At a location that is under development or construction and where it is not possible to obtain a traffic count that would represent future traffic conditions, hourly volumes should be estimated as part of an engineering study for comparison with traffic signal warrants. Except for locations where the engineering study uses the satisfaction of Warrant 8 to justify a signal, a traffic control signal installed under projected conditions should have an engineering study done within 1 year of putting the signal into stop-and-go operation to determine if the signal is justified. If not justified, the signal should be taken out of stop-and-go operation or removed.*
- 12 *For signal warrant analysis, a location with a wide median, even if the median width is greater than 30 feet, should be considered as one intersection.*

Option:

- 13 At an intersection with a high volume of left-turn traffic from the major street, the signal warrant analysis may be performed in a manner that considers the higher of the major-street left-turn volumes as the “minor-street” volume and the corresponding single direction of opposing traffic on the major street as the “major-street” volume.
- 14 For signal warrants requiring conditions to be present for a certain number of hours in order to be satisfied, any four sequential 15-minute periods may be considered as 1 hour if the separate 1-hour periods used in the warrant analysis do not overlap each other and both the major-street volume and the minor-street volume are for the same specific one-hour periods.
- 15 For signal warrant analysis, bicyclists may be counted as either vehicles or pedestrians.

Support:

- 16 When performing a signal warrant analysis, bicyclists riding in the street with other vehicular traffic are usually counted as vehicles and bicyclists who are clearly using pedestrian facilities are usually counted as pedestrians.

Option:

- 17 Engineering study data may include the following:
- A. The number of vehicles entering the intersection in each hour from each approach during 12 hours of an average day. It is desirable that the hours selected contain the greatest percentage of the 24-hour traffic volume.
 - B. Vehicular volumes for each traffic movement from each approach, classified by vehicle type (heavy trucks, passenger cars and light trucks, public-transit vehicles, and, in some locations, bicycles), during each 15-minute period of the 2 hours in the morning and 2 hours in the afternoon during which total traffic entering the intersection is greatest.
 - C. Pedestrian volume counts on each crosswalk during the same periods as the vehicular counts in Item B and during hours of highest pedestrian volume. Where young, elderly, and/or persons with physical or visual disabilities need special consideration, the pedestrians and their crossing times may be classified by general observation.
 - D. Information about nearby facilities and activity centers that serve the young, elderly, and/or persons with disabilities, including requests from persons with disabilities for accessible crossing improvements at the location under study. These persons might not be adequately reflected in the pedestrian volume count if the absence of a signal restrains their mobility.
 - E. The posted or statutory speed limit or the 85th-percentile speed on the uncontrolled approaches to the location.
 - F. A condition diagram showing details of the physical layout, including such features as intersection geometrics, channelization, grades, sight-distance restrictions, transit stops and routes, parking conditions, pavement markings, roadway lighting, driveways, nearby railroad crossings, distance to nearest traffic control signals, utility poles and fixtures, and adjacent land use.
 - G. A collision diagram showing crash experience by type, location, direction of movement, severity, weather, time of day, date, and day of week for at least 1 year.
- 18 The following data, which are desirable for a more precise understanding of the operation of the intersection, may be obtained during the periods described in Item B of Paragraph 17:
- A. Vehicle-hours of stopped time delay determined separately for each approach.
 - B. The number and distribution of acceptable gaps in vehicular traffic on the major street for entrance from the minor street.
 - C. The posted or statutory speed limit or the 85th-percentile speed on controlled approaches at a point near to the intersection but unaffected by the control.
 - D. Pedestrian delay time for at least two 30-minute peak pedestrian delay periods of an average weekday or like periods of a Saturday or Sunday.
 - E. Queue length on stop-controlled approaches.

Section 4C.02 Warrant 1, Eight-Hour Vehicular Volume

Support:

- 01 The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.
- 02 The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.
- 03 It is intended that Warrant 1 be treated as a single warrant. If Condition A is satisfied, then Warrant 1 is satisfied and analyses of Condition B and the combination of Conditions A and B are not needed. Similarly, if Condition B is satisfied, then Warrant 1 is satisfied and an analysis of the combination of Conditions A and B is not needed.

Standard:

- 04 The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions exist for each of any 8 hours of an average day:
- A. The vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection;
 - B. The vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

In applying each condition the major-street and minor-street volumes shall be for the same 8 hours. On the minor street, the higher volume shall not be required to be on the same approach during each of these 8 hours.

Option:

- 05 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 70 percent columns in Table 4C-1 may be used in place of the 100 percent columns.

Guidance:

- 06 The combination of Conditions A and B is intended for application at locations where Condition A is not satisfied and Condition B is not satisfied and should be applied only after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems.

Standard:

- 07 The need for a traffic control signal shall be considered if an engineering study finds that both of the following conditions exist for each of any 8 hours of an average day:
- A. The vehicles per hour given in both of the 80 percent columns of Condition A in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection; and
 - B. The vehicles per hour given in both of the 80 percent columns of Condition B in Table 4C-1 exist on the major-street and the higher-volume minor-street approaches, respectively, to the intersection.

These major-street and minor-street volumes shall be for the same 8 hours for each condition; however, the 8 hours satisfied in Condition A shall not be required to be the same 8 hours satisfied in Condition B. On the minor street, the higher volume shall not be required to be on the same approach during each of the 8 hours.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

| Number of lanes for moving traffic on each approach | | Vehicles per hour on major street (total of both approaches) | | | | Vehicles per hour on higher-volume minor-street approach (one direction only) | | | |
|---|--------------|--|------------------|------------------|------------------|---|------------------|------------------|------------------|
| Major Street | Minor Street | 100% ^a | 80% ^b | 70% ^c | 56% ^d | 100% ^a | 80% ^b | 70% ^c | 56% ^d |
| 1 | 1 | 500 | 400 | 350 | 280 | 150 | 120 | 105 | 84 |
| 2 or more | 1 | 600 | 480 | 420 | 336 | 150 | 120 | 105 | 84 |
| 2 or more | 2 or more | 600 | 480 | 420 | 336 | 200 | 160 | 140 | 112 |
| 1 | 2 or more | 500 | 400 | 350 | 280 | 200 | 160 | 140 | 112 |

Condition B—Interruption of Continuous Traffic

| Number of lanes for moving traffic on each approach | | Vehicles per hour on major street (total of both approaches) | | | | Vehicles per hour on higher-volume minor-street approach (one direction only) | | | |
|---|--------------|--|------------------|------------------|------------------|---|------------------|------------------|------------------|
| Major Street | Minor Street | 100% ^a | 80% ^b | 70% ^c | 56% ^d | 100% ^a | 80% ^b | 70% ^c | 56% ^d |
| 1 | 1 | 750 | 600 | 525 | 420 | 75 | 60 | 53 | 42 |
| 2 or more | 1 | 900 | 720 | 630 | 504 | 75 | 60 | 53 | 42 |
| 2 or more | 2 or more | 900 | 720 | 630 | 504 | 100 | 80 | 70 | 56 |
| 1 | 2 or more | 750 | 600 | 525 | 420 | 100 | 80 | 70 | 56 |

^a Basic minimum hourly volume

^b Used for combination of Conditions A and B after adequate trial of other remedial measures

^c May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

^d May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Option:

- 08 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.03 Warrant 2, Four-Hour Vehicular Volume

Support:

- 01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

- 02 **The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.**

Option:

- 03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Section 4C.04 Warrant 3, Peak Hour

Support:

- 01 The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Standard:

- 02 **This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.**
- 03 **The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:**
- A. **If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:**
 1. **The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and**
 2. **The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and**
 3. **The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.**
 - B. **The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.**

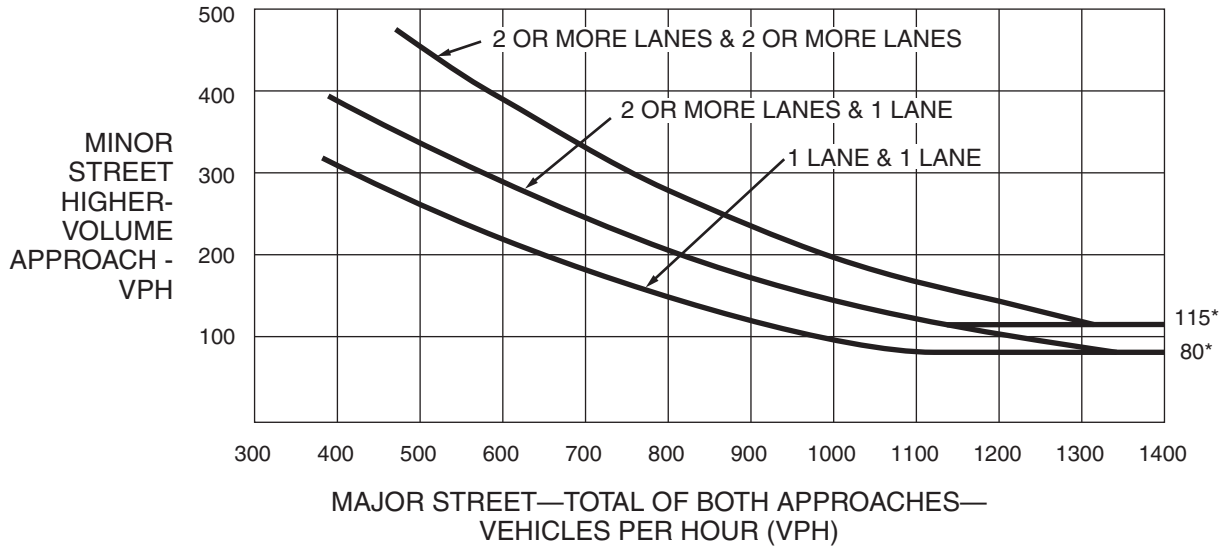
Option:

- 04 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to evaluate the criteria in the second category of the Standard.
- 05 If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.

Guidance:

- 06 *If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal should be traffic-actuated.*

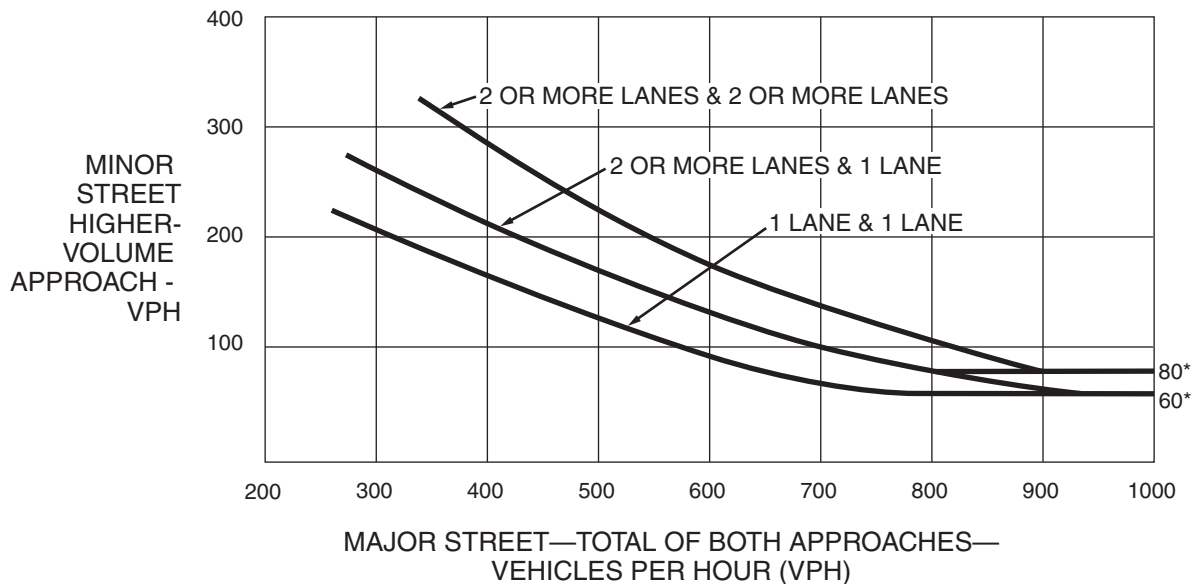
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Market and Fiscal Impacts Analyses
Warrenton Village
Town of Warrenton, Virginia**

**Prepared for:
Jess Achenbach
Castle Development Partners**

June 2023





▪ S. PATZ & ASSOCIATES, INC ▪
▪ REAL ESTATE CONSULTANTS ▪

June 12, 2023

Jess Achenbach
Castle Development Partners
230 Court Square, Suite 202
Charlottesville, Virginia 22902

Jess:

Attached is our full-narrative market study and resulting Fiscal Impacts Analysis (FIA) for the proposed Warrenton Village proposal, to include 376 rental units. The proposal is for three residential components: a 320-unit elevator-served apartment building alongside 36 two-over-two and 20 townhome units. All rental units proposed for Warrenton Village will have market rents and no age restrictions.

The report is presented in three sections. The first is a description of the study site and development proposal. Detailed data describe the Warrenton Village site. The second section is a brief market analysis for the new rental units planned. The market study is not prepared in the same depth as a study for a lender package, as all building and unit designs are not yet set, but sufficient data are provided to determine market support for the proposed 376 rental units. The third section, based on market data, shows the net tax benefits to the Town of Warrenton from the development proposal. The analysis to follow shows full market support for the apartment units at the proposed rents.

The FIA, based on the result of the market analysis, shows a net benefit for the proposal to the Town of Warrenton at \$46,100± annually, after build-out. Most of the revenue to the Town will be generated from off-site impacts, as the Town of Warrenton levies low real estate and personal property tax rates. This is reflected in the General Fund revenues. The following table presents the FIA conclusions at build-out.

**Summary of On-Site and Off-Site Fiscal Impacts of Apartments,
Warrenton Village at Build-Out, Warrenton, Virginia**
(Constant 2023 Dollars)

| Source of Fiscal Impacts on the Town | Impacts On-Site in Warrenton | Impacts Off-Site in Warrenton | Total Fiscal Impacts |
|---|---|--|---------------------------------|
| <u>Apartments (320 Units)</u> | | | |
| Revenues to the Town | \$117,560 | \$338,870 | \$456,430 |
| Town Costs | <u>-\$280,280</u> | <u>-\$145,920</u> | <u>-\$426,200</u> |
| <i>Subtotal</i> | <i>-\$162,720</i> | <i>\$192,950</i> | <i>\$30,230</i> |
| <u>Two-Over-Two (36 Units)</u> | | | |
| Revenues to the Town | \$14,550 | \$55,520 | \$70,070 |
| Town Costs | <u>-\$42,740</u> | <u>-\$23,490</u> | <u>-\$66,230</u> |
| <i>Subtotal</i> | <i>-\$28,190</i> | <i>\$32,030</i> | <i>\$3,840</i> |
| <u>Townhomes (20 Units)</u> | | | |
| Revenues to the Town | \$8,050 | \$41,150 | \$49,200 |
| Town Costs | <u>-\$23,310</u> | <u>-\$13,860</u> | <u>-\$37,170</u> |
| <i>Subtotal</i> | <i>-\$15,260</i> | <i>\$27,290</i> | <i>\$12,030</i> |
| <u>Total Residential (376 units)</u> | | | |
| Revenues to the Town | \$140,160 | \$435,540 | \$575,700 |
| Town Costs | <u>-\$346,330</u> | <u>-\$183,270</u> | <u>-\$529,600</u> |
| Net Fiscal Benefits | <u>-\$206,170</u> | <u>\$252,270</u> | <u>\$46,100</u> |

Source: Town of Warrenton, VA; S. Patz & Associates, Inc.

All detailed market and economic data that support our findings and conclusions are presented in the attached report. Please call if additional data or clarification are needed.

Sincerely,

Ariel Goldring

Ariel Goldring
President

Table of Contents

Section I: Introduction 5

 Warrenton Village..... 6

 Site Description 6

 Development Program 11

 Market Area Economic Overview 15

 At-Place Jobs 16

 Employment and Labor Force..... 20

 COVID-19 and Employment 22

 Current Developments 23

 Demographic Trends and Projections 27

Section II: Apartment Market Analysis..... 31

 Characteristics of the Current Apartment Market 31

 Competitive Apartment Market 31

 Apartment Pipeline..... 34

 Apartment Market Summary and Demand Analysis..... 35

Section III: Fiscal Impacts Analysis 38

 Summary of Fiscal Impacts..... 38

 On-Site Fiscal Impacts: From New Rental Units 40

 Real Estate Tax..... 41

 Personal Property Tax 42

 Consumer Utility Tax 43

 On-Site Fiscal Impacts: Town Costs to Serve Warrenton Village 44

 Tax-Supported Costs of Warrenton Village 46

 On-Site Fiscal Impacts 47

 Off-Site Impacts: Economic and Fiscal..... 47

 Business Receipts 48

 Employment and Earnings 49

 Off-Site Fiscal Impact..... 50

 Warrenton Village Conclusions 51

Section I: Introduction

This will set forth our market and Fiscal Impacts Analysis (FIA) for the proposed Warrenton Village apartment community, planned for a well-located 6.46-acre site along the south side of Oak Springs Drive and just north of W. Lee Highway in the Town of Warrenton, Virginia. The vacant property benefits from its close proximity to several large shopping centers, including the Safeway-anchored Warrenton Village, Marshalls-anchored Warrenton Center, and Giant-anchored Oak Springs Plaza. The site is currently zoned C (Commercial). The sponsor is submitting for a Special Use Permit under the existing zoning.

The proposal is for an attractive 376-unit rental community consisting of 320 elevator-served apartment units, alongside 36 two-over-two and 20 townhome units. The complex will offer a wide range of amenities, including a clubhouse, fitness center and outdoor swimming pool. No such concept currently exists in the Town of Warrenton or elsewhere in Fauquier County, and once built, Warrenton Village will be a “step above” the existing apartment market in the Town and County. Construction is planned to begin in late-2024 with a late-2026 delivery.

The Special Use Permit requires a Fiscal Impacts Analysis (FIA), which calculates the net tax benefits that will accrue to the Town of Warrenton at project build-out. The FIA to follow includes net tax benefits from on-site development and off-site expenditures in the Town, as will be fully explained later in the report. The FIA is based on the ability of the site to be developed, as planned, which is described in the market analysis undertaken for this report.

The report to follow is presented in three sections. The first, the Introduction, is an analysis of the Warrenton Village site and a description of the development proposal. Also part of the description is an analysis of the local economy, which shows the level of job growth that supports the magnitude of new housing unit demand planned for the study site.

Section II is an overview analysis of the Warrenton area apartment market. This is not a full-narrative market analysis that would be acceptable by a lender or investor. Rather, it provides

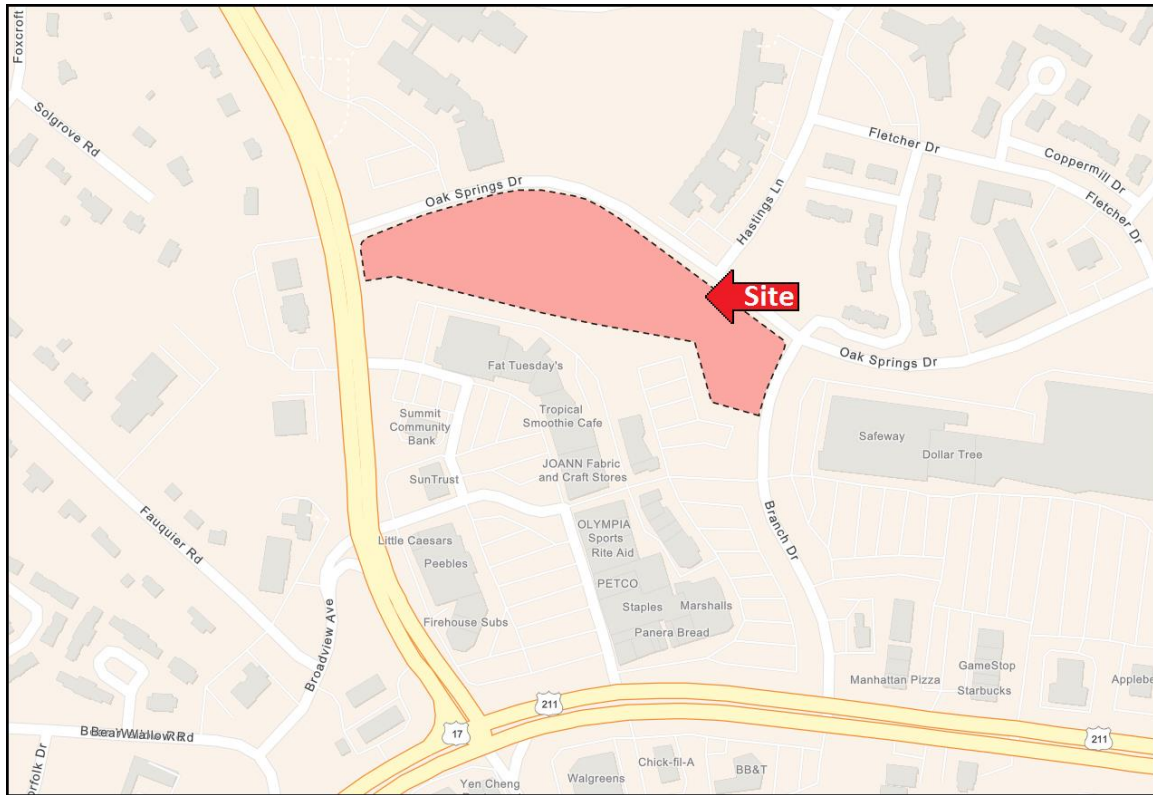
sufficient market data to support the development proposal, as planned. The Conclusions of the market analysis will be the base data for the preparation of the FIA.

Section III is the calculation of the full-narrative FIA that documents annual net tax revenue from the Warrenton Village proposal, based on on-site and off-site revenues from on-site expenditures. Town costs are subtracted from the revenue estimates to establish a net fiscal benefit. For this analysis, all tax revenue and cost data are presented in constant 2023 dollars.

Warrenton Village

Site Description

Map A shows the location of the study site along the southern side of Oak Springs Drive in the Town of Warrenton. The site is bounded to the west by Broadview Drive and to the east by Branch Drive. Its southern boundary is the Warrenton Village Shopping Center, with tenants including Petco, Staples and Marshalls. The study site is shown to be near W Lee Highway, which is a major arterial roadway in the Town that provides direct access to Fauquier Health in the south and U.S. Route 15 in the east.

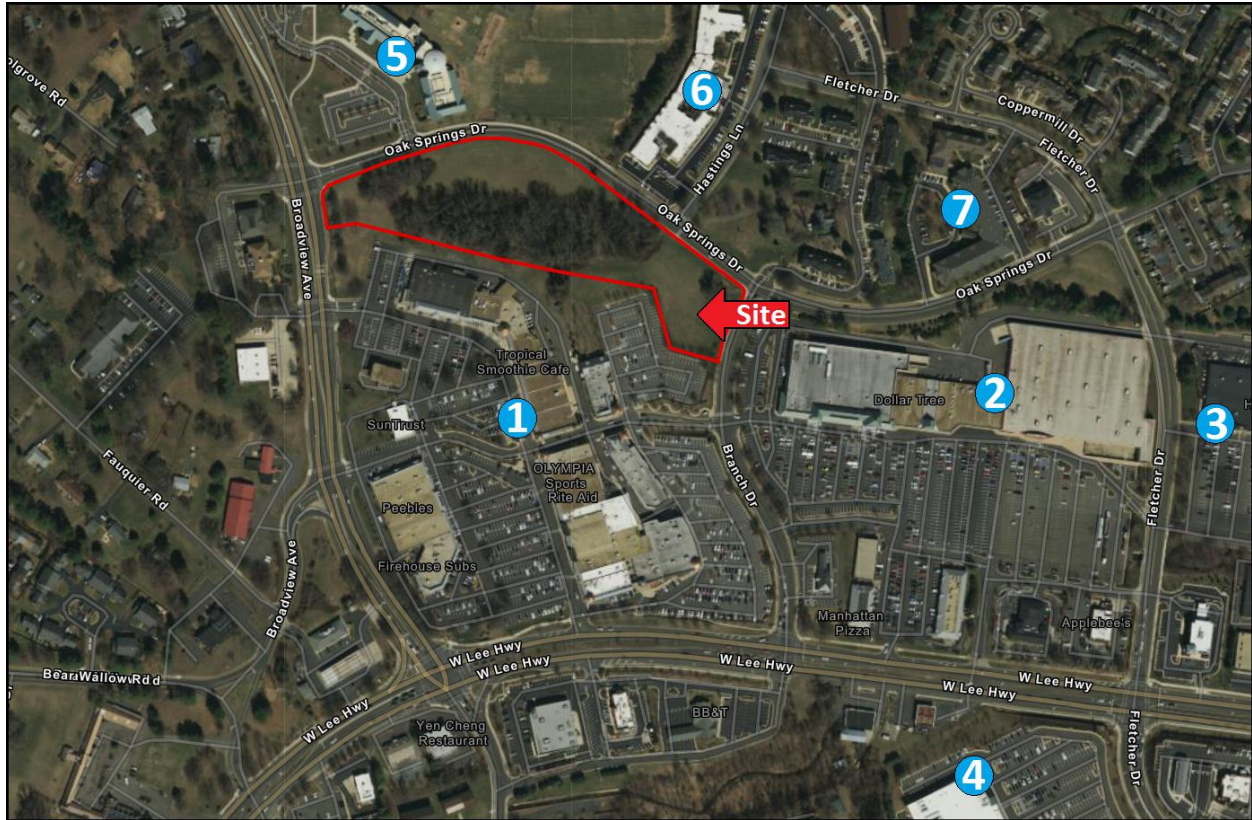


Map A - Site Location

Shown next is a northern aerial of the study site. The aerial shows the irregularly shaped site to be located within a mixed-use setting. Commercial uses generally flank W Lee Highway to the south. This includes the Marshalls-anchored Warrenton Center (Note 1), Safeway-anchored Warrenton Village (Note 2), Giant-anchored Oak Springs Plaza (Note 3) and Harris Teeter-anchored North Rock Shopping Center (Note 4). This is the largest commercial concentration in the Warrenton area. Many of the area restaurants and retailers are within walking distance of the Warrenton Village site.

To the north of the study site is a large private school with over 500 students called Highland School (Note 5) as well as the 130-bed Brookside Rehab & Nursing Center (Note 6). Residential areas are situated to the northeast of the study site and include The Oaks of Warrenton (Note 7), a 111-unit affordable, age-restricted apartment community that was built in two phases

in 1996 and 2001. Most of the other nearby homes are townhomes and condos that have generally sold in the \$200,000s and \$300,000s.



Northern Aerial

Overall, the study site is well-located and in close proximity to local arterial streets, an interchange with U.S. Route 15, nearby employment centers, and a host of big-box and small retailers that serve the existing residential market.

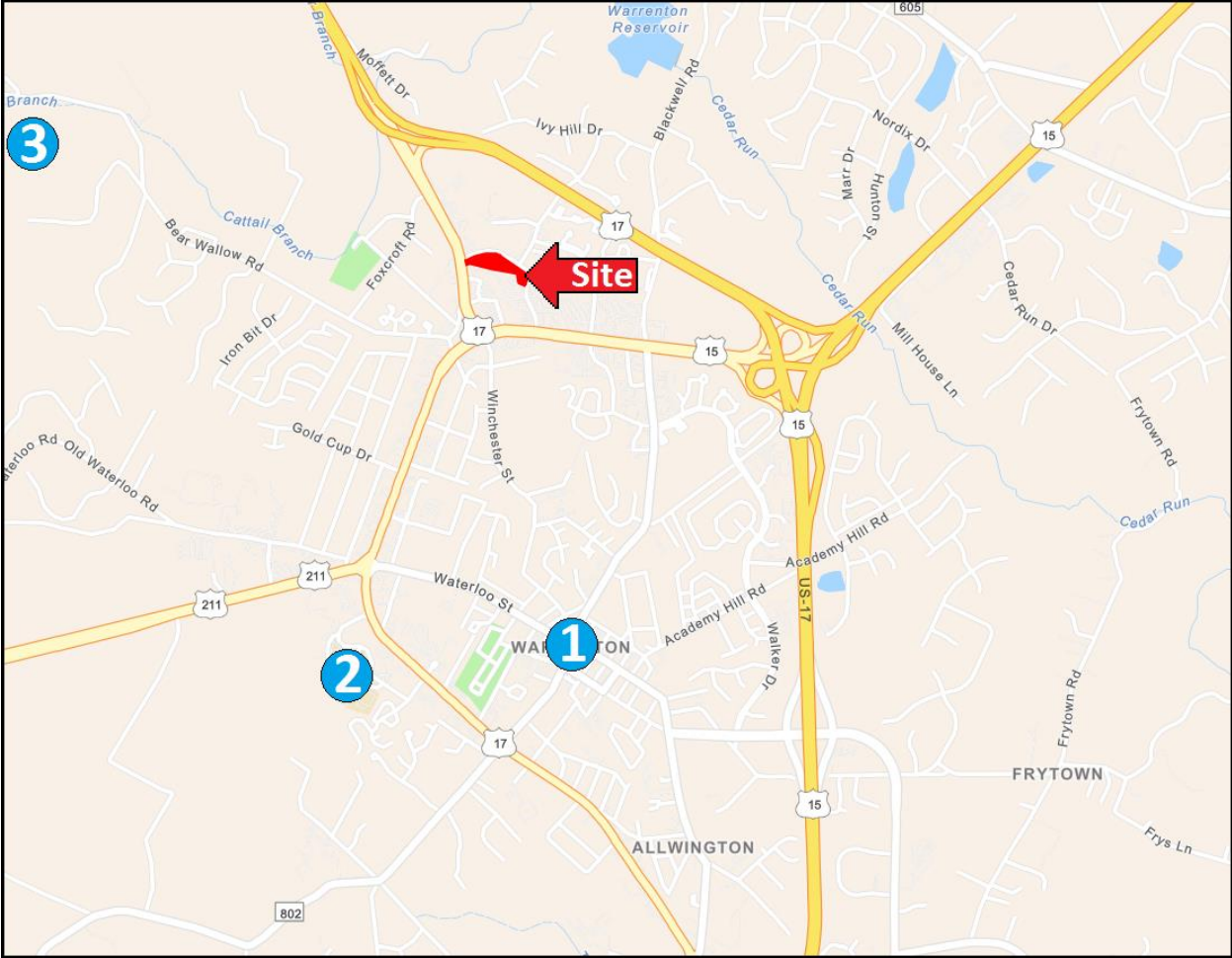
Map C, on page 10, depicts the site setting within the Town of Warrenton. As previously noted, the site is located near W Lee Highway, which accesses U.S. Route 15 less than a mile to the east. This roadway provides direct access to the greater Gainesville/ Haymarket area of western Prince William County, which is the nearest employment cluster outside of Fauquier County. Gainesville is an approximately 12-mile drive from the study site and is the location of

an interchange with I-66 that extends to other major employment centers elsewhere in Northern Virginia.

U.S. Route 17 is also shown to be located just north of the study site via Broadview Avenue. This roadway accesses the community of Marshall at the northern edge of Fauquier County, as well as Bealeton to the south. Both locations are primarily residential. In addition, Map C shows the site's close proximity to Downtown Warrenton, approximately 1.5 miles from the study site. This is the location of several restaurants, specialty retailers and professional office space.

Also shown to be located near the study site is Fauquier Hospital (Note 2), which is located at 500 Hospital Drive in Warrenton. This is a 97-bed, acute care hospital offering surgical services (including robotics), a 24-hour Emergency Department, extensive medical imaging capabilities and an Intensive Care Unit. Construction was recently completed in 2020 on the hospital's new 25,640± square foot Cancer Center. There is approximately 50,000 square feet of medical office space adjacent to Fauquier Hospital. North of the hospital is the large Fauquier Health Rehabilitation and Nursing Center and four office structures that are occupied by County officials.

Map C also shows the site to be located within close proximity of the Warrenton Training Center (Note 3), which is a 346-acre classified United States government communication complex. County staff estimate that the complex employs approximately 350 people.



Map C - Site Setting

Shown next are photos of the study site. The site is shown to be partially wooded and fully vacant.



Southern View of site from Oak Springs Drive

Development Program

The development program for Warrenton Village involves the development of a vacant 6.46-acre parcel with a mix of an elevator-served apartment building alongside two-over-two and townhomes for rent.

Table 1 provides a detailed description of the study proposal, with data on unit sizes, unit mix and proposed rents. The table shows a mix of 133 one-bedroom, 159 two-bedroom and 84 three-bedroom units. One-bedroom apartment units will be spacious and range in size between 642 and 950 square feet, or an average of 771 square feet. Two-bedroom units, each with two full bathrooms will also be large, ranging in size between 980 and 1,184 square feet, or an average of 1,103 square feet. The three-bedroom apartment units will range in size between 1,388 and 2,583 square feet. The three-bedroom two-over-two units will be 1,586 and 2,583 square feet. The three-bedroom townhome units will all measure 2,050 square feet. The three-bedroom units will have between 2.0 and 3.5 bathrooms.

Rents will exclude utilities but will include in-unit washers and dryers at no additional cost to the tenant. One-bedroom rents are proposed to range between \$1,650 and \$1,900, or an average of \$1,750. The smaller two-bedroom apartment units will rent for \$2,200 while the larger two-bedroom apartment units will rent for \$2,350. The two-bedroom units will rent for an average of \$2,250. The three-bedroom apartment units will rent for between \$2,400 and \$2,550. The three-

bedroom two-over-two units will rent for between \$2,800 and \$3,000. The three-bedroom townhome units will rent for between \$3,100 and \$3,200.

Table 1: Proposed Unit Characteristics, Warrenton Village, June 2022

| | <u>Unit Type</u> | <u>Bathrooms</u> | <u>Total Units</u> | <u>Unit Sizes (Sq. Ft.)</u> | <u>Proposed Rents 1/</u> |
|-----------------------------|------------------|------------------|--------------------|-----------------------------|--------------------------|
| <u>One-Bedroom</u> | | | | | |
| A1 | Apartment | 1.0 | 50 | 642 | \$1,650 |
| A2 | Apartment | 1.0 | 28 | 725 | \$1,725 |
| A3 | Apartment | 1.0 | 2 | 790 | \$1,750 |
| A4 | Apartment | 1.0 | 22 | 768 | \$1,750 |
| A5 | Apartment | 1.0 | 11 | 850 | \$1,800 |
| A5A | Apartment | 1.0 | 3 | 950 | \$1,900 |
| A6 | Apartment | 1.0 | 6 | 750 | \$1,750 |
| A7A | Apartment | 1.0 | 4 | 724 | \$1,700 |
| A7B | Apartment | 1.0 | 4 | 738 | \$1,725 |
| A8 | Apartment | 1.0 | <u>3</u> | 775 | \$1,750 |
| <i>Subtotal/ Average</i> | | | <i>133</i> | <i>771</i> | <i>\$1,750</i> |
| <u>Two-Bedroom</u> | | | | | |
| B1 | Apartment | 2.0 | 92 | 1,054 | \$2,200 |
| B2 | Apartment | 2.0 | 45 | 1,167 | \$2,300 |
| B3 | Apartment | 2.0 | 7 | 1,040 | \$2,200 |
| B4 | Apartment | 2.0 | 4 | 1,130 | \$2,300 |
| B5A | Apartment | 2.0 | 3 | 1,184 | \$2,350 |
| B5B | Apartment | 2.0 | 4 | 1,164 | \$2,300 |
| B6 | Apartment | 2.0 | <u>4</u> | 980 | \$2,100 |
| <i>Subtotal/ Average</i> | | | <i>159</i> | <i>1,103</i> | <i>\$2,250</i> |
| <u>Three-Bedroom</u> | | | | | |
| C1 | Apartment | 2.0 | 17 | 1,388 | \$2,400 |
| C2 | Apartment | 2.0 | 4 | 1,425 | \$2,500 |
| C3 | Apartment | 3.0 | 7 | 1,496 | \$2,550 |
| D1 | Two-Over Two | 2.5 | 18 | 1,586 | \$2,800 |
| D2 | Two-Over Two | 2.5 | 18 | 2,583 | \$3,000 |
| E1 | Townhome | 2.5 | 10 | 2,050 | \$3,100 |
| E2 | Townhome | 3.5 | <u>10</u> | 2,050 | \$3,200 |
| <i>Subtotal/ Average</i> | | | <i><u>84</u></i> | <i>1,797</i> | <i>\$2,793</i> |
| Total | | | 376 | | |

Notes: 1/ Excludes utilities. Includes washer/ dryers.

Source: Castle Development Partners

The Warrenton Village proposal will considerably exceed the quality, designs, finishes, and amenities at the market area's apartment properties. The rental units will be comparatively large and, unlike any other rental units in the market area, within walking distance of a host of area retailers and restaurants. Unit features will include granite countertops, stainless steel

appliances, LVT plank throughout (with exception of carpet in bedrooms), 9' ceilings, LED lights, and balconies in all apartment units.

Shown next is the proposed site plan for Warrenton Village. The site plan shows that the apartment community will be accessed from Oak Springs Drive in the north by a newly built roadway.

The community will consist of two development areas. To the west will be a large three- and four-story 320-unit, elevator apartment building. This building will contain 10,000± square feet of amenity space, including a leasing office, large clubroom, fitness center and business center. It will also contain two landscaped courtyards, one of which will include a large outdoor swimming pool. The building will also access a four-story, 445-space parking garage. The eastern side of the property will include the remaining rental units. There will be a total of 574 parking spaces. This equates to a parking ratio of 1.53 spaces per housing unit.

housing unit demand, particularly of the type of housing under study. Thus, the establishment of the market area's economic stability is a key issue related to the demographic growth of the market area. The economic analysis is presented to support the demographic projections used to support future apartment unit demand.

At-Place Jobs

At-place employment refers to jobs physically based at employers in Fauquier County, whether the job is based in private sector or government offices, manufacturing facilities, schools, retail stores, restaurants, nursing home or other facilities. As of year-end 2019, and prior to the more recent pandemic-induced job losses, Fauquier County had 22,250± at-place jobs, which exceeds the 2008 total by over 850 jobs, or four percent.

The County faced heavy job losses between 2008 and 2010 due to the recession of that time and a period in which at-place employment declined by 1,250±. Net job growth began soon after in 2011, with at-place jobs exceeding the pre-recession peak in 2013. Most recently, employment expanded by 300± in 2018, but fell by 170± in 2019. The job losses in 2019 were not associated with any mass layoffs and were principally driven by the loss of 120± jobs in the Accommodations/Food sector.

Public sector jobs account for the majority of employment in the County, with nearly 20 percent of jobs in Fauquier County associated with local, state or federal employment. Most of these public sector jobs are associated with local government and tied to the Fauquier County School Board. Much of the federal employment is related to the U.S. Department of Transportation, which operates a facility in Warrenton. Public sector employment has also been a source of modest job growth, with nearly 360 public sector jobs added since 2008.

The largest private employment sector in Fauquier County is the Retail Trade sector, which accounts for nearly 13 percent of County-wide employment. Much of this employment is clustered in and around Warrenton, and to a smaller extent the Bealeton area. Several of the

County's larger employers are in this sector, including Walmart, Food Lion and Home Depot. Employment in this sector has expanded by 160± since 2008.

The next largest private employment sector in the County is the Health Care sector, accounting for 2,550± jobs, or 11.5 percent of County employment. Much of this employment is associated with the Fauquier Health System, which is the largest private employment in the County with over 1,000 employees.

Several other employment sectors have recorded job growth during this period. These include Professional/ Technical Services (420± new jobs), Accommodations/ Food (230± new jobs), Administrative/ Waste Services (160± new jobs), Education (120± new jobs), Education (120± new jobs), Other Services (80± new jobs), Finance/ Insurance (70± new jobs), Manufacturing (60± new jobs) and Real Estate (40± new jobs).

Only four employment sectors have recorded a net loss of jobs since 2008. The heaviest job losses were concentrated in the Construction sector, which has 350 fewer jobs as of year-end 2019 compared to year-end 2018. Most of these losses, however, occurred in the years immediately following the Great Recession. Construction employment has grown every year since 2014, with over 500 jobs added since that time. Other sectors with job losses since 2008 include Wholesale Trade (240± jobs lost), Information (70± jobs lost) and Management of Companies (40± jobs lost).

Table 2: Trends in Average At-Place Employment, Fauquier County, Virginia, 2008-2019

| Industry | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Agriculture | 550 | 393 | 401 | ND | ND | ND | 396 | 396 | 392 | ND | ND | ND |
| Mining | 57 | 53 | 51 | ND | ND | ND | 54 | 56 | 64 | ND | ND | ND |
| Utilities | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 116 |
| Construction | 2,880 | 2,316 | 2,248 | 2,112 | 2,066 | 2,023 | 2,117 | 2,210 | 2,292 | 2,350 | 2,459 | 2,530 |
| Manufacturing | 863 | 797 | 756 | 794 | 798 | 825 | 873 | 918 | 950 | 958 | 935 | 923 |
| Wholesale Trade | 727 | 615 | 546 | 563 | 481 | 448 | 420 | 434 | 448 | 507 | 490 | 485 |
| Retail Trade | 2,713 | 2,573 | 2,637 | 2,673 | 2,790 | 2,864 | 2,859 | 2,994 | 3,044 | 2,950 | 2,899 | 2,873 |
| Transport./ Wareh. | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 239 |
| Information | 246 | 197 | 162 | 147 | 160 | 101 | 113 | 128 | 133 | 140 | 137 | 181 |
| Finance/Insurance | 479 | 445 | 486 | 509 | 501 | 504 | 515 | 467 | 497 | 496 | 526 | 553 |
| Real Estate | 218 | 315 | 318 | 308 | 365 | 377 | 363 | 288 | 262 | 271 | 253 | 258 |
| Prof./Tech. | 1,307 | 1,339 | 1,352 | 1,632 | 1,662 | 1,658 | 1,654 | 1,716 | 1,761 | 1,690 | 1,792 | 1,727 |
| Mgmt of Co.s | 212 | 213 | 192 | ND | 242 | 175 | 174 | 181 | 178 | 176 | 167 | 169 |
| Admin./Waste | 487 | 432 | 413 | ND | 534 | 485 | 472 | 484 | 522 | 548 | 622 | 645 |
| Education | 365 | 350 | 319 | 322 | 339 | 338 | 342 | 421 | 448 | 482 | 524 | 484 |
| Health Care | 2,415 | 2,499 | 2,386 | 2,386 | 2,703 | 2,781 | 2,747 | 2,686 | 2,575 | 2,532 | 2,544 | 2,549 |
| Arts/Enter./Rec. | 442 | 414 | 467 | 444 | 417 | 411 | 359 | 346 | 334 | 328 | 303 | 306 |
| Accom./Food | 2,067 | 1,932 | 1,962 | 1,969 | 2,025 | 2,095 | 2,050 | 2,201 | 2,370 | 2,407 | 2,414 | 2,293 |
| Other Services | 998 | 943 | 972 | 972 | 1,081 | 1,009 | 1,060 | 1,110 | 1,119 | 1,154 | 1,192 | 1,080 |
| Local Gov. | 3,199 | 3,268 | 3,264 | 3,434 | 3,314 | 3,302 | 3,226 | 3,194 | 3,263 | 3,280 | 3,314 | 3,350 |
| State Gov. | 392 | 398 | 401 | 389 | 404 | 413 | 409 | 393 | 391 | 390 | 394 | 394 |
| Federal Gov. | 421 | 435 | 454 | 564 | 623 | 610 | 597 | 581 | 601 | 610 | 618 | 625 |
| Total | 21,395 | 20,273 | 20,145 | 20,781 | 21,387 | 21,213 | 21,076 | 21,549 | 22,054 | 22,116 | 22,417 | 22,249 |

Notes: ND = Data do not meet BLS or State agency disclosure standards.

Source: United States Department of Labor, Bureau of Labor Statistics

Table 3 shows the net change in at-place job totals since 2008. Very few sectors experienced job losses during this period. Job growth has been spread among a diverse set of sectors. The key figure shown in Table 3 is the 4.0 percent net growth in new jobs since 2008, for a net increase of 850± jobs.

**Table 3: Change in Average At-Place Employment,
Fauquier County, Virginia, 2008-2019**

| <u>Industry</u> | <u>Net Change</u> | <u>Percent Change</u> |
|-------------------|-------------------|-----------------------|
| Construction | -350 | -12.2% |
| Manufacturing | 60 | 7.0% |
| Wholesale Trade | -242 | -33.3% |
| Retail Trade | 160 | 5.9% |
| Information | -65 | -26.4% |
| Finance/Insurance | 74 | 15.4% |
| Real Estate | 40 | 18.3% |
| Prof./Tech. | 420 | 32.1% |
| Mgmt of Co.s | -43 | -20.3% |
| Admin./Waste | 158 | 32.4% |
| Education | 119 | 32.6% |
| Health Care | 134 | 5.5% |
| Arts/Enter./Rec. | -136 | -30.8% |
| Accom./Food | 226 | 10.9% |
| Other Services | 82 | 8.2% |
| Local Gov. | 151 | 4.7% |
| State Gov. | 2 | 0.5% |
| Federal Gov. | <u>204</u> | <u>48.5%</u> |
| Total | 854 | 4.0% |

Notes: ND = Data do not meet BLS or State agency disclosure standards.
Source: United States Department of Labor, Bureau of Labor Statistics

Next shown, in Table 4, are the employment changes that occurred in 2020, which is an outlier year given the unusual impact of the COVID-19 pandemic. The data show a significant loss of jobs, with a reduction in employment of over 880, or by 4.0 percent.

These losses occurred across most employment sectors, with the heaviest job losses impacting the Accommodations/ Food services sector (370± jobs lost), Local Government sector (190± jobs lost) and Health Care sector (170± jobs lost). Although these losses are sizeable, many of these layoffs are expected to be temporary and will likely be recovered once 2021 employment data are released. The local housing market has not been negatively affected by these job losses.

Of note is that several employment sectors did add jobs in 2020, including the Professional/ Technical Services sector (130± new jobs), Retail Trade sector (50± new jobs) and the Transportation/ Warehousing sector (50± new jobs).

Data for 2021 show an increase of 440± jobs in Fauquier County, which signals a continued recovery. Several employment categories recorded net job growth. There are just over 430 fewer at-place jobs at year-end 2021 compared to the pre-pandemic peak.

| | <u>2019</u> | <u>2020</u> | <u>2021</u> | <u>Net Change</u> |
|---------------------------------|---------------|---------------|---------------|-------------------|
| Utilities | 116 | 122 | 117 | 1 |
| Construction | 2,530 | 2,527 | 2,624 | 94 |
| Manufacturing | 923 | 841 | 960 | 37 |
| Wholesale Trade | 485 | 473 | 454 | -31 |
| Retail Trade | 2,873 | 2,921 | 2,944 | 71 |
| Transportation/Warehousing | 239 | 286 | 311 | 72 |
| Information | 181 | 163 | 179 | -2 |
| Finance/Insurance | 553 | 550 | 549 | -4 |
| Real Estate | 258 | 260 | 268 | 10 |
| Professional/Technical Services | 1,727 | 1,859 | 1,871 | 144 |
| Management of Companies | 169 | 158 | 126 | -43 |
| Admin./Waste Services | 645 | 593 | 622 | -23 |
| Educational Services | 484 | 460 | 504 | 20 |
| Health Care | 2,549 | 2,379 | 2,269 | -280 |
| Arts/Entertainment/Recreation | 306 | 235 | 241 | -65 |
| Accommodations/Food | 2,293 | 1,926 | 2,058 | -235 |
| Other Services | 1,080 | 955 | 1,061 | -19 |
| Local Government | 3,350 | 3,161 | 3,209 | -141 |
| State Government | 394 | 396 | 362 | -32 |
| Federal Government | <u>625</u> | <u>652</u> | <u>659</u> | <u>34</u> |
| Total | 22,249 | 21,370 | 21,813 | -436 |

Source: United States Department of Labor

The U.S. Bureau of Labor Statistics has not yet released year-end data for 2022. However, as of September 2022, the date for which the most recent data are available, Fauquier County totals nearly 22,400 at-place jobs, which is in line with pre-pandemic employment levels.

Employment and Labor Force

Employment differs from at-place jobs as it refers to the number of market area residents who are employed, no matter where the job is located. At-place jobs refer to where the job is located, i.e., within Fauquier County. Data are current to year-end 2021 for Employment and Labor Force.

Fauquier County realized a net increase in employment of 770± over the twelve-year period between 2008 and 2019. Like at-place job trends, employment grew early in the decade, up until 2008, when employment reached a pre-recession peak of 36,400± jobs.

Employment totals are larger than at-place job totals, which means net out-commuting occurs into neighboring jurisdictions. These trends are an indication of the market for housing in Fauquier County, with a high percentage of County labor force working across the Washington Region. However, they are selecting homes in Fauquier County.

Employment fell sharply in 2009 when 940± jobs were lost, pushing the unemployment rate from 3.6 percent to 5.6 percent in a single year. A slow recovery began soon after in 2011. Growth in employment occurred every year since, with total employment exceeding pre-recession levels in 2019. The labor force has also grown every year between 2015 and 2019, suggesting sustained confidence in the labor market. This has pushed the overall unemployment rate higher than it otherwise would be.

Recent years have been characterized by a steady increase in the pace of job growth. Employment grew by 350± in 2017, 1,010± in 2018 and 1,070± in 2019. This exceeds the level of growth of at-place jobs and denotes that part of the growth in the resident population of Fauquier County was driven by new jobs in neighboring communities.

Data in Table 5 show that the unemployment rate was a low 2.4 percent in 2019, down from 3.9 percent in 2015. The low unemployment rate means that new job growth will require new residents for the County.

Total employment declined by 2,110± in 2020, pushing the unemployment rate up from a low 2.4 percent in 2019 to 4.7 percent, the highest unemployment rate since 2013. Data for 2021 show some improvements, with employment expanding by 80±. The labor force declined by 560± in 2021, which contributed to the low unemployment rate of 3.0 percent.

**Table 5: Trends in Employment and Unemployment,
Fauquier County, Virginia, 2008-2021**

| | Labor Force | Employment | Unemployment | Percent Unemployed |
|-------------------|--------------------|-------------------|---------------------|---------------------------|
| 2008 | 37,765 | 36,403 | 1,362 | 3.6% |
| 2009 | 37,560 | 35,459 | 2,101 | 5.6% |
| 2010 | 35,805 | 33,536 | 2,269 | 6.3% |
| 2011 | 36,073 | 34,092 | 1,981 | 5.5% |
| 2012 | 35,975 | 34,162 | 1,813 | 5.0% |
| 2013 | 35,928 | 34,198 | 1,730 | 4.8% |
| 2014 | 36,049 | 34,427 | 1,622 | 4.5% |
| 2015 | 35,873 | 34,477 | 1,396 | 3.9% |
| 2016 | 35,977 | 34,745 | 1,232 | 3.4% |
| 2017 | 36,269 | 35,091 | 1,178 | 3.2% |
| 2018 | 37,054 | 36,096 | 958 | 2.6% |
| 2019 | 38,085 | 37,168 | 917 | 2.4% |
| 2020 | 36,777 | 35,058 | 1,719 | 4.7% |
| 2021 | 36,217 | 35,138 | 1,079 | 3.0% |
| Net Change | -1,548 | -1,265 | -283 | -0.6% |

Source: United States Department of Labor, Bureau of Labor Statistics

COVID-19 and Employment

Table 6 shows monthly employment data as of April 2023 in Fauquier County to illustrate the local employment impact of the COVID-19 pandemic. This is the date for which the most recent data are available. Trend data show that total employment has increased by nearly 1,400 since January 2020, with the number of unemployed shrinking by over 120. These data show considerable economic improvements.

The unemployment rate, as of April 2023, is a very low 2.1 percent, down from 9.1 percent in April 2020. The low unemployment rate reflects the difficulty that local employers report in hiring new staff and necessitates new residents to the County to fill vacant and future jobs.

