

**A G E N D A**  
**JAMES CITY COUNTY BOARD OF SUPERVISORS**  
**REGULAR MEETING**  
**County Government Center Board Room**  
**101 Mounts Bay Road, Williamsburg, VA 23185**  
**March 8, 2022**  
**5:00 PM**

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**A. CALL TO ORDER**

**B. ROLL CALL**

**C. MOMENT OF SILENCE**

**D. PLEDGE OF ALLEGIANCE**

**E. PUBLIC COMMENT**

**F. CONSENT CALENDAR**

**G. PUBLIC HEARING(S)**

1. Ordinance to Amend County Code Ch. 2, Article II. Magisterial District, Election Districts and Election Precincts
2. Ordinance to Amend Transient Lodging Tax
3. Z-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)
4. SUP-21-0026. Living Word Church of God
5. AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal
6. SUP-21-0022. 360 Racefield Drive Solar Farm

**H. BOARD CONSIDERATION(S)**

1. S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision
2. Initiation of Consideration of Amendments to the Zoning Ordinance and Subdivision Ordinance to Establish Lot Sizes in the R-8 and A-1 Zoning Districts that are Consistent with the Stated Rural Lands Designation Description and Development Standards of the 2045 Comprehensive Plan
3. 2022 Motor Vehicle Assessment

**I. BOARD REQUESTS AND DIRECTIVES**

**J. REPORTS OF THE COUNTY ADMINISTRATOR**

**K. CLOSED SESSION**

1. Consideration of a personnel matter, the appointment of individuals to County Boards and/or Commissions pursuant to Section 2.2-3711 (A)(1) of the Code of Virginia
2. Board of Zoning Appeals Appointment
3. Williamsburg/James City County Community Action Agency Board Replacement
4. Social Services Advisory Board Appointments

**L. ADJOURNMENT**

1. Adjourn until 9 am on March 11, 2022 for the Joint Meeting at the James City County Recreation Center

**ITEM SUMMARY**

**DATE:** 3/8/2022

**TO:** The Board of Supervisors

**FROM:** Liz Parman, Deputy County Attorney & Jason Purse, Assistant County Administrator

**SUBJECT:** Ordinance to Amend County Code Ch. 2, Article II. Magisterial District, Election Districts and Election Precincts

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**ATTACHMENTS:**

	Description	Type
☐	Memo	Cover Memo
☐	Ordinance	Ordinance
☐	Final Ordinance	Ordinance
☐	district and precinct map	Exhibit
☐	Sept. 28 staff memo	Backup Material
☐	Sept. 28 resolution	Backup Material

**REVIEWERS:**

Department	Reviewer	Action	Date
Attorney	Kinsman, Adam	Approved	2/23/2022 - 2:38 PM
Publication Management	Daniel, Martha	Approved	2/23/2022 - 2:49 PM
Legal Review	Kinsman, Adam	Approved	2/24/2022 - 7:42 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 10:59 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

## MEMORANDUM

DATE: March 8, 2022

TO: The Board of Supervisors

FROM: Liz Parman, Deputy County Attorney  
Jason Purse, Assistant County Administrator

SUBJECT: An Ordinance to Amend and Reordain James City County Code Chapter 2, Article II. Magisterial District, Election Districts and Election Precincts

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### A. UPDATING THE COUNTY'S DISTRICT AND PRECINCT MAP

This Board adopted a resolution on September 28, 2021 endorsing a new district map for the County. The Virginia Supreme Court issued a final order on December 28, 2021 establishing voting districts for the Virginia General Assembly and the U.S. House of Representatives. The County received Geographic Information System (GIS) data for the updated voting districts in early January allowing staff to develop and present the previously endorsed district map, now with precincts, and a corresponding Ordinance amending County Code 2-2 et seq. The following is a description of the proposed map and Ordinance:

#### Districts

James City County retains its five election districts - Berkeley, Jamestown, Powhatan, Stonehouse, and Roberts. An uneven increase in County population resulted in the following changes to districts: (i) Stonehouse loses 1,941 people to Powhatan; (ii) Powhatan loses 501 people to Berkeley; and (iii) Berkeley loses 961 people to Roberts. Jamestown remains the same. Overall, the map moves 3,403 persons across districts - roughly 4% of the total population. Districts are within 750 people of each other.

#### Precincts

The current Ordinance establishes 19 precincts. The proposed Ordinance establishes 18 precincts - the Berkeley, Jamestown, and Powhatan Districts each have four precincts and the Roberts and Stonehouse Districts each have three precincts - with the Roberts District losing one precinct. Precincts in the Berkeley, Powhatan, and Roberts Districts are amended to account for new voters in the district. Roberts A is unchanged. Precincts in the Stonehouse District are amended to account for a larger than permitted precinct. Two precincts in the Jamestown District are amended to put voters closer to a new polling place. Jamestown C and D are unchanged. As required by Va. Code, there are no split precincts and precincts contain no more than 5,000 registered voters.

#### Voter Satellite Office and Polling Places

4095 Ironbound Road, in the Courthouse Green subdivision behind the Williamsburg-James City County Courthouse, is the new Voter Satellite Office to be used for absentee voting. This location is also the new office for the General Registrar and a polling place on Election Day.

The polling place for Jamestown A changes from Legacy Hall to Courthouse Green. The polling place for Powhatan C changes from Toano Middle School to LifePointe Christian Church. The polling place for Stonehouse A changes from Hickory Neck Episcopal Church to Toano Middle School. Because Roberts C is incorporated into Roberts B, Mt. Gilead Baptist Church is no longer a polling place.

An Ordinance to Amend and Reordain James City County Code Chapter 2, Article II. Magisterial District, Election Districts and Election Precincts

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**B. NEXT STEPS**

Va. Code requires the County to redistrict every 10 years following the decennial Census; therefore, staff recommends adoption of the proposed map and Ordinance.

Should the Board adopt the proposed map and Ordinance, the new Rights of Voters Act requires the County to submit its newly adopted map and Ordinance to the Attorney General's (AG) Office for certification. A certification of no objection is deemed to have been issued if the AG does not object within 60 days of the County's submission. The County's General Registrar may administer the new Ordinance and map upon receipt of a certification of no objection.

If adopted, the new map and Ordinance will be used for the next primary election on June 21, 2022, and the next general election on November 8, 2022.

EP/JP/md

AmdCh2Art2DistPrec-mem

Attachment

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 2, ADMINISTRATION, OF THE CODE OF THE COUNTY OF JAMES CITY, VIRGINIA, BY AMENDING ARTICLE II, MAGISTERIAL DISTRICT, ELECTION DISTRICTS AND ELECTION PRECINCTS; BY AMENDING SECTION 2-2, DESIGNATION AND BOUNDARIES OF MAGISTERIAL DISTRICT; SECTION 2-3, DESIGNATION, POPULATION, AND ELECTION CYCLE OF DISTRICTS; SECTION 2-4, ELECTION PRECINCTS AND POLLING PLACES ESTABLISHED; SECTION 2-4.1, CENTRAL ABSENTEE VOTER ELECTION DISTRICT; SECTION 2-4.2, VOTER SATELLITE OFFICES; SECTION 2-5, ELECTION DISTRICT BOUNDARIES; AND SECTION 2-6, ONE SUPERVISOR FROM EACH ELECTION DISTRICT.

BE IT ORDAINED by the Board of Supervisors of the County of James City, Virginia, that Chapter 2, Administration, is hereby amended and reordained by amending Article II, Magisterial District, Election Districts and Election Precincts; by amending Section 2-2, Designation and boundaries of magisterial district; Section 2-3, Designation, population, and election cycle of districts; Section 2-4, Election precincts and polling places established; Section 2-4.1, Central absentee voter election district; Section 2-4.2, Voter satellite offices; Section 2-5, Election district boundaries; and Section 2-6, One supervisor from each election district.

**Chapter 2. Administration**

**Article II. Magisterial District, Election Districts and Election Precincts**

**Sec. 2-2. Designation and boundaries of magisterial district.**

There shall be one magisterial district to be known and designated as the James City County Magisterial District. The boundaries of such district shall be contiguous with and identical to the boundaries of the county.

**Sec. 2-3. Designation, population, and election cycle of districts.**

(a) The election districts with populations set forth are as follows:

Population

01	Election district, Berkeley	<del>13,285</del> 15,206
02	Election district, Jamestown	<del>13,536</del> 15,943
03	Election district, Powhatan	<del>13,302</del> 15,901
04	Election district, Stonehouse	<del>13,147</del> 15,829
05	Election district, Roberts	<del>13,739</del> 15,375

(b) Staggered term election cycle by district:

- 01 Election district, Berkeley, shall hold an election in 2015 and every four years thereafter;
- 02 Election district, Jamestown, shall hold an election in 2017 and every four years thereafter;
- 03 Election district, Powhatan, shall hold an election in 2017 and every four years thereafter;
- 04 Election district, Stonehouse, shall hold an election in 2015 and every four years thereafter;
- 05 Election district, Roberts, shall hold an election in 2015 and every four years thereafter.

**Sec. 2-4. Election precincts and polling places established.**

- (a) Pursuant to authority contained in the Code of Virginia, Chapter 24.2, the precincts and their respective polling places for the county are hereby created and established as set forth in this section.
- (b) The precincts for each election district and the polling place for each precinct shall be set forth below:

*Berkeley Election District 01:*

- Precinct 0101 - Jamestown High School polling place.
- Precinct 0102 - Clara Byrd Baker Elementary School polling place.
- Precinct 0103 - Matoaka Elementary School polling place.
- Precinct 0104 - James City County Fire Administration polling place.

*Jamestown Election District 02:*

- Precinct 0201 - ~~Legacy Hall polling place~~ Courthouse Green polling place.
- Precinct 0202 - James City County Recreation Center polling place.
- Precinct 0203 - Upward Church polling place.
- Precinct 0204 - King of Glory Lutheran Church polling place.

*Powhatan Election District 03:*

- Precinct 0301 - Hornsby Middle School polling place.
- Precinct 0302 - Lafayette High School polling place.
- Precinct 0303 - ~~Toano Middle School polling place.~~ LifePointe Church-Toano polling place.
- Precinct 0304 - Warhill High School polling place.

*Stonehouse Election District 04:*

- Precinct 0401 - ~~Hickory Neck Episcopal Church polling place.~~ Toano Middle School polling place.
- Precinct 0402 - Norge Elementary School polling place.
- Precinct 0403 - Stonehouse Elementary School polling place.

*Roberts Election District 05:*

- Precinct 0501 - James River Elementary School polling place.
- ~~Precinct 0502 - Mt. Gilead Baptist Church polling place.~~
- Precinct 0502<sup>3</sup> - Grace Baptist Church polling place.
- Precinct 0503<sup>4</sup> - Rawls Byrd Elementary School polling place.

**Sec. 2-4.1. Central absentee voter election district.**

- (a) There is hereby established for the county a central absentee voter election district for all elections as defined by section 24.2-712 of the Code of Virginia (1950), as amended. The polling place of the central absentee voter election district shall be located in close proximity to the registrar's office.
- (b) The central absentee voter election district shall conform in all aspects with section 24.2-712 of the Code of Virginia (1950), as amended.

**Sec. 2-4.2. Voter satellite offices.**

- (a) There is hereby established for the county a voter satellite office at ~~the James City County Recreation Center~~ 4095 Ironbound Road in the Courthouse Green subdivision to be used for absentee voting in person.
- (b) Not later than 55 days prior to any election, the general registrar shall post notice of the voter satellite office location and the dates and hours of operation in the office of the general registrar and on the official website for the county. Such notice shall remain in the office of the general registrar and on the official website for the county for the duration of the period during which absentee voting in person is available.
- (c) Such location shall be the equivalent of the general registrar's office for the purposes of completing the application for an absentee ballot in person.

**Sec. 2-5. Election district boundaries.**

*Berkeley Election District 01:*

*Precinct 0101 (Berkeley A).* Beginning at the intersection of State Route 629 and Mill Creek; thence southerly following the centerline of Mill Creek following the easterly side of Lake Powell; thence along the easterly side of Lake Powell to its intersection with State Route 31; thence southerly along ~~State Route 31 to its intersection with State Route 682; thence southerly along the centerline of State Route 682 to its intersection with an unnamed National Park Service driveway; thence southwesterly along the centerline of the unnamed National Park Service driveway to its intersection with Colonial National Historical Parkway; thence westerly along the centerline of Colonial National Historical Parkway to its intersection with Colonial National Historical Parkway Route 359; thence along the centerline of Colonial National historical Parkway Route 359 to its intersection with State Route 31; thence southwesterly along the centerline of State Route 31 extended to its intersection with the centerline of the James River and the James City County-Surry County boundary line; thence northwesterly along the centerline of the James River and the James City County-Surry County boundary line to the centerline of Shellbank Creek extended to the centerline of the James River and the James City County-Surry County boundary line; thence along the centerline of Shellbank Creek to its intersection with State Route 5; thence easterly along the centerline of State Route 5 to its intersection with State Route 614; hence southeasterly along the centerline of State Route 614 to its intersection with State Route 31; thence northwesterly along the centerline of State Route 31 to its intersection with State Route 615; thence northerly along the centerline of State Route 615 to its intersection with State Route 629; thence easterly along the centerline of State Route 629 to the point of beginning~~ the centerline of Powhatan Creek; thence southerly following the centerline of Powhatan Creek to its intersection with State Route 31, thence easterly following the centerline of State Route 31 to its intersection with State Route 681; thence northerly following the centerline of State Route 681 to its intersection with State Route 629; thence easterly following the centerline of State Route 629 to the point of beginning.

*Precinct 0102 (Berkeley B). Beginning at the intersection of Mill Creek and State Route 5; thence southerly following the centerline of Mill Creek to Hickory Signpost Road; thence westerly following the centerline of Hickory Signpost Road to its intersection with Ironbound Road; thence southerly following the centerline of Ironbound Road to its intersection with Sandy Bay Road; thence southerly following the centerline of Sandy Bay Road to its intersection with State Route 31; thence westerly following the centerline of State Route 31 to its intersection with Powhatan Creek, thence northerly following the centerline of Powhatan Creek to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to its intersection with State Route 614; thence northwesterly following the centerline of State Route 614 to its intersection with State Route 6135; thence easterly following the centerline of State Route 6135 to its intersection with Powhatan Creek; thence southerly following the centerline of Powhatan Creek to its intersection with Monticello Avenue; thence easterly following the centerline of Monticello Avenue to its intersection with State Route 613; thence southeasterly following the centerline of State Route 613 to its intersection with State Route 615; thence southerly following the centerline of State Route 615 to its intersection with State Route 5; thence easterly following the centerline of State Route 5 to the point of beginning.*

*Precinct 0103 (Berkeley C). Beginning at the intersection of State Route 633 and State Route 614; thence southerly following the centerline of State Route 614 to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to its intersection with Shellbank Creek; thence southerly following the centerline of Shellbank Creek to its intersection with the James River; thence westerly following the centerline of the James River to its intersection with the centerline of the Chickahominy River and the James City County-Charles City County boundary line; thence northerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to a line extending from the mouth of Nettles Creek; thence southeasterly following the centerline of Nettles Creek to its intersection with the edge of Census Block Number 510950803061052; thence easterly following the northern boundary line of Census Block Number 510950803061052 to its intersection with State Route 633; thence northeasterly following the centerline of State Route 633 to the point of beginning. State Route 5 and Ironbound Road; thence northerly following the centerline of Ironbound Road to its intersection with News Road; thence northwesterly following the centerline of News Road to its intersection with Monticello Avenue; thence southwestly following the centerline of Monticello Avenue to its intersection with Powhatan Creek; thence northerly following the centerline of Powhatan Creek to its intersection with News Road; thence westerly following the centerline of News Road to its intersection with State Route 614; thence southerly following the centerline of State Route 614 to Brick Bat Road; thence southwestly following the centerline of Brick Bat Road to its intersection with State Route 5; thence northwesterly following the centerline of State Route 5 to the centerline of the Chickahominy River and the James City County Charles City County boundary line; thence southerly following the centerline of the Chickahominy River to its intersection with the James River; thence easterly following the centerline of the James River to its intersection with a line extending south from the mouth of Shellbank Creek; thence northerly following Shellbank Creek to its intersection with State Route 5; thence easterly following the centerline of State Route 5 to the point of beginning.*

*Precinct 0104 (Berkeley D)*. Beginning at the intersection of State Route 31 and the James City County-City of Williamsburg boundary line; thence northwesterly following the James City County-City of Williamsburg boundary line to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to Mill Creek; thence southerly following the centerline of Mill Creek to the easterly side of Lake Powell; thence along the easterly side of Lake Powell to State Route 31; thence northeasterly following the centerline of State Route 31 to the point of beginning. ~~And beginning at the intersection of State Route 31 and the Colonial National Historical Parkway Route 359 to its intersection with Colonial National Historical Parkway Route 90003; thence easterly following the centerline of Colonial National Historical Parkway Route 90003 to Mill Creek; thence southeasterly to the centerline of The Thorofare; thence southeasterly following the centerline of The Thorofare extended to the centerline of the James River and the James City County-Surry County boundary line; thence northwesterly following the centerline of the James River and the James City County-Surry County boundary line to the extended-centerline of State Route 31 to the point of beginning.~~

*Jamestown Election District 02:*

*Precinct 0201 (Jamestown A)*. Beginning at the intersection of State Route 5 and State Route 199; thence ~~southeasterly~~*northeasterly* following the centerline of State Route 5 to its intersection with the James City County-City of Williamsburg boundary line; thence northerly ~~along~~*following* the James City County-City of Williamsburg boundary line to its intersection with the centerline of Ironbound Road and *the southeast corner of* Parcel 3842300001; thence westerly following the centerline of Ironbound Road to its intersection with the line extending from the centerline of Ironbound Road; thence westerly following the extended line ~~to its intersection with~~*across* State Route 199 ~~to its intersection with Ironbound Road~~; thence southeasterly following the centerline of ~~State Route 199~~*Ironbound Road* to its intersection with ~~Mill Creek~~*State Route 615*, thence southerly following the centerline of State Route 615 to its intersection with State Route 5; thence ~~southerly~~*northeasterly* following Mill Creek to its intersection with State Route 5; thence ~~northeasterly~~*following the centerline of State Route 5* to the point of beginning.

*Precinct 0202 (Jamestown B)*. Beginning at the intersection of Monticello Avenue and the James City County-City of Williamsburg boundary line; thence northerly following the James City County-City of Williamsburg boundary line to its intersection with *the James City County-York County boundary line*; thence northerly following *the James City County-York County boundary line to its intersection with* State Route 645; thence ~~easterly~~*westerly* following the centerline of State Route 645 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with Olde Towne Road; thence southwestly following the centerline of Olde Towne Road to its intersection with State Route 612; thence southeasterly following the centerline of State Route 612 to its intersection with State Route 199; thence southerly *following the centerline of State Route 199* to its intersection with a line extending easterly from the centerline of Ironbound Road; thence southwestly following the centerline of Ironbound Road to its intersection with State Route 5; thence easterly following the centerline of State Route 5 to its intersection with Mill Creek; thence northerly following the centerline of Mill Creek to its intersection with State Route 199; thence northwesterly following the centerline of State Route 199 to its intersection with the line extending from the centerline of Ironbound Road; thence easterly following the extended line and the centerline of Ironbound Road to its intersection with the southeast corner of Parcel 3842300001 and the James City County-City of Williamsburg boundary line; thence northeasterly following the James City County-City of Williamsburg boundary line to the point of beginning.

*Precinct 0203 (Jamestown C).* Beginning at the intersection of Powhatan Creek and State Route 613; thence easterly following the centerline of State Route 613 to its intersection with the ~~unnamed creek south of Firestone~~ eastern fork of Powhatan Creek; thence northeasterly along the centerline of the ~~unnamed eastern fork of Powhatan Creek creek~~ to its intersection with the northwest corner of Parcel 3830100034A; thence easterly along the northern boundary *line* of Parcel 3830100034A to its intersection, along an extended line, with State Route 199; thence southerly following the centerline of State Route 199 to the point created by the intersecting of centerlines at State Route 199 and Monticello Avenue and the extended centerline of Ironbound Road; thence southwesterly following the centerline of Ironbound Road to its intersection of State Route 613; thence northwesterly following the centerline of State Route 613 to its intersection with Monticello Avenue; thence westerly following the centerline of Monticello Avenue to its intersection with Powhatan Creek; thence northerly following the centerline of Powhatan Creek to the point of beginning.

*Precinct 0204 (Jamestown D).* Beginning at the intersection of State Route 612 and Olde Towne Road; thence northwesterly *following the centerline of State Route 612* to its intersection with ~~Powhatan Creek~~ Longhill Swamp; thence southwesterly following the centerline of ~~Powhatan Creek~~ Longhill Swamp to its intersection *with Powhatan Creek*; *thence southerly following the centerline of Powhatan Creek to its intersection* with State Route 613; thence easterly following the centerline of State Route 613 to its intersection with the ~~unnamed creek south of Firestone~~ eastern fork of Powhatan Creek; thence northeasterly along the centerline of the ~~eastern fork of Powhatan Creek~~ unnamed creek to its intersection with the northwest corner of Parcel 3830100034A; thence easterly along the northern boundary of Parcel 3830100034A to its intersection, along an extended line, with State Route 199; thence northerly following the centerline of State Route 199 to its intersection with State Route 612; thence northwesterly following the centerline of State Route 612 to the point of beginning.

*Powhatan Election District 03:*

*Precinct 0301 (Powhatan A).* Beginning at the intersection of State Route 614 and State Route 612; thence northerly following the centerline of State Route 614 to its intersection with State Route 611; thence westerly following the centerline of State Route 611 to its intersection with State Route 632; thence northwesterly following the centerline of State Route 632 to its intersection with Yarmouth Creek; thence *southwesterly* following the centerline of Yarmouth Creek to its intersection with Shipyard Creek; thence westerly following the centerline of Shipyard Creek to the intersection of the centerline of the Chickahominy River and the James City County-Charles City County boundary line; thence southerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to its intersection with *a line extending from the mouth of Nettles Creek*; *thence southeasterly following the centerline of Nettles Creek to its intersection with the edge of U.S. Census Block number 510950803061052*; *thence easterly following the northern boundary line of U.S. Census Block number 510950803061052 to its intersection with State Route 633*; *thence northeasterly following the centerline of State Route 633 to its intersection with State Route 614*; *thence northerly following the centerline of State Route 614*~~State Route 5~~; ~~thence easterly following the centerline of State Route 5 to its intersection with Brick Bat Road~~; ~~thence northeasterly following the centerline of Brick Bat Road to its intersection with State Route 614~~; ~~thence northerly along the centerline of State Route 614 to its intersection with State Route 613~~; ~~thence easterly along the centerline of State Route 613 to its intersection with Powhatan Creek~~; ~~thence northerly along the centerline of Powhatan Creek to its intersection with State Route 612~~; ~~thence westerly along the centerline of State Route 612 to the point of beginning.~~

*Precinct 0302 (Powhatan B). Beginning at the intersection of State Route 614 and the high power electrical line right-of-way west of Linwood Drive; thence southwesterly following the centerline of State Route 614 to its intersection with State Route 612; thence easterly following the centerline of State Route 612 to its intersection with the western boundary line of U.S. Census Block Number 510950803053002; thence northerly following the western boundary line of U.S. Census Block Number 510950803053002 to a point 105 feet east of the centerline of the Lafayette High School main entrance road; thence on a line due north until its intersection with the high power electrical line right-of-way at the unnamed dirt road 2,767 feet southeast of State Route 614; thence northwesterly along the high power electrical line right-of-way to the point of beginning.*

*Precinct 0303 (Powhatan C). Beginning at the intersection of Yarmouth Creek and State Route 632; thence northerly following the centerline of State Route 632 to its intersection with State Route 631; thence easterly following the centerline of State Route 631 to its intersection with a line extending across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015; thence northwesterly across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015 to its intersection with State Route 776; thence northwesterly following the centerline of State Route 776 to its intersection with State Route 610; thence northeasterly following the centerline of State Route 610 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 30; thence northwesterly following the centerline of State Route 30 to its intersection with the James City County-New Kent County boundary line; thence southwesterly following the James City County-New Kent County boundary line to its intersection with Diascund Creek and the James City County-New Kent County boundary line; thence southerly following the centerline of Diascund Creek and the James City County-New Kent County boundary line of U.S. Route 60 and State Route 610; thence northerly following the centerline of U.S. Route 60 to its intersection with U.S. Route 30; thence westerly following the centerline of U.S. Route 60 to its intersection with Diascund Creek and the James City County New Kent County boundary line; thence southerly following the centerline of Diascund Creek and the James City County New Kent County boundary line to its intersection with the Chickahominy River; thence southerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to its intersection with Shipyard Creek; thence easterly following the centerline of Shipyard Creek to its intersection with Little Creek; thence northerly following the centerline of Little Creek to its intersection with State Route 631; thence northerly following the centerline of State Route 631 to its intersection with State Route 610; thence easterly following the centerline of State Route 610 Yarmouth Creek; thence easterly following the centerline of Yarmouth Creek to the point of beginning.*

*Precinct 0304 (Powhatan D).* Beginning at the intersection of U.S. Route 60 and State Route 614; thence westerly following the centerline of State Route 614 to its intersection with the high power electrical right of way east of Linwood Drive; thence southeasterly following the centerline of the high power electrical right of way to its intersection with an unnamed dirt road 2,767 feet from State Route 614; thence due south in a straight line until it intersects with the centerline of State Route 612 105 feet east of the centerline of the Lafayette High School main entrance road; thence easterly following the centerline of State Route 612 to its intersection with Olde Towne Road; thence northeasterly following the centerline of Olde Towne Road to its intersection with U.S. Route 60; thence southerly following the centerline of U.S. Route 60 to its intersection with State Route 645; thence easterly following the centerline of State Route 645 to its intersection with the James City County York County boundary line; thence northerly following the James City County York County boundary line to the point of beginning; State Route 612 and State Route 658; thence northwesterly following the centerline of State Route 612 to its intersection with the western boundary line of U.S. Census Block Number 510950803053002; thence northerly following the western boundary line of U.S. Census Block Number 510950803053002 to its intersection with the high power electrical line right-of-way; thence northwesterly along the high power electrical line right-of-way to its intersection with State Route 614; thence easterly following State Route 614 to its intersection with the James City County-York County boundary line; thence southeasterly following the James City County-York County boundary line to its intersection with State Route 645; thence westerly following State Route 645 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 658; thence southwesterly following the centerline of State Route 658 to the point of beginning.

*Stonehouse Election District 04:*

*Precinct 0401 (Stonehouse A).* Beginning at the intersection of State Route 30607 and U.S. Route 60 Interstate 64; thence southnortheasterly following the centerline of State Route 607 U.S. Interstate 64 to its intersection with State Route 607 where it crosses the centerline of U.S. Interstate 64; thence northwesterly southwesterly following the centerline of U.S. Interstate 64 State Route 607 to its intersection with the James City County New Kent County boundary line U.S. Route 60; thence southwesterly westerly following the James City County New Kent County boundary line U.S. Route 60 to its intersection with State U.S. Route 6490; thence southeasterly southerly following the centerline of U.S. Route 60 State Route 649 to the point of beginning its intersection with the eastern boundary line of U.S. Census Block number 510950804022002; thence southerly along the eastern boundary line of U.S. Census Block number 510950804022002 to its intersection with the northern boundary line of U.S. Census Block number 510950804022019; thence easterly following the northern boundary line of U.S. Census Block number 510950804022019 to its easternmost intersection with Yarmouth Creek; thence southerly following the centerline of Yarmouth Creek to its intersection with Cranston's Pond; thence westerly following the centerline of Cranston's Pond to its intersection with Yarmouth Creek, thence southwesterly following the centerline of Yarmouth Creek to its intersection with State Route 632; thence northwesterly following the centerline of State Route 632 to its intersection with State Route 631; thence westerly following the centerline of State Route 631 to its intersection with a line extending across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015; thence northwesterly across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015 to its intersection with a line extending from the centerline of State Route 776; thence northwesterly following the centerline of State Route 776 to its intersection with State Route 610; thence northeasterly following the centerline of State Route 610 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 30; thence northerly following the centerline of State Route 30 to the point of beginning.

*Precinct 0402 (Stonehouse B).* Beginning at the intersection of State Route 607 and U.S. Route 60; thence northeasterly following the centerline of State Route 607 to where it crosses the centerline of U.S. Interstate 64; thence southeasterly following the centerline of U.S. Interstate 64 to its intersection with the James City County-York County boundary line; thence southerly following the James City County-York County boundary line to its intersection with U.S. Route 60; thence southeasterly following the centerline of U.S. Route 60 to its intersection with State Route 614; thence westerly following the centerline of State Route 614 to its intersection with State Route 611; thence ~~north~~westerly following the centerline of Route 611 to its intersection with State Route 632; thence ~~north~~westerly following the centerline of State Route 632 to its intersection with Yarmouth Creek; thence ~~southwesterly~~~~northeasterly~~ following the centerline of Yarmouth Creek to its intersection with ~~Little Creek~~~~Cranston's Pond~~; thence ~~northerly~~~~easterly~~ following the centerline of ~~Little Creek~~~~Cranston's Pond~~ to its intersection with ~~State Route 631~~~~Yarmouth Creek~~; thence northerly following the centerline of ~~State Route 631~~~~Yarmouth Creek~~ to its intersection with ~~State Route 610~~~~the northern boundary line of U.S. Census Block number 510950804022019~~; thence ~~easterly on State Route 610 to its intersection with U.S. Route 60~~; thence ~~easterly following the centerline of U.S. Route 60~~westerly along the northern boundary line of U.S. Census Block number 510950804022019 to its intersection with the western boundary line of U.S. Census Block number 510950804022002; thence northerly following western boundary line of U.S. Census Block number 510950804022002 to its intersection with State Route 649; thence northerly following the centerline of State Route 649 to its intersection with U.S. Route 60; thence easterly following the centerline of U.S. Route 60 to the point of beginning.

*Precinct 0403 (Stonehouse C).* Beginning at the intersection of State Route 30 and James City County-New Kent County boundary line; thence easterly following the James City County-New Kent County boundary line to the centerline of the York River; thence southeasterly following the centerline of the York River and the James City County-King and Queen County boundary line to a point being the corner of the James City County-York County boundary line; thence westerly following the James City County-York County boundary line to its intersection with U.S. Interstate 64; thence northerly following the centerline of U.S. Interstate 64 to its intersection with the ~~James City County-New Kent County boundary line~~~~State Route 30~~; thence ~~northerly~~~~easterly~~ following the ~~James City County-New Kent County boundary line~~~~State Route 30~~ to the point of beginning.

*Roberts Election District 05:*

*Precinct 0501 (Roberts A).* Starting at the intersection of the centerline of the James River and a line extending from the Grove Creek; thence northerly following the centerline of Grove Creek to its intersection with the Dominion Virginia Power easement; thence northwesterly following the centerline of the Dominion Virginia Power easement to the intersection with the James City County-York County ~~boundary line~~~~border~~; thence easterly following the James City County-York County boundary line; then southerly following the James City County-York County boundary line to its intersection with the James City County-City of Newport News boundary line; thence southerly following the James City County-City of Newport News boundary to the centerline of the James River; thence northerly following the centerline of the James River to the point of beginning.

*Precinct 0502 (Roberts B).* Starting at the intersection of the centerline of the James River and a line extending from the Grove Creek; thence northerly following the centerline of Grove Creek to its intersection with the Dominion Virginia Power easement; thence northwesterly following the centerline of the Dominion Virginia Power easement to the intersection with the James City County-York County ~~border~~*boundary line*; thence northwesterly following the James City County-York County boundary line to the point where it intersects with ~~State Route 199~~*Tutter's Neck Creek*; thence ~~westerly~~*southerly* following the centerline of ~~State Route 199~~*Tutter's Neck Creek* to its intersection with the ~~Colonial National Historical Parkway~~*Halfway Creek*; thence ~~westerly~~*southerly* following the centerline of ~~Colonial National Historical Parkway~~*Halfway Creek* to its ~~the~~ intersection with the *Colonial National Historic Parkway*; thence *southerly following the centerline of the Colonial National Historic Parkway to the intersection* of an extended line with the centerline of the James River; thence easterly following the centerline of the James River to the point of beginning.

*Precinct 0503.* Beginning at a point created by extending the centerline of Bassett Drive to the centerline of Penniman Road; thence southeasterly following the centerline of Penniman Road and the James City County York County boundary line to its intersection with Oak Drive; thence southeasterly following the centerline of Oak Drive to its intersection with Government Road; thence southeasterly following the centerline of Government Road to its intersection with a point made by extending its centerline to the centerline of State Route 199 and the James City County-City of Williamsburg boundary line; thence northwesterly following the James City County-City of Williamsburg boundary line to the point of beginning.

*Precinct 0503 (Roberts C)4.* Beginning at the intersection of the James City County-York County boundary line and Tutter's Neck Creek; thence southerly following the centerline of Tutter's Neck Creek to its intersection with Halfway Creek; thence westerly following the centerline of Halfway Creek to its intersection with the Colonial National Historic Parkway; thence southerly following the centerline of the Colonial National Historic Parkway to the intersection of an extended line with the centerline of the James River; thence westerly following the centerline of the James River to its intersection with a line extending from the centerline of State Route 31; thence northerly following the centerline of State Route 31 to its intersection with the James City County-York County boundary line; thence easterly following the centerline of the James City County-York County boundary line to the point of beginning. Beginning at the intersection of State Route 199 and State Route 31; thence southwestly following the centerline of State Route 31 to its intersection with an unnamed National Park Service driveway; thence southeasterly along the centerline of the unnamed National Park Service driveway to its intersection with the Colonial National Historical Parkway; thence easterly following the centerline of the Colonial National Historical Parkway to its intersection with Mill Creek; thence southerly following the centerline of Mill Creek extended to the centerline of The Thorofare; thence southeasterly following the centerline of The Thorofare extended to the centerline of the James River and the James City County Surry County boundary line; thence easterly following the centerline of the James River and the James City County Surry County boundary line to a point due south of the mouth of College Creek; thence northerly along the extended line and College Creek to its intersection with the Colonial National Historical Parkway; thence northerly following the centerline of the Colonial National Historical Parkway to its intersection with State Route 199; thence westerly following the centerline of State Route 199 to the point of beginning.

**Sec. 2-6. One supervisor from each election district.**

One supervisor shall be elected from each election district as created under this chapter.

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John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

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Teresa J. Saeed  
Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	___	___	___	___
HIPPLE	___	___	___	___
LARSON	___	___	___	___
SADLER	___	___	___	___
MCGLENNON	___	___	___	___

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March,  
2022.

AmdCh2Art2DistPrec-ord

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 2, ADMINISTRATION, OF THE CODE OF THE COUNTY OF JAMES CITY, VIRGINIA, BY AMENDING ARTICLE II, MAGISTERIAL DISTRICT, ELECTION DISTRICTS AND ELECTION PRECINCTS; BY AMENDING SECTION 2-2, DESIGNATION AND BOUNDARIES OF MAGISTERIAL DISTRICT; SECTION 2-3, DESIGNATION, POPULATION, AND ELECTION CYCLE OF DISTRICTS; SECTION 2-4, ELECTION PRECINCTS AND POLLING PLACES ESTABLISHED; SECTION 2-4.1, CENTRAL ABSENTEE VOTER ELECTION DISTRICT; SECTION 2-4.2, VOTER SATELLITE OFFICES; SECTION 2-5, ELECTION DISTRICT BOUNDARIES; AND SECTION 2-6, ONE SUPERVISOR FROM EACH ELECTION DISTRICT.

BE IT ORDAINED by the Board of Supervisors of the County of James City, Virginia, that Chapter 2, Administration, is hereby amended and reordained by amending Article II, Magisterial District, Election districts and Election Precincts; by amending Section 2-2, Designation and boundaries of magisterial District; Section 2-3, Designation, population, and election cycle of districts; Section 2-4, Election precincts and polling places established; Section 2-4.1, Central absentee voter election district; Section 2-4.2, Voter satellite offices; Section 2-5, Election district boundaries; and Section 2-6, One supervisor from each election district.

**Chapter 2. Administration**

**Article II. Magisterial District, Election Districts and Election Precincts**

**Sec. 2-2. Designation and boundaries of magisterial district.**

There shall be one magisterial district to be known and designated as the James City County Magisterial District. The boundaries of such district shall be contiguous with and identical to the boundaries of the county.

**Sec. 2-3. Designation, population, and election cycle of districts.**

(a) The election districts with populations set forth are as follows:

Population

01	Election district, Berkeley	15,206
02	Election district, Jamestown	15,943
03	Election district, Powhatan	15,901
04	Election district, Stonehouse	15,829
05	Election district, Roberts	15,375

(b) Staggered term election cycle by district:

- 01 Election district, Berkeley, shall hold an election in 2015 and every four years thereafter;
- 02 Election district, Jamestown, shall hold an election in 2017 and every four years thereafter;
- 03 Election district, Powhatan, shall hold an election in 2017 and every four years thereafter;
- 04 Election district, Stonehouse, shall hold an election in 2015 and every four years thereafter;
- 05 Election district, Roberts, shall hold an election in 2015 and every four years thereafter.

**Sec. 2-4. Election precincts and polling places established.**

- (a) Pursuant to authority contained in the Code of Virginia, Chapter 24.2, the precincts and their respective polling places for the county are hereby created and established as set forth in this section.
- (b) The precincts for each election district and the polling place for each precinct shall be set forth below:

*Berkeley Election District 01:*

- Precinct 0101 - Jamestown High School polling place.
- Precinct 0102 - Clara Byrd Baker Elementary School polling place.
- Precinct 0103 - Matoaka Elementary School polling place.
- Precinct 0104 - James City County Fire Administration polling place.

*Jamestown Election District 02:*

- Precinct 0201 - Courthouse Green polling place.
- Precinct 0202 - James City County Recreation Center polling place.
- Precinct 0203 - Upward Church polling place.
- Precinct 0204 - King of Glory Lutheran Church polling place.

*Powhatan Election District 03:*

- Precinct 0301 - Hornsby Middle School polling place.
- Precinct 0302 - Lafayette High School polling place.
- Precinct 0303 - LifePointe Church-Toano polling place.
- Precinct 0304 - Warhill High School polling place.

*Stonehouse Election District 04:*

- Precinct 0401 - Toano Middle School polling place.
- Precinct 0402 - Norge Elementary School polling place.
- Precinct 0403 - Stonehouse Elementary School polling place.

*Roberts Election District 05:*

- Precinct 0501 - James River Elementary School polling place.
- Precinct 0502 - Grace Baptist Church polling place.
- Precinct 0503 - Rawls Byrd Elementary School polling place.

**Sec. 2-4.1. Central absentee voter election district.**

- (a) There is hereby established for the county a central absentee voter election district for all elections as defined by section 24.2-712 of the Code of Virginia (1950), as amended. The polling place of the central absentee voter election district shall be located in close proximity to the registrar's office.
- (b) The central absentee voter election district shall conform in all aspects with section 24.2-712 of the Code of Virginia (1950), as amended.

**Sec. 2-4.2. Voter satellite offices.**

- (a) There is hereby established for the county a voter satellite office at 4095 Ironbound Road in the Courthouse Green subdivision to be used for absentee voting in person.
- (b) Not later than 55 days prior to any election, the general registrar shall post notice of the voter satellite office location and the dates and hours of operation in the office of the general registrar and on the official website for the county. Such notice shall remain in the office of the general registrar and on the official website for the county for the duration of the period during which absentee voting in person is available.
- (c) Such location shall be the equivalent of the general registrar's office for the purposes of completing the application for an absentee ballot in person.

**Sec. 2-5. Election district boundaries.**

*Berkeley Election District 01:*

*Precinct 0101 (Berkeley A).* Beginning at the intersection of State Route 629 and Mill Creek; thence southerly following the centerline of Mill Creek following the easterly side of Lake Powell; thence along the easterly side of Lake Powell to its intersection with State Route 31; thence southerly along the centerline of State Route 31 extended to its intersection with the centerline of the James River and the James City County-Surry County boundary line; thence northwesterly along the centerline of the James River and the James City County-Surry County boundary line to the centerline of Shellbank Creek extended to the centerline of the James River and the James City County-Surry County boundary line; thence along the centerline of Shellbank Creek to its intersection with State Route 5; thence easterly along the centerline of State Route 5 to its intersection with the centerline of Powhatan Creek; thence southerly following the centerline of Powhatan Creek to its intersection with State Route 31, thence easterly following the centerline of State Route 31 to its intersection with State Route 681; thence northerly following the centerline of State Route 681 to its intersection with State Route 629; thence easterly following the centerline of State Route 629 to the point of beginning.

*Precinct 0102 (Berkeley B).* Beginning at the intersection of Mill Creek and State Route 5; thence southerly following the centerline of Mill Creek to Hickory Signpost Road; thence westerly following the centerline of Hickory Signpost Road to its intersection with Ironbound Road; thence southerly following the centerline of Ironbound Road to its intersection with Sandy Bay Road; thence southerly following the centerline of Sandy Bay Road to its intersection with State Route 31; thence westerly following the centerline of State Route 31 to its intersection with Powhatan Creek, thence northerly following the centerline of Powhatan Creek to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to its intersection with State Route 614; thence northwesterly following the centerline of State Route 614 to its intersection with State Route 613; thence easterly following the centerline of State Route 613 to its intersection with Powhatan Creek; thence southerly following the centerline of Powhatan Creek to its intersection with Monticello Avenue; thence easterly following the centerline of Monticello Avenue to its intersection with State Route 613; thence southeasterly following the centerline of State Route 613 to its intersection with State Route 615; thence southerly following the centerline of State Route 615 to its intersection with State Route 5; thence easterly following the centerline of State Route 5 to the point of beginning.

*Precinct 0103 (Berkeley C).* Beginning at the intersection of State Route 633 and State Route 614; thence southerly following the centerline of State Route 614 to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to its intersection with Shellbank Creek; thence southerly following the centerline of Shellbank Creek to its intersection with the James River; thence westerly following the centerline of the James River to its intersection with the centerline of the Chickahominy River and the James City County-Charles City County boundary line; thence northerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to a line extending from the mouth of Nettles Creek; thence southeasterly following the centerline of Nettles Creek to its intersection with the edge of Census Block Number 510950803061052; thence easterly following the northern boundary line of Census Block Number 510950803061052 to its intersection with State Route 633; thence northeasterly following the centerline of State Route 633 to the point of beginning.