**Table 6: Trends in Employment and Unemployment,
Fauquier County, Virginia, 2020-2023 YTD**

| | <u>Labor Force</u> | <u>Employment</u> | <u>Unemployment</u> | <u>Percent Unemployed</u> |
|-------------------|--------------------|-------------------|---------------------|---------------------------|
| January 2020 | 37,631 | 36,674 | 957 | 2.5% |
| February 2020 | 37,692 | 36,824 | 868 | 2.3% |
| March 2020 | 37,237 | 36,207 | 1,030 | 2.8% |
| April 2020 | 35,897 | 32,638 | 3,259 | 9.1% |
| May 2020 | 35,376 | 32,643 | 2,733 | 7.7% |
| June 2020 | 36,700 | 33,899 | 2,801 | 7.6% |
| July 2020 | 36,521 | 34,131 | 2,390 | 6.5% |
| August 2020 | 36,545 | 34,630 | 1,915 | 5.2% |
| September 2020 | 35,851 | 34,310 | 1,541 | 4.3% |
| October 2020 | 36,555 | 35,198 | 1,357 | 3.7% |
| November 2020 | 36,289 | 34,973 | 1,316 | 3.6% |
| December 2020 | 36,117 | 34,929 | 1,188 | 3.3% |
| January 2021 | 36,048 | 34,716 | 1,332 | 3.7% |
| February 2021 | 35,894 | 34,635 | 1,259 | 3.5% |
| March 2021 | 36,013 | 34,747 | 1,266 | 3.5% |
| April 2021 | 36,141 | 35,085 | 1,056 | 2.9% |
| May 2021 | 36,334 | 35,173 | 1,161 | 3.2% |
| June 2021 | 37,478 | 36,109 | 1,369 | 3.7% |
| July 2021 | 37,536 | 36,293 | 1,243 | 3.3% |
| August 2021 | 37,231 | 36,054 | 1,177 | 3.2% |
| September 2021 | 36,740 | 35,719 | 1,021 | 2.8% |
| October 2021 | 37,217 | 36,329 | 888 | 2.4% |
| November 2021 | 36,843 | 36,218 | 625 | 1.7% |
| December 2021 | 37,157 | 36,284 | 873 | 2.3% |
| January 2022 | 37,155 | 36,215 | 940 | 2.5% |
| February 2022 | 37,078 | 36,203 | 875 | 2.4% |
| March 2022 | 37,349 | 36,459 | 890 | 2.4% |
| April 2022 | 37,520 | 36,729 | 791 | 2.1% |
| May 2022 | 37,611 | 36,624 | 987 | 2.6% |
| June 2022 | 38,342 | 37,327 | 1,015 | 2.6% |
| July 2022 | 38,549 | 37,524 | 1,025 | 2.7% |
| August 2022 | 38,216 | 37,051 | 1,165 | 3.0% |
| September 2022 | 37,678 | 36,664 | 1,014 | 2.7% |
| October 2022 | 38,207 | 37,193 | 1,014 | 2.7% |
| November 2022 | 37,968 | 36,945 | 1,023 | 2.7% |
| December 2022 | 37,974 | 37,115 | 859 | 2.3% |
| January 2023 | 38,232 | 37,132 | 1,100 | 2.9% |
| February 2023 | 38,299 | 37,320 | 979 | 2.6% |
| March 2023 | 38,759 | 37,783 | 976 | 2.5% |
| April 2023 | 38,846 | 38,012 | 834 | 2.1% |
| Net Change | 1,215 | 1,338 | -123 | -0.4% |

Notes: 1/ Preliminary. Subject to change.

Source: U.S. Department of Labor, Bureau of Labor Statistics

Current Developments

Most businesses in Fauquier County are small, with over 90 percent having fewer than 20 employees. The largest employer in the County is the Fauquier County School Board, with over 1,900 employees. The second largest employer is the Fauquier Health System, which employs over 1,000 people. The next two largest employers are the U.S. Department of Transportation and Walmart. All of these employers are located within quick driving distance of the Warrenton Village site.

The agriculture and forestry industries directly employ over 500 people, with many more employed in related industries. Tourism represents a growing segment of the economic sector in Fauquier County with nearly 30 vineyards and wineries spread across the County. More recently, the County has also targeted defense and other government contractors as a vital sector, with over 100 firms operating in the County.

Recent job generating development activity in Fauquier County include:

- **E-Z Treat**, a manufacturer of residential and commercial wastewater treatment systems, announced in December 2022 that it would expand its Catlett operations with a new 33,000± square foot building that will generate 16 new engineering and manufacturing jobs.
- **Silver Branch Brewing**, a Maryland-based brewery, announced in June, 2023 that it would open a location in Fauquier County, adding 38 new jobs. The expansion will be the second location for the brewery. Silver Branch is taking over the Warrenton location of the former Wort Hog Brewing Co., which closed in early-2022. The brewery will have 18 to 24 rotating taps at each location. The Warrenton location will add between 750 to 1,000 barrels of capacity. The facility is expected to open in the fall of 2023.
- **Piedmont Urgent Care** announced in September 2021 that it would build a single-story, 7,540± square foot urgent care facility and pharmacy on the corner of Blackwell Road and Walker Drive in Warrenton. The facility has since opened.
- **Oak View National Bank** announced in May 2021 that it would build a 7,000± square foot building on a vacant lot on Waterloo Street, near its current headquarters on Broadview Avenue in Warrenton. The new Warrenton facility will feature a drive thru. Construction was completed in 2022.

- **Lord Fairfax Community College.** Construction was completed in June 2022 on a new science and technology building on the Fauquier campus of Lord Fairfax Community College to be called Eleanor C. and William A. Hazel Hall. The two-story, 40,000± square foot building houses a nursing skills lab, science labs, engineering and fabrication labs, classrooms, a board room, faculty offices, study spaces and a lounge and a conference center with banquet seating for 275 people. The college also has plans currently under review to construct a single-story, 8,130± square foot trades lab building. The new building will allow the college to offer trades classes for the first time on the Fauquier Campus, including a new carpentry program. Other programs planned for the new building include electrical, HVAC, plumbing and heavy equipment operator.
- **Catlett Data Center Park.** This is a proposal to construct two data centers of 1.4 million square feet at Route 28 and Gaskins Lane.
- **Royal Farms.** Construction was completed in 2022 on new Royal Farms at the southwest corner of Routes 17 and 29 at Opal. The development includes a 4,650± square foot convenience store and 14 fuel pumps. Future development of the remaining 2.1 acres calls for an unspecified 3,160± square foot fast-food restaurant, which would share the same entrance with Royal Farms.
- **Hilton Home2 Suites at Mintbrook.** This is proposed four-story, 90- to 100-room hotel planned for a site within the Mintbrook development in Bealeton. The proposal is currently under review.
- **Puller Veterans Care Center.** Construction was completed in March 2022 on this long-term care center at Vint Hill for military veterans at Vint Hill Road and MacIntosh Drive in eastern Fauquier. The 145,000± square foot, 128-bed facility has eight, 16-bed “houses” flanking the “community center.” Each resident has a private room and bathroom. The center has a large dining area, but each house also has a kitchen for smaller meal gatherings, including those with family members. The facility employs approximately 220 people.
- **Lock-It-Up Self Storage.** Plans were submitted in mid-2022 to construct a self-service storage facility, to include storage units and an office, at 10526 Global Way in Bealeton. The facility will consist of six self-storage buildings, totaling 65,750± square feet. The individual storage buildings range from 4,400± square feet to 21,750± square feet. Approximately 1,050± square feet within one of the buildings will be dedicated for office space for the facility.
- **Wexford Village.** Plans were submitted in mid-2022 for commercial development on the west side of Marsh Road across from Village Center Drive in Bealeton. Plans call for a car wash as well as a total of 90,000± square feet of warehouse/self-storage facility use.

- **The Bank of Clarke County** opened a new branch at 530 Blackwell Road in Warrenton in July 2022.
- **17/66 Industrial Park Lot 8**. Plans were submitted in mid-2022 for the construction of a 104,700± square foot warehouse building along Whitting Road between the Norfolk Southern Railroad and Brampton Court. The proposal is still under review.
- **Vint Hill Independent /Assisted Living**. This is a proposal for a retirement community to be built near the intersection of Rogues Road and Farm Station Road in the Vint Hill area. The facility, which is currently under review, is proposed for 90 apartment units.
- **Amazon Web Services** announced in June 2022 that it would build a 220,200± square foot data center in Warrenton, at the intersection of Blackwell Road and Lee Highway. The Warrenton Town Council approved a special use permit for the project in February 2023. The facility is expected to employ approximately 52 people.

It is difficult to quantify the level of future job growth in Fauquier County, as many employers are small and therefore their expansion plans are not tracked by local or state economic development agencies. Economic development officials note that many local employers have vacant positions that they are struggling to fill, partially due to housing availability for prospective employees.

In addition is a significant level of future job growth in neighboring Prince William County. Data in Table 3 and Table 5 above show that Fauquier County is the location of a considerable number of commuters, and thus the local housing market is greatly impacted by job growth elsewhere in Northern Virginia.

Research from S. Patz & Associates has identified at least 3,500 new jobs that have been publicly announced over the next few years within neighboring Prince William County. This total likely undercounts the level of future job growth as many expansions are smaller in scale and not publicly reported. Many of these jobs are in the western portion of Prince William County and near Fauquier County. In addition are several million square feet within multiple data centers that are planned and under construction in this part of the county that will generate new, high-paid jobs.

Demographic Trends and Projections

Demographic trends for Fauquier County, which include the Town of Warrenton, as well as the adjacent areas of western Prince William County, are presented in Table 7. The Prince William County portion of the market area includes the community of Gainesville and the Town of Haymarket. This portion of Prince William County was included in the market area based on interviews with area apartment managers who note a very limited supply of upscale apartment units in Warrenton, with Warrenton likely to compete with the greater Gainesville/ Haymarket area for the upscale rental market.

The market area's population, as of 2022, is estimated to total 203,890±, based on calculations from the Weldon Cooper Center for Public Service and derived from the most recent 2020 U.S. Census count. For Fauquier County, the 2022 population total of 73,540± exceeds the 2010 census count by 8,340±, or an annual population growth rate of nearly 700. This means that population growth in the County for the 2010 decade is below the rate of the 2000 decade, when the population increased by an annual average of approximately 1,000 people. The Prince William County portion of the market area had a significant increase in population since 2010, with the population expanding by over 28,000. This was a slower pace of population growth compared to the 2000s.

The slower level population growth that has occurred in Fauquier County and western Prince William County since 2010 is due to a lack of new housing development and readily available land for the development of new homes. Modest employment growth in Fauquier County is a second factor. The analysis to follow shows only a limited number of new and proposed apartment communities in the market area at this time. Based on population trends, planned housing developments and some job growth, the market area population is projected to reach 219,280± by 2027.

The target market for the new apartment units at Warrenton Village is renter households earning incomes of \$66,000 and above, when incomes are reported in constant 2023 dollars.

Households in this income category can afford net rents of \$1,650 and above, based on 30 percent of income allocated toward net rents.

As of 2022, the market area has approximately 8,780 renter households in the target income category. This total is 2,640± more than in 2010, with much of this growth supported almost by renters in scattered rental units within for-sale subdivisions. As will be shown below, the market area has very few “upscale” apartment communities, and most are now mature. Trend data and future employment growth support a continued net increase in renters within this income category, with an expectation to reach 9,880± target renter households by 2027, the forecast date of this report. This represents an increase of 1,100± households.

| Table 7: Trends and Projections of Population and Households, Warrenton Village Market Area, 1990-2027 (Constant 2023 dollars) | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|
| | 1990 | 2000 | 2010 | 2022 | 2027 |
| Market Area Population | 69,950 | 93,140 | 166,960 | 203,890 | 219,280 |
| Fauquier County | 48,740 | 55,140 | 65,200 | 73,540 | -- |
| Prince William County Portion 3/ | 21,210 | 38,000 | 101,760 | 130,350 | -- |
| Group Quarters Population | 1,470 | 770 1/ | 750 | 1,150 | 1,150 |
| Household Population | 68,480 | 92,370 | 166,210 | 202,740 | 218,130 |
| Persons Per Household | 2.84 | 2.74 | 2.91 | 2.90 | 2.89 |
| Total Households | 24,140 | 33,770 | 57,040 | 71,630 | 75,480 |
| Renter Households | 7,100 | 8,740 | 13,240 | 18,160 | 20,210 |
| Percent Renter Households | 29.4% | 25.9% | 23.2% | 25.4% | 26.7% |
| Target Market (\$66,000+) | | | | | |
| Total Households | 3,070 | 3,960 | 6,140 | 8,780 | 9,880 |
| Percent of Renter Households | 43.2% | 45.3% | 46.4% | 48.3% | 48.9% |
| Notes: 1/ Decline due to closure of Vint Hill Station in 1997, a U.S. Army and NSA signals intelligence and electronic warfare facility. | | | | | |
| 2/ Growth driven by opening of White Springs Senior Living, Poet’s Walk Warrenton, The Villa at Suffield Meadows, and Puller Veterans Station. | | | | | |
| 3/ Includes the following U.S. Census tracts in Prince William County, VA: 9014.03, 9014.07, 9014.08, 9014.09, 9014.10, 9014.11, 9014.12, 9014.13, 9014.14, 9014.15, 9014.16, 9014.17, 9015.03, 9015.04, 9015.05, 9015.06, 9015.07, 9015.08, 9015.09, 9015.10 and 9015.11. | | | | | |
| Source: U.S. Census Bureau; Weldon Cooper Center for Public Service; S. Patz & Associates, Inc. | | | | | |

It should be noted that the demographic trends and projections detailed in Table 7 include the Town of Warrenton. Demographic trends and projections are analyzed for the entire market area, which is comprised of Fauquier County (including Warrenton), as well as the adjacent areas of Gainesville and Haymarket in Prince William County. The market area is the geographic area from which the majority of future tenants at Warrenton Village are expected to originate from and where the competitive rental housing alternatives are located. An analysis of demographic trends and projections of only the Town of Warrenton would understate the market for future renters.

Data in Table 8 show the demographic trends and projections within the Town of Warrenton for comparison purposes. The projections shown are opportunity projections, as they rely on the ability of the Warrenton Village proposal to be built and occupied. Absent this proposal, the projected population in the Town would be reduced.

The data show modest growth among target income households prior to 2022, which is principally due to a lack of new apartment unit development targeting the upscale market. A comparison to the data in Table 7 shows that most target income households have resorted to renting outside of the Town of Warrenton.

**Table 8: Trends and Projections of Population and Households,
Town of Warrenton, Virginia, 1990-2027**
(Constant 2023 dollars)

| | <u>1990</u> | <u>2000</u> | <u>2010</u> | <u>2022</u> | <u>2027</u> |
|--|-------------|-------------|-------------|-------------|-------------|
| Town of Warrenton Population | 4,830 | 6,670 | 9,610 | 10,200 | 10,850 |
| Group Quarters Population | 270 | 410 | 340 | 340 | 340 |
| Household Population | 4,560 | 6,260 | 9,270 | 9,860 | 10,510 |
| Persons Per Household | 2.34 | 2.34 | 2.48 | 2.48 | 2.47 |
| Total Households | 1,950 | 2,680 | 3,740 | 3,980 | 4,260 |
| Renter Households | 920 | 1,140 | 1,510 | 1,570 | 1,950 |
| Percent Renter Households | 47.1% | 42.3% | 40.3% | 39.5% | 45.8% |
| Target Market (\$66,000+) | | | | | |
| Total Households | 460 | 440 | 590 | 630 | 1,030 |
| Percent of Renter Households | 50.0% | 38.6% | 38.9% | 40.1% | 52.8% |
| Source: U.S. Census Bureau; S. Patz & Associates, Inc. | | | | | |

The key point in Table 8 is that the Town of Warrenton has historically had a small number of renter households, particularly in the targeted income range under study. This is a supply, rather than a demand issue, as the shortage of quality rental housing has pushed prospective renters outside of the Town and in many cases outside of Fauquier County. The construction of a new and attractive rental community, of the type proposed for Warrenton Village, provides an opportunity to reverse these past trends. Again, it should be noted that while Warrenton Village will clearly impact the Town of Warrenton the most, it is likely to attract renters from outside of the Town as well.

Section II: Apartment Market Analysis

This part of the report studies the depth of the greater Warrenton area “better” apartment market. The analysis is intended to determine market support for the apartment units proposed at Warrenton Village. As will be shown, there are no upscale, professionally managed market rate apartment properties in Fauquier County.

In addition to the analysis of the current apartment market, the last subsection of Section II studies the apartment unit pipeline in the market area. These apartment properties are studied for development status, project size and comparison with the Warrenton Village proposal.

Characteristics of the Current Apartment Market

Competitive Apartment Market

The existing professionally managed apartment market in the greater Warrenton area is small, with nearly all professionally managed apartment buildings having income- or age-restrictions in place. Thus, most apartment communities in the Warrenton area and elsewhere in Fauquier County serve a separate population compared to the Warrenton Village proposal. The small number of market rate apartment units in the area are mature, and not fully competitive with the upscale and fully-amenitized Warrenton Village proposal.

The existing market rate apartments in the greater Warrenton area include the 100-unit Aspen Apartments South, 24-unit Green Street Apartments and 24-unit Victoria Gardens Apartments. These are mature, modest rental properties that were built between the 1960s and 1980s and are routinely at full occupancy. They serve a more modest income market compared to the Warrenton Village proposal with lower, non-competitive rents. They therefore do not represent true competition for the Warrenton Village proposal.

The demographic analysis shown above in Table 7 identifies a considerable number of higher-income renter households in the market area, with over 40 percent of renters earning

annual incomes over \$66,000. These renters almost entirely occupy scattered townhomes and single-family homes that were not initially built as rental properties, but are instead leased by private individuals, realtors and property management firms. Most are two- and three-bedroom units, with two-bedroom units renting between \$1,600 and \$2,100 and three-bedroom units primarily renting for over \$2,000. Essentially all of these homes are occupied at this time. Data in Table 8 show that a small share of these households currently resides in the Town of Warrenton, with the small percentage due to the persistent limited supply of upscale rental housing.

The closest upscale apartment cluster to Warrenton is the greater Gainesville/ Haymarket area of western Prince William County, which is an approximately 20-minute drive from Warrenton. Management at apartment properties in this area note that they partially compete with the Warrenton market given the severely limited supply of “better” apartments there. There are only three “somewhat” upscale apartments in this part of western Prince William County, as detailed in Table 9 below.

All are now becoming somewhat mature, with two properties—Somershill Farms and Marque Apartments—now 17 years old, and one property—Somerset Pointe—over 20 years old. Marque Apartments generates one-bedroom rents of between \$2,205 and \$2,215. Two-bedroom rents at Somershill Farms and Marque Apartments exceed \$2,200. Somerset Pointe has more modest rents as this is an older apartment property. These rents have been readily accepted by the market as all three properties are at or near full occupancy.

The one-bedroom rents at Warrenton Village are proposed to be below the one-bedroom rooms at Marque Apartments and Somershill Farms. The two-bedroom rents proposed for Warrenton Village will be approximately \$200 below the two-bedroom rents at Marque Apartments and Somershill Farms, on average. The proposed three-bedroom rents of between \$2,400 and \$3,000 are similar to the rents being generated at area scattered three-bedroom units, most of which offer no on-site amenities and require tenants to cover the costs of landscaping and snow removal. Most are now at least a decade old and with lesser levels of unit finishes and

features compared to the Warrenton Village proposal. The proposed three-bedroom rents are above the rents at Somerset Pointe, which is now over two decades old.

Table 9: Characteristics of Better Apartment Communities, Gainesville/Haymarket, VA, June 2022

| | <u>Year Built</u> | <u>Total Units</u> | <u>Vacant Units</u> | <u>One-Bedroom</u> | <u>Two-Bedroom</u> | <u>Three-Bedroom</u> |
|----------------------------------|-------------------|--------------------|---------------------|------------------------|------------------------|------------------------|
| Residences at Somerhill Farms 1/ | 2006 | 140 | 1 | \$1,893-\$1,967 | \$2,262-\$2,924 | \$2,398 |
| Marque Apartments | 2006 | 200 | 7 | \$2,205-\$2,215 | \$2,214-\$2,466 | \$2,963-\$2,998 |
| Somerset Pointe | 2001 | 173 | 3 | \$1,517 | \$1,815 | \$2,088 |
| Proposed Rents | | | | \$1,650-\$1,900 | \$2,200-\$2,350 | \$2,400-\$3,000 |

Notes: 1/ Rent data only provided for vacant and soon-to-be vacant units.
 Source: Field and Telephone Survey by S. Patz and Associates, Inc.

Shown next are photos of the above apartment properties. All are multi-level buildings, but none have contemporary designs, and none are as attractive as the Warrenton Village proposal.



Somerhill Farms



Marque Apartments



Somerset Pointe

The key point is that the Town of Warrenton does not currently offer any upscale, professionally managed apartment units that would be fully competitive with Warrenton Village. The same is true for other locations in Fauquier County. Western Prince William County does have a small number of more upscale apartment units, but these are now becoming mature and do not offer the same level of amenities and features as other newly built apartment properties in Northern Virginia.

Despite the lack of inventory, the market area does have a considerable number of higher-income renter households, with nearly half of these renters earning annual incomes above \$66,000. This denotes that most of these renters are leasing scattered, non-amenitized townhomes and single-family homes. Many of these households can afford “better” apartment units but have few available options. Most of the newer scattered rental units are renting at similar rents to those proposed for Warrenton Village. There is clearly a market for upscale rental housing that is not being adequately served at this time.

Apartment Pipeline

There is currently only one apartment community in active planning in Fauquier County, and none under construction. Vint Hill Lofts is proposed for 183 apartment units to be built at

the former Vint Hill Farm Station Barrack at 4221 Sigler Road and 4285 Bludau Drive. The community will contain a mix of 29 studio, 128 one-bedroom and 26 two-bedroom apartment units. Studio rents will start at \$1,175, one-bedroom rents will start at \$1,550 and two-bedroom rents will start at \$2,050. Rents will include water, sewage, trash and basic high-speed internet. All units will be equipped with a washer and dryer. The developers, Echelon Resources, have not yet secured all County approvals.

Apartment Market Summary and Demand Analysis

At this time, the rental market under study is fully occupied and a sizable pent-up demand exists due to job growth in Warrenton, elsewhere in Fauquier County and neighboring jurisdictions in Northern Virginia. Coupled with this job growth is the longstanding lack of upscale apartment unit development in the area. Area employers, many of which are actively filling open positions, report challenges with attracting new employees, which is partially a function of a very limited supply of apartments in the greater Warrenton area.

The Town of Warrenton and Fauquier County have not been the location of new market rate apartment unit development in several decades. This is despite the fact that the number of higher income renters has steadily increased in the area since 2000, denoting that many of these households have resorted to renting scattered, non-amenitized rental units within for-sale subdivisions. Western Prince William County has also not been the location of new apartment unit development, with the newest apartments now 17 years old. This is partially due to a lack of property zoned land for apartment unit development. The better apartment properties in this portion of Prince William County are typically fully occupied or with very few vacant apartment units.

Many protentional renters who are employed locally have resorted to renting outside of the market area due to the limited apartment unit supply, a trend that could be reversed if a new attractive apartment community were to be built in Warrenton. Additionally, commuters who may want to select Warrenton as an attractive location to relocate have limited options. Some

renters have also resorted to leasing less desirable units due to the extremely limited rental housing supply.

The net demand analysis is shown below based on the projection of new apartment units less vacant and pipeline proposals. From the 1,100± total apartment unit demand projection is subtracted 183 pipeline apartment units proposed for Vint Hill Lofts and the 376-unit Warrenton Village proposal. There are essentially no vacancies in the market area for comparable upscale rental units. The net demand analysis shows an underserved market, resulting in a surplus demand of 540± apartment units.

The 1,100 figure is an extrapolation from the analysis of demographic trends and projections, which begins on Page 27. This number represents the total growth in demand for the competitive apartment market area, distinct from the County itself. The boundaries of the market area are detailed in Table 8, which includes small portions of Prince William County.

Our demand projection is likely to “be in the ballpark,” but it is difficult to make projections within a marketplace that has not added new market rate apartment units in several years. Nevertheless, the demand analysis is defined as positive.

| <u>Net Demand Analysis</u> (2022-2027) | |
|---|---------------------------|
| | <u>Total Units</u> |
| Demand | 1,100 |
| Less: | |
| Pipeline Units | 183 |
| Warrenton Village | <u>376</u> |
| <i>(Subtotal)</i> | <i>(559)</i> |
| Surplus Demand | 541 |

We are aware that the Warrenton Village proposal is large, but the analysis above clearly indicates a pent-up demand for new, upscale apartment units. The proposal offers a diversity of unit types, including three-bedroom townhomes attractive to families, and elevator-served apartment units that will likely attract young professionals and active seniors. The contemporary

design, expansive amenity package and walkability to area retailers, grocery stores and restaurants will set Warrenton Village apart from all of the existing apartments in Fauquier County and the greater Gainesville area. If built as proposed, Warrenton Village should be successful in terms of lease up and at the rents proposed.

Section III: Fiscal Impacts Analysis

This section of the report outlines the methodology and findings of the Fiscal Impacts Analysis (FIA) for the proposed residential development comprising Warrenton Village in the Town of Warrenton at build-out. The FIA compares the tax revenues expected from the proposal, as previously described, with the tax-supported costs the Town of Warrenton will incur to serve the project once it is fully developed. The net fiscal benefits will be the difference between those revenues and the various costs to the Town associated with new development. As noted above, the development plan involves constructing 376 rental units.

On-site fiscal impacts from Warrenton Village pertain to development on the site itself. Fiscal impacts generated off-site, due to the spin-off effects of resident and employee expenditures within the Town of Warrenton, are examined separately. For off-site impacts, economic impact assessments are undertaken to demonstrate how consumer expenditures will stimulate new business within the Town, based on new business receipts, employment, and employee earnings resulting from those expenditures.

Summary of Fiscal Impacts

Table 10 presents a summary of the revenues, costs and net fiscal benefits (revenue surplus or deficit) for the proposed 320 apartment, 36 two-over-two and 20 rental townhome units that are proposed for the Warrenton Village site and for the economic activity that would be generated in the Town of Warrenton by residents off-site.

The data in Table 10 show negative on-site impacts, which is primarily due to two factors. For one, the Town of Warrenton levies a low real estate tax rate of only \$0.0401 per \$100 of value. Thus, while Warrenton Village will likely be assessed at over \$100 million, the taxable amount to the Town of Warrenton for the property would be relatively modest. Second, the largest revenue sources for the General Fund Budget are other local taxes. These include nine different local taxes, most of which do not generate on-site revenues. The majority of local tax revenues, for instance,

are generated by the Meals Tax, BPOL and Local Sales Taxes. As a consequence of the above two factors, a large share of total fiscal impacts will be generated by off-site economic activity.

In total, and at build-out, the full development and occupancy of the new rental units at Warrenton Village will generate a positive annual fiscal benefit of approximately \$46,100, reported in constant 2023 dollars.

**Table 10: Summary of On-Site and Off-Site Fiscal Impacts of Apartments,
Warrenton Village at Build-Out, Warrenton, Virginia**
(Constant 2023 Dollars)

| <u>Source of Fiscal Impacts on the Town</u> | <u>Impacts On-Site in Warrenton</u> | <u>Impacts Off-Site in Warrenton</u> | <u>Total Fiscal Impacts</u> |
|---|-------------------------------------|--------------------------------------|-----------------------------|
| <u>Apartments (320 Units)</u> | | | |
| Revenues to the Town | \$117,560 | \$338,870 | \$456,430 |
| Town Costs | <u>-\$280,280</u> | <u>-\$145,920</u> | <u>-\$426,200</u> |
| <i>Subtotal</i> | <i>-\$162,720</i> | <i>\$192,950</i> | <i>\$30,230</i> |
| <u>Two-Over-Two (36 Units)</u> | | | |
| Revenues to the Town | \$14,550 | \$55,520 | \$70,070 |
| Town Costs | <u>-\$42,740</u> | <u>-\$23,490</u> | <u>-\$66,230</u> |
| <i>Subtotal</i> | <i>-\$28,190</i> | <i>\$32,030</i> | <i>\$3,840</i> |
| <u>Townhomes (20 Units)</u> | | | |
| Revenues to the Town | \$8,050 | \$41,150 | \$49,200 |
| Town Costs | <u>-\$23,310</u> | <u>-\$13,860</u> | <u>-\$37,170</u> |
| <i>Subtotal</i> | <i>-\$15,260</i> | <i>\$27,290</i> | <i>\$12,030</i> |
| <u>Total Residential (376 units)</u> | | | |
| Revenues to the Town | \$140,160 | \$435,540 | \$575,700 |
| Town Costs | <u>-\$346,330</u> | <u>-\$183,270</u> | <u>-\$529,600</u> |
| Net Fiscal Benefits | <u>-\$206,170</u> | <u>\$252,270</u> | <u>\$46,100</u> |

Source: Town of Warrenton, VA; S. Patz & Associates, Inc.

In addition to the on-site fiscal impacts, the economic impacts off-site in the Town of Warrenton from new resident expenditures would generate additional tax revenue. Based on anticipated household incomes, resident expenditures could equal approximately \$26.4 million annually at businesses in the Town, with another \$52.3 million in business expenditures to be generated by the “ripple effect” of resident expenditures across the local economy. This would generate a total of over \$78.6 million in business activity in the Town.

The off-site expenditures will generate new jobs. These would be added region-wide and not just in the Town of Warrenton. Annual earnings from these new jobs would provide additional fiscal impacts across the region. These calculations were reduced by 30 percent to account for consumer expenditures outside of the Town, particularly elsewhere in Fauquier County and in neighboring communities such as Prince William County. Thus, the off-site calculations capture expenditures only within Warrenton.

The following analysis presents the derivation of the fiscal impacts to be derived from the development at the Warrenton Village site. These impacts include the net fiscal benefits of the proposed rental units, being the difference between tax revenue generated for the Town of Warrenton and the costs of public services to serve residents of the new development. As stated above, economic impacts include new business revenue, employees, and employee earnings that would accrue in the Town as a result of resident expenditures in the Town annually.

On-Site Fiscal Impacts: From New Rental Units

The following analyses derive the revenues generated for the Town of Warrenton from Warrenton Village “on-site.” “On-site” denotes revenues that are derived directly from real estate development and personal property taxes, while “off-site” impacts are generated from local business growth based on new resident expenditures. Off-site impacts will be treated separately as “economic impacts,” although their fiscal benefits are also assessed. Data in the tables to follow are rounded off to the nearest ten dollars and represent annual amounts after build-out. All data are presented in constant 2023 dollars.

Table 11 summarizes the various revenues to accrue to the Town of Warrenton from the development and lease-up of the 376 rental units to be built at the study site. Real Estate taxes would account for nearly 38 percent of the revenue to be generated on-site. Personal Property and Consumer Utility taxes would account for the remainder of the \$140,160 in on-site tax revenue.

**Table 11: Summary of Annual On-Site Revenues,
Warrenton Village at Build-Out,
Warrenton, Virginia**
(Constant 2023 Dollars)

| | <u>Amount</u> | <u>Percent of Total</u> |
|---|------------------|-------------------------|
| <u>Apartments</u> | | |
| Real Estate Tax | \$44,060 | 37.5% |
| Personal Property Tax | \$13,980 | 11.9% |
| Consumer Utility Tax | <u>\$59,520</u> | <u>50.6%</u> |
| <i>Subtotal</i> | <i>\$117,560</i> | <i>100.0%</i> |
| <u>Two-Over-Two</u> | | |
| Real Estate Tax | \$5,530 | 38.0% |
| Personal Property Tax | \$2,300 | 15.8% |
| Consumer Utility Tax | <u>\$6,720</u> | <u>46.2%</u> |
| <i>Subtotal</i> | <i>\$14,550</i> | <i>100.0%</i> |
| <u>Townhomes</u> | | |
| Real Estate Tax | \$3,150 | 39.1% |
| Personal Property Tax | \$1,250 | 15.5% |
| Consumer Utility Tax | <u>\$3,650</u> | <u>45.3%</u> |
| <i>Subtotal</i> | <i>\$8,050</i> | <i>100.0%</i> |
| <u>Total</u> | | |
| Real Estate Tax | \$52,740 | 37.6% |
| Personal Property Tax | \$17,530 | 12.5% |
| Consumer Utility Tax | <u>\$69,890</u> | <u>49.9%</u> |
| Total Revenue | \$140,160 | 100.0% |
| Source: Town of Warrenton; S. Patz & Associates, Inc. | | |

Each revenue source will be explained in the paragraphs to follow. A separate section of the report will address the costs of services and facilities that the Town of Warrenton must provide to serve the future development.

Real Estate Tax

Development costs for Warrenton Village are detailed in Table 12. Total development costs are expected to be approximately \$343,277 per apartment unit, \$383,277 per two-over-two and \$393,277 per townhome unit, including site preparation and land acquisition costs. These costs are based on data provided by the sponsor and are consistent with developments costs for other new, upscale rental communities in this part of Virginia. The total property development cost is approximately \$131.5 million. At the Town's real estate tax rate of \$0.0401 per \$100 of

assessed value, real estate taxes would total \$52,740 each year after buildout, in constant 2023 dollars.

| | <u>Apartments</u> | <u>Two-Over-Two</u> | <u>Townhomes</u> | <u>Total</u> |
|------------------------|-------------------|---------------------|------------------|-----------------|
| Cost/Price per Unit | \$343,277 | \$383,277 | \$393,277 | \$349,852 |
| Number of Units | 320 | 36 | 20 | 376 |
| Total Cost | \$109,880,640 | \$13,797,972 | \$7,865,540 | \$131,544,152 |
| Tax Rate | \$0.0401/\$100 | \$0.0401/\$100 | \$0.0401/\$100 | \$0.0401/\$100 |
| Real Estate Tax | \$44,060 | \$5,530 | \$3,150 | \$52,740 |

Source: Town of Warrenton, VA; S. Patz & Associates, Inc.

Personal Property Tax

Personal property taxes for residences in Virginia are based on the depreciated values of vehicles used solely for residential purposes. Residents at Warrenton Village are projected to own approximately 575 vehicles, based on an estimated 1.53 vehicles per apartment unit and 2.00 per two-over two and townhome units at the community. This is in line with the average car ownership rate in the Town of Warrenton.

Residents of Warrenton are required to pay a flat fee of \$25 per vehicle, as well as a personal property tax on vehicles at a rate of \$1.00 per \$100 in assessed value. The Town exempts the personal property tax on vehicles valued at less than \$20,000 and exempts the tax on the first \$20,000 of value for those that are worth more. To be conservative, only 15 percent of vehicles are estimated to be valued above \$20,000. At this value, the total on-site personal property value for residents would come to approximately \$298,000. At the tax rate of \$1.00 per \$100 of assessed value, on-site personal property taxes would be \$2,980 annually in constant 2023 dollars. Added to this total is a flat fee of \$25 per vehicle, which adds an additional revenue of \$14,550 for a total revenue of \$17,530. This is shown in Table 13.

Table 13: Personal Property Taxes, Warrenton Village at Build-Out, Warrenton, Virginia
(Constant 2023 Dollars)

| | <u>Apartments</u> | <u>Two-Over-Two</u> | <u>Townhomes</u> | <u>Total</u> |
|--|-------------------|---------------------|------------------|-----------------|
| Number of Units | 320 | 36 | 20 | 376 |
| Percent Occupied | 97.0% | 97.0% | 97.0% | 97.0% |
| Occupied Units | 310 | 35 | 19 | 364 |
| Vehicles per Unit | 1.53 | 2.00 | 2.00 | 1.60 |
| Number of Vehicles | 474 | 70 | 38 | 582 |
| Number of Vehicles above \$20,000 (15%) | 71 | 11 | 6 | 88 |
| Depreciated Value Per Vehicle (Above \$20,000) | \$3,000 | \$5,000 | \$5,000 | \$3,350 |
| Total Depreciated Value | \$213,000 | \$55,000 | \$30,000 | \$298,000 |
| Tax at \$1.00/\$100 | \$2,130 | \$550 | \$300 | \$2,980 |
| +\$25/Vehicle | \$11,850 | \$1,750 | \$950 | \$14,550 |
| Total Tax | \$13,980 | \$2,300 | \$1,250 | \$17,530 |

Source: Town of Warrenton; S. Patz & Associates, Inc.

Consumer Utility Tax

Consumer utility taxes are taxes on expenditures on consumer utilities including electricity, natural gas and telephone utilities. These taxes are collected by the utility companies and remitted to the Town. While the tax rates for the different utilities vary, experience has shown that the average tax is about \$4.00 per utility, per month. This analysis assumes an occupancy rate of 97 percent to allow for lease-up and normal turnover. At this rate, there would be 364 occupied rental units. For four utilities per household, averaging \$4.00 per utility per month for 12 months, the total utility tax for Warrenton Village would be \$69,890 annually. This is shown in Table 14.

Table 14: Consumer Utility Taxes, Warrenton Village at Build-Out, Warrenton, Virginia
(Constant 2023 Dollars)

| | <u>Apartments</u> | <u>Two-Over-Two</u> | <u>Townhomes</u> | <u>Total</u> |
|--------------------------|-------------------|---------------------|------------------|-----------------|
| Number of Units | 320 | 36 | 20 | 376 |
| Percent Occupied | 97.0% | 97.0% | 97.0% | 97.0% |
| Occupied Units | 310 | 35 | 19 | 364 |
| Utilities Per Unit | 4 | 4 | 4 | 4 |
| Each Utility Average | \$4.00 | \$4.00 | \$4.00 | \$4.00 |
| Number of Months | 12 | 12 | 12 | 12 |
| Total Utility Tax | \$59,520 | \$6,720 | \$3,650 | \$69,890 |

Source: Town of Warrenton; S. Patz & Associates, Inc.

On-Site Fiscal Impacts: Town Costs to Serve Warrenton Village

The focus of the on-site fiscal impacts of costs to the Town of Warrenton from Warrenton Village is the General Fund Budget expenditures expressed on a per capita basis. Per capita expenditures are allocated (by type) to residents and businesses (in terms of numbers of employees) on a proportional basis according to utilization by each type of persons. These costs cover both other operations for services and capital improvements in the form of annual debt service to support the capital improvements programs of the Town. There are no impacts on schools, as public schools are funded by county, state and federal sources.

Budget expenditures will be discussed below, and per capita costs will be calculated based on current types of users. Applying these costs per capita to the residents of Warrenton Village produces an estimate of the annual costs to the Town for services to the proposed new apartment units.

For the Town's adopted FY 2023 budget, approximately 67.8 percent of all General Fund expenditures are supported by local taxes, the remainder being revenues from the state and federal governments. An examination of budgeted revenues for the year will demonstrate this proportion. The fiscal impact costs are based on General Fund expenditures supported by local taxes.

| Table 15: <u>General Fund Revenue by Type from Local Taxes,</u> <u>Town of Warrenton, Virginia</u> | | |
|---|----------------------|--------------------------------|
| | <u>Amount</u> | <u>Percent of Total</u> |
| General Property Taxes | \$1,449,235 | 8.8% |
| Other Local Taxes | <u>\$9,675,138</u> | <u>58.9%</u> |
| <i>Subtotal Local Taxes</i> | <i>\$11,124,373</i> | <i>67.8%</i> |
| Non-Tax Revenue | \$5,288,712 | 32.2% |
| Total General Fund Revenue | \$16,413,085 | 100.0% |
| Source: Adopted FY 2023 Budget for the Town of Warrenton | | |

When the expenditures for each type of user are determined, and the tax-supported proportions are calculated, these costs are divided by the number of persons by type. The population of the Town of Warrenton is estimated to total 10,330± as of 2023, based on recent census data. Regarding jobs in the Town, data from the U.S. Bureau of Labor Statistics (BLS) only track the number of at-place jobs at the county-wide level and not the town level. This is the standard source of employment data for analyses of this type. Data from the Fauquier County Department of Economic Development show that approximately 14,000 people are employed within the Town limits. This is nearly 70 percent of total employment in Fauquier County.

When the expenditures for each type of user are determined, and the tax-supported proportions are calculated, these costs are divided by the number of persons by type. For residents, this is calculated at \$558 per person, while it stands at \$388 per employee for businesses. The disparity is due to approximately \$2.61 million allocated to the Town's Parks and Recreation department.

The budget total for the Town for FY 2023, is \$16.41 million, with 42.5 percent of that cost for the Town's population and 57.5 percent for employment, or persons with jobs in the Town.

Table 16: Allocation of General Fund Expenditures by Type for Residents (Population) and Businesses (Employees), Town of Warrenton, Virginia
(Constant 2023 dollars)

| | <u>Adopted FY 2023</u> <u>Population</u> | <u>Adopted FY 2023</u> <u>Employment</u> | <u>Adopted FY 2023</u> <u>Total</u> |
|--|---|---|--|
| General Gov't Admin. | \$915,956 | \$1,241,372 | \$2,157,328 |
| Public Safety | \$1,806,918 | \$2,448,872 | \$4,255,790 |
| Public Works | \$1,939,681 | \$2,628,802 | \$4,568,483 |
| Parks, Rec. & Culture | \$2,608,455 | \$0 | \$2,608,455 |
| Community Development | \$571,657 | \$774,754 | \$1,346,411 |
| Contributions | \$29,022 | \$39,332 | \$68,354 |
| Non-departmental | \$149,726 | \$202,919 | \$352,645 |
| Dept Service | \$358,785 | \$492,341 | \$855,618 |
| Transfer to Capital | <u>\$84,916</u> | <u>\$115,084</u> | <u>\$200,000</u> |
| Total General Fund Expenditures | \$8,465,114 | \$7,943,477 | \$16,413,084 |
| Percent Tax Support | 67.78% | 67.78% | 67.78% |
| Tax-supported Expenditures | \$5,737,440 | \$5,383,888 | \$11,124,372 |
| Number of Persons | 10,330 | 14,000 | 24,330 |
| Per Capita Tax Support | \$555 | \$385 | \$457 |

Sources: FY 2023 Adopted Budget for Town of Warrenton, VA; U.S. Census Bureau, Fauquier County Department of Economic Development;

Tax-Supported Costs of Warrenton Village

As explained above, costs to the Town to serve Warrenton Village are derived by multiplying the per capita costs of residents and employees by the numbers of those persons. These are tax-supported costs, to be compared to the taxes generated by Warrenton Village. The costs will cover costs of facilities in terms of debt service for capital improvements.

There is expected to be about 624 residents at Warrenton Village at build out, at a ratio of 1.3 people for one-bedroom units, 1.8 people for two-bedroom units and 2.2 persons for three-bedroom units. These data are based on current demographic trends at the existing newly built apartment complexes in the market area. Data were derived from interviews with on-site property managers in the region.

It was shown above in Table 16 that the average tax-supported cost for residents in the Town is \$555 per resident. For the residents of Warrenton Village, total tax-supported costs to the

Town of Warrenton would be approximately \$346,330. This calculation is presented in Table 17 below.

| Table 17: Tax Supported Costs for Residents, Warrenton Village, at Build-Out, Warrenton, Virginia (Constant 2023 Dollars) | | | | |
|---|-------------------|---------------------|------------------|------------------|
| | Apartments | Two-Over-Two | Townhomes | Total |
| Number of Units | 320 | 36 | 20 | 376 |
| Percent Occupied | 97.0% | 97.0% | 97.0% | 97.0% |
| Occupied Units | 310 | 35 | 19 | 364 |
| Persons per Unit | 1.63 | 2.20 | 2.20 | 1.71 |
| Residents | 505 | 77 | 42 | 624 |
| Expenditure Per Capita | \$555 | \$555 | \$555 | \$555 |
| Population Expenditures | \$280,280 | \$42,740 | \$23,310 | \$346,330 |

Source: Town of Warrenton; S. Patz & Associates, Inc.

On-Site Fiscal Impacts

Data in Table 18 below compares the calculated on-site tax revenues expected from Warrenton Village at build-out with the tax-supported costs required to serve the residents of the new rental units to be built. The annual net fiscal benefit will be a deficit of \$206,170, in constant 2023 dollars.

| Table 18: Net On-Site Fiscal Tax Benefit, Warrenton Village, at Build-Out, Warrenton, Virginia (Constant 2023 dollars) | | | | |
|--|-------------------|---------------------|------------------|-------------------|
| | Apartments | Two-Over-Two | Townhomes | Total |
| Total Tax Revenue | \$117,560 | \$14,550 | \$8,050 | \$140,160 |
| Population Expenditures | -\$280,280 | -\$42,740 | -\$23,310 | -\$346,330 |
| Net Fiscal Benefit | -\$162,720 | -\$28,190 | -\$15,260 | -\$206,170 |

Source: Town of Warrenton; S. Patz & Associates, Inc.

Off-Site Impacts: Economic and Fiscal

In addition to the revenues and costs that accrue to the Town of Warrenton from the apartments “on-site” – that is, due to the apartments and residents themselves in their dwellings, there are also off-site impacts that occur, as residents spend part of their income in the Town for consumer goods, and as businesses re-spend the income from purchases by residents by the

purchase of goods and services from other vendors in the Town. Calculations to follow are reduced by 30 percent to account for expenditure that occurs to businesses outside of the Town. This ratio is based on the number of employees in the Town relative to the County. This is a conservative estimate.

The U.S. Bureau of Labor Statistics details average consumer expenditure by location and income levels. There is no direct budget information for Fauquier County or the Town of Warrenton. Instead, national data for a budget for household incomes, based on national averages, has been chosen for this calculation. Among the larger expenditures by consumers are over 20± percent for housing and over 25± percent for retail trade, including automobiles.

Consumer expenditures made off-site in Warrenton are translated into economic impacts in the Town using multiplier matrices provided for the local area by the U.S. Bureau of Economic Analysis, Department of Commerce. These multipliers capture the round-by-round flows of expenditures in the Town initiated by residents at the new homes. There are separate matrices for business receipts, employment and employee earnings. The items in the consumer budget are multiplied in turn by these expenditure-specific categories in each matrix and summed to give the “ripple effect” of circulation of money through the economy. The ripple effects, plus the original consumer expenditures, equal the total economic impacts of homes residents on the Town economy.

Business Receipts

Residents of Warrenton Village are anticipated to allocate approximately 78.9 percent of their total income towards non-housing expenditures. The residual income is predominantly apportioned towards taxes and personal savings. The income estimates of future tenants are deduced from the proposed rents outlined in Table 1, with an assumption that a typical household will have an income that is approximately 15.0 percent higher than the minimum required to qualify for residency in the community. This requirement stipulates that a minimum of 30 percent of income be allocated towards net rent. This income range is conservative and is

representative of the anticipated typical renter demographic within the community, as the majority are expected to earn above the established minimum threshold.

Overall, this equates to \$26.4 million in annual consumer expenditures from the expected residents at full build-out. The ripple, or multiplier effect, will generate another \$52.3 million in annual receipts among Town businesses, for a total business receipts impact of \$78.6 million. These business receipts will form the basis for many tax receipts for the Town of Warrenton from the impacted businesses.

| <u>Source of Impact</u> | <u>Apartments</u> | <u>Two-Over-Two</u> | <u>Townhomes</u> | <u>Total</u> |
|--------------------------------|---------------------|---------------------|--------------------|---------------------|
| Direct Consumer Expenditures | \$20,324,220 | \$3,268,300 | \$2,753,100 | \$26,345,620 |
| Indirect Ripple Effect | \$41,637,240 | \$6,695,610 | \$3,948,100 | \$52,280,950 |
| Total Business Receipts | \$61,961,460 | \$9,963,910 | \$6,701,200 | \$78,626,570 |

Employment and Earnings

Since there are only a few employees on-site for the apartment units, essentially all employment and employee earnings impacts come from the ripple or multiplier effects on businesses, i.e., employee earnings that support increased business receipts in the Town. There will be approximately 476 new full-time equivalent employment positions created from resident expenditures at Warrenton Village, over time, with total earnings for these employees of \$21.5 million.

| <u>Spinoff Employment and Salaries</u> | | | |
|--|------------------|-----------------------|-----------------------|
| | <u>Employees</u> | <u>Average Salary</u> | <u>Total Earnings</u> |
| Apartments | 379 | \$45,185 | \$17,125,115 |
| Two-Over-Two | 61 | \$45,183 | \$2,756,163 |
| Townhomes | 36 | \$45,450 | \$1,636,200 |
| Total/ Average | 476 | \$45,273 | \$21,517,478 |

The new jobs to be created by the construction of Warrenton Village would not only enhance Warrenton's economic vitality but also diversify the employment base. The creation of these new jobs will span various sectors, reflecting the broad impact of the proposed

development. It is important to underscore that this job growth will have a multiplier effect, stimulating other sectors of the local economy indirectly. The new jobs, along with the associated attraction of new residents and increased patronage of local businesses, would significantly contribute to attracting further investment from potential employers.

Furthermore, the proposed development aligns with Warrenton's comprehensive plan which envisions the Town as a hub for culture, entertainment, and the arts. The design elements of the project are formulated to enrich the Town's cultural fabric, including providing a diversity of home types. As such, the merits of this development extend beyond immediate economic advantages and aim to cultivate a long-term vision for Warrenton.

Off-Site Fiscal Impact

Table 19 summarizes the revenues and costs to the Town of Warrenton from the off-site impacts of Warrenton Village. These impacts derive primarily from the \$78.6 million in new business receipts in the Town, plus estimates of real property and business personal property for a typical commercial operation. It is proper to look at these impacts as long-term. That is, it is not likely that the projected 476 new employees will be immediate or lead to abrupt expansion of the property tax base, but this should happen over time as part of business expansion in the Town.

Other tax receipts should accrue as soon as consumers at Warrenton Village begin making expenditures, that is, as soon as the property is built out and stabilized occupancies are achieved. In the short run, revenues should start at approximately \$65,330 rising to \$435,540 as businesses expand physically. Costs are based on 476 new employees within the Town at a cost to the Town of \$385 per employee, as derived above in Table 16. With costs of \$183,270, the net fiscal benefits from off-site expenditures from Warrenton Village residents should be approximately \$252,270.

**Table 19: Off-Site Fiscal Impact of Consumer Expenditures by Type,
Residents of Warrenton Village, at Build-Out, Warrenton, Virginia**
(Constant 2023 dollars)

| | Apartments | Two-Over-Two | Townhomes | Total |
|---|-------------------|---------------------|------------------|-------------------|
| <u>Annual Revenues for the Town:</u> | | | | |
| Real Estate Tax | \$12,150 | \$1,950 | \$1,640 | \$15,740 |
| Business Property Tax | \$37,870 | \$6,090 | \$5,100 | \$49,060 |
| Cigarette Tax | \$2,190 | \$350 | \$210 | \$2,750 |
| Machinery and Tools Tax | \$34,820 | \$5,600 | \$4,720 | \$45,140 |
| Retail Sales Tax | \$38,890 | \$6,250 | \$5,270 | \$50,410 |
| BPOL Tax | \$37,910 | \$6,100 | \$5,130 | \$49,140 |
| Transient Occupancy Tax | \$24,880 | \$4,000 | \$3,370 | \$32,250 |
| Utility Tax | \$13,040 | \$2,130 | \$1,290 | \$16,460 |
| Bank Franchise Tax | \$10,950 | \$2,760 | \$1,640 | \$15,350 |
| Meals Tax | \$105,680 | \$16,990 | \$10,020 | \$132,690 |
| Motor Vehicle Licenses | \$10,650 | \$1,720 | \$1,430 | \$13,800 |
| Personal Property Tax | \$9,840 | \$1,580 | \$1,330 | \$12,750 |
| Total Revenue | \$338,870 | \$55,520 | \$41,150 | \$435,540 |
| Less Costs to the Town | -\$145,920 | -\$23,490 | -\$13,860 | -\$183,270 |
| Net Fiscal Benefit to the Town | \$192,950 | \$32,030 | \$27,290 | \$252,270 |

Source: RIMS II Modeling System; U.S. Bureau of Economic Analysis; S. Patz & Associates, Inc.

Warrenton Village Conclusions

Table 20 shows a summary of net tax benefits for the proposed rental units at Warrenton Village. On-site benefits will produce a deficit of \$206,170 due to the Town's low real estate tax rates. The off-site benefits will total \$252,270, and therefore fully offset any on-site losses. Combined, this will generate a fiscal surplus of \$46,100 annually at build-out for the Town of Warrenton.

**Table 20: Summary of On-Site and Off-Site Fiscal Impacts of Apartments,
Warrenton Village at Build-Out, Warrenton, Virginia**
(Constant 2023 Dollars)

| <u>Source of Fiscal Impacts on the Town</u> | <u>Impacts On-Site in Warrenton</u> | <u>Impacts Off-Site in Warrenton</u> | <u>Total Fiscal Impacts</u> |
|--|--|---|--|
| <u>Apartments (320 Units)</u> | | | |
| Revenues to the Town | \$117,560 | \$338,870 | \$456,430 |
| Town Costs | <u>-\$280,280</u> | <u>-\$145,920</u> | <u>-\$426,200</u> |
| <i>Subtotal</i> | <i>-\$162,720</i> | <i>\$192,950</i> | <i>\$30,230</i> |
| <u>Two-Over-Two (36 Units)</u> | | | |
| Revenues to the Town | \$14,550 | \$55,520 | \$70,070 |
| Town Costs | <u>-\$42,740</u> | <u>-\$23,490</u> | <u>-\$66,230</u> |
| <i>Subtotal</i> | <i>-\$28,190</i> | <i>\$32,030</i> | <i>\$3,840</i> |
| <u>Townhomes (20 Units)</u> | | | |
| Revenues to the Town | \$8,050 | \$41,150 | \$49,200 |
| Town Costs | <u>-\$23,310</u> | <u>-\$13,860</u> | <u>-\$37,170</u> |
| <i>Subtotal</i> | <i>-\$15,260</i> | <i>\$27,290</i> | <i>\$12,030</i> |
| <u>Total Residential (376 units)</u> | | | |
| Revenues to the Town | \$140,160 | \$435,540 | \$575,700 |
| Town Costs | <u>-\$346,330</u> | <u>-\$183,270</u> | <u>-\$529,600</u> |
| Net Fiscal Benefits | <u>-\$206,170</u> | <u>\$252,270</u> | <u>\$46,100</u> |

Source: Town of Warrenton, VA; S. Patz & Associates, Inc.

**STATEMENT OF JUSTIFICATION
WARRENTON VILLAGE CENTER
SPECIAL USE PERMIT APPLICATION**

GPIN 6985-20-7247-000 and GPIN 6984-29-6753-000

**Owner: Jefferson Associates L P, Warrenton Center, LLC
Applicant: NewCastle Development Group**

February 14, 2024

INTRODUCTION

NewCastle Development Group (hereinafter, the “Applicant”) is seeking a Special Use Permit for two parcels, totaling 29.05 acres and identified as GPINs 6984-20-7247-000 and 6984-29-6753-000 (the “Property”), to add residential units into the existing Warrenton Village Center (the “Center”) in order to create a new mixed-use, live/work/play community (the “Proposal”). The Proposal seeks to bring a maximum of 386 residential dwellings to the existing commercial center through a variety of dwelling types, including traditional apartment units, 2-over-2s units and townhomes.