*Precinct 0104 (Berkeley D).* Beginning at the intersection of State Route 31 and the James City County-City of Williamsburg boundary line; thence northwesterly following the James City County-City of Williamsburg boundary line to its intersection with State Route 5; thence westerly following the centerline of State Route 5 to Mill Creek; thence southerly following the centerline of Mill Creek to the easterly side of Lake Powell; thence along the easterly side of Lake Powell to State Route 31; thence northeasterly following the centerline of State Route 31 to the point of beginning.

*Jamestown Election District 02:*

*Precinct 0201 (Jamestown A).* Beginning at the intersection of State Route 5 and State Route 199; thence northeasterly following the centerline of State Route 5 to its intersection with the James City County-City of Williamsburg boundary line; thence northerly following the James City County-City of Williamsburg boundary line to its intersection with the centerline of Ironbound Road and the southeast corner of Parcel 3842300001; thence westerly following the centerline of Ironbound Road to its intersection with the line extending from the centerline of Ironbound Road; thence westerly following the extended line across State Route 199 to its intersection with Ironbound Road; thence southeasterly following the centerline of Ironbound Road to its intersection with State Route 615; thence southerly following the centerline of State Route 615 to its intersection with State Route 5; thence northeasterly following the centerline of State Route 5 to the point of beginning.

*Precinct 0202 (Jamestown B).* Beginning at the intersection of Monticello Avenue and the James City County-City of Williamsburg boundary line; thence northerly following the James City County-City of Williamsburg boundary line to its intersection with the James City County-York County boundary line; thence northerly following the James City County-York County boundary line to its intersection with State Route 645; thence westerly following the centerline of State Route 645 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with Olde Towne Road; thence southwesterly following the centerline of Olde Towne Road to its intersection with State Route 612; thence southeasterly following the centerline of State Route 612 to its intersection with State Route 199; thence southerly following the centerline of State Route 199 to its intersection with a line extending easterly from the centerline of Ironbound Road; thence easterly following the extended line and the centerline of Ironbound Road to its intersection with the southeast corner of Parcel 3842300001 and the James City County-City of Williamsburg boundary line; thence northeasterly following the James City County-City of Williamsburg boundary line to the point of beginning.

*Precinct 0203 (Jamestown C).* Beginning at the intersection of Powhatan Creek and State Route 613; thence easterly following the centerline of State Route 613 to its intersection with the eastern fork of Powhatan Creek; thence northeasterly along the centerline of the eastern fork of Powhatan Creek to its intersection with the northwest corner of Parcel 3830100034A; thence easterly along the northern boundary line of Parcel 3830100034A to its intersection, along an extended line, with State Route 199; thence southerly following the centerline of State Route 199 to the point created by the intersecting of centerlines at State Route 199 and Monticello Avenue and the extended centerline of Ironbound Road; thence southwesterly following the centerline of Ironbound Road to its intersection of State Route 613; thence northwesterly following the centerline of State Route 613 to its intersection with Monticello Avenue; thence westerly following the centerline of Monticello Avenue to its intersection with Powhatan Creek; thence northerly following the centerline of Powhatan Creek to the point of beginning.

*Precinct 0204 (Jamestown D).* Beginning at the intersection of State Route 612 and Olde Towne Road; thence northwesterly following the centerline of State Route 612 to its intersection with Longhill Swamp; thence southwesterly following the centerline of Longhill Swamp to its intersection with Powhatan Creek; thence southerly following the centerline of Powhatan Creek to its intersection with State Route 613; thence easterly following the centerline of State Route 613 to its intersection with the eastern fork of Powhatan Creek; thence northeasterly along the centerline of the eastern fork of Powhatan Creek to its intersection with the northwest corner of Parcel 3830100034A; thence easterly along the northern boundary of Parcel 3830100034A to its intersection, along an extended line, with State Route 199; thence northerly following the centerline of State Route 199 to its intersection with State Route 612; thence northwesterly following the centerline of State Route 612 to the point of beginning.

*Powhatan Election District 03:*

*Precinct 0301 (Powhatan A).* Beginning at the intersection of State Route 614 and State Route 612; thence northerly following the centerline of State Route 614 to its intersection with State Route 611; thence westerly following the centerline of State Route 611 to its intersection with State Route 632; thence northwesterly following the centerline of State Route 632 to its intersection with Yarmouth Creek; thence southwesterly following the centerline of Yarmouth Creek to its intersection with Shipyard Creek; thence westerly following the centerline of Shipyard Creek to the intersection of the centerline of the Chickahominy River and the James City County-Charles City County boundary line; thence southerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to its intersection with a line extending from the mouth of Nettles Creek; thence southeasterly following the centerline of Nettles Creek to its intersection with the edge of U.S. Census Block number 510950803061052; thence easterly following the northern boundary line of U.S. Census Block number 510950803061052 to its intersection with State Route 633; thence northeasterly following the centerline of State Route 633 to its intersection with State Route 614; thence northerly following the centerline of State Route 614 to the point of beginning.

*Precinct 0302 (Powhatan B).* Beginning at the intersection of State Route 614 and the high power electrical line right-of-way west of Linwood Drive; thence southwesterly following the centerline of State Route 614 to its intersection with State Route 612; thence easterly following the centerline of State Route 612 to its intersection with the western boundary line of U.S. Census Block Number 510950803053002; thence northerly following the western boundary line of U.S. Census Block Number 510950803053002 to its intersection with the high power electrical line right-of-way; thence northwesterly along the high power electrical line right-of-way to the point of beginning.

*Precinct 0303 (Powhatan C).* Beginning at the intersection of Yarmouth Creek and State Route 632; thence northerly following the centerline of State Route 632 to its intersection with State Route 631; thence easterly following the centerline of State Route 631 to its intersection with a line extending across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015; thence northwesterly across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015 to its intersection with State Route 776; thence northwesterly following the centerline of State Route 776 to its intersection with State Route 610; thence northeasterly following the centerline of State Route 610 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 30; thence northwesterly following the centerline of State Route 30 to its intersection with the James City County-New Kent County boundary line; thence southwesterly following the James City County-New Kent County boundary line to its intersection with Diascund Creek and the James City County-New Kent County boundary line; thence southerly following the centerline of Diascund Creek and the James City County-New Kent County boundary line to its intersection with the Chickahominy River; thence southerly following the centerline of the Chickahominy River and the James City County-Charles City County boundary line to its intersection with Shipyard Creek; thence easterly following the centerline of Shipyard Creek to its intersection with Yarmouth Creek; thence easterly following the centerline of Yarmouth Creek to the point of beginning.

*Precinct 0304 (Powhatan D).* Beginning at the intersection of State Route 612 and State Route 658; thence northwesterly following the centerline of State Route 612 to its intersection with the western boundary line of U.S. Census Block Number 510950803053002; thence northerly following the western boundary line of U.S. Census Block Number 510950803053002 to its intersection with the high power electrical line right-of-way; thence northwesterly along the high power electrical line right-of-way to its intersection with State Route 614; thence easterly following State Route 614 to its intersection with the James City County-York County boundary line; thence southeasterly following the James City County-York County boundary line to its intersection with State Route 645; thence westerly following State Route 645 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 658; thence southwestly following the centerline of State Route 658 to the point of beginning.

*Stonehouse Election District 04:*

*Precinct 0401 (Stonehouse A).* Beginning at the intersection of State Route 30 and U.S. Interstate 64; thence southeasterly following the centerline of U.S. Interstate 64 to its intersection with State Route 607; thence southwestly following the centerline of State Route 607 to its intersection with U.S. Route 60; thence westerly following U.S. Route 60 to its intersection with State Route 649; thence southerly following the centerline of State Route 649 to its intersection with the eastern boundary line of U.S. Census Block number 510950804022002; thence southerly along the eastern boundary line of U.S. Census Block number 510950804022002 to its intersection with the northern boundary line of U.S. Census Block number 510950804022019; thence easterly following the northern boundary line of U.S. Census Block number 510950804022019 to its easternmost intersection with Yarmouth Creek; thence southerly following the centerline of Yarmouth Creek to its intersection with Cranston's Pond; thence westerly following the centerline of Cranston's Pond to its intersection with Yarmouth Creek, thence southwestly following the centerline of Yarmouth Creek to its intersection with State Route 632; thence northwesterly following the centerline of State Route 632 to its intersection with State Route 631; thence westerly following the centerline of State Route 631 to its intersection with a line extending across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015; thence northwesterly across Little Creek Reservoir following the southwestern boundary line of U.S. Census Block number 510950804022015 to its intersection with a line extending from the centerline of State Route 776; thence northwesterly following the centerline of State Route 776 to its intersection with State Route 610; thence northeasterly following the centerline of State Route 610 to its intersection with U.S. Route 60; thence northerly following the centerline of U.S. Route 60 to its intersection with State Route 30; thence northerly following the centerline of State Route 30 to the point of beginning.

*Precinct 0402 (Stonehouse B).* Beginning at the intersection of State Route 607 and U.S. Route 60; thence northeasterly following the centerline of State Route 607 to where it crosses the centerline of U.S. Interstate 64; thence southeasterly following the centerline of U.S. Interstate 64 to its intersection with the James City County-York County boundary line; thence southerly following the James City County-York County boundary line to its intersection with U.S. Route 60; thence southeasterly following the centerline of U.S. Route 60 to its intersection with State Route 614; thence westerly following the centerline of State Route 614 to its intersection with State Route 611; thence westerly following the centerline of Route 611 to its intersection with State Route 632; thence northwesterly following the centerline of State Route 632 to its intersection with Yarmouth Creek; thence northeasterly following the centerline of Yarmouth Creek to its intersection with Cranston's Pond; thence easterly following the centerline of Cranston's Pond to its intersection with Yarmouth Creek; thence northerly following the centerline of Yarmouth Creek to its intersection with the northern boundary line of U.S. Census Block number 510950804022019; thence westerly along the northern boundary line of U.S. Census Block number 510950804022019 to its intersection with the western boundary line of U.S. Census Block number 510950804022002; thence northerly following western boundary line of U.S. Census Block number 510950804022002 to its intersection with State Route 649; thence northerly following the centerline of State Route 649 to its intersection with U.S. Route 60; thence easterly following the centerline of U.S. Route 60 to the point of beginning.

*Precinct 0403 (Stonehouse C).* Beginning at the intersection of State Route 30 and James City County-New Kent County boundary line; thence easterly following the James City County-New Kent County boundary line to the centerline of the York River; thence southeasterly following the centerline of the York River and the James City County-King and Queen County boundary line to a point being the corner of the James City County-York County boundary line; thence westerly following the James City County-York County boundary line to its intersection with U.S. Interstate 64; thence northerly following the centerline of U.S. Interstate 64 to its intersection with the State Route 30; thence northerly following State Route 30 to the point of beginning.

*Roberts Election District 05:*

*Precinct 0501 (Roberts A).* Starting at the intersection of the centerline of the James River and a line extending from the Grove Creek; thence northerly following the centerline of Grove Creek to its intersection with the Dominion Virginia Power easement; thence northwesterly following the centerline of the Dominion Virginia Power easement to the intersection with the James City County-York County boundary line; thence easterly following the James City County-York County boundary line; then southerly following the James City County-York County boundary line to its intersection with the James City County-City of Newport News boundary line; thence southerly following the James City County-City of Newport News boundary to the centerline of the James River; thence northerly following the centerline of the James River to the point of beginning.

*Precinct 0502 (Roberts B).* Starting at the intersection of the centerline of the James River and a line extending from the Grove Creek; thence northerly following the centerline of Grove Creek to its intersection with the Dominion Virginia Power easement; thence northwesterly following the centerline of the Dominion Virginia Power easement to the intersection with the James City County-York County boundary line; thence northwesterly following the James City County-York County boundary line to the point where it intersects with Tutter's Neck Creek; thence southerly following the centerline of Tutter's Neck Creek to its intersection with the Halfway Creek; thence westerly following the centerline of Halfway Creek to its intersection with the Colonial National Historic Parkway; thence southerly following the centerline of the Colonial National Historic Parkway to the intersection of an extended line with the centerline of the James River; thence easterly following the centerline of the James River to the point of beginning.

*Precinct 0503 (Roberts C).* Beginning at the intersection of the James City County-York County boundary line and Tutter's Neck Creek; thence southerly following the centerline of Tutter's Neck Creek to its intersection with Halfway Creek; thence westerly following the centerline of Halfway Creek to its intersection with the Colonial National Historic Parkway; thence southerly following the centerline of the Colonial National Historic Parkway to the intersection of an extended line with the centerline of the James River; thence westerly following the centerline of the James River to its intersection with a line extending from the centerline of State Route 31; thence northerly following the centerline of State Route 31 to its intersection with the James City County-York County boundary line; thence easterly following the centerline of the James City County-York County boundary line to the point of beginning.

**Sec. 2-6. One supervisor from each election district.**

One supervisor shall be elected from each election district as created under this chapter.



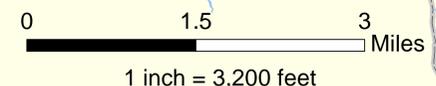
# James City County

## Voting Precincts State Senate and House Districts



Election District	Voting Precinct	State House District	State Senate District	Polling Place
Stonehouse	Stonehouse A	71st	26th	Toano Middle School (5)
	Stonehouse B	71st	26th	Norge Elementary School (2)
	Stonehouse C	71st	26th	Stonehouse Elementary School (3)
Powhatan	Powhatan A	71st	26th	Hornsby Middle School (4)
	Powhatan B	71st	26th	Lafayette High School (14)
	Powhatan C	71st	26th	Lifepointe Christian Church (1)
	Powhatan D	71st	26th	Warhill High School (7)
Jamestown	Jamestown A	71st	26th	Office of Elections Bldg (15)
	Jamestown B	71st	26th	JCC Recreation Center (8)
	Jamestown C	71st	26th	Upward Church (6)
	Jamestown D	71st	26th	King of Glory Lutheran Church (17)
Berkeley	Berkeley A	69th	26th	Jamestown High School (9)
	Berkeley B	71st	26th	Clara Byrd Baker Elementary School (10)
	Berkeley C	71st	26th	Matoaka Elementary School (16)
	Berkeley D	71st	26th	JCC Fire Administration Building (18)
Roberts	Roberts A	69th	24th	James River Elementary School (12)
	Roberts B	69th	26th	Grace Baptist Church (11)
	Roberts C	69th	26th	Laurel Lane Elementary School (13)

All Precincts are in the 1st Congressional District



## MEMORANDUM

DATE: September 28, 2021

TO: The Board of Supervisors

FROM: Jason Purse, Assistant County Administrator  
Elizabeth Parman, Assistant County Attorney

SUBJECT: 2021 Redistricting

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### A. 2020 CENSUS DATA

The County increased in population from 67,009 in 2010 to 78,254 in 2020, an increase of 17%. In comparison, Virginia grew by 8% and Hampton Roads grew by 5% between 2010 and 2020. James City County is the eighth fastest growing locality in Virginia. 2020 Census data reflect an overall increase in population across all districts; however, the percent increase was not even across districts. Stonehouse is now the largest district with a total population of 17,770, a 35% increase in population from 2010. Roberts is the smallest district with a total population of 14,414, a 5% increase in population from 2010. The Berkeley and Jamestown districts each grew by 18%, on pace with the County as a whole, while the Powhatan district grew by 9%.

**Table 1. 2010, 2020 James City County Population by District**

<i>District</i>	<i>2010 Population</i>	<i>2020 Population</i>	<i>Increase</i>	<i>Percent Increase</i>
Berkeley	13,285	15,666	2,381	18%
Jamestown	13,536	15,943	2,407	18%
Powhatan	13,302	14,461	1,159	9%
Roberts	13,739	14,414	675	5%
Stonehouse	13,147	17,770	4,623	35%
Total	67,009	78,254	11,245	17%

\*United States Census Bureau, Population, Census, April 1, 2010, 2020.

### B. DISTRICT REQUIREMENTS

Virginia Code § 24.2-300 et seq. sets forth the redistricting requirements for localities in Virginia. Localities are required to redistrict every 10 years following release of the decennial Census population data. In a typical redistricting year, the General Assembly would adopt its new districts by June and the County would adopt its new local district maps by the end of the year. The release of 2020 Census data was delayed to August 2021 which shortened the timeline to complete the redistricting process by the end of the year.

Virginia Code requires that local electoral districts be contiguous and compact, have near equal resident population, and have clearly defined and observable boundaries.

The County may not enact changes to the district maps in the 60 days prior to an election thus the 2021 redistricting process will not affect the 2021 November general election.

### C. UPDATING DISTRICT MAPS

Because of the uneven increase in population across the County, current electoral districts do not have near equal representation among the five districts. The largest district is 23% larger than the smallest district.

The ideal district size based on the 2020 Census data is 15,650 with an acceptable range of roughly between 15,200 and 16,030. Deviations in the district size should be less than 5%.

The goal in updating the district map is to achieve statutory requirements while moving the fewest number of people between districts.

The Census Block map shows the current five electoral districts in the County along with lines delineating the 913 Census blocks. County Geographic Information System (GIS) staff view updated population totals when moving Census blocks across districts.

Option 1 shows a potential district map that meets Virginia Code requirements and moves 3,403 persons across districts - roughly 4% of the total population. Districts are within 750 people of each other. In this map, an area with 1,723 people north of Route 60 and southwest of Highway 30 moves from Stonehouse to Powhatan. This area includes Skillman Estates, The Retreat, Meadow Lake, and Racefield. A second area with 218 people east of Little Creek Dam Road, Little Creek, and Yarmouth Creek moves from Stonehouse to Powhatan. A third area with 501 people north of John Tyler Highway and Brick Bat Road and south of Bush Neck Road and Jolly Pond Road moves from Powhatan to Berkeley. A fourth area with 961 people east of Jamestown Road and including Jamestown Island moves from Berkeley to Roberts. This area includes Powhatan Shores, Landfall at Jamestown, Raleigh Square, and the Cottages at Stone Haven.

Option 2 shows a second potential district map that also meets Virginia Code requirements but moves 9,305 people across districts - roughly 12% of the total population. Districts are within 455 people of each other. In this map, an area with 1,723 people north of Route 60 and southwest of Highway 30 moves from Stonehouse to Powhatan. This area includes Skillman Estates, The Retreat, Meadow Lake, and Racefield. A second area with 218 people east of Little Creek Dam Road, Little Creek, and Yarmouth Creek moves from Stonehouse to Powhatan. A third area with 2,428 people north of Longhill Road and Olde Towne Road and southwest of Highway 199 moves from Powhatan to Jamestown. A fourth area with 367 people south of Olde Town Road, north of the City of Williamsburg, and east of Chisel Run moves from Jamestown to Powhatan. A fifth area with 1,393 people east of Centerville Road and north of Route 5 moves from Berkeley to Powhatan. This area includes Braemar Creek, Greensprings Plantation, and Patriot's Colony. A sixth area with 2,215 people east of Ironbound Road, northwest of Route 5, and southwest of Highway 199 moves from Jamestown to Berkeley. This area includes Baron Woods, Brandon Woods, Graylin Woods, The Foxes, White Oakes, Indigo Park, The Meadows, and Mill Creek Landing. A seventh area with 961 people east of Jamestown Road and including Jamestown Island moves from Berkeley to Roberts. This area includes Powhatan Shores, Landfall at Jamestown, Raleigh Square, and the Cottages at Stone Haven.

## **D. NEXT STEPS**

### ***1. Select District-Level Map***

Staff recommends that the Board reach consensus tonight on a district-level map. This first step will allow work to begin on the remaining steps in the redistricting process.

### ***2. Set Precincts***

Virginia Code requires that each precinct be wholly contained within a single congressional district, Senate district, House of Delegates district, and local election district. Put another way, the County may have split districts but no split precincts. Changes to the congressional district map and the General Assembly district map will require the County to adjust its precincts.

**3. *Submit to Attorney General***

The new Rights of Voters Act requires the County to submit its proposed district map to the Attorney General's Office for certification or follow an extended notice and public comment period. Receiving certification from the Attorney General is likely the quicker of the two procedures. Once precincts are set the County will submit its proposed map to the Attorney General. A certification of no objection is deemed to have been issued if the Attorney General does not object within 60 days of the County's submission.

**4. *Adopt New Map and Ordinance***

Following certification from the Attorney General, the Board will post notice of its new proposed district and precinct map and Ordinance for adoption. Ideally the Board would adopt its new map and Ordinance by the end of the year. However, because Virginia may not have new congressional-level and General Assembly-level district maps before December, the County may have to delay adoption of a new map and Ordinance until after the first of year.

JP/EP/md  
2021Redistrict-mem

Attachment

**RESOLUTION**

**ENDORSE DISTRICT LEVEL MAP**

WHEREAS, Code of Virginia § 24.2-304.1 et seq. requires the County, upon release of decennial population figures from the U.S. Census, to reapportion the representation among its districts to give, as nearly as is practicable, representation on the basis of population; and

WHEREAS, the County increased in population from 67,009 in 2010 to 78,254 in 2020, an increase of 17%; and

WHEREAS, the increase in County population was not even across districts and the largest district is now 23% larger than the smallest district; and

WHEREAS, the new Rights of Voters Act, Code of Virginia § 24.2-125 et seq., requires the County to submit its proposed district map to the Attorney General's Office for certification or follow an extended notice and public comment period; and

WHEREAS, the Virginia General Assembly has yet to adopt new district maps which will affect the location of County precincts; and

WHEREAS, the Board of Supervisors is of the opinion that it should endorse a district level map so that materials can be prepared to send to the Virginia Attorney General for certification prior to the adoption of a new district map and Ordinance; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does endorse the attached map, Attachment No. 2, Option No. 1 so that staff may prepare materials to send to the Virginia Attorney General for certification prior to adoption by the Board.

  
Michael J. Hipple  
Chairman, Board of Supervisors

ATTEST:

  
Teresa J. Fellows  
Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
SADLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICENHOUR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LARSON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MCGLENNON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIPPLE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Adopted by the Board of Supervisors of James City County, Virginia, this 28th day of September, 2021.

**Option 1**  
**All Districts are in the 5% range**  
**Count of population changing district - 3,403**

**James City County**  
**Redistricting 2021**



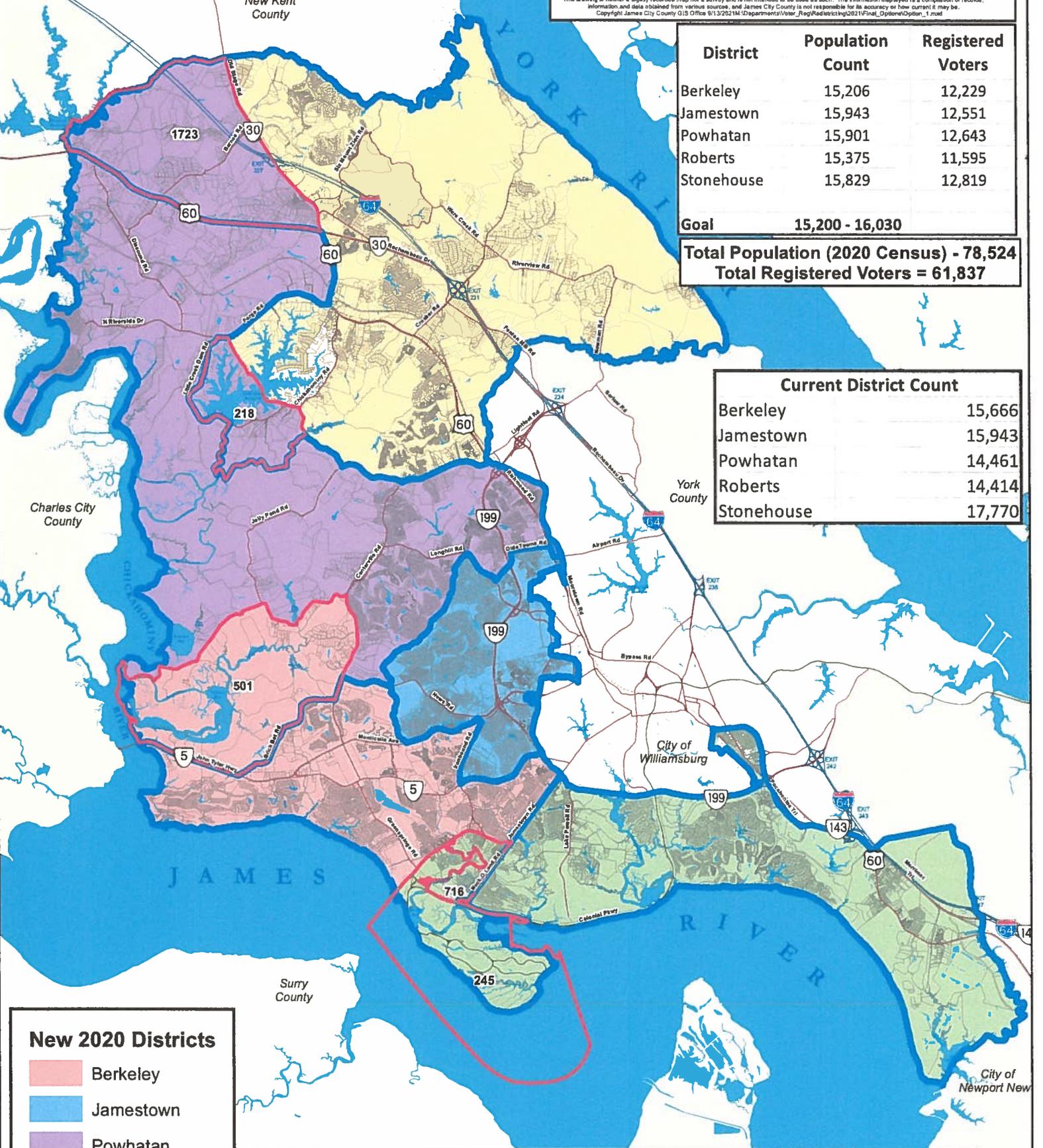
1 inch = 12,440 feet

This drawing is neither a legally recorded map nor a survey and is not intended to be used as such. The information displayed is a compilation of records, information, and data obtained from various sources, and James City County is not responsible for its accuracy or how current it may be. Copyright James City County GIS Office 9/13/2021M:\Departmental\Water\_Reg\Redistricting2021\Final\_Options\Option\_1.mxd

District	Population Count	Registered Voters
Berkeley	15,206	12,229
Jamestown	15,943	12,551
Powhatan	15,901	12,643
Roberts	15,375	11,595
Stonehouse	15,829	12,819
<b>Goal</b>	<b>15,200 - 16,030</b>	

**Total Population (2020 Census) - 78,524**  
**Total Registered Voters = 61,837**

Current District Count	
Berkeley	15,666
Jamestown	15,943
Powhatan	14,461
Roberts	14,414
Stonehouse	17,770



**New 2020 Districts**

<span style="display:inline-block; width:15px; height:15px; background-color: #f8d7da;"></span>	Berkeley
<span style="display:inline-block; width:15px; height:15px; background-color: #d1ecf1;"></span>	Jamestown
<span style="display:inline-block; width:15px; height:15px; background-color: #d1c4e9;"></span>	Powhatan
<span style="display:inline-block; width:15px; height:15px; background-color: #d4edda;"></span>	Roberts
<span style="display:inline-block; width:15px; height:15px; background-color: #fff3cd;"></span>	Stonehouse

<span style="display:inline-block; width:20px; height:20px; border: 2px solid red;"></span>	Areas to Change (# of Population changing District is labeled on the map)
<span style="display:inline-block; width:20px; height:20px; border: 2px solid blue;"></span>	Current Districts

**ITEM SUMMARY**

**DATE:** 3/8/2022

**TO:** Board of Supervisors

**FROM:** Commissioner of the Revenue

**SUBJECT:** An ordinance to amend Ch. 20, Art. IV of the County Code to adopt changes enacted by 2021 Va. Acts (Special Session I), Ch. 383.

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**ATTACHMENTS:**

	Description	Type
☐	Memorandum	Cover Memo
☐	Ordinance	Ordinance
☐	Ordinance (Final)	Ordinance

**REVIEWERS:**

Department	Reviewer	Action	Date
Attorney	Kinsman, Adam	Approved	2/8/2022 - 12:39 PM
Publication Management	Daniel, Martha	Approved	2/9/2022 - 8:23 AM
Legal Review	Kinsman, Adam	Approved	2/9/2022 - 9:12 AM
Board Secretary	Saeed, Teresa	Approved	2/15/2022 - 9:54 AM
Board Secretary	Purse, Jason	Approved	2/15/2022 - 10:20 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM

## MEMORANDUM

DATE: March 8, 2022

TO: The Board of Supervisors

FROM: Richard W. Bradshaw, Commissioner of the Revenue

SUBJECT: Transient Occupancy Tax

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During the General Assembly's first Special Session of 2021, legislation was enacted that altered the scope and language of the Transient Occupancy Tax enabling statutes, including the methods of collection, reporting, and remission. *See* 2021 Va. Acts (Special Session I), Ch. 383. There were no changes to the amount of tax collected and the County's authority for the additional tax of \$2 per room per night was not substantively altered.

Attached is an Ordinance amending of the existing provisions of the County Code to comply with the new state law.

RWB/ap  
AmdCCSec20TOTax-mem

Attachment

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 20, TAXATION, OF THE CODE OF THE COUNTY OF JAMES CITY, VIRGINIA, BY AMENDING AND RENAMING ARTICLE IV, TRANSIENT LODGING TAX WITH NEW NAME TRANSIENT OCCUPANCY TAX; BY AMENDING SECTION 20-14, TAX LEVIED; SECTION 20-15, DEFINITIONS; SECTION 20-16, COLLECTION PROCEDURE; SECTION 20-17, REPORTS AND REMITTANCE OF TAX COLLECTED; BY AMENDING AND RENAMING SECTION 20-18, INTEREST AND PENALTIES UPON FAILURE OR REFUSAL TO REMIT TAX WITH NEW NAME INTEREST AND PENALTIES UPON FAILURE OR REFUSAL TO REPORT OR REMIT TAX; AND BY AMENDING SECTION 20-20, RECORDS TO BE KEPT BY PERSON LIABLE FOR COLLECTION AND PAYMENT OF TAX; SECTION 20-21, TAX IMMEDIATELY DUE AND PAYABLE UPON CESSATION OF BUSINESS; AND SECTION 20-22, EXEMPTIONS FROM TAX.

BE IT ORDAINED by the Board of Supervisors of the County of James City, Virginia, that Chapter 20, Taxation, is hereby amended and reordained by amending Article IV, Transient Occupancy Tax, by amending Section 20-14, Tax levied; Section 20-15, Definitions; Section 20-16, Collection procedure; Section 20-17, Reports and remittance of tax collected; Section 20-18, Interest and penalties upon failure or refusal to report or remit tax; Section 20-20, Records to be kept by person liable for collection and payment of tax; Section 20-21, Tax immediately due and payable upon cessation of business; and Section 20-22, Exemptions from tax.

**Chapter 20. Taxation**

**Article IV. Transient ~~Lodging~~ Occupancy Tax**

**Sec. 20-14. Tax levied.**

- (a) There is hereby levied and imposed, in addition to all other taxes and fees of every kind now imposed by laws, on each transient a tax equivalent to five percent of the total ~~amount~~ *price* paid for ~~lodging~~ *the use or possession of any accommodations* by or for any such transient to any ~~hotel~~ *accommodations provider*. Such tax shall be collected from such transient at the time and in the manner provided by this article.
- (b) In addition to the tax provided for in subsection (a) above, as provided in section 58.1-3823(C) of the Virginia Code, there is hereby levied and imposed an additional transient occupancy tax of \$2.00 per room *per* night for the ~~occupancy~~ *use or possession* of any overnight guest room rented by a transient. Such additional tax shall be collected from such transient at the time and in the manner provided by

this article. Of the revenues generated by this tax, one-half of the revenues shall be deposited into the Historic Triangle Marketing Fund, created pursuant to section 58.1-603.2 (E)(1) of the Virginia Code, and one-half of the revenues shall be retained by the county.

### Sec. 20-15. Definitions.

The following words and phrases, when used in this article, shall, for the purposes of this article, have the following respective meanings, except when the context clearly indicates a different meaning:

*Advertising the Historic Triangle Area.* Advertising that is intended to attract visitors from a sufficient distance so as to require an overnight stay of at least one night.

~~*Hotel Accommodations.* Any room or rooms, lodgings, or accommodations in any public or private hotel, inn, hostelry, tourist home or house, motel, rooming house, travel campground or tourist camps, or any other lodging place within the county offering lodging, as defined herein, for compensation, in which rooms, lodging, space, or accommodations are regularly furnished to any transient as defined herein for consideration.~~

*Accommodations fee.* The room charge less the discount room charge, if any, provided that the accommodations fee shall not be less than \$0.

*Accommodations intermediary.* Any person other than an accommodations provider that facilitates the sale of an accommodation, charges a room charge to the customer, and charges an accommodations fee to the customer, which fee it retains as compensation for facilitating the sale. For purposes of this definition, "facilitates the sale" includes brokering, coordinating, or in any other way arranging for the purchase of the right to use accommodations via a transaction directly, including via one or more payment processors, between a customer and an accommodations provider. However, "accommodations intermediary" does not include a person:

1. *If the accommodations are provided by an accommodations provider operating under a trademark, trade name, or service mark belonging to such person; or*
2. *Who facilitates the sale of an accommodation if (i) the price paid by the customer to such person is equal to the price paid by such person to the accommodations provider for the use of the accommodations, and (ii) the only compensation received by such person for facilitating the sale of the accommodation is a commission paid from the accommodations provider to such person.*

*Accommodations provider.* Any person that furnishes accommodations to the general public for compensation. The term "furnishes" includes the sale of use or possession or the sale of the right to use or possess.

*Commissioner.* The commissioner of the revenue of the county or his authorized designee.

*Discount room charge.* The full amount charged by the accommodations provider to the accommodations intermediary, or an affiliate thereof, for furnishing the accommodations.

*Individual.* One or more natural persons.

~~*Lodging.* Space or room furnished any transient, including the total charge made for the use or possession of the accommodations by any hotel for room or space furnished any transient. If the charge made by such hotel to such transient includes any charge for services or accommodations in addition to that of lodging and/or the use of space, then such portion of the total charges as represents only room and/or space rental shall be distinctly set out and billed to such transient by such hotel as a separate item.~~

*Person.* Any individual, partnership, society, association, joint stock company, corporation, estate, receiver, trustee, assignee, referee or any other person acting in a fiduciary or representative capacity, whether appointed by a court or otherwise; and any combination or group of individuals acting as a unit.

*Room charge.* The full retail price charged to the customer by the accommodations intermediary for the use of the accommodations, including any accommodations fee, before taxes.

*Transient.* Any individual or group of same individuals who, for a period of fewer than 30 consecutive days, either at his own expense, or at the expense of another, obtains lodging at any hotel accommodations as defined herein.

*Treasurer.* The treasurer of the county or his authorized designee.

#### **Sec. 20-16. Collection procedure.**

- (a) For any sale of accommodations not facilitated by an accommodations intermediary, the accommodations provider shall collect the tax imposed pursuant to this article. The accommodations provider shall separately state the amount of the tax in the bill, invoice, or similar documentation and shall add the tax to the total price paid for the use or possession of the accommodations.
- (b) For any sale of accommodations facilitated by an accommodations intermediary, the accommodations intermediary shall collect the tax imposed pursuant to this article, computed on the room charge. The accommodations intermediary shall separately state the amount of the tax on the bill, invoice, or similar documentation and shall add the tax to the room charge; thereafter, such tax shall be a debt from the customer to the accommodations intermediary, recoverable at law in the same manner as other debts.
- (c) If the total price paid or room charge for the accommodations includes any charge for services in addition to those related to the accommodations or the use or possession of space, then such portion of the total price paid or room charge as represents only the amounts related to the use or possession of room or space that is suitable or intended for occupancy by transients for dwelling, lodging, or sleeping purposes shall be distinctly set out and billed to such transient by such accommodations intermediary or accommodations provider as a separate item.
- (d) Consistent with the provisions of this section, Every person accommodations intermediary or accommodations provider receiving any payment for lodging accommodations with respect to which a tax is levied under this article shall collect the amount of such tax so imposed from the transient on whom such tax is levied or from the person paying for such lodging accommodations at the time payment for such lodging accommodations is made. The taxes required to be collected under this section shall be deemed to be held in trust by the person required to collect such taxes until remitted as required in this article.

#### **Sec. 20-17. Reports and remittance of tax collected.**

- (a) It shall be the duty of every seller accommodations intermediary and accommodations provider in acting as the tax collection medium or agency for the county to collect from the purchaser, for the use of the county, the tax hereby imposed and levied at the time of collecting the purchase price charged paid for the lodging accommodations. The responsibility for remittance of the tax collected pursuant to Sec. 20-16 shall be as follows:
  - (1) For any sale of accommodations facilitated by an accommodations intermediary at a hotel, the accommodations intermediary shall remit the taxes on the accommodations fee to the county and any remaining taxes to the hotel, and the hotel shall remit such remaining taxes to the county.

*An accommodations intermediary shall not be liable for taxes under this article remitted to a hotel but that are then not remitted to the county.*

(2) *For any sale of accommodations facilitated by an accommodations intermediary at accommodations other than a hotel, the accommodations intermediary shall remit all taxes to the county.*

(3) *For any sale of accommodations not facilitated by an accommodations intermediary, the accommodations provider shall remit all taxes to the county.*

(b) Every ~~seller~~ *accommodations intermediary and accommodations provider* with respect to which a tax is levied under this article shall make out a report, upon such forms and setting forth such information as the commissioner of the revenue may prescribe and require, showing the amount of tax required to be collected. Every ~~seller~~ *accommodations intermediary and accommodations provider* shall sign and deliver the following items to the commissioner of the revenue before the twentieth day of each month: (1) such report as is required by the commissioner of the revenue covering the taxes collected during the preceding calendar month, and (2) a remittance of such tax in a form payable to the treasurer. The taxes collected by an ~~seller~~ *accommodations intermediary or accommodations provider* shall be deemed to be held in trust by such seller until they have been remitted to the county.

(b)c) Any ~~seller~~ *accommodations intermediary or accommodations provider* collecting the tax on transactions exempt or not taxable under this article shall transmit such erroneously or illegally collected tax in accordance with this section unless and until he can affirmatively show that the tax has since been refunded to the purchaser or credited to ~~his~~ *their* account.

#### **Sec. 20-18. Interest and penalties upon failure or refusal to *report or* remit tax.**

(a) *If any person shall fail or refuse to file a report required to be filed by this article within the time specified, the commissioner shall assess a penalty of ten percent to the tax owed for each such failure or refusal to file a report, which penalty shall become part of the tax owed at the time the penalty is assessed. No such penalty shall exceed the amount of the tax owed.*

(b) If any person shall fail or refuse to remit to the treasurer the tax required to be collected and paid under this article within the time and in the amount specified in this article, there shall be added to such tax by the treasurer a penalty in the amount of ten percent of the tax past due, ~~or \$10.00 whichever is greater~~; provided, however, that the penalty shall in no case exceed the amount of the tax assessable, ~~and~~ *The treasurer shall also add* interest thereon at the rate of ten percent per annum, which shall be computed upon the taxes and penalty from the date such taxes are due and payable.

#### **Sec. 20-20. Records to be kept by person liable for collection and payment of tax.**

It shall be the duty of every person liable for the collection ~~and~~ *or* payment to the county of any tax imposed by this article to keep and ~~to~~ preserve, for a period of four years, ~~such suitable~~ *the* records ~~as may be necessary to determine and show accurately the amount of such tax as he they may have been responsible for collecting and paying to the county.~~ The commissioner may inspect such records at all reasonable times.

#### **Sec. 20-21. Tax immediately due and payable upon cessation of business.**

Whenever any person required to collect ~~and~~ *or* remit the tax imposed and levied by this article shall go out of business, dispose of ~~his~~ *the* business, or otherwise cease to operate, all ~~such~~ taxes collected *or payable under this article* shall thereupon be reported and remitted as required by this article.

**Sec. 20-22. Exemptions from tax.**

No tax shall be payable under this article on charges for ~~lodging~~ accommodations paid to any hospital, medical clinic, convalescent home, home for the aged or paid by or for any individual or group of same individuals, ~~as defined in section 20-15(f)~~, who obtains ~~lodging at any hotel,~~ accommodations for a period of 30 or more consecutive days.

BE IT FURTHER ORDAINED by the Board of Supervisors of the County of James City, Virginia, that this Ordinance shall be effective retroactive to, and including, September 1, 2021, in order to comply with 2021 Va. Acts (Special Session I), Ch. 383.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	___	___	___	___
HIPPLE	___	___	___	___
LARSON	___	___	___	___
SADLER	___	___	___	___
MCGLENNON	___	___	___	___

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE TO AMEND AND REORDAIN CHAPTER 20, TAXATION, OF THE CODE OF THE COUNTY OF JAMES CITY, VIRGINIA, BY AMENDING AND RENAMING ARTICLE IV, TRANSIENT LODGING TAX WITH NEW NAME TRANSIENT OCCUPANCY TAX; BY AMENDING SECTION 20-14, TAX LEVIED; SECTION 20-15, DEFINITIONS; SECTION 20-16, COLLECTION PROCEDURE; SECTION 20-17, REPORTS AND REMITTANCE OF TAX COLLECTED; BY AMENDING AND RENAMING SECTION 20-18, INTEREST AND PENALTIES UPON FAILURE OR REFUSAL TO REMIT TAX WITH NEW NAME INTEREST AND PENALTIES UPON FAILURE OR REFUSAL TO REPORT OR REMIT TAX; AND BY AMENDING SECTION 20-20, RECORDS TO BE KEPT BY PERSON LIABLE FOR COLLECTION AND PAYMENT OF TAX; SECTION 20-21, TAX IMMEDIATELY DUE AND PAYABLE UPON CESSATION OF BUSINESS; AND SECTION 20-22, EXEMPTIONS FROM TAX.

BE IT ORDAINED by the Board of Supervisors of the County of James City, Virginia, that Chapter 20, Taxation, is hereby amended and reordained by amending Article IV, Transient Occupancy Tax, by amending Section 20-14, Tax levied; Section 20-15, Definitions; Section 20-16, Collection procedure; Section 20-17, Reports and remittance of tax collected; Section 20-18, Interest and penalties upon failure or refusal to report or remit tax; Section 20-20, Records to be kept by person liable for collection and payment of tax; Section 20-21, Tax immediately due and payable upon cessation of business; and Section 20-22, Exemptions from tax.