The Property is located within the New Town Warrenton District in the Plan Warrenton 2040 Comprehensive Plan, which is described as “a location for signature office/jobs center; with a greater intensity of mixed use and strong live, work and play options. A mix of uses could be organized around an internal street network and public amenities, such as civic spaces, parks green spaces and public gathering areas.” This guidance from Plan Warrenton 2040 was the framework upon which the Proposal was contemplated and designed.

The Proposal seeks to create a critical mass of residential units on the vacant land north of Warrenton Village Center via a multifamily apartment building and structured parking garage that will 1) bring much needed rental supply to the Warrenton housing market and 2) introduce a new supply of consumers to support the existing businesses of not only Warrenton Village Center, but of all of Warrenton’s established commercial/retail businesses.

The Applicant proposes to offer a wider range of housing types and price points through two additional sections of housing, which will include 2-over-2 and townhome dwelling units. These infill blocks, which will provide much needed “missing middle” housing types, will be utilized to integrate residential dwellings into the existing commercial center, creating a true mixed-use environment.

Lastly, the Applicant proposes a multitude of new improvements to the existing Warrenton Village Center, including public plazas, increased pedestrian walkability, and an enhanced road network, all of which adhere to the goals and initiatives of the New Town Warrenton District’s vision for mixed-use centers.

SPECIAL USE PERMIT – MODIFICATIONS/WAIVERS

The Applicant is requesting the following modifications from Town Council, via approval of a Special Use Permit:

1. Increase in Overall Project Density

- Article 2-6.1: The maximum density specified in the zoning ordinance for a given zoning district shall not be exceeded. The maximum density is 5 units per acre or 10 units per acre with inclusion of 10% affordable dwelling units.
 - Waiver Request #1: Increase density to 386 units or 13.28 per acre.
 - In lieu of calculating density on a dwelling unit per acre basis, applicant proposes to calculate residential density based on existing commercial square footage (1 dwelling unit per 500 square feet of non-residential space, as allowed under the Mixed-Use Development Option of the Commercial District zoning ordinance)
 - Dwelling units allowed per DU/A calculation:
 - $29.05 \text{ acres} \times 5 \text{ DU/A} = 145 \text{ units}$
 - Dwelling units allowed per DU/A calculation (assuming affordable housing bonus):
 - $29.05 \text{ acres} \times 10 \text{ DU/A} = 290 \text{ units}$
 - Dwelling units allowed per DU/GSF calculation:
 - $219,792 \text{ GSF} / 500 = 439 \text{ units}$
 - Proposed dwelling units = 386 units
2. Front Yard Setback Modification along Broadview Avenue
- Article 3-4.10.4: Required front yard setback from ROW greater than 50' is 40' minimum, if no parking or loading is proposed.
 - Waiver Request #2: Decrease minimum setback to 14' along Broadview Avenue.
 - This modification will allow the units to be closer to street, creating a more urban form and character.
3. Side & Rear Yard Setbacks along all internal property lines
- Article 3-4.10.4: Required side/rear yard setbacks is 5' minimum.
 - Waiver Request #3: Decrease side/rear yard setbacks to 0'.
 - This modification will allow the overall development to function as a true mixed-use development that will not be segmented by internal separations.
4. Landscape Buffers along internal property lines and public ROW
- Article 8-8.5: Minimum buffer width for commercial uses adjacent to residential uses is 25', plus 1' for each foot of building height over 35'. Minimum buffer width for rear boundaries of residential uses from public ROW is 25'.
 - Waiver Request #4a: Decrease buffer width between commercial and residential uses to 0'.
 - Waiver Request #4b: Decrease rear buffer width for residential uses from public ROW to 14'.
 - This modification will allow the overall development to function as a true mixed-use development by creating an integrated project that is not segmented by buffer strips adjacent to residential and commercial uses. The schematic landscaping plan has identified areas where plantings are proposed.
5. Height Modifications
- Article 2-20: Height limit for dwellings may be increased up to 45' and up to three stories provided that front, side and rear setbacks increase 1' for each additional foot of building height over 35'.
 - Waiver Request #5: Increase height limit for dwellings as follows:
 - 54' max height for Block 1, Oak Springs Drive Frontage
 - 36' max height for Block 1, Broadview Drive Frontage
 - 45' max height for Block 2

- 36' max height for Block 3

CREATION OF A MIXED-USE CENTER

The goal of the new Warrenton Village Center is to create a mixed-use community that is representative of the Plan Warrenton 2040's vision for the New Town Warrenton Character District. The New Town Warrenton District emphasizes highly visible centers with greater intensity of mixed-use and strong live, work and play options. This mix of uses is ideally located around an internal street network and public amenities, such as civic spaces, parks, green space and public gathering areas. This was the guiding directive when designing the Proposal.

The existing Warrenton Village Center is an established commercial center with a wide variety of in-place retail tenants. Due to the existing operations of these long-standing Warrenton businesses, the Proposal does not have the luxury of a "clean slate" from which to design the "quintessential" mixed-use community—impacts to tenants must be minimized, displacement of tenants may not be acceptable and the ability to demise existing structures, if possible, must be done extremely selectively.

So, while the existing commercial structures must remain as is, the Proposal seeks to improve the under-utilized commercial areas with the introduction of public amenities, increased pedestrian circulation and new interesting gathering areas—in this way, the new residential areas will offer a place to live, and the enhanced commercial areas will offer a place to "play."

The goal of the design is not to create a new apartment community adjacent to an existing commercial center. The goal is to create an integrated village environment where both uses enjoy and thrive off one another and the lines between residential and commercial uses becomes blurred.

The Proposal focuses on two primary components to create a mixed-use community that will have little to no negative impact on existing businesses:

- 1) introduction of residential dwellings into the existing commercial center to create a live, work, play environment; and
- 2) installation of new public amenity areas and pedestrian connectivity to tie the different uses together in a cohesive manner.

1) Introduction of Residential Dwellings

The Proposal includes three new residential "blocks." Each block will submit its own Site Development Plan and will meet the general requirements of a "standalone" site plan with respect to open space requirements, parking requirements, landscaping requirements, ADU requirements, etc. While it is not possible for each of the individual blocks to satisfy all the guiding principles of the 2040 Plan, when combined, they will create a cohesive mixed-use center that exhibits all the goals of the New Town Character District. The "Block Sequencing and Required Site Improvements" section later in this Statement of Justification will provide additional detail on how the Applicant proposes to ensure that this comprehensive plan will be realized.

Block 1 (Multi-Family Apartments): located on the vacant land along Oak Springs Drive, between Broadview Avenue and Hastings Lane, this component of the SUP will include a maximum of 320 rental dwellings, comprised of 1-, 2-, and 3-bedroom units, a four-story parking garage and

approximately 10,000 square feet of clubhouse and amenity space, including a state-of-the-art fitness facility, work-from-home/co-working spaces, entertainment lounges, cyber and coffee cafes, gathering spaces, and more. The building will also offer two interior courtyards that will include a saltwater pool and resort style pool deck, outdoor kitchens and grilling stations, outdoor game spaces, ample seating and lounging areas, firepits and “brew gardens.”

Primary access to the internal, four-story, parking garage will be located on Oak Springs Drive, directly across from the entrance into Highland School. The residential leasing offices and amenity areas will be accessed at the corner of Oak Springs Drive and the new Hastings Lane extension. On-street parallel parking along the Hastings Lane extension will be provided for prospective tenants that are visiting the leasing facilities.

All building frontage facing Broadview Avenue will be three stories, while building frontage facing Oak Springs Drive and Hastings Lane will be four stories. All first-floor units along Broadview Avenue, Oak Springs Drive and Hastings Lane will feature direct entry access to promote pedestrian walkability.

This block will include the majority of the proposed residential units and will have the greatest impact on bringing much needed housing supply and consumers to Warrenton.

Block 1 Multi-Family Apartment Building Elevation



Block 2 (Multi-Family 2-over-2s): a maximum of 36 2-over-2 dwelling units are proposed in the northeast corner of the Warrenton Village Center, at the intersection of Oak Springs Drive and Hastings Lane. These buildings will be four stories, with one unit located on the 1st and 2nd floors and a second unit located on the 3rd and 4th floors of each residential “stack.” All units will include a one-car garage and direct pedestrian access to first-floor units along Oak Springs Drive and Branch Drive.

Block 2 will introduce a housing type that is not currently available in Warrenton and provide new supply to the highly desirable “missing middle” housing stock.

Block 2 Multi-Family 2-over-2 Elevation



Block 3 (Multi-Family Townhomes): a maximum of 30 townhomes are proposed on the west side of Warrenton Village Center along Broadview Avenue. These will be three story units and feature a two-car garage in each unit and direct pedestrian sidewalk access to all units.

Block 3 will be true infill into the existing commercial center, better integrating the two uses and promoting walkability between the Central and West Plazas. These units will add additional units to the “missing middle” housing supply.

Block 3 Multi-Family Townhome Elevation



2) Installation of Public Improvements

Central Plaza: the Applicant proposes to create a new Central Plaza at the core of Warrenton Village Center. This public gathering space will include a plaza green with seating and lounging areas for visitors and provide a place for local businesses to hold activities; a splash-pad that will be a major attractor for families with young children and serve as a central landmark for the newly improved center; and an area for a potential future retail building that would further activate this public amenity—ownership envisions a coffee or ice cream shop with indoor/outdoor seating that will be a destination for all residents of Warrenton. This plaza will be adorned with street and ornamental trees and planting beds and feature a raised watertable street crossing that will connect the space to the existing retail in a pedestrian safe manner. The new Central Plaza will serve as Warrenton Village Center’s vehicular and pedestrian crossroads, a hub that will function

as the heart of the Center and is sized, programmed, and planned to allow for community activities as well as everyday use.

East and West Plazas: Smaller public plazas are proposed at the Broadview Avenue entrance and the Hasting Lane entrance into the Warrenton Village Center. These plazas are connecting points celebrating the east and west entrances to the multifamily building and will act as visual links between the residential and commercial areas. These “doorways” into the Center will enhance walkability for the residents by providing easy and direct connection to the retail areas. The plazas will also help transition from public sidewalks to private interior residential lobbies. The 24/7 illuminated interiors of the lobbies will provide visual activation for both plazas and serve as an anchoring use for the open spaces.

The East and West plazas will serve as passive, ceremonial transition zones between the private residential realm and the public retail realm. Their primary intent and use is to connect residents with the rest of the commercial center, while also allowing for a different, less active, and smaller public area for passive recreation.

Dog Park and Picnic Area: a new dog park and seating areas will be accessible to both residents and the general public. The dog park will include a fenced in area for off-leash play, pet water fountains and waste clean up stations. Just outside of the dog area will be picnic table seating areas for pet owners and guests to relax and congregate while their pets play.

Oak Springs Drive Pedestrian Crosswalks: two crosswalks are proposed on Oak Springs Drive—one at Hastings Land and one at the Highland School entrance. These new crosswalks will provide safe points of pedestrian access for people visiting the Center from the north side of Oak Springs Drive.

Completion of Outer Sidewalk Ring: the Proposal seeks to complete a sidewalk ring around the entirety of the Warrenton Village Center. Each residential block will include sidewalks along its outer rim (either along Broadview Avenue, Oak Springs Drive or Branch Drive) to piece together a fully encompassing sidewalk circle.

Additionally, there is currently a large gap in the sidewalk connection along the east side of Broadview Avenue. The Applicant proposes to install a new ~475' section of sidewalk in this area (located behind the Galaxy Strike Bowling Center building). Once completed, this section of sidewalk and the new sidewalks within the residential blocks will complete an outer ring of sidewalks around the entire Warrenton Village Center.

Internal Pedestrian Connectivity: residential tenants will benefit from quick and easy access to all the businesses of Warrenton Village Center via new sidewalks, crosswalks and wayfinding markers. All new buildings will be encircled by new sidewalks and will include direct entry access to ground level units (with the exception of those units in Block 1 that will face the rear of the existing commercial building). The addition of the plazas, linked together with internal sidewalks, will serve to better activate and tie together the different uses found within the Center. Finally, new crosswalks are proposed at all primary street crossings. These improvements will not only benefit pedestrian circulation within the site, but will also allow for easier and safer travel for those accessing the site from the outside.

A Conceptual Circulation Plan for pedestrian, vehicular and bicycle traffic can be found on Sheet 23 of the SUP.

Hastings Lane Extension: a new vehicular and pedestrian entrance into the Warrenton Village Center is proposed at the Oak Springs Drive and Hastings Lane intersection. This new entrance will provide a new source of direct ingress/egress into the Center, which will help to facilitate less congestion at the Center's other entrances and result in less traffic on Oak Springs Drive and Branch Drive, as vehicles no longer have to circle around the Center to access one of the existing entrances on Broadview Avenue and Branch Drive.

Summary of Improvements, included within each block:

Block 1:

- Multi-family building and parking garage
- Central Plaza
- West Plaza
- East Plaza
- Hastings Lane extension
- Reconfiguration of commercial parking
- Modified Alley, all improvements
- Dog park and picnic area
- Sidewalks included in Block 1 Improvements – Sheet 4 of SUP
- Two crosswalks across Oaks Springs Drive at Hastings Lane and Highland School entrance

Block 2:

- 2-over-2 dwelling units and parking
- Sidewalks included in Block 2 Improvements – Sheet 5 of SUP

Block 3:

- Townhome dwelling units and parking
- Sidewalks included in Block 3 Improvements – Sheet 5 of SUP
- New sidewalk section on east side of Broadview Ave (behind Galaxy Strike Bowling Center building)

ADDITIONAL JUSTIFICATIONS AND PROPOSAL DETAILS

Density

Plan Warrenton 2040 states that the calculation of density on a unit per acre basis can be deficient in a mixed-use environment – “when considering implementation, conventional zoning that separates land uses and measures development intensities by dwelling units per acre (DU/AC) is not compatible with a vision of mixed-use, walkable neighborhoods with a range of housing types” and “if the density requirements for a zoning district are revised accordingly, the chances are high that a typical multi-family building will be built.” It recognizes that using DU/AC as a density measurement often gives a false perception of increased density with housing types that are lower in square footage and are stacked vertically, such as the apartments and “2-over-2” units included in the Proposal. To eliminate the false sense of increased density given the proposed housing types, this submittal proposes to utilize an alternative density calculation method that is included in Article 9-25.1.B of the Zoning Ordinance.

Per the Mixed-Use Development Option in Article 9-25.1.B of the Zoning Ordinance, which stipulates that a mixed-use property can be approved for up to one dwelling unit per 500 gross

square feet (GSF) of non-residential floor space, the Property could be permitted to have up to 439 units with approval of an SUP, given the existing 216,306 gross square feet of non-residential floor space (219,792 GSF / 500 GSF = 439 units).

The Warrenton Village Center proposes a maximum of 386 residential dwellings, paired with 219,792 square feet of non-residential uses. Therefore, while the Applicant is requesting a modification for increased density, the request is 53 units less than the maximum amount that can be approved via an SUP.

Plan Warrenton 2040 encourages “setting district standards based on form rather than density” to “achieve the middle-range housing types desired.” Accordingly, this proposal prioritizes site design and a mix of housing types over a strict adherence to underlying density requirements. This enhanced site design will mitigate any effects of the additional density, with an emphasis on walkability, a variety of housing types, and the integration of multiple uses within a single destination location.

Lastly, the Economic and Fiscal Resilience goals of the Plan Warrenton 2040 call for “a range of housing types and housing assistance programs for employees to live in Warrenton.” This proposal accomplishes this by including affordable housing and a range of housing types that will be attractive to current Warrenton residents, as well as potential employers looking to bring new business and employees to Warrenton. This proposal supports Plan Warrenton 2040’s goal to “promote Character Districts as the place to accommodate a range of housing typologies” by proposing a variety of housing types, including multi-family, 2-over-2s, and townhomes. This new stock of residential units and new housing types will bolster a housing supply that is severely underserved and sorely needed within the Town.

The Applicant’s proposal meets and advances nearly all of the housing goals stated in the Plan Warrenton 2040. Additionally, it promotes consolidation of a high amount of density into an infill project, in lieu of sprawl development that is detrimental to the area’s rural preservation.

Height

The New Town Character District uses a form-based transect approach to development, which defines form with greater maximum height towards Lee Highway and the center of the district, with a gradual step down in scale towards Oak Springs Drive, where the Property is located. Since the Property is in the Transition Zone, building heights of one-to-three stories or 35’ are recommended.

Applicant is seeking a modification for a fourth story on the east side of Block 1 and all of Block 2, which is one story greater than the three recommended in the Transition Zone. Since Plan Warrenton 2040 envisions developments along Lee Highway and east of Broadview Avenue to be up to six stories, the Property would still maintain a step down in scale towards Oak Springs Drive at four stories. Therefore, the requested height modification is still in conformance with the goal of Plan Warrenton 2040, which is to step down in height towards residential zones.

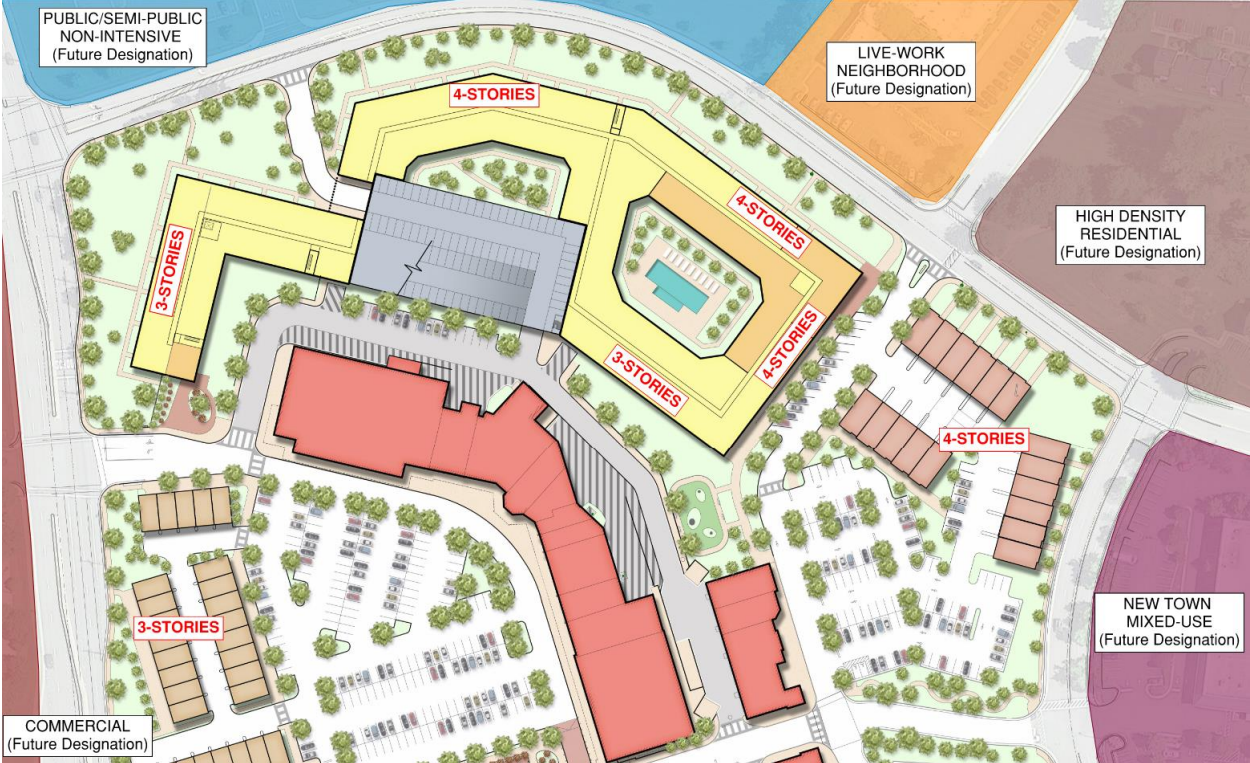
The goal of the height recommendations of Plan Warrenton 2040 is to step down towards residential zones. The Proposal achieves this goal by locating its three-story sections in the areas that are nearest to single family residential, as well as have low density designations in the Future Land Use Map—most notably, those neighborhoods located on the west side of Broadview Avenue—and increasing heights in areas that are near existing commercial and Future Land Use designations that allow up to three stories (i.e. High Density Residential). As proposed, the

buildings on the west side of the Property (including the multi-family apartment building and multi-family townhomes) will conform to the recommended three-story heights, while the buildings on the east side of the Property (including the multi-family apartment building and the multi-family 2-over-2s), which are located adjacent to existing commercial, such as Warrenton Village Center and the Brookside Rehab & Nursing Center, will step up to four-stories.

Inclusion of four-story buildings at this location will provide a more gradual step down from the six stories allowed along Lee Highway to the three-stories allowed in the High-Density Residential areas shown on the Future Land Use Map on the north side of Oak Springs Drive. This will create a better design aesthetic than the stark contrast of a dramatic drop from six stories down to three stories. From a visual perspective along Oak Springs Drive, this modification would allow for three-story buildings on the north side of the street, four-story buildings on the south side of the street in the Transition Zone, then escalating up to six-story buildings along Lee Highway—a gradual and appropriate escalation in heights.

It is noteworthy that the Property drops in elevation from west to east by approximately 45'. The far eastern side of the Property, where the four-story sections are located, is significantly lower than the western side—placement of the taller buildings at this location was intentional to make it better conform in appearance with the adjacent three-story buildings.

Building Heights and Surrounding Future Land Use Designations



Another transition goal of Plan Warrenton 2040 is that “the neighborhood edge provides the means of transition from the Character District to adjoining properties.” Four-story apartments are an appropriate transition to the High-Density Residential areas located to the north, which will be similar in character and use. High-Density Residential will allow up to 12 units per acre, which is in line with the DU/AC proposed at Warrenton Village Center (13.28 DU/AC).

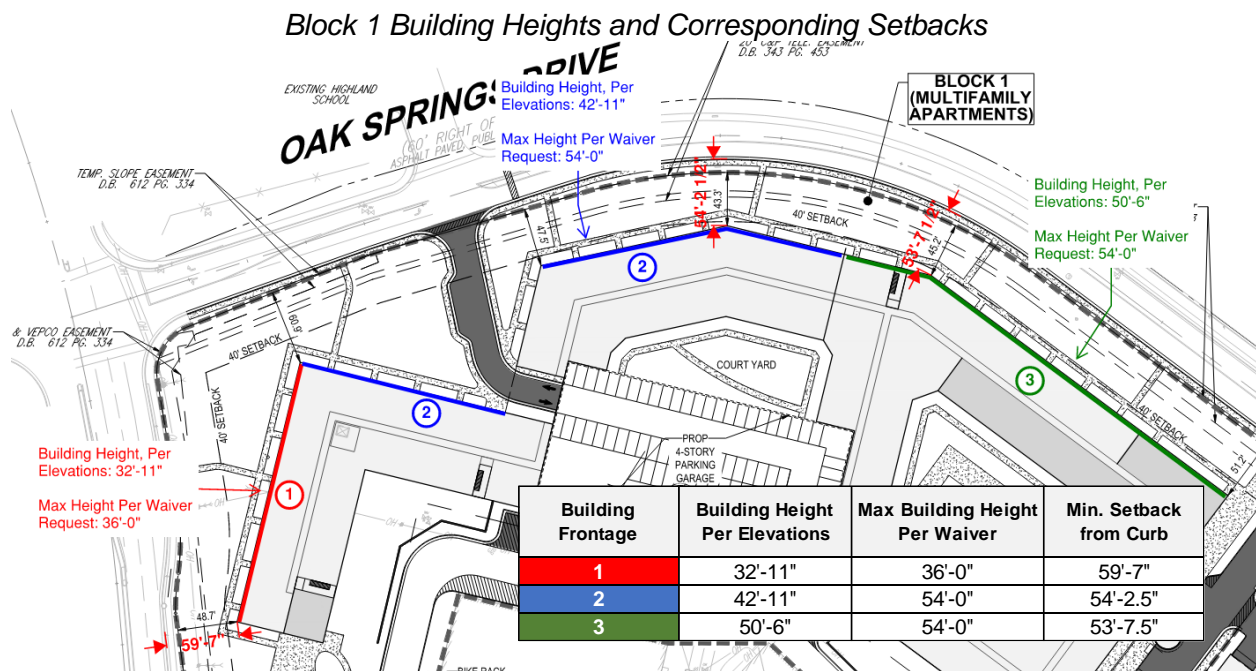
Further, the Future Land Use Plan’s Character District Summaries calls for “greater intensity of mixed-use and strong live, work, and play options” in the New Town Warrenton District and notes that this district has “high visibility,” due to its proximity to Route 29. The requested modifications to increase density and height support the need for greater intensities and higher visibility in this character district.

Finally, one of the ten guiding principles for the character districts is to place parking behind buildings and away from street frontages. To accomplish this goal, the Applicant has proposed an interior structured parking garage that will not be visible from surrounding streets. Increasing building heights in select areas is the only way to create the necessary density needed to facilitate this improved parking condition.

Building Heights and Setbacks

Article 2-20 allows for building height limits to increase above 35’ if the corresponding setback increases by an equal amount. The intent of offering a mechanism by which an applicant can increase building heights if corresponding building setbacks are simultaneously and equally increased, is to ensure that an appropriate balance or ratio of height to depth is maintained. The general rule of thumb in land planning is that for every one foot of building height, there should be a minimum of one foot of corresponding setback. Applicant has satisfied this standard by providing appropriately sized setbacks that correspond with the proposed increases in building height limits.

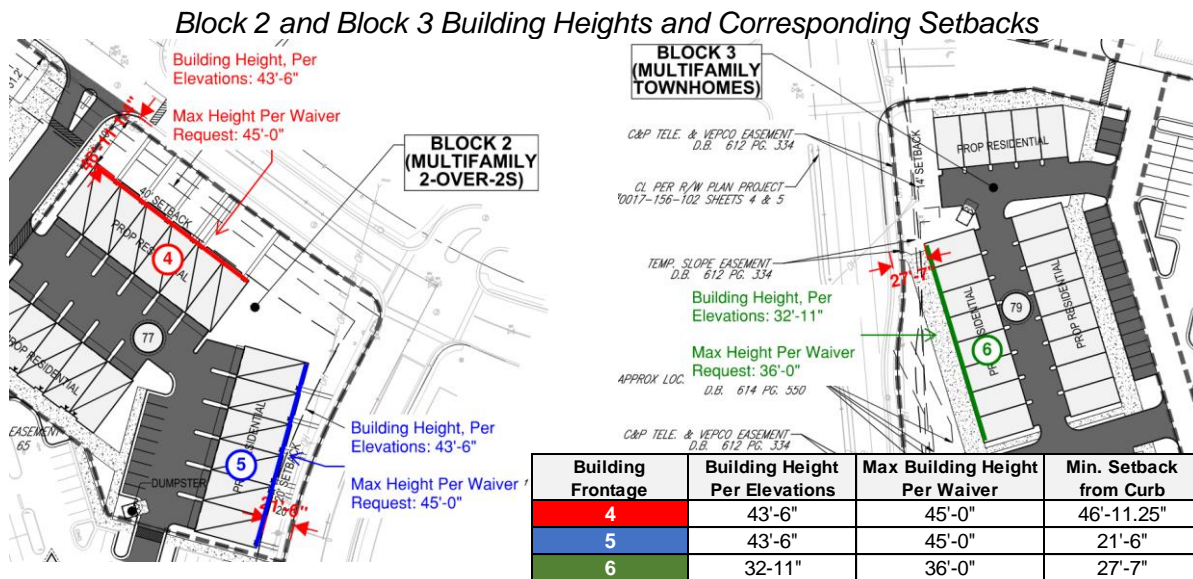
The below illustration examines the three building frontages of the Block 1 apartment building. Anticipated building heights are calculated using the average ground surface elevation across a building’s frontage in relation to the highest point of a flat roof (parapets have not been included in building heights, per IBC code definition). For each building frontage, the corresponding minimum setback from the back of street curb has been provided. Along all three frontages, building setbacks are equal to or greater than the anticipated building height, confirming that the appropriate standard has been achieved.



Note—Applicant acknowledges that setbacks are defined by the Town from property lines, however, the point of this exercise is to illustrate that proper height to setback standards have been provided, which apply to the public’s viewpoint (i.e. traveling the street) and not an intangible property line. Applicant is therefore requesting a height waiver because it acknowledges that adequate setbacks from property lines have not been provided.

In Block 2, proper anticipated building height to minimum setbacks ratios are provided along Frontage #4 (Oak Springs Drive), but not along Frontage #5 (Branch Drive). The Applicant feels that this is appropriate given the internal nature of Branch Drive as a “cut through” drive within the Warrenton Village Center. Branch Drive serves the Center more as an internal drive than as a primary thoroughfare, in which case it is appropriate to push buildings up onto internal street frontages.

Block 3 has anticipated building heights below 35’, which would typically require no additional setbacks. However, a waiver is already being requested at this location to reduce setbacks to 14’.



Below is the compiled list of anticipated building heights along street frontages and the maximum height allowed per the Applicant’s waiver request. Slight height increases have been added into the maximum height limits to provide buffer for average ground surface grade changes that may occur during Site Development Plan.

| Building Frontage | Location | Block | Building Height Per Elevation | Max Height Per Waiver Request |
|-------------------|-------------------|-------|-------------------------------|-------------------------------|
| 1 | Broadview Avenue | 1 | 32'-11" | 36'-0" |
| 2 | Oak Springs Drive | 1 | 42'-11" | 54'-0" |
| 3 | Oak Springs Drive | 1 | 50'-6" | 54'-0" |
| 4 | Oak Springs Drive | 2 | 43'-6" | 45'-0" |
| 5 | Branch Drive | 2 | 43'-6" | 45'-0" |
| 6 | Broadview Avenue | 3 | 32'-11" | 36'-0" |

See Elevation Sheets 11-15 of SUP for a depiction of these calculations.

Affordable Housing

To support the need for affordable housing within the Town of Warrenton, the Applicant proposes that for a minimum affordability period of twenty-five years from the issuance of this Special Use Permit (the "Affordability Period), at least ten percent (10%) of the residential dwelling units built on the Property shall be designated as affordable low-income restricted units (the "Affordable Dwelling Units or ADUs").

Allocation of the Affordable Dwelling Units between 1-, 2- and 3-bedroom units will be at the discretion of the Applicant, so long as a minimum of ten percent (10%) of residential dwelling units within each of the three residential blocks are maintained as Affordable Dwelling Units. In other words, each individual residential block will satisfy the 10% affordability requirement independently of the other blocks. The ADUs shall be similar to the market rate units in architectural design, fixture/appliance selections and unit size. No more than three ADU units will be positioned adjacent to one another at any given time.

"Qualified Parties" who will be eligible to rent or purchase one of the ADUs, are defined as:

For the purposes of qualifying for the lease of the affordable rental ADU a Qualified Party shall be an individual or a family (x) whose gross annual family income does not exceed 80% of the current Fauquier County Area Median Family Income ("AMI") at the time the rental application is opened for such Qualified Parties, as the AMI is published by the United States Department of Housing and Urban Development or other approved source of such information such as the United States Census Bureau, and (y) for whom the monthly rental of such unit does not exceed 30% of the Qualified Party's gross monthly family income.

For the purposes of qualifying for the purchase of an affordable townhome ADU, a Qualified Party shall be an individual or a family (x) whose gross annual family income does not exceed 80% of the current Fauquier County AMI at the time application is opened for such Qualified parties, as the AMI is published by the United States Department of Housing and Urban Development or other approved source of such information such as the United States Census Bureau, and (y) for whom the monthly mortgage payment for such unit does not exceed 30% of the Qualified Party's gross annual family income.

Persons eligible for assistance under the following state or federal programs:

- a. Virginia Housing Development Authority
- b. Section 8 Rental Assistance Program
- c. Department of Housing and Urban Development Community Block Grant Program
- d. Farmer's Home Administration Program
- e. Other programs similar to those named herein as approved by Town Council

The ADU status of the aforesaid minimum ten percent (10%) of total units shall be set forth in a deed of restrictive covenants recorded against the Property and shall continue to bind the ten percent (10%) minimum unit requirement within each block to the Property for a period of twenty-

five years from the issuance of this Special Use Permit; provided, however, that for rental units, the Applicant may recalculate the rental rate based on factors (x) and (y) above.

The Applicant shall establish in a deed of restrictive covenants a program for the administration of this ADU program according to the requirements of these conditions. The Applicant (or Owners Associations with respect to any purchase units if the Applicant is no longer the Declarant) shall make each ADU available for a period of not less than 90 days for rental units and 180 days for purchase units, following the issuance of a certificate of occupancy for each unit.

The Applicant shall designate on the Construction Drawings submitted for building permit approval which units will be the initial ADUs; however, the units that are selected as the initial rental ADU units are not required to remain as the designated rental ADUs for the entirety of the Affordability Period. The Applicant will have the authority to re-designate the rental ADUs from time to time based on leases and vacancies. The Applicant will maintain a building plan set at the leasing office located in the Block 1 at all times that shows which units are currently designated as rental ADUs.

The documents creating the ADU program shall be reviewed and approved by the Town Attorney prior to their recordation in the Land Records.

ADUs will first be made available to the following persons: those residing or working in the Town of Warrenton or Fauquier County; Town of Warrenton or Fauquier County teachers; Town of Warrenton or Fauquier County first responders. The Applicant shall contact the appropriate local Social Service and/or Housing Authority offices for identification and placement of local residents.

The community's Property Management Team shall make annual reports to the Zoning Administrator as to the number, type and location of units hereunder that shall have been rented as ADUs and shall verify that they have been rented to Qualified Parties.

These obligations are described in greater detail in the proposed Conditions of Approval.

Condo Sale of Block 2 and Block 3

All dwelling units in all three blocks are intended to be for rent, however, Applicant will maintain the ability to sell the entirety of Block 2 (Multi-Family 2-over-2s) and/or the entirety of Block 3 (Multi-Family Townhomes) as Condos. The Applicant agrees to sell all or none of the units within Block 2 or Block 3, so as to prohibit a mix of for rent and for sale units in the same block.

All conditions of the SUP will continue to be enforced in a block sale scenario through the Declarations of Restrictive Covenants that the Applicant will record and encumber the Block 2 and/or Block 3 parcels. In a block sale scenario, Homeowner Associations will be established to maintain all conditions of the SUP and will own the block parcel, while individual condo owners will own the condo dwelling units.

In a sale scenario, residents/owners of the condos will not be tenants of the apartment community and will not have access to the rental amenities located within Block 1.

In a block sale scenario, 10% of the units within the sold block will be required to be sold as ADUs, in accordance with the language outlined in the SUP's Affordable Housing Conditions of Approval.

Architecture

Included with the SUP application, the Applicant has submitted a separate document titled “Warrant Village Center – Design Story” to provide more detail on the intent and thought process behind the selected aesthetics.

The Conditions of Approval includes language that the final design of all buildings shall be in general conformance with the materials included in this SUP submittal.

A list of prohibited materials is also included in the Conditions of Approval.

Garage Screening

A structured parking garage is proposed in Block 1. Three of the garage’s four sides will be concealed within the apartment building and not visible from the exterior. The south facing façade, while exposed, is not anticipated to be easily viewed from ground level, given its position behind the existing Warrenton Village Center commercial buildings. To mitigate concerns that may remain regarding its visibility, the Applicant will install a screen on the southern facing façade of the garage to minimize its visual impact. A concept of this screening is provided below.

Conceptual Garage Screening Design on South Facing Façade



Block Sequencing and Required Site Improvements

Applicant can develop the blocks in any order. Each block will have its own independent Site Development Plan, separately submitted and approved by the Town of Warrenton.

All improvements included within each individual block are shown on SUP Sheet 4 and Sheet 5.

To ensure that site improvements are completed in a timely manner along with the residential buildings, Applicant agrees that the Town of Warrenton will withhold Certificates of Occupancy (COs) in accordance with the following schedule:

- **Block 1:** the 215th CO within Block 1 will not be issued until such time as all Block 1 site improvements have been substantially completed;
- **Block 2:** the 25th CO within Block 2 will not be issued until such time as all Block 2 site improvements have been substantially completed;

- **Block 3:** the 22nd CO within Block 3 will not be issued until such time as all Block 3 site improvements have been substantially completed.

It is anticipated, but not required, that Block 1 (Multi-family Apartment Building) will commence construction first. Block 2 (Multi-Family 2-over-2s) is anticipated to commence simultaneously with Block 1 or shortly after, depending on market conditions. Block 3 (Multi-Family Townhomes) will commence last, due to in-place tenants in the current retail building at that location (Summit Community Bank). It is anticipated that Block 3 will commence upon lease expiration of current retail tenant, but exact timing is unknown.

Open Space

Each individual residential block/parcel, as well as the residual retail parcel, will individually satisfy the 10% open space requirement.

Applicant will construct all open spaces in general conformance with the renderings and materials included in the SUP and inclusive of the "New Improvements" listed on Sheet 6 "Open Space Plan."

Most Notably:

- Open Space A in Block 1 will include the West Plaza, inclusive of a hardscape residential plaza with bench seating and a bike rack;
- Open Space D in Retail Block will include a fenced in dog play area, picnic table seating and a bike rack;
- Open Space E in Retail Block will include the Central Plaza, inclusive of a lawn area, splash-pad, bench seating, two bike racks, and future commercial pad.

Site Conditions

The proposed development consists of two parcels totaling approximately 29.05 acres. Approximately 22.59 acres are the existing shopping center known as Warrenton Village Center and the remaining 6.46 acres are a vacant semi-wooded parcel with road frontage on Broadview Avenue and Oak Springs Drive. The topography of the site ranges in elevation from 550' at the northwest corner of the site at Broadview Avenue to an elevation of 505' along the eastern property line at Branch Avenue. Site soils consist of various loams such as Rohrsersville, Middleburg, Fauquier Silt, Glenelg and Elioak. A detailed tree survey will be provided at the time of Site Development Plan.

The Property is surrounded by a mix of commercial, education and residential uses:

- To the north, across Oak Springs Drive, is Highland Private School, Brookside Rehab and Nursing Center and the Cedars of Warrenton town home community;
- To the east, across Branch Drive, is Safeway and other commercial businesses included within Warrenton Village Center;
- To the south is Warrenton Village Center;
- To the west, across Broadview Avenue, are standalone commercial and office uses and single family neighborhoods.

Construction Impacts

Construction limits of disturbance will be limited to within the Property. No neighboring or adjoining properties will be included within the limits of disturbance. No offsite impacts or storage will be required. If substantial rock is discovered at the Property, blasting may be required and permitted in accordance with Town of Warrenton requirements.

Per Gorove Slade's Traffic Impact Analysis, turn lanes are not warranted at the proposed access points on Oak Springs Drive, therefore, the only impact to the public right of way will be the two new connections to Oak Springs Drive and the two new crosswalks on Oak Springs Drive.

Construction Timelines

Block 1 (Multi-family Apartments): Construction will take approximately 24 to 28 months.

Site Work Duration: 6 to 8 months
 Vertical Construction Commencement: ~ Month 6
 Vertical Construction Duration: 18 to 20 months
 Clubhouse/Leasing Delivery: ~ Month 20
 First Units Available: ~ Month 20
 Construction Completion: ~ Month 26

Block 2 (Multi-family 2-over-2s): Construction will take approximately 14 months.

Site Work Duration: 3 to 4 months
 Vertical Construction Commencement: ~ Month 4
 Vertical Construction Duration: 8 to 10 months
 First Units Available: ~ Month 12
 Construction Completion: ~ Month 14

Block 3 (Multi-family Townhomes): Construction will take approximately 14 months.

Site Work Duration: 3 to 4 months
 Vertical Construction Commencement: ~ Month 4
 Vertical Construction Duration: 8 to 10 months
 First Units Available: ~ Month 12
 Construction Completion: ~ Month 14

Construction schedules included herein are estimates and subject to change based on potential unanticipated delays, such as those caused by severe weather, material shortages, etc.

Economic Impact

A Fiscal Impact Analysis by S. Patz & Associates, Inc. determined that the Proposal would result in a \$46,100 annual surplus for the Town of Warrenton, plus the additional benefit of much needed housing supply.

The full report has been submitted as part of the SUP application.

Traffic Impact Analysis

New access to the Property will be provided via a parking deck entry with direct access to Oak Springs Drive (Town Route 3), a fourth-leg to the existing full-movement intersection of Oak Springs Road at Hastings Lane, and via the existing shopping center accesses to the south.

Based on the capacity and queueing analysis results, the proposed Warrenton Village Center will not have a substantial impact on the surrounding transportation and roadway network. No improvements are warranted or recommended to mitigate traffic concerns created by the Proposal.

It is anticipated that the peak activity times for the proposed residential units would have only a short overlap with the Highland School peak arrival and dismissal times. Based on existing traffic counts, the school driveway on Oak Springs Drive sees most activity after 7:45 AM and has very little traffic after 4:30 PM. Typical peak times for multi-family residences are 7:00-8:00 AM and 5:00-6:00 PM, according to the Institute of Transportation Engineers. Similarly, the Traffic Impact Study prepared for the site indicates that with both Highland School traffic and new trips from the residential units, acceptable traffic operations would be maintained at the shared entrance location during all times of day.

The full report on transportation impacts can be found in the Traffic Impact Analysis by Gorove Slade that has been submitted as part of this SUP application.

New Amenities for Public Use

In addition to the extensive package of amenities that will be offered to tenants within the Block 1 multi-family apartment building, the Proposal also includes a variety of new improvements that will be available to and benefit the general public:

- Improved walkability through an enhanced sidewalk and crosswalk network within the Center will make for a more efficient shopping experience.
- New and improved crosswalks on Oak Springs Drive at Hastings Lane and at the Highland School entrance will create easier and safer points of pedestrian access to the Center.
- Traffic slowing measures will create a safer walking environment.
- The Central Plaza will provide a new destination family attraction for residents of Warrenton with its splash-pad, activity area and future eatery.
- The Dog Park will offer a new off-leash area for pets to play, while owners can relax nearby on benches and picnic tables.

Impact on Community Facilities

Stormwater Management will include, but not be limited to both structural and non-structural best management practices for managing stormwater runoff. This could include underground stormwater facilities, bio-retention areas and rain gardens.

The Property will connect to public water and sewer. The average daily water/sewer demand will be approximately 57,900 gpd (386 units * 150 gpd). Based on comments received from the Town of Warrenton Department of Public Works and Utilities there are no concerns with providing adequate capacity for the Proposal.

No negative impacts regarding the local schools are anticipated, given the adequate capacity in the local school system. See further details in below section—“Impacts on Schools.”

The Property will rely on Town Services such as fire, rescue, and police services.

Impact on Schools

School age children residing at the proposed community would attend the following public schools:

Elementary: Bradley
 Middle School: Warrenton
 High School: Fauquier

Per the Fauquier County Public Schools Ten-Year Enrollment Projection, dated November 2018, the max capacity and projected enrollments of these schools are shown in the table below. Based on the available data, an increase of 111 elementary students, 82 middle school students and 284 high school students would be required to meet the capacity at any of these schools over the next five years.

Available Capacity at District Public Schools

Bradley Elementary School

| | | | | | | | |
|------------------------|-----|--------------------|----------------|----------------|----------------|----------------|----------------|
| Max Capacity | 588 | <i>School Year</i> | | | | | |
| | | <i>2023-24</i> | <i>2024-25</i> | <i>2025-26</i> | <i>2026-27</i> | <i>2027-28</i> | <i>2028-29</i> |
| Enrollment Projections | | 474 | 473 | 475 | 475 | 475 | 477 |
| Available Capacity | | 114 | 115 | 113 | 113 | 113 | 111 |

Warrenton Middle School

| | | | | | | | |
|------------------------|-----|--------------------|----------------|----------------|----------------|----------------|----------------|
| Max Capacity | 545 | <i>School Year</i> | | | | | |
| | | <i>2023-24</i> | <i>2024-25</i> | <i>2025-26</i> | <i>2026-27</i> | <i>2027-28</i> | <i>2028-29</i> |
| Enrollment Projections | | 427 | 440 | 454 | 463 | 462 | 458 |
| Available Capacity | | 118 | 105 | 91 | 82 | 83 | 87 |

Fauquier High School

| | | | | | | | |
|------------------------|-------|--------------------|----------------|----------------|----------------|----------------|----------------|
| Max Capacity | 1,634 | <i>School Year</i> | | | | | |
| | | <i>2023-24</i> | <i>2024-25</i> | <i>2025-26</i> | <i>2026-27</i> | <i>2027-28</i> | <i>2028-29</i> |
| Enrollment Projections | | 1,302 | 1,287 | 1,283 | 1,305 | 1,314 | 1,350 |
| Available Capacity | | 332 | 347 | 351 | 329 | 320 | 284 |

COMBINED

| | | | | | | | |
|------------------------|-------|--------------------|----------------|----------------|----------------|----------------|----------------|
| Max Capacity | 2,767 | <i>School Year</i> | | | | | |
| | | <i>2023-24</i> | <i>2024-25</i> | <i>2025-26</i> | <i>2026-27</i> | <i>2027-28</i> | <i>2028-29</i> |
| Enrollment Projections | | 2,203 | 2,200 | 2,212 | 2,243 | 2,251 | 2,285 |
| Available Capacity | | 564 | 567 | 555 | 524 | 516 | 482 |

Given that the most common age demographics among market rate apartment renters is 25-35 and 55-65 years of age, the percentage of units with school age children as tenants is very low. The average number of school age students per unit within the Applicant’s rental portfolio is as follows:

Average School Age Children Per Dwelling Unit – Applicant Rental Portfolio

| School Type | Children Per Dwelling Unit | # of Students (applied to proposed 386 unit community) |
|--------------|----------------------------|---|
| Elementary | 3.4% | 13 |
| Middle | 1.1% | 4 |
| High | 2.2% | 9 |
| Total | 6.7% | 26 |

From tenant data collected across the Applicant’s entire rental portfolio, the anticipated number of school aged children living at the proposed community is 26. As shown by this data, even if this anticipated amount was doubled, it would not threaten to meet the available capacity of the three district public schools.

Topography

To address grade changes of approximately 45’ from west to east across the site and approximately 10’ from south to north, the architect and engineering teams have utilized different grade mitigation methods such as stepped buildings, introduction of “basement” units, small retaining walls and adding elevated stoops with sidewalk access.

Below is a building elevation to help illustrate some of these strategies—this elevation is taken from the new Hastings Lane extension, looking west at the proposed multi-family building.

Profile Illustrating the “Stepping” of the Apartment Building



In Section A, at the corner of Oak Springs and Branch Drive, the Property’s elevation is at its lowest point. The leasing offices and amenity areas have been located at this corner and the finished floor elevation of the building has been dropped to mitigate the lower elevations and provide direct on-grade access at that point. These sections will also benefit from increased ceiling heights created from the “sunken” finished floor elevation.

In Section B, as the site’s elevation rises, residential units will be elevated above the street level, with access to those units provided by a secondary sidewalk that sits on top of a section of masonry retaining wall. One “public” sidewalk will be placed adjacent to the street and run with the slope and a secondary “private” sidewalk will be placed adjacent to the building in an elevated, level position. The elevated residential units will have direct access to the raised secondary sidewalk, which will also create increased privacy for those ground floor residents. See image below for illustration of this concept.

View of Section B Showing “Double Sidewalk” Configuration



In Section C, the finished floor elevation of the building is on-grade at street level and no grade mitigation is required.

In Section D, where there is a steep increase in elevation, the building will step from four-stories to three-stories, utilizing a retaining wall hidden within the building’s foundation to mitigate the significant grade change.

Through methods such as these around the Property, the elevation changes across the site will be mitigated in subtle and attractive ways that enhance the aesthetic of the building and avoid large and potentially unsightly retaining walls.

Geotech

A geotechnical report will be completed at the time of Site Development Plan. Results of the study will be incorporated into the certified structural design and approved during the building permit review process.

Road & Infrastructure Maintenance

The Warrenton Village Center will be owned and maintained by Jefferson Associates L P, Warrenton Center, LLC and/or affiliated entities. These entities will be responsible for the continued maintenance and cleaning of all existing and proposed improvements, including but not limited to residential buildings, private roads, sidewalks, stormwater facilities, parking areas, plazas and open space, as well as continued maintenance of landscaping, including mowing, weeding, mulching and snow removal.

Modified Alley – Improvements, Vehicular Access & Loading, and Screening

Improvements to the existing alley located behind the retail buildings are proposed with this SUP plan. The primary usage of the Modified Alley will continue to be for “back of house” loading functions and trash pickup areas for the existing commercial buildings. These functions will be improved through several enhancements, including a consolidation of existing dumpster locations into three, centrally located, screened trash areas (see Sheet 19 of SUP), removal and cleanup of existing “ancillary” structures that have been erected adjacent to the commercial buildings, painting of the rear facing commercial façade, and striping of “back of house” areas to designate retail loading and trash zones. This alley will also include approximately twenty-five parking spaces that will be reserved for employees of the commercial tenants.

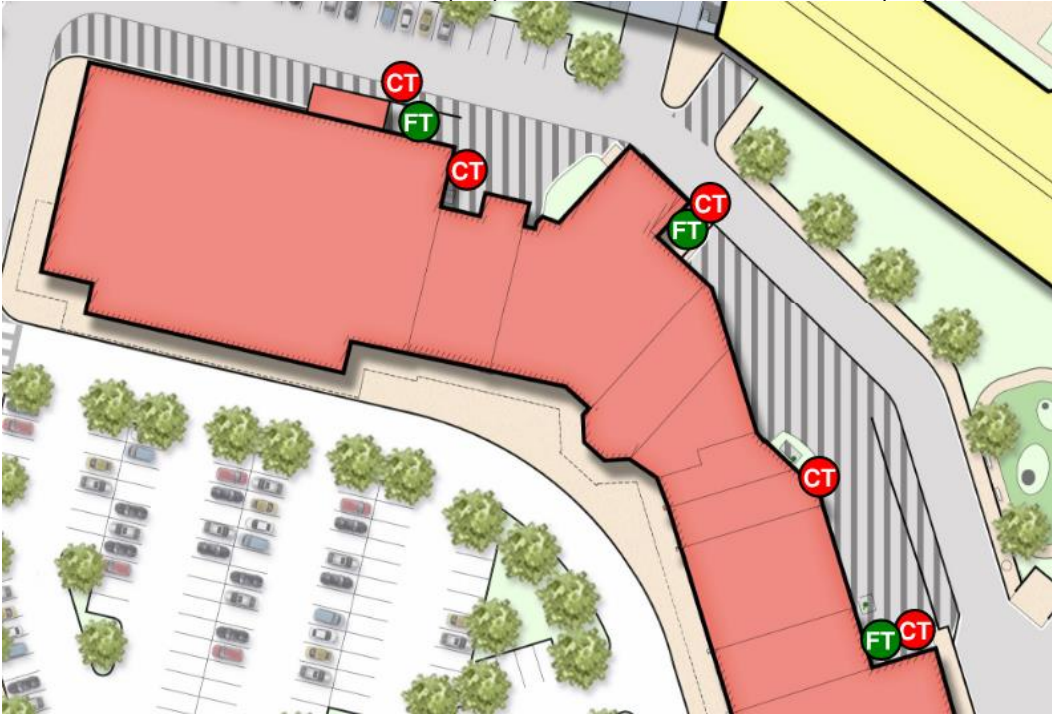
The Modified Alley will also serve as a secondary vehicular ingress/egress into the garage, as well as provide Residential Loading and Trash Pickup Areas. Two residential loading and trash pickup areas have been designated within the Modified Alley. The primary ingress/egress into the garage will be located on Oak Springs Drive, so as to minimize vehicular traffic in the Modified Alley.

Vehicular studies have been performed to ensure appropriate turning radii will be provided for commercial loading vehicles and adequate lines of site around all corners/turns will be confirmed during Site Development Plan review. These studies were coordinated with the existing shopping center owner to ensure that adequate loading space will be provided for each of the business's required loading vehicle sizes and types. Additionally, convex traffic safety mirrors can be installed at any location that poses a safety concern.

The Applicant plans to incorporate a number of visual improvements to the Modified Alley, summarized below:

- Garage positioning: the garage has purposefully been located in a parallel position along the rear of the commercial buildings so that the majority of the multi-family building that abuts the “back of house” area is non-residential space.
- Trash screening: commercial trash areas have been consolidated into three locations, all of which will have new privacy fencing installed around the designated areas. Construction details of all screening and fencing will be addressed at the time of Site Development Plan.

Current Trash Locations (CT) and Future Trash Locations (FT)



- Landscape buffers and screening: all portions of the Modified Alley that are within the potential viewshed of residential dwelling units will include 35' to 50' of landscape buffers, plus privacy fencing along the drive lanes—see Sheets 18 & 19 of SUP. Construction details of all screening and fencing will be addressed at the time of Site Development Plan.

- **Painting:** all rear elevations of the commercial building that are adjacent to the Modified Alley will be repainted in a consistent, neutral color.
- **Striping:** all residential and commercial trash and loading areas will be striped to encourage loading/delivery activity to stay out of the travel way and within the designated locations.
- **Demolition:** all ancillary structures that have been erected adjacent to the commercial building will be demised and removed. Examples of these ancillary structures are shown below.