**Chapter 20. Taxation**

**Article IV. Transient Occupancy Tax**

**Sec. 20-14. Tax levied.**

- (a) There is hereby levied and imposed, in addition to all other taxes and fees of every kind now imposed by laws, on each transient a tax equivalent to five percent of the total price paid for the use or possession of any accommodations by or for any such transient to any accommodations provider. Such tax shall be collected from such transient at the time and in the manner provided by this article.
- (b) In addition to the tax provided for in subsection (a) above, as provided in section 58.1-3823(C) of the Virginia Code, there is hereby levied and imposed an additional transient occupancy tax of \$2.00 per room per night for the use or possession of any overnight guest room rented by a transient. Such additional tax shall be collected from such transient at the time and in the manner provided by this article. Of the revenues generated by this tax, one-half of the revenues shall be deposited into the

Historic Triangle Marketing Fund, created pursuant to section 58.1-603.2(E)(1) of the Virginia Code, and one-half of the revenues shall be retained by the county.

**Sec. 20-15. Definitions.**

The following words and phrases, when used in this article, shall, for the purposes of this article, have the following respective meanings, except when the context clearly indicates a different meaning:

*Advertising the Historic Triangle Area.* Advertising that is intended to attract visitors from a sufficient distance so as to require an overnight stay of at least one night.

*Accommodations.* Any room or rooms, lodgings, or accommodations in any public or private hotel, inn, hostelry, tourist home or house, motel, rooming house, travel campground or tourist camps, or any other place within the county; in which rooms, lodging, space, or accommodations are regularly furnished to any transient as defined herein for consideration.

*Accommodations fee.* The room charge less the discount room charge, if any, provided that the accommodations fee shall not be less than \$0.

*Accommodations intermediary.* Any person other than an accommodations provider that facilitates the sale of an accommodation, charges a room charge to the customer, and charges an accommodations fee to the customer, which fee it retains as compensation for facilitating the sale. For purposes of this definition, “facilitates the sale” includes brokering, coordinating, or in any other way arranging for the purchase of the right to use accommodations via a transaction directly, including via one or more payment processors, between a customer and an accommodations provider. However, “accommodations intermediary” does not include a person:

1. If the accommodations are provided by an accommodations provider operating under a trademark, trade name, or service mark belonging to such person; or
2. Who facilitates the sale of an accommodation if (i) the price paid by the customer to such person is equal to the price paid by such person to the accommodations provider for the use of the accommodations, and (ii) the only compensation received by such person for facilitating the sale of the accommodation is a commission paid from the accommodations provider to such person.

*Accommodations provider.* Any person that furnishes accommodations to the general public for compensation. The term “furnishes” includes the sale of use or possession or the sale of the right to use or possess.

*Commissioner.* The commissioner of the revenue of the county or his authorized designee.

*Discount room charge.* The full amount charged by the accommodations provider to the accommodations intermediary, or an affiliate thereof, for furnishing the accommodations.

*Individual.* One or more natural persons.

*Person.* Any individual, partnership, society, association, joint stock company, corporation, estate, receiver, trustee, assignee, referee or any other person acting in a fiduciary or representative capacity, whether appointed by a court or otherwise; and any combination or group of individuals acting as a unit.

*Room charge.* The full retail price charged to the customer by the accommodations intermediary for the use of the accommodations, including any accommodations fee, before taxes.

*Transient.* Any individual or group of same individuals who, for a period of fewer than 30 consecutive days, either at his own expense, or at the expense of another, obtains accommodations as defined herein.

*Treasurer.* The treasurer of the county or his authorized designee.

**Sec. 20-16. Collection procedure.**

- (a) For any sale of accommodations not facilitated by an accommodations intermediary, the accommodations provider shall collect the tax imposed pursuant to this article. The accommodations provider shall separately state the amount of the tax in the bill, invoice, or similar documentation and shall add the tax to the total price paid for the use or possession of the accommodations.
- (b) For any sale of accommodations facilitated by an accommodations intermediary, the accommodations intermediary shall collect the tax imposed pursuant to this article, computed on the room charge. The accommodations intermediary shall separately state the amount of the tax on the bill, invoice, or similar documentation and shall add the tax to the room charge; thereafter, such tax shall be a debt from the customer to the accommodations intermediary, recoverable at law in the same manner as other debts.
- (c) If the total price paid or room charge for the accommodations includes any charge for services in addition to those related to the accommodations or the use or possession of space, then such portion of the total price paid or room charge as represents only the amounts related to the use or possession of room or space that is suitable or intended for occupancy by transients for dwelling, lodging, or sleeping purposes shall be distinctly set out and billed to such transient by such accommodations intermediary or accommodations provider as a separate item.
- (d) Consistent with the provisions of this section, every accommodations intermediary or accommodations provider receiving any payment for accommodations with respect to which a tax is levied under this article shall collect the amount of such tax so imposed from the transient on whom such tax is levied or from the person paying for such accommodations at the time payment for such accommodations is made. The taxes required to be collected under this section shall be deemed to be held in trust by the person required to collect such taxes until remitted as required in this article.

**Sec. 20-17. Reports and remittance of tax collected.**

- (a) It shall be the duty of every accommodations intermediary and accommodations provider in acting as the tax collection medium or agency for the county to collect from the purchaser, for the use of the county, the tax hereby imposed and levied at the time of collecting the price paid for the accommodations. The responsibility for remittance of the tax collected pursuant to Sec. 20-16 shall be as follows:
  - (1) For any sale of accommodations facilitated by an accommodations intermediary at a hotel, the accommodations intermediary shall remit the taxes on the accommodations fee to the county and any remaining taxes to the hotel, and the hotel shall remit such remaining taxes to the county. An accommodations intermediary shall not be liable for taxes under this article remitted to a hotel but that are then not remitted to the county.
  - (2) For any sale of accommodations facilitated by an accommodations intermediary at accommodations other than a hotel, the accommodations intermediary shall remit all taxes to the county.
  - (3) For any sale of accommodations not facilitated by an accommodations intermediary, the accommodations provider shall remit all taxes to the county.
- (b) Every accommodations intermediary and accommodations provider with respect to which a tax is levied under this article shall make out a report, upon such forms and setting forth such information as the commissioner may prescribe and require, showing the amount of tax required to be collected. Every accommodations intermediary and accommodations provider shall sign and deliver the following items to the commissioner before the twentieth day of each month: (1) such report as is

required by the commissioner covering the taxes collected during the preceding calendar month, and (2) a remittance of such tax in a form payable to the treasurer. The taxes collected by an accommodations intermediary or accommodations provider shall be deemed to be held in trust by such seller until they have been remitted to the county.

- (c) Any accommodations intermediary or accommodations provider collecting the tax on transactions exempt or not taxable under this article shall transmit such erroneously or illegally collected tax in accordance with this section unless and until he can affirmatively show that the tax has since been refunded to the purchaser or credited to their account.

**Sec. 20-18. Interest and penalties upon failure or refusal to report or remit tax.**

- (a) If any person shall fail or refuse to file a report required to be filed by this article within the time specified, the commissioner shall assess a penalty of ten percent to the tax owed for each such failure or refusal to file a report, which penalty shall become part of the tax owed at the time the penalty is assessed. No such penalty shall exceed the amount of the tax owed.
- (b) If any person shall fail or refuse to remit to the treasurer the tax required to be collected and paid under this article within the time and in the amount specified in this article, there shall be added to such tax by the treasurer a penalty in the amount of ten percent of the tax past due; provided, however, that the penalty shall in no case exceed the amount of the tax assessable. The treasurer shall also add interest thereon at the rate of ten percent per annum, which shall be computed upon the taxes and penalty from the date such taxes are due and payable.

**Sec. 20-20. Records to be kept by person liable for collection and payment of tax.**

It shall be the duty of every person liable for the collection or payment to the county of any tax imposed by this article to keep and preserve, for a period of four years, the records necessary to determine and show accurately the amount of such tax as they may have been responsible for collecting and paying to the county. The commissioner may inspect such records at all reasonable times.

**Sec. 20-21. Tax immediately due and payable upon cessation of business.**

Whenever any person required to collect or remit the tax imposed and levied by this article shall go out of business, dispose of the business, or otherwise cease to operate, all taxes collected or payable under this article shall thereupon be reported and remitted as required by this article.

**Sec. 20-22. Exemptions from tax.**

No tax shall be payable under this article on charges for accommodations paid to any hospital, medical clinic, convalescent home, home for the aged or paid by or for any individual or group of same individuals who obtains accommodations for a period of 30 or more consecutive days.

BE IT FURTHER ORDAINED by the Board of Supervisors of the County of James City, Virginia, that this Ordinance shall be effective retroactive to, and including, September 1, 2021, in order to comply with 2021 Va. Acts (Special Session I), Ch. 383.

**ITEM SUMMARY**

**DATE:** 3/8/2022

**TO:** The Board of Supervisors

**FROM:** Josh Crump, Principal Planner

**SUBJECT:** Z-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford's Village)

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**ATTACHMENTS:**

	Description	Type
☐	Staff Report	Staff Report
☐	Ordinance	Ordinance
☐	2. Location Map	Backup Material
☐	3. Community Impact Statement	Backup Material
☐	4. Proposed Proffers	Backup Material
☐	5. Proposed Master Plan	Backup Material
☐	6. Existing Proffers	Backup Material
☐	7. Existing Master Plan	Backup Material
☐	8. Fiscal Impact Spreadsheet	Backup Material
☐	9. Housing Type Examples	Backup Material
☐	10. DRW Memorandum	Backup Material
☐	11. Parks and Recreation Exception Request	Backup Material
☐	12. Public Input	Backup Material
☐	13. Approved minutes from the December 1, 2021, Planning Commission meeting	Minutes

**REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	2/18/2022 - 5:40 PM
Development Management	Holt, Paul	Approved	2/18/2022 - 5:40 PM
Publication Management	Daniel, Martha	Approved	2/22/2022 - 8:14 AM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:39 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:52 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:01 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:12 PM

**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford’s Village)  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**SUMMARY FACTS**

Applicant: Mr. Vernon Geddy, III, on behalf of Frye Development, LLC

Land Owners: SWR-HOCKADAY, LLC & MCMURRAN, MARTHA

Proposal: A request to amend the adopted proffers and master plan for the Continuing Care Retirement Facility at Ford’s Colony. The proposal would permit up to 286 age-restricted residential units consisting of single-family dwellings and multifamily dwellings, as well as a facility containing a total of no more than 230 age-restricted assisted living/memory care rooms/skilled nursing beds, with no more than 75 apartments, no more than 155 assisted living rooms/memory care rooms, and no more than 40 skilled nursing beds. This development would include accessory amenities intended for the residents and employees of the development and not the general public.

Location: 3889 News Road

Tax Map/Parcel No.: 3730100004

Current Zoning: R-4, Residential Planned Community District with proffers

Project Acreage: +/- 179.2 acres

Comprehensive Plan: Low Density Residential

Primary Service Area: Inside (PSA)

Staff Contact: Thomas Wysong, Senior Planner II

**PUBLIC HEARING DATES**

Planning Commission: November 3, 2021, 6:00 p.m. (Postponed)  
December 1, 2021, 6:00 p.m.

Board of Supervisors: January 11, 2022 (Postponed)  
March 8, 2022

**FACTORS FAVORABLE**

1. Staff finds the proposal to be consistent with the adopted 2045 Comprehensive Plan.
2. Pursuant to the Fiscal Impact Analysis (FIA) submitted for this application, the proposal is expected to have a positive fiscal impact.
3. Due to the proffered age restriction, the proposal is not anticipated to generate any schoolchildren.
4. The applicant has proffered cash contributions that are intended to mitigate the impacts of this proposal.
5. The applicant has proffered transportation improvements that adequately mitigate impacts to News Road and the surrounding transportation network.

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**  
**Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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6. The applicant has proffered for the 286 single-family and multifamily units to be constructed to Energy Star (or equivalent independent) residential certification.
7. The applicant has proffered for the submittal of a Nutrient Management Plan for all landscaped areas within the development.
8. The applicant has proffered the installation of a bus stop and shelter on News Road adjacent to the main entrance into the Property, upon request of Williamsburg Area Transit Authority (WATA) or any successor agencies.
9. The applicant has proffered to reserve two assisted living beds for Medicaid-qualified individuals under the Auxiliary Grant Program administered by the Virginia Department of Social Services.
10. The applicant has proffered the submittal of a traffic management plan for construction of the project in order to mitigate the traffic impacts on News Road related to construction.
11. Impacts: See Impact Analysis on Pages 10-12.

**FACTORS UNFAVORABLE**

1. Impacts: See Impact Analysis on Pages 10-12.
2. See Affordable/Workforce Analysis on Page 8.

**SUMMARY STAFF RECOMMENDATION**

Staff recommends that the Board of Supervisors approve the Master Plan and proffer amendment application.

**PLANNING COMMISSION RECOMMENDATION**

At its December 1, 2021, Regular Meeting, the Planning Commission recommended approval of the application with the proposed conditions by a vote of 5-1.

**CHANGES SINCE THE PLANNING COMMISSION MEETING**

In response to public input, the applicant has included an additional proffer requiring the submittal of a Traffic Management Plan (TMP) for construction of the project prior to site development. The applicant has also revised the proffer and master plan for the emergency access to ensure an updated traffic study will be provided and improvements installed in the event this entrance is proposed for conversion to a full entrance.

**CHANGES SINCE THE JANUARY 11 BOS MEETING**

The applicant has provided a proffer for project phasing, as well as a proffer detailing the establishment of a homeowners association for the single-family and multifamily units (see Page 4 of the staff report and updated Attachment No. 4).

**PROJECT DESCRIPTION**

This application proposes to amend the currently adopted Ford's Colony Master Plan and related proffers for the Continuing Care Retirement Community (CCRC) proposed on the property. This previously approved CCRC, which has not commenced development, is known as Ford's Village and is identified as Section 37 on the approved Ford's Colony Master Plan. The use of the property for continuing care is not proposed to change, though this amendment does significantly change the proposed unit mixture and internal site layout for Ford's Village.

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford’s Village)**  
**Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

Master Plan Amendment

Under the currently approved Master Plan (MP-0008-2007), the access to Ford’s Village is proposed to be provided via an entrance on News Road, located across from the Firestone residential entrance to Ford’s Colony. The streets internal to Ford’s Village are proposed to be privately maintained and the project is shown connecting to public water and sewer provided by James City Service Authority (JCSA).

In terms of internal layout, the currently approved 2007 Plan shows a total of 36 principal buildings, along with several smaller accessory structures. Nineteen of the buildings are two-unit townhouses (duplexes), which account for 38 units. The remaining 17 buildings and accessory structures are intended to house the various independent living units, assisted living rooms, and skilled nursing beds planned for the CCRC, which account for a total of 703 units/rooms/beds. There are also a wide variety of support uses including a health center, community meeting facility, parking and storage functions, maintenance and support functions, dining halls and kitchens, and on-site services (such as a barbershop, beauty parlor, post office, etc.).

The proposed Master Plan amendment would change the proposed unit mixture by significantly increasing the amount of single-family and multifamily units and significantly decreasing the amount of proposed apartments, resulting in a more balanced mix within the development. In this proposal, the land use would be divided into two categories: the single-family and multifamily units would account for 286 units and be dispersed along the private road network proposed in Land Areas designated A, B, or C. The proposed apartments, memory care/assisted living, and skilled nursing beds would account for a maximum of 230 units and be located within Land Area D, which is the hub of apartments, medical, and institutional uses.

Both categories of development would be part of the same continuing care facility, with residents and employees able to access the shared

amenities within the parcel. These amenities include recreational amenities and limited commercial uses intended for the residents and employees of the development (not the general public) and including a café/coffee shop; education room; spa and wellness center; physical therapy and/or physician’s office(s), and pharmacy.

As detailed in the following table, the unit mixture within the proposed Master Plan amendment would significantly increase the amount of single-family and multifamily units on-site, while also significantly reducing the amount of apartments. In terms of medical and institutional uses, the potential development for assisted living/memory care is increased, while the potential development of skilled nursing beds decreases.

*Table 1: Master Plan Unit Mix Comparison*

Unit/Bed Type	Adopted 2007 Master Plan	Proposed 2021 Amendment	Difference
Single-Family and Multifamily Units	38	286	+248
Apartments	558	75	-483
Assisted Living/Memory Care	85	155	+72
Skilled Nursing	60	40	-20
Total Max	741	516*	-225

*\*Per the amended proffers, the total amount of apartments, assisted living/memory care rooms/skilled nursing beds within the institutional facility (Land Use “D” on the Master Plan) shall not exceed 230 (see rows shaded blue in the Table), which is why this number is capped at 516.*

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**  
**Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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Proffer Amendment

In conjunction with the proposed Master Plan amendment, the applicant is proposing to amend and restate the proffers for the parcel. This proposal includes revisions to the existing proffer language as well as the proposed removal of certain proffers as follows:

- Revision to the proffered unit max and type to match what is proposed on the amended Master Plan (see Table 1 on Page 3 for details).
- Revisions to the details of the proffered Stormwater Plan to reflect the amended approach to stormwater management on the Master Plan.
- Revisions to the recreational amenities proffers to clarify that the proposed amenities are not open to the general public and are intended for residents of Ford's Village.
- Inclusion of a proffer requiring the submittal and approval of an updated traffic signal warrant analysis for the News Road/Firestone Drive/project entrance intersection prior to site plan or subdivision plan approval.
- Inclusion of a proffer requiring the submittal of a TMP for construction of the project in order to mitigate the traffic impacts on News Road related to construction.
- Inclusion of a proffer requiring an updated traffic study and installation of required road improvements to the emergency entrance, in the event it is proposed to be converted to a full entrance.
- Inclusion of a phasing proffer stipulating that the County will not issue building permits for more than 50 dwelling units in the single-family and multifamily unit neighborhoods until construction on the institutional uses has commenced.
- Inclusion of a proffer detailing the establishment of a homeowners association for the single-family and multifamily component of the residential development.
- Revisions to the build-out trigger point for when traffic counts need to be submitted to the County (current approved number is at 247 units, then at 494 units; the proposed trigger point is at 400 units, roughly halfway between the two). The purpose of the trigger points is to determine the traffic impacts at certain points during project build-out such that any additional needed transportation improvements (such as entrance or turn lane improvements) can be installed prior to continued build-out.
- Removal of the Greenway Trail proffer, which proposes the construction and dedication to the public of this trail portion, on account of the lack of an interconnecting easement being made available from the Monticello Woods property (See Impact Analysis Table on Page 10 for further analysis).
- Removal of redundant proffers that establish standards already required by the Zoning Ordinance, including the proffer regulating lighting, archaeology study, natural resource study, etc.
- Removal of proffers limiting heights for buildings no longer shown on the Master Plan.
- Removal of the proffer requiring the submittal of the Cold Spring Swamp Drainage Analysis, on account of an analysis being completed for the swamp since the original rezoning and master plan approval for this property.

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**  
**Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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Per the Planning Commission's recommendation, Planning staff held a follow-up meeting with Stormwater and Resource Protection (SRP) to discuss the potential for upstream flooding on the property and the impact of removing Proffer No. 19 and Proffer No. 10(b) on flooding and erosion control. SRP confirmed that the Powhatan Creek Floodplain Study (which analyzes the full build-out of the Powhatan Creek watershed) eliminates the need for Proffer No. 19, which would require a drainage analysis of Cold Spring Swamp (part of the Powhatan Creek Study) at full build-out.

SRP also confirmed that the removal of Proffer No. 10(b), which requires the submittal of a stream monitoring plan on the subject property and annual monitoring of erosion for a period of 10 years, would not prevent the Stormwater Division from adequately addressing erosion concerns on the parcel during the development plan process.

The stream monitoring plan required by this proffer requires a baseline assessment and monitoring of stream segments delineated on Sheet No. 7 of the Master Plan. Furthermore, this proffer requires the property owner to install additional upstream run-off control measures, as approved by SRP, to prevent further erosion if the stream monitoring indicates the presence of new erosion not shown in the baseline assessment. These additional upstream run-off control measures would include measures on the other side of News Road on parcels not included with this application, which would make enforcement of this proffer impractical for the County. Finally, mitigating any potential impacts of this development on the Powhatan Creek watershed and the Cold Spring Swamp would be accomplished at the site plan stage, should this project be approved, and the development would be held to the current standards and requirements of the Erosion and Sediment Control, Stormwater Management, and Chesapeake Bay Preservation Ordinances.

As detailed within Table 2, the proposed proffers also include revisions and updates to the cash commitments associated with this project. Specifically, the applicant is proposing to update and increase the per unit/room/bed commitment for the 2021 amendment to account for the Marshall & Swift Building Cost Index. The proposed proffers also remove the cash commitments to specific improvements from the 2007 rezoning related to infrastructure development, namely sewer and road improvements. The \$60,000 cash commitment to sewer infrastructure has been proposed for removal, as has the \$36,000 cash commitment to road improvements for the Monticello Avenue/News Road Intersection and Monticello Avenue Corridor. The \$60,000 proffered for off-site sewer improvements is proposed for removal by the applicant. JCSA has raised no concerns with this proposed removal.

The \$36,000 proffered for off-site transportation improvements to the News Road/Monticello Avenue intersection and the Monticello Avenue Corridor is proposed for removal by the applicant due to the completion of these improvements since the original rezoning.

Overall, the total development amount of cash contribution for the project is expected to decrease by approximately 25% from \$1,757,475 to \$1,326,095.15, depending on final unit mix. This is largely attributed to the overall proposed reduction in dwelling units resulting from the amended Master Plan and proffers, in which the current proffered amount of 596 residential units is being decreased by 40% to 361 dwelling units.

**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford’s Village)  
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*Table 2: The Village at Ford’s Colony: Cash Contribution Proffer Comparison*

Cash Contribution Proffer Summary	Approved 2007 Proffers (in 2008 dollars)	2021 Proffer Amendment
Proffer Use:	Amount:	Amount:
Fire, Police, Emergency Services, Library, Public Facilities:	\$1,000 per Dwelling Unit (x 596 Dwelling Units = \$596,000)	\$1,277.61 per Dwelling Unit (x 361 Dwelling Units) = \$461,217.21
<i>Fire, Police, Emergency Services, Library, Public Facilities:</i>	\$250 per Room/Bed (x 83 Rooms) + (x 60 Beds) = \$35,750	\$319.40 per Room/Skilled Nursing Unit* (x 115 Rooms) + (20 Skilled Nursing Units) = \$43,119
Water Infrastructure Development:	\$870 per Dwelling Unit (x 596 Dwelling Units) = \$518,520	\$1,111.52 per Dwelling Unit (x 361 Dwelling Units) = \$401,258.72
<i>Water Infrastructure Development:</i>	\$435 per Room/Bed (x 83 Rooms) + (x 60 Beds) = \$62,205	\$555.76 per Room/Skilled Nursing Unit x (115 Rooms +20 Skilled Nursing Units) = \$75,027.60
Sewer Infrastructure Development:	\$60,000 (one-time payment)	\$0
Monticello Avenue/News Road Intersection and Monticello Avenue Corridor Improvements:	\$36,000 (one-time payment)	\$0
Road Improvements:	\$750 per Dwelling Unit (x 596 Dwelling Units = \$447,000)	\$958.20 per Dwelling Unit (x 361) = \$345,910.20
Total Cash Contribution Per Dwelling Unit:	Up to: \$2,620 per Dwelling Unit (x 596 Dwelling Units = \$1,561,520)	Up to \$3,347.33 per Dwelling Unit (x 361 Dwelling Units) = \$1,208,386.13
<i>Total Cash Contribution Per Room/Bed:</i>	\$685 per Room/Bed (x 143 Rooms/Beds) = \$97,955	\$875.16 per Room/Skilled Nursing Unit (x 135 Rooms/Unit) = \$118,146.60
Total Development Cash Contribution:**	Up to: \$1,757,475	Up to \$1,326,095.15***

\*Per the proffers, one skilled nursing unit is equal to two beds.

\*\*Cash amount is stated as “up to” on account of the different unit mix possibilities, per the proffers in both proposals.

\*\*\*Per the proffers, two of the four beds within one of the assisted living rooms will be reserved for Medicaid qualified individuals and are exempt from the proffered cash contribution, which is why half a unit’s worth of cash contributions (2 beds = \$437.58) has been subtracted from the estimated total.

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**  
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Transportation Analysis

Separate from the cash contributions, the applicant has proffered the same on-site transportation improvements included within the 2007 rezoning, with the exception of the shoulder bike lane on News Road, which is not recommended by the County's bicycle/pedestrian maps and has been removed from the proffers. These on-site improvements include the following:

- A signal at the intersection of News Road, Firestone Drive, and the project entrance (if warranted by updated traffic signal warrant analysis that is proffered to be completed prior to development plan approval).
- An exclusive left-turn lane from westbound News Road into the Property.
- An exclusive right-turn lane from eastbound News Road into the Property at the main entrance into the Property at the intersection of News Road and Firestone Drive.
- The restriping of the existing southbound left-turn lane on Firestone Drive at News Road to be a shared left and through lane.
- The installation of an exclusive left-turn on westbound News Road at the intersection with Powhatan Secondary.
- The installation or payment for a traffic signal at the intersection of News Road and Powhatan Secondary at the time such signal is warranted.

The applicant has submitted a trip generation calculation memorandum (see Attachment No. 10) for this proposal that compares the proposed unit mix to information within the previously approved traffic studies for Ford's Colony, including the study performed for the

rezoning of this parcel in 2007 and the 2020 Kimley-Horn Associates traffic study. The traffic study from the 2007 rezoning showed a daily trip generation of 2,697, while the proposed generation for this amendment shows a total of 1,916 trips, a reduction of 781 daily trips.

The County adopted the Adequate Transportation Facilities Test by resolution on August 14, 2018. This policy requires for a proposed Special Use Permit (SUP) or rezoning to be tested during the application process to ensure that transportation facilities are adequate to mitigate traffic impacts. Per the adopted policy, a proposed rezoning or SUP application will pass the test if:

- i. No off-site improvements are required by the Traffic Impact Analysis (TIA) that is approved by both the Planning Director and the Virginia Department of Transportation (VDOT); or
- ii. All off-site improvements recommended by a TIA that are approved by both the Planning Director and the VDOT are guaranteed in a form approved by the Planning Director and County Attorney.

The transportation improvements proffered with this application ensure that this proposal passes the Adequate Transportation Facilities Test.

Parks and Recreation Analysis

This project is required to meet the R-4 Zoning Ordinance requirements, which requires 40% of the overall planned development of Ford's Colony to be open space. If approved, this proposal would result in no change in the overall open space for Ford's Colony, which is 52.3%. The R-4 District also requires one acre of recreational open space per 350 dwelling units. This proposal exceeds this requirement by proposing a minimum of four acres of dedicated recreation area.

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The R-4 requirements do not encompass all aspects of the Parks and Recreation Development Guidelines, which include trails, courts/pools, and fields. Please see below for the proposal analysis.

- Requirement: Park land (0.83 acres minimum).
- Applicant Proposal: The Master Plan guarantees a minimum of four acres of recreational land and facility, which substantially exceeds the recommended amount.
  
- Requirement: Playground (minimum of five activities) or other age-appropriate alternative facility.
- Applicant Proposal: The Master Plan shows eight pocket parks, in which playgrounds can be located; however, the Master Plan and proffers do not commit to facilities in the pocket parks.
  
- Requirement: Hard surface sport court or pool.
- Applicant Proposal: The applicant has proffered pickleball courts, to be located within the Land Use areas designated for single-family and multifamily development.
  
- Requirement: Graded athletic field.
- Applicant Proposal: The applicant is not proposing a graded athletic field as part of this proposal.
  
- Requirement: Paved multiuse trail.
- Applicant Proposal: The applicant is proposing the Greenway Trail to serve the site, as well as a multiuse path along News Road.

The Parks and Recreation Development Guidelines state that the Board of Supervisors may approve alternatives to the recommended facility categories listed above. The applicant has submitted an exception request (see Attachment No. 11). While playgrounds/age-appropriate alternative facilities and a graded athletic field are not included in this proposal, other recreational amenities proposed for the site include a spa and wellness center, an outdoor pool, and walking/biking paths.

The County’s *2002 Greenway Master Plan* proposed a Greenway Trail traversing this property from News Road to Monticello Avenue. The currently adopted Master Plan shows the proposed Greenway Trail connecting from News Road to the southern portion of the property. The proposed Master Plan shows the Greenway Trail traversing the southern portion of the property and connecting to the “Park” and “Clubhouse/Recreation” area, but offering no connection to the southern property line.

Housing Affordability Analysis

The Comprehensive Plan encourages inclusion of affordable and workforce units within new residential development. The 361 proposed units are planned to be a mix of single-family, multifamily, or apartments, all to be offered at market rate within the context of the Continuing Care development. At this time, it is undetermined what the exact unit mix will be. The tables below and on the next page provide the sales and rental prices affordable at distinct percentages of Area Median Income (AMI) level, which is \$84,500 for 2021.

*Affordable Sales Price by AMI %*

% AMI	Upper limit of the sales price affordable to this AMI level (2021 prices)
30%	\$129,750
60%	\$257,250
80%	\$341,950
100%	\$427,125
120%	\$512,000

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*Affordable Rental Price by AMI %*

% AMI	Upper limit of the rental price affordable to this AMI level (2021 prices)
30%	\$ 634
60%	\$1,268
80%	\$1,689
100%	\$2,113
120%	\$2,535

**PLANNING AND ZONING HISTORY**

The subject property is currently an undeveloped parcel of land (formerly known as the “Warburton Tract”) which is largely in a natural, undisturbed state. The land has previously been timbered, and remnants of several logging roads cross it in various locations. The parcel is heavily vegetated with a mixture of pines, hardwoods, and dense underbrush. The ground is higher in the center of the property, and slopes away steeply toward the eastern, southern, and western edges. Cold Spring Swamp runs along the eastern boundary of the property, and the main stem of Powhatan Creek runs along the western property boundary. The property is approximately 179.20 acres in size.

This parcel was rezoned in 2008 from the R-8, Rural Residential Zoning District to the R-4, Residential Planned Community with proffers and incorporated into the Ford’s Colony Master Plan. The proposed use for the property on the approved Master Plan is a CCRC consisting of 38 townhomes, 558 independent living units, 83 assisted living rooms, and 60 skilled nursing beds. In conjunction with this rezoning and master plan, the parcel was removed from the Gordon Creek Agricultural and Forestal District. No development has commenced within the property and no cash proffers have been collected.

**SURROUNDING ZONING AND DEVELOPMENT**

North: R-2, General Residential (Springhill Subdivision) R-4, Residential Planned Community District (Ford’s Colony).

West: A-1, General Agricultural.

South: PUD-R, Planned Unit Development Residential Community District (Monticello Woods).

East: R-4, Residential Planned Community District (Powhatan Secondary).

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford’s Village)**  
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**IMPACT ANALYSIS**

<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
<u>Public Transportation: Vehicular</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- Please see the Transportation Analysis on Page 7.</li> <li>- Per the proffers, upon the request of the WATA, the Owner shall install a bus stop, and shelter on News Road adjacent to the main entrance into the Property, with the exact location being subject to the approval of WATA.</li> </ul>
<u>Public Transportation: Pedestrian/Bicycle</u>	<u>Not Fully Mitigated</u>	<ul style="list-style-type: none"> <li>- The County’s <i>Pedestrian Accommodation Master Plan</i> and <i>Regional Bikeways Map</i> shows the need for a multiuse path along the property frontage on News Road.</li> <li>- The proposed Master Plan shows a multiuse path abutting the News Road frontage in between the primary entrance and emergency access entrance for the property, but not the entirety of the property as recommended on the maps.</li> <li>- Pursuant to Section 24-35 of the Zoning Ordinance, the proposed improvements shown on these maps are required to be shown on the site plan and installed at development.</li> <li>- The County’s <i>2002 Greenway Master Plan</i> proposed a Greenway Trail traversing this property from News Road to Monticello Avenue.</li> <li>- The currently adopted Master Plan shows the proposed Greenway Trail connecting from News Road to the southern portion of the property. The proposed Master Plan shows the Greenway Trail traversing the southern portion of the property and connecting to the “Park” and “Clubhouse/Recreation” areas, but offering no connection to the southern property line.</li> </ul>
<u>Public Safety</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- Located within a six-minute radius of Fire Station 5.</li> <li>- The proposal is expected to generate impacts that are mitigated by the proffered cash contributions (see Table 2 on Page 6 for details).</li> </ul>
<u>Public Schools</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- Ford’s Village is proposed as a CCRC. Per the proffers, all proposed units are age-restricted and are not expected to generate schoolchildren.</li> </ul>

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<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
<u>Public Parks and Recreation</u>	<u>No Mitigation Required</u>	- See Analysis on Pages 7 and 8.
<u>Public Libraries and Cultural Centers</u>	<u>Mitigated</u>	- Per the proposed proffers, the applicant is contributing a portion of the \$1,277.61 to mitigate impacts to the library.
<u>Groundwater and Drinking Water Resources</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- The Master Plan proposes to connect to the existing water and sewer facilities currently located within News Road. JCSA has reviewed and approved the water and sewer flows within the CIS, as well as the proposed utility layout within the Master Plan.</li> <li>- Per the proposed proffers, the property will be developed with water conservation standards approved by JCSA.</li> </ul>
<u>Watersheds, Streams, and Reservoirs</u> The property is located within the Powhatan Creek Watershed.	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- The Master Plan shows a conceptual layout for stormwater management facilities.</li> <li>- The proposed proffers require the Master Stormwater Management Plan (MSWMP) for the Property be approved prior to the first site plan submittal and comply with the standards within the adopted Watershed Management Plan in place at time of submittal.</li> </ul>
<u>Cultural/Historic</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- This property is identified as a Moderate sensitive area on the James City County Archaeological Assessment, meaning no archaeological study is required for this application as part of the legislative submittal.</li> <li>- Per Section 24-145 of the Zoning Ordinance, a Phase 1 Archaeological Study will be required for submittal and review as part of the initial site plan submittal.</li> </ul>
<u>Nearby and Surrounding Properties</u>	<u>No Mitigation Required</u>	- The proposed area to be developed as Ford’s Village will be residential in nature and age-restricted throughout, per the proposed proffers. The impacts related to nuisances such as noise and light are not anticipated to impact neighboring and surrounding proffers due to adequate buffering and Ordinance requirements regarding lighting.

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<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
Please note the information in the Status column indicated below does not include information from the Financial Impacts of Residential Units section of this staff report.		
<u>Community Character</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- News Road is identified as a Wooded Community Character Corridor (CCC).</li> <li>- The Master Plan shows a 150-foot wide CCC buffer along the entire frontage of News Road on the property. This property is heavily wooded and consists of mature trees that provide substantial screening from the News Road right-of-way.</li> </ul>

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**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford’s Colony (Ford’s Village)  
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**FINANCIAL IMPACTS OF RESIDENTIAL UNITS**

On September 10, 2019, the Board of Supervisors adopted a resolution directing staff to produce a fact sheet that outlines general financial impacts of residential dwellings based on the Adopted Budget, the Capital Improvements Program, the Comprehensive Plan, the Strategic Plan, and any other relevant data. The resolution further directs that the fact sheet should address the immediate and long-range fiscal impacts related to increased use and demand on the following public facilities and resources. The per unit Residential Impacts are based on the Fiscal Year (FY) 2022 data provided by the Department of Financial and Management Services (FMS) and JCSA, as well as the projected number of annual residential unit data through 2034 (the Comprehensive Plan horizon year). The per unit impacts are detailed in Table 1 below.

*Table 1-Per Unit Fiscal Residential Impacts Information*

Category	Residential Impact	Proffered with current application*
Public Transportation	\$ 299.21	\$958.20
Public Safety	-	\$1,277.61
Public Schools	\$1,417.63	\$0**
Public Parks & Recreation	\$4,156.19	\$0
Public Libraries and Cultural Centers	\$ 170.88	\$1,277.61 (portion of Public Safety)
Groundwater and Drinking Water Resources	\$3,542.69	\$1,111.52
Watersheds, Streams & Reservoirs	\$1,954.03	\$0

*\*The rooms/beds are excluded from this analysis, per the CCRC analysis guidance in the Comprehensive Plan.*

*\*\*All units are age-restricted and not expected to generate school children.*

The general financial impacts of dwelling units described above are for the County and residential development as a whole. Submission of a development-specific FIA is required for all rezonings that include a residential component. The FIA takes into account all development components, including both residential and non-residential uses and the results are also affected by types of residential units and projected assessed values.

- The County’s FIA worksheet was submitted per the Fiscal Year 2021 calculations provided by the Department of FMS (see Attachment No. 8).
- Per that analysis, the development would result in a \$727,922 annual positive fiscal impact to the County. When not accounting for schoolchildren generation (which is not anticipated as a result of this age-restricted development), the impact is \$1,887,000.

**Comprehensive Plan**

The 2045 Comprehensive Plan states that the use of land should be consistent with the capacity of existing and planned public facilities and services and the County’s ability to provide such facilities and services. The Plan also states “expect developments subject to zoning or SUP review to mitigate their impacts.” Information on impacts and the mitigation provided by this application are included in this staff report.

The property is designated Low Density Residential (LDR) on the adopted 2045 Comprehensive Plan Land Use Map and is located inside the PSA. The following general guidance is stated for the LDR designation in the Comprehensive Plan:

**REZONING-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**  
**Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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Single-family homes, multifamily units, and retirement and care facilities/communities are all recommended uses in LDR areas provided that development:

- Complements the residential character of the surrounding area;
- Has traffic, noise, and lighting impacts similar to surrounding uses;
- Is generally located on collector or arterial roads at intersections;
- Provides adequate screening and buffering to protect the character of nearby residential areas; and
- Act as a transitional use between residential and commercial areas or, if located within a residential community, be integrated with the residential character of the area rather than altering its nature.

Staff finds this proposal meets all of these criteria. Additionally, the Comprehensive Plan recommends a gross density of one to four units per acre in LDR areas. When describing the review process for a CCRC, the Comprehensive Plan recommends the density be based on the number of independent living units (361 units), with the assisted living rooms and/or skilled nursing beds excluded from this calculation as these are considered institutional uses.

As such, this application would result in a significant decrease in the density on the subject parcel from the 4.77 units per acre to 2.89 dwelling units per acre. This proposal would also result in a marginal decrease within the overall density of Ford's Colony from 1.36 unit per acre to 1.28 units per acre.

**STAFF RECOMMENDATION**

Staff recommends that the Board of Supervisors approve the Master Plan and proffer amendment application.

TW/ap  
RZ21-12MP21-3FordsClnyVillage

Attachments:

1. Ordinance
2. Location Map
3. Community Impact Statement
4. Proposed Proffers
5. Proposed Master Plan
6. Existing Proffers
7. Existing Master Plan
8. Fiscal Impact Analysis
9. Housing Examples
10. DRW Memorandum
11. Parks and Recreation Exception Request
12. Public Input
13. Approved minutes from the December 1, 2021, Planning Commission meeting

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE TO AMEND EXISTING PROFFERS RECORDED AS INSTRUMENT NUMBER 080017656, APPROVED AS PART OF Z-08-07 TO PERMIT A DIFFERENT MIX OF UNIT TYPES AND REVISED DEVELOPMENT STANDARDS AND AS DESCRIBED IN CASE NO. Z-21-0012

WHEREAS, on July 8, 2008, the Board of Supervisors approved Case No. Z-08-07 which included proffers regulating the development of a proposed Community Care Retirement Facility, including but not limited to the number of units, unit type, cash contributions for impact mitigation, and stormwater management, on the parcel located at 3889 News Road, James City County, Virginia, further identified as James City Tax ID Parcel No. 3730100004 (the "Property"); and

WHEREAS, Mr. Vernon Geddy has applied for an amendment to the existing proffers on behalf of the owners, SWR-Hockaday LLC & Martha McMurrin, to permit a different unit mixture, site design, and development approach; and

WHEREAS, the Planning Commission, following its public hearing on December 1, 2021, recommended approval of Case No. Z-21-0012 by a vote of 5-1; and

WHEREAS, the Board of Supervisors of James City County, Virginia, finds Case No. Z-21-0012 to be required by public necessity, convenience, general welfare, and good zoning practice.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that Case No. Z-21-0012 is hereby approved as described therein and the amended voluntary proffers are accepted.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

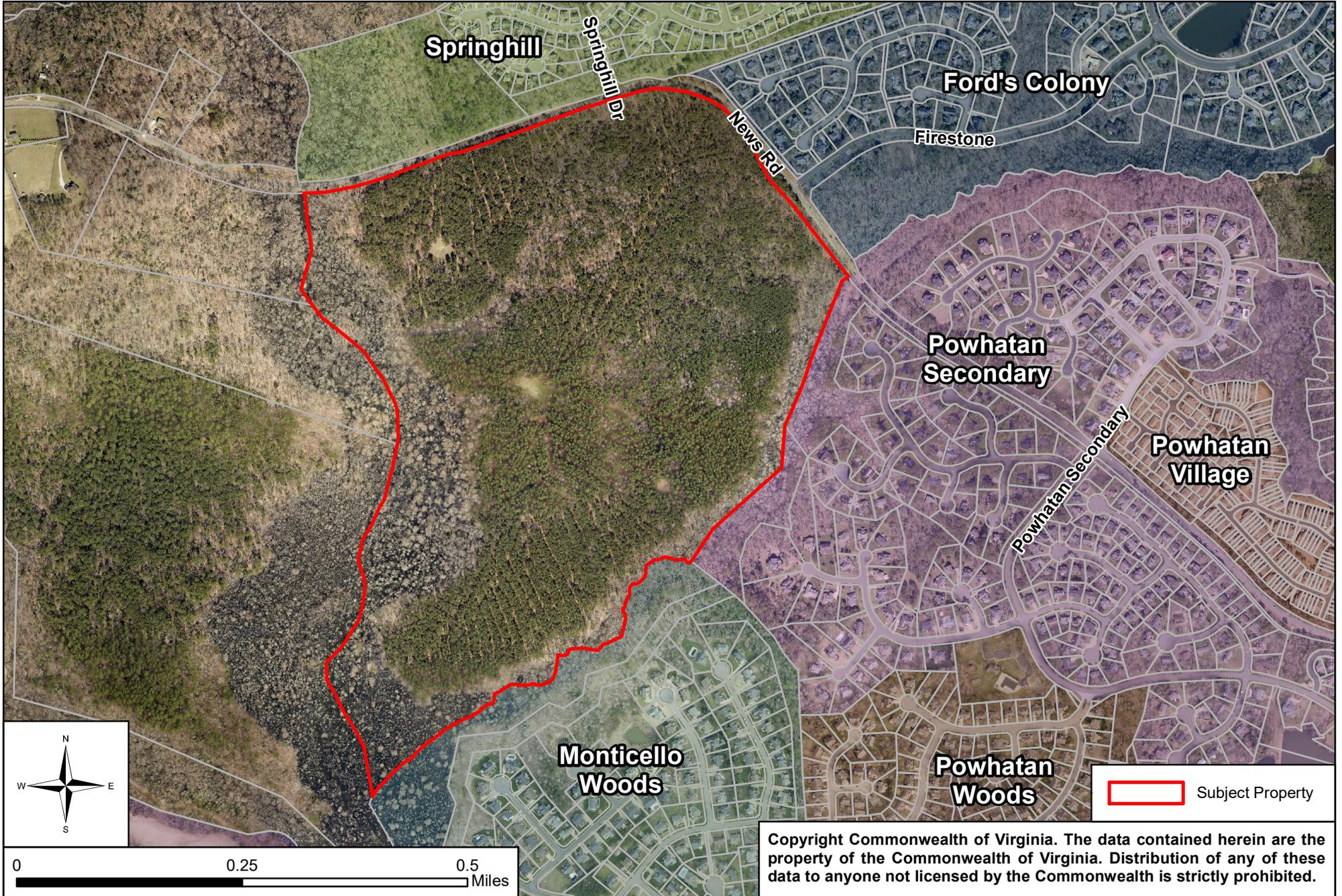
ATTEST:

\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	_____	_____	_____	_____
HIPPLE	_____	_____	_____	_____
LARSON	_____	_____	_____	_____
SADLER	_____	_____	_____	_____
MCGLENNON	_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

# Z-21-0012 & MP 21-0003. Proffer and Master Plan Amendment for Ford's Colony (Ford's Village)



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# **Community Impact Statement**

*For*

# *Ford's Village*



*Prepared For*

**Frye Development, LLC**  
**Norfolk, VA 23510**

*Revised October 2021*  
*AES Project Number W10514*

Prepared by:



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## ***I. INTRODUCTION***

Frye Development, LLC, proposes to amend the previously approved master plan for Ford's Colony at Williamsburg to create a revised mix of senior residential housing and skilled care units. The amended master plan covers 180.79 acres located along News Road located directly across from Firestone Drive.

## ***II. THE PROJECT TEAM***

The organizations that participated in the preparation of the information provided with this rezoning submission are as follows:

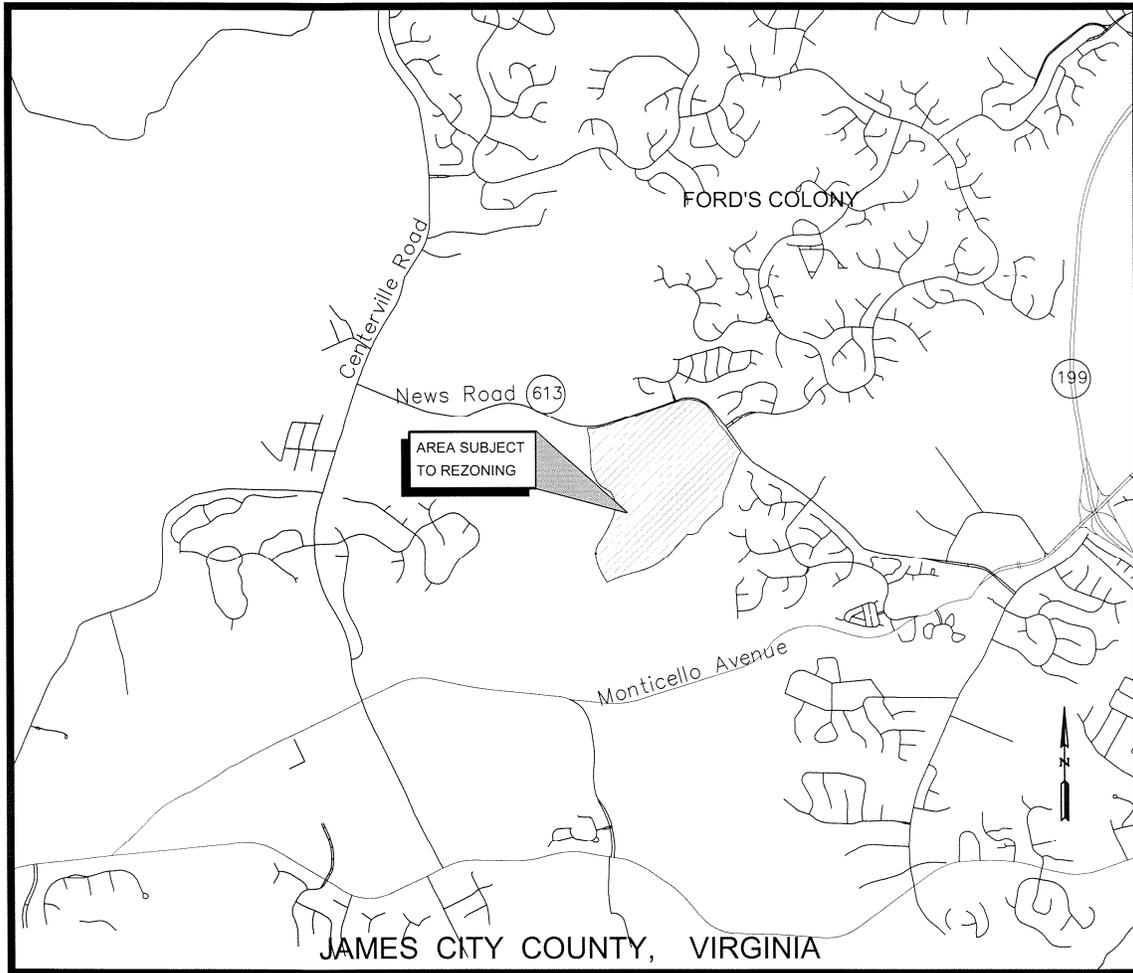
- Developer - Frye Development, LLC
- Senior Living Operator - Retirement Unlimited, Inc.
- Civil Engineering - AES Consulting Engineers
- Environmental/Wetlands - Wetlands Solutions, Inc./Kerr Environmental
- Traffic - DRW & Associates
- Land Planning - Michael Watkins Architect
- Attorney - Geddy, Harris, Franck & Hickman, LLP

Frye Development, LLC, a wholly owned subsidiary of Frye Properties, Inc.. Frye Properties, Inc. Headquartered in Norfolk, Virginia, Frye provides real estate development, property management, construction, and full-service real estate brokerage services. The recipient of multiple regional and national awards for its developments, Frye Properties, Inc. has earned the respect of government officials, residents and clients. Frye is a trusted and highly experienced design, development, build group that specializes in creating traditional, walkable neighborhoods that seamlessly integrate into the special communities where they build. Frye's dedicated team represents a collection of experience that ranges from master planning, land development, architecture and building, to historic rehabilitation and management of a large portfolio of residential and commercial properties. Frye's extensive experience in developing quality residential projects, including East Beach in Norfolk and The Cavalier Residences in Virginia Beach, demonstrates its long-standing commitment to the highest level of design standards within the urban context. Frye believes its philosophy of respecting the land and its natural assets, its surroundings, and community history leads to the creation of vibrant, memorable communities which will compliment James City County's development goals and standards. Frye is excited about the chance to make that vision a reality.

Frye Development has partnered with Retirement Unlimited, Incorporated (RUI) to operate the senior living building on the property. RUI is a family run business, focused on senior living throughout the state of Virginia. RUI honors the values and traditions set forth by their founders and strives to take the senior living experience to the next level by offering diverse enrichment programs, social experiences, and levels of care in a comfortable and elegant setting. RUI operates multiple properties across the state Virginia including sites in Newport News, Virginia Beach and Richmond.

### III. EXISTING CONDITIONS

Site Location:



**Figure 1**

Master Plan Sheet 3 and 4 contain detailed information on wetlands, buffers, soils, and slopes. A pre-development site analysis revealed the following results:

<i>Wetland areas:</i>	<i>47.42 acres</i>
<i>Buffers:</i>	<i>58.81 acres</i>
<b>Subtotal</b>	<b>106.23 acres</b>
<i>Uplands</i>	<i>74.56 acres</i>
<b>Total</b>	<b>180.79 acres</b>

## **IV. PROJECT DESCRIPTION**

*The Village* is approximately 181 acres in area and located across from the Firestone Entrance to Ford's Colony on News Road in James City County. The Village is envisioned as a full-service Continuing Care Retirement Community (CCRC) with 286 age restricted single family, townhome and condominium units; and a senior living building housing a combination of 230 independent-living apartment units, assisted-living units, and skilled/memory care beds. The CCRC development will provide on-site shared amenities available for those living in the senior living ("big house") and those living in the independent homes. The 286 age restricted units are envisioned as for sale product with a small reservation of 5 units available for short term rentals for guests of community residences. The model of this development differs from similar existing CCRC developments in James City as the senior living operator intends to offer their units on a rental model rather than the upfront buy-in model and the housing units are to be fee simple. Additionally, the property while part of the overall Ford's Colony master plan is intended to be autonomous, having its own internal homeowner's association. Approximately 70% of the total site is preserved in open space; much of that open space is to remain natural through the preservation of wetlands, streams, and associated buffers in compliance with James City County ordinances and policies. Other developable lands have been provided as common open space either in the form of buffer areas or recreation open space (as noted on Sheet 4 of the Master Plan set, *The Village Land-Use Master Plan*).

## **V. PLANNING CONSIDERATIONS**

### **A. Land Use**

The proposed land use for The Village is consistent with the current property zoning and designation of CCRC on the Ford's Colony at Williamsburg Master Plan and the surrounding land uses in the vicinity; Ford's Colony and Springhill to the north, Powhatan Secondary to the east, Monticello Woods to the south, and Greensprings Plantation to the west. The Village property is designated Low-Density Residential on the current James City County Comprehensive Plan, with a gross density of 1 to 4 units per acre. The revised mix of residential age restricted units reduces the previously approved density on the property (from 10 units/acre to 7 units/acre) and is shown in the residential count of the Ford's Colony Master Plan which produces an overall density of approximately 1.2 DUA. The maximum residential density in the R-4 District (which is also generally consistent with surrounding zoning districts) is 2.0 Dwelling Units per Acre.

### **B. Environmental**

A detailed environmental site analysis was conducted on this property. The Warburton Tract was subjected to thorough soft and hardwood timbering less than twenty years ago. Thick undergrowth is prevalent on the property. Recent work performed by the Environmental Services Division of Wetlands Solutions identified 47 acres of wetlands and streams or 26% of the site. Wetland Solutions has also conducted a perennial stream analysis on the property and is in the process of coordinating a review with the James City County Environmental Department. The Warburton Tract Preliminary Layout and Grading plan sheet found in the environmental studies report at page 4 shows both the Resource Protection Area (RPA) buffers; based on changes in the perennial scoring system areas previously covered by 50' non-RPA buffers have been revised to have full 100-ft RPA buffers. Additional areas containing slopes of 25% or greater have been mapped but account for limited portions of the developable area of the site (outside

RPA buffers). Updated research and field verification also indicated that habitat for the Small Whorled Pogonia and Virginia Least Trillium are not present on this site.

### ***C. Parks and Recreation***

Frye Development, LLC, proposes to provide both active and passive recreational amenities designed to meet the needs of the anticipated residents while exceeding James City County policy standards. There are two sets of amenities for the project; those within the CCRC building and those scattered throughout the development in the form of pocket parks, soft and hard surface trails and passive open space. Frye proposes to dedicate a minimum of 4 acres of park/recreation space within Land Uses A,B&C; including a pool and community center building, walking trails a series of parks, several passive open space areas, nature trails and sidewalks. The project envisions the potential to provide existing Ford's Colony residents the ability to share in the development amenities.

## ***VI. ANALYSIS OF IMPACTS TO PUBLIC FACILITIES AND SERVICES***

The subject property is located within the Primary Service Area of James City County. Parcels and subsequent land development activities within the Primary Service Area are required to connect to public water and sanitary sewer service provided by the James City Service Authority (JCSA). Sheet 5 of the Master Plan, *The Master Utility Plan* is intended to supplement this report for information on public water and public sanitary sewer.

### ***A. Public Water Facilities***

The subject property will be served with public drinking water by the existing JCSA water distribution system in the area. JCSA currently maintains an existing 12-inch water main along News Road. This line is supported by loops through existing Ford's Colony as well as a loop from Monticello Avenue. The system facilities in this area are anticipated to be adequate for this development based upon previous flow data taken at a hydrant at the entrance to the adjacent Spring Hill subdivision. This would indicate adequate pressures and flows will be present throughout the proposed development. While our projected flows anticipate water and sewage demands based on residential housing as outlined by JCSA and the State Health Department, it is significant to note, that case studies and previous projects within JCC demonstrate reduced water consumption in age restricted communities.

A detailed water distribution system model will be completed and submitted as part of the subdivision review process. The model will examine flow rates and pressures throughout the immediate water system area to ensure adequate flow and pressure to accommodate the required fire flows.

### ***B. Public Sewer Facilities***

Sanitary sewer service is provided to the subject property via the adjacent Powhatan Secondary interceptor sewer. This pipeline is a 21-inch gravity interceptor which flows to JCSA Lift Station 1-2. Lift Station 1-2 pumps directly into a HRSD Force Main. All flows from the project are to be

collected by onsite gravity sewers and connected to the existing 21-inch interceptor line. The connection point will be in the vicinity of manhole on News Road as indicated on the Utility Master Plan. Capacity in the existing gravity sewer and receiving Lift Station was evaluated by JCSEA as part of the original application. The current application represents a 42% reduction in total daily anticipated sewer flows from the project. Additionally, JCSEA made improvements to the Powhattan Sewer main since the 2008 rezoning which we anticipate would have improved the current sewer capacity.

**Table 1 – Projected Wastewater Flows from *The Village***

Type of Development	No. of Units	Flow (GPD/ Unit)	Average Daily Flow (GPD)	Duration (hrs)	Avg. Flow (GPM)	Peak Flow (GPM)
<b>RESIDENTIAL</b>						
Single-family/Multi Family	286	310	88,660	24	46.3	115.7
IL Apartments	75	310	23,250	24	25.8	64.5
Subtotal	361		111,910		77.7	194.3
<b>NON-RESIDENTIAL</b>						
Nursing/Skilled	155 Beds	160	24,800	24	17.2	42.5
Subtotal			24,800		17.2	42.5
<b>Total (Amendment)</b>			<b>136,710</b>		<b>94.9</b>	<b>237.3</b>
<i>Total (Original)</i>			<i>219,420</i>		<i>152.4</i>	<i>381.0</i>

### **C. Fire Protection and Emergency Services**

There are currently five fire stations providing fire protection and Emergency Medical Services (EMS) to James City County. The closest fire station to the subject site is Station #5 located at 3201 Monticello Avenue, approximately 3.25 miles southwest of this project. According to the James City County Deputy Fire Marshal, the official response time is based on the arrival of both fire and EMS personnel. Currently, EMS services are only available from Station #4 on Olde Towne Road. From this station, an estimated response time will be less than eight minutes. However, EMS is planned for Station #5 in the near future. The CCRC will have medical first responders, as well as CPR and First Aid certified personnel, on staff. Limited medical facilities are onsite in the main CCRC and the Assisted Living buildings.

The next closest fire station to the subject site is station number 3 at 5077 John Tyler Highway. Only slightly more distant than the Monticello station (approximately 3.9 miles), response time to the site is reasonable if an emergency event occurs requiring additional fire and life safety support. These two fire stations, and the emergency medical staff available at these stations, will provide a more than adequate response to potential emergencies. In

addition, through cooperative agreements between Williamsburg, James City County, and York County, the site may also be served by the York County station at Lightfoot.

**D. Solid Waste**

The proposed development on the subject property will generate solid wastes that will require collection and disposal to promote a safe and healthy environment. Reputable, private contractors, hired by the Homeowners Association will handle the collection of solid waste. Both trash and recyclable material will be removed from this site to a solid waste transfer station.

**E. Utility Service Providers**

Virginia Natural Gas, Dominion Virginia Power, and Cox Communications provide, respectively, natural gas, electricity, cable TV service, and telephone service to this area. The current policy of these utility service providers is to extend service to the development at no cost to the developer when positive revenue is identified; plus, with new land development, these utility service providers are required to place all new utility service underground.

**F. Schools**

*The Village* is located within the Matoka Elementary School, James Blair Middle School, and Lafayette High School districts. However, under the proposed Master Plan, the CCRC facility and all residential units will be age-restricted removing the residency potential for school age children. Thus, the proposed development, consistent with the previously approved zoning for the property will not generate any school children.

**VII. ANALYSIS OF ENVIRONMENTAL IMPACTS**

**A. Preliminary Wetland Determination**

Investigations were conducted by Wetland Solutions (WSSI/Kerr Environmental Services Corp in the fall of 2016 and were reinvestigated in 2020 for the property. The extent of wetland features is shown on Master Conceptual Plan Sheet 3. The U.S. Army Corps of Engineers confirmation of delineated wetlands is currently underway.

Based on the investigation by WSSI, approximately 47 acres of wetlands are present on the property. In the Master Plan for the proposed development, we have attempted to avoid all impacts to the wetlands, however it may be necessary to provide minor impacts to the wetlands for utility crossings and stormwater outfalls. In addition, there may be some temporary disturbances of some steep slopes associated with the construction of the sanitary sewer pump station and the stormwater management facilities. All of the above-described items may require proper state and federal permitting prior to the issuance of James City County Land Disturbance Permits.

**B. Resource Protection Areas**

The property contains Resource Protection Areas (RPA) and associated buffers which are shown on Master Plan Sheet 2- Existing Conditions. Also illustrated is an expanded Powhatan Creek buffer as previously coordinated with James City County.

### **C. Soils**

The Soil Survey of James City and York Counties and the City of Williamsburg, Virginia (USDA 1985) shows several soil types within the property boundary. This property is predominantly situated on well-drained soils of Craven-Uchee, Emporia Complex, Emporia, and Slagle soil types. Detailed soils breakdown are noted on sheet 3 of the master plan.

## **VIII. ANALYSIS OF STORMWATER MANAGEMENT**

As the property falls within the Powhatan Creek Watershed, additional measures of watershed management are suggested by James City County policy to protect the natural resource of the watershed, and prevent further degradation of the watershed's water quality. These measures, in the form of Special Stormwater Criteria (SSC), further enhance the quality of stormwater runoff from the development site and assist in the preservation of pre-development hydrology. In addition to the main structural BMP, seven (7) SSC measures are required to meet minimum requirements set forth by the James City County policy. Furthermore, five (5) additional measures will be provided to improve the water quality of the Powhatan Creek Watershed "over and above" the state stormwater requirements. Water quality measures to be implemented include: bioretention facilities; dry swales at locations not draining to a BMP; enhanced outlet protection at all piped outfalls of BMP; enhanced cut/fill slope stabilization measure applied site-wide. Please refer to the Stormwater Plan for the water quality calculation work sheet as well as the preliminary list of measures to be implemented.

A preliminary stormwater management analysis and design has been performed as a component of the planning for this proposed project. The purpose of the stormwater management plan is to address the Department of Environmental Quality (DEQ) requirements for water quality and quantity control of flow generated by the proposed development. AES performed initial design BMP sizing and determined that the proposed wet ponds and bioretention cells will satisfy a significant amount of the water quality and quantity requirements as outlined in the Virginia Runoff Reduction Method. Preliminary estimates suggest the development will need to remove a proposed 30 lbs. of phosphorus a year with our current envisioned design removing as much as 38 lbs. per year. In evaluating stormwater management solutions on the subject site, unique site characteristics were considered. Preliminary site investigation identified the following site characteristics to be considered in stormwater management planning:

- The entire project is situated within the Powhatan Creek Watershed of the James River. The property nearly equally drains to the Powhatan Creek mainstem and to Cold Spring Swamp (Powhatan Creek Subwatershed 209).
- The property is currently young forest and overall unimproved. Extensive landscaping will be used within the developed areas of the site and large perimeter area buffers will be left in the current natural state.

In summary, with the preliminary analysis of *The Village*, the stormwater management plan proposed will protect overall downstream water quality, help preserve the natural hydrology of the watershed, and reduce the tendency of development to cause downstream erosion to receiving channels.

**IX. ANALYSIS OF IMPACTS TO TRAFFIC**

A traffic study memo has been prepared by DRW & Associates to supplement previously prepared studies of the News Road Corridor and Ford's Colony Firestone entrances. In summary of that memo, the impacts associated with the amendment represent a roughly 14% reduction in the Total Daily traffic from the currently proposed development over the previously approved rezoning application (7% less traffic volume than anticipated in the recent 2020 Kimley Horn Study). The developer is still pledging to address the remaining traffic proffers as proposed under the original development.

**X. FISCAL IMPACT STUDY**

A fiscal impact analysis was completed utilizing the James City County provided worksheet. The worksheet demonstrates that the proposed community will generate a positive fiscal contribution of roughly \$505,000 annually however it should be noted that this worksheet considers school children for all the residential units within the community. Not wanting to modify the JCC forms we have submitted them as required, however as this project is proffered to be age restricted, we feel that this fiscal analysis provides for an overly conservative evaluation of the benefit this community will provide James City County. If we were to remove the school children from the worksheets calculation this development is anticipated to positively contribute \$1,887,000 annually to James City County's tax base.

**XI. CONCLUSIONS**

In summary, the Community Impact Statement for the rezoning and subsequent development of *The Village* highlights the following conclusions and public benefits:

- This project will provide a significant financial benefit to James City County; with a net positive contribution of approximately \$1.9 million per year.
- The rezoning is consistent with the intended land use designated on the current Comprehensive Plan for this area. Further, the proposed residential development is consistent with adjacent neighborhoods and represents reduced impacts from the current master plan.
- There is adequate capacity in the system of roads serving this project and developer is maintaining the previously proffered traffic improvements with the project.
- Adequate public services (water and sewer, fire) and utility services (gas, electricity, cable television, and telephone) are available for development.
- James City County's stormwater requirements, including the incorporation of SSC associated with the Powhatan Creek are being met. Additional use of Low-Impact Design (LID) techniques ensures those requirements are exceeded.

Tax Parcel: 3730100004  
Prepared by: Vernon M. Geddy, III (VSB#21902)  
Geddy, Harris, Franck & Hickman, LLP  
1177 Jamestown Road  
Williamsburg, Virginia 23185

AMENDMENT TO AMENDED AND RESTATED FORD'S  
COLONY PROFFERS

This AMENDMENT TO AMENDED AND RESTATED FORD'S COLONY PROFFERS are made this 17<sup>th</sup> day of February, 2022 by **SWR-HOCKADAY, LLC**, a Georgia limited liability company, and **MARTHA WARBURTON MCMURRAN** (collectively, together with their successors in title to the Property, the "Owner") and **FRYE DEVELOPMENT, LLC**, a Virginia limited liability company ("Developer"), each to be indexed as Grantor, and **JAMES CITY COUNTY, VIRGINIA**, a political subdivision of the Commonwealth of Virginia (the "County), to be indexed as Grantee.

RECITALS

A. Owner is the owner of the real property with an address of 3889 News Road, Parcel ID# 3730100004, containing approximately 180 acres, which property is more particularly described on Exhibit A (the "Property"). Developer is the contract purchaser of the Property.

B. Upon application in 2008 by Realtec, Incorporated, the then owner of the Property and developer of the Ford's Colony at Williamsburg development, the County approved an amendment of the Ford's Colony Master Plan to include the Property as Section 37 of Ford's Colony (the "Approved Master Plan") and the rezoning of the Property from R-8 to R-4, subject to Amended and Restated Ford's Colony Proffers made by Realtec, Incorporated dated June 10, 2008 and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument

No. 080017656 (the "2008 Proffers"). The 2008 Proffers restated the prior proffers applicable to the Ford's Colony development not including the Property (defined as the "Existing Property" in the 2008 Proffers) and added new proffers applicable only to the Property. Realtec no longer owns the Property and is no longer involved in the development of Ford's Colony. The proffers applicable to the Existing Property were amended by Amendment to Ford's Colony Proffers dated March 11, 2020 and recorded in the aforesaid Clerk's Office as Instrument No. 200008078 (the "2020 Amendment"). The 2008 Proffers, as amended by the 2020 Amendment, are hereinafter called the "Existing Proffers."

C. Owner and Developer have submitted to the County an application to (i) amend the Approved Master Plan and in connection therewith have submitted a master plan entitled "Master Plan Amendment for Ford's Village" prepared by AES Consulting Engineers dated June 2021 (the "Amended Master Plan") in accordance with the County Zoning Ordinance and (ii) amend the Existing Proffers applicable to the Property to offer to the County certain revised conditions on the development of the Property not generally applicable to land zoned R-4.

D. In consideration of the approval of the amendment of the Approved Master Plan, Owner desires to amend the Existing Proffers as set forth below. If the requested rezoning and amendment of the Approved Master Plan is not approved by James City County, this Amendment to Amended and Restated Ford's Colony Proffers shall be void and the Existing Proffers applicable to the Property shall remain unchanged, in full force and effect. Owner shall have no obligation under this Amendment to Amended and Restated Ford's Colony Proffers unless and until the Property is developed pursuant to

the Amended Master Plan.

#### AMENDMENT OF PROFFERS APPLICABLE TO THE PROPERTY

Sections 2 through 22 of the Existing Proffers are hereby deleted and replaced by the following:

2. **Master Plan**. The Property shall be developed generally as shown and set out on sheets 4 through 6 of the Amended Master Plan. Final plans (as defined in Section 24-276(b)(1) of the Zoning Ordinance) may vary from the Amended Master Plan to the extent permitted by Section 24-276(b)(1) of the Zoning Ordinance.

3. **Density**. (a) There shall be no more than 230 dwelling units comprised of independent living units, assisted living/memory care units consisting of up to four beds, and skilled nursing units consisting of up to two beds (each a "dwelling unit") on the portion of the Property designated on the Master Plan as CCRC-D, of which no more than 75 shall be independent dwelling units, no more than 155 shall be AL units (defined below) and no more than 40 shall be skilled nursing beds. The term "assisted living/memory care unit" (an "AL Unit") shall mean a non-medical residential dwelling unit in the assisted living facility area or memory care area of the independent and assisted living community licensed in accordance with Sections 63.2-1800 et seq. of the Virginia Code and Sections 22 VAC 40-73 et seq. of the Virginia Administrative Code where adults who are aged, infirm or disabled are provided personal and health care services and 24-hour supervision and assistance. An AL Unit must meet the standards set forth in 22 VAC 40-73-750 and 900.

(b) There shall be no more than a total of 286 independent living dwelling units on the portion of the Property designated on the Master Plan as CCRC-A, CCRC-B or

CCRC-C.

(c) All dwelling units developed on the Property shall be occupied by persons eighteen (18) years of age or older in accordance with applicable federal and state laws and regulations, including but not limited to: the Fair Housing Act, 42 U.S.C. 3601 et seq. and the exemption therefrom provided by 42 U.S.C. 3607(b)(2)(C) regarding discrimination based on familial status; the Housing for Older Persons Act of 1995, 46 U.S.C. 3601 et seq.; the Virginia Fair Housing Law Va. Code 36-96.1 et seq.; any regulations adopted pursuant to the foregoing; any judicial decisions arising thereunder; any exemptions and/or qualifications thereunder; and any amendments to the foregoing as now or may hereafter exist. Specific provisions of the age restriction described above and provisions for enforcement of same shall be set forth in a recorded document which shall be subject to the review and approval of the County Attorney prior to issuance of the first building permit for dwelling units on the Property.

(d) Any accessory commercial uses located on the Property, such as bank offices, beauty salons and barbershops, shall be located and designed to serve residents of the Property as verified by the Director of Planning.

**4. Water Conservation.** The Owner shall be responsible for developing water conservation standards to be submitted to and approved by the James City Service Authority ("JCSA") and subsequently for enforcing these standards. The standards shall address such water conservation measures as limitations on the installation and use of irrigation systems and irrigation wells, the use of drought resistant native and other adopted low water use landscaping materials and warm season turf on common areas in areas with appropriate growing conditions for such turf and the use of

water conserving fixtures and appliances to promote water conservation and minimize the use of public water resources. The standards shall be approved by the JCSA prior to final subdivision or site plan approval.

**5. Contributions for Community Impacts.** (a) A contribution of \$1,277.61 for each independent living dwelling unit ("IL Dwelling Unit") on the Property shall be made to the County for fire, police or emergency services, library uses, and other public facilities, uses or infrastructure.

(b) A contribution of \$319.40 for each AL Unit and skilled nursing dwelling unit (each an "AL/MC/SN Dwelling Unit") on the Property shall be made to the County for fire, police or emergency services uses.

(c) A contribution of \$1,111.52 for each IL Dwelling Unit and \$555.76 for each AL/MC/SN Dwelling Unit on the Property shall be made to the JCSA for water system improvements.

(d) A contribution of \$958.20 for each IL Dwelling Unit on the Property, subject to a credit for the costs of engineering and construction related to the improvements proffered by Owner in Section 6(b) calculated as set forth below, shall be made to the County for improvements to the News Road/Powhatan Secondary intersection, flood control measures where News Road crosses Cold Spring swamp, improvements at the News Road/Centerville Road intersection and other off-site road improvements in the News Road corridor. Owner shall receive a credit in an amount equal to its actual costs of the engineering and construction of the improvements proffered by Owner in Section 6(b) against the initial per unit contributions proffered under paragraph (d) of this Section (the "Credit Amount"). If construction of such

improvements is not complete at the time the initial per unit contributions are due under paragraph (e) of this Section, the Credit Amount shall equal an engineer's estimate of such costs submitted by the Owner and approved by the Director of Planning. The Credit Amount divided by \$958.20 is the number of IL Dwelling Units for which the Credit Amount offsets the cash contribution otherwise due and payable. After application of the Credit Amount, the \$958.20 per IL Dwelling Unit cash contribution shall be payable on all subsequent IL Dwelling Units on the Property. Owner shall provide the County with copies of invoices and other supporting documentation of the costs of the improvements. If the Credit Amount is based on an agreed upon costs estimate, it shall be adjusted to equal the final actual costs of engineering and construction ("Actual Costs"). If the Credit Amount is more than the Actual Costs, Owner shall pay to the County an amount equal to the difference. If the Credit Amount is less than the Actual Costs, Owner shall receive a credit equal to the difference between the Actual Costs and the Credit Amount at the time the next cash contributions are due this paragraph.

(e) The contributions described above in paragraphs (a), (b), (c) and (d) shall be paid to the County for each dwelling unit on the Property after completion of the final inspection and prior to the time of the issuance of any certificate of occupancy for the dwelling unit in question.

(f) The per dwelling unit contribution amounts shall consist of the amounts set forth in the above paragraphs plus any adjustments included in the Marshall and Swift Building Costs Index (the "Index") from 2021 to the year a payment is made if payments are made after on or after January 1, 2022. In no event shall the per dwelling unit

contribution be adjusted to a sum less than the amounts set forth in the preceding paragraphs of this Section. In the event that the Index is not available, a reliable government or other independent publication evaluating information heretofore used in determining the Index (approved in advance by the County Manager of Financial Management Services) shall be relied upon in establishing an inflationary factor for purposes of increasing the per dwelling unit contribution to approximate the rate of annual inflation in the County.

(g) The Subsidized Beds defined in Paragraph 15 shall not be included in the number of dwelling units contemplated in this Paragraph 5 and therefore shall not be subject to the contribution amounts described in subparagraphs (a), (b), (c) and (d).

**6. Entrances; Traffic Improvements.** (a) Prior to approval of any site or subdivision plans for development on the Property there shall be an updated traffic signal warrant analysis for the News Road/Firestone Drive/project entrance intersection submitted to and approved by VDOT and the County. If the updated analysis shows a signal is warranted and the installation of the signal is approved by VDOT, Owner shall install or pay for the installation of the traffic signal as a part of the construction of the project entrance. At the main entrance into the Property at the intersection of News Road and Firestone Drive, an exclusive left-turn lane from westbound News Road into the Property and an exclusive right-turn lane from eastbound News Road into the Property shall be constructed. The existing southbound left turn lane on Firestone Drive at News Road will be restriped to a shared left and through lane.

(b) Prior to the County issuing final approval on any site or subdivision plan for any dwelling units on the Property, Owner shall submit plans to the County and Virginia

Department of Transportation ("VDOT") for the installation of an exclusive left-turn lane on westbound News Road at the intersection with Powhatan Secondary. Owner will complete construction of the left-turn lane within twelve months of County and VDOT approvals to construct this exclusive left-turn lane. Owner is not responsible for road right of way acquisition or landscape/screening other than stabilization of disturbed soils. The County may elect to accept the cash equivalent contribution outlined in Proffer 5(d), (with any adjustments as may be appropriate as provided for in Proffer 5(g)), in lieu of construction of the turn lane by the Owner, in the event that acquisition of any needed right-of-way proves to be prohibitive. In the event that VDOT constructs this turn lane as part of its Six Year Secondary Road Plan, the County may elect to divert some or all of the cash equivalent contribution to other road projects in the News Road Corridor, at the News Road/Monticello Avenue intersection, or in the western Monticello Avenue Corridor. If VDOT traffic signal warrants are met and VDOT has approved the installation of a traffic signal at the intersection of News Road with Powhatan Secondary on or before the date that control of the homeowners' association created for the areas designated in the Master Plan as CCRC-A, CCRC-B or CCRC-C has transitioned from developer to homeowner control, Owner shall install or pay for the installation of the traffic signal.

(c) The improvements proffered hereby shall be constructed in accordance with VDOT standards. The improvements listed in paragraph (a) shall be completed or all required permits and plans for such approvals shall have been approved by all necessary governmental agencies and their completion guaranteed in form satisfactory to the County Attorney prior to the issuance of any certificates of occupancy for any

building on the Property.

(d) The second entrance to the Property shall be located in the general location shown on the Master Plan and shall be limited by gate to emergency access only unless and until an updated traffic study identifying the impacts of a full entrance is submitted to and reviewed and approved by VDOT and the County. This updated study shall be approved prior to the submission of any site plan for the full entrance and shall document required turn lane and other roadway improvements for the full entrance which improvements shall be shown on the submitted site plan. The entrance shall be limited to emergency access only until such improvements have been constructed and, to the extent necessary, accepted by VDOT.

(e) Owner shall convey free of charge to VDOT or the County any right of way from the Property necessary for the widening or realignment of News Road or the improvements proffered herein within 60 days of a written request for such conveyance together with final plans for the widening or realignment.

(f) Owner shall conduct traffic counts at its entrance prior to the County being obligated to issue certificates of occupancy for more than 400 dwelling units on the Additional Property. If these counts show a trip generation from the Additional Property more than 10% higher than the trip generation projected by the TIS Update for Ford's Colony Master Plan – Phased Development, Kimley-Horn and Associates., Inc. January 2020 on file with the Planning Division, Owner shall submit an updated traffic impact study, including a listing of any entrance or turn lane improvements necessary to accommodate the increased traffic and the appropriate trigger for their construction, for review and approval by the County and VDOT. Owner shall install the necessary

improvements, including any warranted traffic signal, as approved by the County and VDOT at the time recommended in the updated approved traffic study.

7. **Sustainable Building.** (a) Independent living dwelling units in the areas designated in the Master Plan as CCRC-A, CCRC-B or CCRC-C shall be built to an Energy Star (or equivalent independent) residential certification.

(b) The development in the area designated on the Master Plan as CCRC-D shall contain the following elements: (i) Carpool or Vanpool parking; (ii) Hybrid or Low-Emissions Vehicle Parking; (iii) Low Flow Plumbing Fixtures; (iv) Green Label Carpet and Carpet Padding; and (v) Energy Star Appliances.

8. **Master Stormwater Management Plan.** The Master Stormwater Management Plan (MSWMP) for the Property shall be approved prior to the first site plan submittal. The MSWMP shall comply with the standards within the adopted watershed management plan in place at time of submittal and all outside agency permits shall be issued prior to the third submittal of the MSWMP. The approved master stormwater management plan, as revised and/or updated, shall be implemented in all development plans for the Property.

9. **Nutrient Management Plan.** The Owner shall be responsible for contacting an agent of the Colonial Soil and Water Conservation District ("CSWCD") or, if a CSWCD agent is unavailable, a soil scientist licensed in the Commonwealth of Virginia, or other qualified professional to conduct soil tests and to develop, based upon the results of the soil tests, customized nutrient management plans (the "Plans") for all landscaped common areas within the Property shown on site plans for the Property. The Plans shall be submitted to the County's Director of Stormwater and Resource

Protection for his review and approval prior to the issuance of building permits for more than 50% of the dwelling units shown on the Master Plan. Upon approval, the Owner, until such time as the homeowners association is established and thereafter the association, shall be responsible for ensuring that any nutrients applied to common areas be applied in strict accordance with the Plan.

10. **Private Streets.** All streets and alleys on the Property shall be private and shall be maintained by the Owner.

11. **Ford's Colony at Williamsburg Homeowners Association.** The Additional Property shall not be subjected to the Declaration of Protective Covenants, Section II, Ford's Colony at Williamsburg, dated April 2, 1985, as the same may have been amended and/or restated ("DPC") or the Bylaws of the Ford's Colony Homeowners Association ("FCHOA"), as amended from time to time ("Bylaws") nor shall owners or residents of units, lots or parcels on the Additional Property be "Owner(s)" as such term is defined in the DPC or the Bylaws or be Members (as defined in the DPC) of the FCHOA.

12. **Public Transit.** Upon the request of the Williamsburg Area Transit Authority ("WATA") or any successor entity to WATA as may become appropriate on or before the date that control of the homeowners' association created for the areas designated in the Master Plan as CCRC-A, CCRC-B or CCRC-C has transitioned from developer to homeowner control and after such time as WATA provides bus service along News Road to the Property, Owner shall install a bus stop and shelter on News Road adjacent to the main entrance into the Property, with the exact location being subject to the approval of WATA.

**13. Recreation.** The portion of the Property designated as CCRC-D on the Master Plan shall include, but shall not be limited to, the following amenities: main lobby and living room; dining room; activities/card room; fitness center; beauty/barber salon; library; multipurpose room and landscaped grounds and courtyards generally as shown on the Master Plan. CCRC-D may also include, but shall not be limited to, the following additional amenities: a bar/lounge; café/coffee shop; education room, spa and wellness center; physical therapy and/or physician's office(s), home health, and pharmacy. The amenities listed above are intended for residents and employees of Ford's Village and their guests and not the general public. The portions of the Property designated as CCRC-A, CCRC-B and CCRC-C on the Master Plan shall include the following amenities: a clubhouse with studio room for classes, and a recreation room; an outdoor pool; pocket parks; pickleball courts and walking and biking paths all generally as shown on the Master Plan. The exact recreational facilities provided in portions of the Property designated as CCRC-A, CCRC-B and CCRC-C on the Master Plan and their location may be changed with the prior approval of the Development Review Committee.

**14. Off-Site Sewer Easements.** Upon the request of JCSA and at no costs to JCSA, Owner shall grant JCSA utility easements over, across and under the portion of the Additional Property along Powhatan Creek to permit future connections from the gravity sewer on the Additional Property to Tax Parcel 3640100007. The location of the easement shall be determined during the site plan approval process. The easements shall be recorded prior to JCSA issuing a Certificate to Construct.

**15. Social Services.** Owner shall reserve two assisted living beds ("Subsidized

Beds") for Medicaid qualified individuals at a rate that is no greater than what such individuals' out-of-pocket expense would be under the Auxiliary Grant Program administered by the Virginia Department of Social Services. Such individuals shall be subject to all admission and discharge criteria of the facility and all other generally applicable rules and regulations of the facility.

**16. Construction Traffic Management Plan.** Owner shall prepare and submit to the County a construction traffic management plan which seeks to minimize impacts from construction traffic entering and exiting the Property to the extent reasonably practical. The plan will be submitted with the initial site plan for development on the Property and shall be subject to review and approval by the Planning Director. A copy of the approved plan shall be provided to all contractors working on the Property and all construction contracts entered into by Owner shall require compliance with the plan by the contractor.

**17. Project Phasing.** The County shall not be obligated to issue building permits for more than a total of 50 dwelling units in the portions of the Property designated on the Master Plan as CCRC-A, CCRC-B or CCRC-C until the County has issued a building permit for construction of the facility on the portion of the Property designated on the Master Plan as CCRC-D and construction has commenced. Construction having commenced shall mean foundations have been poured.

**18. Homeowners Association.** There shall be organized an owner's association or associations (the "Association") in accordance with Virginia law in which all property owners in the portion of the Property designated on the Master Plan as CCRC-A, CCRC-B or CCRC-C, by virtue of their property ownership, shall be members.

The articles of incorporation, bylaws and restrictive covenants (together, the "Governing Documents") creating and governing each Association shall be submitted to and reviewed by the County Attorney for consistency with this Proffer. The Governing Documents shall require that the Association adopt an annual maintenance budget, which shall include a reserve for capital components, and all other common areas (including open spaces) under the jurisdiction of the Association, shall require each purchaser of a lot to make a capital contribution to the Association for reserves and shall require that the Association (i) assess all members for the maintenance of all properties owned or maintained by the Association and (ii) file liens on members' properties for non-payment of such assessments. The Governing Documents shall provide that at such time as 75% of the Lots permitted on the portion of the Property designated on the Master Plan as CCRC-A, CCRC-B or CCRC-C have been conveyed to purchasers other than builders, the declarant's right to unilaterally appoint and remove members of the Board of Directors of the Association shall terminate and the Board shall thereafter be elected by the lot owners (including the declarant). The Governing Documents shall not include a provision granting the declarant any veto rights over actions of the Board of the Association once the Board is elected by the lot owners.

*[signatures appear on following pages]*

WITNESS the following signatures and seals:

OWNER:

SWR-HOCKADAY, LLC, a Georgia Limited liability company

A.M. REDD, JR., INC., a Georgia corporation, Its Manager

By: Margaret P. Staats  
Title: PRESIDENT

STATE OF Georgia  
CITY/COUNTY OF Fulton, to-wit:

The foregoing instrument was acknowledged before me this 17<sup>th</sup> day of February, 2022 by Margaret P. Staats, President of A.M. REDD, JR., INC., a Georgia corporation, as Manager of SWR-HOCKADAY, LLC, a Georgia Limited liability company on behalf of the company.