“Ancillary Structures” in the Existing Alley



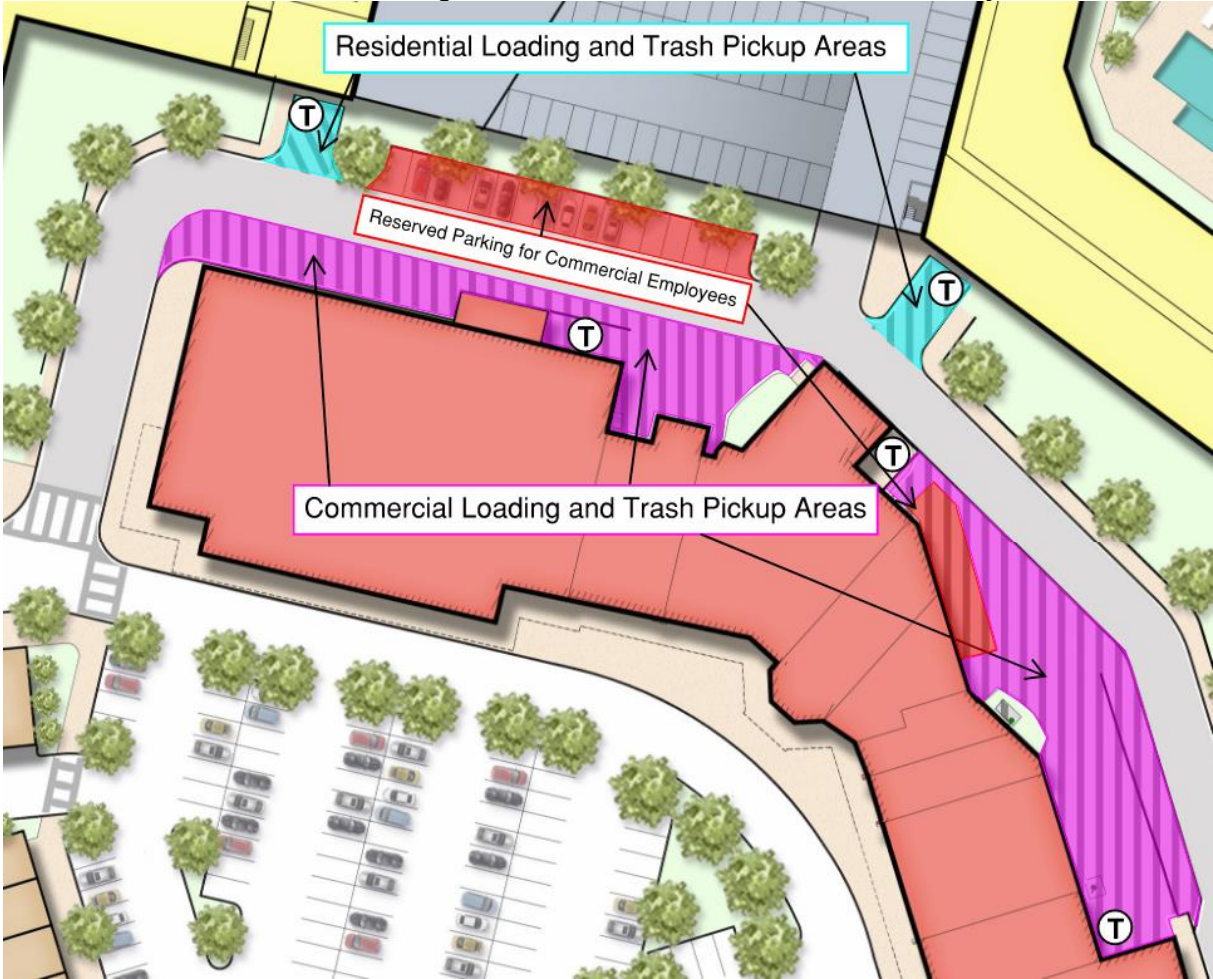
Loading and Trash Pickup Areas

Striped loading and trash pickup areas are proposed along both sides of the Modified Alley. The loading areas are intended to be reserved for exclusive use by either the residential tenants or the commercial tenants, as outlined below:

- **Commercial Loading and Trash Area (PINK):** these striped areas will be reserved for exclusive use by commercial tenants for “back of house” operations. These areas will provide access to necessary loading and delivery areas for the commercial tenants in accordance with their current and future needs. Existing loading areas and loading doors/docks will continue to serve the commercial building—no changes are proposed to the existing commercial loading bays and appropriate turning radii will be provided to ensure that commercial vehicles maintain access to existing loading facilities. Commercial trash dumpsters will be consolidated to the three locations marked with a “T” and will be shielded with privacy fencing. Privately contracted waste management services will pick up trash at these locations on scheduled trash days.

- **Residential Loading and Trash Area (BLUE):** these striped areas will be reserved for exclusive use by residential tenants for “move in / move out” purposes. Tenants will have the ability to reserve these areas on an hourly basis at specific times to facilitate move ins and move outs. Reservations for use of these spaces will be made through the property management team. These two loading areas are a minimum of 30’ deep, which is adequate space to fit the maximum sized commercial rental truck (e.g. U-Haul truck). These areas will also serve as trash pickup locations for the residential building. On scheduled trash days, property management will roll dumpsters from the trash compactors located on the interior of the building to these locations, where they will be picked up by privately contracted waste management services.
 - No ground level residential units will be placed adjacent to the Residential Loading and Trash Areas. Those areas of the buildings will be designated for loading and trash services.
- **Reserved Parking for Commercial Employees (RED):** to ensure that employees of the commercial tenants do not utilize the loading areas for employee parking, approximately 25 parking spaces will be provided for their exclusive use along the Modified Alley. This will help to provide consistent, unimpeded trash and loading access to both the residential and commercial tenants.

Reserved Loading and Trash Areas within the Modified Alley



Trash

The Applicant shall maintain Warrenton Village Center in a clean and orderly manner and shall arrange for the pickup of trash, litter, and debris on a daily basis through a private refuse collection company.

Deliveries and refuse/solid waste collection shall follow Town Code Section 11-19(9).

Residential Trash Locations: trash facilities are proposed at three locations (found on Sheets 4 & 5 of the SUP):

- 1) Block 1: A trash compactor will be located within the multi-family building. Trash chutes will be located on all floors of the building for direct deposit of trash from residential floors into the trash compactor. Trash bins will be rolled out by property management to one of the Residential Loading and Trash Pickup Areas on either side of the garage on trash pickup days.
- 2) Block 2: It is anticipated that each individual unit will have its own trash bin kept within that unit's garage. Residents will be responsible for rolling trash bins out to the rear alley on trash pickup days.
 - a. If the municipality will not allow individual trash bins/pickup, the location for a potential trash dumpster that will serve all residents of Block 2 has been included in the SUP plans.
 - b. Block 2 dumpster will be surrounded by privacy fencing, as well as landscape buffering.
- 3) Block 3: It is anticipated that each individual unit will have its own trash bin kept within that unit's garage. Residents will be responsible for rolling trash bins out to the rear alley on trash pickup days.
 - a. If the municipality will not allow individual trash bins/pickup, the location for a potential trash dumpster that will serve all residents of Block 3 has been included in the SUP plans.
 - b. Block 3 dumpster will be surrounded by privacy fencing, as well as landscape buffering.

Commercial Trash Locations: trash dumpsters behind the existing retail buildings will be consolidated into the three centrally located trash areas shown on Sheet 14 of the SUP. These trash areas will be hidden from public view with new privacy fencing.

All exterior refuse storage areas will be shielded within enclosures or privacy screening.

Wayfinding

The Applicant will include detailed locations and specifications on all proposed signage and wayfinding in the site plan. All signage will comply with the Zoning Ordinance at the time of Site Development Plan.

A Conceptual Signage Plan can be found on Sheet 21 of the SUP.

Lighting

The Applicant will prepare a detailed lighting plan in conformance with §9-8 of the Zoning Ordinance and will install lighting in accordance with that plan. This will be reviewed at the time of Site Plan Development review.

Light pollution restrictions will include:

- All site lighting, to include both new fixtures within the new development areas as well as any non-residential area that is modified as a part of site development, must consist of fully-shielded, full cut-off fixtures to meet the requirements of Article 9, Section 9-8.
- Color temperature of exterior light fixtures will be 3,000 degrees kelvin or lower.
- Average horizontal illumination level of exterior light fixtures will be 3.0 footcandles or less.

A Conceptual Lighting Plan can be found on Sheet 22 of the SUP.

Bicycle Plan

The streets within the retail and residential areas are proposed to function as shared streets for both cars and bicycles. This is appropriate given the low vehicular volumes, short street segments that limit vehicular speeds, existing and proposed character of the property with significant pedestrian/vehicle interactions, and the need to minimize street widths to keep pedestrian crossing distances short.

Eliminated/shortened travel ways, especially those encouraging speedy vehicular use between Broadview Avenue and Oak Springs Drive, change the nature of available accessways within the Center. This combined with on-street parking – parallel and head-in spaces, reduced driveway widths and raised crosswalks, will automatically provide traffic calming and slower traffic speeds, thereby making it safer for multi-modal use. Visitors entering the site are immediately confronted with a travel landscape that is unlike urban throughfares and more like parking lots with limited speeds, but good visibility. Unlike urban throughfares, which are designed for speedy travel between points A and B, visitors entering the Center will be immediately at B. The proposed streets and accessways encourage visitors to think about parking their vehicles or bikes and setting out on foot.

A Conceptual Circulation Plan, including proposed bicycle travel ways and public bike rack locations, can be found on Sheet 23 of the SUP.

Resident Connectivity to the Town of Warrenton

The Applicant believes that the new residents of Warrenton Village Center should not only benefit the commercial tenants at the Center but should provide new patronage to all of Warrenton's businesses. To do this, the Applicant desires to enhance and promote new and existing transportation networks to other areas of Warrenton.

Warrenton Circuit Rider: to encourage increased use of this public transport by residents, the Applicant proposes the following concepts:

- 1) There are currently Green Route and Blue Route stops within Warrenton Village Center at the current location of Joann Fabrics. If desired by the Town, the Applicant agrees to work with the Town to establish additional stops at the West Plaza and/or East Plaza residential lobbies.
- 2) Install permanent signage within residential lobbies to promote this public transportation option.
- 3) Establish a program with the Town that provides tenants with a monthly stipend for Circuit Rider fares—"Circuit Rider Cash" or something similar that would be accepted by the buses and funded by the apartment community.

Green Building Design

All residential buildings will be designed and certified to a National Green Building Standard (NGBS), Level Bronze, or higher. This certification requires minimum efficiency standards among building materials, plumbing and electrical fixtures, appliances and much more. If NGBS is not available for this project, an equivalent certification from an alternative third-party green building rating system will be acceptable.

EV Stations

To encourage continued growth of electric vehicles, a minimum of 5% of parking spaces within the Block 1 parking garage will include electric charging stations for resident use. Block 2 and Block 3 will not include charging stations, as residents will be able to utilize individual unit garages to supply EV power.

Noise & Exhaust

The proposed development will not produce any noticeable increase in noise or odor.

Emergency Services

All plans will be in conformance with Town Code and approved at Site Development Plan.

Sheet 8 of the SUP provides a Fire Truck Movement plan, confirming 360 degree fire truck access to all buildings.

Community Hours of Operations

All proposed residential rental units in all three blocks (multi-family, townhome and 2-over-2 units) will be part of the same new apartment community. All residents will have access to the community amenities found primarily at the Block 1 multi-family building. Hours of operations for the community's amenities will be as follows:

- Leasing Office: 9am-6pm (Monday-Friday), 10am-5pm (Saturday), Closed (Sunday)
- Mail & Packaging: 24 hours a day, 7 days a week
- Bike Storage: 24 hours a day, 7 days a week
- Pool and Pool Deck: 10am – 8pm, 7 days a week (Memorial Day to Labor Day)
- Fitness: 24 hours a day, 7 days a week
- Co-Working Space: 24 hours a day, 7 days a week
- Entertainment Lounge: 24 hours a day, 7 days a week
- Gathering Room: 24 hours a day, 7 days a week
- Garage Parking: 24 hours a day, 7 days a week

3-Bedroom Unit Maximum

3-bedroom apartments are important to provide a wide range of housing types and price points to the residents of Warrenton. 3-bedroom units provide the lowest rental rates on a per bedroom basis and are therefore pivotal when seeking to provide lower cost options to the Town's residents. In order to minimize concerns regarding potential fiscal impacts of 3-bedroom units, the Applicant agrees to cap 3-bedroom units in Block 1 at 10% of the total Block 1 units.

PLAN WARRENTON 2040

Plan Warrenton 2040 establishes a series of goals for future development within Warrenton. This proposal advances many of these goals, which have been outlined below:

Housing Goals

Character Districts are identified as an opportunity for “expanding housing options” and to “accommodate a range of housing typologies.” The Proposal advances this goal via inclusion of multiple housing types.

Goals H-1 and H-1.3 recommend the creation of workforce housing. The Proposal advances this by creating a variety of housing types to provide a wide range of rental price points, as well as inclusion of an affordable housing component.

Goal H-1.1 is to encourage “Missing Middle” housing types. The Proposal advances this goal by providing highly sought after rental dwellings in both townhome and 2-over-2 product types.

Goal H-1.2 of the Plan is to encourage the creation of a range of housing types. The Proposal meets this goal by providing 1-, 2- and 3-bedroom multi-family apartment units, as well as 2-over-2 and townhome dwelling units.

Goal H-2.2 of the Plan provides for appropriate use and scale of development and proper transitions to existing neighborhoods. The Proposal meets this goal by placing higher, four-story buildings in areas closer to existing commercial and future three-story residential, and then steps down to three-story buildings on the west side, where existing neighborhoods and future low density residential are found on the west side of Broadview Avenue.

Open Space, Parks, & Environment Goals

Goals P-3 and P-3.1 focus on providing residents with access to green and public spaces. The Proposal meets this goal by providing significant open space in close proximity to new residential housing, most notably, at the newly proposed Central, East and West Plazas.

Transportation Goals

Goals T-3.6 and T-3.10 focus on encouraging bicycle friendly policies and bicycle parking in new development standards. A bike storage room will be located within the multi-family building for use by all residents, as well as multiple bike racks throughout the site to promote bicycle transportation and recreation.

Goals T-3.4 and T-4.3 focus on creating a walkable network with sidewalk, pedestrian safety features, and increased network connectivity. An extensive new sidewalk network is being proposed throughout the Warrenton Village Center to promote walkability for residents and commercial shoppers alike. Pedestrians will have the ability to easily navigate between the residential, commercial and plaza areas with new sidewalks, crosswalks and vehicular traffic slowing measures.

Economics & Fiscal Resilience Goals

Goal E-1.2 of the Plan calls for a range of housing, with appropriate levels of density and transitions. The Proposal meets this goal by providing a variety of housing types, with height and density tapering down toward existing residential neighborhoods.

Goal E-1.5 of the Plan focuses on a diverse, equitable stable tax base. The Proposal advances this goal by providing opportunities for an increased tax base through its added housing stock.

Goal E-2.2 of the Plan promotes Warrenton's high quality of life to attract employers to work here. The Proposal will appeal to employers wanting to offer their employees new, high quality housing options. Warrenton Village Center will provide the Town with the first new, Class A apartment community in decades.

Goal E-2.5 of the Plan calls for development of a range of housing types. The Proposal meets this goal by providing 1-, 2- and 3-bedroom multi-family apartment units, as well as 2-Over-2 and townhome dwelling units.

Goal E-3.3 of the Plan focuses on maximizing public spaces and right-of-way for outdoor gathering space. The Proposal meets this goal by adding significant publicly accessible open space to the Property, most notably, at the Central, East and West Plazas.

Land Use & Character Districts

The Plan recommends a set of ten design criteria for projects within a Character District. The proposal meets and advances all these criteria, as shown below:

1. Discernable Center

The highlight of the proposed Warrenton Village Center is the new Central Plaza. The Plaza is centrally located within the 29-acre site at the crossroads of vehicular and pedestrian circulation and positioned to benefit the new residential units and existing commercial businesses alike. The Central Plaza is proposed as approximately one-half acre and includes a splash-pad, public green, hardscapes for seating and decorative planters and flower beds. It is sized, programmed, and designed for everyday use as well as for larger community activities. Additionally, the Central Plaza is bookended by a space for future retail development that would further activate the public amenity. A new raised watertable crosswalk will provide safe pedestrian connectivity and new wayfinding will allow the entire Warrenton Village Center to easily locate and enjoy this new public space.

2. Connected sidewalks with a clear pedestrian path, street trees, and lighting

The new Warrenton Village Center will benefit from a multitude of improvements that will increase pedestrian connectivity throughout the entire site. New sidewalks will be added along the entire perimeter of all residential blocks, including direct sidewalk connectivity to all street facing, ground floor units. The extension of Hastings Lane and accompanying sidewalks will offer a new pedestrian access point from Oak Springs Drive. Multiple sidewalks will link the three new residential blocks to the new public amenities and allow maximum ease of walkability from one side of the Property to the other.

Ample street trees, landscaping and lighting will line the sidewalks along the streets and private drives, providing shade during the day and lighting during the evenings to create a pleasant and safe walking environment.

Detailed landscaping and lighting plans will be provided at Site Development Plan review. Concept plans have been included on Sheets 9 & 10 (landscape) and Sheet 22 (lighting) of the SUP.

The siting of all three blocks, the sidewalk connections leading from the residential to the retail and the consistent street wall and streetscape envisioned will allow for a familiar experience typically seen in traditional mixed-use settings.

3. Buildings that are placed close to the street to create a sense of place

All buildings have been placed along exterior streets to create desirable streetscapes and a sense of place. Majority of parking has been pulled away from streets and concealed from view within a centrally located parking garage—inclusion of the parking garage has eliminated the need for unattractive surface parking lots.

Portions of all three building types (multi-family, 2-over-2s and townhomes) have been faced inwards so that they are visible from the commercial areas to enhance the mixed-use feel of the Center.

Street-facing, ground level units in all residential buildings will have direct access from the units to the sidewalk systems installed along all public and private streets.

4. Parking placed behind buildings and away from street frontages

All parking for Block 1 will be centrally located within a four-story parking garage that has been concealed from public view within the building itself.

Block 2 and Block 3 will have interior garages (two-car garage per townhome unit and one-car garage per 2-over-2 unit) and residents of those units will have the ability to park behind their garages in the unit's driveway space and/or in visitor parking areas found within both blocks.

5. Complete streets create a balance between cars, pedestrians, and bicyclists

The street networks are designed to slow vehicular traffic, create ease of access for residents and visitors, and promote pedestrian activity.

A bike storage room will be located within the multi-family building for use by all residents, as well as multiple bike racks throughout the site to promote bicycle transportation and recreation—see Sheet 23 of the SUP.

An extensive new sidewalk network is being proposed throughout the Warrenton Village Center to promote walkability for residents and commercial shoppers alike. Pedestrians will have the ability to easily navigate between the residential, commercial and plaza areas with new sidewalks, crosswalks and vehicular traffic slowing measures.

6. Compact street blocs encourage walking

The deliberate location of the Central Plaza and reorganization of vehicular, pedestrian and bicycle traffic around it allows the center to appear as a collection of smaller blocks, providing numerous ways for residents and visitors to explore areas within the center.

These enhancements will create smaller, more compact blocks to promote easy walkability from the new residential to the existing retail.

Further traffic calming by way of raised crosswalks/watertables at important intersections and elimination of travel ways designed for speed will encourage pedestrian use.

7. A park, trail, or activity center is within a half mile walking radius

The proposed development will link its new residents directly to the adjacent shops and businesses of Warrenton Village Center, turning the existing retail into an active pedestrian amenity. The creation of the Central Plaza, East and the West Plaza will further promote the Warrenton Village Center as a destination for not only residents of the community, but all residents of Warrenton. The location of the plazas and their use and function is directly tied to the role they are expected to play. The Central Plaza is 'centrally' located at the crossroads – vehicular and pedestrian to allow it to function as the neighborhood center and is sized, programmed, and planned to allow for community activities as well as everyday use. The East and West plazas serve as passive, ceremonial transition zones between the private residential realm and the public retail realm. Their primary intent and use is to connect residents with the rest of the commercial center while also allowing for a different, less active and smaller public area for passive recreation.

8. A variety of dwelling types accommodates a wide range of family sizes and income levels and commercial activity

As the first large rental community in the area in over a decade, the proposed Warrenton Village Center will add diversity to the housing market by providing much needed market rate and affordable rental dwellings. The community will offer 1-, 2-, and 3-bedroom apartment units within Block 1, as well as unique 2-over-2 and townhome units to supply the “missing middle” in Blocks 2 and 3—all dwellings will be for rent.

9. Neighborhood identity connects district wayfinding and identification with a larger marketing effort to bring private investment to the neighborhood

Warrenton Village Center is an existing neighborhood anchor and community shopping destination. The new Warrenton Village Center will synergistically elevate the overall development, redefining the neighborhood identity as a regional Live-Work-Play destination for both residents and visitors from the surrounding area.

The overall aesthetic of the new Warrenton Village Center brand and identity will be a contemporary design that thoughtfully incorporates Warrenton's rich history, focusing on equestrian inspired materials and textures. The sleek façade of the exterior pairs light colored brick and cementitious panels with warm stone, wood, and dark metal accents.

Signage and wayfinding will exercise these same principles to create a sense of place and affirm the character of the new development. The existing equestrian themed signage at Warrenton Village Center will be contemplated to create fresh branding and wayfinding that complements the existing infrastructure with a new modern and sleek identity.

10. The neighborhood edge provides the means of transition from the Character District to adjoining properties.

The buildings are designed to scale appropriately with the adjacent current and future uses, which are primarily commercial with some periphery residential. At four-stories, the proposed new buildings will be a step down from the six-stories allowed along Lee Highway and create an appropriate transition to the three-story residential areas allowed on the north of Oak Springs Drive. Three-story sections of the buildings are proposed along the western side of the Property, near areas designated as Low Density Residential on the Future Land Use Map.

Project ID: SUP 22-5

GPIN: 6984-29-6753-000 & 6985-20-7247-000

360 Oak Springs Drive, Center District Town of Warrenton, Virginia 20186

| # | Department | Issue | Reviewer |
|---|------------|--|---------------|
| 1 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
| 2 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
| 3 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
| 4 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |

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| 5 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
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| 6 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
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| 7 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
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|----|----------|--|---------------|
| 8 | Planning | Plan Warrenton 2040: New Town Character District | Denise Harris |
| 9 | Planning | Housing & Density | Denise Harris |
| 10 | Planning | Housing & Density | Denise Harris |
| 11 | Planning | Housing & Density | Denise Harris |
| 12 | Planning | Housing & Density | Denise Harris |
| 13 | Planning | Housing & Density | Denise Harris |
| 14 | Planning | Community Facilities & Infrastructure | Denise Harris |
| 15 | Planning | Community Facilities & Infrastructure | Denise Harris |

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|----|----------|----------------|---------------|
| 16 | Planning | Transportation | Denise Harris |
| 17 | Planning | Transportation | Denise Harris |
| 18 | Planning | Transportation | Denise Harris |

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|----|----------|----------------|---------------|
| 19 | Planning | Transportation | Denise Harris |
| 20 | Planning | Transportation | Denise Harris |
| 21 | Planning | Transportation | Denise Harris |
| 22 | Planning | Transportation | Denise Harris |
| 23 | Planning | Transportation | Denise Harris |
| 24 | Planning | Transportation | Denise Harris |

| | | | |
|----|----------|-------------|---------------|
| 25 | Planning | Walkability | Denise Harris |
|----|----------|-------------|---------------|

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|----|----------|--------------------|---------------|
| 26 | Planning | Lighting & Signage | Denise Harris |
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| 27 | Planning | Economic Impact | Denise Harris |
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|----|----------|---------------|---------------|
| 28 | Planning | Environmental | Denise Harris |
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| 29 | Planning | Environmental | Denise Harris |
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| 30 | Zoning | General | Heather Jenkins |
| 31 | Zoning | General | Heather Jenkins |
| 32 | Zoning | General | Heather Jenkins |
| 33 | Zoning | General | Heather Jenkins |
| 34 | Zoning | Article 2-18 -- Permitted Enchroachments | Heather Jenkins |
| 35 | Zoning | Article 3-4.10.3 -- Permitted Uses in the Commercial District | Heather Jenkins |
| 36 | Zoning | Article 6 -- Signs | Heather Jenkins |

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| 37 | Zoning | Article 6 -- Signs | Heather Jenkins |
| 38 | Zoning | Article 6 -- Signs | Heather Jenkins |
| 39 | Zoning | Article 6 -- Signs | Heather Jenkins |
| 40 | Zoning | Article 7 -- Parking | Heather Jenkins |
| 41 | Zoning | Article 7 -- Parking | Heather Jenkins |
| 42 | Zoning | Article 8 -- Landscaping | Heather Jenkins |
| 43 | Zoning | Article 8 -- Landscaping | Heather Jenkins |

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| 44 | Zoning | Article 8 -- Landscaping | Heather Jenkins |
| 45 | Zoning | Article 8 -- Landscaping | Heather Jenkins |
| 46 | Zoning | Article 8 -- Landscaping | Heather Jenkins |
| 47 | Zoning | Article 8 -- Landscaping | Heather Jenkins |
| 48 | Zoning | Article 8 -- Landscaping | Heather Jenkins |

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| 49 | Zoning | Article 9-8 -- Lighting | Heather Jenkins |
| 50 | Zoning | Article 9-8 -- Lighting | Heather Jenkins |
| 51 | Zoning | Article 9-8 -- Lighting | Heather Jenkins |
| 52 | Zoning | Article 9-3.1 -- Affordable Dwelling Unit Provisions | Heather Jenkins |
| 53 | Zoning | Article 9-3.5 -- Affordable Dwelling Unit Provisions | Heather Jenkins |
| 54 | Zoning | Article 9-17 -- Steep Slopes | Heather Jenkins |

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| 55 | Zoning | Article 9-25.1.B -- Density | Heather Jenkins |
| 56 | Zoning | Article 9-25.1.C -- Density | Heather Jenkins |
| 57 | Zoning | Article 9-25.1.C -- Density | Heather Jenkins |
| 58 | Zoning | Article 9-25.1.D -- Phasing | Heather Jenkins |
| 59 | Zoning | Article 9-25.1.E -- Subject Parcels | Heather Jenkins |

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| 60 | Zoning | Article 9-25.1.G -- Integration | Heather Jenkins |
| 61 | Zoning | Article 9-25.1.H -- Open Space | Heather Jenkins |
| 62 | Zoning | Article 9-25.1.H -- Open Space | Heather Jenkins |
| 63 | Zoning | Article 9-25.1.I -- Lot and Yard Regulations | Heather Jenkins |

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| 64 | Zoning | Article 9-25.1.I -- Lot and Yard Regulations | Heather Jenkins |
| 65 | Zoning | Article 9-25.1.J -- Modifications | Heather Jenkins |
| 66 | Public Works & Utilities | General | Paul Bernard |
| 67 | Public Works & Utilities | Article 4 -- Site Conservation Manual (SCM) | Paul Bernard |
| 68 | Public Works & Utilities | Article 5 -- Stormwater Management | Paul Bernard |

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| 69 | Public Works & Utilities | Water and Sanitary Sewer | Paul Bernard |
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| 70 | Public Works & Utilities | Transportation | Paul Bernard |
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| 71 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
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| 72 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 73 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 74 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 75 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 76 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 77 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 78 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |

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| 79 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 80 | Traffic Impact Analysis | Analysis Files | Zachary Bugg |
| 81 | Traffic Impact Analysis | Background and Volume Development | Zachary Bugg |
| 82 | Traffic Impact Analysis | Trip Assignment | Zachary Bugg |
| 83 | Traffic Impact Analysis | Trip Assignment | Zachary Bugg |
| 84 | Traffic Impact Analysis | Trip Assignment | Zachary Bugg |
| 85 | Traffic Impact Analysis | Other | Zachary Bugg |

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| 86 | Traffic Impact Analysis | Other | Zachary Bugg |
| 87 | Traffic Impact Analysis | Other | Zachary Bugg |
| 88 | Traffic Impact Analysis | Lane Configurations & Mitigation Measures | Zachary Bugg |
| 89 | Traffic Impact Analysis | Lane Configurations & Mitigation Measures | Zachary Bugg |
| 90 | Traffic Impact Analysis | Lane Configurations & Mitigation Measures | Zachary Bugg |
| 91 | VDOT | Special Use Permit | Stephen Brich |
| 92 | VDOT | Special Use Permit | Stephen Brich |
| 93 | VDOT | Traffic Impact Analysis | Stephen Brich |

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| 94 | VDOT | Traffic Impact Analysis | Stephen Brich |
| 95 | VDOT | Traffic Impact Analysis | Stephen Brich |
| 96 | Fire & Rescue | General | James Swain |
| 97 | Fire & Rescue | General | James Swain |
| 98 | Fire & Rescue | General | James Swain |
| 99 | Fire & Rescue | General | James Swain |

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| 100 | Fire & Rescue | General | James Swain |
| 101 | Fire & Rescue | General | James Swain |
| 102 | Fire & Rescue | General | James Swain |
| 103 | Fire & Rescue | General | James Swain |
| 104 | Fire & Rescue | General | James Swain |
| 105 | Fire & Rescue | General | James Swain |
| 106 | Fire & Rescue | General | James Swain |

| Comment | Applicant Response |
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| <p>There are caveats on the SUP plans that all images are illustrative and subject to change</p> | <p>"Subject to change" language has been removed from SUP sheets. Section 4 of COA includes language that final design shall be in general conformance to Elevations included in the SUP.</p> |
| <p>Staff encourages the Applicant to also provide elevations from Broadview</p> | <p>Two renderings from Broadview have been added to the SUP.</p> |
| <p>There are details proposed that do not follow the Ten Guiding Principles. For example, the screening wall proposed the length of the alley road will create a tunnel effect that is not inviting or cohesive in nature.</p> | <p>We feel that the submittal strongly adheres to the 10 guiding principles. The ~6' height and placement of the screening wall in the alley will avoid a tunnel effect from being created--that screening has been incorporated to benefit the ground level units in that area, so that they do not look directly into the commercial "back of house" areas. Additionally, the alley is purposefully a secondary access area and not meant to be a highly trafficked alley. Vehicular ingress/egress will be focussed towards the Oak Springs garage entrance and pedestrian access will utilize the building lobby located at the West Plaza.</p> |
| <p>There continues to be gaps in pedestrian connections between blocks and central commercial development. This is especially true of Block 2, which does not have sidewalks and resident pedestrians would have to walk in the road and through parking lots to reach restaurants in locations currently occupied by Red Zone and Faang Thai.</p> | <p>New sidewalks encircle all three residential blocks, with direct sidewalk access provided to all ground level units. Crosswalks have been added to connect all residential blocks directly to the commercial center--including a new crosswalk across the New Entrance Drive (Hastings Lane) adjacent to the proposed dog park. New sidewalk will also be added to the missing section located along Broadview behind the bowling alley--sidewalk is shown meandering and partially running adjacent to interior drive aisle curb as to avoid impact to existing mature trees along Broadview Ave. This has been added to the COA.</p> |

The Comp Plan is very intentional in stating the height on Oak Street shall be 1-3 stories to serve as a transition zone. While the Applicant offers a reasoning for the 4-story structure is a step down from 6-stories on Lee Hwy, no such structures exist yet and the Comp Plan is specific regarding heights on Oak Springs. The Comp Plan is a guide and Council may choose to vary from it, but Staff will continue to point out the adopted goals of the Comp Plan.

Understood. SOJ "Height" Section includes justification language for our 4-story sections. Waiver #7 of the SUP includes our request to modify our proposed heights from those included in the Comp Plan.

Applicant is proposing first floor residential and will need to include this request in the waiver/modification 9.23.1 Section of the Zoning Ordinance to ensure no issues in the future.

Per Section 9-25.1 on Mixed-Use Regulations: A. A mixed-use development, that includes residential use only structures, shall contain a minimum of five (5) acres. Town Council may approve a mixed-use development utilizing residential use only structures on parcels less than five (5) acres when approved as part of the Special Use Permit application which includes a concept plan detailing the integration of the different uses B.3. Residential units located on the first floor of a mixed-use structure shall not front the street or drive aisle

Per Section A., we are submitting the SUP for Town approval to allow the residential use only structures.

Per Section B.3., only applies to mixed-use structures (which we do not have) and does not apply to a mixed-use development.

Per the ordinance and the summary above, we believe the waiver/modification would only be required for a mixed use structure. Because our project does not include such structures, we do not believe a waiver is necessary.

Relocation of Panera--drive through requires SUP and should be added to applications.

The Panera relocation has been deleted from this Application. That area has been added to Block 3 and will included additional townhome units.

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| <p>Applicant modified phasing to blocks. This approach is still considered phasing and Conditions of Approval will need to carefully consider triggers for each proposed aspect of the mixed-use development. For example, Statement of Justification states all public improvements are proposed to be constructed as part of Block 1; yet it states the full internal pedestrian loop will be completed with Block 3. Please clarify.</p> | <p>Updated Language has been added the SOJ and COA--"Block Sequencing and Required Site Improvements." Blocks can be developed in any order, but the Town will have the ability to withhold Certificates of Occupancy within each individual block until such time as the site improvements including in that block have been substantially completed.</p> |
| <p>ADUs should not be grouped together. A condition of Approval will be needed to ensure this.</p> | <p>Language has been added to SOJ and COA: "No more than three ADU units will be positioned adjacent to one another at any given time."</p> |
| <p>Applicant may like to indicate in the SUP a minimum number of ADUs to be included in each proposed block and ensure they will not be grouped together within the blocks.</p> | <p>SOJ and COA have been updated: all residential blocks will independently maintain 10% of the units within each block as ADUs.</p> |
| <p>Will there be a variety of types of units offered in the ADU program ranging from the proposed 1-3 bedrooms?</p> | <p>ADU units will be offered in 1-, 2-, and 3-bedroom units types, as well as townhomes and 2-over-2s. Owner will have the ability to increase/decrease allocation between 1-, 2-, and 3-bedroom units based on market demand and unit availability, so long as a minimum of 10% of the units in each individual block are maintained as ADUs. This language is included in the SOJ and COA.</p> |
| <p>Will the ADUs have same elevations, square footages, and finishes as the market rate units.</p> | <p>Language included in SOJ and COA: "The ADUs shall be similar to the market rate units in architectural design, fixture/appliance selections and unit size."</p> |
| <p>Will there be a mechanism to verify the ADU units without relying on a report from the Property Manager.</p> | <p>We have proposed the same ADU language as cases previously approved by Town Council. We are amenable to other audit mechanisms that the Town may propose.</p> |
| <p>Staff encourages the Applicant to revisit the treatment of refuse and dumpsters. Attention to these details can result in a community feeling pleasant or the reverse.</p> | <p>Additional language has been added to the "Trash" and "Loading and Trash Pickup Areas" sections of the SOJ regarding trash details, locations, pickup and shielding.</p> |
| <p>Landscaping plan includes trees over the exact location of the proposed dumpsters. Both these items are necessary. Ensuring the development properly accommodates and considers both is important for residents and commercial tenants.</p> | <p>Block 2 landscaping has been revised to eliminate the conflict.</p> |

Staff continues to be concerned about the access road to the parking garage through the rear commercial delivery points. The proposal to use a street that is aged and connects to a rear non-architectural side of aging commercial buildings does not provide visual or usable connectivity.

We must work within the parameters established by the existing commercial building. The alley has been designed to maintain delivery access to the rear of the commercial and also provide secondary access to the residential garage. The overall project has been designed to pull vehicles and pedestrians away from the alley--purposefully making this area a secondary means of ingress/egress. Even so, significant attention has been given to improving this area, including landscape buffering, trash consolidation, privacy fencing, painting of the commercial building, removal of "ancillary" structures and asphalt painting that will clearly define thoroughfares from "back of house" areas. See details of these improvements in the SOJ ("Modified Alley" section).

"Modified Alley" has been added to the COA to ensure that this area is improved in accordance with the SUP plan.

Are proposed elevations of the back of the existing commercial proposed to be modified or is it just repainting.

Rear elevations will be painted a consistent, neutral color. All trash dumpsters will be consolidated to two, centralized, screened locations. All existing "ancillary" structures will be removed.

"Ancillary" structures are proposed to be demolished yet there does not appear to be a description as to what those structures are.

"Makeshift" structures have been erected behind the commercial building at various locations. These appear to be used for storage. Pictures of these structures have been added to the SOJ.

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| <p>How will this alley become an inviting area for residents to feel safe and comfortable.</p> | <p>This area is not intended to be a focal point of the community--this area is now and will continue to be primarily for "back of house" use and secondary access. The design of the project purposefully directs vehicular and pedestrian traffic towards the commercial center and new plazas, that are intended to be the inviting, communal areas.</p> <p>That said, substantial improvements are being made to this alley to ensure that it is comfortable and safe for residents, including landscaping, lighting, painting, privacy fencing, consolidation of trash, removal of "ancillary" structures and asphalt painting.</p> |
| <p>Site is overparked according to the required 1,069 spaces to the proposed 1,557 spaces. Likewise, the Fiscal Impact Analysis anticipates 575 vehicles, but 607 spaces are provided. Recommend looking at proposal through lens of transferring from an auto-oriented strip mall to a walkable, mixed-use environment.</p> | <p>Proposed parking is higher than required parking b/c the existing commercial parking areas are significantly over parked. The new parking allocated to the residential blocks is in line with required levels.</p> |
| <p>Concern with locations where parking is proposed to back out/into proposed drive aisles. In order to move towards a more grid system road network, these types of parking spaces are not conducive. Applicant should consider removing these spaces to allow for more green space and sidewalks.</p> | <p>Back out/in spaces have been deleted from the SUP. Those spaces are now proposed as parallel spaces--these spaces are necessary to remain in the plan to provide parking for prospective tenants visiting the leasing offices in Block 1.</p> |
| <p>Careful attention should be given to intersections, crosswalks and potential bump out for pedestrians.</p> | <p>Understood. These will be designed in detail at Site Development Plan.</p> |
| <p>Condition of Approval will require a cooperative parking agreement between all parcels, now and future.</p> | <p>Each residential block and the commercial center meet their own individual parking requirements--as shown on SUP Sheet 4. No shared parking agreements will be required. Guess parking spaces in Block 2 and Block 3 will include signage that spaces are reserved for resident use only.</p> |
| <p>Town was awarded Smartscale funding for roundabout at the intersection of Broadview and Winchester. The "peanut" roundabout at Broadview (western side of property) was not successful this round.</p> | <p>Understood. The roundabout at Broadview and Winchester is included in the Traffic Impact Analysis and recommendations from that analysis contemplate that improvement.</p> |

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| <p>There is confusion over the timing triggers proposed for when these improvements will be built. Phasing has been proposed to be removed, but the blocks are still proposed to be built as the market indicates--there needs to be a nexus between the timing of the proposed improvements. Please clarify.</p> | <p>Each of the three blocks and the site improvements tied to each of those blocks are shown on Sheet 4 and Sheet 5 of the SUP. The blocks can be developed in any order, but the Town of Warrenton will have the authority to limit issuance of COs with each block until such time as the site improvements within that block have been completed. This language has been added to the SOJ and COA--"Block Sequencing and Required Improvements"</p> |
| <p>Consideration should be given to producing a Master Sign Plan for the entire development and conditioned as part of the approval process. Currently, SUP plans are labeled as conceptual and subject to change.</p> | <p>Conceptual signage design has been included in the "Warrenton Village Center Design Story" materials, as well as the "Conceptual Site Signage Plan" sheet in the SUP. These materials provide representation of the anticipated site signage. Signage design and locations will be approved by the Town at Site Development Plan.</p> |
| <p>FIA references on Page 36 a demand for 1,100 units. The assumption is this demand is for the entire County. Please confirm the geographic area the demand is representing and the source of the projection.</p> | <p>The 1,100 figure is an extrapolation from the analysis of demographic trends and projections, which begins on page 27. This number represents the total demand for the competitive apartment market area, distinct from the county itself. The boundaries of this market area are detailed in Table 8, which includes small portions of Prince William County.</p> <p>This statement has been added to the updated report submitted with this 3rd submission.</p> |
| <p>Staff continues to request how the proposed units will be treated on Branch Avenue. For example, if there will need to be a retaining wall constructed on the Branch Drive side of the development, the wall may visually close off the roadway making a tighter and less comfortable travel way for cars, bikes and pedestrians.</p> | <p>No retaining wall is anticipated to be required. If required, a short wall would only be anticipated for the southern-most units (±40'-50') proposed along Branch Drive. The wall will be tied into the building construction and we do not feel that it will create an unattractive or uncomfortable condition.</p> |
| <p>Applicant may consider developing a Geotechnical Report sooner than time of site plan to demonstrate potential environmental impacts (i.e. blasting). Town has taken blasting into consideration in the past.</p> | <p>Understood. Applicant is comfortable with risks associated with delaying Geotechnical Report.</p> |

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| <p>Statement of Justification describes three distinct development phases--1) multi-family apartment building, 2) 2 over 2 and townhome units, and 3) improvements to the commercial area of pedestrians, vehicular traffic and a plaza. The plan does not show these areas as three phases, nor do the proposed Conditions of Approval address the timing of these phases. Additional information is needed.</p> | <p>Site plan improvements tied to each block are shown on Sheet 4 and Sheet 5 of the SUP. Language has been added to the SOJ and COA that will limit approval of Certificates of Occupancy within individual blocks until such time as the site improvements within that block have been substantially completed.</p> |
| <p>Provide screening details such as height, material, etc or provide a prominent note on the plan that all screening shall be addressed at the time of site development plan.</p> | <p>Language has been added to SOJ that "Construction details of all screening and fencing will be addressed at time of Site Development Plan." Note #12 has been added to the General Notes in the SUP (Sheet 3 & 4).</p> |
| <p>Remove phasing from the plan if phasing is no longer being utilized--example, Sheet 2 references phasing within the curve table</p> | <p>All references to phasing have been removed from the SUP.</p> |
| <p>Phasing is still shown throughout plan and the statement of justification references Blocks. Provide a phasing plan sheet or address phasing in the Conditions of Approval.</p> | <p>Each of the three blocks and the site improvements tied to each of those blocks are shown on Sheet 4 and Sheet 5 of the SUP. The blocks can be developed in any order, but the Town of Warrenton will have the authority to limit issuance of COs with each block until such time as the site improvements within that block have been completed. This language has been added to the SOJ and COA--"Block Sequencing and Required Improvements"</p> |
| <p>Setback modification request does not specify that it will include decks. Specify whether the deck is included within the building footprint shown on the plan. Permitted deck encroachments: uncovered decks must be at least 10' from rear property line and cannot encroach in front/side yard setbacks. Covered decks cannot encroach setbacks.</p> | <p>Decks are not included in the footprint shown. Typical unit decks protrude 2' past the building footprint, however those 2' protrusions will not encroach into any of the required setbacks. Note has been added to reference 2' decks.</p> |
| <p>The application materials should be revised as necessary to clarify that all residential development will be multi-family, with Block 2 and Block 3 having the appearance of townhomes/2 over 2 units.</p> | <p>All materials have been updated to reflect this request.</p> |
| <p>Note on SUP plan that signage is required to meet requirements of Article 6 of the Town of Warrenton Zoning Ordinance at the time of Site Development Plan</p> | <p>Note has been added to the Conceptual Signage Plan sheet.</p> |

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| <p>The statement of justification acknowledges that signage shall comply with the Zoning Ordinance but does not specify that signage is required to comply at the time of Site Development Plan. Add this note to the Statement of Justification.</p> | <p>Requested note has been added to SOJ-- "Wayfinding" section.</p> |
| <p>Conceptual building signage (#3) shown on Sheet 16 does not meet the Zoning Ordinance for Building Signage--"6-13.3.2; Building Signs shall not extend above the top of the roofline of the building to which it is attached."</p> | <p>Conceptual sign image #3 has been revised. Signs will be in conformance with all requirements of Article 6.</p> |
| <p>Conceptual monument signage depicted on Sheet 16 (#1) will be required to meet the requirements of Article 6-13.4 and will be subject to line-of-sight review during the Site Plan process; provide note to clarify requirement.</p> | <p>Note has been added to the Conceptual Signage Plan sheet.</p> |
| <p>Loading area noted in front of the parking garage shows pull in spaces on the illustrative plan. Clarify what type of loading is intended and if any changes are proposed to the existing loading areas behind the shopping center.</p> | <p>"Loading and Trash Pickup Areas" section has been added to the SOJ to provide more detail on the different loading areas. Changes to the existing loading areas are outlined in the "Modified Alley" section of the SOJ.</p> |
| <p>How far away will the loading areas be from residential windows, decks and HVAC intake (7-18 and 9-14.4 ZO)</p> | <p>"Loading and Trash Pickup Areas" section has been added to the SOJ to provide more detail on the reserved loading and trash areas. No residential units will be located on the ground level adjacent to these areas. Residential trash will be located within the buildings in trash compactor rooms. Trash will only be rolled out to the trash pickup spots on scheduled trash days. Note--all HVAC units will be located on the buildings roof.</p> |
| <p>Advisory comment remains: Conformance w/ landscaping requirements is required at time of SDP submission. Modifications to the required buffers under Article 8-8 may be approved by Town Council. The application includes a request to modify "interior lot line buffers requirements." Provide additional information regarding this request, specifically noting which buffers are included in the modification. For example, is this for the 25' buffer between commercial/residential uses or for storage/loading areas?</p> | <p>Additional clarification added to Waiver #4 on Sheet 7.</p> |
| <p>Advisory Comment remains: A 25-foot buffer is noted as to be provided along Branch Drive, however the setback is noted as 20 feet along Branch Drive. Clarify the width of the buffer to be provided</p> | <p>Setback along Branch drive is 20', which is in compliance with front setback requirement along that street.</p> |

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| <p>The concept plan does not show all landscaping calculations required under Articles 8-6 and 8-10. Modifications of these sections may not be granted. Conformance with landscaping requirements is required at time of SDP submission. As presented staff cannot verify if the information provided meets Articles 8-6 and 8-10. Staff is also having a hard time verifying that there are no discrepancies in the number of trees noted between the planting table, landscape plan, and tables A-C.</p> | <p>Landscape Plan revised and note added that compliance with landscaping requirements will be shown with Site Development Plan. Note--the existing retail portion of site does not meet 10% canopy coverage requirement. Reducing parking to add additional landscape islands could aide this, but is not proposed as part of this SUP.</p> |
| <p>Understory trees are proposed for Street Trees on a 1/50 feet basis. Ornamental trees may be substituted for canopy trees on a two to one basis. (8-5.5.3 ZO). Provide additional understory trees as necessary.</p> | <p>Comment addressed in Landscape Plan.</p> |
| <p>The applicant is requesting to be waived from the buffer requirement between residential and commercial, however there are areas where additional buffering may be needed, to include the area between Block 3 and the new retail/drive-thru. Staff recommends providing additional screening in this area, such as a screening wall and/or dense evergreen shrubs to reduce the impact from headlight glare on residences.</p> | <p>Location has been revised with elimination of the Panera building and addition of more townhomes. Given the new configuration, we do not believe there is a need for increased landscape buffer at this location.</p> |
| <p>The cross-section on Sheet 13 of the plan as well as the other renderings show additional landscaping between the commercial area and the residential areas that is not shown on the plan drawing or captured in the conditions of approval. Staff recommends that the plan drawing should be revised to show this additional landscaping as well as a condition of approval to require a mixture of canopy, understory, shrubs and herbaceous perennials within all landscaped buffer areas and green spaces if this is the final site condition that is desired.</p> | <p>Cross section has been revised to align with site plan.</p> |
| <p>To address the landscaping comments, staff requests that the plan set be revised to include a waiver/modification sheet that delineates those site areas where a waiver or modification is being requested, to include a comparison between the ordinance requirements and the proposed conditions.</p> | <p>Sheet 7 "Waiver Information" has been added to the SUP to define all waivers and illustrate the location of each waiver request.</p> |

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| <p>The Statement of Justification acknowledges all lighting must meet requirements of Article 9 of the Zoning Ordinance. A conceptual lighting plan has been provided but staff is unable to determine that the lighting will meet Ordinance requirements. The applicant acknowledges on the plan that all fixtures on site will require conformance to current lighting standards at the time of site development plan.</p> | <p>Note has been added to the Conceptual Lighting Plan sheet.</p> |
| <p>The wall sconce lighting and the utility lighting depicted on the lighting plan (#2) does not meet Zoning Ordinance requirements. This type of lighting must be shielded from the top so that light is not emitted above the horizontal plane. This comment should also include the utility lighting.</p> | <p>Concept light #2 has been revised.</p> |
| <p>Staff recommends an approval condition be added to state that all site lighting, to include both new fixtures within the new development areas as well as any non-residential area that is modified as a part of site development, must consist of fully-shielded, full cut-off fixtures to meet the requirements of Article 9, Section 9-8. The applicant may wish to consider additional conditions of approval to address potential glare such as limiting the height of all outdoor fixtures to 14 feet, limiting the color temperature to 3,000 kelvin or lower, and limiting the average horizontal illumination level to no more than 2.5 footcandles.</p> | <p>COA has been updated with following conditions: -All site lighting, to include both new fixtures within the new development areas as well as any non-residential area that is modified as a part of site development, must consist of fully-shielded, full cut-off fixtures to meet the requirements of Article 9, Section 9-8. -Color temperature of exterior light fixtures will be 3,000 degrees kelvin or lower. -Average horizontal illumination level of exterior light fixtures will be 3.0 footcandles or less.</p> |
| <p>The Statement of Justification identifies those eligible for rental of the affordable dwelling units as those that do not exceed 80% of the Fauquier County area median income. The statement of justification and plan must be revised to address all forms of affordable housing qualification such Section 8 rental assistance, Virginia Housing Development Authority, Farmer's Home Administration, etc</p> | <p>ADU language has been updated in the SOJ and COA to include the state and federal programs outlined in the Zoning Ordinance.</p> |
| <p>The statement of justification states that Affordable dwelling units may be advertised to Town first responders and Fauquier County teachers. The Ordinance states that units should first be made available to those residing and/or working in the Town of Warrenton or Fauquier County. It does not specify that they must be teachers or first responders</p> | <p>ADU language has been updated in the SOJ and COA to reflect the specify language included in the Zoning Ordinance--ADU's will first be made available to persons living or working in the Town of Warrenton or Fauquier County.</p> |
| <p>It appears there may be areas of steep slopes on the vacant parcel to be developed. Note any steep slopes on the existing conditions plan.</p> | <p>Steep slopes are shown in dark gray on the Existing Conditions Plan.</p> |

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| <p>The Applicant is requesting from Town Council residential density in excess of 5 units per acre. Phase one is proposed to have 339 units and Phase 2 is to have 97 units, for a total of 436 units. The proposed density does not exceed one unit per 500 gross square feet of non-residential floor space. The Applicant has not sufficiently proven that the requested density is in conformance with the Comprehensive Plan as the area is included within the Transition Zone for building height (1-3 stories, 35 feet max).</p> | <p>See SOJ - "Density" section for detail on density calculation, justification, and conformance with Plan Warrenton 2040.</p> |
| <p>The statement of justification notes the affordable dwelling units will initially be identified on the plan but are subject to change. Affordable dwelling units must be specifically identified on the plan.</p> | <p>Building plans are not currently available to show which units are designated as ADUs. These designations will be shown on the Construction Drawings submitted for building permits. Language has been added to SOJ and COA to reflect this.</p> |
| <p>The 10% affordable housing bonus permits a 100% density increase. At 29.05 acres and 5 units per acre, equaling 145.25 units, a 100% density bonus allows for 290.5 units. Phase one proposes 339 units.</p> | <p>See SOJ - "Density" section for detail on density calculation, justification, and conformance with Plan Warrenton 2040.</p> |
| <p>Original Comment: The plan sheet shows two phases, although only one is proposed at this time. As such, Phase 1 must meet all the requirements with regards to Phasing. Include the existing commercial property/calculations in the development tabulation for Phase 1.</p> <p>This comment does not appear to have been addressed. The plan still references phasing and the statement of justification mentions "Blocks". Clarification is needed, because the applicant also appears to be requesting a waiver for phasing.</p> | <p>Each individual block will have its own unique site plan that will be approved by the Town of Warrenton. Each block will meet the requirements of a standalone site plan--i.e. open space requirements, parking requirements, ADU requirements, etc.</p> <p>The combination of the three blocks will together satisfy the goals and requirements of the 2040 Plan, as it would not be possible for each block to individually satisfy those goals. There are three individual pieces of this puzzle--but once put together, we will achieve the goal of creating a comprehensive mixed use community in that is reflective of the 2040 Plan.</p> |
| <p>Provide a separate sheet showing the existing and proposed parcel boundaries, to include existing/proposed building footprints and required setbacks from property lines.</p> | <p>Sheet 2A "Parcel Overview Plan" has been added to the SUP to address this comment.</p> |

Original Comment: Pedestrian and bicycle routes shall be provided to connect all uses per Article 9-25.1 Subsection G. Show or note the location of areas designated for bicycle traffic on the SUP Plan. Note the width of the proposed sidewalks.

Clarification: Provide ingress/egress information in the area of the main parking garage entrance off of Oak Springs Drive

An extensive sidewalk network is proposed with the new uses to connect with and compliment the existing sidewalks in the retail center. The streets within the retail and residential areas are proposed to function as shared streets for both cars and bicycles. This is appropriate given the low vehicular volumes, short street segments that limit vehicular speeds, existing and proposed character of the property with significant pedestrian/vehicle interactions, and the need to minimize street widths to keep pedestrian crossing distances short.

Both garage entrances will be two-way--arrows have been added to the plans.

All interior roads will be shared roads for bicycles and vehicles.

A 5' sidewalk minimum has been added to the COA.