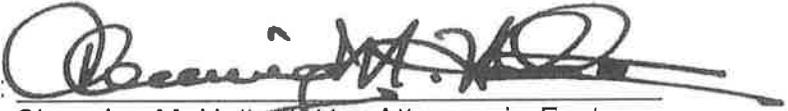
Sarah Ann Staats  
NOTARY PUBLIC

My commission expires: 1/14/2023  
Registration No.: N/A



OWNER:

MARTHA WARBURTON MCMURRAN

By:   
Channing M. Hall, III, Her Attorney-in-Fact  
Under Limited Power of Attorney recorded  
as James City County Instrument No.  
180010230

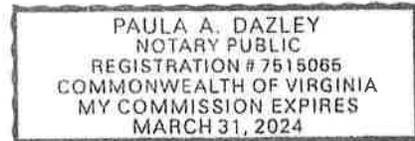
COMMONWEALTH OF VIRGINIA

COUNTY OF JAMES CITY, to-wit:

The foregoing instrument was acknowledged before me this 17<sup>th</sup> day of February,  
2022, by CHANNING M. HALL, III, Attorney-in-Fact for MARTHA WARBURTON  
MCMURRAN.

  
NOTARY PUBLIC

My commission expires: 03/31/2024  
Registration No.: 7515065



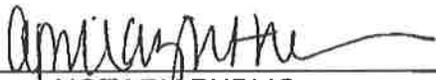
DEVELOPER:

FRYE DEVELOPMENT, LLC, a Virginia limited liability company

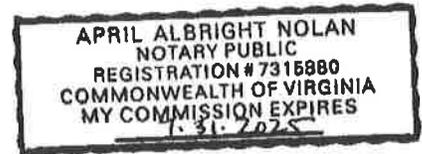
By:   
D. B. Frye, Jr., Manager

STATE OF Virginia  
CITY/COUNTY OF Norfolk, to-wit:

The foregoing instrument was acknowledged before me this 17<sup>th</sup> day of February, 2022 by D. B. Frye, Jr., Manager of FRYE DEVELOPMENT, LLC, a Virginia limited liability company, on behalf of the company.

  
NOTARY PUBLIC

My commission expires: 7/31/2025  
Registration No.: 7315880



## Exhibit A

### Property Description

#### PARCEL A

All of that certain piece or parcel of land, lying and being in Jamestown District, James City County, Virginia, known as Hockaday, containing one hundred flirty-seven and one-half (147-1/2) acres, more or less, bounded on the East; South and West by the land of the Shaw Land & Timber Co., known as the Pyle tract, the land of J. A. Barnes and Powhatan Swamp, and on the North by the land of New Brothers.

#### PARCEL B

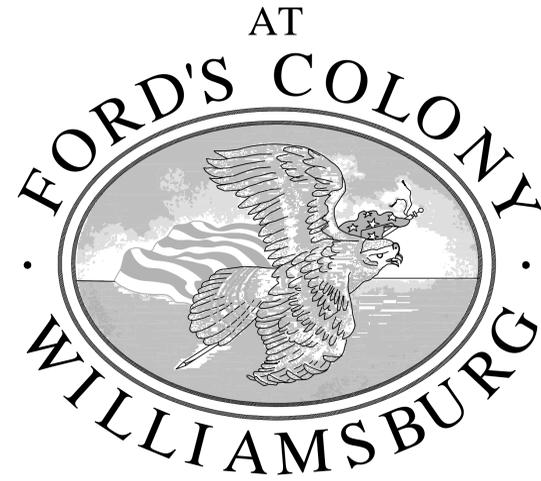
All of that certain piece or parcel of land situate in Jamestown District, James City County, Virginia, containing fifty-five and two fifths (55-2/5) acres, more or less, and known as Cypress Swamp, and adjoining the lands of William Martin' s estate on the East, Greenspring on the South and Thomas N. Ratcliffe on the West and D. S. Jones on the North.

LESS AND EXCEPT that property conveyed to the Commonwealth of Virginia by Order Confirming Commissioner's Report, entered February 20, 1974, in the Circuit Court for the City of Williamsburg and County of James City, Virginia, and recorded in the Office of the Clerk of Court of such Court in James City County Deed Book 150, at Page 420, containing 3.74 acres, more or less, confirming that certain Certificate Number C-21570, filed by State Highway Commissioner of Virginia against the Heirs at Law of John G. Warburton, dated May 24, 1972, and recorded June 12, 1972, in the aforesaid Clerk's Office in James City County Deed Book 137, at Page 213, and SUBJECT TO the easements conveyed to the Commonwealth of Virginia in such Order and such Certificate.

The property herein conveyed, commonly known as the "Hockaday-Cypress Tract," is further described in its entirety on that certain plat of survey, entitled "BOUNDARY SURVEY OF A PORTION OF THE JOHN G. WARBURTON ESTATE, KNOWN AS THE HOCKADAY-CYPRESS TRACT," made by V. Monroe Mallory, of Dillard & Mallory, P.C., Certified Land Surveyors, Tappahanock, Virginia, dated October 25, 2001, recorded November 7, 2001, in the aforesaid Clerk's Office in James City County Plat Book 83, at Page 82, to which plat reference is made for a more complete description of such property.

Being the same property conveyed to Martha Warburton McMurrin, and SWR-Hockaday, LLC, a Georgia limited liability company, by Deed from Peter G. Zemanian, Substitute Trustee, dated February 12, 2010, and recorded February 22, 2010, in the aforesaid Clerk's Office, as James County Instrument No. 100003372.

# MASTER PLAN AMENDMENT FOR FORD'S VILLAGE



FOR

## FRYE DEVELOPMENT, LLC

**PROJECT TEAM**

DEVELOPER: FRYE DEVELOPMENT, LLC  
 CCRC OPERATOR: RETIREMENT UNLIMITED, INC  
 LAND PLANNING: MICHAEL WATKINS ARCHITECT, LLC  
 ENVIRONMENTAL: WETLANDS SOLUTIONS, INC.  
 TRAFFIC: DRW & ASSOCIATES  
 CIVIL CONSULTING: AES CONSULTING ENGINEERS  
 LEGAL COUNSEL: GEDDY, HARRIS, FRANK & HICKMAN, LLP

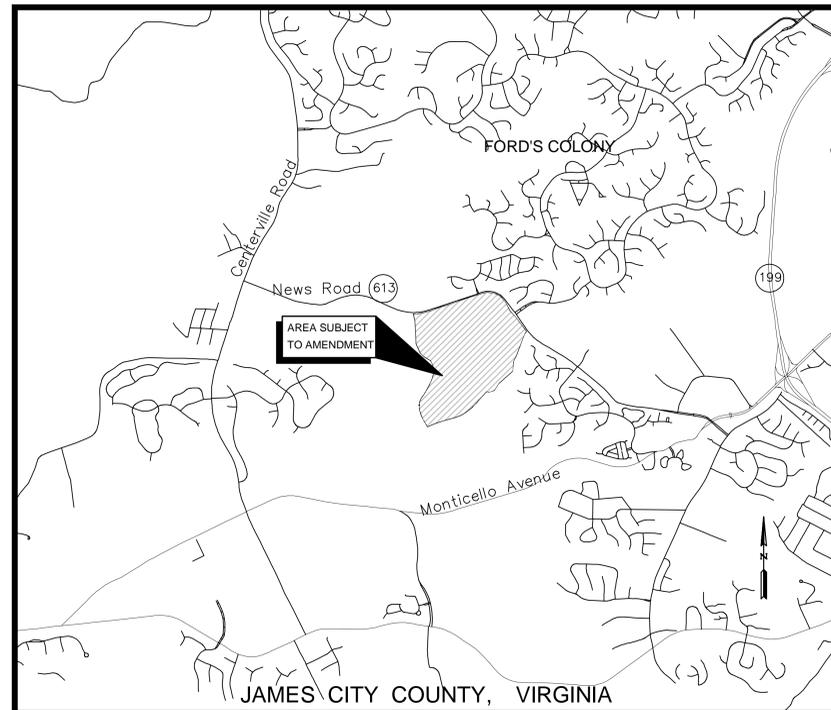
**SITE DATA:**

PARCEL ID: 3730100004  
 PROPERTY OWNERS: SWR-HOCKADAY, LLC & MARTHA WARBURTON McMURRAN  
 PROPERTY ADDRESS: 3889 NEWS ROAD  
 CURRENT ZONING: R-4 W/PROFFERS  
 PROPERTY ACREAGE: 180.7 AC. ±

**INDEX OF SHEETS**

1	COVER SHEET
2	FORD'S COLONY LAND USE MASTER PLAN
3	ENVIRONMENTAL INVENTORY
4	BINDING MASTER PLAN
5	MASTER UTILITY PLAN
6	MASTER STORMWATER MANAGEMENT PLAN

NOTE: THIS PROJECT LIES WITHIN THE POWHATAN CREEK WATERSHED OF THE JAMES RIVER. THE EASTERN HALF OF THE PROPERTY IS PART OF POWHATAN CREEK SUBWATERSHED 209 (COLD SPRING SWAMP) AND THE WESTERN HALF IS PART OF THE NON-TIDAL POWHATAN CREEK MAINSTEM.



**VICINITY MAP**

(APROX. SCALE 1"=2000')

ORIGINALLY SUBMITTED: JUNE 2021

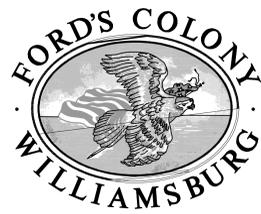


**CONSULTING ENGINEERS**

WILLIAMSBURG • RICHMOND • GLOUCESTER

5248 Olde Towne Road, Suite 1 • Williamsburg, Virginia 23188  
 (757) 253-0040 • Fax (757) 220-8994

Master Plan Amendment -  
 Ford's Village  
 JCC CASE # Z-21-0012 /  
 MP-21-0003  
 AES Project # W10514-01



**NON RESIDENTIAL AMENITY AND SERVICE SITES**

100 HOTEL CONDOMINIUMS, EXECUTIVE MEETING FACILITIES AND GOLF ACADEMY	4.71 AC.
2 GOLF CLUB AND PRO SHOP	5.05 AC.
3 INFORMATION AND SALES CENTER	1.81 AC.
4 ADMINISTRATIVE BUILDING	3.50 AC.
5 PUBLIC SERVICE AREA *	28.05 AC.
6 GOLF MAINTENANCE	3.90 AC.
7 COMMUNITY CLUB	7.72 AC.
8 PROJECT MAINTENANCE	10.59 AC.
9 DRIVING RANGE/CART STORAGE	10.34 AC.
10 ADDITIONAL RECREATION AREA	6.36 AC.
11 ADDITIONAL PUBLIC SERVICE AREA	6.76 AC.
12 CONTINUING CARE RETIREMENT COMMUNITY (CCRC)	180.8 AC.
<b>TOTAL</b>	<b>269.49 AC.</b>

\* NOTE: 1.21 AC. PORTION OF ORIGINAL 30.0 AC. P.S.A. SOLD TO FORD'S COLONY

**LEGEND**

- RESIDENTIAL "A"
- RESIDENTIAL "B"
- RESIDENTIAL "D"
- OPEN SPACE
- WILLIAMSBURG WEST SUBDIVISION AND APARTMENTS NOT A PORTION OF MASTER PLAN

NOTE:  
VARIABLE WIDTH (25' MIN) BUFFER ALONG THE FORD'S COLONY TRACT WHERE IT ADJOINS CENTERVILLE ROAD SHALL BE RESERVED FOR FUTURE WIDENING AND REALIGNMENT OF S.R. 614

**GENERAL NOTES:**

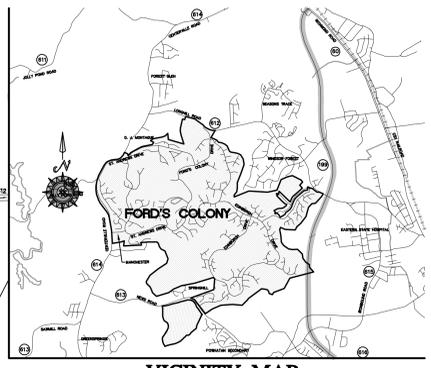
- RECORDATION OF THIS PLAN IS SOLELY FOR THE PURPOSE OF IDENTIFYING THE LAND COVERED BY THE PROFFERS RECORDED HERewith AND DOES NOT CONSTITUTE A PLAT OF SUBDIVISION NOR DOES IT DEDICATE TO PUBLIC OR PRIVATE USE ANY ROADS, COMMON AREAS, GREEN AREAS, OR RECREATION AREAS.
- THE PROPERTY SHOWN ON THIS PLAN IS COVERED BY PROTECTIVE COVENANTS OF RECORD IN THE CLERK'S OFFICE IN THE COURTHOUSE OF JAMES CITY COUNTY, VIRGINIA, WHICH PROVIDE FOR THE MAINTENANCE OF COMMON OPEN SPACE, RECREATION AREAS, SIDEWALKS, PARKING, PRIVATE STREETS AND OTHER PRIVATELY OWNED, BUT COMMON FACILITIES SERVING THIS PROJECT.
- LOTS NUMBERED REPRESENT RECORDED SECTIONS OR SECTIONS THAT HAVE RECEIVED PRELIMINARY APPROVAL.
- THE 2008 MASTER PLAN AMENDMENT WILL BE CONSIDERED A STAND ALONE PROJECT FOR THE PURPOSES OF STORMWATER MANAGEMENT POINTS AND CREDITS.



**LAND USE TABULATION**

	2021	2008
<b>RESIDENTIAL "A"</b>		
TOTAL NUMBER OF UNITS	2,856 UNITS	2,856 UNITS
GROSS AREA OF RESIDENTIAL "A"	1,868.77± AC.=(63.09%)	1,868.77± AC.=(63.09%)
PERMITTED DENSITY	4.00 UNITS/ACRE	4.00 UNITS/ACRE
UNIT DENSITY	1.53 UNITS/ACRE	1.53 UNITS/ACRE
<b>RESIDENTIAL "B"</b>		
TOTAL NUMBER OF UNITS	80 UNITS	80 UNITS
GROSS AREA OF RESIDENTIAL "B"	22.9± AC.=(0.77%)	22.9± AC.=(0.77%)
PERMITTED DENSITY	9.60 UNITS/ACRE	9.60 UNITS/ACRE
UNIT DENSITY	3.49 UNITS/ACRE	3.49 UNITS/ACRE
<b>RESIDENTIAL "D"</b>		
TOTAL NUMBER OF UNITS	314 UNITS	314 UNITS
GROSS AREA OF RESIDENTIAL "D"	31.82 AC.=(1.07%)	31.82 AC.=(1.07%)
PERMITTED DENSITY	18.00 UNITS/ACRE	18.00 UNITS/ACRE
UNIT DENSITY	9.87 UNITS/ACRE	9.87 UNITS/ACRE
<b>C.C.R.C. "A", "B" &amp; "C"</b>		
TOTAL NUMBER OF UNITS	286 UNITS	38 UNITS
<b>C.C.R.C. "D"</b>		
TOTAL NUMBER OF UNITS	75 UNITS	558 UNITS
TOTAL NUMBER OF BEDS	155 BEDS	145 BEDS
ACREAGE FOR DENSITY**SEE SHT 4	125.03 AC.	125.03 AC.
OVERALL C.C.R.C. DENSITY (SEE SHT 4)	2.89 UNITS/AC.	4.77 UNITS/AC.
NOTE: BEDS ARE NOT INCLUDED IN DENSITY CALCULATIONS		
<b>OPEN SPACE</b>		
WITHIN NON-RESIDENTIAL AMENITY AND SERVICE SITES	150.27 AC.	150.27 AC.
* GOLF COURSE, LAKES AND BUFFERS, MARSH RESERVE	844.71 AC.	844.71 AC.
OPEN SPACE WITHIN RESIDENTIAL "A"	914.12 AC.	914.12 AC.
OPEN SPACE WITHIN RESIDENTIAL "B" & "D"	38.77 AC.	38.77 AC.
TOTAL AREA OF OPEN SPACE	1,547.87 AC.	1,547.87 AC.
TOTAL AREA OF PROJECT	2,962.24 AC.	2,962.24 AC.
% OF OPEN AREA	52.3%	52.3%
<b>OVERALL DENSITY</b>		
TOTAL PROJECT AREA	2,962.28 AC.	2,962.28 AC.
GROSS AREA (FOR DENSITY CALCULATION ONLY)	2,830.6 AC.	2,830.6 AC.
TOTAL NUMBER OF RESIDENTIAL UNITS	3,340 UNITS	3,701 UNITS
OVERALL PROJECT DENSITY	1.28 UNITS/AC.	1.36 UNITS/AC.

\* NOTES  
MARSH RESERVES, LAKES AND BUFFERS 278.12 AC.  
GOLF COURSE (INCLUDES LAKES IN PLAY) 491.09 AC.  
RESERVED FOR ROUTE 199 20.0 AC.  
ASSOCIATED GREENBELT'S NATURAL OPEN SPACE IN 1993 ADDITION 3.30 AC.  
OPEN SPACE IN 1995 ADDITION 5.00 AC.  
OPEN SPACE IN 1998 ADDITION 47.20 AC.  
OPEN SPACE IN 2008 ADDITION 112.49 AC.



No.	DATE	REVISION / COMMENT / NOTE
1	4/7/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

5248 Old Towne Road, Suite 1  
Williamsburg, Virginia 23188  
(757) 253-0040  
Fax (757) 220-8994



**LAND USE MASTER PLAN**  
**FORD'S COLONY**  
AT WILLIAMSBURG  
OWNER / DEVELOPER: REALTEC, INCORPORATED  
JAMES CITY COUNTY, VIRGINIA  
POWHATAN DISTRICT

Designed AES	Drawn AES
Scale 1" = 600'	Date 6/2021
Project No. W10514-01	
Drawing No. 2	

SOIL CHARACTERISTICS				
SOIL #	SOIL NAME	TYPICAL SLOPES	EROSION FACTOR (K)	EROSION FACTOR (I)
5	BETHERA	0-2%	0.28-0.32	5
10B	CRAVEN	2-6%	0.32-0.37	3
10C	CRAVEN	6-10%	0.32-0.37	3
11C	CRAVEN-UCHEE COMPLEX	6-10%	0.32-0.37	3
14B	EMPORIA	2-6%	0.20-0.28	4
15D	EMPORIA COMPLEX	10-15%	0.20-0.28	4
15E	EMPORIA COMPLEX	15-25%	0.20-0.28	4
19B	KEMPUNKEY EMPORIA	2-6%	0.20-0.32	3
26B	PAMUNKEY	2-6%	0.28	4
27	PEAMCK	RELATIVELY FLAT	0.24-0.37	4
29A	SLAGLE	0-2%	0.24	3

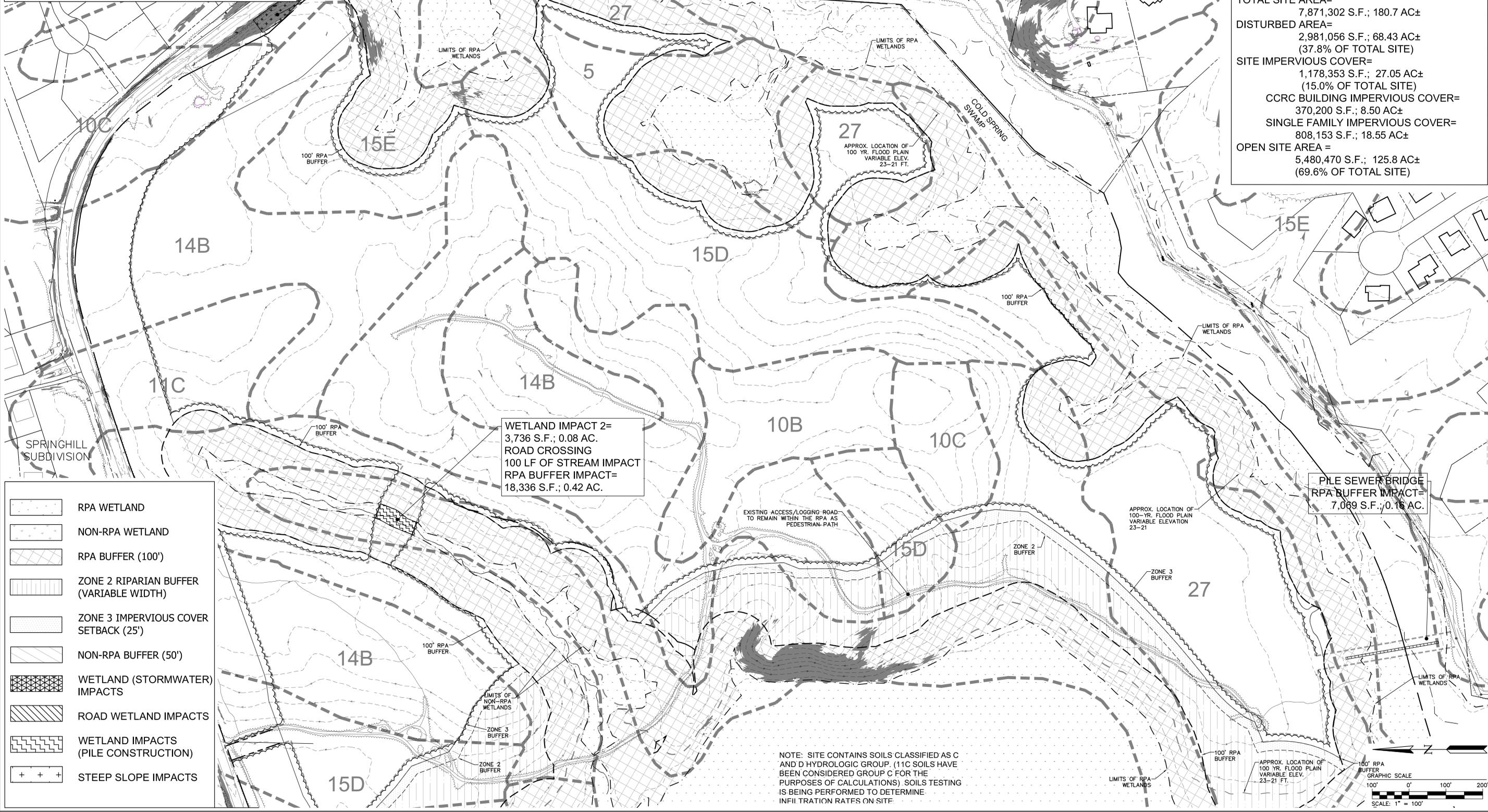
INFORMATION TAKEN FROM "SOIL SURVEY OF JAMES CITY AND YORK COUNTIES AND THE CITY OF WILLIAMSBURG, VIRGINIA" ISSUED IN APRIL 1985 BY THE UNITED STATES DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE IN COOPERATION WITH VIRGINIA POLYTECHNIC INSTITUTE AND STATE

SOIL SUSCEPTIBILITY TO EROSION CLASSIFICATION (K)  
 0.23 AND LOWER - LOW ERODIBILITY  
 0.23 - 0.36 - MODERATE ERODIBILITY  
 0.36 AND UP - HIGH ERODIBILITY

THE MAP SHOWN IS A "BEST FIT MODEL" OF THE SCS MAPS WITH EXISTING BASE INFORMATION.

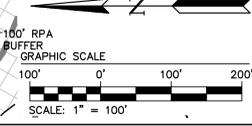
ENVIRONMENTAL IMPACTS	
TIDAL WETLANDS:	NONE
TIDAL SHORES:	NONE
100 FT RPA BUFFER:	5,685 S.F.; 0.13 AC.
NON-TIDAL WETLANDS IN RMA:	17,055 S.F.; 0.39 AC.
NON-TIDAL WETLANDS IN RPA:	8,050 S.F.; 0.18 AC.
HYDRIC SOILS:	NOT MODIFIED
25% OR GREATER SLOPES:	8,000± S.F.; 0.18 AC.
NON-RPA BUFFERS:	52,383 S.F.; 1.20 AC.

SITE DATA:	
TOTAL SITE AREA=	7,871,302 S.F.; 180.7 AC±
DISTURBED AREA=	2,981,056 S.F.; 68.43 AC± (37.8% OF TOTAL SITE)
SITE IMPERVIOUS COVER=	1,178,353 S.F.; 27.05 AC± (15.0% OF TOTAL SITE)
CCRC BUILDING IMPERVIOUS COVER=	370,200 S.F.; 8.50 AC±
SINGLE FAMILY IMPERVIOUS COVER=	808,153 S.F.; 18.55 AC±
OPEN SITE AREA =	5,480,470 S.F.; 125.8 AC± (69.6% OF TOTAL SITE)



[Symbol]	RPA WETLAND
[Symbol]	NON-RPA WETLAND
[Symbol]	RPA BUFFER (100')
[Symbol]	ZONE 2 RIPARIAN BUFFER (VARIABLE WIDTH)
[Symbol]	ZONE 3 IMPERVIOUS COVER SETBACK (25')
[Symbol]	NON-RPA BUFFER (50')
[Symbol]	WETLAND (STORMWATER) IMPACTS
[Symbol]	ROAD WETLAND IMPACTS
[Symbol]	WETLAND IMPACTS (PILE CONSTRUCTION)
[Symbol]	STEEP SLOPE IMPACTS

NOTE: SITE CONTAINS SOILS CLASSIFIED AS C AND D HYDROLOGIC GROUP. (11C SOILS HAVE BEEN CONSIDERED GROUP C FOR THE PURPOSES OF CALCULATIONS) SOILS TESTING IS BEING PERFORMED TO DETERMINE INFILTRATION RATES ON SITE



Rev.	Date	Description	Revised By
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	JAG
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008	JAG

**AES**  
 CONSULTING ENGINEERS

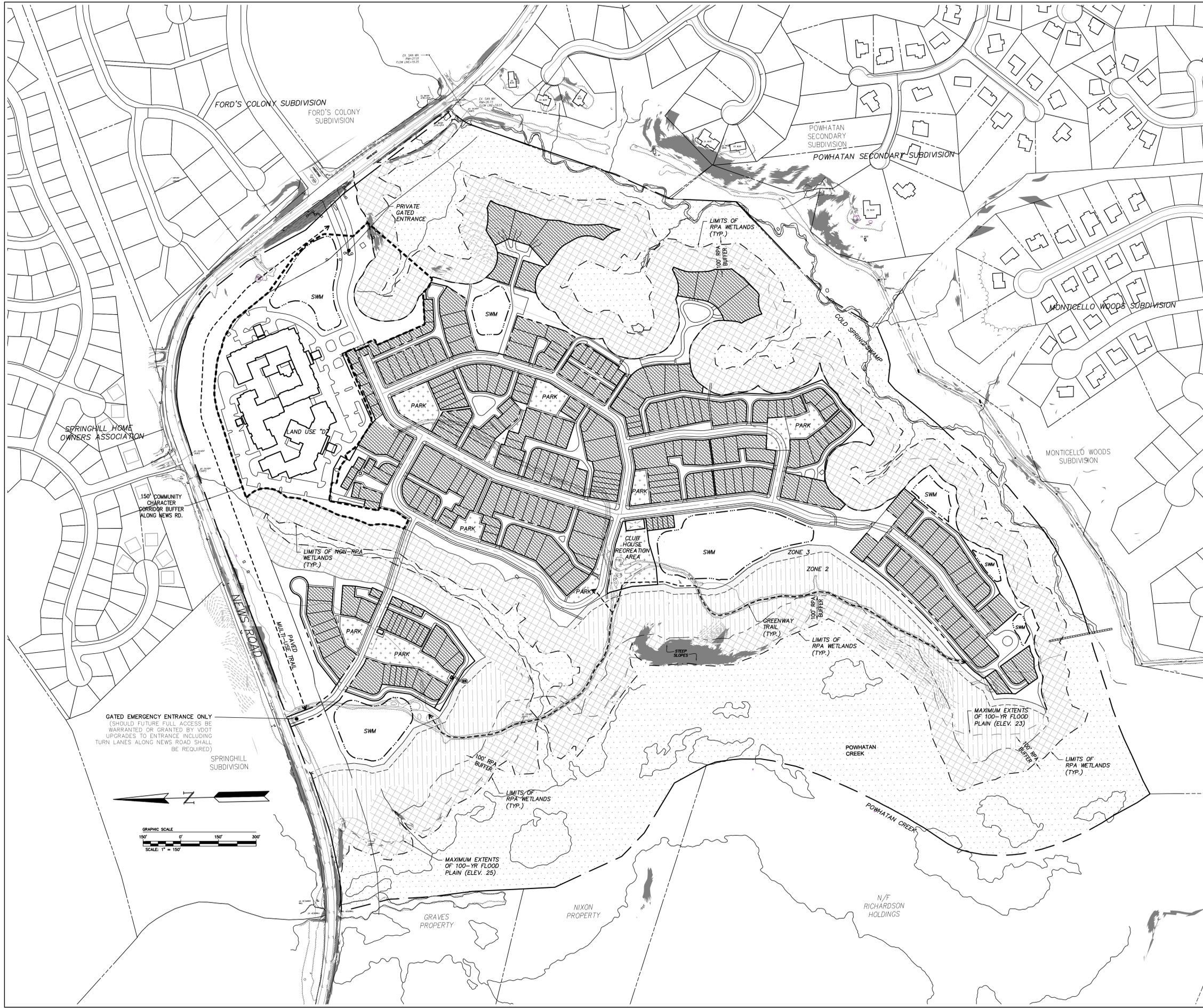
5248 Olde Towne Road, Suite 1  
 Williamsburg, Virginia 23188  
 Phone: (757) 253-0040  
 Fax: (757) 220-8994  
 www.aesva.com

Hampton Roads | Central Virginia | Middle Peninsula

ENVIRONMENTAL INVENTORY AT  
**FORDS' VILLAGE**  
 AT  
 FORD'S COLONY OF WILLIAMSBURG  
 FOR  
 FRYE DEVELOPMENT, LLC

POWHATAN DISTRICT  
 JAMES CITY COUNTY  
 VIRGINIA

Project Contact:	JAG
Project Number:	W10514-01
Scale:	1"=100'
Date:	6/20/21
Sheet Number	<b>3</b>



**DEVELOPMENT TABULATIONS:**

EXISTING ZONING (AND LAND USE DESIGNATION)	R-4 (B & D)
PROPOSED LAND USE DESIGNATION:	R-4 (A, B, C, & D)

**DENSITY TABULATIONS:**

TOTAL ACREAGE:	180.79 AC. +/-
LESS RPA WETLANDS:	47.42 AC. +/-
LESS RPA BUFFERS:	35.35 AC. +/-
LESS 25% SLOPES:	0.0 AC. +/- (OUTSIDE WETLANDS/BUFFER AREAS)
LESS FLOOD PLAIN (1):	0.01 AC. +/- (OUTSIDE WETLANDS/BUFFER AREAS)
TOTAL NON-DEVELOPABLE AREA:	82.78 AC. +/- (45% OF TOTAL PARCEL)
GROSS ACREAGE FOR PARCEL DENSITY:	125.03 AC. +/-

**LAND-USE TABULATIONS:**

TOTAL PARCEL:	<b>180.79 AC. +/-</b>
LANDUSES A, B, C, & D (2):	74.56 AC. +/-
OPEN SPACE:	
RPA WETLANDS:	47.42 AC. +/-
BUFFER AREAS (3) :	58.81 AC. +/-
TOTAL OPEN SPACE:	106.23 AC. +/-

(1) FLOOD PLAIN IS DELINEATED ON THE PLANS AND GENERALLY LOCATES THE LIMITS OF THE FLOOD PLAIN BASED UPON FIELD SURVEYED ELEVATIONS.  
 (2) INCLUDES (±4 AC.) RECREATIONAL-AMENITY OPEN SPACE AREA.  
 (3) BUFFER AREAS INCLUDE RPA BUFFER (35.36 AC.), ZONE 2 RIPARIAN BUFFER (11.17 AC.), ZONE 3 RIPARIAN BUFFER (1.37 AC.), COMMUNITY CHARACTER CORRIDOR BUFFER (10.91 AC.).

**LEGEND:**

- RPA WETLAND (47.42 AC. ±)
- RPA BUFFER (100') (35.35 AC. ±)
- ZONE 2 RIPARIAN BUFFER (7.10 AC. ±) (VARIABLE WIDTH)
- ZONE 3 RIPARIAN BUFFER (25') (1.38 AC. ±)
- LAND USE "B"
- APPROX. LOCATIONS OF RECREATIONAL-AMENITY OPEN SPACE (4 AC. ±)
- SLOPES 25% OR GREATER
- PEDESTRIAN CIRCULATION
- STORMWATER FEATURE

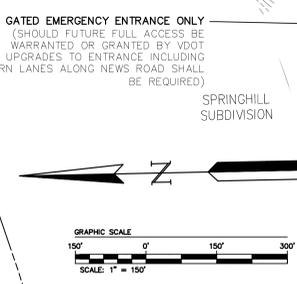
NOTE: 15 FT. BUILDING SETBACK TO RPA BUFFER ALONG COLD SPRING SWAMP.

Land Use Density Chart	Max. # Units	Max. Non-Residential Floor Space	Land Use Pod Size
Land Use A, B, & C			
A - Single Family			
B - Multifamily (2-4 unit buildings)	286 (1) UNITS	N/A	±61 Acres
C - Multifamily (2 over 4 unit buildings)			
<b>TOTAL</b>			
D - Independent Living Apartments	75 Units		
D - Common Areas			
Dining Areas			
Administration Offices			
Other Amenities			
Other Limited Commercial Uses (2)		UP TO 150,000 S.F.	±13 Acres
E - Health Care Center			
Assisted Living/Memory Care	155 Rooms		
Skilled Nursing	40 Beds		
<b>MAXIMUMS:</b>	<b>361 UNITS(3)</b>	<b>150,000 gsf</b>	<b>±74 Acres</b>

NOTES  
 (1) MASTERPLAN WILL CONSIST OF A MIX OF SINGLE FAMILY, TOWNHOME, AND CONDOMINIUM, STYLE UNITS. MASTER PLAN LAYOUT SHOWN FOR DENSITY PURPOSES. FINAL CONFIGURATION TO BE REVIEWED AND APPROVED AT SITE PLAN.  
 (2) LIMITED COMMERCIAL USES SHALL BE PERMITTED FOR USE BY RESIDENTS, GUEST OF THE COMMUNITY, & EMPLOYEES.  
 (3) TOTAL NUMBER OF UNITS, ROOMS & BEDS SHALL NOT EXCEED 516 AS DESCRIBED IN PROFFERS.

**ADDITIONAL MASTER PLAN NOTES**

- NO STRUCTURES WITHIN THE "D" PORTION OF THE SITE SHALL EXCEED 60-FT IN HEIGHT AS DEFINED BY JCC ORDINANCE.
- ALL STREETS, ALLEYS AND DRIVEWAYS SHALL BE PRIVATELY MAINTAINED. ALL ENTRANCES TO THE VDOT RIGHT OF WAY SHALL BE DESIGNED IN ACCORDANCE WITH VDOT COMMERCIAL ENTRANCE DESIGN STANDARDS.
- A MINIMUM OF 4 ACRES OF DEDICATED RECREATION AREAS SHALL BE PROVIDED. THESE AREAS SHALL BE GENERALLY AS SHOWN ON THE MASTER PLAN AND PROVIDE BASIC AMENITIES SUCH AS A POOL, CLUBHOUSE, PARK BENCHES AND LANDSCAPED AREAS. ADDITIONALLY PASSIVE OPEN SPACES AND WALKING TRAILS SHALL BE PROVIDED.

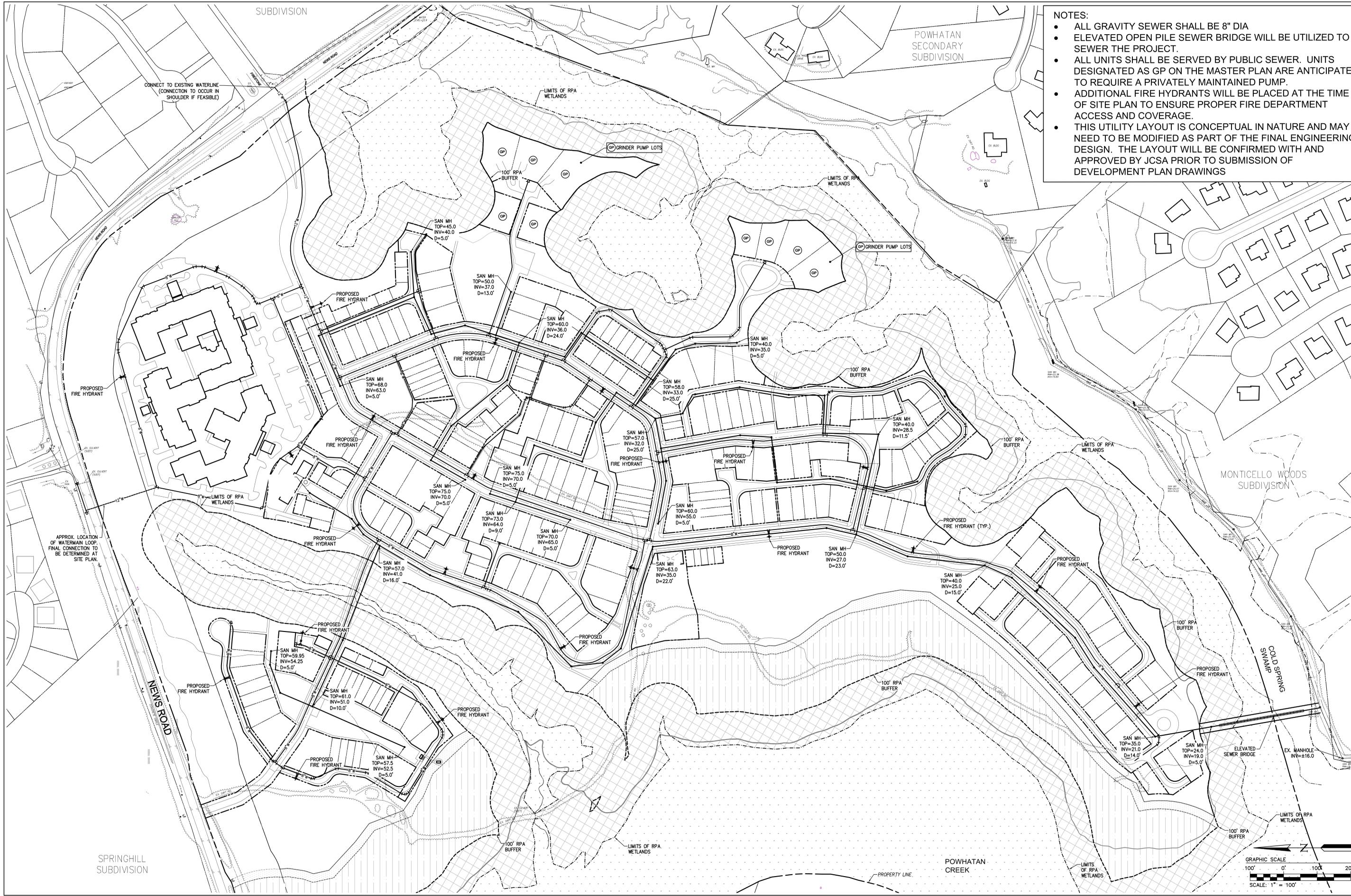


Rev.	Date	Description	Revised By

**AES**  
 CONSULTING ENGINEERS  
 Hampton Roads | Central Virginia | Middle Peninsula  
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AMENDED LAND-USE MASTER PLAN  
**FORDS' VILLAGE**  
 AT  
 FORD'S COLONY OF WILLIAMSBURG  
 FOR  
 FRYE DEVELOPMENT, LLC  
 POWHATAN DISTRICT | JAMES CITY COUNTY | VIRGINIA

Project Contact: JAG  
 Project Number: W10514-01  
 Scale: 1"=100'  
 Date: 6/2021  
 Sheet Number  
**4**



- NOTES:**
- ALL GRAVITY SEWER SHALL BE 8" DIA
  - ELEVATED OPEN PILE SEWER BRIDGE WILL BE UTILIZED TO SEWER THE PROJECT.
  - ALL UNITS SHALL BE SERVED BY PUBLIC SEWER. UNITS DESIGNATED AS GP ON THE MASTER PLAN ARE ANTICIPATED TO REQUIRE A PRIVATELY MAINTAINED PUMP.
  - ADDITIONAL FIRE HYDRANTS WILL BE PLACED AT THE TIME OF SITE PLAN TO ENSURE PROPER FIRE DEPARTMENT ACCESS AND COVERAGE.
  - THIS UTILITY LAYOUT IS CONCEPTUAL IN NATURE AND MAY NEED TO BE MODIFIED AS PART OF THE FINAL ENGINEERING DESIGN. THE LAYOUT WILL BE CONFIRMED WITH AND APPROVED BY JCSA PRIOR TO SUBMISSION OF DEVELOPMENT PLAN DRAWINGS

Rev.	Date	Description	Revised By

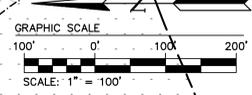
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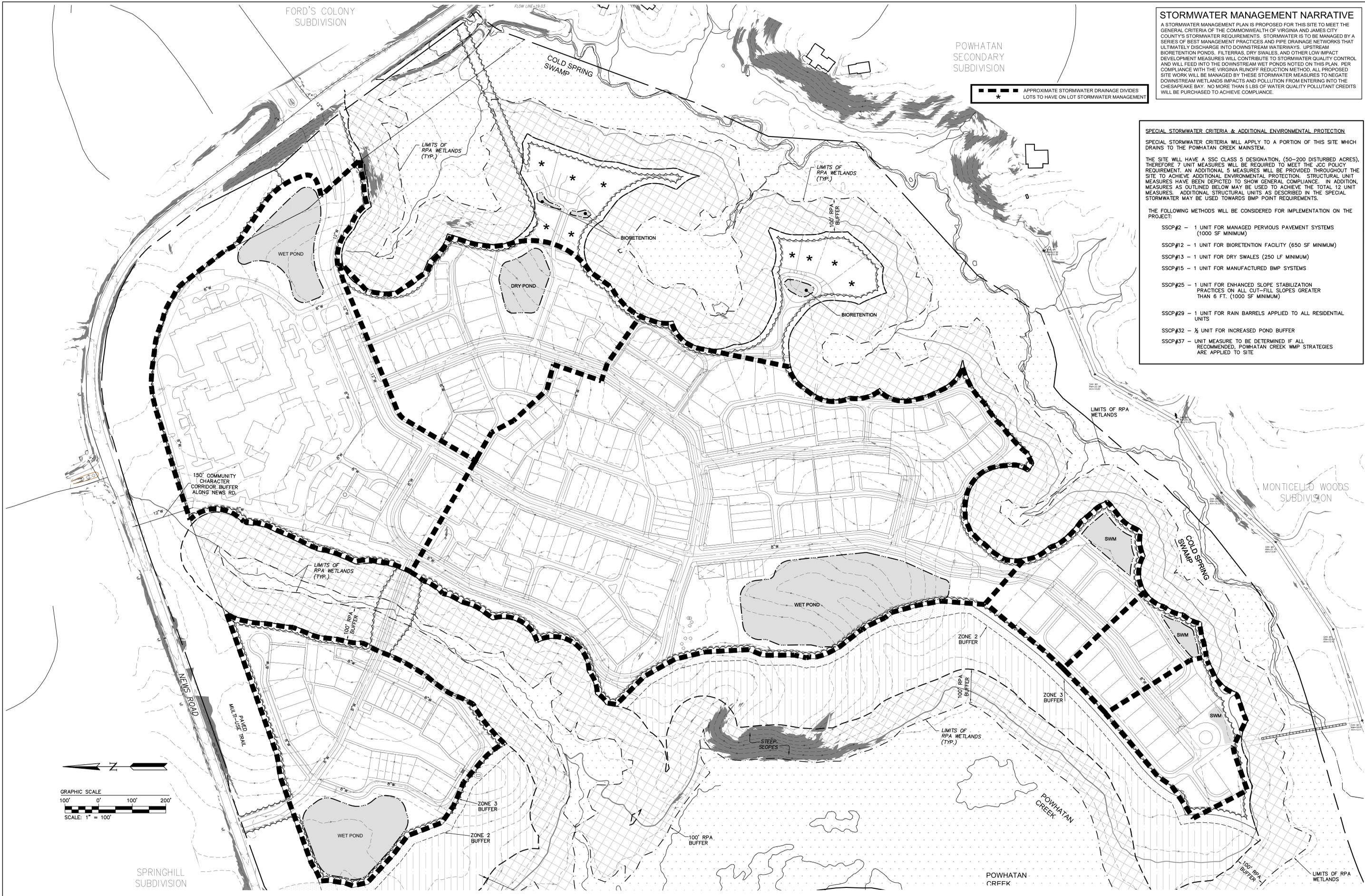
5248 Olde Towne Road, Suite 1  
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CONCEPTUAL UTILITY PLAN OF  
**FORDS' VILLAGE**  
 AT  
 FORD'S COLONY OF WILLIAMSBURG  
 FOR  
 FRYE DEVELOPMENT, LLC

POWHATAN DISTRICT      JAMES CITY COUNTY      VIRGINIA

Project Contact: JAG  
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 Scale: 1"=100'  
 Date: 6/2021  
 Sheet Number  
**5**





**STORMWATER MANAGEMENT NARRATIVE**  
 A STORMWATER MANAGEMENT PLAN IS PROPOSED FOR THIS SITE TO MEET THE GENERAL CRITERIA OF THE COMMONWEALTH OF VIRGINIA AND JAMES CITY COUNTY'S STORMWATER REQUIREMENTS. STORMWATER IS TO BE MANAGED BY A SERIES OF BEST MANAGEMENT PRACTICES AND PIPE DRAINAGE NETWORKS THAT ULTIMATELY DISCHARGE INTO DOWNSTREAM WATERWAYS. UPSTREAM BIORETENTION PONDS, FILTERRAS, DRY SWALES, AND OTHER LOW IMPACT DEVELOPMENT MEASURES WILL CONTRIBUTE TO STORMWATER QUALITY CONTROL AND WILL FEED INTO THE DOWNSTREAM WET PONDS NOTED ON THIS PLAN. PER COMPLIANCE WITH THE VIRGINIA RUNOFF REDUCTION METHOD, ALL PROPOSED SITE WORK WILL BE MANAGED BY THESE STORMWATER MEASURES TO NEGATE DOWNSTREAM WETLANDS IMPACTS AND POLLUTION FROM ENTERING INTO THE CHESAPEAKE BAY. NO MORE THAN 5 LBS OF WATER QUALITY POLLUTANT CREDITS WILL BE PURCHASED TO ACHIEVE COMPLIANCE.

**SPECIAL STORMWATER CRITERIA & ADDITIONAL ENVIRONMENTAL PROTECTION**  
 SPECIAL STORMWATER CRITERIA WILL APPLY TO A PORTION OF THIS SITE WHICH DRAINS TO THE POWHATAN CREEK MAINSTEM.  
 THE SITE WILL HAVE A SSC CLASS 5 DESIGNATION, (50-200 DISTURBED ACRES), THEREFORE 7 UNIT MEASURES WILL BE REQUIRED TO MEET THE JCC POLICY REQUIREMENT. AN ADDITIONAL 5 MEASURES WILL BE PROVIDED THROUGHOUT THE SITE TO ACHIEVE ADDITIONAL ENVIRONMENTAL PROTECTION. STRUCTURAL UNIT MEASURES HAVE BEEN DEPICTED TO SHOW GENERAL COMPLIANCE. IN ADDITION, MEASURES AS OUTLINED BELOW MAY BE USED TO ACHIEVE THE TOTAL 12 UNIT MEASURES. ADDITIONAL STRUCTURAL UNITS AS DESCRIBED IN THE SPECIAL STORMWATER MAY BE USED TOWARDS BMP POINT REQUIREMENTS.  
 THE FOLLOWING METHODS WILL BE CONSIDERED FOR IMPLEMENTATION ON THE PROJECT:

- SSCP#2 - 1 UNIT FOR MANAGED PERVIOUS PAVEMENT SYSTEMS (1000 SF MINIMUM)
- SSCP#12 - 1 UNIT FOR BIORETENTION FACILITY (650 SF MINIMUM)
- SSCP#13 - 1 UNIT FOR DRY SWALES (250 LF MINIMUM)
- SSCP#15 - 1 UNIT FOR MANUFACTURED BMP SYSTEMS
- SSCP#25 - 1 UNIT FOR ENHANCED SLOPE STABILIZATION PRACTICES ON ALL CUT-FILL SLOPES GREATER THAN 6 FT. (1000 SF MINIMUM)
- SSCP#29 - 1 UNIT FOR RAIN BARRELS APPLIED TO ALL RESIDENTIAL UNITS
- SSCP#32 - 1/2 UNIT FOR INCREASED POND BUFFER
- SSCP#37 - UNIT MEASURE TO BE DETERMINED IF ALL RECOMMENDED, POWHATAN CREEK WMP STRATEGIES ARE APPLIED TO SITE

--- APPROXIMATE STORMWATER DRAINAGE DIVIDES  
 \* LOTS TO HAVE ON LOT STORMWATER MANAGEMENT

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

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Project Contact: JAG  
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 Date: 6/2021  
 Sheet Number  
**6**

080017656

AMENDED AND RESTATED FORD'S  
COLONY PROFFERS

These AMENDED and RESTATED FORD'S COLONY PROFFERS are made this 10th day of June, 2008 by REALTEC INCORPORATED, a North Carolina corporation (together with its successors in title, the "Owner").

RECITALS

A. Owner is the developer of the Ford's Colony at Williamsburg development containing approximately 2,962 acres and which is zoned R-4, Residential Planned Community, with proffers, and subject to a Master Plan heretofore approved by James City County (the "Existing Master Plan").

B. In connection with prior Master Plan amendments, Owner has entered into and James City County has accepted Amended and Restated Ford's Colony Proffers dated as of January 6, 2005 and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City as Instrument No. 050001465 and Richard J. Ford has entered into and James City County has accepted Richard J. Ford/Ford's Colony Proffers dated as of September 29, 1995 and recorded in the Clerk's Office of the Circuit Court for the City of Williamsburg and County of James City in James City Deed Book 757 at page 529 (together, the "Existing Proffers"). The property now subject to the Existing Proffers and Existing Master Plan is hereinafter called the "Existing Property".

C. Owner has applied to amend its Existing Master Plan to include as Section 37 of Ford's Colony a tract of land with an address of 3889 News Road, Parcel ID# 3730100004, containing approximately 180 acres, which property is more particularly described on Exhibit A (the "Additional Property") and to rezone the Additional Property from R-8 to R-4, with proffers.

Prepared by: Vernon M. Geddy, III, Esq., 1177 Jamestown Rd., Williamsburg, VA 23185 (757-220-6500)

Return to: Adam R. Kinsman, Deputy County Attorney, 101-C Mounts Bay Rd., Williamsburg, VA 23185 (757-253-6612)

D. Owner has submitted to the County a master plan entitled "Master Plan for Rezoning of The Village at Ford's Colony at Williamsburg for Realtec Incorporated" prepared by AES Consulting Engineers dated July 20, 2007, last revised May 20, 2008 (the "Amended Master Plan") in accordance with the County Zoning Ordinance.

E. Owner desires to offer to the County certain conditions on the development of the Property not generally applicable to land zoned R-4.

F. In consideration of the approval of the amendment of its Amended Master Plan and the rezoning, Owner desires to amend and restate the Existing Proffers as set forth below. If the requested rezoning and amendment of Owner's Existing Master Plan is not approved by James City County, these Amended and Restated Ford's Colony Proffers shall be void and the Existing Proffers shall remain unchanged, in full force and effect.

#### RESTATEMENT

1. **Restatement.** The Existing Proffers are hereby restated and incorporated herein by reference and shall continue to apply only to the Existing Property.

#### PROFFERS APPLICABLE TO THE ADDITIONAL PROPERTY

The following proffers apply only to the Additional Property:

2. **Master Plan.** The Additional Property shall be developed generally as shown and set out on sheets 4 through 8 of the Amended Master Plan. Final plans (as defined in Section 24-279 of the Zoning Ordinance) may vary from the Amended Master Plan to the extent permitted by Section 24-279 of the Zoning Ordinance.

3. **Density.** (a) There shall be no more than 596 independent living dwelling units ("dwelling units"), 83 assisted living/memory care rooms and 60 skilled nursing beds (together, the "rooms/beds") and two AG Beds (as defined in Proffer 22) on the Additional Property. The

terms “assisted living room” or “room” shall mean a non-medical residential room in the assisted living facility area of the continuing care retirement community licensed in accordance with Sections 63.2-1800 et seq. of the Virginia Code and Sections 22 VAC 40-72 et seq. of the Virginia Administrative Code where adults who are aged, infirm or disabled are provided personal and health care services and 24-hour supervision and assistance. Rooms must meet the standards set forth in 22 VAC 40-72-730 and 880. Typically rooms are occupied by one person. No more than two persons may occupy a room and only persons directly related by blood or marriage may occupy the same room.

(b) All dwelling units developed on the Additional Property shall be occupied by persons eighteen (18) years of age or older in accordance with applicable federal and state laws and regulations, including but not limited to: the Fair Housing Act, 42 U.S.C. 3601 et seq. and the exemption therefrom provided by 42 U.S.C. 3607(b)(2)(C) regarding discrimination based on familial status; the Housing for Older Persons Act of 1995, 46 U.S.C. 3601 et seq.; the Virginia Fair Housing Law Va. Code 36-96.1 et seq.; any regulations adopted pursuant to the foregoing; any judicial decisions arising thereunder; any exemptions and/or qualifications thereunder; and any amendments to the foregoing as now or may hereafter exist. Specific provisions of the age restriction described above and provisions for enforcement of same shall be set forth in a recorded document which shall be subject to the review and approval of the County Attorney prior to issuance of the first building permit for dwelling units on the Additional Property.

(c) Any accessory commercial uses located on the Additional Property, such as bank offices, beauty salons and barbershops, shall be located and designed to serve residents of the Additional Property as verified by the Director of Planning.

4. **Water Conservation.** (a) The Owner shall be responsible for developing water

conservation standards to be submitted to and approved by the James City Service Authority (“JCSA”) and subsequently for enforcing these standards. The standards shall address such water conservation measures as limitations on the installation and use of irrigation systems and irrigation wells, the use of drought resistant native and other adopted low water use landscaping materials and warm season turf on common areas in areas with appropriate growing conditions for such turf and the use of water conserving fixtures and appliances to promote water conservation and minimize the use of public water resources. The standards shall be approved by the JCSA prior to final subdivision or site plan approval.

(b) If the Owner desires to have outdoor watering of the Additional Property it shall provide water for irrigation utilizing surface water collection from the surface water ponds (“Impoundments”) or other collection devices such as cisterns or rain barrels (“Collection Devices”). In the design phase, the Owner and design engineer shall take into consideration the design of stormwater systems that can be used to collect stormwater for outdoor water use for the development. In no circumstance shall the JCSA public water supply be used for irrigation purposes, except as otherwise provided by this condition. If the Owner demonstrates to the satisfaction and approval of the General Manager of JCSA through drainage area studies and irrigation water budgets that the Impoundments and Collection Devices cannot provide sufficient water for all irrigation, the General Manager of the JCSA may, in writing, approve a shallow (less than 100 feet) irrigation well to supplement the water provided by the Impoundments and the Collection Devices.

**5. Contributions for Community Impacts.** (a) A contribution of \$1,000 for each dwelling unit on the Additional Property shall be made to the County for fire, police or emergency services, library uses, and other public facilities, uses or infrastructure.

(b) A contribution of \$250.00 for each room/bed (excluding the AG Beds) on the Additional Property shall be made to the County for fire, police or emergency services uses.

(c) A contribution of \$870.00 for each dwelling unit and \$435.00 for each room/bed on the Additional Property shall be made to the JCSA for water system improvements.

(d) A one-time cash contribution in the amount of \$36,000.00 shall be made to the County prior to the County being obligated to issue any certificates of occupancy for dwelling units/rooms/beds on the Additional Property for off-site improvements at the News Road/Monticello Avenue intersection and in the Monticello Avenue corridor.

(e) A contribution of \$750.00 for each dwelling unit on the Additional Property, subject to a credit for the costs of engineering and construction related to the improvements proffered by Owner in Section 6(b) calculated as set forth below, shall be made to the County for improvements to the News Road/Powhatan Secondary intersection, flood control measures where News Road crosses Cold Spring swamp, improvements at the News Road/Centerville Road intersection and other off-site road improvements in the News Road corridor. Owner shall receive a credit in an amount equal to its actual costs of the engineering and construction of the improvements proffered by Owner in Section 6(b) against the initial per unit contributions proffered under paragraph (d) of this Section (the "Credit Amount"). If construction of such improvements is not complete at the time the initial per unit contributions are due under paragraph (e) of this Section, the Credit Amount shall equal an engineer's estimate of such costs submitted by the Owner and approved by the Director of Planning. The Credit Amount divided by \$750.00 is the number of dwelling units for which the Credit Amount offsets the cash contribution otherwise due and payable. After application of the Credit Amount, the \$750.00 per dwelling unit cash contribution shall be payable on all subsequent dwelling units on the

Additional Property. Owner shall provide the County with copies of invoices and other supporting documentation of the costs of the improvements. If the Credit Amount is based on an agreed upon costs estimate, it shall be adjusted to equal the final actual costs of engineering and construction ("Actual Costs"). If the Credit Amount is more than the Actual Costs, Owner shall pay to the County an amount equal to the difference. If the Credit Amount is less than the Actual Costs, Owner shall receive an additional credit equal to the difference between the Actual Costs and the Credit Amount at the time the next cash contributions are due this paragraph.

(f) The contributions described above in paragraphs (a), (b), (c) and (e) shall be payable for each dwelling unit or room/bed, as applicable, on the Additional Property at the time of final subdivision or site plan approval for the residential unit or non-residential building unless the County adopts a policy calling for the payment of cash proffers at a later time in the development process, in which case the contributions described in paragraphs (a), (b), (c) and (e) above shall be payable at the time specified in the policy. In the event dwelling units, such as townhouse units, require both a site plan and subdivision plat, the contributions described above shall be paid at the time of final subdivision plat approval.

(g) A one-time cash contribution shall be made to JCSA in the amount of \$60,000.00 prior to the County being obligated to issue any certificates of occupancy for dwelling units/rooms/beds on the Additional Property for use by JCSA for off-site sewer improvements.

(h) The per unit/room/bed contribution amounts shall consist of the amounts set forth in the above paragraphs plus any adjustments included in the Marshall and Swift Building Costs Index (the "Index") from 2008 to the year a payment is made if payments are made after on or after January 1, 2009. In no event shall the per unit/room/bed contribution be adjusted to a sum less than the amounts set forth in the preceding paragraphs of this Section. In the event that the

Index is not available, a reliable government or other independent publication evaluating information heretofore used in determining the Index (approved in advance by the County Manager of Financial Management Services) shall be relied upon in establishing an inflationary factor for purposes of increasing the per unit/room/bed contribution to approximate the rate of annual inflation in the County.

**6. Entrances; Traffic Improvements.** (a) At the main entrance into the Additional Property at the intersection of News Road and Firestone Drive, an exclusive left-turn lane from westbound News Road into the Additional Property and an exclusive right-turn lane, including a shoulder bike lane, from eastbound News Road into the Additional Property shall be constructed. A shoulder bike lane along the Additional Property's News Road frontage shall be constructed. The existing southbound left turn lane on Firestone Drive at News Road will be restriped to a shared left and through lane.

(b) Prior to the County issuing final approval on any site or subdivision plan for any dwelling units/rooms/beds on the Additional Property, Owner shall submit plans to the County and Virginia Department of Transportation ("VDOT") for the installation of an exclusive left-turn lane on westbound News Road at the intersection with Powhatan Secondary. Owner will complete construction of the left-turn lane within twelve months of County and VDOT approvals to construct this exclusive left-turn lane. Owner is not responsible for road right of way acquisition or landscape/screening other than stabilization of disturbed soils. The County may elect to accept the cash equivalent contribution outlined in Proffer 5(d), (with any adjustments as may be appropriate as provided for in Proffer 5(g)), in lieu of construction of the turn lane by the Owner, in the event that acquisition of any needed right-of-way proves to be prohibitive. In the event that VDOT constructs this turn lane as part of its Six Year Secondary Road Plan, the

County may elect to divert some or all of the cash equivalent contribution to other road projects in the News Road Corridor, at the News Road/Monticello Avenue intersection, or in the western Monticello Avenue Corridor. Owner shall install or pay for the installation of a traffic signal at the intersection of News Road with Powhatan Secondary at such time as VDOT traffic signal warrants are met and VDOT has approved the installation of such a traffic signal.

(c) The improvements proffered hereby shall be constructed in accordance with VDOT standards. The improvements listed in paragraph (a) shall be completed or all required permits and plans for such approvals shall have been approved by all necessary governmental agencies and their completion bonded in form satisfactory to the County Attorney prior to the issuance of any certificates of occupancy for any building on the Additional Property.

(d) The second entrance to the Additional Property shall be located in the general location shown on the Master Plan and shall be limited by gate to emergency access only unless and until turn lanes approved by VDOT at this entrance have been installed.

(e) Owner shall convey free of charge to VDOT any right of way from the Additional Property necessary for the widening or realignment of News Road within 60 days of a written request for such conveyance together with final plans for the widening or realignment.

(f) Owner shall conduct traffic counts at its entrances prior to the County being obligated to issue certificates of occupancy for more than 247 dwelling units/rooms/beds on the Additional Property and again prior to the County being obligated to issue certificates of occupancy for more than 494 dwelling units/rooms/beds on the Additional Property. If these counts show a trip generation from the Additional Property more than 10% higher than the trip generation projected by the News Road Corridor Traffic Forecast and Analysis dated April 4, 2008 prepared by DRW Consultants, LLC filed with the rezoning application and on file with the Planning Division,

Owner shall submit an updated traffic impact study, including a listing of any entrance or turn lane improvements necessary to accommodate the increased traffic and the appropriate trigger for their construction, for review and approval by the County and VDOT. Owner shall install the necessary improvements, including any warranted traffic signal, as approved by the County and VDOT at the time recommended in the updated approved traffic study.

7. **Archaeology.** A Phase I Archaeological Study for the entire Additional Property shall be submitted to the Director of Planning for review and approval prior to land disturbance. A treatment plan shall be submitted and approved by the Director of Planning for all sites in the Phase I study that are recommended for a Phase II evaluation and/or identified as eligible for inclusion on the National Register of Historic Places. If a Phase II study is undertaken, such a study shall be approved by the Director of Planning and a treatment plan for said sites shall be submitted to, and approved by, the Director of Planning for sites that are determined to be eligible for inclusion on the National Register of Historic Places and/or those sites that require a Phase III study. If in the Phase III study, a site is determined eligible for nomination to the National Register of Historic Places and said site is to be preserved in place, the treatment plan shall include nomination of the site to the National Register of Historic Places. If a Phase III study is undertaken for said sites, such studies shall be approved by the Director of Planning prior to land disturbance within the study areas. All Phase I, Phase II, and Phase III studies shall meet the Virginia Department of Historic Resources' *Guidelines for Preparing Archaeological Resource Management Reports* and the Secretary of the Interior's *Standards and Guidelines for Archaeological Documentation*, as applicable, and shall be conducted under the supervision of a qualified archaeologist who meets the qualifications set forth in the Secretary of the Interior's *Professional Qualification Standards*. All approved treatment plans shall be incorporated into

the plan of development for the Additional Property and the clearing, grading or construction activities thereon.

**8. Off-Site Sewer Easements.** Upon the request of JCSA, Owner shall grant JCSA utility easements over, across and under the portion of the Additional Property along Powhatan Creek to permit future connections from the gravity sewer on the Additional Property to Tax Parcel 3640100007. The location of the easement shall be determined during the site plan approval process. The easements shall be recorded prior to JCSA issuing a Certificate to Construct.

**9. Sustainable Building.** The project shall be designed and constructed to obtain at least 200 points under the EarthCraft House Virginia, EarthCraft Multi-Family program certification process and a copy of the project worksheet shall be provided to the Director of Planning prior to the issuance of a certificate of occupancy for buildings in the phase in question.

**10. Master Stormwater Management Plan.** (a) Owner shall submit to the County a master stormwater management plan for the Additional Property consistent with the Master Stormwater Conceptual Plan prepared by AES Consulting Engineers dated July 20, 2007, last revised April 14, 2008 ("Stormwater Plan") and included in the Master Plan set submitted herewith and on file with the County, including facilities and measures necessary to meet the County's general stormwater management system requirements and the special stormwater criteria applicable in the Powhatan Creek watershed ("SSC") and, in addition, including features and measures over and above those necessary to meet the general requirements and SSC requirements and which will provide at least an additional five SSC credits, which shall include, without limitation, the features and measures listed on the Stormwater Plan subject to the criteria and conditions set forth on the Stormwater Plan. The master stormwater plan shall be approved

by the Environmental Director or his designee prior to the submission of any development plans for the Additional Property. The master stormwater management plan may be revised and/or updated during the development of the Additional Property based on on-site conditions discovered in the field with the prior approval of the Environmental Division. The approved master stormwater management plan, as revised and/or updated, shall be implemented in all development plans for the Additional Property.

(b) Prior to final site plan approval of the first site plan on the Additional Property, Owner shall submit a stream monitoring plan to the Environmental Division for their review and approval including a baseline assessment of the existing condition of the stream segments delineated on sheet 7 of the Master Plan and providing for annual monitoring beginning upon the date of the issuance of the first certificate of occupancy for a building on the Additional Property and continuing for a period of ten years from that date of the geomorphology of such stream segments. If such monitoring indicates the presence of new erosion not shown in the baseline assessment, Owner shall install additional upstream run-off control measures to prevent further erosion as approved by the Environmental Division.

(c) The warehouse building constructed in the area shown on the Master Plan as "Maintenance Area" shall be constructed using "green roof" technology. "Green roof" is defined as a roof which includes vegetation planted in soil or another growing medium spread over a waterproof membrane and may include drainage and/or irrigation systems.

11. **Nutrient Management Plan.** The Owner shall be responsible for contacting an agent of the Virginia Cooperative Extension Office ("VCEO") or, if a VCEO agent is unavailable, a soil scientist licensed in the Commonwealth of Virginia, an agent of the Soil and Water Conservation District or other qualified professional to conduct soil tests and to develop,

based upon the results of the soil tests, customized nutrient management plans (the "Plans") for all common areas within the Additional Property shown on site plans for the Additional Property. The Plans shall be submitted to the County's Environmental Director for his review and approval prior to the issuance of the any certificates of occupancy for units/rooms/beds shown on the site plan. Upon approval, the Owner shall be responsible for ensuring that any nutrients applied to common areas be applied in strict accordance with the Plan.

12. **Private Streets.** All streets and alleys on the Additional Property shall be private and shall be maintained by the Owner.

13. **Lighting.** All light poles on the Additional Property shall not exceed 30 feet in height. All external lights on the Additional Property shall be recessed fixtures with no globe, bulb or lens extending below the casing or otherwise unshielded by the case so that the light source is visible from the side of the fixture. No light spillage defined as 0.1 footcandle or higher shall extend outside the property lines of the Additional Property unless otherwise approved by the Director of Planning. Owner shall submit a lighting plan to the Director of Planning for review and approval for consistency with this Proffer prior to final site plan approval.

14. **Greenway Trail.** Subject to the issuance of all required permits by the County and other agencies as may be needed, Owner shall construct a trail with a minimum eight foot wide travel path with a mulch or other natural surface (which will be open to the general public during daylight hours only), including necessary bridges, if any, generally in the location shown on the Master Plan. In addition, Owner shall grant the County an easement eight feet in width from the centerline of the trail as constructed for public access as described above and the maintenance and improvement of the trail by the County. The exact location of the trail and

greenway easement may be varied with the prior written approval of the Environmental Division. The trail shall be constructed within twelve months of the issuance of necessary permits by the County and other agencies as may be needed.

15. **Natural Resources.** A natural resource inventory of suitable habitats for S1, S2, S3, G1, G2, or G3 resources as defined in the County's Natural Resources Policy on the Additional Property shall be submitted to the Director of Planning for his/her review and approval prior to the submittal of any development plans for the Additional Property. If the inventory confirms that a natural heritage resource exists, a conservation management plan shall be submitted to and approved by the Director of Planning for the affected area. All inventories and conservation management plans shall meet the Virginia Department of Conservation and Recreation's Division of Natural Resources ("DCR/DNH") standards for preparing such plans, and shall be conducted under the supervision of a qualified biologist as determined by the DCR/DNH or the United States Fish and Wildlife Service. All approved conservation management plans shall be incorporated into the plan of development for the site, and the clearing, grading or construction activities thereon, to the maximum extent possible. Upon approval by the Director of Planning, a mitigation plan may substitute for the incorporation of the conservation management plan into the plan of development for the site. This proffer shall be interpreted in accordance with the County's Natural Resources Policy adopted by the County on July 27, 1999.

16. **Public Transit.** Owner shall install a bus stop and shelter on News Road adjacent to the main entrance into the Additional Property, with the exact location being subject to the approval of Williamsburg Area Transit ("WAT"), or any successor entity to WAT as may become appropriate. The bus stop shall be installed upon the request of WAT at such time as

WAT provides bus service along News Road to the Additional Property.

17. **Ford's Colony at Williamsburg Homeowners Association.** Owner shall not subject the Additional Property to the Declaration of Protective Covenants, Section II, Ford's Colony at Williamsburg, dated April 2, 1985 ("DPC") or the Bylaws of the Ford's Colony Homeowners Association ("FCHOA"), as amended from time to time ("Bylaws") nor shall owners or residents of units, lots or parcels on the Additional Property be "Owner(s)" as such term is defined in the DPC or the Bylaws or be Members (as defined in the DPC) of the FCHOA.

18. **Recreation.** Owner will provide recreational and social facilities and programs appropriate for residents of a continuing care retirement community, which includes senior adult housing, assisted living beds, and nursing beds, as determined by Owner and generally as described below and in the general locations shown on the Master Plan. Facilities will be both indoor and outdoor and will be managed and maintained on a year round basis by Owner. Hard surface and soft surface trails and sidewalks will be installed for walking and bicycling and shown on the site plan for each phase of the development. The phase one construction shall include an outdoor pool and areas designated for lawn games, and accessible gardens. The phase one main CCRC building will contain terraces and covered porch areas that will be programmed for community social events such as cookouts and concerts and will have benches and chairs to be used during non-programmed time. The phase one main CCRC building will contain a comprehensive wellness center and pool for aerobic and strength conditioning, physical therapy, swimming and water aerobics, rooms for dining, formal lounges and bar, activities such as arts and crafts and woodworking, convenience shopping, health, beauty and other spa features, and a chapel. A multi-purpose facility will be built in conjunction with phase one for social and educational programming with a capacity of approximately 400 people. A private transportation

system will be employed to transport groups to Williamsburg area entertainment venues and shopping. All residents shall have full access to all indoor and outdoor facilities and programming. The dedicated assisted living buildings and skilled nursing care building will feature health care-related exercise areas and indoor and outdoor respite areas.

Associated Functions:

Building A: Lobby, Main Hall, Front Desk, Work Room, Mail Room, Administration, Sales, Security, Living Room, Community Center/Chapel, Library, Card Room, Terrace Room, Deli, Dining Room, Kitchen, Game Room, Crafts, Shop, Movie Auditorium, Bank, Toilets, Beauty/Barber, Business, Wellness/Spa, Pool, Staff Support, Maintenance, Housekeeping, Mechanical, Loading Dock, Receiving and Training

Building B: Lobby, Main Hall, Front Desk, Work Room, Mail Room, Administration, Sales, Security, Living Room, Community Center/Chapel, Library, Card Room, Terrace Room, Deli, Dining Room, Kitchen, Game Room, Crafts, Shop, Movie Auditorium, Bank, Toilets, Beauty/Barber, Business, Wellness/Spa, Pool, Staff Support, Maintenance, Housekeeping, Mechanical, Loading Dock, Receiving and Training, Service

Building C: main community meeting & multi-purpose, terrace, parking

Building D: spa, beauty/barber, arts/crafts, & chapel

19. **Cold Spring Swamp Drainage Analysis.** Prior to the County being obligated to grant final approval of the first site plan for development on the Additional Property, Owner shall cause a duly licensed professional engineer to prepare and submit to the County an analysis of the Cold Spring swamp drainage basin assuming full development in the drainage basin, subject to the review and approval of the County's Environmental Division Director, evaluating the adequacy of the existing culverts under News Road for use by the County in determining whether or not improvements to the culverts are necessary for flood control purposes.

20. **Height Restrictions.** No building on the Additional Property shall exceed 60 feet in height (with building height as defined in Section 24-2 of the County Zoning Ordinance) nor have more than four stories above grade. Building P as designated on the Master Plan shall not

exceed 106 feet above sea level (or 38 feet above finished grade) in height (with building height as defined in Section 24-2 of the County Zoning Ordinance). The buildings shown on the Master Plan as Duplexes shall not contain more than one and one-half stories. Building A shall not contain more than three stories or exceed 50 feet above finished grade in height (with building height as defined in Section 24-2 of the County Zoning Ordinance). Building Q shall not contain more than two stories. The buildings shown on the Master Plan as Maintenance, Transportation and Warehouse shall not contain more than two stories.

**21. Building P.** All mechanical equipment and vehicular entrances to underground parking for Building P shall be located on the sides of the building. All mechanical equipment serving Building P shall be screened for sound attenuation purposes by solid walls approved by the Director of Planning. Owner shall install evergreen trees behind Building P pursuant to a landscape plan approved by the Development Review Committee in the site plan review process in order to provide additional screening of the basement level of Building P from the Monticello Woods subdivision.

**22. Social Services.** Owner shall reserve two assisted living beds (“AG Beds”) in Phase 2 of the project for individuals receiving auxiliary grants under the Auxiliary Grant Program (the “Program”) administered by the Virginia Department of Social Services and shall participate in the Program with respect to the AG Beds. Such individuals must meet applicable Program eligibility criteria as determined by the County Department of Social Services and are subject to all admission and discharge criteria of the facility other than ability to pay for services and all other generally applicable rules and regulations of the facility.

WITNESS the following signatures and seals:

REALTEC INCORPORATED

By: [Signature]

Title: VICE PRESIDENT

STATE OF VIRGINIA  
CITY/COUNTY OF James City to-wit:

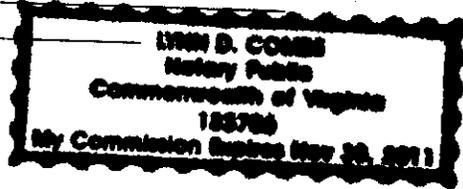
The foregoing instrument was acknowledged before me this 30<sup>th</sup> day of

June, 2008 by Drew Mulhare, Vice President of REALTEC  
INCORPORATED, a North Carolina corporation, on behalf of the corporation.

[Signature]  
NOTARY PUBLIC

My commission expires: \_\_\_\_\_

Registration No.: \_\_\_\_\_



## Additional Property Description

### PARCEL A

#### PARCEL A

All of that certain piece or parcel of land, lying and being in Jamestown District, James City County, Virginia, known as Hockaday, containing one hundred forty-seven and one-half (147-1/2) acres, more or less, bounded on the East, South and West by the land of the Shaw Land & Timber Co., known as the Pyle tract, the land of J. A. Barnes and Powhatan Swamp, and on the North by the land of Now Brothers.

#### PARCEL B

All of that certain piece or parcel of land situate in Jamestown District, James City County, Virginia, containing fifty five and two fifths (55-2/5) acres, more or less, and known as Cypress Swamp, and adjoining the lands of William Marlin's estate on the East, Greenspring on the South and Thomas N. Ratcliffe on the West and D. S. Jones on the North.

LESS AND EXCEPT that property conveyed to the Commonwealth of Virginia by Order Confirming Commissioner's Report, entered February 20, 1974, in the Circuit Court for the City of Williamsburg and County of James City, Virginia, and recorded in the Office of the Clerk of Court of such Court in James City County Deed Book 130, at Page 420, containing 3.74 acres, more or less, confirming that certain Certificate Number C-21570, filed by State Highway Commissioner of Virginia against the Heirs at Law of John G. Warburton, dated May 24, 1972, and recorded June 12, 1972, in the aforesaid Clerk's Office in James City County Deed Book 137, at Page 213, and SUBJECT TO the easements conveyed to the Commonwealth of Virginia in such Order and such Certificate.

The property herein conveyed, commonly known as the "Hockaday-Cypress Tract," is further described in its entirety on that certain plat of survey, entitled "BOUNDARY SURVEY OF A PORTION OF THE JOHN G. WARBURTON ESTATE, KNOWN AS THE HOCKADAY-CYPRESS TRACT," made by V. Monroe Mallory, of Dillard & Mallory, P.C., Certified Land Surveyors, Tappahannock, Virginia, dated October 25, 2001, recorded November 7, 2001, in the aforesaid Clerk's Office in James City County Plat Book 83, at Page 82, to which plat reference is made for a more complete description of such property.

Being a portion of the same property conveyed to John G. Warburton by Deed from C. H. Matthews and Mary Matthews, his wife, dated April 22, 1925, and recorded April 27, 1925, in the aforesaid Clerk's Office in James City County Deed Book 22, at Page 76, and by Deed from C. C. Hall and Beulah B. Hall, his wife, and T. C. Hall and Elsie G. Hall, his wife, dated March 18, 1952, and recorded April 3, 1952, in the aforesaid Clerk's Office in James City County Deed Book 47, at Page 183, the aforesaid John G. Warburton, having departed this life on October 15, 1986, and by his Last Will and Testament, dated February 3, 1964, and duly probated and recorded in the aforesaid Clerk's Office in City of Williamsburg Will Book 11, at Page 393, and duly recorded in the James City County probate records in Will File Number 374, devised such property to his daughters, Martha W. McMurrin, and Sue Gregory Warburton Redd, subject to a life estate devised to Sarah Warburton, widow of John G. Warburton, who thereafter departed this life on September 25, 1991 (and whose Last Will and Testament, dated July 30, 1964, was duly probated and duly recorded in the aforesaid Clerk's Office in City of Williamsburg Will Book 45, at Page 16, and duly recorded in the James City County probate records in Will File Number 3234), leaving Martha W. McMurrin and Sue Gregory Warburton Redd as the sole fee simple owners of such property, the said Sue Gregory Warburton Redd having conveyed her undivided one-half interest in and to such property to SWR-Hockaday, LLC, by Deed of Gift, dated February 24, 2003, and recorded March 3, 2003, in the aforesaid Clerk's Office as James City County Instrument Number D30006334, and by Deed of Correction, dated February 15, 2005, and recorded March 2, 2005, in the aforesaid Clerk's Office as James City County Instrument Number 050004430 and being the same property conveyed to Realtec, Incorporated, a North Carolina corporation, by Deed dated August 6, 2007, from Martha Warburton McMurrin, widow and SWR-Hockaday, LLC, a Georgia Limited Liability company, and recorded in the said Clerk's Office as Instrument Number 070024542.

VIRGINIA: CITY OF WILLIAMSBURG & COUNTY OF JAMES CITY

This document was admitted to record on 16 July 08 at 2:47 AM/PM. The taxes imposed by Virginia Code Section 58.1-801, 58.1-802 & 58.1-814 have been paid.

STATE TAX LOCAL TAX ADDITIONAL TAX

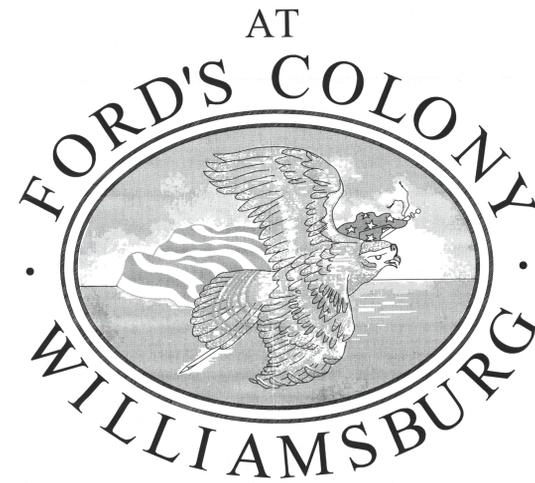
\$ \_\_\_\_\_ \$ \_\_\_\_\_ \$ \_\_\_\_\_

TESTE: BETSY B. WOOLRIDGE, CLERK

BY: Betsy B. Woolridge Clerk



# MASTER PLAN FOR REZONING OF THE VILLAGE



FOR

## REALTEC INCORPORATED

**PROJECT TEAM**

DEVELOPER: REALTEC INCORPORATED

LAND PLANNING: EDWARDS ASSOCIATES ARCHITECTS  
MCBRIDE HESS DESIGN GROUP P.A.

ENVIRONMENTAL: CAHILL ASSOCIATES  
KOONTZ-BRYANT, P.C.  
KERR ENVIRONMENTAL SERVICES CORPORATION

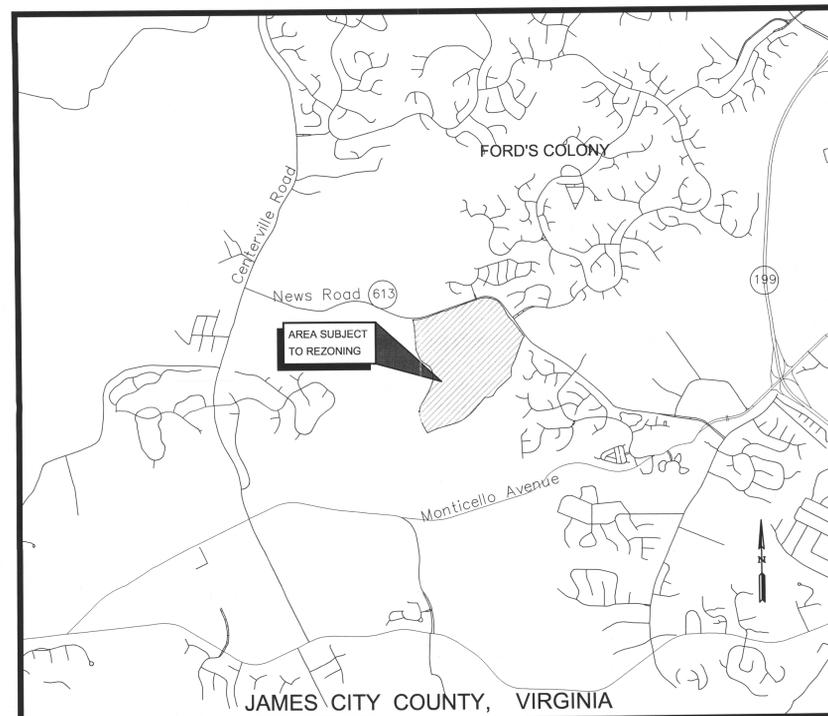
TRAFFIC: DRW & ASSOCIATES

CIVIL CONSULTING: AES CONSULTING ENGINEERS

**INDEX OF SHEETS**

1	COVER SHEET
2	2008 FORD'S COLONY MASTER PLAN
3	ENVIRONMENTAL INVENTORY
4	SECTION 37 LAND-USE MASTER PLAN
5	BINDING MASTER PLAN
6	MASTER UTILITY PLAN
7	MASTER STORMWATER MANAGEMENT PLAN
8	GRADING PLAN

NOTE: THIS PROJECT LIES WITHIN THE POWHATAN CREEK WATERSHED OF THE JAMES RIVER. THE EASTERN HALF OF THE PROPERTY IS PART OF POWHATAN CREEK SUBWATERSHED 209 (COLD SPRING SWAMP) AND THE WESTERN HALF IS PART OF THE NON-TIDAL POWHATAN CREEK MAINSTEM.