Original Comment: A minimum of 10% of open space must provide parks, squares, or other open space uses. Delineate any proposed natural open space areas open space on the plan,

Clarification: Delineation to include the area (sq.ft.) of each open space area, the proposed use/activity within all open space areas, and adequate improvements/amenities to support the proposed open space use.

Sheet 6 "Open Space Plan" has been added to the SUP to clarify locations, sizes and improvements within each open space. These details have been added to the SOJ and COA as well.

Each block/residential parcel and the residual retail parcel will individually meet the 10% open space requirement.

Staff notes that the conceptual renderings show amenities that are not included in the plan data or approval conditions; amenities and open space improvements that are not conditioned or specified in the documents may not reflect the final site conditions. Recommend providing a condition of approval to state the requirement for benches, tables, play equipment, and other amenities to adequately support open space use so that the final built conditions of the development more closely match the conditions shown in the renderings.

Sheet 6 "Open Space Plan" has been added to the SUP to clarify locations, sizes and improvements within each open space.

Language has been added to the SOJ and COA to confirm that open space improvements will be in general conformance with the materials included in the SUP and the details provided on Sheet 6.

Side yard setbacks are not noted on the plan. Clarify where the boundary line adjustment is to be placed and note setbacks accordingly.

All setbacks have been added to the Overall Site Development Plan.

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| <p>A modification of building height is requested. Include the setback adjustment provided to setbacks in the calculations for the increase building height. The Applicant has not sufficiently proven that the requested building height is in conformance with the Comprehensive Plan as the area is included within the Transition Zone for building height (1-3 stories, 35 feet max).</p> | <p>Building Heights and Setbacks section has been added to the SOJ to detail proposed building heights and corresponding setbacks.</p> |
| <p>The Applicant’s letter states they are requesting modifications to increase the overall density, reductions in front yard setback along Oak Springs Drive, reduce interior lot buffer requirements, and allow increased building height. Ensure it is clear what modifications are being requested from Town Council with the Special Use Permit under Article 9-25.1 Subsection J.</p> | <p>See "Special Use Permit Modifications" section of SOJ and "Section 3--Waivers and modifications" of the COA. We believe these sections adequately outline the modifications being requested.</p> |
| <p>The SUP application does not provide the detailed design required for the final site development plan (SDP) submittal. Therefore enough information is not available to conduct the engineering review at this time. If this project is to be designed and developed in phases, or blocks, please be sure to design the initial infrastructure to support the subsequent blocks.</p> | <p>Detailed design to be submitted for approval at Site Development Plan.</p> <p>Infrastructure will be designed to ensure flexible sequencing of blocks.</p> |
| <p>Conformance with erosion and sediment control (ESC) requirements is required at the time of SDP submission. The concept plan does not include the ESC measures and calculations that will be required with the final site development plan. That plan must meet the Site Conservation Manual Article 4, VAC 9-25-840, Virginia and Erosion and Sediment Control Law, and State Regulations.</p> | <p>Detailed ESC plans will be submitted for approval at Site Development Plan.</p> |
| <p>Conformance with stormwater requirements is required at the time of SDP submission. The concept plan does not show stormwater facilities that will be required to bring this project into conformance with current regulations. As a new development project, they must meet the requirements of the Stormwater Management Ordinance Article 5 and State Regulations for new development. That means they will need to provide at least a 20% reduction in runoff and nutrients from the site.</p> | <p>Detailed stormwater plans will be submitted for approval at Site Development Plan.</p> |

This proposal claims an allowable maximum density of 432 units. The design calls for 376 residential units and 216,306 SF of retail/commercial space. Assuming these densities are correct and acceptable by Zoning, this total development could place a demand of from 90,000 to 160,000 gallons per day (GPD) on the Town's water plant. The latest Sewer and Water Capacity analysis conducted for the Town estimated the water demand for this property's proposed density at 156,000 GPD. This will equate to from 16 to 28% of the projected water demand for the Lee Highway, New Town, Land Use District, while the project includes 16% of that total district land area. During the final design process, the Applicant will need to provide flow projections and fixture unit counts for meter sizing requirements. Fire protection requirements will also need to be met. More information will be provided regarding the proposed connection for water and sewer service to this development with the final site plan. This plan will also require adequate water system easements to serve the added residential and commercial applications. These demands will put a little extra pressure on our water reservoir capacity, and the wastewater generated will put a significantly more pressure on our Cedar Run pump station and the Treatment Plant.

Flow projections, fixture counts and fire protection measures will be submitted for approval at Site Development Plan.

This plan improves the access to the parking area for the apartment building. The final design will need to ensure adequacy and compatibility of access with turn lanes off Oak Spring Road. As indicated in the comment responses, detailed elements will be addressed at the time of final site plan design. The proposed angled parking on Hastings Drive extended, would imply one-way traffic coming into the site, or those cars leaving the parking will need to exit through the shopping center. This could create traffic conflicts if folks pulling out of the angled parking and trying to position themselves for existing the site to the north.

All warranted road improvements (including turn lanes off Oak Springs Road) will be included in plan submitted for approval at Site Development Plan.

The angled parking on Hastings Lane have been removed and replaced with parallel spots.

0% grade has been coded for all study intersection approaches within the Synchro files. We recommend updating the grades to reflect the general terrain of the signalized and stop- controlled study intersections. Google Earth is a planning-level resource to estimate intersection approach grades.

Analysis files have been revised to include estimated grade.

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| <p>Pedestrian volumes have not been coded in the Synchro models. We recommend coding these to match the peak hour pedestrian counts for the existing scenarios and carrying these through (with any assumed growth, with appropriate documentation provided) for future scenarios.</p> | <p>Analysis files have been revised to include pedestrian volume.</p> |
| <p>We recommend adjusting the number of pedestrian calls per hour at all signalized intersections to reflect the pedestrian demand.</p> | <p>Analysis files have been revised as requested.</p> |
| <p>For all future background and total traffic conditions, a minimum peak hour factor of 0.92 should be used at all study intersections per the TOSAM. The total traffic conditions Synchro model includes different peak hour factors for various movements at Intersections 6 and 7; we recommend using a consistent peak hour factor of 0.92 for the whole intersection.</p> | <p>Analysis files have been revised as requested.</p> |
| <p>Intersection 1 - we do not recommend coding the northbound and southbound right turns as "free" movements, as there is no receiving lane on Broadview Ave. One approximation for coding this signal timing would be to code it as permissive in the minor street through phase and the overlapping major street left turn phase (phases 1 and 3 for the northbound right turn and phases 4 and 5 for the southbound right turn).</p> | <p>Analysis files have been revised as requested.</p> |
| <p>Intersection 1 (SIDRA analysis) -the U-turn volumes have been included as left-turn volumes. We recommend coding U-turn movements separately.</p> | <p>SIDRA file has been revised as requested.</p> |
| <p>Intersections 1 and 10 (SIDRA analysis) - 50 pedestrians/hour have been coded for all approaches. We recommend changing the pedestrian demand to match the count data or documenting the assumptions behind the projected growth in pedestrian demand.</p> | <p>SIDRA file has been revised as requested.</p> |
| <p>Intersections 1 and 10 (SIDRA analysis) - Conceptual renderings within the project cut sheets for these proposed roundabouts are referenced in the TIA Appendix. Consider adjusting the geometry (circulating width, island diameter, entry radius, entry angle) to match the concept drawings.</p> | <p>SIDRA file has been revised as requested for intersection 1. The roundabout at Intersection 10 has been removed.</p> |

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| <p>Intersection 10 (SIDRA analysis) - the number of circulating lanes should be 1 for the SW approach for all SIDRA analyses. Adjust circulating width for the W approach to reflect two circulating lanes. Suggest estimating the AM and PM peak hour demands at the E and W driveway approaches based on land uses/trip generation rather than assuming 1 vph per movement.</p> | <p>Intersection 10 is no longer a roundabout as it was not approved for SMARTSCALE funding.</p> |
| <p>Intersection 7 - we suggest a design speed of 25 mph for the southbound approach. We recommend coding a storage length for either the left or right turn lane on the southbound approach.</p> | <p>Analysis files have been revised as requested.</p> |
| <p>Regional growth rates have been applied to all movements at all study intersections. We do not agree with applying regional growth to driveways and minor side street approaches, as the land uses there are not expected to change before the site is developed, and this conflates the impact of the site trips.</p> | <p>Understood. Growth was applied to all movements to be conservative. Analysis has been revised to remove growth from driveways and minor street approaches.</p> |
| <p>Approximately half of the external trips are assigned to the Driveway at Intersection 7, and half are assigned to Intersection 6. No trips are assigned to the shopping center site accesses at Intersections 2, 4, 9, or 10. Given that the apartment units constitute 85% of the development and a dedicated parking deck will be provided with a primary access at Intersection 7, we suggest assigning more site trips to the driveway at Intersection 7.</p> | <p>Trip assignments have been revised as suggested.</p> |
| <p>Alternatively, some vehicles may exit the parking deck to the south and access the external street network at Intersections 9, 10, 2, or 4, although this is a much more circuitous route. We recommend assigning a small number of trips to these other external intersections to reflect that some drivers may choose this route.</p> | <p>Trip assignments have been revised as suggested.</p> |
| <p>The westbound left turn delay during the PM peak hour under total traffic conditions at Intersection 8 is much higher than Intersection 9 (approximately 50 seconds compared with 10 seconds). We recommend reassigning some trips from Intersection 8 to Intersection 9 to reflect that some vehicles may divert to this intersection to access the street network.</p> | <p>Trip assignments have been revised as suggested.</p> |
| <p>Figure 16 - please provide a higher-resolution version of the site plan in the next submission.</p> | <p>A higher resolution version of the site plan has been included.</p> |

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| Figure 19 - two AM peak hour volumes do not match the Synchro files (off by one vph): the northbound left turn at Intersection 5 and the westbound through movement at Intersection 7. | Volume figure has been updated to match the synchro |
| Please include the signal timing plans in the appendix. | Signal timing plans have been added to the appendix. |
| We recommend including a planning-level signal warrant analysis at Intersection 8. | A planning level signal warrant has been included. |
| We recommend evaluating a crosswalk crossing Oak Springs Dr at Intersection 7. | A crosswalk study will be submitted as a separate document. |
| We recommend evaluating left turn lanes on northbound and southbound Branch Dr at Intersection 4. | Left and right turns were evaluated and discussed in the report. The existing volumes warrant a northbound left turn lane. |
| Oak Springs Drive has a functional roadway classification of Major Collector. When full access commercial entrances are directly across from each other, it is defined as an intersection for access management spacing purposes. Based on VDOT's Road Design Manual Appendix F-31, the minimum spacing standards for an unsignalized intersection is 440' for a collector roadway. If the roadway was maintained by VDOT, an access management exception (AME) would be required for any unsignalized intersection that does not meet the minimum access management spacing. (LU) | It does not appear that Oak Springs Drive is a VDOT maintained roadway and therefore is not subject to VDOT spacing standards. |
| The pedestrian crossing of Oak Springs Drive at the intersection of Hasting Lane, is in conflict with the proposed commercial entrance and will need to be relocated. Unsignalized pedestrian crossings should be to be analyzed per VDOT IIM-TE-384.1 (LU) | A crosswalk study will be submitted as a separate document. |
| In General: The proposed roundabout at the intersection of BUS 17 at Broadview Avenue/ Warrenton Village South ("Study Intersection #10") was not selected for SmartScale Round 5 funding. Accordingly, the intersection should be analyzed as still an unsignalized conventional intersection in 2027, not as a roundabout. (TE) | Understood. The roundabout has been removed and the intersection remains unsignalized. |

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| <p>2027 Synchro Models: The 2027 models have the BUS 17/BUS 29/211 and Winchester intersection (“Study Intersection # 1”) as a signalized intersection despite the TIA text saying the intersection is assumed to be a roundabout. Due to the different platooning of traffic leaving signal vs a roundabout, whether the intersection is modeled as signalized or a roundabout in Synchro does affect the delay and LOS at the BUS 17/BUS 29/211 & Branch Drive (“Study Intersection #3”) signal. Even though Sidra is being used for the Intersection #1 LOS analysis, switch Study Intersection #1 to a roundabout in the 2027 Synchro models. (TE)</p> | <p>Analysis files have been revised as requested.</p> |
| <p>Page 52: Unsignalized pedestrian crossings will need to be analyzed per IIM-TE-384.1, not IIM-TE-384.0 as stated in the TIA. (TE)</p> | <p>A crosswalk study will be submitted as a separate document.</p> |
| <p>With the development of Mixed-Use Occupancies, there is an expanded need for response to fires and emergencies. Please consider allowing 360 degrees of access around the property, if possible, to include the parking garage.</p> | <p>A sheet showing Fire Truck Movement (Sheet 8) around all blocks has been added to the SUP.</p> |
| <p>Consider wider access roads to allow for fire apparatus to be set up to rescue trapped occupants on upper floors.</p> | <p>Proposed access roads are sufficient to provide necessary setup space--all clearance spaces will be addressed and approved at Site Development Plan.</p> |
| <p>Consider the parking garage and the need for access for fire apparatus. The proposal doesn’t appear to allow access for our larger apparatus which will increase the chances of a catastrophic fire in the garage and adjacent structures.</p> | <p>Garage will be designed per code and approved at Site Development Plan and Building Permits.</p> |
| <p>Consider not allowing electric vehicle charging within the parking garage. Major cities and populated areas are currently having difficulties dealing with fire in EV and other rechargeable transportation methods. If a fire occurs with an EV, the response to the fire will be hampered and delayed due to fire hose deployment within the depths of the parking garage. Numerous fires have occurred throughout the Country where an extreme amount of water was needed to extinguish these fires.</p> | <p>To serve the growing demand for EV spaces by residents and lack of sufficient surface parking spaces, Applicant does intend to include EV spaces in the garage.</p> |

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| <p>Added fire protection in the apartments? Will there be a fire suppression system in the garage? We would highly recommend it if not required due to the remoteness.</p> | <p>It is unknown at this time whether the garage will include a fire suppression system. This will be determined once the garage has been designed. The garage design and potential inclusion of a fire suppression system will be in accordance with IBC and NFPA building code requirements.</p> |
| <p>Strict enforcement of no parking areas to ensure adequate area for set up of fireapparatus.</p> | <p>No parking areas will be striped and include signage. Details of these measures to be included in plans submitted for approval at Site Development Plan.</p> |
| <p>Consider not narrowing the access road to the garage or back of the house access roads.</p> | <p>Proposed access roads are sufficient to provide necessary setup space--all clearance spaces will be addressed and approved at Site Development Plan.</p> |
| <p>The Warrenton Volunteer Fire Company does not have any apparatus that will allow access into the garage.</p> | <p>Garage will be designed per code and approved at Site Development Plan and Building Permits.</p> |
| <p>Consider more fire hydrants to ensure coverage for other responding apparatus. If a working fire happens units will deploy on the front and rear. Availability of water will ensure a quicker response to trapped or endangered occupants.</p> | <p>Fire hydrant plan will be be provided and approved at Site Development Plan and will be in conformance with town code.</p> |
| <p>Ensure flat areas 1/4 of the height of the building all the way around the building for ground ladder placement to perform any rescues where aerial apparatus isn't available.</p> | <p>The current plan satisfies this request.</p> |
| <p>Consider all curbs be rounded to allow fire apparatus access.</p> | <p>The curb plan will be be provided and approved at Site Development Plan and will be in conformance with town code. Mountable curbs can be considered and included at that time.</p> |

Warrenton Village Mixed Use Center

1st Review Response

Project ID: SUP 22-5

GPIN: 6984-29-6753-000 & 6985-20-7247-000

360 Oak Springs Drive, Center District, Town of Warrenton, Virginia 20186

Date: July 10, 2023

Project and Document Comments

| Comment # | Department | Issue | Reviewer |
|------------------|-------------------|--|---------------------------|
| 1 | Planning Division | Plan Submission | Millie Latack, Planner |
| 2 | Planning Division | Plan Submission | Millie Latack, Planner |
| 3 | Planning Division | Plan Submission | Millie Latack, Planner |
| 4 | Planning Division | Plan Warrenton 2040: New Town Character District | Millie Latack, Planner |

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|---|-------------------|--|---------------------------|
| 5 | Planning Division | Plan Warrenton 2040: New Town Character District | Millie Latack, Planner |
| 6 | Planning Division | Plan Warrenton 2040: New Town Character District | Millie Latack, Planner |
| 7 | Planning Division | Plan Warrenton 2040: New Town Character District | Millie Latack, Planner |
| 8 | Planning Division | Housing & Density | Millie Latack, Planner |

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| 9 | Planning Division | Housing & Density | Millie Latack, Planner |
| 10 | Planning Division | Community Facilities & Infrastructure | Millie Latack, Planner |
| 11 | Planning Division | Community Facilities & Infrastructure | Millie Latack, Planner |
| 12 | Planning Division | Community Facilities & Infrastructure | Millie Latack, Planner |
| 13 | Planning Division | Transportation | Millie Latack, Planner |

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| 14 | Planning Division | Transportation | Millie Latack, Planner |
| 15 | Planning Division | Transportation | Millie Latack, Planner |
| 16 | Planning Division | Transportation | Millie Latack, Planner |
| 17 | Planning Division | Transportation | Millie Latack, Planner |
| 18 | Planning Division | Transportation | Millie Latack, Planner |
| 19 | Planning Division | Lighting & Signage | Millie Latack, Planner |

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|----|-------------------|-----------------------|---------------------------|
| 20 | Planning Division | Lighting & Signage | Millie Latack, Planner |
| 21 | Planning Division | Economic Impact | Millie Latack, Planner |
| 22 | Planning Division | Economic Impact | Millie Latack, Planner |
| 23 | Planning Division | Environmental - Trees | Millie Latack, Planner |

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|----|----------------------|---|------------------------|
| 24 | Planning Division | Environmental - elevations and topography | Millie Latack, Planner |
| 25 | Planning Division | Environmental | Millie Latack, Planner |
| 26 | Planning Division | Zoning Ordinance | Millie Latack, Planner |
| 27 | Planning Division | Zoning Ordinance | Millie Latack, Planner |
| 28 | Zoning Administrator | Zoning Ordinance | Kelly Machen, ZA |
| 29 | Zoning Administrator | Zoning Ordinance | Kelly Machen, ZA |

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| 30 | Zoning Administrator | Zoning Ordinance | Kelly Machen, ZA |
| 31 | Zoning Administrator | Zoning Ordinance - Article 2-18 — Permitted Encroachments | Kelly Machen, ZA |
| 32 | Zoning Administrator | Zoning Ordinance - Article 3-4.10.3 - Permitted Uses in the Commercial District | Kelly Machen, ZA |
| 33 | Zoning Administrator | Zoning Ordinance - Article 3-4.10.4- Lot & Yard Regulations | Kelly Machen, ZA |
| 34 | Zoning Administrator | Zoning Ordinance - Article 3-4.10.4- Lot & Yard Regulations | Kelly Machen, ZA |
| 35 | Zoning Administrator | Zoning Ordinance - Article 6 — Signs | Kelly Machen, ZA |

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| 36 | Zoning Administrator | Zoning Ordinance - Article 7 — Parking | Kelly Machen, ZA |
| 37 | Zoning Administrator | Zoning Ordinance - Article 7 — Parking | Kelly Machen, ZA |
| 38 | Zoning Administrator | Zoning Ordinance - Article 7 — Parking | Kelly Machen, ZA |
| 39 | Zoning Administrator | Zoning Ordinance - Article 7 — Parking | Kelly Machen, ZA |
| 40 | Zoning Administrator | Zoning Ordinance - Article 7 — Parking | Kelly Machen, ZA |
| 41 | Zoning Administrator | Zoning Ordinance - Article 8 — Landscaping | Kelly Machen, ZA |

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| 42 | Zoning Administrator | Zoning Ordinance - Article 8 — Landscaping | Kelly Machen, ZA |
| 43 | Zoning Administrator | Zoning Ordinance - Article 8 — Landscaping | Kelly Machen, ZA |
| 44 | Zoning Administrator | Zoning Ordinance - Article 8 — Landscaping | Kelly Machen, ZA |
| 45 | Zoning Administrator | Zoning Ordinance - Article 9-8 — Lighting | Kelly Machen, ZA |
| 46 | Zoning Administrator | Zoning Ordinance - Article 9-17 — Steep Slopes | Kelly Machen, ZA |
| 47 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.B — Density | Kelly Machen, ZA |

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| 48 | Zoning Administrator | Zoning Ordinance - Article 9-25.1. C — Density | Kelly Machen, ZA |
| 49 | Zoning Administrator | Zoning Ordinance - Article 9-25.1. C — Density | Kelly Machen, ZA |
| 50 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.D- Phasing | Kelly Machen, ZA |
| 51 | Zoning Administrator | Zoning Ordinance - Article 9-25.7.E— Subject Parcels | Kelly Machen, ZA |
| 52 | Zoning Administrator | Zoning Ordinance - Article 9-25.1. G — Integration | Kelly Machen, ZA |
| 53 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.H - Open Space | Kelly Machen, ZA |
| 54 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.1— Lot and Yard Regulations | Kelly Machen, ZA |

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| 55 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.1— Lot and Yard Regulations | Kelly Machen, ZA |
| 56 | Zoning Administrator | Zoning Ordinance - Article 9-25.1.J — Modifications | Kelly Machen, ZA |
| 57 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 58 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 59 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 60 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 61 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |

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| 62 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 63 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 64 | Zoning Administrator | Zoning Ordinance - Article 11-3.10.3 — Evaluation Criteria; Issues for Consideration | Kelly Machen, ZA |
| 65 | Vanderpool, Frostick & Nishanian, P.C. | Zoning Ordinance - Setbacks, Section 3-4.10.4 | Tyler J. Blaser, Vanderpool, Frostick & Nishanian, P.C. |
| 66 | Vanderpool, Frostick & Nishanian, P.C. | Zoning Ordinance - Buffer and Landscapnig, Section 8-6.2 | Tyler J. Blaser, Vanderpool, Frostick & Nishanian, P.C. |
| 67 | Public Works and Utilities | General | Paul Bernard P.E., Town Engineer; Dina Hermoso, Stormwater Administrator |

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| 68 | Public Works and Utilities | Article 4 — Site Conservation Manual (SCM) | Paul Bernard P.E., Town Engineer; Dina Hermoso, Stormwater Administrator |
| 69 | Public Works and Utilities | Article 5— Stormwater Management (SWM) | Paul Bernard P.E., Town Engineer; Dina Hermoso, Stormwater Administrator |
| 70 | Public Works and Utilities | Water and Sanitary Sewer | Paul Bernard P.E., Town Engineer; Dina Hermoso, Stormwater Administrator |
| 71 | Public Works and Utilities | Transportation | Paul Bernard P.E., Town Engineer; Dina Hermoso, Stormwater Administrator |
| 72 | Police Department - CPTED | Traffic | Lieutenant A. Arnold |

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| 73 | Police Department - CPTED | Traffic | Lieutenant A. Arnold |
| 74 | Police Department - CPTED | Traffic | Lieutenant A. Arnold |
| 75 | Police Department - CPTED | Traffic | Lieutenant A. Arnold |
| 76 | Police Department - CPTED | Traffic | Lieutenant A. Arnold |
| 77 | Police Department - CPTED | Pedestrian | Lieutenant A. Arnold |
| 78 | Police Department - CPTED | Pedestrian | Lieutenant A. Arnold |

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|----|---------------------------|-------------|---------------------------------------|
| 79 | Police Department - CPTED | Lighting | Lieutenant A. Arnold |
| 80 | Police Department - CPTED | Landscaping | Lieutenant A. Arnold |
| 81 | Police Department - CPTED | Landscaping | Lieutenant A. Arnold |
| 82 | Planning Division | | Adam Shellenberger, Chief of Planning |
| 83 | VDOT | Traffic | Craig Simpson |
| 84 | VDOT | Traffic | Craig Simpson |
| 85 | VDOT | Traffic | Craig Simpson |

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| 86 | VDOT | Traffic | Craig Simpson |
| 87 | VDOT | Traffic | Craig Simpson |

Comment

The Statement of Justification notes this SUP is for Phase 1, while Phase 2 details will be provided with an SUP amendment. Several areas in the plan and within the Economic Impact Analysis note certain aspects of Phase 2. If both phases are to be reviewed as a master plan development, as intended by the Zoning Ordinance, then more information is needed on how the mixed-use will be integrated and the timing of this phasing.

In the "General Notes" section of Sheet 4 on the SUP Plan, GPIN 6985-20-7247-000 (6.46 acres total) is Phase 1 and GPIN 6984-29-6753-000 (22.59 acres total) is Phase 2. But, in the "Development Tabulation" total Phase 1 acreage is noted as 9.39 acres, exceeding the total acres of GPIN 6985-20-7247-000.

The Statement of Justification and SUP Plan states the parking garage will be 4-stories while the Fiscal Impact Analysis states the garage will be 5-stories (page 32).

As proposed without detail information on Phase 2, the height of the development will be central to the mixed-use center and step-up to residential neighborhoods on the secondary streets rather than stepping down...not meeting the intent of the Character District (pg 4).

The proposed development currently does not show a discernible center. There is a proposed plaza area that is not centered and undersized compared to the 29.05-acre development area.

The residential dwellings are set back behind existing commercial making them a standalone building area visually cutoff and separated from the commercial development.

Visual site lines of the development are important in creating place. As proposed, the hardscape plaza is the only portion of the new development that would have through visibility of a portion of the mixed-use center. The courtyards proposed are incapsulated within the apartment complex or behind the existing commercial separating the site of the development detaching the major residential component from the commercial (see Figure 1).

The proposal fails to demonstrate how the existing commercial and proposed residential will be integrated to create a mixed-use community. At this time, the proposal appears to be an apartment building on vacant land with little consideration to the larger intent of the mixed-use ordinance and Comprehensive Plan guidance.

More detailed information is required for the Affordable Dwelling Unit Program provided. The proposed program length of 10 years is less than half of the required 25 years. Information on the units that would be available to the program, how the program will be administered, and how the program will be assured continuance through the required timeframe are a few pieces of information still needed.

The Fiscal Analysis does not speculate the impact on local Town housing requirements and implications. This is necessary in determining benefit to Warrenton and its residents. All listed benefits of the housing opportunity are framed within Fauquier County. Current housing availability for those who work in Town is minimal with a goal to be providing housing opportunity for those invested in the community.

Calculated load on the public water and sewer system for the new residents should be provided to determine if capacity exists.

Information related to the party responsible for the maintenance of the road and infrastructure has not been provided. No information was provided regarding trash services, as well.

Fauquier County Community Development staff has recommended apartment units should not exceed more than two bedrooms, as three-bedroom unit is the largest potential of capital and fiscal impacts. Additionally, the demand for three-bedrooms would be accommodated by the proposed Warrenton Village Townhomes with additional current and prospective Townhome developments in and around Warrenton.

The intersections throughout the larger proposed parcel are not supportive of safe multimodal travel ways. Current internal street configuration has several points of conflict for pedestrians and cars creating an unfavorable environment to encourage biking (see Figures 2-4). Consideration to reconfigure the existing internal circulation to allow for safer multimodal circulation.

Bike storage for the apartments and bike racks throughout the center encourage bike use but the internal configuration does not note any additional provisions to ensure safe travel, i.e., bike path, signage, striping, wayfinding, etc. Consideration to include such elements is strongly encouraged.

The proposed single access to the parking garage through the rear commercial delivery points is problematic. The proposal to use a street that is aged and connects to a rear nonarchitectural side of aging commercial buildings does not provide visual or usable connectivity.

There will be visibility issues around tight corners (see Figures 5-6) and, without a lighting plan, dangerous travel ways for pedestrians, bicycles, and cars.

The applicant should review the roundabouts, the Pipeline Study and produce a Traffic Impact analysis this proposal will have on the surrounding network.

There seem to be breaks within the internal circulation near the mixed-use center entrances. Crosswalks for the main entrances will be integral to pedestrian safety for the residential to access the commercial center. Portions of internal improvements in the Phase 2 area were provided but do not address all pedestrian points. Clarification is also needed if these improvements will be in Phase 1 or Phase 2. Below are examples of locations that seem to be missing sidewalk or crosswalk improvements (see Figures 7-9).

General lighting information should be provided to review impacts on safety and setting for the development. The main entrance goes behind existing commercial buildings with minimal lighting which creates unsafe environments for drivers and pedestrians. Further, the lighting impact of the front-facing portion of the complex needs to be addressed in relationship to the impact of light shed on Oak Springs Drive and Hasting Lane neighborhoods.

Please include a Master Sign Plan for the entire development. This will give a better idea of wayfinding elements related to internal circulation, safety caution related to multimodal transportation, visual impact on neighboring residential/commercial, and more.

The entirety of the Fiscal Impact Analysis provided focuses on the impact on Fauquier County. No information was provided pertaining to the following:

- Physical and financial impact on TOWN water, sewer, and trash services
- Physical and financial impact on TOWN infrastructure maintenance
- Impact on TOWN residential tax base (real estate & personal property)
- Impact on TOWN business tax base (business, meals, etc.)

Information regarding the increase in employment base is minimal, as the heavy commercial component is within Phase 2. A complete picture of beneficial outcome related to employment base, employer attraction, and promotion of Warrenton as a cultural, entertainment, and arts center. All elements of which are listed in the Comprehensive Plan as goals for future Town development.

There are a considerable number of trees and natural landscape that will be removed for the development. A general comparison of what is being removed and what is being replaced would make for better context.

Elevations and topography vary drastically throughout the Phase 1 parcel and to the adjoining existing commercial. Particularly on the corner of Branch Drive and Oak Springs Drive (see Figures 10-11). Information regarding how the site will be shored (if the site will be leveled, retaining wall constructed, etc.) for the development is necessary to understand how it will impact existing infrastructure, site lines, interconnected walkability, and general community character. For example, if there will need to be a retaining wall constructed on the Branch Drive side of the development, the wall may visually close off the roadway making a tighter and less comfortable travel way for cars, bike, and pedestrians.

The Interpretative Guide for Fauquier County Soils Part II notes 45B and 55B as moderate for shrink swell potential and 55B is noted as low for bearing capacity. It is understood the State Code requires mitigation for soils considered moderate for shrink swell to be addressed at time of site development. That said, the amount of moderate 45B and 55B soil on the proposed parcel may require larger applications of mitigation and excavation.

Information regarding the extent of the disturbance and its impact on neighboring or adjoining properties needs to be addressed, including if blasting will be required.

While the Zoning Division provides its own comments, all Special Use Permit are evaluated under the criterion listed in §11-3.10.3. Please review the criteria and provide information that addresses the factors for consideration.

The application states it is only for phase 1. However, the statement of justification and SUP plans includes partial information about phase 2. Include all improvements and information associated phase 2 within the application.

The application does not clearly describe how refuse will be addressed on site for the residential uses.

The location shown for View 3 on Sheet 6 does not match the illustration provided for View 3. It appears that View 3 is from the front side of the existing commercial, not the area between the buildings as seen on Sheet 6. Provide additional information on how the backside of the existing commercial is to be treated or seen by residents.

Decks are shown on the proposed elevations. Uncovered decks must be at least 10 feet from a rear property line and cannot encroach in front/side yard setbacks. Covered decks cannot encroach in setbacks. If requesting a modification of setbacks for decks, specifically note the request in the SUP Plan and Letter of Justification.

The applicant has proposed multifamily and two over two townhouse units as part of a mixed-use development. Townhouses are defined as having one unit per lot. Clarify use and proposed lot lines.

Phase I does not meet front setback requirements along Oak Springs Drive within the Commercial district. The Applicant has requested a modification of this requirement from Town Council as part of the SUP per Article 9-25.1, Subsection J. In general, the setbacks noted on the plans as "required" do not include Article 2-13.10. To provide additional clarity show the math for setbacks, including any reductions granted by design or through Article 2-13.10 and any increases due to building height.

Phase I does not meet height requirements as defined in article 3-4.5.8 of the Zoning Ordinance. Maximum achievable height is 3-story. The applicant has requested a modification of this requirement per article 9-25.1, Subsection I.

No signs included as part of the application but are mentioned in the Statement of Justification. Any proposed signs will need to meet the regulations noted under Article 6 of the Zoning Ordinance.

Accessible parking is not addressed but must be provided according to the Americans with Disabilities Act at time of Site Development Plan (SDP) submission.

Existing parking appears to be modified but the parking calculations for the existing shopping center are provided under table line for Phase 2. Staff should be able to clearly verify that parking will continue to be met for Phase 1.

The shopping center parking calculations need to include, "plus additional spaces, as required herein, for offices, theaters, banks, personal services, and eating establishments."

The parking garage unloads onto a narrow area behind the Costello's Ace hardware store. This location could prove difficult for safe access and travel to/from the property. (7-2.5 ZO)

The loading area noted in front of the parking garage shows pull in spaces on the illustrative plan. Clarify what type of loading is intended and if any changes are proposed to the existing loading areas behind the shopping center. How far away will the loading areas be from residential windows, decks, and HVAC intake? (7-18 and 9-14.4 ZO).

Conformance with landscaping requirements is required at time of SDP submission. Modifications to the required buffers under Article 8-8 may be approved by Town Council. The application includes a request to modify "interior lot line buffer requirements." Provide additional information regarding this request, specifically noting which buffers are included in the modification. For example, is this for the 25-foot buffer between commercial/residential uses or for storage/loading areas?

A 25-foot buffer is noted as to be provided along Branch Drive, however the setback is noted as 20 feet along Branch Drive. Clarify the width of the buffer to be provided.

The concept plan does not show all landscaping calculations required under Articles 8-6 and 8-10. Modifications of these sections may not be granted. Conformance with landscaping requirements is required at time of SDP submission. As presented staff cannot verify if the information provided meets Articles 8-6 and 8-10. Staff is also having a hard time verifying that there are no discrepancies in the number of trees noted between the planting table, landscape plan, and tables A-C.

Understory trees are proposed for Street Trees on a 1/50 feet basis. Ornamental trees may be substituted for canopy trees on a two to one basis. (8-5.5.3 ZO)

The Statement of Justification acknowledges all lighting must meet requirements of Article 9 of the Zoning Ordinance. No lighting plan has been provided at this time but all fixtures on site will require conformance to current lighting standards at the time of site development plan.

It appears there may be areas of steep slopes on the vacant parcel to be developed. Note any steep slopes on the existing conditions plan.

The Applicant is requesting from Town Council residential density in excess of 5 units per acre. Phase one is proposed to have 339 units and Phase 2 is to have 97 units, for a total of 436 units. The proposed density does not exceed one unit per 500 gross square feet of non-residential floor space. The Applicant has not sufficiently proven that the requested density is in conformance with the Comprehensive Plan as the area is included within the Transition Zone for building height (1-3 stories, 35 feet max).

The Applicant is requesting from Town Council an increase in residential density as part of the SUP by providing 10% of the proposed dwellings as affordable dwelling units. The applicant would like to only provide these units for a maximum of 10 years. After the 10-year agreement, the dwellings would be rented at market rate. However, under Article 9-3.2, affordable housing should be provided for at least 25 years. Town Council will need to approve the suggested 10-year provision.

The 10% affordable housing bonus permits a 100% density increase. At 29.05 acres and 5 units per acre, equaling 145.25 units, a 100% density bonus allows for 290.5 units. Phase one proposes 339 units.

The plan sheet shows two phases, although only one is proposed at this time. As such, Phase 1 must meet all the requirements with regards to Phasing. Include the existing commercial property/calculations in the development tabulation for Phase 1.

It is unclear what parcels are to be proposed. The plan notes a boundary line adjustment is to be completed with the site plan but does not show proposed the adjustment.

Pedestrian and bicycle routes shall be provided to connect all uses per Article 9-25.1 Subsection G. Show or note the location of areas designated for bicycle traffic on the SUP Plan. Note the width of the proposed sidewalks.

A minimum of 10% of open space must provide parks, squares, or other open space uses. Delineate any proposed natural open space areas open space on the plan.

Side yard setbacks are not noted on the plan. Clarify where the boundary line adjustment is to be placed and note setbacks accordingly.

A modification of building height is requested. Include the setback adjustment provided to setbacks in the calculations for the increase building height. The Applicant has not sufficiently proven that the requested building height is in conformance with the Comprehensive Plan as the area is included within the Transition Zone for building height (1-3 stories, 35 feet max).

The Applicant's letter states they are requesting modifications to increase the overall density, reductions in front yard setback along Oak Springs Drive, reduce interior lot buffer requirements, and allow increased building height. Ensure it is clear what modifications are being requested from Town Council with the Special Use Permit under Article 9-25.1 Subsection J.

The project is required to meet all building and safety codes.

Information has not been provided regarding any potential impacts from loading/unloading noise near the proposed residential units.

No signs are shown. Signs will need to meet the Zoning Ordinance prior to obtaining a building permit.

A modification of buffer requirements is requested. Landscaping requirements cannot be fully verified at this time. Landscaping must be in full compliance with the Zoning Ordinance at time of SDP submission (except for any approved modifications).

No refuse enclosures are shown on the application. All refuse storage areas must be shielded. A loading area is shown in front of the proposed parking garage; Loading areas for the commercial uses need to be specified and noted on the plans.

Hours of operation for the clubhouse area, leasing office, and pool are not specified in the Statement of Justification.

One loading area is shown on the plans between the parking garage and commercial building. No screening or landscaping is shown in this area.

Exhaust odors caused by vehicles loading and unloading supplies for the existing commercial development is not addressed.

Section 3-4.10.4 of the Zoning Ordinance requires a minimum setback for the Commercial District of 60 feet from right of way of major thoroughfare or collector street having right of way greater than 50 feet (e.g. Oak Springs & Broadview), and 40 feet from right of way of a service drive (e.g. Branch). Section 9.25(l) provides that as part of a mixed-use development, Residential lots shall meet the Lot and Yard Regulations for the RMF District, which only requires a 25 ft. setback. The provided setback along Branch does not meet either of these the minimum required setbacks.

The total paved area for parking, circulation, ingress, egress, and loading is not readily apparent on the proposed Site Development Plan, nor is the total area to be landscaped. The proposed plan does indicate there will be a total of 1,448 parking spaces, which would require 1,448 trees and 4,344 shrubs. The proposed plan does not meet this requirement.

The SUP application does not provide enough information to verify the work type and the area to be disturbed in phase 2. Please include additional details if phase 2 is planned to be included in the SUP at this time.

Conformance with erosion and sediment control (ESC) requirements is required at the time of SDP submission. The concept plan does not appear to show ESC measures and calculations. They must meet the Site Conservation Manual Article 4, VAC 9-25-840, Virginia and Erosion and Sediment Control Law, and State Regulations.

Conformance with stormwater requirements is required at the time of SDP submission. The concept plan does not appear to show stormwater facilities. As a new development project, they must meet the requirements of the Stormwater Management Ordinance Article 5 and State Regulations for new development. That means they will need to provide at least a 20% reduction in runoff and nutrients from the site.

The average daily demand for water and sewer for these 436 residential units should be approximately 65,400 gallons per day (gpd) assuming 150 gpd/unit. More information will be provided regarding the proposed connection for water and sewer service to this development with the final site plan.

As a general comment the back alley to the Warrenton Village Shopping Center this is an interesting primary point of access to these residential units. The final design will need to make sure compatibility of access with the loading and deliveries of the shopping center. We will wait to see how the details of these points of access will be addressed with the final design in the site plan.

As proposed, the approximately 1862 weekday vehicular trips generated would mostly be entering and exiting the parking garage behind Costello's Ace Hardware and Fat Tuesday's. There is not enough room to safely handle that kind of traffic volume as well as delivery trucks, trash placement and trash pickup, etc

Vehicular traffic would come to a choke point behind Joann Fabrics and Red Zone. There is a semi-truck delivery area behind Joann Fabrics that narrows the road. The safety of employees for businesses taking trash out in that area is a concern.

Blind corners would result in traffic accidents — particularly from employee parking or delivery drivers.

Emergency vehicle access into the facility does not appear to be an issue, but any significant police or emergency services response would completely block ingress and egress to the parking garage.

The increase in volume of traffic would result in back up delays for vehicular traffic trying to turn left onto Broadview Ave. with no traffic control devices added.

As mentioned above, the employees of the businesses that back up to this proposed site will face challenges from the traffic volume.

Because the site makes walking to the existing shopping center easy, traffic calming devices/measures should be considered at all pedestrian crossings.

A lighting plan was not submitted. Lighting should be LED or OLED with a correlated color temperature of between 2700 and 3000 Kelvin. After installation a night-time lighting study should be done to check illumination, uniformity, and brightness and to ensure the lights are properly shielded so glare doesn't affect traffic on neighboring roads.

Tree type and placement should be planned so the canopy doesn't interfere with the lights in the parking lot as they grow.

Shrubs should be low growing so as not to obscure sight lines or cover windows.

Fauquier County suggests that the Town and Applicant consider limiting or prohibiting the three-bedroom apartment units. The three-bedroom apartment units are the most likely to house families and could potentially contain four children each. As such, these units present the largest potential for capital and fiscal impact to the County/School budget. Furthermore, we believe that the demand for three-bedroom housing units is likely accommodated by (1) the townhomes proposed in this application, (2) other townhome developments proposed in an around Warrenton, and (3) the existing townhomes in close proximity to the subject property as well as around Warrenton.

VDOT concurs with Town, that a Traffic Impact Analysis (TIA) should be performed for the proposed development to evaluate impacts of the proposed development to the Town and transportation network.

The crash history should also be reviewed as part of the TIA. The intersection of Bus 17 (Broadview Ave) & Warrenton Ctr has a Culpeper District Potential Safety Improvement (PSI) intersection ranking of 103 and the intersection of Bus 29/211 (Lee Hwy) & Winchester Street has a Culpeper District (PSI) intersection ranking of 36.

Trip generation should be provided based on the ITE Trip Generation Manual.

With the improvements to the pedestrian infrastructure along Oak Springs Drive and the anticipated increase in pedestrian trips that will be generated from this development, the unsignalized pedestrian crossings along Oak Springs Drive and at the intersection of Bus 17 (Broadview Ave) & Oak Springs Drive should be reviewed per the latest IIM-TE-384.0 (Pedestrian Crossing Accommodations at Unsignalized Approaches). Pedestrian routes and existing/proposed pedestrian crossings should be reviewed as part of the TIA.

The Statement of Justification Transportation Impact section references a technical memorandum prepared by Kittleson & Associates dated March 23, 2022 that was not received by VDOT and has not been reviewed.

Applicant Response

Phasing has been removed from the SUP application.

Phasing has been removed. General Notes have been updated.

Parking garage will be a 4-story structure. All sheets have been updated accordingly.

Phase 2 has been deleted from the SUP. Justification for the SUP's height modification can be found in the SOJ Section - Height.

A new Central Plaza has been added to the plan that is appropriately sized for the 29-acre development area, centrally located and designed with improvements to create a discernible center--public green, gazebo, seating, and potential for future retail activation. An additional West Plaza has been added adjacent to the northern entrance on Broadview Avenue to serve as a connection point between the proposed residential building and existing retail to improve the integration of the two uses with a shared space. Both plazas are designed and located to benefit both residential and commercial uses within the Center.

We have reorganized the plan by providing a new cut-through street shortening the distance between the east residential entrance and the retail. A west entrance to the residential building has been added along with a plaza to connect the west end of the building with retail. A centrally located, sizable Central plaza with reorganized streets and accessways breaks the plan of the center into smaller blocks and is now accessible and visible from different areas within the center.

SOJ Section - Creation of a Mixed-Use Community has been added to satisfy this comment.

SOJ Section - Affordable Housing has been updated to satisfy this comment.

Fiscal Analysis has been updated to report impacts on the Town of Warrenton, instead of greater Fauquier County.

The average daily water/sewer demand will be approximately 56,400 gpd (376 units * 150 gpd).

SOJ Section - Road & Infrastructure Maintenance has been added to satisfy this comment.

SOJ Section - Trash has been added to satisfy this comment.

3-bedroom apartments are important to provide a wide range of housing types and price points to the residents of Warrenton. 3-bedroom units provide the lowest cost option on a per bedroom basis, so are pivotal when seeking to provide lower cost options to residents. Applicant will agree to cap 3-bedroom units in the apartment building at 10% of the units.

SOJ Section - 3-Bedroom Unit Maximum has been added to address this comment.

Eliminated/shortened travelways, especially those encouraging speedy vehicular use between Broadview Ave and Oak Springs Drive, change the nature of available accessways within the center. This combined with on-street parking – parallel, angled and head-in spaces, reduced driveway widths and raised crosswalks, will automatically provide traffic calming and slower traffic speeds thereby making it safer for multi modal use. Visitors entering the site are immediately confronted with a landscape that is unlike urban throughfares and more like parking lots with limited speeds but good visibility. Unlike urban throughfares which are designed for speedy travel between points A and B, visitors entering the project are already at B. The project streets and accessways encourage visitors to think about parking their vehicles or bikes and setting out on foot.

Short term bike parking will be spread along the retail sidewalk, Central, East and West plazas for convenient use by residents and visitors. Long term bike parking within the residential building will be provided for residents. Due to the various traffic calming measures we are undertaking, we believe the plan now supports multi modal use with improved safety for pedestrians. New crosswalks, reduced driveway widths, signage, lighting, pavement markings, etc will improve visibility, navigation and intent of the infrastructure.

Plan has been revised to move the primary garage access to Oak Springs Drive. A single, secondary access along the rear alley will serve primarily "back of house" functions and tenant loading/unloading.

Considerable measures including eliminating/shortening travelways designed for speed, reduced driveway widths, improved crosswalks, on-street parking, lighting, signage, stop signs, etc will improve multi modal use and overall safety.

Traffic Impact Analysis by Gorove Slade has been provided with this submittal and contemplates these potential improvements.

Refer to Conceptual Circulation Plan (Sheet 18) included with the submittal to see reorganized circulation patterns.

Comment noted. Conceptual lighting plan (Sheet 17) is included with the submittal. Detailed lighting plan addressing lighting impacts will be provided at site plan.

Conceptual Site Signage Plan (Sheet 18) has been included in the SUP.

FIA has been updated accordingly

Phase II has been removed. FIA has been updated accordingly.

Existing trees can be found on SUP Sheet 2. Proposed street trees can be found on SUP Sheet 6.

The site renderings have been updated to show the change in grade across the site. A detailed grading plan will be provided at time of site plan.

See SOJ Section - Topography for additional information.

A geotechnical study will be completed at time of site plan.

Limits of construction disturbance will be limited to within the Property. No adjoining parcels will be included within limits of disturbance.

The submittal adequately addresses all SUP criteria list in §11-3.10.3

Phasing has been removed from the SUP application.

Clarification on trash locations and pickup has been added to SOJ Section - Trash

Views have been updated in revised submittal.

Residents will have limited views of the backside of the existing commercial center and in most cases will have fences and/or vegetation obscuring the view of the backside of the commercial center.

Additional information on alley improvements and screening can be found in SOJ Section - Modified Alley – Improvements, Vehicular Access & Loading, and Screening

A setback modification is being requested and has been noted on the plans and in the SOJ Section - Special Use Permit Modifications.

Townhomes and 2-Over-2s are rental properties and have a multi-family use designation. These units will not have individual lot lines/parcels.

A setback modification is being requested and has been noted on the plans and in the SOJ Section - Special Use Permit Modifications.

A reduction in setbacks is requested to achieve the mixed use nature of development with buildings closer to road.

A height modification is being requested.

See SOJ Section - Height for additional justification.

Conceptual Site Signage Plan (Sheet 18) has been included with this submittal, which describes the types of signage and general anticipated location of such signs. All signs will meet regulations noted under Article 6 of the Zoning Ordinance.

Accessible parking will be addressed at SDP submission.

The parking table has been revised on Sheet 4.

The parking table has been revised on Sheet 4.

Garage access has been revised so that the primary ingress/egress is located on Oak Springs Drive. A single, secondary ingress/egress is located at the alley to service "back of house" functions and loading/unloading.

Two loading spaces for the residential multifamily building are now shown in the alley flanking the residential garage. Loading spaces will allow for residential tenants to use moving trucks to move in and out of the building. Trash for the building will be held in designated trash rooms within the building and directly connected to the loading areas to allow carting of the trash dumpsters on days for collection by the trash truck. This will cause minimal inconvenience, unsightliness, odor to residential tenants or impact on the commercial center operations. No residential unit (windows and decks) will be located immediately adjacent to these loading areas. All HVAC systems will be located on the roof.

A landscape buffer modification to waive ALL interior buffer requirements between the proposed residential and existing retail is being requested.

A 20' buffer along Branch Drive has been provided along Branch Drive and is shown on Sheet 3 and Sheet 5 of the SUP.

Landscape calculations under Articles 8-6 and 8-10 have been shown for Residential blocks. Parking lot trees outside of residential blocks have been replaced with equivalent trees to give the same coverage as what was previously provided. The initial plan for the commercial side of this parcel was approved prior to the currently approved zoning ordinance and will not meet the appropriate canopy that is currently required. See Landscape Sheet 6.

Street trees have been adjusted. In instances where overhead wires are present, understory trees are proposed at a two to one basis for large canopy trees. See Landscape Sheet 6.

Applicant will coordinate and provide the required exhibits for this item demonstrating compliance at the time of site development plan. For current review, a conceptual lighting plan has been included describing the types of lighting and their general location anticipated at this moment.

Areas of Steep Slopes have been noted on Sheet 2 of the SUP.

See SOJ Section - Height and SOJ Section - Density for additional justification.

Application has been revised to include a twenty-five (25) year affordability period.

A density modification is being requested with this SUP.

See SOJ Section - Density

Phasing has been removed from the SUP application. All submittal materials have been updated accordingly.

The proposed parcel lines have been added to Sheet 2.

New crosswalks, raised tabletop crossing, reduced driveway widths along along the retail and continuous sidewalks along the connecting streets – existing as well as proposed, will allow for safe pedestrian and bicycle access between the retail, residential and communal uses on the site. See Sheet 18 for pedestrian/vehicular/bicycle circulation plan. Sidewalk dimensions have been added to the SUP sheets.

10% openspace has been provided and labled on the plans.

The proposed boundary lot adjustment has been shown on Sheet 2 of the SUP. Additionally, a modification request to reduce the side yard setbacks has been requested.

See SOJ Section - Height for additional justification.

The modifications being requested has been listed on Sheet 3 of the SUP and in the SOJ. Locations of the waivers have been noted on the SUP Plans.

Conformance with all building and safety codes will be confirmed at SDP and building permit review.

Residential units have been pulled away from loading and trash pickup areas. No noise impacts are anticipated.

Conceptual Site Signage Plan (see Sheet 16)has been included with this submittal--all signs will meet regulations noted under Article 6 of the Zoning Ordinance.

Landscaping will be in full compliance with the Zoning Ordinance at time of SDP submission.

Trash and Loading Areas have been labled on the plan.

Additional information can be found in SOJ Section - Modified Alley and SOJ Section - Trash

All refuse storage areas will be shielded.

Hours of operation have been added to the SOJ Section -
Community Hours of Operations

Plan has been revised to include two loading areas for the multifamily building. Screening and landscaping has been added to the rear alleyway--see Sheets 13 & 14.

Alley width is wide enough and vehicular volume is not be substantial enough in these areas to create any concerns.

A setback modification are being requested for Oak Springs and Branch Drive and have been noted on Sheet 3 of the SUP and in the SOJ.

Calculations for interior parking lot landscaping for residential blocks has been provided and meets the requires parking lot tree and shrub requirements. Parking lot trees for the existing commercial side of the site have been replaced on an equivalent basis for any trees that are to be removed due to site improvements. The initial plan for the commercial side of this parcel was approved prior to the currently approved zoning ordinance and will not meet the appropriate interior landscaping area that is currently required. See Landscape Sheet 6.

Phasing has been removed from the SUP application. All submittal materials have been updated accordingly.

Conformance with ESC requirements will be addressed at SDP.

Conformance with stormwater requirements will be addressed at SDP.

Density has been reduced to 376. This will be addressed at final site plan.

The primary point of ingress/egress to the garage has been relocated to Oak Springs Drive. The single remaining ingress/egress to the garage from the alley will primarily serve "back of house" function and resident loading/unloading.

Primary ingress/egress of garage has been relocated to Oak Springs Drive to reduce vehicular trips in the alley to an acceptable level. It is anticipated that the Oak Springs garage access and the access across from Hastings Lane would each carry approximately 1,600 and 800 weekday vehicular trips, respectively. Capacity analysis shows these two intersections operating at LOS C or better during both peak hours with the proposed development in place.

A new primary access point to the multifamily residential garage has been provided along Oak Springs Drive to alleviate concerns of a single access point from the alley behind the commercial center. This along with an access point to the garage from the alley will provide two ways of entering/exiting the residential garage. Additionally, the new street alignment bisecting the existing commercial center will provide for additional circulation for both retail trucks and residential. The alley as designed will provide functions an alley usually does – access for loading and trash pickup for retail and residential uses, and a secondary access point for retail employee or resident parking.

Comment received. All corners will be analysed and reviewed at SDP.

Vehicle ingress/egress to garage has been split--one on Oaks Springs Drive and one at alley to alleviate this concern.

Capacity analysis of the westbound left onto Broadview shows a minor increase in delay and no change in level of service with the addition of the site traffic. The operation is anticipated to be similar to conditions without the development in place. This intersection was also analyzed with the planned roundabout. With the roundabout in place, the approach is expected to operate at LOS A with and without the site trips.

Primary ingress/egress of garage has been relocated to Oak Springs Drive to reduce vehicular trips in the alley to an acceptable level. Additionally, 24 parking spaces are proposed at the alley to be restricted to commercial employee use only.