**VICINITY MAP**

(APPROX. SCALE 1"=2000')

ORIGINALLY SUBMITTED: JULY 20, 2007

RESUBMITTED: APRIL 14, 2008

RESUBMITTED: MAY 20, 2008

JCC CASE # Z-0008-2007 / MP-0006-2007



**CONSULTING ENGINEERS**

WILLIAMSBURG • RICHMOND • GLOUCESTER

5248 Olde Towne Road, Suite 1 • Williamsburg, Virginia 23188  
(757) 253-0040 • Fax (757) 220-8994

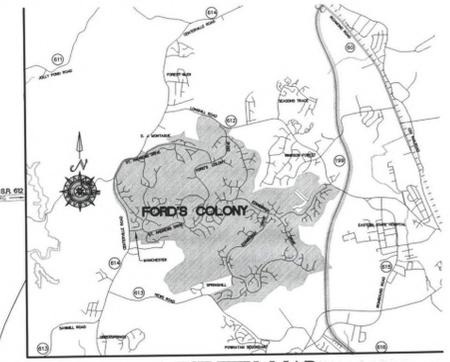
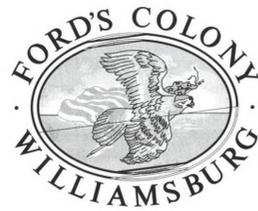


MP-0006-2007 / Z-0008-2007

Master Plan for Rezoning -  
The Village at Ford's Colony  
JCC CASE # Z-0008-2007 /  
MP-0006-2007  
AES Project # 5652-22

FINAL VERSION  
OF CCRC MASTER  
PLAN





VICINITY MAP  
SCALE 1"=4000'

**NON RESIDENTIAL AMENITY AND SERVICE SITES**

100 HOTEL CONDOMINIUMS, EXECUTIVE MEETING FACILITIES AND GOLF ACADEMY	4.71 AC.
GOLF CLUB AND PRO SHOP	5.05 AC.
INFORMATION AND SALES CENTER	1.81 AC.
ADMINISTRATIVE BUILDING	3.50 AC.
PUBLIC SERVICE AREA *	28.05 AC.
GOLF MAINTENANCE	3.90 AC.
COMMUNITY CLUB	7.72 AC.
PROJECT MAINTENANCE	10.59 AC.
DRIVING RANGE/CART STORAGE	10.34 AC.
ADDITIONAL RECREATION AREA	6.36 AC.
ADDITIONAL PUBLIC SERVICE AREA	6.76 AC.
CONTINUING CARE RETIREMENT COMMUNITY (CCRC)	180.7 AC.
<b>TOTAL</b>	<b>289.49 AC.</b>

\* NOTE: 1.21 AC. PORTION OF ORIGINAL 30.0 AC. P.S.A. SOLD TO FORD'S COLONY

**LEGEND**

- RESIDENTIAL "A"
- RESIDENTIAL "B"
- RESIDENTIAL "D"
- OPEN SPACE
- WILLIAMSBURG WEST SUBDIVISION AND APARTMENTS NOT A PORTION OF MASTER PLAN

NOTE:  
VARIABLE WIDTH (25' MIN) BUFFER ALONG THE FORD'S COLONY TRACT WHERE IT ADJOINS CENTERVILLE ROAD SHALL BE RESERVED FOR FUTURE WIDENING AND REALIGNMENT OF S.R. 614

**GENERAL NOTES:**

- RECORDATION OF THIS PLAN IS SOLELY FOR THE PURPOSE OF IDENTIFYING THE LAND COVERED BY THE PROFFERS RECORDED HERewith AND DOES NOT CONSTITUTE A PLAT OF SUBDIVISION NOR DOES IT DEDICATE TO PUBLIC OR PRIVATE USE ANY ROADS, COMMON AREAS, GREEN AREAS, OR RECREATION AREAS.
- THE PROPERTY SHOWN ON THIS PLAN IS COVERED BY PROTECTIVE COVENANTS OF RECORD IN THE CLERK'S OFFICE IN THE COURTHOUSE OF JAMES CITY COUNTY, VIRGINIA, WHICH PROVIDE FOR THE MAINTENANCE OF COMMON OPEN SPACE, RECREATION AREAS, SIDEWALKS, PARKING, PRIVATE STREETS AND OTHER PRIVATELY OWNED, BUT COMMON FACILITIES SERVING THIS PROJECT.
- LOTS NUMBERED REPRESENT RECORDED SECTIONS OR SECTIONS THAT HAVE RECEIVED PRELIMINARY APPROVAL.
- THE 2008 MASTER PLAN AMENDMENT WILL BE CONSIDERED A STAND ALONE PROJECT FOR THE PURPOSES OF STORMWATER MANAGEMENT POINTS AND CREDITS.



**LAND USE TABULATION**

	2008	2004
<b>RESIDENTIAL "A"</b>		
TOTAL NUMBER OF UNITS	2,856 UNITS	2,856 UNITS
GROSS AREA OF RESIDENTIAL "A"	1,868.77± AC.=(63.09%)	1,868.77± AC.=(67.19%)
PERMITTED DENSITY	4.00 UNITS/ACRE	4.00 UNITS/ACRE
UNIT DENSITY	1.53 UNITS/ACRE	1.53 UNITS/ACRE
<b>RESIDENTIAL "B"</b>		
TOTAL NUMBER OF UNITS	80 UNITS	80 UNITS
GROSS AREA OF RESIDENTIAL "B"	22.9± AC.=(0.77%)	22.9± AC.=(0.79%)
PERMITTED DENSITY	9.60 UNITS/ACRE	9.60 UNITS/ACRE
UNIT DENSITY	3.49 UNITS/ACRE	3.49 UNITS/ACRE
<b>RESIDENTIAL "D"</b>		
TOTAL NUMBER OF UNITS	314 UNITS	314 UNITS
GROSS AREA OF RESIDENTIAL "D"	31.82 AC.=(1.07%)	31.82 AC.=(1.14%)
PERMITTED DENSITY	18.00 UNITS/ACRE	18.00 UNITS/ACRE
UNIT DENSITY	9.87 UNITS/ACRE	9.87 UNITS/ACRE
<b>C.C.R.C. "B"</b>		
TOTAL NUMBER OF UNITS	38 UNITS	N/A
GROSS AREA OF C.C.R.C. "B"	10.97± AC.=(0.37%)	N/A
PERMITTED DENSITY	9.80 UNITS/ACRE	N/A
UNIT DENSITY	3.46 UNITS/ACRE	N/A
<b>C.C.R.C. "D"</b>		
TOTAL NUMBER OF UNITS	558 UNITS	N/A
GROSS AREA OF C.C.R.C. "D"	57.33 AC.=(1.94%)	N/A
PERMITTED DENSITY	18.00 UNITS/ACRE	N/A
UNIT DENSITY	9.73 UNITS/ACRE	N/A
<b>OPEN SPACE</b>		
WITHIN NON-RESIDENTIAL AMENITY AND SERVICE SITES	150.27 AC.	39.27 AC.
* GOLF COURSE, LAKES AND BUFFERS, MARSH RESERVE	844.71 AC.	844.71 AC.
OPEN SPACE WITHIN RESIDENTIAL "A"	514.12 AC.	514.12 AC.
OPEN SPACE WITHIN RESIDENTIAL "B" & "D"	38.77 AC.	38.77 AC.
TOTAL AREA OF OPEN SPACE	1,547.87 AC.	1,436.87 AC.
TOTAL AREA OF PROJECT	2,962.24 AC.	2,781.49 AC.
% OF OPEN AREA	52.3%	51.7%
<b>OVERALL DENSITY</b>		
TOTAL PROJECT AREA	2,962.24 AC.	2,781.49 AC.
TOTAL NUMBER OF RESIDENTIAL UNITS	3,846 UNITS	3,250 UNITS
OVERALL PROJECT DENSITY	1.30 UNITS/ACRE	1.17 UNITS/ACRE

* NOTES	278.12 AC.
MARSH RESERVES, LAKES AND BUFFERS	491.09 AC.
GOLF COURSE (INCLUDES LAKES IN PLAY)	20.0 AC.
RESERVED FOR ROUTE 199	3.30 AC.
ASSOCIATED GREENBELT'S NATURAL OPEN SPACE IN 1993 ADDITION	5.00 AC.
OPEN SPACE IN 1998 ADDITION	47.50 AC.
OPEN SPACE IN 2008 ADDITION	111.0 AC.

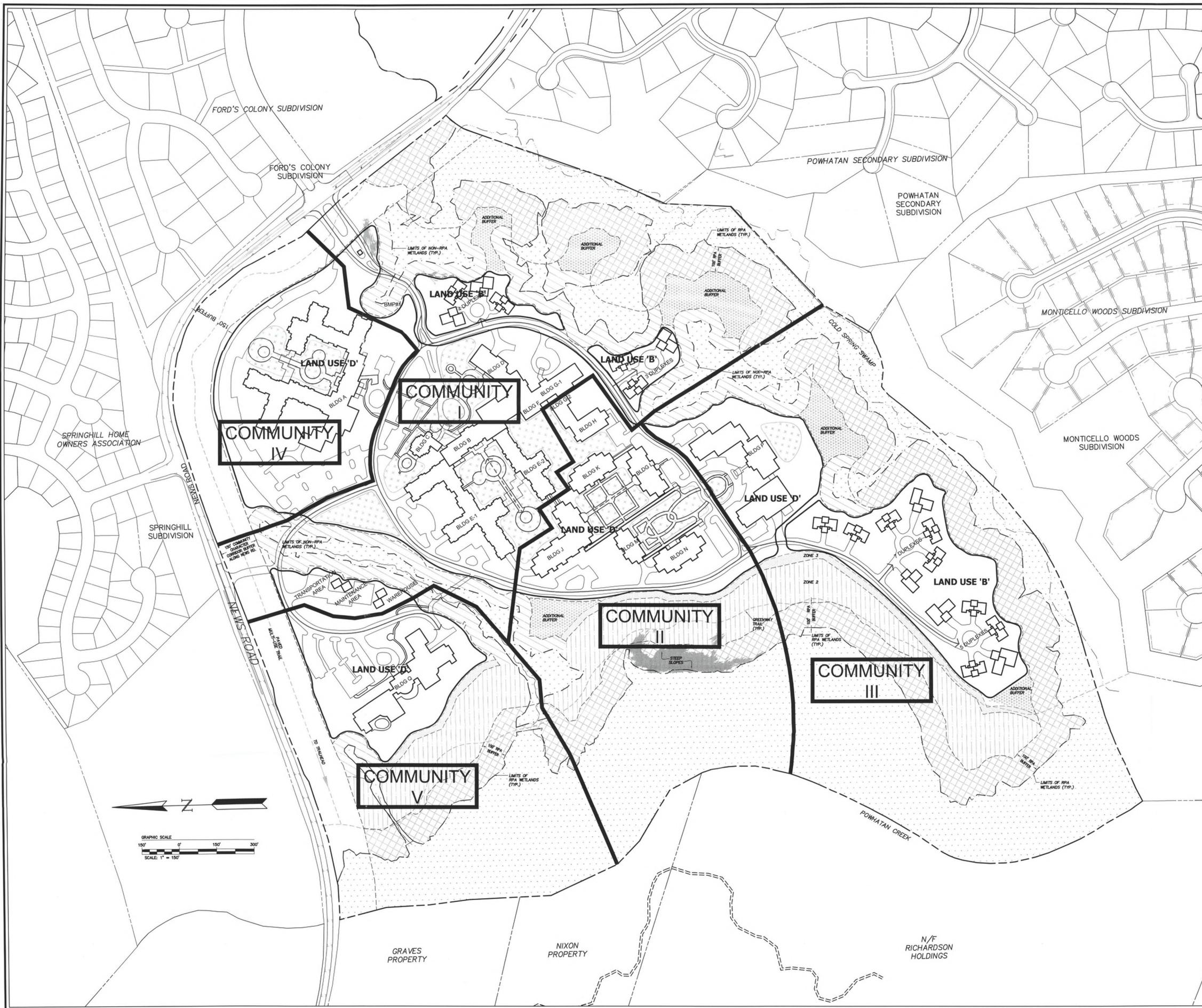
NO.	DATE	REVISION / COMMENT / NOTE
2	5/29/08	REVISIONS PER RELOCATION OF BUILDINGS
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 20, 2008
		DESIGNED BY
		DRAWN BY

5248 Olde Towne Road, Suite 1  
Williamsburg, Virginia 23108  
(757) 253-0089 FAX  
FAX (757) 220-8994



**2008 LAND USE MASTER PLAN**  
**FORD'S COLONY**  
AT WILLIAMSBURG  
OWNER / DEVELOPER : REALTEC, INCORPORATED  
JAMES CITY COUNTY, VIRGINIA  
POWATAN DISTRICT

Designed: AES  
Scale: 1"=600'  
Drawn: AES  
Date: 2/4/08  
Project No.: 5652-70  
Drawing No.: 2



**REPRODUCTION TABULATIONS:**

PROPOSED ZONING (AND LAND USE DESIGNATION)	R-4 (B & D)
EXISTING ZONING:	R-8

**DENSITY TABULATIONS:**

GROSS ACREAGE:	180.79 AC. +/-
LESS RPA WETLANDS:	42.20 AC. +/-
LESS 25% SLOPES:	1.4 AC. +/-
TOTAL NON-DEVELOPABLE AREA:	43.60 AC. +/- (24.1% OF TOTAL PARCEL)

**LAND-USE TABULATIONS:**

TOTAL PARCEL:	180.79 AC. +/-
LANDUSES B & D (1):	68.30 AC. +/-
OPEN SPACE:	112.49 AC. +/-
RPA WETLANDS:	42.20 AC. +/-
NON-RPA WETLANDS:	9.23 AC. +/-
BUFFER AREAS (2):	61.06 AC. +/-

1. INCLUDES (±9 AC.) RECREATIONAL-AMENITY OPEN SPACE AREA.  
 2. BUFFER AREAS INCLUDE RPA BUFFER (22.00 AC.), ZONE 2 RIPARIAN BUFFER (11.87 AC.), ZONE 3 RIPARIAN BUFFER (1.77 AC.), NON-RPA BUFFER (9.96 AC.), COMMUNITY CHARACTER CORRIDOR BUFFER (10.91 AC.) & ADDITIONAL BUFFERS (4.55 AC.).

**LEGEND:**

- RPA WETLAND (42.20 AC. ±)
- NON-RPA WETLAND (9.23 AC. ±)
- RPA BUFFER (100') (22.00 AC. ±)
- ZONE 2 RIPARIAN BUFFER (11.87 AC. ±) (VARIABLE WIDTH)
- ZONE 3 RIPARIAN BUFFER (25') (1.77 AC. ±)
- NON-RPA BUFFER (50') (9.96 AC. ±)
- LANDUSE BOUNDARIES (68.30 AC. ±)
- ADDITIONAL BUFFER (4.55 AC. ±)
- APPROX. LOCATIONS OF RECREATIONAL-AMENITY OPEN SPACE (9 AC. ±)
- SLOPES 25% OR GREATER
- VEHICULAR CIRCULATION
- PEDESTRIAN CIRCULATION

NOTE: 15 FT. BUILDING SETBACK TO RPA BUFFER ALONG COLD SPRING SWAMP.

Land Use Density Chart	Max. # Units	Area Density	Max. Non-Residential Floor Space	Maximum Acreage
B - Townhomes	38	0.17 Dwelling Units (du) per Acre	N/A	180.8 Acres
D - Independent Living Units	558	3.44	N/A	
D - Common Areas (1)			297,800 gsf	
Dining Areas Administration Service/Loading Dock Wellness Center Other Amenities Other Limited Commercial Uses (3)				
D - Health Care Center (2)	83 Rooms 60 Beds 2 Beds	N/A	N/A	
TOTALS:	596	3.30 du / ac.	297,800 gsf	180.8 Acres

Note (1) Excludes "Community Buildings" (identified as Building "C" on the Illustrative Masterplan).  
 Note (2) Health Care Center units not part of Land Use Density Tabulation.  
 Note (3) Limited commercial uses to include but not be limited to doctor's office, book store, pharmacy, deli, farmers market, craft store for use by residents only.

**COMMUNITY BREAKDOWN**

COMMUNITY 1:	BUILDINGS B, C, D, E-1/E-2, F, G-1, 14 DUPLEXES, WAREHOUSE, STORAGE & EMPLOYEE PARKING TOTAL INDEPENDENT LIVING UNITS = 230; TOTAL BEDS/ROOMS = 54
COMMUNITY 2:	BUILDINGS G-2, H, J, K, L, M & N TOTAL INDEPENDENT LIVING UNITS = 168; TOTAL BEDS/ROOMS = 54
COMMUNITY 3:	BUILDING P, 24 DUPLEXES TOTAL INDEPENDENT LIVING UNITS = 60; TOTAL BEDS/ROOMS = 0
COMMUNITY 4:	BUILDING A TOTAL INDEPENDENT LIVING UNITS = 138; TOTAL BEDS/ROOMS = 0
COMMUNITY 5:	BUILDING Q TOTAL INDEPENDENT LIVING UNITS = 0; TOTAL BEDS/ROOMS = 35



No.	DATE	REVISION / COMMENT / NOTE	REVISED BY	REVIEWED BY
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	AES	JAG
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008	AES	JAG



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 Williamsburg, Virginia 23188  
 Ph: (757) 253-0040  
 Fax: (757) 220-8994  
 www.aesva.com



BINDING LAND-USE MASTER PLAN FOR REZONING OF	
<b>THE VILLAGE</b>	
at	
FORD'S COLONY OF WILLIAMSBURG	
for	
REALTEC INCORPORATED	
POWhatan DISTRICT	JAMES CITY COUNTY
VIRGINIA	

Designed AES	Drawn AES
Scale 1"=150'	Date 2/4/08
Project No. 5652-22	
Drawing No. 4	



No.	DATE	REVISION / COMMENT / NOTE	DESIGNED BY	DRAWN BY
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	AES	JAG
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008	AES	JAG


**Edwards Associates**  
 architects


**ES**  
 CONSULTING ENGINEERS  
 WILLIAMSBURG • RICHMOND

5248 Olde Towne Road, Suite 1  
 Williamsburg, Virginia 23188  
 Ph: (757) 253-0040  
 Fax: (757) 220-8994  
 www.aesva.com


**Cahill Associates**  
 ENVIRONMENTAL CONSULTANTS

BINDING MASTER PLAN of  
**THE VILLAGE**  
 FORD'S COLONY OF WILLIAMSBURG  
 for  
 REALTEC INCORPORATED  
 POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

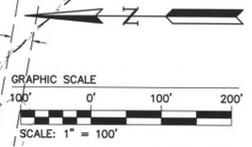
Designed	Drawn
AES	AES
Scale	Date
1"=100'	2/4/08
Project No.	Drawing No.
5652-22	5



**NOTE:**

- TO LIMIT WETLANDS AND RPA BUFFER IMPACTS 2 UNITS WILL BE SERVED BY A DUPLEX GRINDER PUMP. THIS UNIT WILL BE OWNED AND MAINTAINED BY THE CCRC FACILITY.
- TWO BRIDGES WILL BE UTILIZED TO SEWER THE PROJECT. THE ONE BRIDGE WHICH WILL IMPACT RPA WETLANDS, ALSO SERVES AS A PEDESTRIAN CONNECTION FOR THE COUNTY TRAIL SYSTEM.
- ALL UTILITIES ON-SITE TO REMAIN PRIVATE (UNLESS OTHERWISE NOTED).

**NOTE:** ALL BUILDINGS SHALL BE PROTECTED BY FIRE SUPPRESSION SYSTEMS. ADDITIONAL FIRE HYDRANTS WILL BE PLACED AT THE TIME OF SITE PLAN ONCE THE LOCATIONS OF FIRE DEPARTMENT CONNECTIONS ARE ESTABLISHED



No.	DATE	REVISION / COMMENT / NOTE	DESIGNED BY	CHECKED BY
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	AES	JAG
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008	AES	JAG

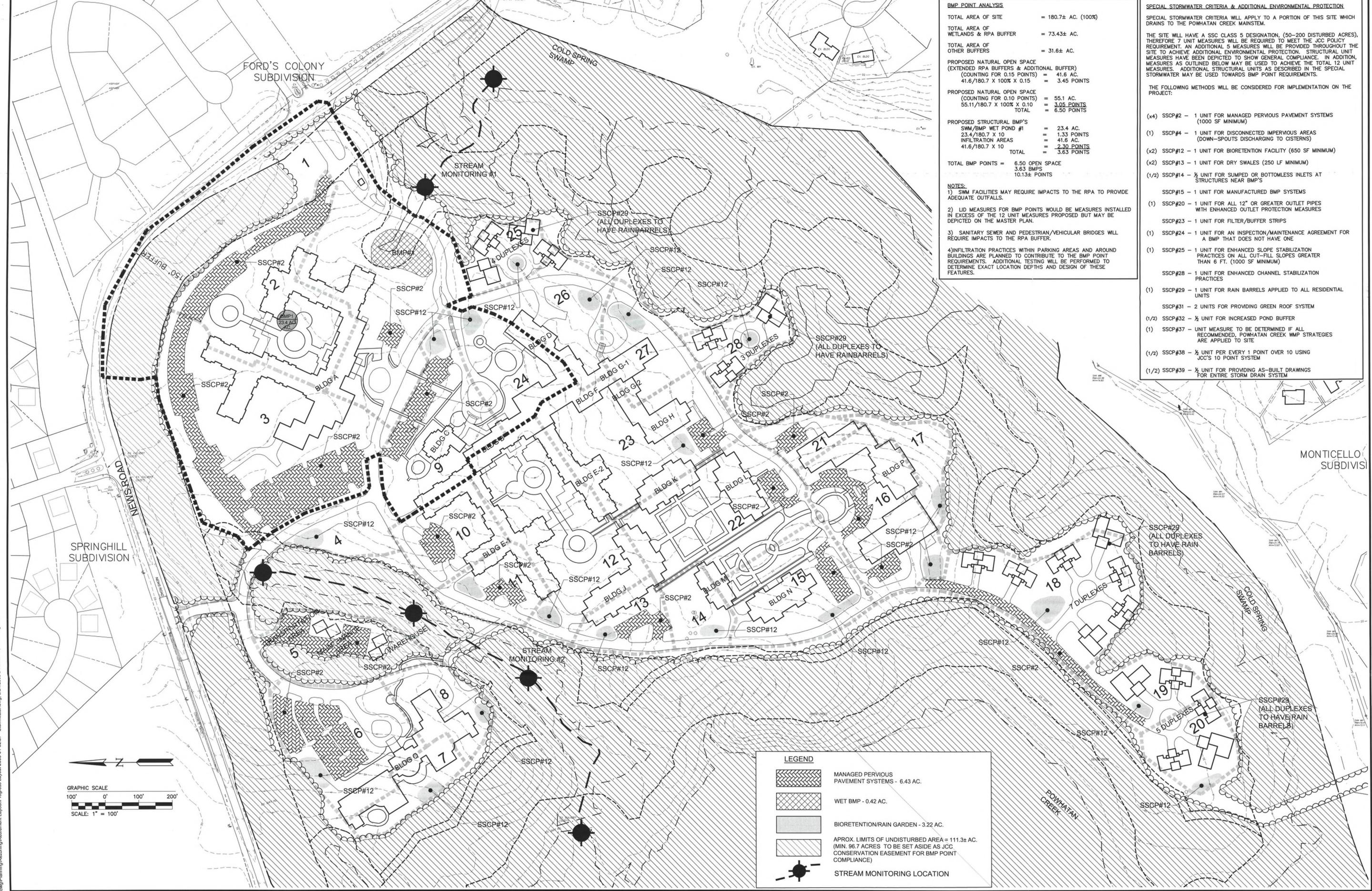
**Edwards Associates**  
architects

**ES** CONSULTING ENGINEERS  
Engineers  
Surveyors  
Planners  
Landscape Architects  
WILLIAMSBURG • RICHMOND

5248 Olde Towne Road, Suite 1  
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Ph: (757) 253-0040  
Fax: (757) 220-8994  
www.aesva.com

**Cahill Associates**  
ENVIRONMENTAL CONSULTANTS

MASTER UTILITY PLAN of <b>THE VILLAGE</b> at FORD'S COLONY OF WILLIAMSBURG for REALTEC INCORPORATED		Designed Scale Date Project No. Drawing No.
POWHATAN DISTRICT    JAMES CITY COUNTY    VIRGINIA		AES 1"=100' 2/4/08 5652-22 6



**BMP POINT ANALYSIS**

TOTAL AREA OF SITE	= 180.7± AC. (100%)
TOTAL AREA OF WETLANDS & RPA BUFFER	= 73.43± AC.
TOTAL AREA OF OTHER BUFFERS	= 31.6± AC.
PROPOSED NATURAL OPEN SPACE (EXTENDED RPA BUFFERS & ADDITIONAL BUFFER) (COUNTING FOR 0.15 POINTS)	= 41.6 AC. 41.6/180.7 X 100% X 0.15 = 3.45 POINTS
PROPOSED NATURAL OPEN SPACE (COUNTING FOR 0.10 POINTS)	= 55.1 AC. 55.1/180.7 X 100% X 0.10 = 3.05 POINTS TOTAL = 6.50 POINTS
PROPOSED STRUCTURAL BMP'S	
SWM/BMP WET POND #1	= 23.4 AC.
23.4/180.7 X 10	= 1.33 POINTS
INFILTRATION AREAS	= 41.6 AC.
41.6/180.7 X 10	= 2.30 POINTS
TOTAL	= 3.63 POINTS
TOTAL BMP POINTS =	6.50 OPEN SPACE 3.63 BMP'S 10.13± POINTS

**NOTES:**

- 1) SWM FACILITIES MAY REQUIRE IMPACTS TO THE RPA TO PROVIDE ADEQUATE OUTFALLS.
- 2) LID MEASURES FOR BMP POINTS WOULD BE MEASURES INSTALLED IN EXCESS OF THE 12 UNIT MEASURES PROPOSED BUT MAY BE DEPICTED ON THE MASTER PLAN.
- 3) SANITARY SEWER AND PEDESTRIAN/VEHICULAR BRIDGES WILL REQUIRE IMPACTS TO THE RPA BUFFER.
- 4) INFILTRATION PRACTICES WITHIN PARKING AREAS AND AROUND BUILDINGS ARE PLANNED TO CONTRIBUTE TO THE BMP POINT REQUIREMENTS. ADDITIONAL TESTING WILL BE PERFORMED TO DETERMINE EXACT LOCATION DEPTHS AND DESIGN OF THESE FEATURES.

- SPECIAL STORMWATER CRITERIA & ADDITIONAL ENVIRONMENTAL PROTECTION**
- SPECIAL STORMWATER CRITERIA WILL APPLY TO A PORTION OF THIS SITE WHICH DRAINS TO THE POWHATAN CREEK MAINSTEM.
- THE SITE WILL HAVE A SSC CLASS 5 DESIGNATION, (50-200 DISTURBED ACRES), THEREFORE 7 UNIT MEASURES WILL BE REQUIRED TO MEET THE JCC POLICY REQUIREMENT. AN ADDITIONAL 5 MEASURES WILL BE PROVIDED THROUGHOUT THE SITE TO ACHIEVE ADDITIONAL ENVIRONMENTAL PROTECTION. STRUCTURAL UNIT MEASURES HAVE BEEN DEPICTED TO SHOW GENERAL COMPLIANCE. IN ADDITION, MEASURES AS OUTLINED BELOW MAY BE USED TO ACHIEVE THE TOTAL 12 UNIT MEASURES. ADDITIONAL STRUCTURAL UNITS AS DESCRIBED IN THE SPECIAL STORMWATER MAY BE USED TOWARDS BMP POINT REQUIREMENTS.
- THE FOLLOWING METHODS WILL BE CONSIDERED FOR IMPLEMENTATION ON THE PROJECT:
- (x4) SSCP#2 - 1 UNIT FOR MANAGED PERVIOUS PAVEMENT SYSTEMS (1000 SF MINIMUM)
  - (1) SSCP#4 - 1 UNIT FOR DISCONNECTED IMPERVIOUS AREAS (DOWN-SPOUTS DISCHARGING TO CISTERNS)
  - (x2) SSCP#12 - 1 UNIT FOR BIORETENTION FACILITY (650 SF MINIMUM)
  - (x2) SSCP#13 - 1 UNIT FOR DRY SWALES (250 LF MINIMUM)
  - (1/2) SSCP#14 - 1/2 UNIT FOR SLUMPED OR BOTTOMLESS INLETS AT STRUCTURES NEAR BMP'S
  - SSCP#15 - 1 UNIT FOR MANUFACTURED BMP SYSTEMS
  - (1) SSCP#20 - 1 UNIT FOR ALL 12" OR GREATER OUTLET PIPES WITH ENHANCED OUTLET PROTECTION MEASURES
  - SSCP#23 - 1 UNIT FOR FILTER/BUFFER STRIPS
  - (1) SSCP#24 - 1 UNIT FOR AN INSPECTION/MAINTENANCE AGREEMENT FOR A BMP THAT DOES NOT HAVE ONE
  - (1) SSCP#25 - 1 UNIT FOR ENHANCED SLOPE STABILIZATION PRACTICES ON ALL CUT-FILL SLOPES GREATER THAN 6 FT. (1000 SF MINIMUM)
  - SSCP#28 - 1 UNIT FOR ENHANCED CHANNEL STABILIZATION PRACTICES
  - (1) SSCP#29 - 1 UNIT FOR RAIN BARRELS APPLIED TO ALL RESIDENTIAL UNITS
  - SSCP#31 - 2 UNITS FOR PROVIDING GREEN ROOF SYSTEM
  - (1/2) SSCP#32 - 1/2 UNIT FOR INCREASED POND BUFFER
  - (1) SSCP#37 - UNIT MEASURE TO BE DETERMINED IF ALL RECOMMENDED, POWHATAN CREEK WMP STRATEGIES ARE APPLIED TO SITE
  - (1/2) SSCP#38 - 1/2 UNIT PER EVERY 1 POINT OVER 10 USING JCC'S 10 POINT SYSTEM
  - (1/2) SSCP#39 - 1/2 UNIT FOR PROVIDING AS-BUILT DRAWINGS FOR ENTIRE STORM DRAIN SYSTEM

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No.	DATE	REVISION / COMMENT / NOTE	REVISED BY	REVIEWED BY
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	AES	JAG
1	4/14/08	REVISIONS PER JCC COMMENTS DATED MARCH 25, 2008	AES	JAG

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**Cahill Associates ENVIRONMENTAL CONSULTANTS**

MASTER STORMWATER MANAGEMENT PLAN of  
**THE VILLAGE**  
 FORD'S COLONY OF WILLIAMSBURG  
 for  
 REALTEC INCORPORATED

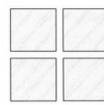
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA

Designed AES	Drawn AES
Scale 1"=100'	Date 2/4/08
Project No. 5652-22	
Drawing No. 7	



Sub: 56522-Washington Tracking\Planning\Grading\Retirement Layout\Progress Layout 2008-01-02-08 - Grading.dwg, 5/21/2008 2:02:37 PM, leanne.griffin

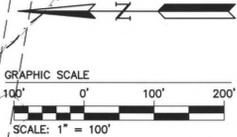
No.	DATE	REVISION / COMMENT / NOTE	DESIGNED BY	DRAWN BY
2	5/20/08	REVISIONS PER RELOCATION OF BUILDINGS	AES	JAC
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**Cahill Associates**  
 ENVIRONMENTAL CONSULTANTS

GRADING PLAN of <b>THE VILLAGE</b> at FORD'S COLONY OF WILLIAMSBURG for REALTEC INCORPORATED		Designed AES Scale 1"=100' Project No. 5652-22 Drawing No. 8
POWHATAN DISTRICT JAMES CITY COUNTY VIRGINIA		Drawn AES Date 2/4/08



Version FY2022  
 (Last Updated 7/19/2021)



Please use the accompanying Excel spreadsheet to calculate the numbers below.

## FISCAL IMPACT WORKSHEET AND ASSUMPTIONS

Please complete all *applicable* sections. Please use the provided spreadsheet to perform calculations. If space provided is insufficient, please feel free to include additional pages. If you have any questions please contact the Planning Office at 757-253-6685 or [planning@jamescitycountyva.gov](mailto:planning@jamescitycountyva.gov)

1a) PROPOSAL NAME: Ford's Village

1b) Does this project propose residential units? Yes  No  (if no, skip Sec. 2)

1c) Does this project include commercial or industrial uses? Yes  No  (If no skip Sec. 3)

### Fiscal Impact Worksheet Section 2: Residential Developments

2a) TOTAL NEW DWELLING UNITS. Please indicate the total number of each type of proposed dwelling unit. Then, *add* the total number of new dwelling units.

Single-Family Detached	158	Apartment	75
Townhome/Condominium/Single-Family	128	Manufactured Home	0
<b>Total Dwelling Units</b>	<b>361</b>		

Are any units affordable? Yes  No  (If yes, how many?) \_\_\_\_\_

### Residential Expenses – School Expenses

2b) TOTAL NEW STUDENTS GENERATED. *Multiply* the number of each type of proposed unit from (2a) its corresponding Student Generation Rate below. Then, *add* the total number of students generated by the proposal.

Unit Type	Number of Proposed Units (from 2a)	Student Generation Rate	Students Generated
Single-Family Detached	184	0.4	73.6
Townhome/Condo/Attached	102	0.17	17.34
Apartment	75	0.31	23.25

Manufactured Home		0.46	
Total			114.19

2c) TOTAL SCHOOL EXPENSES. *Multiply* the total number of students generated from (2b) by the Per-Student Total Expenses below.

Total Students Generated	Per-Student Operating Expenses	Per-Student Capital Expenses	Per-Student Total Expenses	Total School Expenses
114.19	\$8,762.38	\$1,948.32	\$10,710.70	\$1,223,054

### Residential Expenses - Non-School Expenses

2d) TOTAL POPULATION GENERATED. *Multiply* the number of proposed units from (2a) and multiply by the Average Household Size number below.

Total Units Proposed	Average Household Size	Total Population Generated
361	2.49	612.5

2e) TOTAL NON-SCHOOL EXPENSES. *Multiply* the population generated from (2d) by the Per Capita Non-School Expenses below.

Total Population Generated	Per-Capita Non-School Expenses	Total Non-School Expenses
612.5	\$680.24	\$ 416,647.00

2f) TOTAL RESIDENTIAL EXPENSES. *Add* school expenses from (2c) and non-school expenses (2e) to determine total residential expenses.

Total School Expenses	Non-School Expenses	Total Residential Expenses
\$ 1,223,055	\$ 416,647.00	\$ 1,639,701.83

### Residential Revenues

2g) TOTAL REAL ESTATE EXPECTED MARKET VALUE. Write the number of each type of units proposed from (2a). Then *determine the average* expected market value for each type of unit. Then, *multiply* the number of unit proposed by their average expected market value. Finally, *add* the total expected market value of the proposed units.

Unit Type:	Number of Units:	Average Expected Market Value:	Total Expected Market Value:
Single-Family Detached	158	\$ 730,000	\$ 115,340,000
Townhome/Condo/Multi-family	128	\$ 568,164	\$ 72,725,000

Apartments	75	\$ 200,000	\$ 15,000,000
Total:	0	N/A	\$ 203,065,000

2h) TOTAL REAL ESTATE TAXES PAID. *Multiply* the total market value from (2g) by the real estate tax rate below.

Total Market Value	Real Estate Tax Rate	Total Real Estate Taxes Paid
\$ 203,065,000	.0084	\$ 1,705,746

2i) TOTAL PERSONAL PROPERTY TAXES PAID. *Multiply* the total real estate taxes paid (2h) by the property tax average below.

Real Estate Tax Paid	Personal Property Tax Average	Personal Property Taxes Paid
\$ 1,705,746	0.15	\$ 255,862

2j) TOTAL SALES & MEALS TAXES PAID. *Multiply* the total real estate taxes paid (2h) by the sales and meals tax average below:

Real Estate Tax Paid	Sales and Meals Tax Average	Total Sales & Meals Taxes Paid
\$ 1,705,746	.09	\$ 153,517

2k) TOTAL CONSERVATION EASEMENT TAXES PAID. If the proposal contains a conservation easement, *multiply* the size of the proposed conservation easement by the conservation easement assessment rate.

Proposed Conservation Easement Size	Assessment Rate	Conservation Easement Taxes Paid
0	\$2000/acre (prorated)	0

2l) TOTAL HOA TAXES PAID. If the HOA will own any property that will be rented to non- HOA members, *multiply* the expected assessed value of those rentable facilities by the real estate tax rate below.

HOA Property Type	Total Assessed Value	Real Estate Tax Rate	Total HOA Taxes Paid
0	0	.0084	\$ 0

2m) TOTAL RESIDENTIAL REVENUES. *Add* all residential taxes paid to the County from (2h) through (2l).

<b>Total Residential Revenues</b>	<b>\$2,115,125</b>
-----------------------------------	--------------------

2n) RESIDENTIAL FISCAL IMPACT. Subtract total residential revenues (2m) from total residential expenses (2f).

Total Residential Ex	Total Residential Revenues	Total Residential Fiscal Impact
\$ 1,575,652	\$ 2,115,125	\$ 539,473

### **Fiscal Impact Analysis Worksheet Section 3: Commercial and Industrial Developments**

#### **Commercial and Industrial Expenses**

3a) TOTAL NEW BUSINESSES. How many new businesses are proposed? \_\_\_\_\_  
(Include all businesses that will rent or lease space at the location as part of the proposal, including probable tenants of an office park or strip mall).

3b) TOTAL COMMERCIAL EXPENSES. *Multiply* the total business real estate expected assessment value from (3c) below by the Commercial Expenses Rate below.

Total Expected Assessment Value	Commercial Expense Rate	Total Commercial Expenses
\$30,000,000	0.00468	\$ 140,400

#### **Commercial & Industrial Revenues**

3c) TOTAL REAL ESTATE EXPECTED ASSESSMENT VALUE. *Estimate* the expected real estate assessment value, at buildout, of all proposed commercial element properties below.

Proposed Business Properties (by use and location)	Expected Assessment Value
Elder Care	\$ 30,000,000
Total:	\$ 30,000,000

3d) TOTAL REAL ESTATE TAXES PAID. *Multiply* the total expected market property value from (3c) by the real estate tax rate below.

Expected Market Value	Real Estate Tax Rate	Real Estate Taxes Paid
30,000,000	.0084	\$ 252,000

3e) TOTAL BUSINESS PERSONAL PROPERTY TAXES PAID. *Multiply* the total business capitalization for each proposed commercial element by the business personal property tax rate below. Then *add* the total personal property taxes paid.

<b>Proposed Business Name</b>	<b>Total Business Capitalization</b>	<b>Personal Property Tax Rate</b>	<b>Total Business Property Taxes Paid</b>
Elder Care	\$2,500,000	.001	\$25,000.00
Total:			\$25,000

3f) TOTAL BUSINESS MACHINERY AND TOOLS TAXES PAID. If any manufacturing is proposed, *multiply* the total business capitalization for each proposed manufacturing element by the business machinery and tools tax rate below. Then, *add* the machinery and tools tax paid.

<b>Proposed Business Name</b>	<b>Total Business Capitalization</b>	<b>Machinery and Tools Tax Rate</b>	<b>Total Business Property Taxes Paid</b>
		<b>0.01</b>	
		<b>0.01</b>	
Total:		N/A	

3g) TOTAL SALES TAXES PAID. *Estimate* the applicable total gross retail sales, prepared meals sales, and hotel/motel room sales for proposal's commercial elements below. Then, *multiply* the projected commercial gross sales by the applicable sales tax rates. Then, *add* the total sales taxes paid.

<b>Tax Type</b>	<b>Projected Gross Sales</b>	<b>Sales Tax Rates</b>	<b>Sales Taxes Paid</b>
		<b>0.015 of Gross Retail Sales</b>	
Food Services	500,000	<b>0.04 of Prepared Sales</b>	\$22,000.00
		<b>0.02 of Gross Sales*</b>	
Total:	<b>N/A</b>	<b>N/A</b>	\$ 22,000.00

\*Actual Occupancy Tax is 5% of Gross Sales; however, 60% of those funds are targeted to tourism.

3h) TOTAL BUSINESS LICENSES FEES PAID. Estimate each business element's total gross sales. Multiply each business element's projected gross sales by the Annual Business License rate to determine annual business licenses fee paid.

<b>Proposed Business Name(s)</b>	<b>Business Type* (see exhibit sheet)</b>	<b>Projected Total Gross Sales</b>	<b>Business License Rate</b>	<b>Annual Business License Fees Paid</b>
	Professional Services	10,500,000	<b>0.0058</b>	\$ 60,900

	Retail Services	0	<b>0.0020</b>	
	Other Services	500,000.00	<b>0.0036</b>	\$1,800.00
	Total	N/A	N/A	\$ 62,700.00

3i) TOTAL COMMERCIAL AND INDUSTRIAL REVENUES. *Add* the total taxes and fees paid by all of the business elements from (3d) through (3h).

<b>Total Commercial and Industrial Revenues</b>	\$ 361,700.00
---	---------------

3j) COMMERCIAL FISCAL IMPACT. *Subtract* total commercial and industrial revenues (3i) from total commercial and industrial expenses (3b).

<b>Total Commercial</b>	<b>Total Commercial Revenues</b>	<b>Total Commercial Fiscal Impact</b>
		221,300.00

3k) TOTAL PROPOSED FISCAL IMPACT. *Add* residential fiscal impacts (2n) and commercial fiscal impacts (3j).

<b>Residential Fiscal Impact</b>	<b>Commercial Fiscal Impact</b>	<b>Total Proposed Fiscal Impact</b>
\$ 539,473	\$ 221,300	\$ 727,922

#### **Fiscal Impact Analysis Worksheet Section 4: Current Land Use**

**Current Residential Use** (If there are no existing residential units, skip to (4g)).

4a) TOTAL CURRENT DWELLING UNITS. Please indicate the total number of each type of existing dwelling unit. Then, *add* the total number of existing dwelling units.

Single-Family Detached	1	Apartment	
Townhome/Condominium/Single-Family Attached		Manufactured Home	
Total Dwelling Units	1		

#### **Residential Expenses - School Expenses**

4b) TOTAL CURRENT STUDENTS. *Multiply* the number of existing units from (4a) by its corresponding Student Generation Rate below. Then, *add* the total number of existing students.

<b>Unit Type</b>	<b>Number of Existing Units</b>	<b>Student Generation Rate</b>	<b>Existing Students</b>
Single-Family Detached	0.4	0.4	0.4
Townhome/Condo/Attached	0	0.17	
Apartment	0	0.31	
Manufactured Home	0	0.46	

Total		N/A	0.4
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- 4c) TOTAL CURRENT SCHOOL EXPENSES. *Multiply* the total number of current students from (4b) by the per-student school cost below.

Number of Existing Students	Per-Student School Cost	Current School Expenses
0.4	\$11,828	\$ 4,731.20

#### **Residential Expenses - Non-School Expenses**

- 4d) TOTAL CURRENT POPULATION. *Multiply* the total number of existing units from (4a) by average household size below.

Total Existing Units	Average Household Size	Total Current Population
0	2.45	

- 4e) TOTAL CURRENT NON-SCHOOL EXPENSES. *Multiply* the current population from (4d) by per-capita non-school expenses below.

Total Current Population	Per-Capita Non-School Expenses	Current Non-School Expenses
	\$1,284.00	

- 4f) TOTAL RESIDENTIAL EXPENSES. *Add* school expenses from (4c) and non-school expenses from (4e).

School Expenses	Non-School Expenses	Residential Expenses
\$	\$ 3145.80	

#### **Residential Revenues**

- 4g) TOTAL CURRENT ASSESSMENT VALUE. *Search* for each residential property included in the proposal on the Parcel Viewer at <http://property.jccgov.com/parcelviewer/Search.aspx>. *Indicate* each property's total assessment value below. Then, *add* total assessment values.