Elimination/shortening of speedy travelways, reduced width driveways, new crosswalks including raised crosswalks where necessary and incorporation of parking - parallel, angled and head-in, along travelways, will have the effect of reduced vehicular speed and improved pedestrian safety at crossings within the site.

Comment noted. While a conceptual lighting plan has been included with this submittal (Sheet 17), a final lighting plan detailing all requirements will be provided at the time of Site Plan.

Landscape plan will be coordinated with lighting plan to confirm no interference.

Landscape plan will incorporate low growing plants so as not to obscure sight lines and cover windows.

3-bedroom apartments are important to provide a wide range of housing types and price points to the residents of Warrenton. 3-bedroom units provide the lowest rental rates on a per bedroom basis and are therefore pivotal when seeking to provide lower cost options to the Town's residents. In order to minimize concerns regarding potential fiscal impacts of 3-bedroom units, the Applicant agrees to cap 3-bedroom units in the multifamily building at 10% of the total proposed units. This has been added to SOJ Section - 3-Bedroom Unit Maximum

A full TIA analysis by Gorove Slade has been submitted with this application. No offsite improvements are warranted or recommended with construction of the proposed site.

A crash assessment is included with the full TIA analysis by Gorove Slade.

A trip generation table based on ITE 11th edition is included with the full TIA analysis by Gorove Slade. The proposed site is expected to generate approximately 150 new trips during the AM peak hour, 192 new trips during the PM peak hour, and 2,534 new daily trips on a typical weekday.

A summary of pedestrian routes and existing/proposed pedestrian crossings is included with the full TIA analysis by Gorove Slade. A detailed pedestrian analysis per TE-384.1 will be submitted as a subsequent document.

A full TIA analysis by Gorove Slade has been submitted with this application.



Planning Commission Work Session
SUP 2022-04 Warrenton Village Center
Mixed Use
March 19, 2024

PC Decision Deadline June 27, 2024 Unless Applicant Defers

Special Use Permit Application

- **GPINs:** 6984-20-7247-000/6984-29-6753-000
- **Property Owner:** Warrenton Center LLC/Jefferson Associates LP
- **Representative:** Jess Achenbach, Castle Development Partners
- **Zoning:** C (Commercial)
- **Comprehensive Plan:** New Town Character District
- **SUP** to allow for mixed use development on approximately 29.05 Acres
- Maximum 386 Residential Dwellings
 - 320 Rental Apartments 1-3 BD
 - Approximately 36 2 over 2
 - Approximately 30 Townhomes
 - 10% Affordable Dwelling Unit

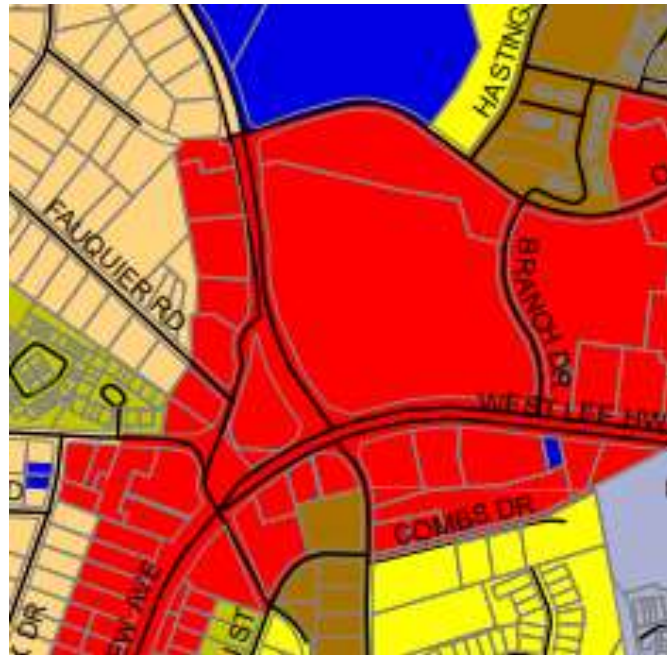
Location



Adjacent Land Uses

Zoning Map

Item 1.



- Existing Commercial
- Public/Semi Public School
- Senior Care Apartments

Zoning Districts

- R-15
- R-10
- R-6
- RT
- RMF
- RO
- PSP
- C

Future Land Use Map



Plan Warrenton 2040

- Walkability Audit & Complete Streets
- 10 Guiding Principles
 - Discernible Center
 - Connected Sidewalks, Street Trees, Lighting
 - Buildings close to the street
 - Parking behind buildings
 - Variety of Dwelling Types
 - Park/Trail/Activity Center ½ mile radius
- Broadview = Gateway
- Lee Highway = Boulevard
- Oak Springs Drive/ Branch = Neighborhood



New Town Warrenton District

With large lots, direct access from Route 29, and high visibility, this district could be a location for a signature office/jobs center; with greater intensity of mixed use and strong live, work, and play options. A mix of uses could be organized around an internal street network and public amenities, such as civic spaces, parks, green space, and public gathering areas.

Smart Scale Projects

Item 1.



545

Proposal



Proposal Includes

- 320 Apartments 1-3 BD, 4 story parking garage
- 36 2 over 2 4 story, 1 car garage
- 30 Townhomes 3 Story, 2 car garage
- 10% Affordable Dwellings
- Central Plaza
- Dog Park
- Pedestrian Connectivity/Crosswalks
- Hastings Lane Extension

Elevations



Elevations



Agency Reviews

Item 1.



Full site



Transportation and Internal Circulation



Parking



Walkability/Bicycle/Grid Connections



Landscaping/Signage



Lighting



VDOT Pipeline Study/Smart Scale



Plan Warrenton 2040

Requested Modifications and Waivers

- Increase in maximum density
- Broadview Avenue Setbacks
- Side and Rear Yard Setbacks
- Decrease Buffers between Commercial and Residential Uses
- Building Heights; plus along Oak Springs and Broadview



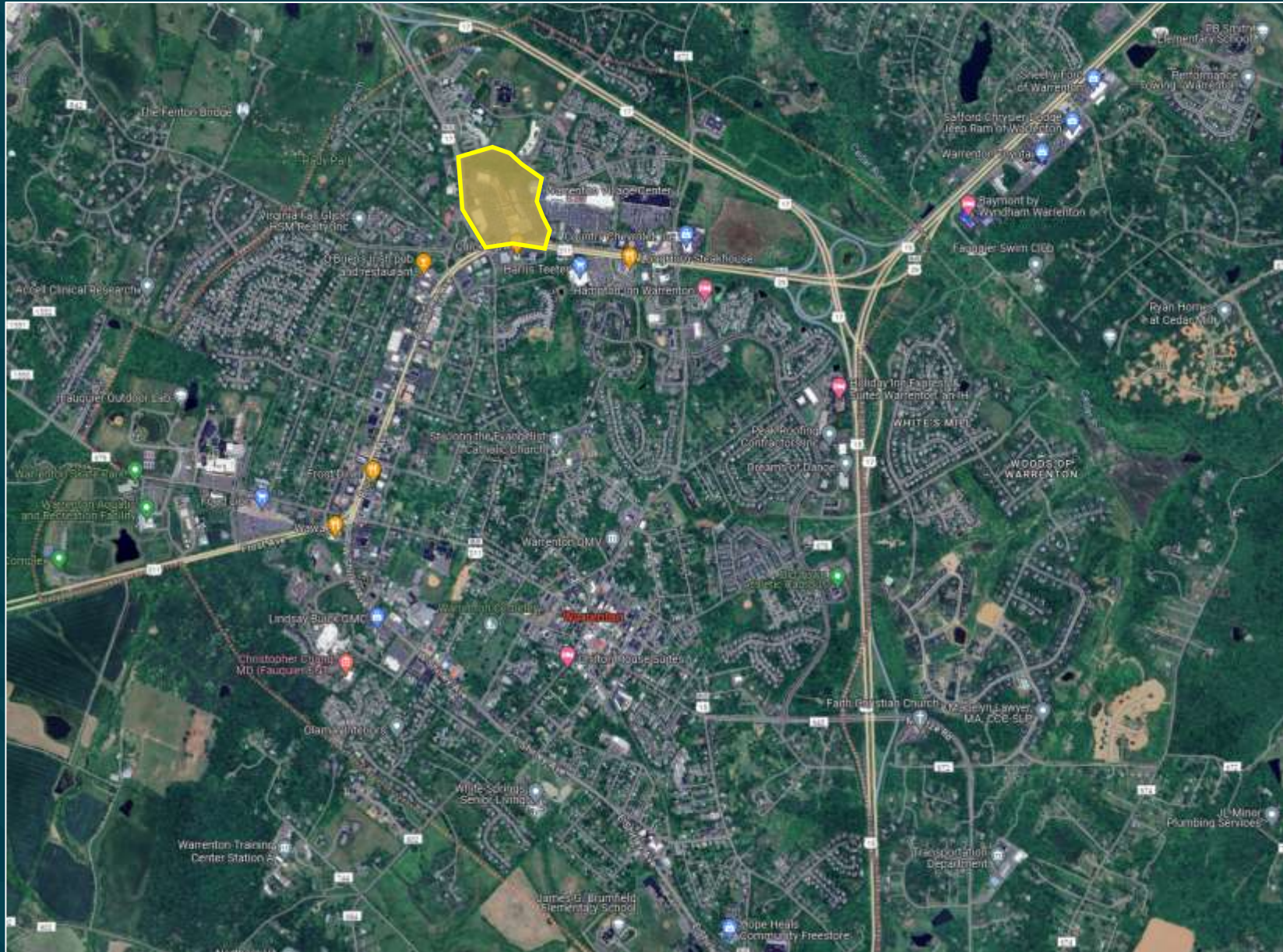
NEWCASTLE
DEVELOPMENT GROUP

**SPECIAL USE PERMIT
#SUP 22-5**

WARRENTON VILLAGE CENTER

**PLANNING COMMISSION WORK SESSION
MARCH 19, 2024**





Warrenton Village Center
Built in 1959

West Lee Hwy.
Warrenton, VA 20186

218,000 SF
Existing Commercial Space

~6.5 acres
Currently Vacant Land

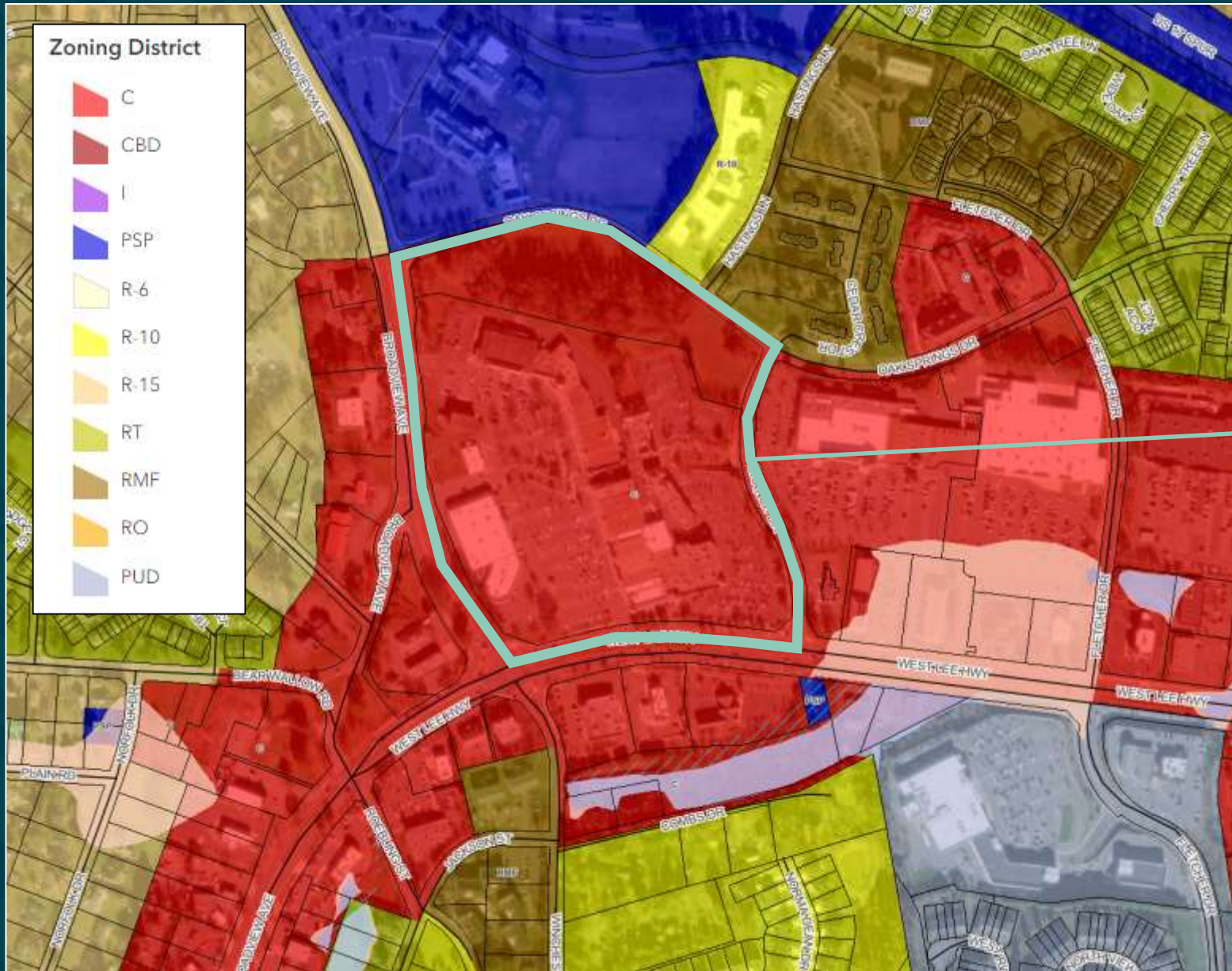


EXISTING CONDITIONS



**Proposed
Development
Area**

**Existing
Commercial
Center**



Commercial (C)



ADOPTED COPY APRIL 13, 2021

PLAN WARRENTON 2040





FUTURE LAND USE MAP

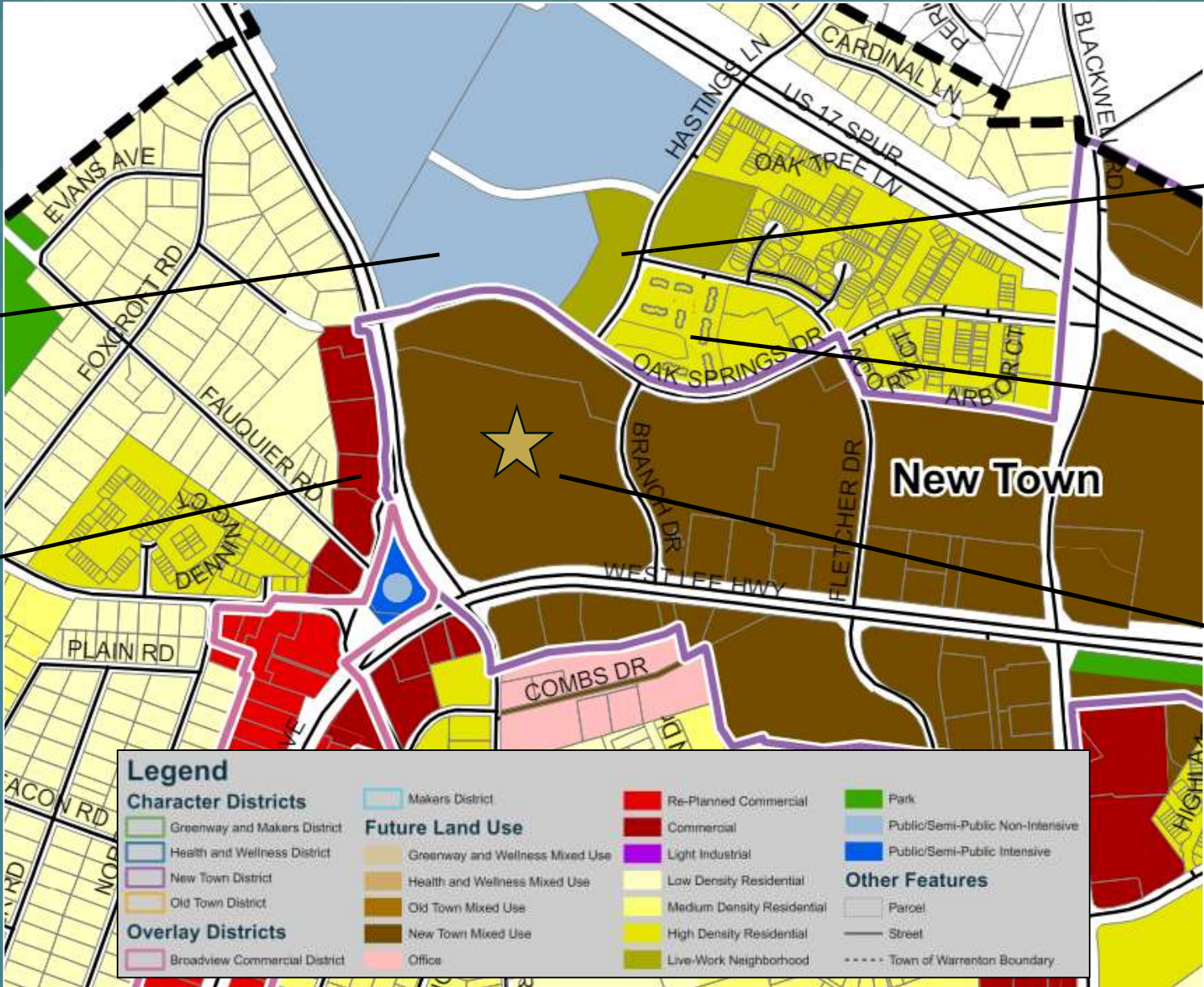
Public/Semi-Public
Non-Intensive

Commercial

Live-Work
Neighborhood

High Density
Residential

New Town
Mixed Use





New Town Warrenton District

With large lots, direct access from Route 29, and high visibility, this district could be a location for a signature office/jobs center; with greater intensity of mixed use and strong live, work, and play options. A mix of uses could be organized around an internal street network and public amenities, such as civic spaces, parks, green space, and public gathering areas.

THE TEN GUIDING PRINCIPLES FOR CHARACTER DISTRICTS

- 1. A discernible center.** Every neighborhood should have a discernible center that is walkable within a quarter-mile radius. The center can accommodate programmed or spontaneous events, or simply be a place people relax or meet friends. The center is often a hardscaped plaza or a green or park space; sometimes it can even be a busy street corner or a main street.
- 2. Connected sidewalks with a clear pedestrian path, street trees, and lighting.** Streets within the Character District form a connected network, which disperses traffic by providing a variety of pedestrian and vehicular routes to any destination. There is an interconnected street grid network that disperses traffic and eases walking.
- 3. Buildings that are placed close to the street to create a sense of place.** All buildings are directly accessible with front doors from the street.
- 4. Parking placed behind buildings and away from street frontages.** Interior access roads to services and parking are designed into the site plan.
- 5. Complete streets create a balance between cars, pedestrians, and bicyclists.** Complete Streets have no singular design prescription. Each one is unique and responds to its community context; however, complete streets are designed to balance drivers, pedestrians, and bicyclists.
- 6. Compact street blocks encourage walking.** Compact street blocks that are 200 to 400 feet wide and up to 600-foot deep provide a comfortable neighborhood scale that facilitates a fine-grain development pattern and walking experience. For blocks that exceed the maximum recommended length of 600 feet, a mid-block pedestrian path is recommended to allow for passage.
- 7. A park, trail, or activity center is within a half mile walking radius.** Linkages to pedestrian amenities can be made with continuous sidewalks, street trees, and through-block pedestrian pathways.
- 8. A variety of dwelling types accommodates a wide range of family sizes and income levels and commercial activity.** The variety provides synergy among uses and creates an immediate critical mass to sustain retail and commercial uses.
- 9. Neighborhood identity connects district wayfinding and identification with a larger marketing effort to bring private investment to the neighborhood.** Neighborhood identity provides the brand and image of the area, and a basis for a marketing strategy to promote businesses, events, and future development opportunities.
- 10. The neighborhood edge provides the means of transition from the Character District to adjoining properties.** The edge would transition to adjacent established neighborhoods and future land-use categories and exhibit compatibility in scale, massing, and setback with existing and planned developed on adjacent land.



PLAN WARRENTON 2040 Your Town. Your Neighborhood. Your Plan.

WHAT CAN NEW TOWN WARRENTON DISTRICT BE IN THE YEAR 2040?



Internal walkable streets and hardscaped plazas that can accommodate events and pedestrian activity.



Multi-purpose public areas can accommodate annual and regional events.



A mix of employment, residential, and commercial uses can be designed around public amenities.



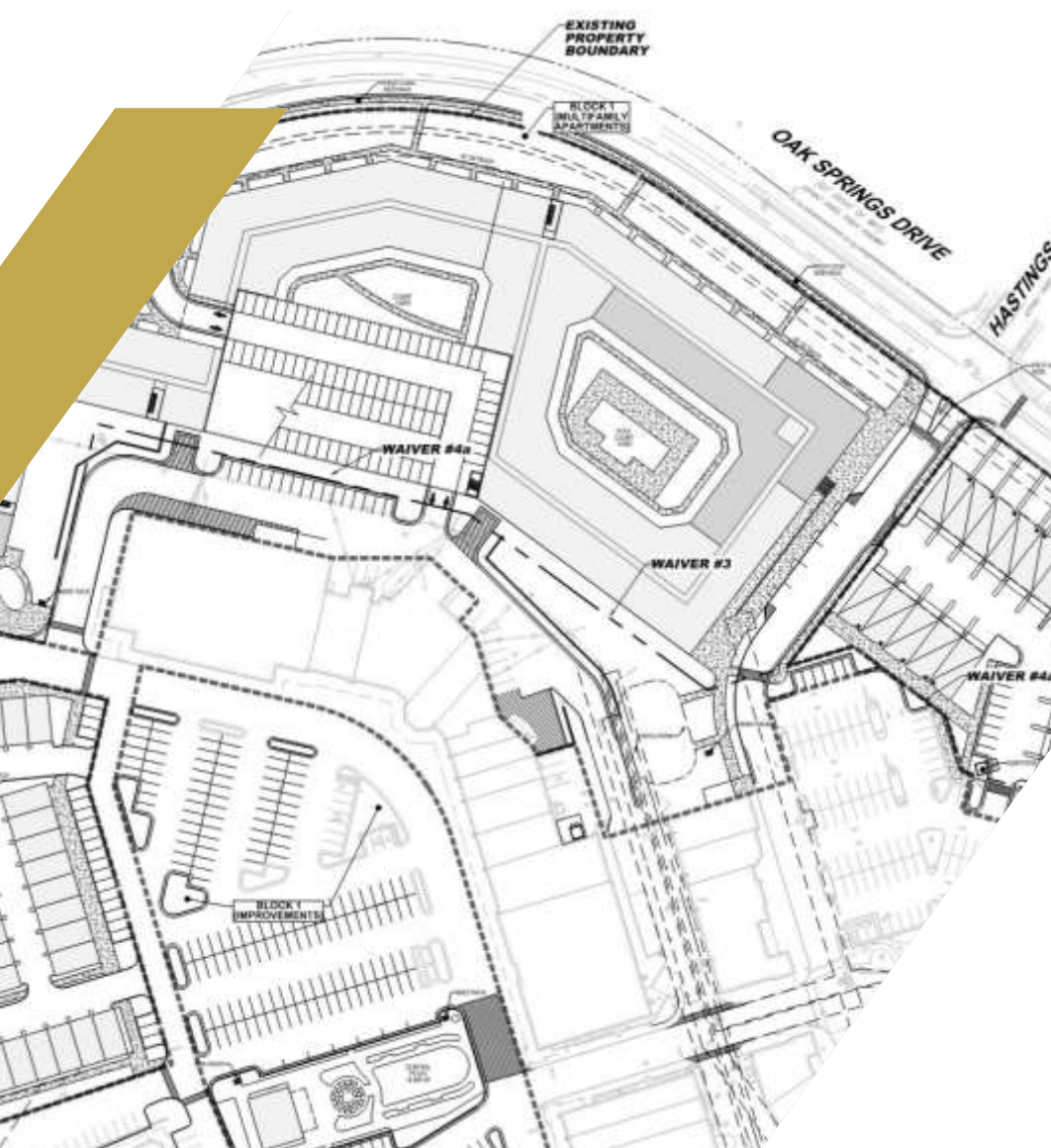
The development along the neighborhood edge is compatible with adjoining neighborhoods.



Daylighting flood plains (as a flood control project) provides an opportunity to create park with pedestrian amenities. Carroll Creek Park. Frederick, MD



Create residential communities with visual sight lines through the development, and where possible, with pedestrian pathways.



- **Waiver Request #1:** Increase density to 386 units or 13.28 per acre
- **Waiver Request #2:** Decrease minimum setback to 14' along Broadview Avenue
- **Waiver Request #3:** Decrease side/rear yard setbacks to 0'
- **Waiver Request #4a:** Decrease buffer width between commercial and residential uses to 0'
- **Waiver Request #4b:** Decrease rear buffer width for residential uses from public ROW to 14'
- **Waiver Request #5:** Increase height limit for dwellings as follows:
 - 54' max height for Block 1, Oak Springs Drive Frontage
 - 36' max height for Block 1, Broadview Drive Frontage
 - 45' max height for Block 2
 - 36' max height for Block 3



BENEFITS OF PROPOSAL

PLAN 2040

Advances all goals of Plan 2040 Character Districts

HOUSING SUPPLY

Provides much needed additional housing supply near retail and other services/facilities via infill development and not urban sprawl

HOUSING TYPES

Provides much needed housing types unique to the Town, including “missing middle” townhomes, 2-over-2s and the first new multifamily community in decades

AFFORDABLE HOUSING

10% of units within each residential block will be dedicated as Affordable Dwelling Units, restricted to residents with household incomes below 80% AMI at restricted rental rates

PEDESTRIAN ACCESS

Provides new and improved, safe pedestrian access to and circulation within Warrenton Village Center for new residents and existing neighbors

PUBLIC SPACES

The Central Plaza will be the new centerpiece of the Center, featuring activity and eating areas and a splashpad; a new dog park and picnic area will also be open to for public use

INCREASED PATRONAGE

New resident supply will provide increased patronage to all of Warrenton’s existing businesses

ECONOMIC IMPACT

\$46,100 projected annual surplus for the Town of Warrenton

RESIDENTIAL BLOCK 1

Item 1.

Multi-Family Apartments

- Location: Vacant land on north side of the Center along Oak Springs Drive
- Units: Up to 320 total units
- Types: 1-, 2-, and 3-bedroom apartment units
- Parking: Internal 4-level parking garage
- Amenities:
 - 10,000 square foot leasing and amenity center
 - Central Plaza
 - East & West “Entrance” Plazas
 - Dog Park & Picnic Area
 - Pedestrian connectivity and circulation



561



RESIDENTIAL BLOCK 1

Item 1.





RESIDENTIAL BLOCK 1



South facing elevation from Oak Springs Drive (left side)



South facing elevation from Oak Springs Drive (right side)



RESIDENTIAL BLOCK 1

Item 1.

Leasing entrance at intersection of Oaks Springs Drive & Hastings Lane





RESIDENTIAL BLOCK 1

*View from intersection of Oaks Springs Drive & Hasting Lane
Block 1 (Apartment Bldg.) on right; Block 2 (2-Over-2s) on left





RESIDENTIAL BLOCK 1

View from intersection of Oaks Springs Drive & Broadview Avenue





RESIDENTIAL BLOCK 1

View from Broadview Avenue entrance into Warrenton Village Center





RESIDENTIAL BLOCK 1

*View from Hastings Lane out towards Oaks Springs Drive entrance
Block 1 (Apartment Bldg.) on left; Block 2 (2-Over-2s) on right





RESIDENTIAL BLOCK 1

View from within Center out towards Broadview Avenue entrance
*Block 1 (Apartment Bldg.) on right; Block 3 (Townhomes) on left



Multi-Family 2-Over-2

- Location: Vacant land at northeast corner of the Center at intersection of Oak Springs Drive and Branch Drive
- Units: Up to 36 total units
- Widths: Units currently proposed with 24' widths, yielding a plan count of 34 units. Proposal is up to 36 total units to account for width flexibility, which could impact total unit count.
- Types: 2-story, 3-bedroom "condo" units
- Parking: Each unit has one internal parking garage and one dedicated exterior surface space





RESIDENTIAL BLOCK 2

Item 1.





RESIDENTIAL BLOCK 2

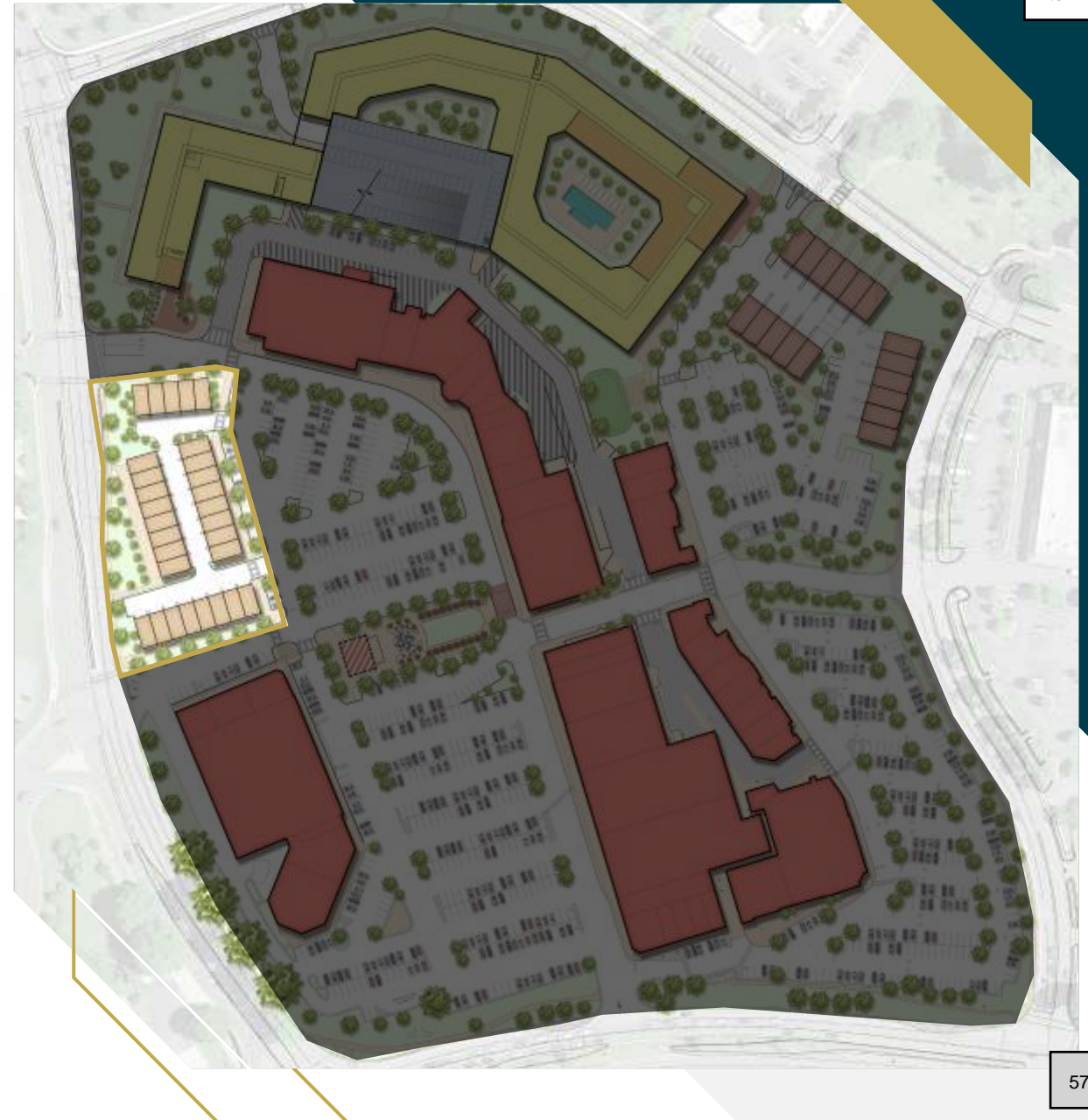
Item 1.



View from Oak Springs Drive

Multi-Family Townhomes

- Location: West side of the Center along Broadview Avenue, currently occupied by Summit Community bank and a vacant commercial bank building
- Units: Up to 30 total units
- Widths: Units currently proposed with 20' widths, yielding a plan count of 29 units. Proposal is up to 30 total units to account for width flexibility, which could impact total unit count.
- Types: 3-story, 3-bedroom townhome units
- Parking: Each unit has two internal parking garages and two dedicated exterior surface spaces





RESIDENTIAL BLOCK 3

Item 1.



Front and side elevations



RESIDENTIAL BLOCK 3

Item 1.



View from Broadview Avenue



RESIDENTIAL BLOCK 3

Item 1.



View of townhomes from within the Center



PROJECT IMPROVEMENTS

CENTRAL PLAZA

A new vehicular and pedestrian hub that will function as the heart of the Center and is sized, programmed, and planned to allow for community activities as well as everyday use

EAST & WEST PLAZAS

Smaller public plazas are proposed at the Broadview Avenue entrance and the Hasting Lane entrance to serve as “doorways” into the Center and enhance walkability between uses

DOG PARK / PICNIC AREA

New off-leash, fenced dog park and picnic areas will be accessible to the public.

OAK SPRINGS CROSSWALKS

Two crosswalks are proposed on Oak Springs Drive—one at Hastings Lane and one at the Highland School entrance, which will provide safe access for neighbors to the north

SIDEWALK RING COMPLETION

Proposal will complete a full ring of sidewalk around the entire Center, including the addition of a missing section of sidewalk behind Galaxy Strike Bowling

HASTINGS LANE EXTENSION

New vehicular and pedestrian entrance into the Center is proposed at the Oak Springs Drive and Hastings Lane intersection

MODIFIED ALLEY

Will serve as a secondary vehicular ingress/egress into the garage, as well as provide both residential and commercial loading and trash pickup areas

PEDESTRIAN CIRCULATION

Proposal includes an enhanced system of sidewalks, crosswalks and wayfinding to improve the safety and ease of pedestrian access the Center’s businesses

PROJECT IMPROVEMENTS – TRAFFIC

Oak Springs Entrance

Modified Alley

Secondary Garage Entrance



Oak Springs Crosswalks

Hastings Lane Entrance

PROJECT IMPROVEMENTS – PUBLIC SPACE

Item 1.

West Plaza

Central Plaza

Pedestrian Circulation



East Plaza

Dog Park & Picnic Area

PROJECT IMPROVEMENTS

Item 1.



Bird's eye view of Central Plaza



PROJECT IMPROVEMENTS

Item 1.



Alternate bird's eye view of Central Plaza (Note Blocks 1 & 2 in background)

581



PROJECT IMPROVEMENTS

Item 1.



Ground level view of Central Plaza



PROJECT IMPROVEMENTS

Item 1.



Ground level view within Central Plaza (Note Blocks 1 & 3 in background)



PROJECT IMPROVEMENTS

Item 1.



Ground level view of pedestrian access to Central Plaza (Note Block 3 in background)



PROJECT IMPROVEMENTS

Item 1.



Ground level view of Central Plaza

585



PROJECT IMPROVEMENTS

Item 1.



Ground level view of West Plaza



PROJECT IMPROVEMENTS

Item 1.



Ground level view of East Plaza



NEWCASTLE
DEVELOPMENT GROUP

**SPECIAL USE PERMIT
#SUP 22-5**

WARRENTON VILLAGE CENTER

**PLANNING COMMISSION WORK SESSION
APRIL 16, 2024**



WORK SESSION #2 – APRIL 16TH, 2024

- A Product of Plan Warrenton 2040
- Warrenton Housing Market & Economic Impacts
- Architecture
- Public Improvements

WORK SESSION #3 – APRIL 23RD, 2024

- Modification/Waiver Requests
- Water/Sewer Impacts
- Transportation
- Schools



A PRODUCT OF PLAN WARRENTON 2040



WHY HERE, WHY NOW?

Warrenton Economic White Papers

↳ Plan Warrenton 2040 Economic Goals & Fiscal Sustainability

↳ Emphasis on *Mixed-Use Development, Infill Revitalization, Live/Work/Play*

↳ Creation of the New Town Character District

↳ Warrenton Village Center SUP Proposal



WHITE PAPER FINDINGS – ECONOMIC BASE (RKG)



Since the '08 Recession, the Regional economy has become more robust with more high-skilled, high paying occupations compared to Warrenton



Three primary factors that have driven Regional economic growth, relative to Warrenton:

- 1) Strong integration of services and entertainment venues with work locations
- 2) Strong transportation connectivity between employment and residences
- 3) Diversity in housing types and prices



The strongest growth markets have created the strongest live-work-play environments



These markets attract workers at all skill levels



Warrenton does not offer the same amenities and housing options that draw a more diverse workforce and makes attracting companies more challenging given their respective options regionally

WHITE PAPER FINDINGS – FISCAL SUSTAINABILITY (RKG)

- An economic model was created to determine the impact of land use decisions and the resulting economic ramifications
- The model weighed the cost of the Town’s desired capital projects against different growth scenarios:

| Scenario | Intended Growth Strategy | New Housing Units (by 2039) | Annual Net Fiscal Impact |
|----------|---|-----------------------------|--------------------------|
| 1 | Minimal growth, i.e. 2010 – 2019 trends | Minimal | (\$508,808) |
| 2 | Become a stronger livable community | 750+ | (\$240,682) |
| 3 | Become a livable destination community | 1,150+ | \$102,185 |
| 4 | Become a regional live/work community | 2,100+ | \$335,535 |

RKG Conclusion:

- To achieve the level of services and amenities desired by the citizens of Warrenton, the Town must increase its development activity
- Warrenton cannot “save its way” (i.e. cut back on spending) to fiscal sustainability
- Without residential development, “the Town does not have the demand to continue to increase retail services.”



RKG summarizes,

“Balancing the uses between residential and nonresidential uses will be critical from both a market perspective and a fiscal one. Simply put, growth in commercial development (particularly retail and dining venues) will require greater consumer spending, which primarily comes from local households... Having a high quality, well-integrated live/work/recreate community is a fundamental need to attracting these workers (and as a result, their companies).”

- The White Paper recommendations, particularly with respect to the need for additional housing, heavily influenced the creation of the Warrenton 2040 Plan
- It is incorporated by reference into the Plan
- The ability to satisfy this housing need is addressed throughout the Plan: **Specifically, Character Districts are envisioned to contain a variety of attainable housing types**

H-2.2: Increase opportunities for multi-family and mixed-use residential development by updating the commercial corridors in the Character Districts to allow for appropriate use and scale transitions into existing neighborhoods.



New Town Warrenton District

With large lots, direct access from Route 29, and high visibility, this district could be a location for a signature office/jobs center; with greater intensity of mixed use and strong live, work, and play options. A mix of uses could be organized around an internal street network and public amenities, such as civic spaces, parks, green space, and public gathering areas.

GOALS

H-1: Ensure equitable, attainable housing opportunities across residents of all ages, incomes, and abilities by catering to the needs of a diverse community, including young families, professionals early in their careers, essential workforce, and those entering retirement.

POLICIES & STRATEGIES

H-1.1: Encourage development of the “Missing Middle” housing types beyond traditional single-family homes, townhouses, and apartments by updating the Zoning Ordinance to create a beneficial mix.

H-2: Character Districts will accommodate a balance of available housing typologies that are compatible to existing neighborhoods in scale, character, and transition.



WHY HERE, WHY NOW?

Item 1.

The Warrenton Village Center SUP proposal is the desired result of a lengthy process of review, comparison analysis and decision making by the Town of Warrenton – from the White Papers through the Plan Warrenton 2040 drafting and adoption – and will serve as the building block upon which to create a highly desirable live/work/play community that is the goal of the Plan Warrenton 2040 New Town Character District



WARRENTON HOUSING MARKET & ECONOMIC IMPACTS

IMPACT OF THE WARRENTON HOUSING SUPPLY

Item 1.

- As forecast by the White Papers, the lack of housing supply and typology has had impacts that we can see on today's Warrenton housing market and overall economics:
 - Potential renters who are employed locally must often rent outside of Warrenton
 - Commuters to D.C. based jobs can't consider Warrenton when searching for relocation options
 - Area employers have challenges attracting new employees
- Due to the scarcity of rental units, potential renters do one of three things:
 - 1) pay above market rents for the few desirable units available
 - 2) resort to leasing less desirable units
 - 3) look elsewhere, outside of Warrenton
- These outcomes are all detrimental to the Warrenton economy and the existing community

1) APARTMENT COMMUNITIES

- There are six (6) apartment communities in the Warrenton area that are income and/or age restricted
- There is one (1) market rate apartment community in Warrenton
- Per a 4/4/24 search, there were zero (0) apartment units available for immediate occupancy in any of Warrenton’s apartment communities

| Apartment Communities | Year Built | Total Units | Available Units* | Age Restricted | Income Restricted |
|-----------------------|------------|-------------|------------------|----------------|----------------------------------|
| Moffett Manor | 2007 | 98 | 0 | Senior (55+) | 50% & 60% AMI Programs |
| Steeplechase | 2000 | 56 | 0 | Senior (55+) | 50% & 60% AMI Programs |
| The Oaks | 1996 | 111 | 0 | Senior (55+) | 50% & 60% AMI Programs |
| Highland Commons | 1994 | 96 | 0 | No | 50% & 60% AMI Programs |
| Warrenton Manor | 1985 | 98 | 0 | Senior (55+) | 30%, 50%, 60% & 80% AMI Programs |
| Academy Hill | 1983 | 31 | 0 | No | USDA Section 515 Rental Program |
| Victoria Gardens | 1979 | 24 | 0 | None | None – Market Rate |
| Totals | | 514 | 0 | | |

*Per Apartments.com results taken on 4/4/24

2) SINGLE FAMILY OR CONDO RENTAL DWELLINGS

- Per a 4/4/24 search, there were eight (8) rental units available for immediate occupancy in single family rentals and condo buildings
- With the exception of a single unit built in 2006, all available units are 30+ years old

| Unit Type | Condo Apartment | Townhomes | Houses | Total Units |
|-----------|---|---|---|-------------|
| 1-Bedroom | 2 Units \$1,500 (1975) \$1,665 (1949) | | | 2 |
| 2-Bedroom | | 3 Units \$1,600 (1993) \$1,750 (1975) \$1,750 (1980) | | 3 |
| 3-Bedroom | | | 2 Units \$1,695 (1978) \$2,875 (1986) | 2 |
| 4-Bedroom | | | 1 Unit \$3,500 (2006) | 1 |
| Totals | | | | 8 units |

*Per Zillow.com results taken on 4/4/24

RENTAL SUMMARY

- Assuming current growth trends (i.e. “status quo” with no increased growth plan), the Warrenton rental market area will have a rental housing demand of 1,100 units between 2022 and 2027*
- As of 4/4/24, there were eight (8) available rental dwelling units in all of Warrenton and only one pipeline apartment community in the market (Vint Hill Lofts, 183 units)

Demand: 1,100

New Units: 183

Rental Shortage: 917 This number will go up significantly if Warrenton continues to encourage live/work/play environments that will attract new companies and additional renters



WHEN PEOPLE CAN'T FIND HOUSING IN WARRENTON...

Item 1.





- The new commercial amenities and services that are so desired by the existing community are not fiscally achievable without the economic improvement generated by an increase in residents
- Not only will new and improved retail not come to Warrenton, existing retail will continue to decline and deteriorate
- Consumer spending is trending down, commercial vacancy is trending up – these trends will continue
- Existing retailers will continue to see diminished business activity, leading to potential viability concerns
- New potential retailers will choose alternative destinations outside of Warrenton

WARRENTON POPULATION & EMPLOYMENT GROWTH

- Warrenton’s population has remained relatively stagnant over the last 15 years
- An increased growth rate is not anticipated going forward
- Lack of growth is largely due to lack of available housing
- Warrenton’s employment increased by 574 jobs between 2006-2019—a growth rate of 0.4% per year
- Over that same period of time, the Northern Virginia Region increased its jobs by 1.9% annually—**nearly five times the Town’s growth rate**




| Year | At-Place Jobs | # Change | % Change |
|------|---------------|----------|----------|
| 1990 | 4,830 | | |
| 2000 | 6,670 | 1,840 | 38.1% |
| 2010 | 9,622 | 2,952 | 44.3% |
| 2011 | 9,721 | 99 | 1.0% |
| 2012 | 9,784 | 63 | 0.7% |
| 2013 | 9,829 | (28) | (0.3%) |
| 2014 | 9,831 | 47 | 0.5% |
| 2015 | 9,857 | (34) | (0.3%) |
| 2016 | 9,891 | 60 | 0.6% |
| 2017 | 9,898 | 69 | 0.7% |
| 2018 | 9,949 | 51 | 0.5% |
| 2019 | 10,038 | 89 | 0.9% |
| 2020 | 10,043 | 5 | 0.1% |
| 2021 | 10,174 | 131 | 1.3% |
| 2022 | 10,197 | 23 | 0.2% |
| 2023 | 10,274 | 77 | 0.8% |
| 2024 | 10,351 | 77 | 0.8% |
| 2025 | 10,428 | 77 | 0.7% |

*Source: Worldpopulationreview.com

-  The Market and Fiscal Impacts Analysis performed by S. Patz & Associates, Inc. concluded the following:
 -  The project will have a Net Fiscal Benefit to the Town of Warrenton—meaning that the taxes generated by the project (both direct and indirect) will outweigh the capital expenditures connected with the project
 -  At full buildout, residents will generate \$26.4M in direct annual consumer expenditures (i.e. business activity)
 -  The project, along with the increased business activity that it generates, will yield 476 new full-time jobs in the community

AFFORDABLE DWELLING UNITS

Item 1.

-  In accordance with the Plan Warrenton 2040 guidelines, the proposal conditions that 10% of all units will be leased to households earning less than 80% of AMI and rents will be capped at 80% AMI rental rate limits
-  80% AMI income and rent limits are defined as the current Fauquier County Area Median Income published by the U.S. Department of Housing and Urban Development (HUD)
-  10% of the units within each individual residential block will be allocated as affordable dwelling units



ARCHITECTURE

WARRENTON VILLAGE CENTER DESIGN STORY

WARRENTON, VIRGINIA | FEBRUARY 14, 2024



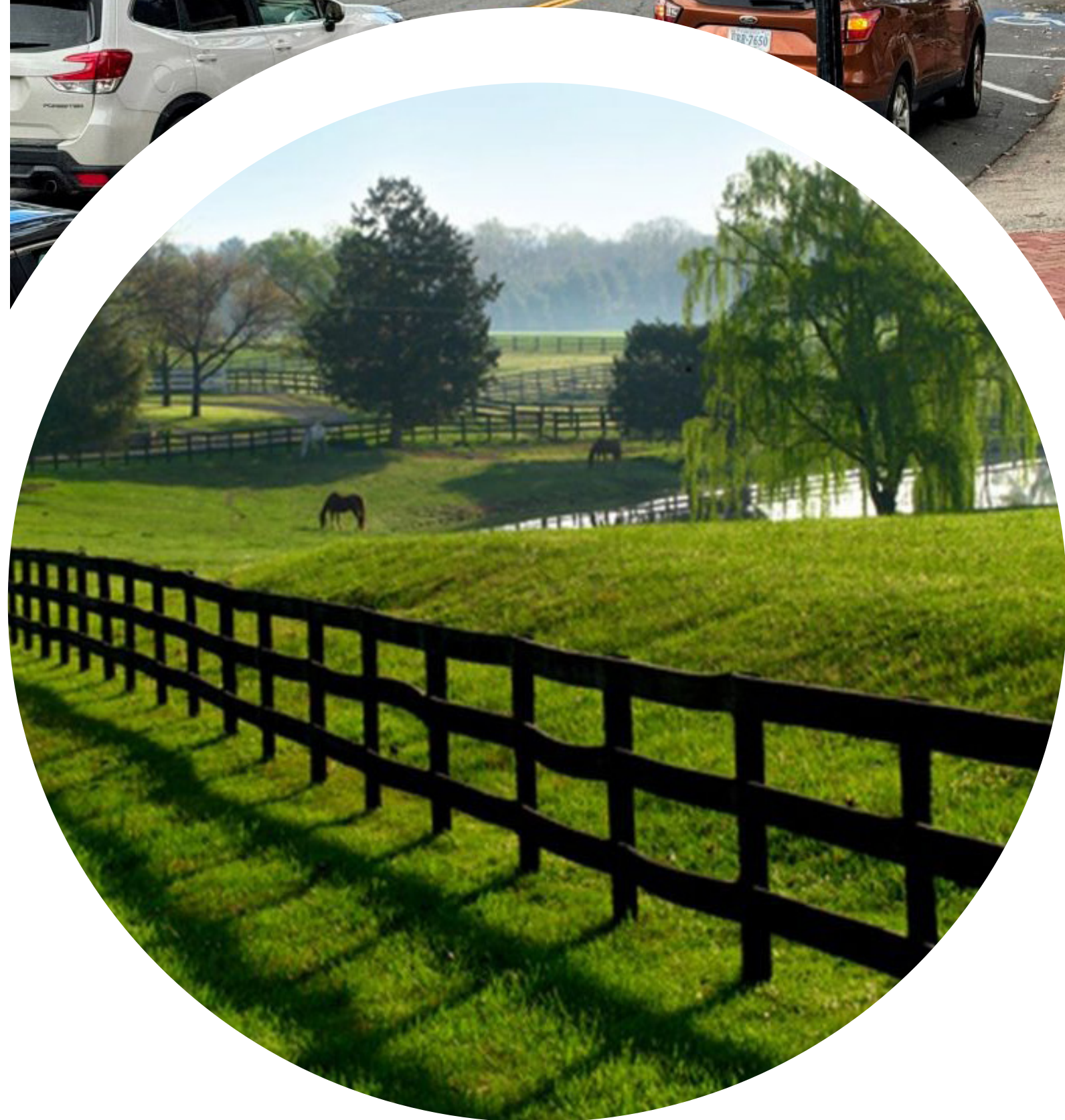
DESIGN OBJECTIVE

To transform the existing Warrenton Village retail center into a thriving, walkable, mixed-use, community destination with a sense of place that celebrates the character of Warrenton, while introducing a new, fresh, modern aesthetic.



DESIGN IMPLEMENTATION

- Purposeful integration of new buildings to create a Live/Work/Play community in line with the goals of the 2040 Warrenton Plan.
- Revitalization of the existing retail with new public gathering spaces, pedestrian connectivity, reduced vehicles speeds, a new Central Plaza for village events, enhanced green spaces, and activated streetscapes.
- Fusion of a new contemporary aesthetic with the warmth of local and historical design influences.



WARRENTON CONTEXT

- Historical downtown Warrenton provides inspiration with its textures of brick and stone, dark metal accents and awnings, historical lighting fixtures, traditional lap siding, classic masonry banding and detailing, large windows with dark mullions, and pedestrian friendly streetscapes.
- The greater Warrenton area has deep equine and agricultural industry roots, featuring iconic horse farms and celebrated bucolic landscapes. Inspirations include classic equestrian design features, rich colors and textures, dark metal accents, warm woods, and farmhouse inspired lap siding and stone.



DESIGN APPLICATION
Warrenton's past becomes Warrenton's future. The rich palette of historic materials, textures, and architectural details are reclaimed with a fresh perspective and contemporary context.

RESIDENTIAL DESIGN

The three and four story massing of the residential development is designed to emulate the scale of a walkable town center. A clean, light modern aesthetic is grounded with rich masonry and architectural detailing. The street level is activated with resident access, generous sidewalks and rich landscaping. The articulated façade and generous fenestration break down the scale of the buildings and create visual interest for pedestrians.



MATERIALS

- Stacked stone
- Masonry with banding and detailing
- Exterior reveal panel system
- Classic lap siding
- Brick masonry with contemporary color palette
- Wood tones to infuse warmth



ACCENT FEATURES & STREETSCAPE

- Metal accents & awnings
- Equestrian inspired light fixtures
- Large windows with dark mullions and lintels
- Architectural detailing to provide visual interest at pedestrian level
- Residential street level entries activating the sidewalk
- Pedestrian Connectivity
- Walkable Environment



Leasing/Entry



Clubroom



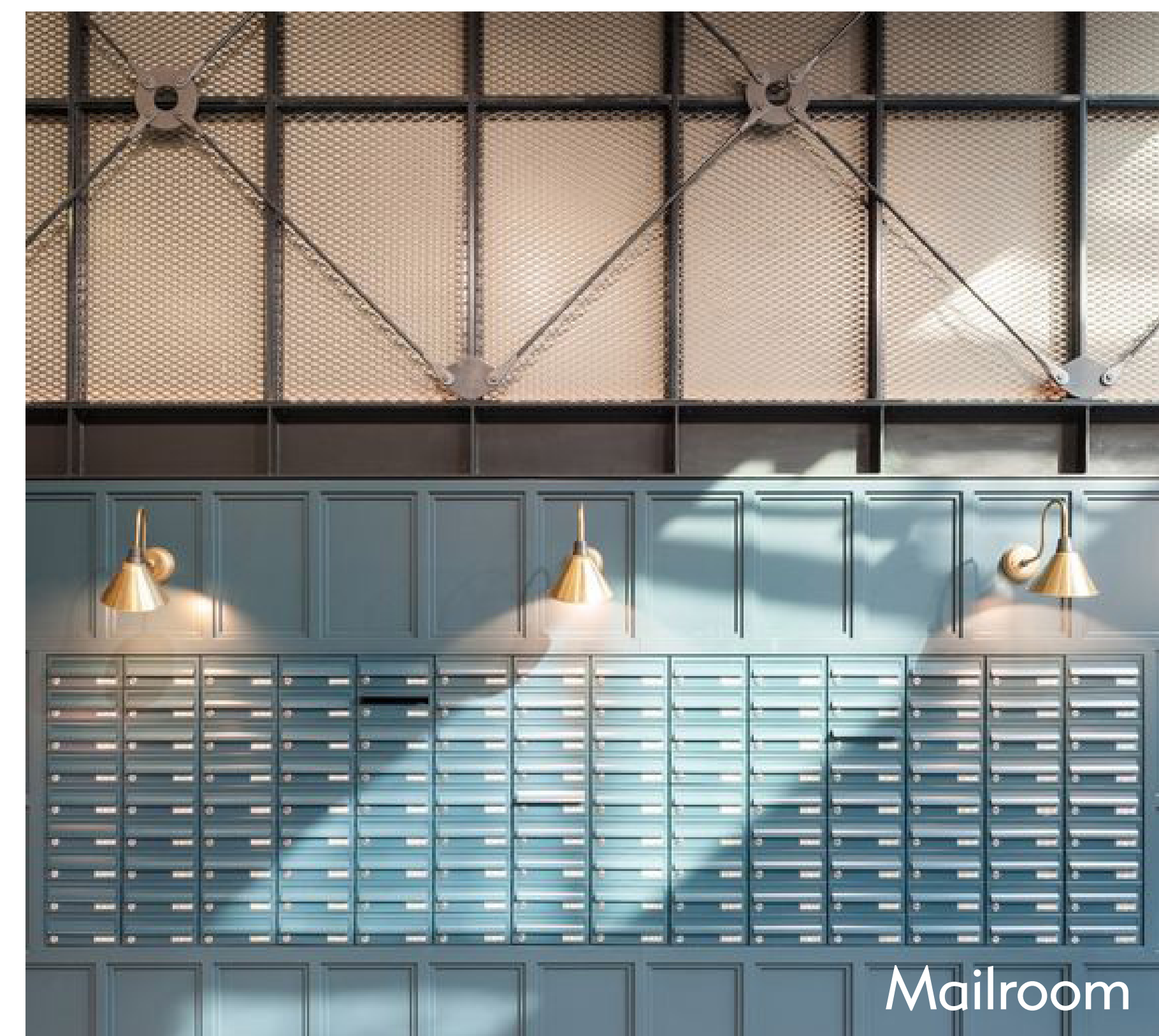
Fitness



Co-Working

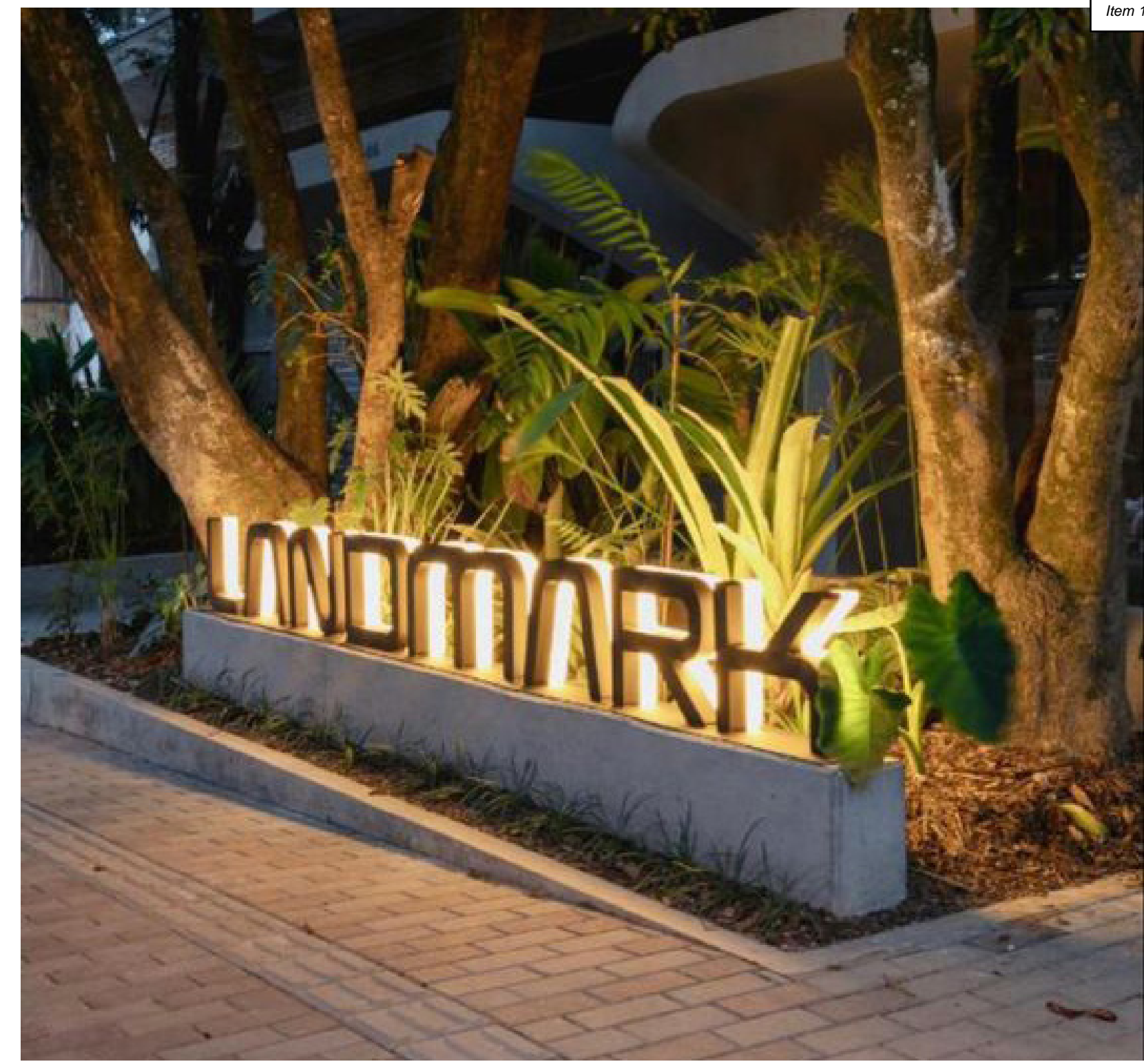


Color Palette



Mailroom

INTERIOR DESIGN CONCEPT
Urban Farmhouse aesthetic blends classic, timeless materials and natural textures with crisp, clean lines, neutral color palettes and light, open spaces. Old is blended with the new to provide spaces that are comfortable and approachable with a nod toward the trends of tomorrow.



SIGNAGE

Signage and wayfinding are designed to combine key historical elements or notable community themes with clean, sophisticated materials, fonts and applications, bridging the old and the new.



RESIDENTIAL BLOCK 1

Item 1.

Leasing entrance at intersection of Oaks Springs Drive & Hastings Lane



RESIDENTIAL BLOCKS 1 & 2

View from intersection of Oaks Springs Drive & Hasting Lane
*Block 1 (Apartment Bldg.) on right; Block 2 (2-Over-2s) on left





RESIDENTIAL BLOCK 1

Item 1.

View from intersection of Oaks Springs Drive & Broadview Avenue





RESIDENTIAL BLOCK 1

View from Broadview Avenue entrance into Warrenton Village Center





RESIDENTIAL BLOCKS 1 & 2

*View from Hastings Lane out towards Oaks Springs Drive entrance
Block 1 (Apartment Bldg.) on left; Block 2 (2-Over-2s) on right





RESIDENTIAL BLOCK 1

Item 1.

*View from within Center out towards Broadview Avenue entrance
Block 1 (Apartment Bldg.) on right; Block 3 (Townhomes) on left





RESIDENTIAL BLOCK 2

Item 1.



View from Oak Springs Drive



RESIDENTIAL BLOCK 3

Item 1.



View from Broadview Avenue



RESIDENTIAL BLOCK 3

Item 1.










View of townhomes from within the Center



PUBLIC IMPROVEMENTS

LIST OF IMPROVEMENTS FOR PUBLIC USE & BENEFIT

Item 1.

-  Central Plaza
-  East & West Plazas
-  Dog Park and Picnic Area
-  Oak Springs Drive Pedestrian Crosswalks
-  Completion of outer sidewalk ring around Warrenton Village Center
-  Internal pedestrian system – sidewalks, crosswalks, wayfinding, vehicle slowing measures
-  Hastings Lane extension

CENTRAL PLAZA

Item 1.



Bird's eye view of Central Plaza



CENTRAL PLAZA

Item 1.



Alternate bird's eye view of Central Plaza (Note Blocks 1 & 2 in background)



CENTRAL PLAZA

Item 1.

View of splashpad at Central Plaza





CENTRAL PLAZA

Item 1.



Ground level view of Central Plaza



CENTRAL PLAZA

Item 1.



Ground level view within Central Plaza (Note Blocks 1 & 3 in background)



CENTRAL PLAZA

Item 1.



Ground level view of pedestrian access to Central Plaza (Note Block 3 in background)



CENTRAL PLAZA

Item 1.



Ground level view of Central Plaza



WEST PLAZA

Item 1.



Ground level view of West Plaza



EAST PLAZA

Item 1.



Ground level view of East Plaza



NEWCASTLE
DEVELOPMENT GROUP

**SPECIAL USE PERMIT
#SUP 22-5**

WARRENTON VILLAGE CENTER

**PLANNING COMMISSION WORK SESSION
APRIL 23, 2024**



WORK SESSION #2 – APRIL 16TH, 2024

- A Product of Plan Warrenton 2040
- Warrenton Housing Market & Economic Impacts
- Architecture
- Public Improvements

WORK SESSION #3 – APRIL 23RD, 2024

- Water/Sewer Impacts
- Transportation
- Schools
- Modification/Waiver Requests



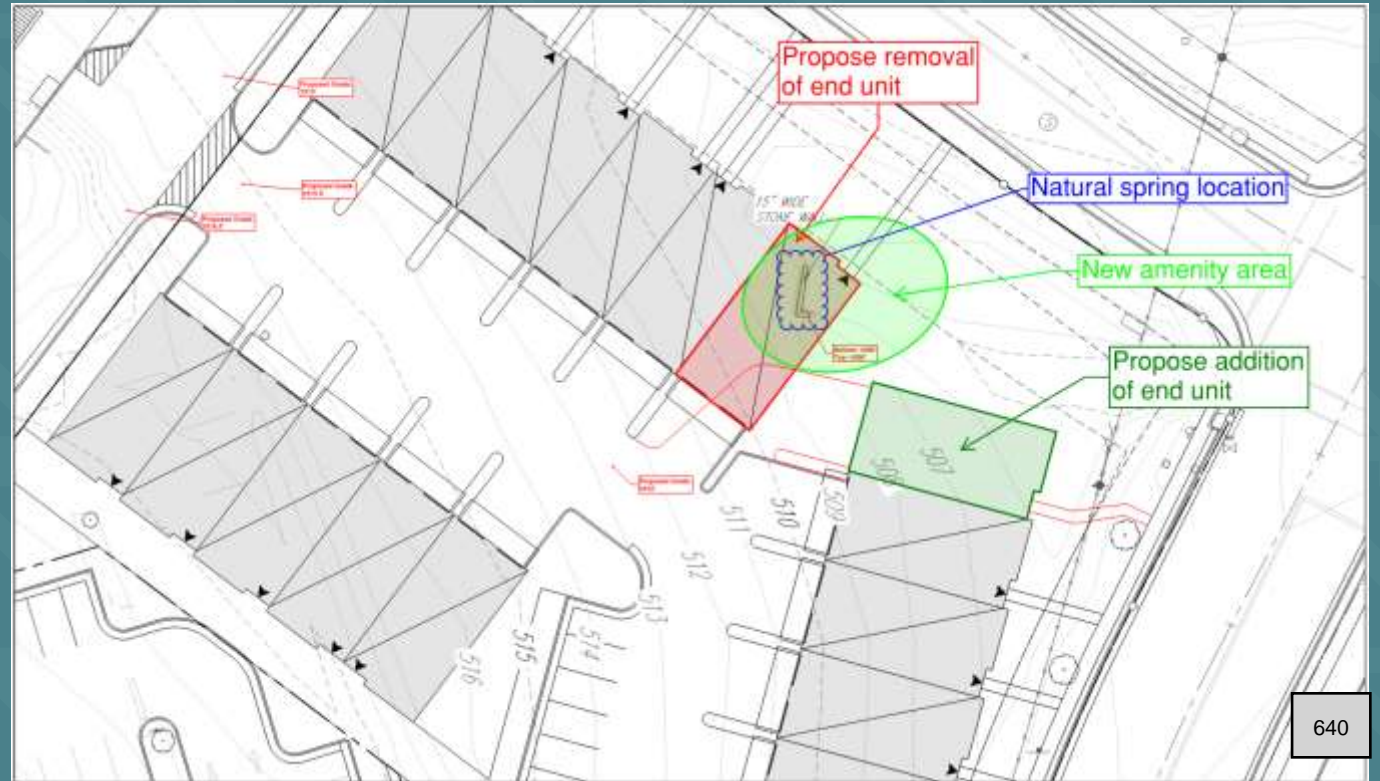
FOLLOW UP FROM WORK SESSION #2 (4/16/23)

OAK SPRING

- It has been requested that we explore the preservation and restoration of Oak Spring—located near the intersection of Oak Spring Drive and Branch Drive
- Restoration of this natural spring will preserve a unique piece of Warrenton history and character
- We are looking into a site plan revision that will allow the spring to be preserved and reconditioned into a public amenity



Item 1.



INCREASE SHADE AT SPLASHPAD

Item 1.

- Shade trees have been added to the Central Plaza to provide coverage for the surrounding seating areas



Storm Water Management Plan is conceptual at this time and will be fully designed and approved during Site Development Plan.

Bohler Engineering is here tonight to answer general questions pertaining to the potential system; however, the scope and methodology of the system are yet to be determined.

ARCHITECTURE

- While the goal of our proposed aesthetic is to introduce a modern and fresh design to Warrenton, we recognize the request to incorporate more components that reflect the character of the community
- Renderings here show a revised color pallet, with incorporation of beige brick in lieu of white and softening of previously dark gray siding to a lighter brown
- Our team is currently studying additional design enhancements with the goal of implementing features that are more representative of the Town's character





WATER / SEWER IMPACTS

NewCastle’s average daily water usage across its Virginia apartment community portfolio:

| Community | Units | Total Usage (GAL) | Total Daily Usage (GAL) | Daily Usage Per Unit (GAL) |
|-----------------|-------|-------------------|-------------------------|----------------------------|
| Community 1 | 250 | 3,295,006 | 9,027 | 36.1 |
| Community 2 | 316 | 7,344,232 | 20,121 | 63.7 |
| Community 3 | 212 | 5,543,803 | 15,188 | 71.6 |
| Community 4 | 280 | 6,729,187 | 18,436 | 65.8 |
| Community 5 | 242 | 5,181,400 | 14,196 | 58.7 |
| Community 6 | 452 | 14,757,676 | 33,449 | 74.0 |
| Avg. / Total ** | 1,752 | | 20,278 | 67.0 |

*Data is from January ,1 2023 through December 31, 2023

**Community 1 was finishing lease up for the first half of 2023 so data does not represent a full calendar year of stabilized occupancy. Community 1 data has been excluded from average data presented and was excluded from usage analysis.

- Average daily community usage across Virginia portfolio is 20,278 gallons per day (GPD)
- Assuming the daily usage per unit of 67.0 GPD, we would project 25,862 GPD for Warrenton Village Center (386 units x 67.0 GPD)

- Town of Warrenton uses their own daily usage amounts when making their capacity determination:
 - For 386 residential units, the Town assumes 116,000 gallons per day
- This is significantly higher than the data collected across NewCastle's Virginia communities – 25,862 GPD vs. 116,000 GPD
- **Even with the assumed usage of 116,000 GPD, the Public Works Department has determined that there is adequate capacity for this project**

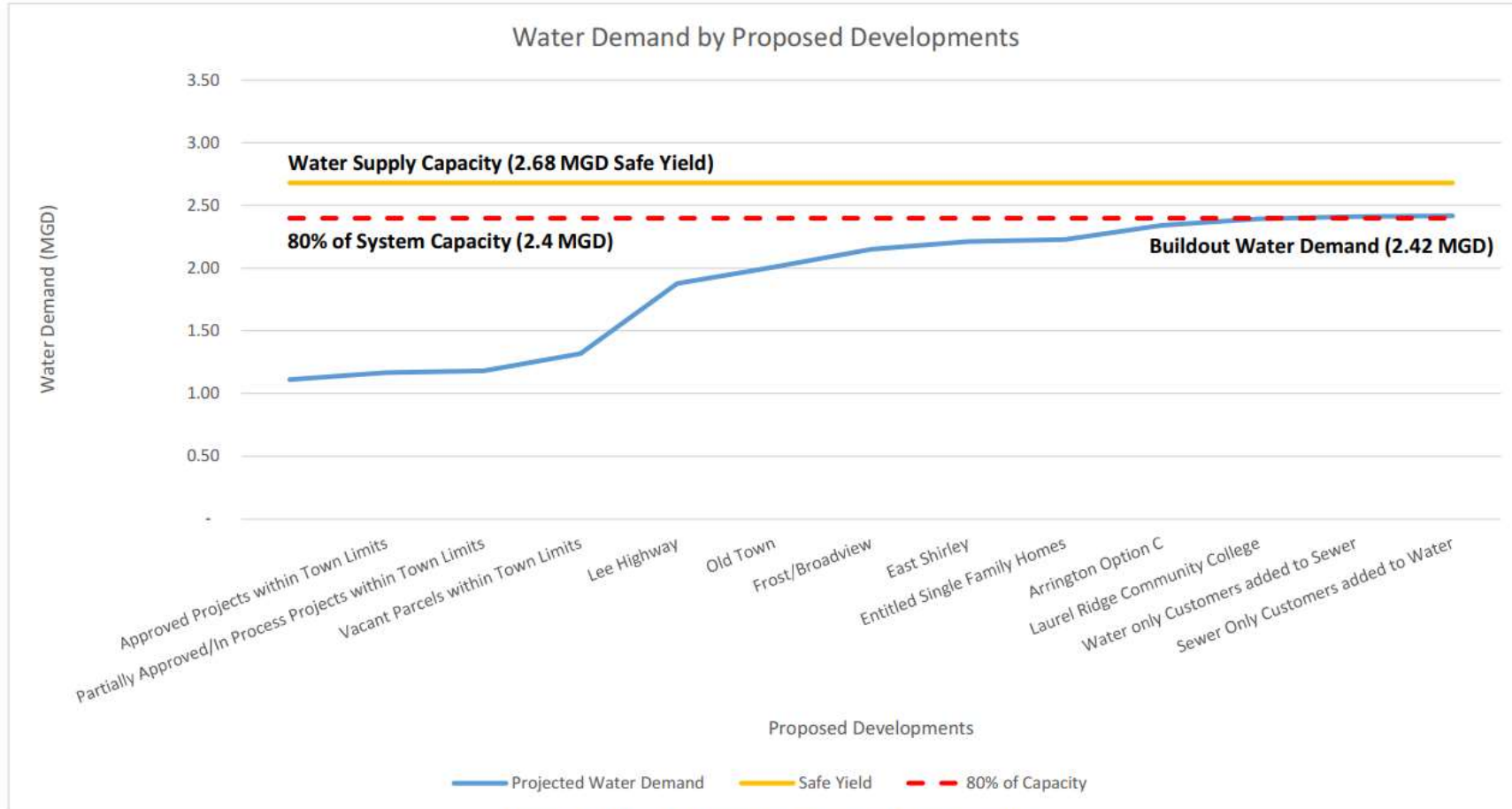


Figure 5.1: Water Demand by Proposed Developments

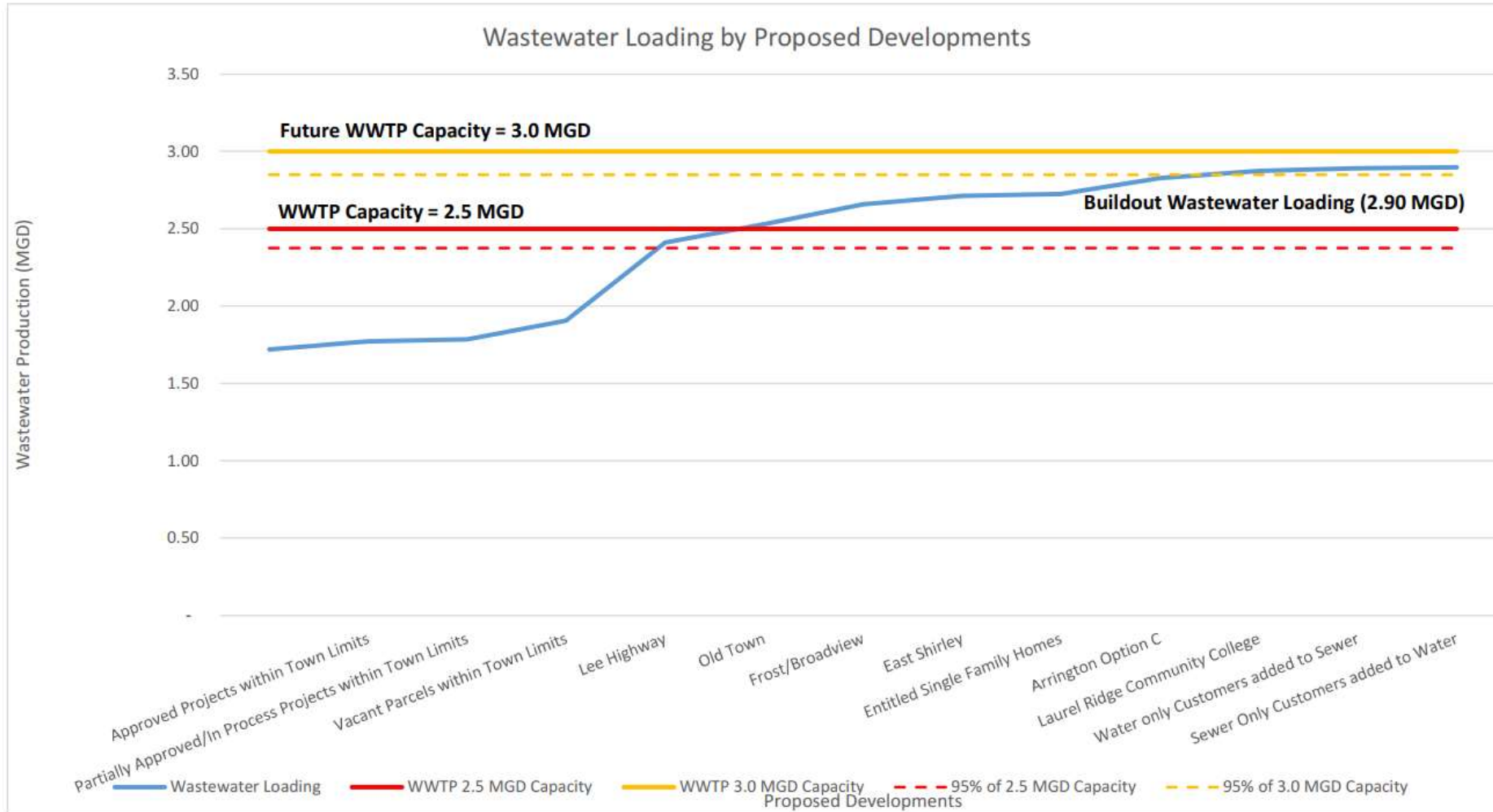


Figure 6.1: Wastewater Loading by Proposed Developments



TRANSPORTATION

SITE PLAN OVERVIEW

Item 1.

Primary vehicular access:

- Full-movement entry on Oak Springs Dr, forming 4th leg of Highland School Driveway intersection
- Full-movement driveway on Oak Springs Dr, forming 4th leg of Hastings Ln intersection
- Access also provided via existing shopping center connections to the south
- A total of 6 access points to the surrounding streets



SITE PLAN OVERVIEW

Item 1.

Pedestrian Connectivity:

- Extensive sidewalk network proposed along all streets and within site to promote walkability
- Connects to and augments pedestrian network within existing center
- Crosswalks will be added on Oak Spring Dr at Hastings Ln and Highland School to promote safe pedestrian access from the north
- Retain crosswalks on Broadview Ave and Branch Dr



TRAFFIC STUDY AREA

Item 1.

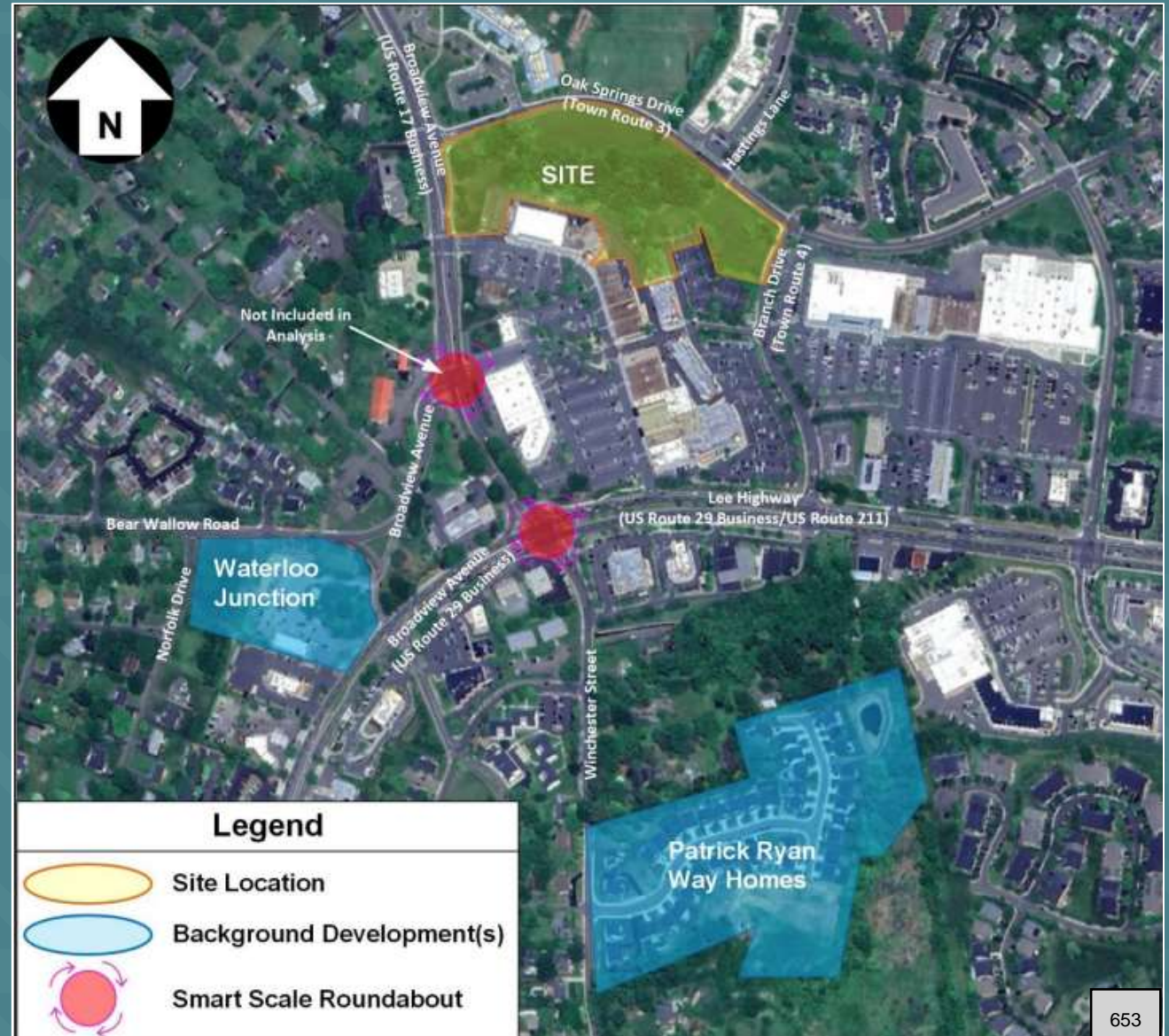


FUTURE CONDITIONS WITHOUT PROPOSED DEVELOPMENT

Item 1.

Assumptions:

- Accounted for 1% annual regional growth on Lee Hwy mainline
- Other approved developments in the area will add some traffic, including 47 new townhomes and 40 new single-family homes
- Roundabout at Broadview Avenue, Broadview Avenue, and shopping center entrance not funded through SMARTScale



FUTURE CONDITIONS WITHOUT PROPOSED DEVELOPMENT

Item 1.

Assumptions (cont.):

Planned Roundabout at Rt 29/211 and Broadview Ave Intersection:

- Separate VDOT project, not triggered by this development
- \$29M in SMARTScale funding awarded for this and Blackwell Road roundabout
- Expected to improve traffic operations and safety
- Includes accommodations for pedestrians



PROJECT PIPELINE

Roundabout: reconfigures the intersection to a multi-lane hybrid roundabout. The roundabout can improve operations by 60%, reduce crashes up to 60%, and improve the safety of pedestrian crossings.

Figure 17. Broadview Avenue Roundabout Concept





Traffic Operations:

- Overall, the road network assuming the “future without development” condition is expected to continue operating similar to the existing conditions
- Some minor increases in delays are projected for some movements at unsignalized intersections, but signalized intersections and the new roundabout would operate efficiently
- The maximum “future without development” increase in delay at any study intersection is 7 seconds, as compared to existing conditions
- The planned infrastructure improvements, like the roundabout, will improve traffic flow compared to existing conditions



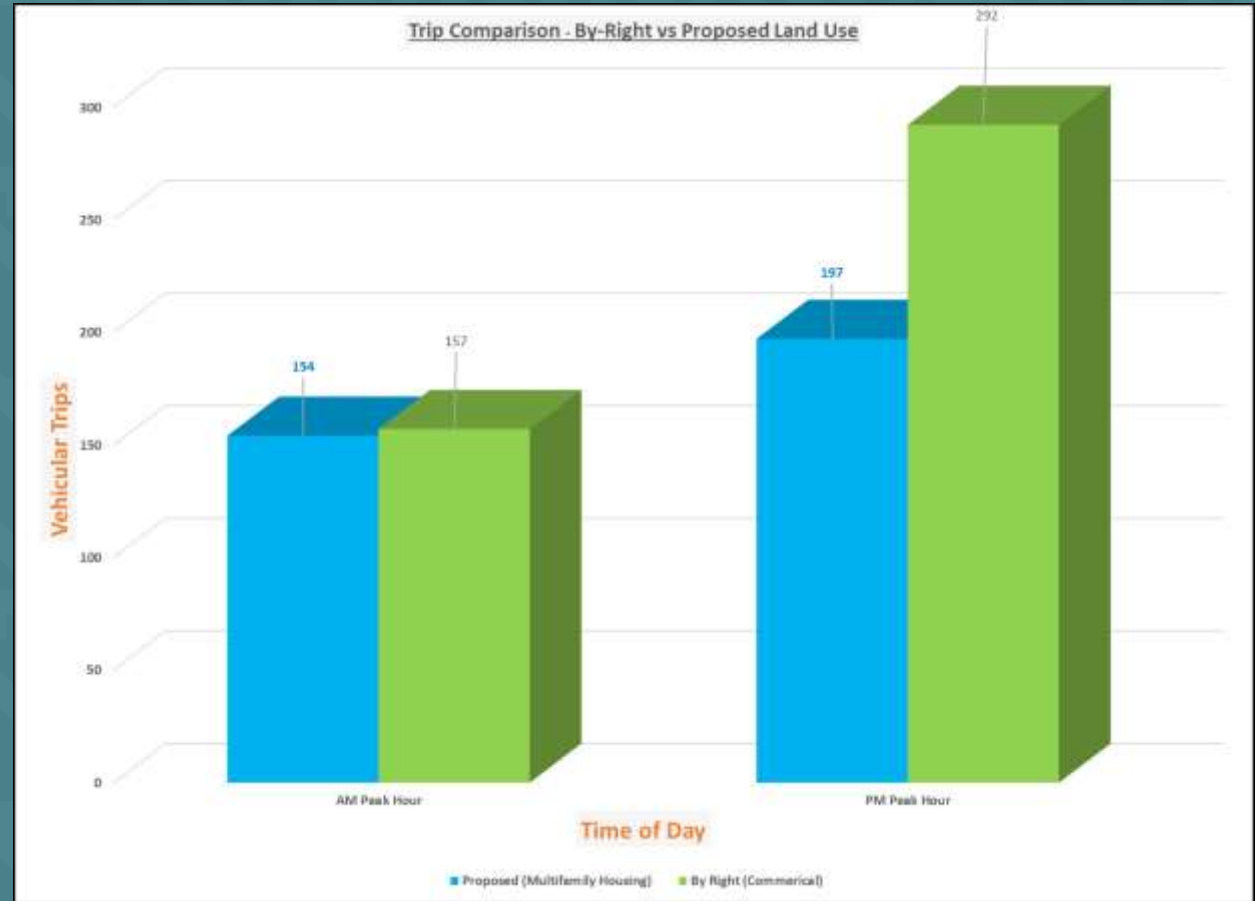
SITE TRIP GENERATION

New Trips Generated by the Development:

- The proposed 386 new residential units are expected to generate around 154 new vehicle trips during the morning commute hour and 197 new vehicle trips during the evening commute hour
- These are distributed across the internal connections and 6 access points, reducing impact at any single location

Less Than By-Right Commercial Development:

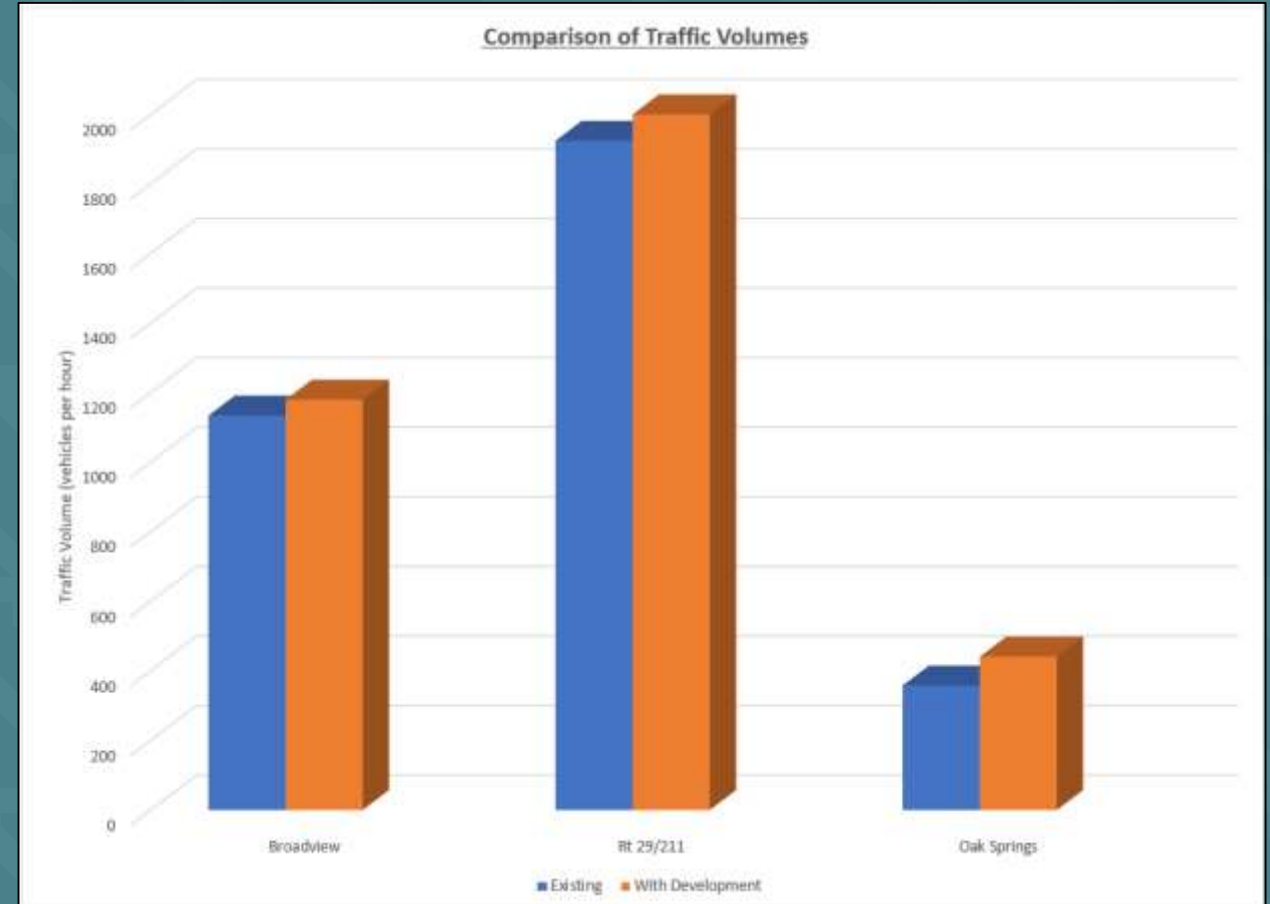
- The residential traffic volumes are lower than what would be seen if the site was developed by right with 40,000 sf of retail instead



SITE TRIP IMPACTS

Minimal Traffic Impact:

- Site-generated traffic represents a small percentage of the existing volumes:
 - 3 - 4% on Broadview Avenue
 - 0.1 - 4% on Rt 29/211
 - Greater proportion on Oak Spring Dr and Branch Dr, where current volumes are lower
- Capacity analysis confirms these modest additions can be accommodated by the surrounding road network without degrading operations





Minimal Impact on Intersection Operations:

- The addition of site-generated traffic does not significantly increase delays when compared to the future conditions without the development

Maintaining Efficient Traffic Flow:

- Signalized intersections and the new planned roundabout will continue operating efficiently, demonstrating the surrounding network can accommodate the new trips

Manageable Impacts at Unsignalized Intersections:

- The unsignalized intersection of Warrenton Village South Driveway and Broadview Avenue is anticipated to operate with higher delays, but the site-generated traffic only constitutes approximately 3.5% of the total volume at this location
- At all other unsignalized study intersections, the minor increases in delay represent conditions no worse than what is projected to occur without the development

Accommodating Site Traffic:

- Queues can still be fully accommodated within the available storage at all intersections, similar to the existing and future no-build conditions

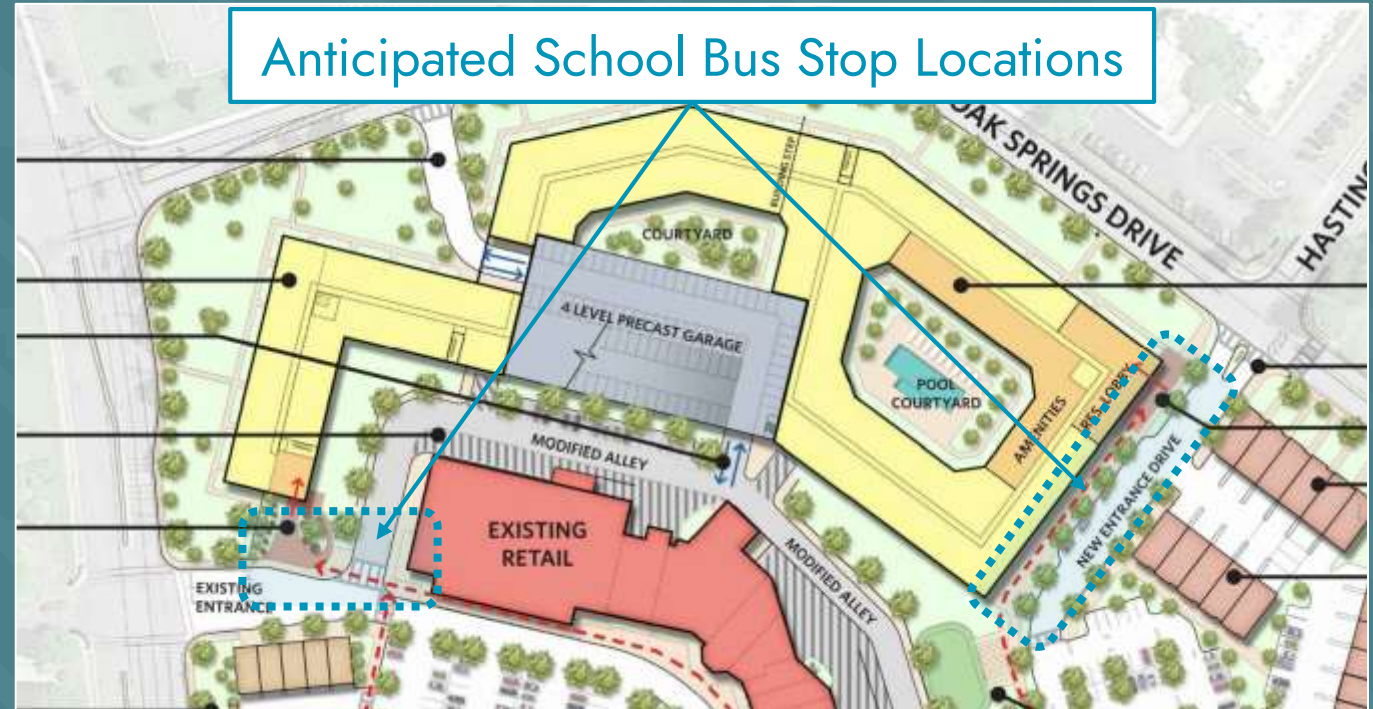
SCHOOL BUS ACCOMMODATIONS

School Bus Stops:

- The developer will work with County schools on exact locations of school bus stops
- Expected to be near the residential lobbies

Impact on Traffic:

- Anticipated that buses will stop on internal streets, rather than adjacent public roads
- Maintain the flow of through traffic on the surrounding streets during peak school travel times



HIGHLAND SCHOOL TRAFFIC

Balancing Access and Minimizing Disruption:

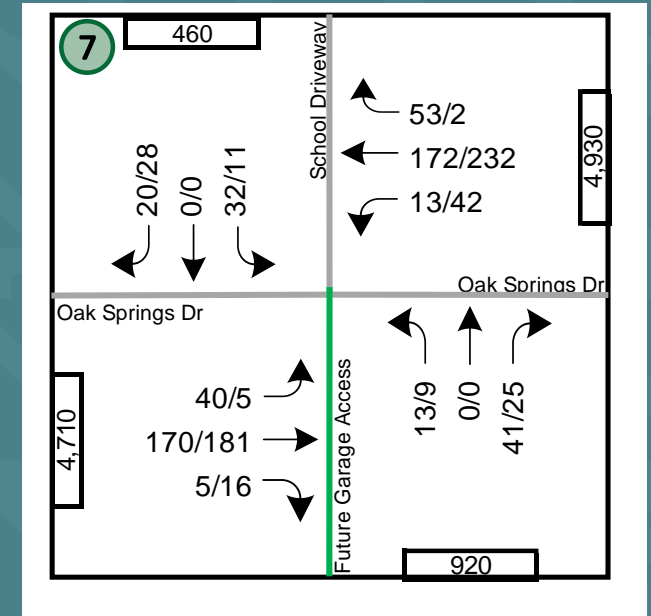
- The proposed parking deck entry is positioned across from the Highland School driveway to balance access needs while minimizing disruption to the existing intersection

Minimizing Conflicts with School Peak Hours:

- Analysis found Highland School and residential AM peak hours have a 15-minute overlap, during which conflicts are expected to be minimal
- Analysis found no overlap in PM peak hours
- It is anticipated that residents will use secondary garage entrance during AM peak hours, which will further reduce conflicts

Accommodating School Operations:

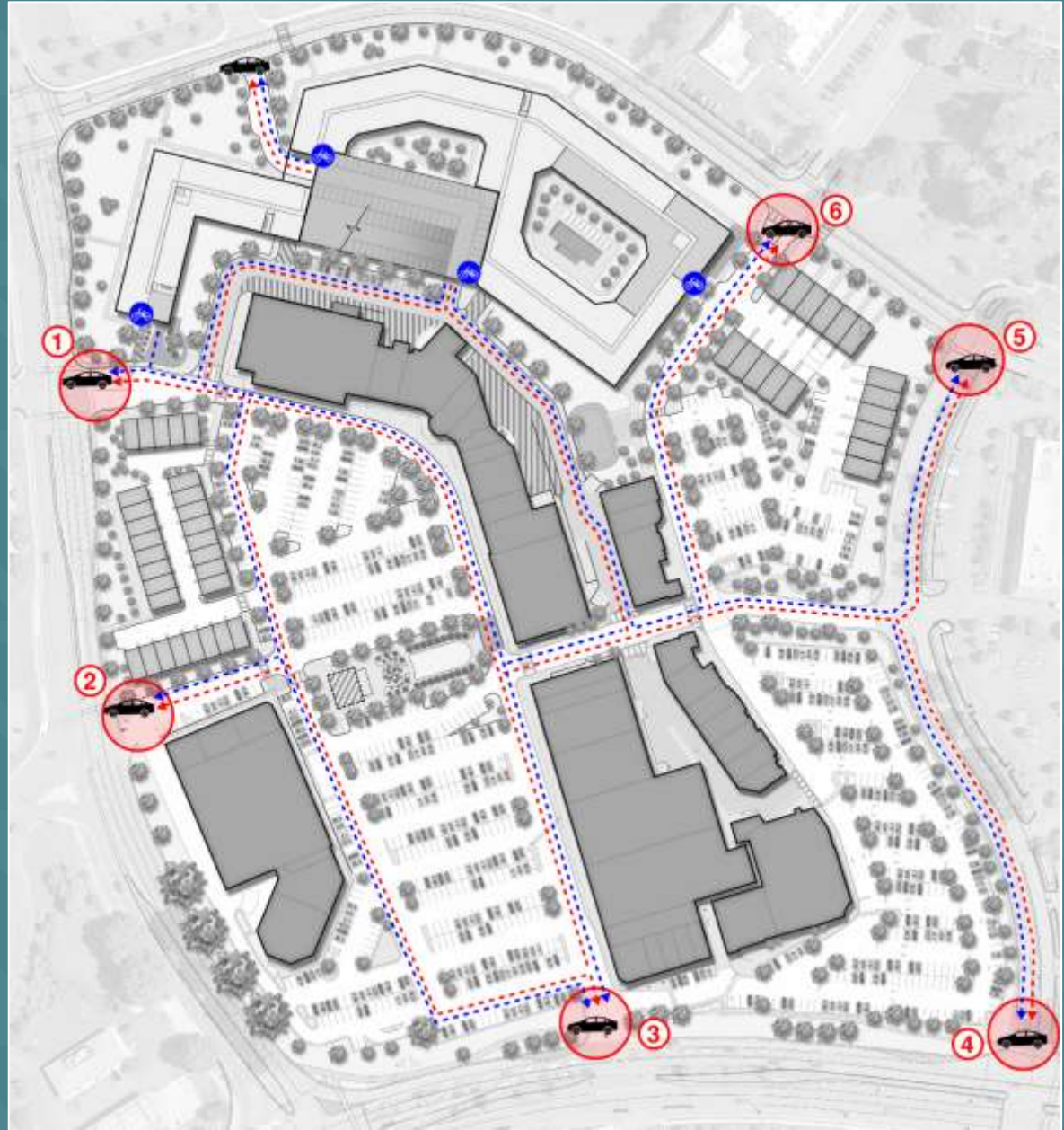
- Observations showed limited queuing of vehicles along Oak Springs Dr at the existing Highland School access point, even during peak times
- The school has multiple pickup/drop-off locations and two entrances, which helps distribute the traffic



Overall, the traffic impacts from the proposed development are not anticipated to significantly disrupt or impede the normal operations of Highland School

HIGHLAND SCHOOL TRAFFIC

- Residents of Warrenton Village Center will want to avoid traffic as much as those dropping off/picking up students at Highlands School
- The site provides 6 alternative points of ingress/egress for vehicles and bicycles that will be the preferable route of travel during peak traffic hours to avoid congestion on Oak Springs Drive
- These alternative points of ingress/egress will further reduce what the Traffic Impact Analysis has determined to be minimal conflicts to the Highland School traffic





ROAD IMPROVEMENTS

Turn Lane Warrant Analysis:

- No new turn lanes warranted at proposed site access points per VDOT standards
- No new turn lanes recommended to be constructed by the development

Signal Warrant Analysis:

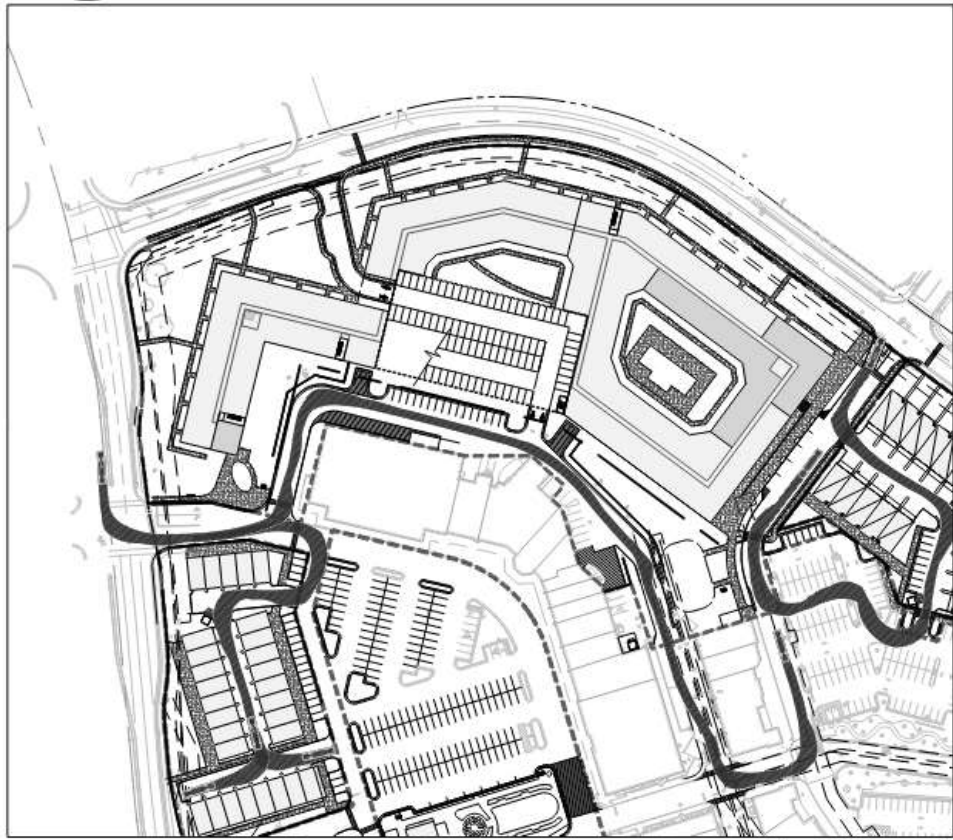
- Signal warrant analysis performed for Broadview Ave/Oak Springs Rd intersection
- Traffic volumes do not meet MUTCD signal warrants, so signalization is not recommended
- Unsignalized operations projected to function acceptably at LOS C or better

The Warrenton Village Center development does not necessitate any additional roadway improvements beyond what is already planned by VDOT and the Town

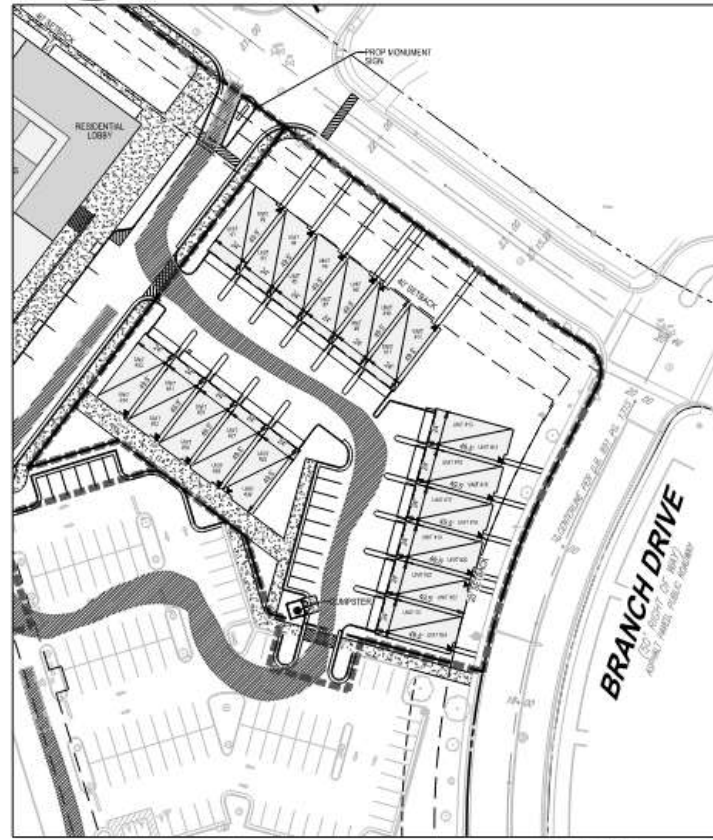
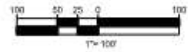


EMERGENCY & DELIVERY VEHICLE MOVEMENTS

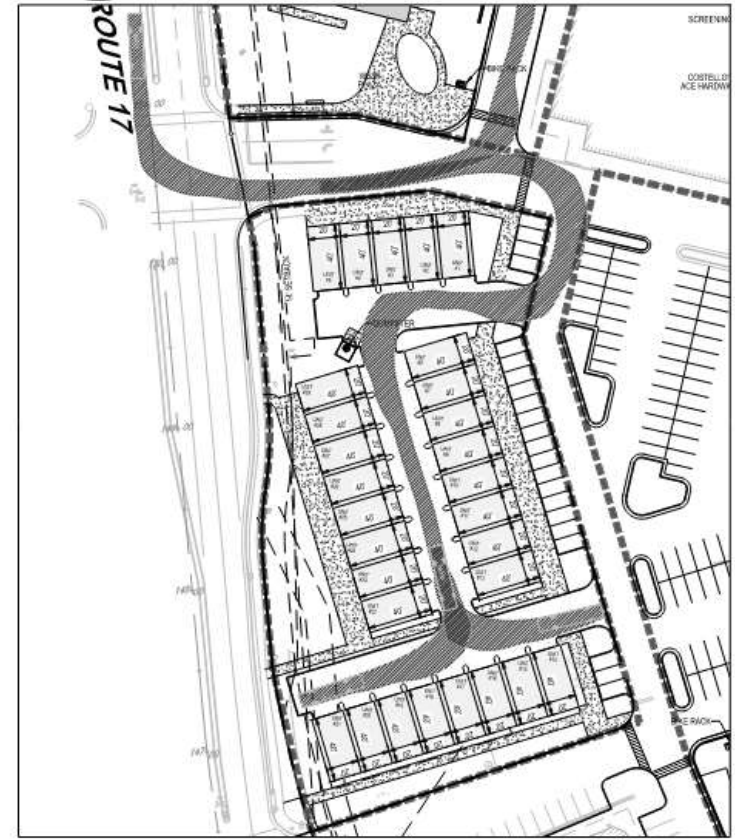
Item 1.



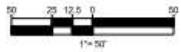
BLOCK 1



BLOCK 2 (2 OVER 2 BLOCK)



BLOCK 3 (TOWNHOME BLOCK)



- Vehicle turning analysis has confirmed maneuverability throughout all blocks
- Mountable curbs can be included at desired locations during site plan

Pumper Fire Truck
 Overall Length 40
 Overall Width 8
 Overall Body Height 22
 Min Body Ground Clearance
 Track Width
 Lock-to-lock time 5.00s
 Max Wheel Angle 45.00°

663



SUMMARY OF IMPACTS

Additional Traffic:

- The proposed 386 residential units will generate 154 new trips in the AM peak and 197 in the PM peak hour
- This equates to about 4% of the current traffic on most surrounding roadways

Dispersed Access Points:

- Multiple entry/exit locations directly to Oak Springs Dr and through shopping center driveways
- Distributes new trips across the road network, avoiding concentration at a single point



Leveraging Existing and Planned Infrastructure:

- The mixed-use nature of the development will help reduce external trips generated, as some trips can be captured internally
- Surrounding street grid offers multiple route choices, dispersing trips
- Planned roundabout will improve operation at Rt 29/211 and Broadview Ave
- Capacity analysis confirms surrounding intersections and roads can accommodate the new traffic with minimal impact

Outcome:

- The Warrenton Village Center development would improve walkability, vibrancy, and housing choices, with a marginal increase in traffic that does not warrant new road improvements



SCHOOLS

Fauquier County Student Generation Calculation:

- 0.72 students per single family detached dwelling
 - 0.45 students per single family attached dwelling
 - 0.20 students per apartment dwelling
-
- Allocation per school type assumption is:
 - 52% elementary school
 - 22% middle school
 - 26% high school

Warrenton Village Center Projection at Full Buildout and Occupancy:

- Block 1: 320 apartments x 0.20 = 64 students
- Block 2: 36 attached dwellings x 0.45 = 16
- Block 3: 30 attached dwellings x 0.45 = 14
- Total proposed students = 94

- Allocation per school:
 - Bradley (52%) = 49
 - Taylor (22%) = 21
 - FHS (26%) = 24



FAUQUIER COUNTY ENROLLMENT PROJECTIONS

Enrollment Projection

This is an 5-year analysis of program capacity based on projected enrollment. This analysis is a cohort progression model, looking at birth rates and considers a growth factor. Areas of concern are:

- Elementary (South and Central)
- Middle School Growth
- Liberty HS

| | Program Capacity | 95% Cap | Actual Enrollment | | | | | % Cap | Projected Enrollment | | | | |
|-------------------------|------------------|---------------|-------------------|---------------|---------------|---------------|---------------|--------------|----------------------|---------------|---------------|---------------|---------------|
| | | | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| ES South | | | | | | | | | | | | | |
| Miller | 580 | 551 | 493 | 476 | 484 | 489 | 505 | 87.2% | 503 | 492 | 504 | 505 | 522 |
| Pearson | 532 | 505 | 385 | 347 | 365 | 367 | 381 | 71.6% | 397 | 394 | 407 | 422 | 433 |
| Pierre | 560 | 532 | 550 | 487 | 514 | 531 | 533 | 95.2% | 537 | 546 | 554 | 543 | 551 |
| Water | 568 | 559 | 410 | 363 | 412 | 399 | 396 | 67.3% | 409 | 430 | 451 | 452 | 474 |
| Subtotal South | 2,260 | 2,147 | 1,838 | 1,673 | 1,775 | 1,786 | 1,816 | 80.4% | 1,846 | 1,864 | 1,916 | 1,922 | 1,980 |
| ES Central | | | | | | | | | | | | | |
| Bradley | 588 | 559 | 369 | 332 | 339 | 356 | 349 | 59.4% | 341 | 354 | 355 | 363 | 360 |
| Bramfield | 716 | 680 | 495 | 458 | 482 | 492 | 508 | 70.9% | 530 | 560 | 580 | 608 | 644 |
| Greenville | 604 | 574 | 531 | 437 | 479 | 495 | 494 | 81.8% | 506 | 506 | 496 | 488 | 471 |
| Ritchie | 548 | 521 | 483 | 416 | 478 | 491 | 522 | 95.3% | 532 | 529 | 543 | 547 | 563 |
| Smith | 572 | 543 | 414 | 356 | 414 | 418 | 393 | 68.7% | 418 | 443 | 465 | 505 | 524 |
| Subtotal Central | 3,028 | 2,877 | 2,292 | 1,999 | 2,192 | 2,262 | 2,266 | 74.8% | 2,327 | 2,394 | 2,441 | 2,491 | 2,562 |
| ES North | | | | | | | | | | | | | |
| Coleman | 520 | 494 | 347 | 276 | 311 | 332 | 315 | 60.6% | 312 | 302 | 280 | 270 | 266 |
| Thompson | 368 | 350 | 254 | 224 | 257 | 256 | 262 | 71.2% | 267 | 280 | 310 | 327 | 344 |
| Subtotal North | 888 | 844 | 601 | 500 | 568 | 588 | 577 | 65.0% | 579 | 582 | 590 | 597 | 610 |
| TOTAL ELEMENTARY | 6,176 | 5,867 | 4,731 | 4,172 | 4,535 | 4,626 | 4,659 | 75.4% | 4,752 | 4,840 | 4,947 | 5,010 | 5,152 |
| Available Capacity | | | 1,445 | 2,004 | 1,641 | 1,550 | 1,517 | 24.6% | 1,424 | 1,336 | 1,229 | 1,166 | 1,024 |
| Middle Schools | | | | | | | | | | | | | |
| Auburn | 822 | 591 | 568 | 513 | 575 | 552 | 578 | 92.9% | 588 | 590 | 613 | 647 | 668 |
| Cedar Lee | 900 | 855 | 650 | 622 | 613 | 596 | 637 | 93.0% | 677 | 664 | 605 | 651 | 659 |
| Marshall | 654 | 621 | 466 | 445 | 419 | 408 | 405 | 61.9% | 396 | 391 | 391 | 413 | 414 |
| Taylor | 618 | 587 | 470 | 422 | 435 | 424 | 607 | 96.2% | 607 | 601 | 569 | 601 | 606 |
| Warrenton | - | - | 432 | 368 | 366 | 392 | - | - | - | - | - | - | - |
| TOTAL MIDDLE | 2,794 | 2,654 | 2,586 | 2,370 | 2,408 | 2,372 | 2,427 | 86.9% | 2,468 | 2,445 | 2,379 | 2,512 | 2,547 |
| Available Capacity | | | 208 | 424 | 386 | 422 | 367 | 13.1% | 326 | 349 | 415 | 282 | 247 |
| High Schools | | | | | | | | | | | | | |
| Fauquier | 1,612 | 1,531 | 1,254 | 1,217 | 1,170 | 1,134 | 1,122 | 69.6% | 1,089 | 1,111 | 1,153 | 1,147 | 1,170 |
| Kettle Run | 1,360 | 1,292 | 1,184 | 1,147 | 1,112 | 1,172 | 1,164 | 85.6% | 1,165 | 1,214 | 1,233 | 1,241 | 1,267 |
| Liberty | 1,370 | 1,302 | 1,250 | 1,252 | 1,259 | 1,324 | 1,300 | 94.9% | 1,261 | 1,263 | 1,326 | 1,341 | 1,368 |
| TOTAL HIGH | 4,342 | 4,125 | 3,688 | 3,616 | 3,541 | 3,630 | 3,586 | 82.6% | 3,515 | 3,608 | 3,714 | 3,729 | 3,805 |
| Available Capacity | | | 654 | 726 | 801 | 712 | 756 | 17.4% | 827 | 734 | 628 | 613 | 537 |
| District Total | 13,312 | 12,646 | 11,005 | 10,158 | 10,484 | 10,628 | 10,672 | 80.2% | 10,735 | 10,893 | 11,040 | 11,251 | 11,504 |

*Data provided by Fauquier County Public Schools

NEW STUDENTS VS. AVAILABLE CAPACITY

Bradley

New students = 49

Available Capacity (min.) = 225

Taylor/Warrenton Middle

New students = 21

Available Capacity (min.) = 243

FHS

New students = 24

Available Capacity (min.) = 464

| | | Actuals | % of Capacity | Projections | | | | |
|---------------------------------------|-------|-------------|---------------|-------------|---------|---------|---------|---------|
| Bradley Elementary School | | | | | | | | |
| Max Capacity | 588 | | | | | | | |
| | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| Enrollment | | 349 | 59.4% | 341 | 354 | 355 | 363 | 360 |
| Available Capacity | | 239 | | 247 | 234 | 233 | 225 | 228 |
| Taylor/Warrenton Middle School | | | | | | | | |
| Max Capacity | 850 | School Year | | | | | | |
| | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| Enrollment | | 607 | 71.4% | 607 | 601 | 569 | 601 | 606 |
| Available Capacity | | 243 | | 243 | 249 | 281 | 249 | 244 |
| Fauquier High School | | | | | | | | |
| Max Capacity | 1,634 | School Year | | | | | | |
| | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| Enrollment | | 1,122 | 68.7% | 1,089 | 1,111 | 1,153 | 1,147 | 1,170 |
| Available Capacity | | 512 | | 545 | 523 | 481 | 487 | 464 |
| COMBINED | | | | | | | | |
| Max Capacity | 3,072 | School Year | | | | | | |
| | | 2023-24 | | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| Enrollment | | 2,078 | 67.6% | 2,037 | 2,066 | 2,077 | 2,111 | 2,136 |
| Available Capacity | | 994 | | 1,035 | 1,006 | 995 | 961 | 936 |



MODIFICATIONS & WAIVERS



The mixed-use development option is created within the Commercial District to allow a mixture of uses when consistent with the Comprehensive Plan. The mixed-use option is intended to encourage development in a creative and integrated manner that encourages pedestrian walkability, shared open spaces and an alternative form of housing within the Town.

Section J. – Modifications:

Modifications from the standards set forth in Section 9-25 may be approved by Town Council in conjunction with the Special Use Permit upon a determination that the intent of the Comprehensive Plan is being met.



SUP MODIFICATION & WAIVERS – WAIVER REQUEST #1



- Section 3-4.10.3 of the Zoning Ordinance provides that density in a mixed-use development within a Commercial zone may be calculated pursuant to Sec. 9-25 of the Zoning Ordinance
- Sec. 9-25 allows for calculation of density in a mixed-use development to be up to 1 dwelling unit per 500 square feet of non-residential space. This section also provides that density above 5 units per acre must be approved by the Town Council.
- While this is a modification of Sec. 3-4.10.3, the requested density is fully consistent with the provisions of Sec. 9-25 for a mixed-use development, and less than what could be achieved
- This modification will allow for realization of the concentrated increased density that is a primary objective of the New Town Character District
- **Waiver Request #1:** Increase density above 5 units per acre to 13.28 units per acre, which will yield 386 units

By-Right Density Calculation:

- 5 dwelling units per acre
- $5 \times 29.05 \text{ acres} = 145 \text{ units}$

By-Right Density Calculation, with affordable housing bonus:

- 10 dwelling units per acre
- $10 \times 29.05 \text{ acres} = 290 \text{ units}$

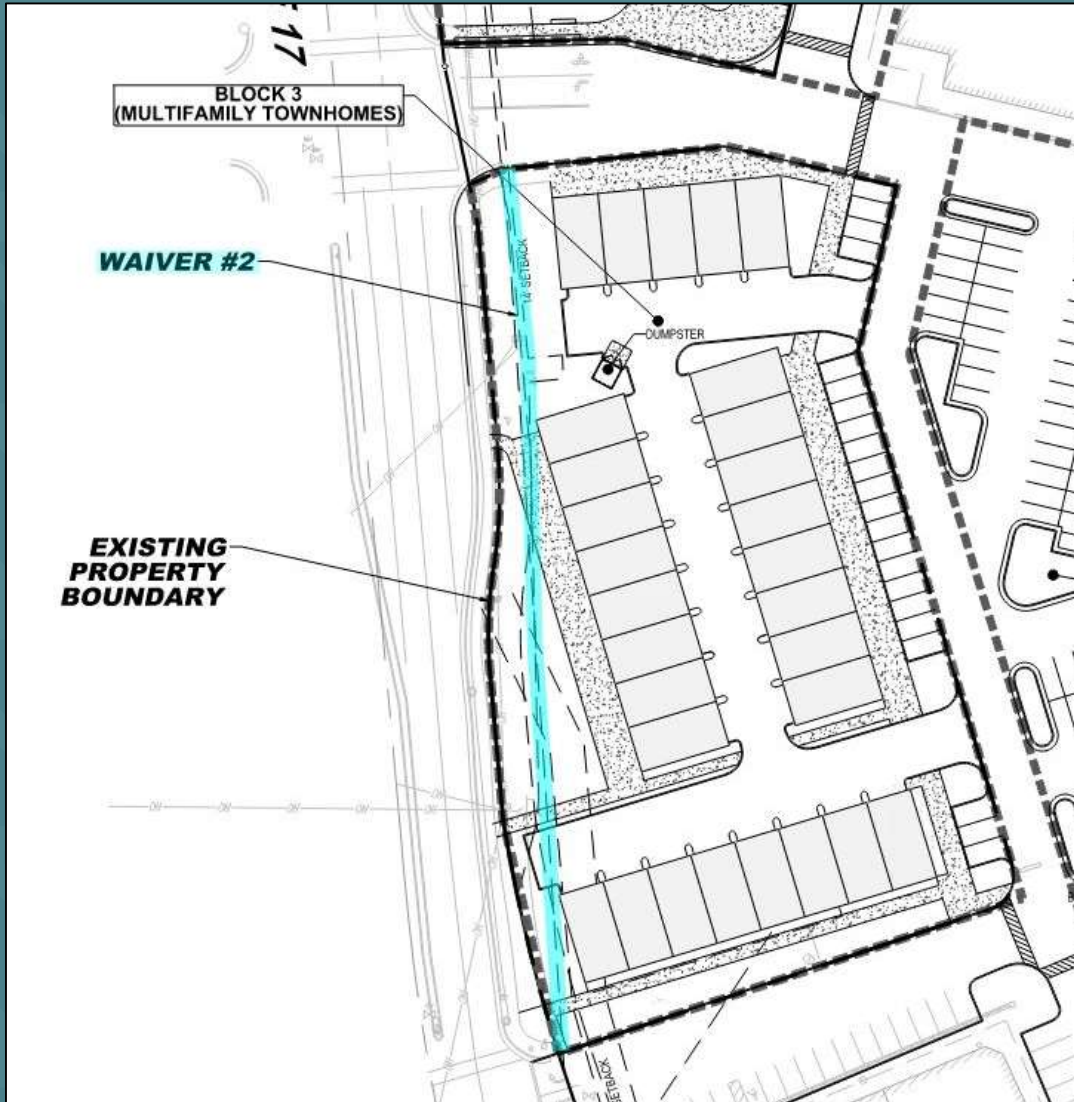
Mixed-Use Density Calculation (with SUP approval):

- 1 dwelling unit per 500 GSF of non-residential floor space
- $218,142 \text{ GSF} / 500 = 436 \text{ units (15 units per acre)}$
- Requested Density = 386 (13.28 units per acre)



SUP MODIFICATION & WAIVERS – WAIVER REQUEST #2

Item 1.



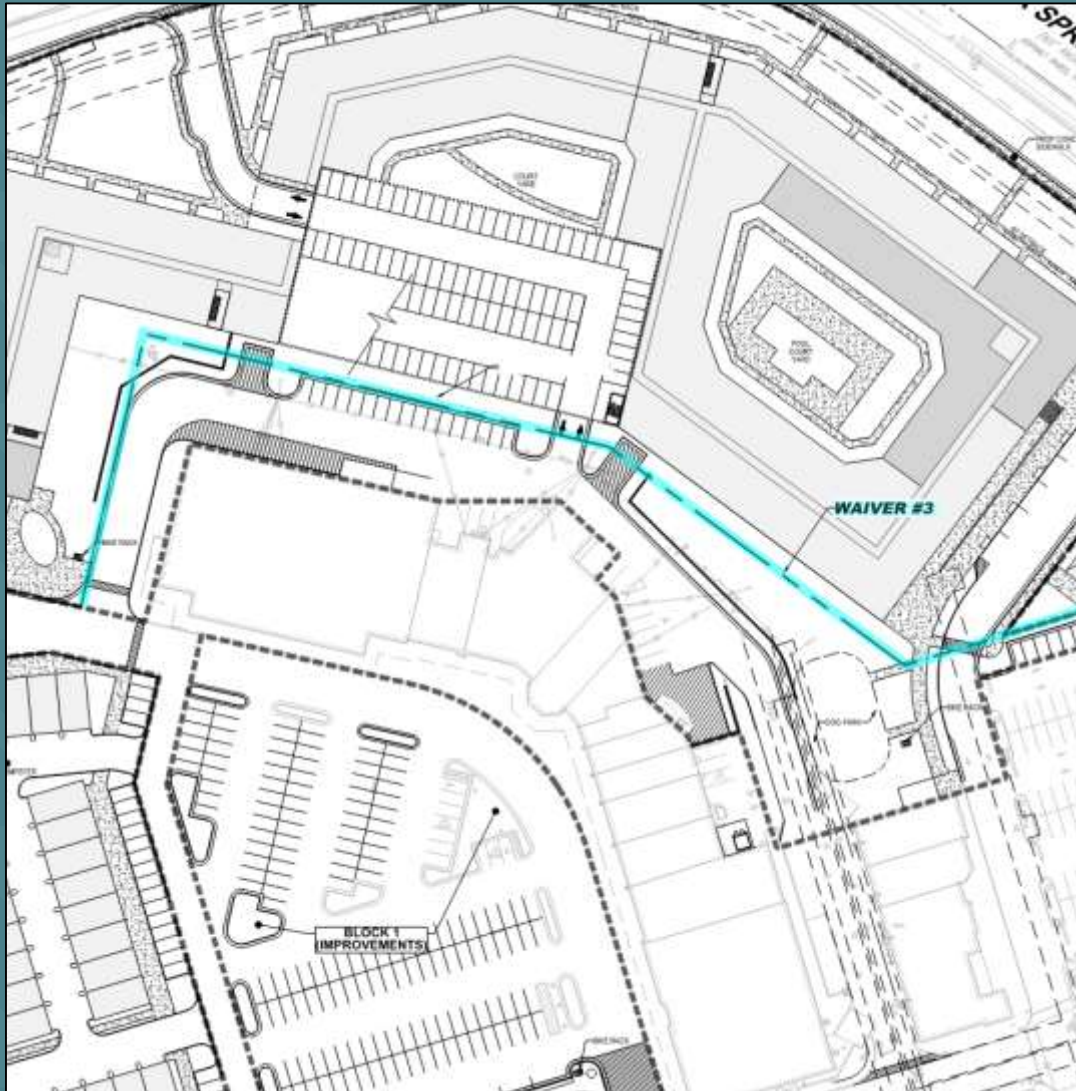
- Article 3-4.10.4: Required front yard setback from ROW greater than 50' is 40' minimum, if no parking or loading is proposed.
- This modification will allow the units to be closer to the street, creating a more consistent edge that is representative of the New Town Character district
- Waiver Request #2:** Decrease minimum setback to 14' along Broadview Avenue





SUP MODIFICATION & WAIVERS – WAIVER REQUEST #3

Item 1.

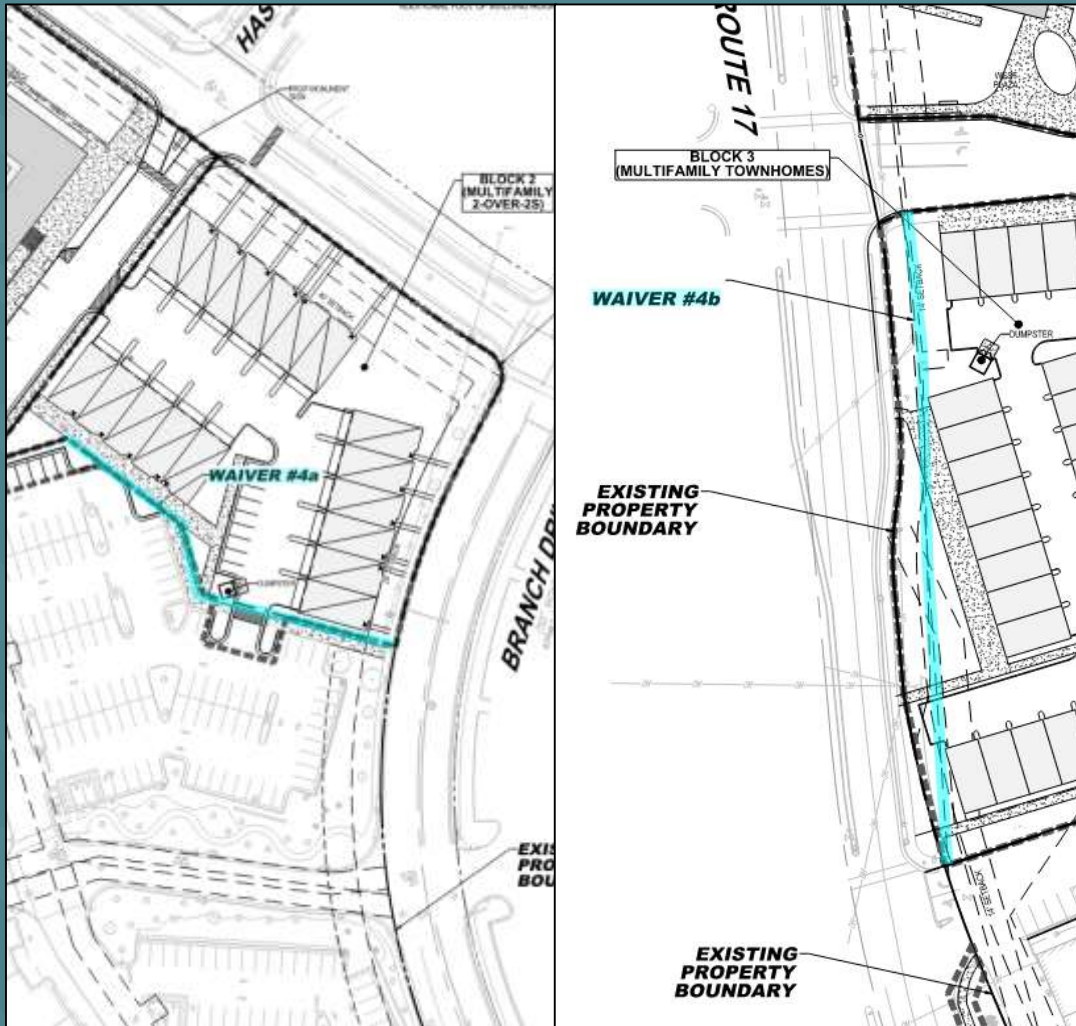


- Article 3-4.10.4: Required side/rear yard setbacks is 5' minimum.
- This modification will allow the overall development to function as a true mixed-use development that will not be segmented by internal separations.
- **Waiver Request #3**: Decrease side/rear yard setbacks along internal proposed and existing property lines to 0'



SUP MODIFICATION & WAIVERS – WAIVER REQUEST #4

Item 1.



- Article 8-8.5: Minimum buffer width for commercial uses adjacent to residential uses is 25', plus 1' for each foot of building height over 35'. Minimum buffer width for rear boundaries of residential uses from public ROW is 25'.
- This modification will allow the overall development to function as a true mixed-use development that will not be segmented by internal separations
- This modification will allow the units to be closer to the street, creating a more consistent edge that is representative of the New Town Character district
- Waiver Request #4a:** Decrease buffer width between commercial and residential uses to 0'
- Waiver Request #4b:** Decrease rear buffer width for residential uses from public ROW to 14'



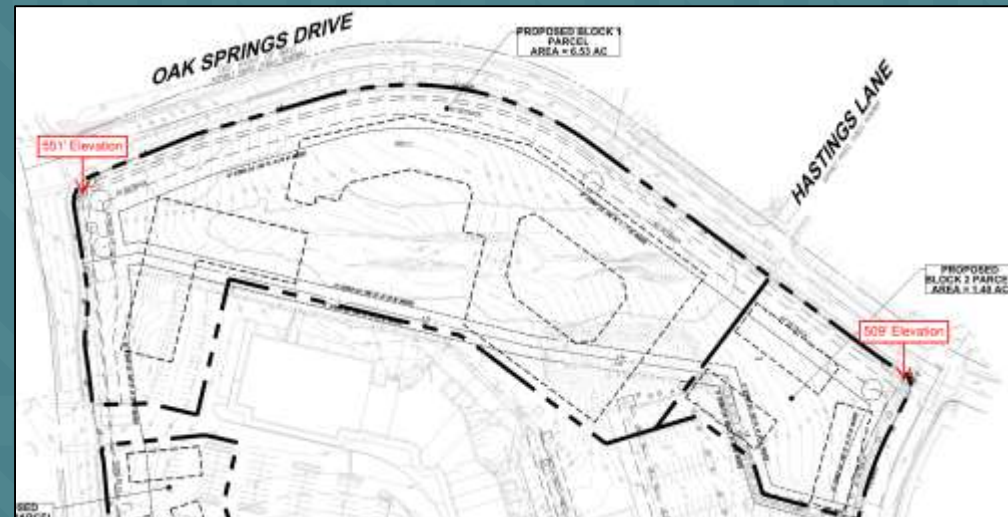
- Article 2-20: Height limit for dwellings may be increased up to 45' and up to three stories provided that front, side and rear setbacks increase 1' for each additional foot of building height over 35'.

- **Waiver Request #5**: Increase height limit for dwellings as follows:
 - 54' max height for Block 1, Oak Springs Drive Frontage
 - 36' max height for Block 1, Broadview Drive Frontage
 - 45' max height for Block 2
 - 36' max height for Block 3

WHY ADDITIONAL HEIGHT IS NEEDED

Item 1.

- Site drops 42' from Broadview Avenue to Branch Drive
- The building starts as 3-stories on the west side at the higher elevation and increases to 4-stories on the east side as the elevation drops
- Increasing height as a building moves down a hill is a technique to keep consistency in scale across a building's elevation, as well as a way to conceal retaining walls within the building's foundation, as opposed to creating unsightly external walls

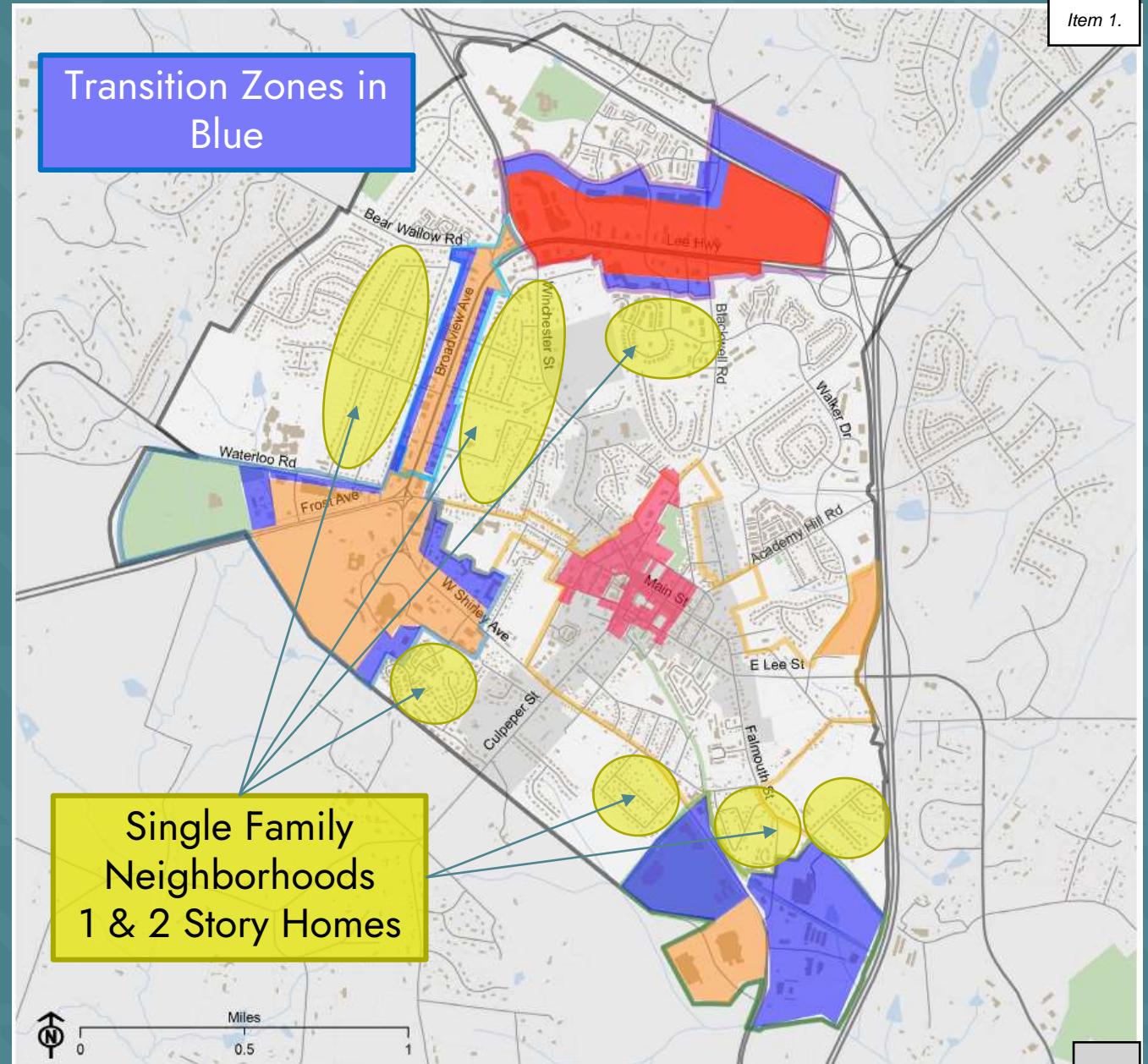


WHY ADDITIONAL HEIGHT IS NEEDED

- The New Town Character District has been established in Plan Warrenton 2040 as a designated area of high density—3-story residential does not allow for the concentrated density desired in the District
- The New Town Character District calls for “greater intensity of mixed-use and strong live, work, and play options” and notes that this district has “high visibility,” due to its proximity to Route 29. The requested modifications to increase density and height support the need for greater intensities and higher visibility in this Character District.
- 4-stories allows for the internal parking garage to be hidden from the exterior of the building

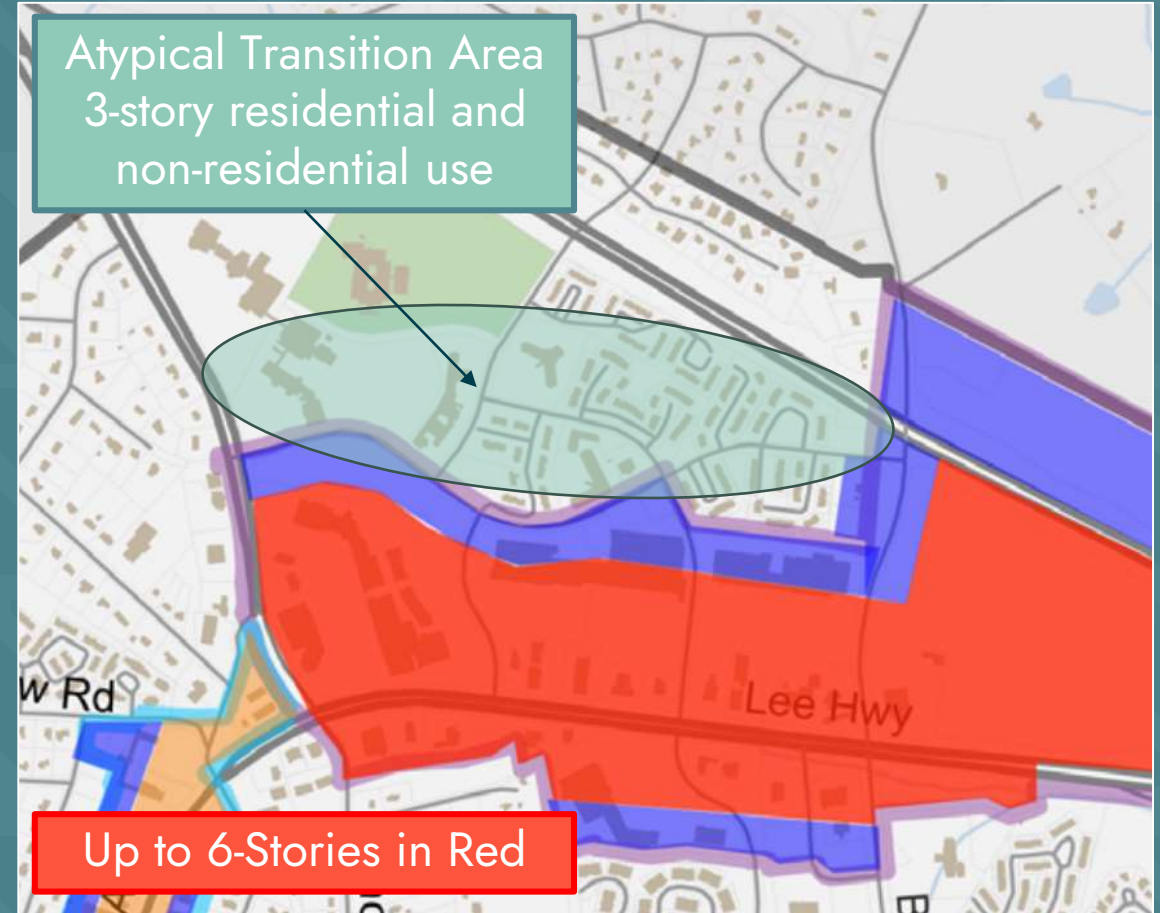
TRANSITION ZONES

- The area along the south side of Oak Springs Drive is located within in a “Transition Zone” as defined by Plan Warrenton 2040
- Transition Zones are “specifically defined as adjoining neighborhoods to articulate a step down in the number of stories for greater compatibility to adjoining single-family neighborhoods”
- These areas are intended to be a max of 3-stories to provide a step down to the adjacent 1- and 2-story single family neighborhoods
- Transition Zones have been placed in accordance with this definition across the Future Land Use map



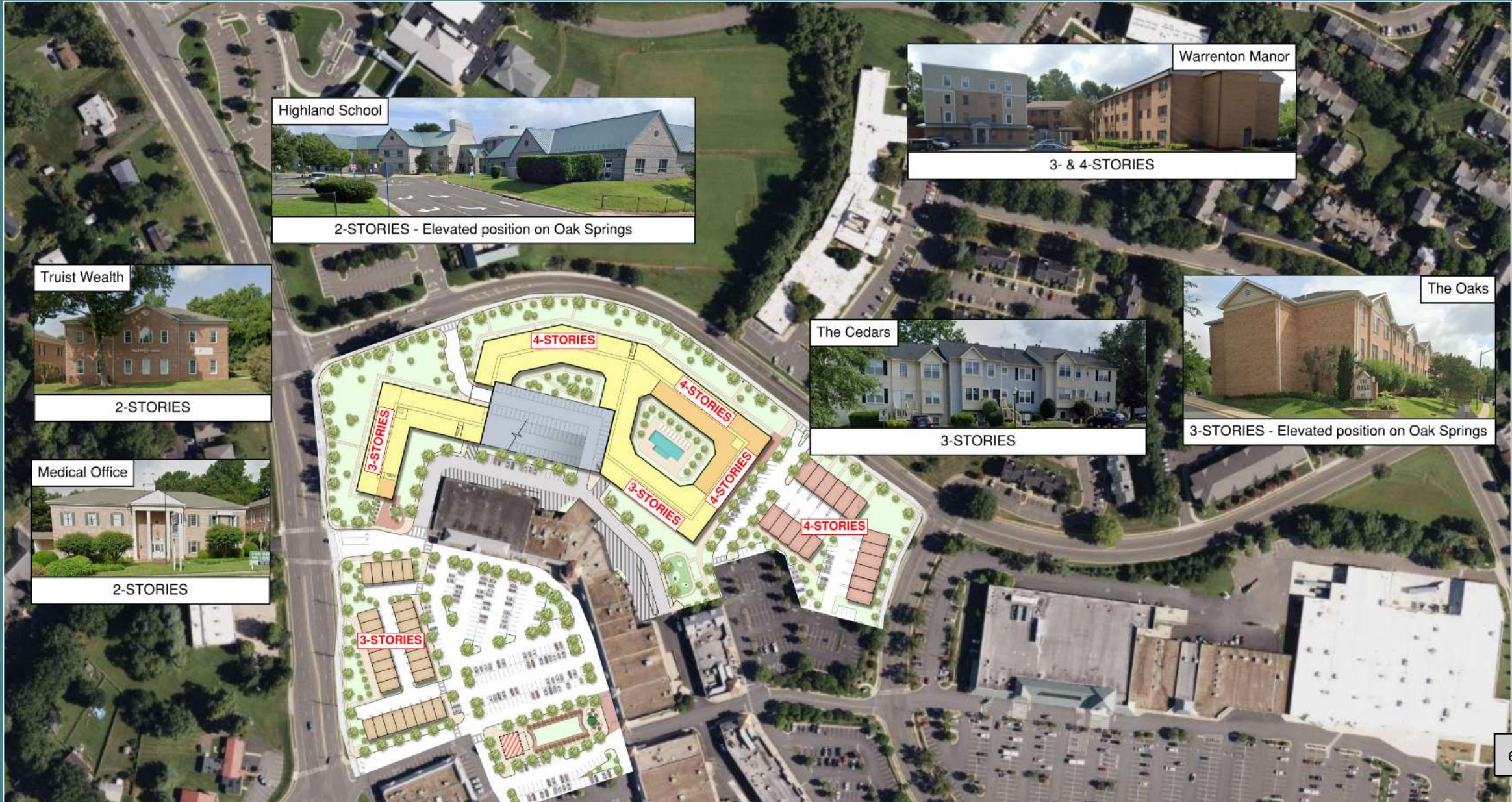
TRANSITION ZONES

- With the exception of the Transition Zone placed along Oak Springs Drive
- The uses on the north side of Oak Springs Drive are not 1- & 2-story single family neighborhoods
- This area is occupied with 3- & 4-story apartments, 3-story townhomes, Brookside Rehab & Nursing Center and Highland School
- Because of this, increasing building heights to 4-stories at Warrenton Village Center still provides the intended step-down affect, given that the uses on the north side are atypical, 3-story and non-residential uses and the uses along Lee Hwy may go up to 6-stories



SURROUNDING BUILDING HEIGHTS

Item 1.



NOTABLE WARRENTON BUILDING HEIGHTS

Item 1.

Warrenton Manor Apartments

- Stories: 4
- Location: Hastings Lane
- Zoning: Residential Multi-Family
- Future Use: Live-Work Neighborhood



98 Alexandria Pike Office Building

- Stories: 5
- Location: North of Old Town
- Zoning: Central Business District
- Future Use: Old Town Mixed Use



NOTABLE WARRENTON BUILDING HEIGHTS

Item 1.

28 Blackwell Park Lane Office Building

- Stories: 3
- Location: Blackwell Business Park
- Zoning: Commercial
- Future Use: Commercial



Hampton Inn

- Stories: 5
- Location: Blackwell Road
- Zoning: Commercial
- Future Use: Commercial



NOTABLE WARRENTON BUILDING HEIGHTS

Item 1.

Fauquier County High School

- Stories: 4
- Location: 705 Waterloo Road
- Zoning: Public-Semi-Institutional
- Future Use: Public/Semi-Public Non-Intensive



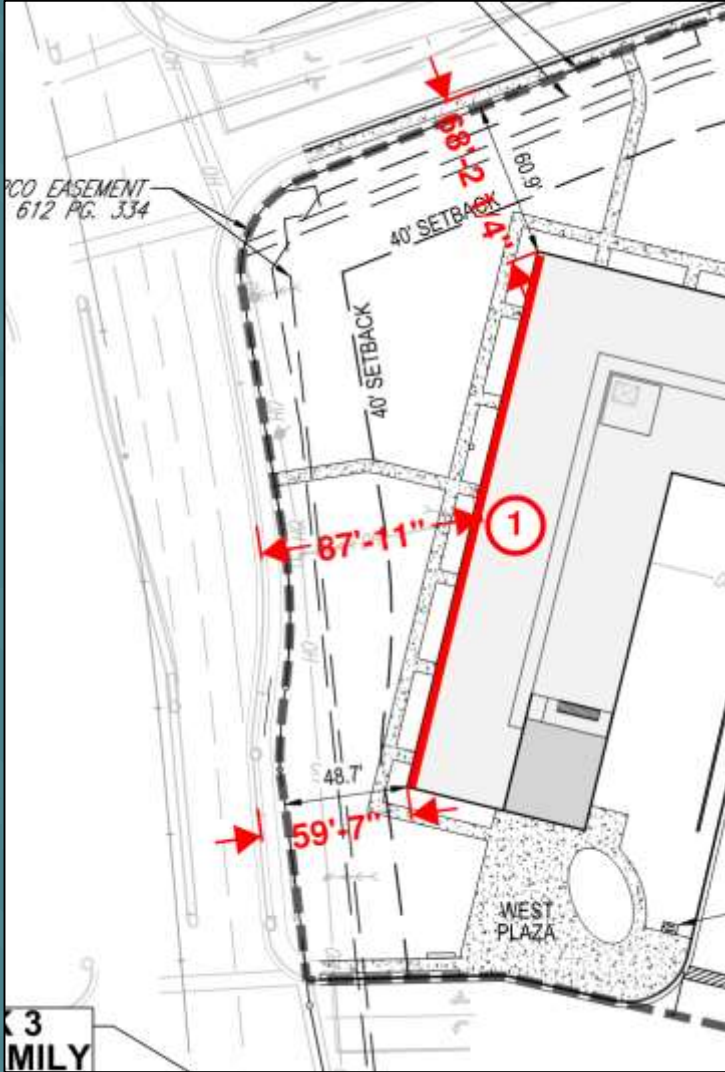
Fauquier Health

- Stories: 5
- Location: 500 Hospital Drive
- Zoning: Public-Semi-Institutional
- Future Use: Public/Semi-Public Intensive



BUILDING HEIGHTS & SETBACKS – FROM BROADVIEW

Item 1.

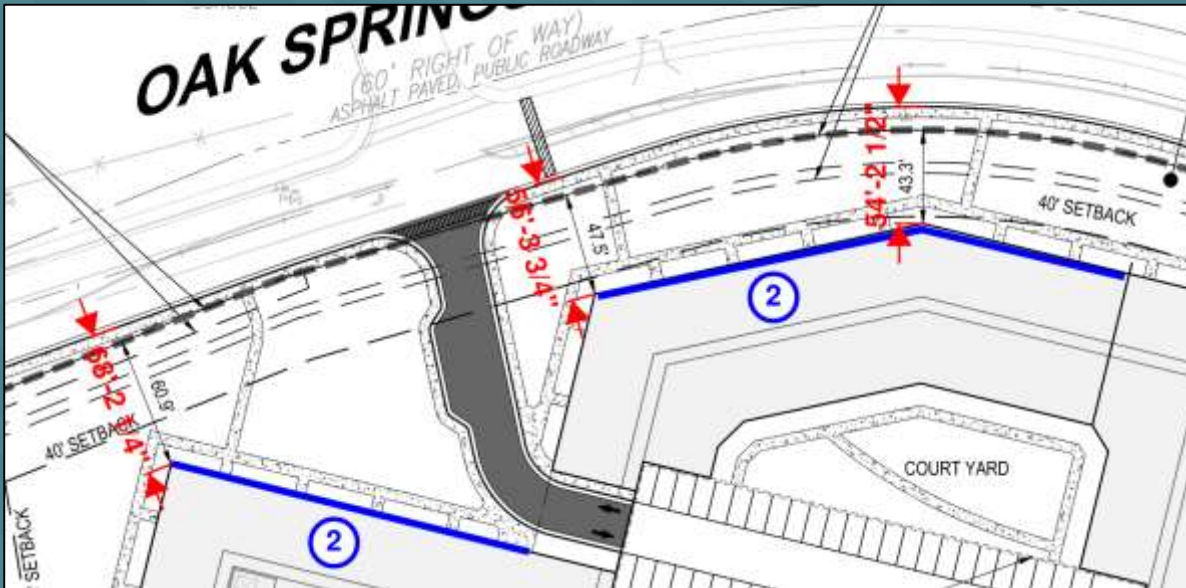


| Number of Stories | Average Building Height | Max Building Height Per Waiver | Minimum Setback from Curb |
|-------------------|-------------------------|--------------------------------|---------------------------|
| 3 | 32'-11" | 36'-0" | 59'-7" |

Setback to Height Ratio = 1.7 : 1

BUILDING HEIGHTS & SETBACKS – FROM OAK SPRINGS

Item 1.

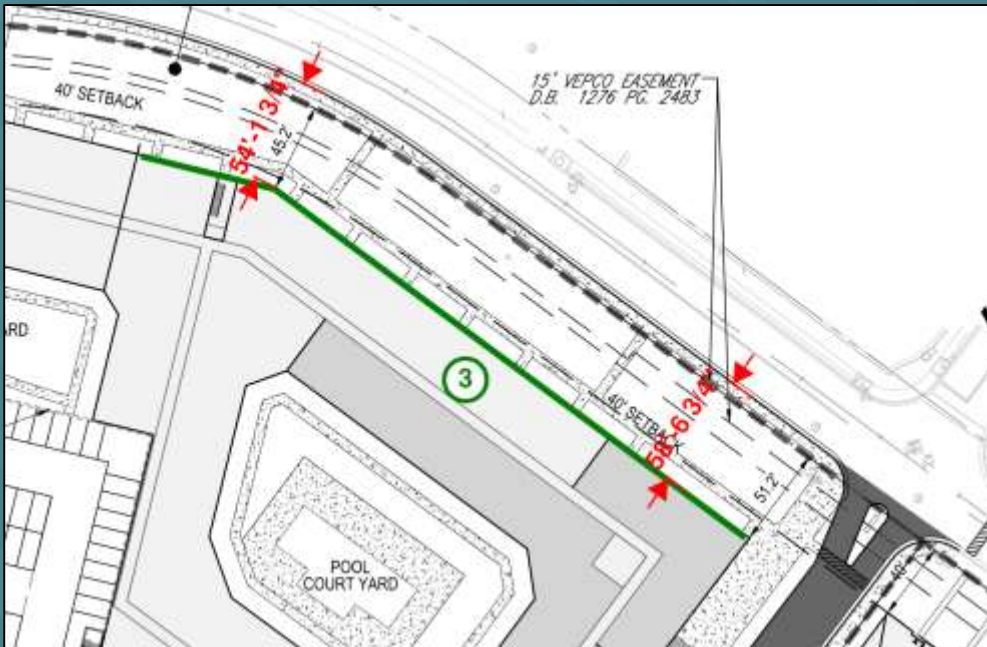


| Number of Stories | Average Building Height | Max Building Height Per Waiver | Minimum Setback from Curb |
|-------------------|-------------------------|--------------------------------|---------------------------|
| 4 | 42'-11" | 54'-0" | 54'-2" |

Setback to Height Ratio = 1 : 1

BUILDING HEIGHTS & SETBACKS – FROM OAK SPRINGS

Item 1.



| Number of Stories | Average Building Height | Max Building Height Per Waiver | Minimum Setback from Curb |
|-------------------|-------------------------|--------------------------------|---------------------------|
| 4 | 45'-0" | 54'-0" | 54'-2" |

Setback to Height Ratio = 1 : 1

BUILDING HEIGHTS & SETBACKS – FROM OAK SPRINGS

Item 1.

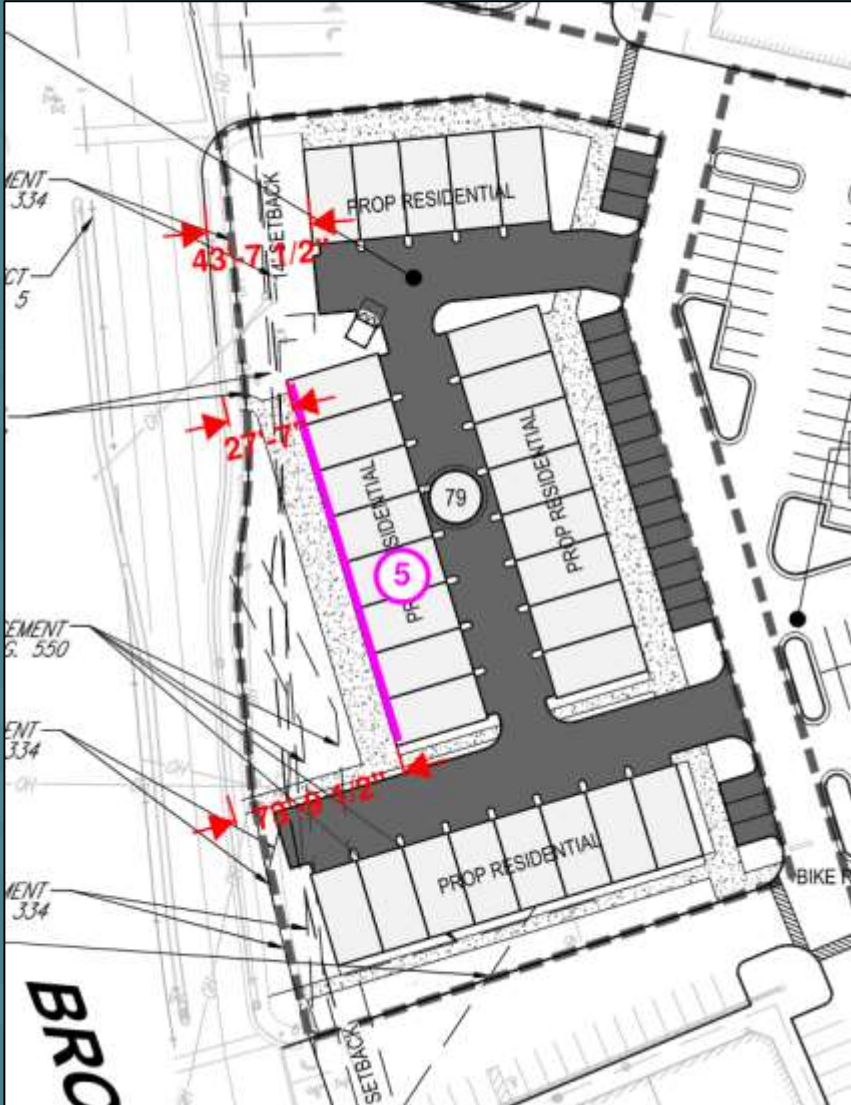


| Number of Stories | Average Building Height | Max Building Height Per Waiver | Minimum Setback from Curb (Oak Springs Dr.) | Minimum Setback from Curb (Branch Dr.) |
|-------------------|-------------------------|--------------------------------|---|--|
| 4 | 43'-6" | 45'-0" | 46'-11" | 21'-6" |

- Setback to Height Ratio = ~1 : 1 on Oak Springs Dr
- Setback to Height Ratio = ~0.5 : 1 on Branch Dr

BUILDING HEIGHTS & SETBACKS – FROM BROADVIEW

Item 1.



| Number of Stories | Average Building Height | Max Building Height Per Waiver | Minimum Setback from Curb |
|-------------------|-------------------------|--------------------------------|---------------------------|
| 3 | 32'-11" | 36'-0" | 27'-7" |

Setback to Height Ratio = 0.8 : 1