Property Address and Description	Assessment Value
3889 News Road	\$ 3,153,900.00
Total:	\$ 3,153,900.00

- 4h) TOTAL CURRENT REAL ESTATE TAXES PAID. *Multiply* the total assessment value from (4g) by the real estate tax rate below.

Total Assessment Value	Real Estate Tax Rate	Real Estate Taxes Paid
3,153,900.00	.0084	\$ 26,493

- 4i) TOTAL CURRENT PERSONAL PROPERTY TAXES PAID. *Multiply* total real estate taxes paid from (4h) by the personal property tax average below.

Real Estate Tax Paid	Personal Property Tax Average	Personal Property Paid
\$26,492	0.15	\$3,974

- 4j) TOTAL CURRENT SALES AND MEALS TAXES PAID. *Multiply* the total real estate taxes paid from (4h) by the sales and meals tax average below.

Real Estate Tax Paid	Sales and Meals Tax Average	Average Excise Tax Paid
\$26,492	.09	\$ 2,384

- 4k) TOTAL CURRENT RESIDENTIAL REVENUES. *Add* all current residential taxes paid to the County from (4h) through (4j).

<b>Total Current Residential Revenues</b>	\$ 32,851
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- 4l) CURRENT RESIDENTIAL FISCAL IMPACT. *Subtract* total residential revenues (4k) from total residential expenses (4f).

Total Residential	Total Residential Revenues	Total Residential Fiscal Impact
\$32,851		\$32,851

- 4m) FINAL RESIDENTIAL FISCAL IMPACT. *Subtract* current residential fiscal impact from (4l) from proposed residential fiscal impact from (2n).

Proposed Residential Impact	Current Residential Impact	Final Residential Fiscal Impact
\$539,473	\$32,851	\$ 506,622

### Current Commercial Use

**Current Commercial Expenses** (if there are no current businesses or commercial properties, skip to (5k).

- 5a) TOTAL CURRENT BUSINESSES. How many businesses exist on the proposal properties? 0  
(Include all businesses that rent or lease space at the location).

5b) TOTAL CURRENT COMMERCIAL EXPENSES. *Multiply* the current number of businesses operating on the proposal properties by the per-business expense rate below.

Total Expected Assessment Value	Commercial Expense Rate	Total Commercial Expenses
	0.00468	\$

### Current Commercial Revenues

5c) TOTAL CURRENT ASSESSMENT VALUE. *Search* for each commercial property included in the proposal on the Parcel Viewer at <http://property.jccegov.com/parcelviewer/Search.aspx>. *Indicate* each property's total assessment value below. Then, *add* total assessment values.

Addresses	Assessment Value	Real Estate Tax Rate	Real Estate Tax Paid
		.0084	
		.0084	
Total:			\$

5d) TOTAL CURRENT BUSINESS PERSONAL PROPERTY TAXES PAID. *Multiply* the total business capitalization for each current commercial element by the business personal property tax rate below. Then *add* the total personal property taxes paid.

Current Business	Total Business	Personal Property Tax Rate	Business Property Taxes Paid
		0.01	
		0.01	
		0.01	
Total:		N/A	\$

5e) TOTAL CURRENT MACHINERY AND TOOLS TAX PAID. If any manufacturing exists, *multiply* the total capitalization for manufacturing equipment by the business machinery and tools tax rate below.

Current Business	Total Business Capitalization	Personal Property Tax Rate	Machinery and Tools Tax Paid
0		0.01	\$ 0

5f) TOTAL CURRENT SALES TAXES PAID. *Estimate* the applicable total gross retail sales, prepared meals sales, and hotel/motel sales for existing commercial elements below. Then, *multiply* the projected commercial gross sales by the applicable sales tax rates. Then, *add* the total sales taxes paid.

Activity	Projected Gross Sales	Tax Rate	Sales Taxes Paid
Retail Sales	0	<b>0.01 of Gross Retail Sales</b>	0
Prepared Meals	0	<b>0.04 of Prepared Sales</b>	0
Hotel, Motel	0	<b>0.02 of Gross Sales*</b>	0
Total:	<b>N/A</b>	<b>N/A</b>	\$ 0

\*Actual Occupancy Tax is 5% of Gross Sales; however, 60% of those funds are targeted to tourism.

5g) TOTAL CURRENT BUSINESS LICENSES FEES PAID. *Estimate* each current business element's total gross sales. Then, *multiply* each business element's projected gross sales by the Annual Business License rate to determine annual business licenses fee paid. Then, *add* the total business license fees paid.

Business Type	Gross Sales	Business License Rate	Annual Business License Fees Paid
Professional Services	0	<b>\$0.0058</b>	
Retail Sales	0	<b>\$0.0020</b>	
Contractors	0	<b>\$0.0016</b>	
Wholesalers	0	<b>\$0.0005</b>	
Manufacturers	0	<b>No tax</b>	
Other Services	0	<b>\$0.0036</b>	

5h) TOTAL CURRENT COMMERCIAL REVENUES. *Add* all current commercial revenues paid by existing businesses from (5c) through (5g).

<b>Total Current Commercial Revenues</b>	\$ 0.00
--	---------

5i) CURRENT COMMERCIAL FISCAL IMPACT. *Subtract* total commercial revenues (5h) from total residential expenses (5b).

Total Commercial Expenses	Total Commercial Revenues	Total Commercial Fiscal Impact
		\$ 0.00

5j) FINAL COMMERCIAL FISCAL IMPACT. *Subtract* current commercial fiscal impact from (5i) from proposed commercial fiscal impact from (3j).

Proposed Commercial Impact	Current Commercial Impact	Final Commercial Fiscal Impact
\$221,300	0	\$221,300

5k) FINAL FISCAL IMPACT. *Subtract* the final commercial fiscal impact from (5i) from final residential fiscal impact from (4m).

<b>Final Residential Impact</b>	<b>Final Commercial Impact</b>	<b>Final Fiscal Impact</b>
\$ 506,622	\$221,300	\$ 727,922

**Fiscal Impact Worksheet Section 6: Phasing**

**Residential Phasing**

6a) *Copy and paste* the residential phasing template from the accompanying Excel sheet to the page below.

**Commercial Phasing**

6b) *Copy and paste* the commercial phasing template from the accompanying Excel sheet to the page below.

**Final Phasing Projections**

6c) *Copy and paste* the final phasing projection from the accompanying Excel sheet to the page below.

**Fiscal Impact Worksheet Section 7: Employment**

7a) *Copy and paste* the employment projections from the accompanying Excel sheet to the page below.

## **DEFINITIONS AND ASSUMPTIONS**

**Apartment** – A building used, or intended to be used as the residence of three or more families living independently of each other. Tenants have no equity in the dwelling.

**Assessment Value** – Assessment value is assumed to be within 1% of market value. Market value drives assessment value.

**Buildout** – All data and assumptions reflect the fiscal impact of the proposal at buildout.

**Commercial Expense Rate** – The commercial expense rate uses the proportional valuation method to determine individual business expenses. Under that method businesses are collectively responsible for impact related to the commercial property valuation.

This rate assumes that the costs of providing County services to a business are directly correlated with that business's property assessment. This assumes more valuable properties have generally more intense uses incurring greater County expenses.

**Condominium** – A building, or group of buildings, in which units are owned individually and the structure, common areas and common facilities are owned by all the owners on a proportional, undivided basis.

**Contractor** – Any person, firm or corporation accepting or offering to accept orders or contracts for doing any work on or in any building or structure, any paving, curbing or other work on sidewalks, streets, alleys or highways, any excavation of earth, rock or other materials, any construction of sewers and any installation of interior building components.

**Direct Impact** – The worksheet only calculates direct financial impacts on the County budget. The worksheet is only one of many development management tools and as such, does not make a determination whether any type of development “should” happen based solely on that proposal's fiscal impact. The tool is not designed to measure non-budget impacts, such as increased traffic or nonbudget benefits, such as forwarding the goals of the Comprehensive Plan. Costs incurred by other entities, such as other localities or the state, remain uncounted.

**Dwelling** – Any structure which is designed for use for residential purposes, except hotels, motels, boardinghouses, lodging houses and tourist cabins.

**Exempt** – Certain types of business activities or products are exempted from annual County business licenses. These include manufacturers, insurance agencies, apartment complexes and gasoline sales.

**Fees & Licenses** – All fees collected by the County, including business and professional licenses, planning fees, building permit fees, stormwater fees, environmental inspection fees, septic tank fees, dog licenses and motor vehicle licenses, are deducted from the per-capita and per-business budgetary costs of each department that collects them.

**Fiscal Impact Analysis** – The County has created a set of standardized data and assumptions to streamline both the creation and review of fiscal impact studies. The County had no itemized list of questions for fiscal impact study creators to answer, resulting in portions of fiscal impact studies with no bearing on the County’s budgetary bottom line. The guesswork is removed from the creation of these documents. The data used by fiscal impact study authors also came from myriad sources, often within the County, which were difficult to verify. The fiscal impact worksheet allows consistency across multiple fiscal impact studies.

**Fiscal Impact Worksheet** – The worksheet helps the applicant present relevant data to the County, using data verified by the County. The worksheet provides consistency across all fiscal impact analyses.

**Non-School Expenses** – Non-school expenses include all non-school budget spending. Non-school expenses are calculated using the Proportional Variation method. Using the Proportional Variation method, residents and businesses are assumed to be responsible for differing percentages of the County’s non-school spending.

**Manufacturing** – Assembly of components, pieces, or subassemblies, or the process of converting raw, unfinished materials into different products, substances or purposes.

**Market Value** – Market value is assumed to be within 1% of assessment value. Market value drives assessment value.

**Manufactured Home** – A manufactured home is a structure not meeting the specifications or requirements or a manufactured home, designed for transportation after fabrication. The only manufactured homes counted in the Student Generation figure are those in designated manufactured home parks. Manufactured homes on individual lots are indistinguishable from single-family detached dwellings for the purposes of the worksheet.

**Phasing** – All residential developments are assumed to have an absorption rate of 20% per annum. All commercial development are assumed to have an absorption rate of 20% per annum. The date stamp Year 1 in the phasing template represents 365 days after the Board of Supervisors approval.

**Professional Services** – Work performed by an independent contractor within the scope of the practice of accounting, actuarial services, architecture, land surveying, landscape architecture, law, dentistry, medicine, optometry, pharmacy or professional engineering. Professional services shall also include the services of an economist procured by the State Corporation Commission.

**Proportional Valuation Impact** – Proportional valuation impact assumes that a proposed residential or commercial project’s fiscal impact is proportional to the percentage of the total tax base that is either residential or commercial. James City’s proportional valuation is calculated using the County’s Real Estate Mapping GIS program.

Furthermore, individual business expenses to the County are calculated using the proportional valuation impact method. (See Commercial Expense Rate)

**Per-Business Expense Rate** – The per-business expense rate assumes that the County incurs non-school expenses equal to 0.04% of the commercial real estate assessment of any given business.

**Per Capita Evaluation Method** – This worksheet uses the Per Capita Evaluation method to assign per-capita and per-business costs to non-school expenses. This method assumes that current per-capita and per-business expenditures and service levels are consistent with future per-capita and per-business expenditures and service levels.

**Per Capita** – Per capita calculations divide each department’s spending, minus fees and state contributions, by the current County population. This number excludes institutional residents in detention at correctional facilities and mental institutions. Total population is determined from James City County Planning Division figures.

**Per Student** – Per student calculations divide County contributions to WJCC Schools by the total number of K-12 students living in James City and also attending WJCC Schools. Total students are determined from Williamsburg-James City County Schools enrollment reports.

**Per Business** – Per business calculations divide each departments spending, minus fees and state contributions, by the total number of County businesses. Total businesses are determined by the number of business licenses issued.

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<b>Total Number of JCC Businesses</b>	<b>5490*</b>
<b>Percentage of Property Tax Assessments</b>	<b>13%**</b>

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\*James City County Commissioner of the Revenue

\*\*Commercial impacts are calculated on a proportional variation process

**Proffer** – Proffers paid for schools can only be applied toward the capital expense portion of per-student school expenses. (See Board of Supervisors’ Proffer Policy.)

**Retail Services** – Display and sale of merchandise at retail or the rendering of personal services, such as food, drugs, clothing, furniture, hardware, appliances, barber and beauty, antiques, and household uses and other uses.

**Single-Family Detached Dwelling** – A detached structure arranged or designed to be occupied by one family, the structure only having one dwelling unit.

**State Contributions** – The state contributes both targeted and unspecified funds to the James City County budget.

**Student Generation Rate** – The student generation rate the number of students produced by an individual dwelling unit per year. Different domestic units produce students at different rates. Using WJCC enrollment figures, an address was found for WJCC students residing in James City County. Using the James City County Real Estate Division's Property Information map on the James City County website, the number of students from each subdivision was determined. Using the Real Estate Division's Real Estate Parcel Count, the number of improved lots in each neighborhood was determined. Total students from each neighborhood were divided by the total number of units from that neighborhood to determine the average number of students per housing unit. The student generation numbers for 256 subdivisions were determined this way, along with the same method for counting students from apartments and manufactured home parks.

**Townhome** –In a structure containing three or more dwelling units, a dwelling unit for single-family occupancy, not more than three stories in height, attached by one or more vertical party walls extending to the roof sheathing without passageway openings to one or more additional such dwelling units, each of which is served by an individual exterior entrance or entrances.

**Fiscal Impact Analysis Worksheet - Version 2021- Proposed Land Use**

Last updated on 7/19

This Excel file will assist you with most of the Fiscal Impact Worksheet's calculations. Please skip inapplicable questions.  
Use the numbers in this program to fill in the identical section on the worksheet.

**Please enter the information requested in the relevant yellow highlighted cells**

2a) How many residential units are proposed? What types?

<b>Single Family Detached</b>	158
<b>Townhome/Condominium/Multifamily</b>	128
<b>Apartment</b>	75
<b>Manufactured Home Park Unit</b>	0
<b>Total</b>	361
Are any units affordable? If yes, how many?	0

**Residential Expenses - School Expenses**

2b) How many students are generated?

	<b>Student Generation Rate</b>	<b>Students Generated</b>
<b>Single Family Detached</b>	0.4	63.2
<b>Townhome/Condominium/Multifamily</b>	0.17	21.76
<b>Apartment</b>	0.31	23.25
<b>Manufactured Home Park Unit</b>	0.46	0
<b>Total</b>		108.21

2c) What is the schools expenses?

<b>Total Students</b>	108.21
<b>Per Student Operating Costs</b>	\$8,762.38
<b>Per Student Capital Costs</b>	\$1,948.32
<b>Per Student School Costs</b>	\$10,710.70
<b>Total School Fiscal Impact</b>	\$ 1,159,004.85

**Residential Expenses - Non-School Expenses**

2d) What is the total population generated?

<b>Total Units</b>	361
<b>Average Household Size</b>	2.49
<b>Total Population Generated</b>	612.5

2e) What are the total non-school expenses?

<b>Total Population Generated</b>	612.5
<b>Per-Capita Non School Costs</b>	\$ 680.24
<b>Total Non-School Costs</b>	\$ 416,647.00

2f) What is the total residential expenses?

<b>Total School Expenses</b>	\$	1,159,004.85
<b>Total Non-School Expenses</b>	\$	416,647.00
<b>Total Residential Expenses</b>	\$	1,575,651.85

**Residential Revenues**

2g) What is the average expected market value for each type of unit sold?

	Unit Type	Number of Type	Price for Each Unit Type
<b>Single Family Detached</b>		158	\$ 730,000.00
<b>Bungalows</b>		26	\$ 400,000.00
		0	\$ -
<b>Townhomes</b>		69	\$ 700,000.00
<b>Condos</b>		33	\$ 425,000.00
		0	\$ -
		0	\$ -
		0	\$ -
<b>Apartment (Value of Apartment Complex (Total))</b>			15,000,000
<b>Manufactured Home Park Unit (Value of Park Property (Total))</b>		0	
<b>Total Expected Real Estate Sales Amount</b>			\$ 203,065,000.00

2h) What are the total real estate taxes paid?

<b>Total Expected Real Estate Sales Amount</b>	203065000
<b>Real Estate Tax Rate</b>	0.0084
<b>Total Real Estate Tax Revenue</b>	\$ 1,705,746.00

2i) What is are total personal property taxes paid?

<b>Total Real Estate Tax Revenue</b>	1705746
<b>Personal property Tax Revenue (as % of Real Estate Taxes Paid)</b>	0.15
<b>Total Personal Property Tax Revenue</b>	\$ 255,861.90

2j) What are the total sales and meals taxes paid?

<b>Total Real Estate Tax Revenue</b>	1705746
<b>Sales and Meals Tax Revenue (as % of real estate taxes paid)</b>	0.09
<b>Total Personal Property Tax Revenue</b>	\$ 153,517.14

2k) What are total conservation easement taxes paid? (If any)

<b>Total Acreage in Conservation Easement</b>	0
<b>Conservation Easement Real Estate Tax Rate</b>	2000
<b>Total Conservation Easement Tax Revenue</b>	\$ -

2l) What are the total HOA taxes paid (for property rentable to non-HOA members, if any)?

**Total Market Value of any HOA Property Rentable to non-HOA Members**  
**Real Estate Tax Rate**  
**Total Rentable HOA Property Tax Revenue**

**0**  
0.0084  
\$ -

2m) What is the total residential tax revenue?

\$ 2,115,125.04

**Residential Fiscal Impact**

2n) What is the residential fiscal impact?

\$ 539,473.19

**Commercial Expenses**

3a) How many new businesses are proposed? (Include all businesses that will rent or lease space)

**Total Number of New Businesses**

**1**

3b) What is the expected real estate market value for each business property (at buildout)?

	Business Property
1	Elderly Care
2	
3	
4	
5	
6	

Expected Market Value

\$ 30,000,000.00

Total Commercial Real Estate Expected Market Value

\$ 30,000,000.00

3c) What are the commercial expenses?

**Total Commercial Real Estate Taxes Paid**  
**Per-Business Commercial Expense Rate**  
**Total Commercial Expenses**

252000  
0.00468  
\$ 140,400.00

**Commercial Revenues**

3d) What are the commercial real estate taxes paid?

**Total Commercial Real Estate Assessment Value**  
**Real Estate Tax Rate**  
**Total Commercial Real Estate Taxes Paid**

30000000  
0.0084  
\$ 252,000.00

3e) What are the business personal property taxes paid?

Proposed Businesses Name (s)	Initial Capital Investment		
1 Elderly Care	\$ 2,500,000.00	\$	25,000.00
2		\$	-
3		\$	-
4	\$ -	\$	-
5	\$ -	\$	-
6	\$ -	\$	-
Total Business Personal Property Taxes Paid		\$	25,000.00

3f) What are the business machinery and tools taxes paid (for manufacturers only)?

Proposed Businesses Name(s)	Initial Capital Investment		
1		\$	-
2	\$ -	\$	-
3	\$ -	\$	-
4	\$ -	\$	-
5	\$ -	\$	-
6	\$ -	\$	-
Total Business Personal Property Taxes Paid		\$	-

3g) What are retail sales-based taxes paid? (if any)

Proposed Business Name(s)	Estimated Retail Sales	Estimated Prepared Meals Sales	Estimated Hotel/Motel/Condo Room Sales		
1 Elderly Care	\$ 200,000.00	\$ 500,000.00	\$ -	\$	22,000.00
2		\$ -	\$ -	\$	-
3		\$ -	\$ -	\$	-
4		\$ -	\$ -	\$	-
5	\$ -	\$ -	\$ -	\$	-
6	\$ -	\$ -	\$ -	\$	-
Total Sales-Based Tax Paid	\$ 200,000.00	\$ 500,000.00	\$ -	\$	22,000.00
Total Business Sales Tax Revenue				\$	22,000.00

3h) What are the proposed annual business license fees paid?

Proposed Business Name(s)	Business Type	Estimated Sales	License Fee Rate		
1	Contractors	\$ -	0.0016	\$	-
2	Manufacturers		0	\$	-
3	Other Services	\$ 500,000.00	0.0036	\$	1,800.00
4	Professional Services	\$ 10,500,000.00	0.0058	\$	60,900.00
5	Retail Sales		0.002	\$	-
6	Wholesalers		0.0005	\$	-

Total Business License Revenue	\$	62,700.00
3i) What are the total commercial revenues?	\$	361,700.00

**Commercial Fiscal Impact**

3j) What is the net commercial fiscal impact?	\$	221,300.00
3k) What is the proposed fiscal impact?	\$	760,773.19

**You will now estimate the current conditions of the proposal property. Please click on worksheet tab labeled "Current" below and follow the instructions.**

What is the final fiscal impact? **\$ 727,922.17**

**Phasing - Residential Phasing**

6a) When will proposed residential units be built?

Total Units Proposed						361
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Buildout</b>
Homes Built	61	75	75	75	75	361
Total Res Exp	\$ 1,575,651.85	\$ 1,575,651.85	\$ 1,575,651.85	\$ 1,575,651.85	\$ 1,575,651.85	
Per Unit Exp	\$ 4,364.69	\$ 4,364.69	\$ 4,364.69	\$ 4,364.69	\$ 4,364.69	\$ 4,364.69
Total Res Exp	\$ 266,245.88	\$ 327,351.49	\$ 327,351.49	\$ 327,351.49	\$ 327,351.49	\$ 1,575,651.85
Total Res Rev	\$ 2,115,125.04	\$ 2,115,125.04	\$ 2,115,125.04	\$ 2,115,125.04	\$ 2,115,125.04	
Per Unit Rev	\$ 5,859.07	\$ 5,859.07	\$ 5,859.07	\$ 5,859.07	\$ 5,859.07	\$ 5,859.07
Total Res Rev	\$ 357,403.40	\$ 357,403.40	\$ 357,403.40	\$ 357,403.40	\$ 357,403.40	\$ 1,787,017.00
Per Unit Impact	\$ (1,494.39)	\$ (1,494.39)	\$ (1,494.39)	\$ (1,494.39)	\$ (1,494.39)	\$ (1,494.39)
Res Impact	\$ (85,606.52)	\$ (190,860.43)	\$ (296,114.34)	\$ (401,368.26)	\$ (506,622.17)	\$ 506,622.17

**Phasing - Commercial Phasing**

6b) When will proposed commercial units be built?

Total New Businesses			1
	<b>Year 1</b>	<b>Year 2</b>	<b>Buildout</b>
Bus Built	0.5	0.5	1
Bus Exp	\$ 140,400.00	\$ 140,400.00	
Per Bus Exp	\$ 140,400.00	\$ 140,400.00	
Year Bus Exp	\$ 70,200.00	\$ 70,200.00	
Bus Rev	\$ 361,700.00	\$ 361,700.00	
Per Bus Rev	\$ 361,700.00	\$ 361,700.00	
Year Bus Rev	\$ 180,850.00	\$ 180,850.00	

Bus Impact        \$            110,650.00    \$            221,300.00

6c) What is the final phasing projection?

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Buildout</b>
Res Impact	\$ (85,606.52) \$	(190,860.43) \$	(296,114.34) \$	(401,368.26) \$	(506,622.17) \$	(506,622.17)
Bus Impact	\$ 110,650.00 \$	221,300.00 \$	221,300.00 \$	221,300.00 \$	221,300.00	
Final Impact	\$ 25,043.48 \$	30,439.57 \$	(74,814.34) \$	(180,068.26) \$	(285,322.17)	

**Employment**

7a) How many full-time equivalent jobs (FTE) will be generated from the proposal? What will be the average payroll?

<b>Business</b>	<b>FTE Jobs Generated</b>	<b>Average Payroll</b>
1 Nursing	50	\$ 1,650,000.00
2 Professional	11	\$ 600,000.00
3 Administrative	5	\$ 300,000.00
4 Support Services	22	\$ 650,000.00
5		\$ -
6		\$ -

# Proposed Home Types

Note: these are photos of our projects in Hampton Roads. The architecture of Ford's Village will be less coastal, and more in keeping with the historic vernacular of the Peninsula and Williamsburg area.



# Drive Under Gateway Apartment

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Manor Home  
4 units per building

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Single Family Homes  
2200-3000+ sf

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Cottage detached Garage  
1800-2400 sf

---



Village House- 2 Story Bungalows  
1400-1900 sf

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Detached Townhomes  
(blank wall one side)  
2200-2400 sf



Images are taken from downtown Norfolk Virginia,  
and Savannah, Georgia.





Townhomes  
2600-2900 sf

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Mews Large (Typically face a park or courtyard)  
1300-1700 SF

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Mews Small  
1250-1350 sf Attached and Detached Examples

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Bungalows  
800-1000 sf

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TO: Jason Grimes, P. E.  
FROM: Dexter R. Williams, P. E.  
SUBJECT: Response To 22 July, 2021 VDOT Letter:  
RE: Ford's Village (a.k.a Ford's Bluff, Village at Ford's Colony)  
3889 News Rd. (Rt. 613)  
James City County plan Z-21-0012, MP-21-003  
DATE: September 7, 2021

This memo and enclosed documents are provided to inform VDOT and any other interested parties on the extensive history of traffic analysis at the Rt. 613 News Road/Firestone Drive as well as respond to points in the July 22, 2021 letter from VDOT. As reference documents, enclosed are the most recent and relevant traffic studies to date:

1. TIS Update for Ford's Colony Master Plan – Phased Development, Kimley-Horn and Assoc., Inc. January 2020
2. Traffic Analysis For Ford's Colony CRC, DRW Consultants, LLC, July 12, 2007
3. News Road Corridor Traffic Forecast And Analysis, DRW Consultants, LLC, April 22, 2008

Exhibit 1b in the 2008 DRW study has a useful reference map identifying various development properties around Ford's Colony and News Road.

Following is a history of traffic analysis at Rt. 613 News Road/Firestone Drive intersection:

1. The intersection is part of the Ford's Colony development approval in 1988 with proffered road improvements and a requirement for traffic study update every five years to determine if unbuilt proffered improvements are warranted.
2. The first study update in 1993 by DRW included the intersection and the other three points of access to Ford's Colony. At that time, the Rt. 613 News Road/Firestone Drive intersection has been constructed in its current state by the Ford's Colony development company with proffered left and right turn lanes on News Road at Firestone Drive serving Ford's Colony traffic. The only remaining proffered item at that time and now is signalization when warranted.
3. DRW provided subsequent traffic study updates in 1998 and 2003.
4. In 2006, DRW provided a traffic study for what is now called Ford's Village (a.k.a Ford's Bluff, Village at Ford's Colony) for proposed single family use (then called the Warburton Tract). Sole access to this tract of land is aligned at the Rt. 613 News Road/Firestone Drive intersection.
5. In 2007, DRW provided at TIA dated 07-12-07 for The Village At Ford's Colony (CRCC

style development) that focused only on the News Road/Firestone Drive intersection as the sole access to The Village.

6. In 2008, DRW provided a traffic study of the News Road corridor that was triggered by the Village At Ford's Colony zoning proposal for CCRC senior housing and care development.
7. Beginning in 2019, DRW provided a series of memos to JCC documenting the degree of change in trip generation between the evolving CCRC development plans (Ford's Bluff to Ford's Village) and the original The Village At Ford's Colony.
8. In early 2020, KHA included the Rt. 613 News Road/Firestone Drive intersection in a study for a Ford's Colony master plan update on behalf of Ford's Colony Home Owners Association. This work included a signal warrant analysis at Rt. 613 News Road/Firestone Drive.
9. DRW provided a memo dated January 21, 2021 that documented changes in proposed trip generation from 2008 study (updated July 9, 2021) and changes in traffic counts at the Rt. 613 News Road/Firestone Drive intersection between 2007 (2008 study) and 2017 (2020 study).
10. DRW has provided an updated memo dated Aug. 31, 2021 that addresses comments from JCC regarding the changes in proposed trip generation from 2008 and the 2020 KHA study and changes in traffic counts at the Rt. 613 News Road/Firestone Drive intersection between 2007 and 2017.

At the time of the 2008 DRW study, the Village At Ford's Colony (now Ford's Village) was under the control of the developer of Ford's Colony (Realtec, Inc). Realtec, Inc. is no longer active, and Ford's Village is proposed for development by different developers and the proffer from 2008 can no longer be guaranteed. It may be a consideration for the current rezoning proposal going forward but there may be no way to guarantee action by the developers of Ford's Village on other privately owned land in Ford's Colony. A review of Google Earth indicates that Firestone Drive has been resurfaced several times over the years and a stop bar has been replaced after each resurfacing, but it does not appear that the two lanes of pavement on the Firestone Drive exit have ever been striped.

The Aug. 31, 2021 DRW memo documented that:

1. PM peak hour counts are higher than AM counts (2007 and 2017).
2. Trip generation for Ford's Village as proposed is less than that for The Village At Ford's Colony in the 2008 study and the 2020 Kimley Horn study in the PM peak hour and for daily traffic, and not appreciably greater in the AM peak hour.
3. Traffic hasn't grown much from 2007 to 2017: 1.8% per year in the AM and 0.5% in the PM. Buildout forecast in the 2008 study is 58% and 46% greater than 2017 counts in the AM and PM peak hours, respectively. The 2027 forecast in the 2020 KHA study is 42% and 39% greater than 2017 counts in the AM and PM peak hours, respectively.
4. In summary, the August 31, 2021 memo demonstrates that there is nothing new about foreseeable traffic forecasts with Ford's Village that wasn't addressed in the 2008 study

for The Village at Ford's Colony and the 2020 KHA study and there is no justification for a new study: traffic generation for Ford's Village has been deliberately kept at or below previous levels, increases in traffic volumes over the last ten years are meager, and previous traffic forecasts are well in excess of existing conditions.

Regarding any commitment for signalization at the Rt. 613 News Road/Firestone Drive intersection, Ford's Colony proffered signalization in 1988 and the most recent 2020 KHA study addressed that issue and concluded that signalization is not warranted. If VDOT needs to see native files for the 2020 KHA study, then VDOT needs to contact KHA.

There has never been any analysis for a signal warranted by The Village At Ford's Colony/Ford's Village because traffic forecast are far below signal warrant thresholds as follows:

1. For exiting left turn traffic on site entrance at News Road/Firestone Drive to meet minor warrants, it must meet/exceed 53 vehicles per hour for eight hours for Warrant 1, 60 vehicles per hour for four hours for Warrant 2 and 75 vehicles per hour for the peak hour.
2. Exiting left turn traffic forecasts are as follows:
  - a. 2008 Study: 7 vehicles per hour AM, 16 vehicles per hour PM
  - b. 2020 KHA Study: 14 vehicles per hour AM, 23 vehicles per hour PM
3. For entering left turn traffic on site entrance at News Road/Firestone Drive to meet minor warrants, it must meet the thresholds cited above for exiting left turns.
4. Entering left turn traffic forecasts are as follows:
  - a. 2008 Study: 44 vehicles per hour AM, 77 vehicles per hour PM
  - b. 2020 KHA Study: 31 vehicles per hour AM, 59 vehicles per hour PM
5. Use of entering left turns requires the westbound approach on News Road at Firestone Drive to meet/exceed 420 vehicles per hour for eight hours and generally more for Warrants 2 and 3.
6. Westbound through traffic forecasts are as follows:
  - a. 2008 Study: 300 vehicles per hour AM, 243 vehicles per hour PM
  - b. 2020 KHA Study: 269 vehicles per hour AM, 218 vehicles per hour PM

There is no possibility for Ford's Village traffic to warrant a signal at News Road/Firestone Drive:

- Forecast exiting left turns, peak hour volumes are nowhere near minimum thresholds for minor streets
- For entering left turns, forecast westbound through traffic peak hour volumes are nowhere near minimum thresholds for major streets.

Regarding access to Ford's Village at News Road/Firestone Drive, the anticipated design includes previous proffers: "a left turn lane from westbound News Road into the Additional Property and a right turn radius from eastbound News Road into the Additional Property shall be constructed". Left turn lane warrants were addressed in the 2007 study, and right turn warrants were addressed in the 2007 and 2008 studies.



TO: Jason Grimes, P. E., AES  
FROM: Dexter R. Williams, P. E.  
SUBJECT: Ford's Bluff Trip Generation And Traffic Forecasts: Relative Need For  
Peak Hour Traffic Study Update  
DATE: August 31, 2021

This memo and enclosed exhibits present a summary of peak hour trip generation for proposed and prior development inventories for Ford's Bluff and a comparison of peak hour traffic counts and background traffic forecasts presented in previous studies. There are two previous studies of relevance:

1. News Road Corridor Traffic Forecast And Analysis, DRW Consultants, April 22, 2008. This study was the culmination of JCC review of the original Village At Fords' Colony traffic impact study. The original study was expanded to include the News Road corridor and ten other developments in addition to the News Road/Firestone Drive intersection which is to provide access to previous and proposed Ford's Bluff.
2. Ford's Colony Master Plan – Phased Development, Kimley-Horn & Associates, January 2020. This study primarily focused on points of access to Ford's Colony. It includes trip generation for the Village At Ford's Colony based on zoned units which differed from the units assumed in the 2008 study.

Enclosed Exhibit A shows trip generation for Ford's Bluff (formerly Village At Ford's Colony) as follows:

1. Table One shows the Trip Generation, 7<sup>th</sup> Edition (TG7) land uses, and units used for the Village At Ford's Colony traffic studies in 2008. There are five different land uses with separate trip generation by beds and units, 952 beds and units total.
2. Table Two shows the current proposal for Ford's Bluff five land uses and the translation to TGM10 trip generation uses.
3. Table Three shows the currently proposed Ford's Bluff lots translated to detached and attached single family housing units.
4. Table Four shows Trip Generation Manual, 10<sup>th</sup> Edition (TGM10) trip generation for five land uses in proposed Ford's Bluff, 516 beds and units total. The KHA 2020 trip generation used equations for congregate care AM and PM peak hour trip generation. My previous work used rates for congregate care AM and PM peak hour. I think rates are the appropriate source vs. equations, but the guidelines for choosing equations vs. rates are murky and the differences are trivial (equations are slightly higher for 75 units). Therefore, I used congregate care AM and PM equations on enclosed Exhibit A for consistency with previous KHA work.

5. Table Five presents a comparison of proposed Ford’s Bluff units and trip generation relative to previous values as follows:
  - a. Row 1 is trip generation in the 2008 traffic studies for The Village At Ford’s Colony using TG7.
  - b. Row 2 is trip generation for the units defined in the 2008 proffers and presented in the 2020 KHA study using TGM10. 2008 proffers cited development limits of 596 independent living units, 83 assisted living/memory care rooms and 60 skilled nursing beds.
  - c. The 2008 proffers allow up to 2 persons per room in the AL rooms. Row 3 assumes 2 beds in each assisted living rooms with 166 maximum beds. TGM10 is used for trip generation.
  - d. In all cases, proposed development units, PM trip generation and daily trip generation are reduced from the previous prior units and trip generation values. Proposed development AM trip generation is higher than the previous benchmarks.

Regarding other traffic growth on News Road, enclosed Exhibit B shows April 2007 counts from the 2008 study and June 2017 counts from the 2020 KHA study at the News Road/Firestone Drive/future Ford’s Bluff intersection. For 2007 counts shown on top row, PM peak hour counts (570 vehicles per hour [vph]) are 35% higher than AM counts (421 vph). For 2017 counts shown on middle row, PM peak hour counts (599 vehicles per hour [vph]) are 20% higher than AM counts (498 vph). In the ten years between 2007 and 2017 counts, traffic increased at an overall rate of 1.8% per year in the AM peak hour (18% over 10 years) and 0.5% per year in the PM peak hour (5% over ten years). These comparative results are summarized below:

TABLE ONE: NEWS ROAD/FIRESTONE DRIVE  
 2007/2017 PEAK HOUR COUNT COMPARISON (TOTAL ALL APPROACHES)

	AM PEAK HOUR	PM PEAK HOUR
2007 COUNTS	421	570
2017 COUNTS	498	599
10 YEAR % INCREASE	18%	5%
ANNUAL % INCREASE	1.8%	0.5%

Regarding forecast background traffic (i.e., without Ford’s Bluff site), Exhibit C shows the 2008 traffic study build out forecast at the News Road/Firestone Drive/future Ford’s Bluff intersection on the top row. The second row on Exhibit C shows the increase in the 2008 build out forecast over 2017 counts: overall increase of 23% in the AM peak hour and 38% in the PM peak hour. Even on a percentage basis, the build out forecast in the 2008 study is appreciably higher than the actual increases from 2007 to 2017. The following table illustrates the relative size of the 2008 study peak hour forecast to the 2017 counts:

TABLE TWO: NEWS ROAD/FIRESTONE DRIVE  
 2008 STUDY FORECAST VS. 2017 COUNTS (TOTAL ALL APPROACHES)

	AM PEAK HOUR	PM PEAK HOUR
2017 COUNTS	498	599
2008 STUDY FORECAST	614	827
INCREASE	116	228
% INCREASE	23%	38%

The buildout forecast for the 2027 KHA forecast shown on the third row of Exhibit C. The fourth row on Exhibit C shows the increase in the 2027 KHA forecast over 2017 counts: overall increase of 17% in the AM peak hour and 24% in the PM peak hour.

TABLE THREE: NEWS ROAD/FIRESTONE DRIVE  
 2020 STUDY FORECAST VS. 2017 COUNTS (TOTAL ALL APPROACHES)

	AM PEAK HOUR	PM PEAK HOUR
2017 COUNTS	498	599
2020 STUDY FORECAST	583	745
INCREASE	85	146
% INCREASE	17%	24%

In summary, trip generation for the proposed development plan has adequately been addressed in previous studies because the critical PM peak hour is lower than previous studies and overall daily traffic is lower. In addition, the 2008 and the 2020 study has overall background forecast that is well in excess of 2017 counts. There is nothing in terms of known traffic sources (both proposed site, other site development and general background growth) that has not been addressed in previous studies. There is no justification for additional peak hour traffic study because any reasonable order of magnitude for known traffic increase sources has been addressed.

VALUE	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE ONE - THE VILLAGE AT FORD'S COLONY TRIP GENERATION - 2008 TG7**

eq./adj. st.	Elderly Detached	251	32 units	4	6	10	13	9	22	206
rate/adj. st.	Elderly Attached	252	332 units	12	15	27	23	14	37	1155
rate/adj. st.	Congregate Care	253	290 units	10	7	17	27	22	49	586
rate/adj. st.	Assisted Living	254	118 occ.bed	15	5	20	18	16	34	323
rate/adj. st.	Nursing Home	620	180 beds	21	10	31	13	27	40	427
	<b>TOTAL</b>		952 bed/unit	62	43	105	94	88	182	2697

**TABLE TWO: 2021 FORD'S BLUFF UNITS IN ITE TERMS**

2020 Updated Units		TGM10	
Independent Living Apts	75	Congregate Care	
Assisted Living/ Memory Care Beds	125	Assisted Living	
Skilled Nursing Facility Beds	30	Nursing Home	
Independent Living Homes - Attached	102	Sr. Adult Attached	
Independent Living Homes - Detached	184	Sr. Adult Detached	
<b>Total</b>	<b>516</b>		

**TABLE THREE: 2020 FORD'S BLUFF LOTS IN DETACHED AND ATTACHED UNITS**

Lot Type Description	Detached	Attached
Single Family - general	67	
Village House 2-story Bungalow	46	
Cottage	27	
Bungalow	31	
Detached Townhouse	13	
Townhouse		37
Mews Large		9
Mews Small		23
Manor House Multi Family		32
Drive-Through Apartment		1
<b>Total</b>	<b>184</b>	<b>102</b>

**TABLE FOUR: FORD'S BLUFF FIVE LAND USES - 2020 TGM10**

eq.-adj. st.	Sr. Adult Detached	251	184 units	21	44	65	47	30	77	962
eq.-adj. st.	Sr. Adult Attached	252	102 units	7	13	20	15	12	27	385
eq./rate-adj. st.	Congregate Care	253	75 units	4	2	6	8	8	16	152
rate-adj. st.	Assisted Living	254	125 beds	15	9	24	13	20	33	325
rate/adj. st.	Nursing Home	620	30 beds	4	1	5	2	5	7	92
	<b>TOTAL</b>		516 bed/unit	51	69	120	85	75	160	1916

**TABLE FIVE: PROPOSED DEVELOPMENT CHANGE FROM PRIOR VALUES**

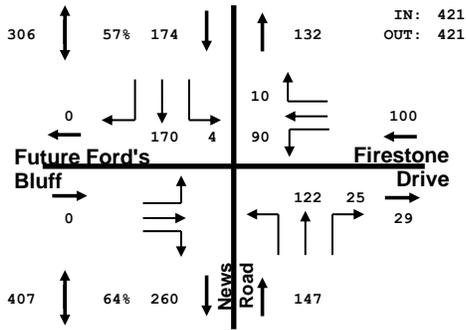
PRIOR TRIP GENERATION VALUES		UNITS	AM PEAK	PM PEAK	TOTAL
1	April 2008 Study (TG7)	952	105	182	2697
	Change With Proposed Plan	-436	15	-22	-781
2	KHA 2020 (TGM10) 83 AL Beds	739	101	161	2078
	Change With Proposed Plan	-223	19	-1	-162
3	2008 Proffer Limits (TGM10) 166 AL Beds	822	117	182	2294
	Change With Proposed Plan	-306	3	-22	-378

**FORD'S BLUFF  
TRIP GENERATION AUG. 31, 2021**

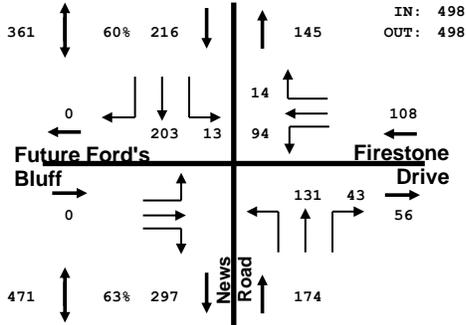
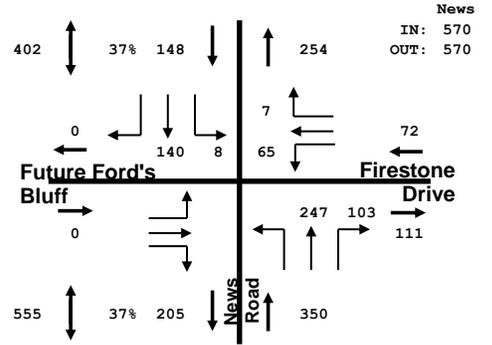
**DRW Consultants, LLC  
804-794-7312**

Trip generation rates from Trip Generation, 7th Edition (TG7) and Trip Generation Manual, 10th Edition (TGM10) by the Institute of Transportation Engineers (ITE) Unless Otherwise Noted

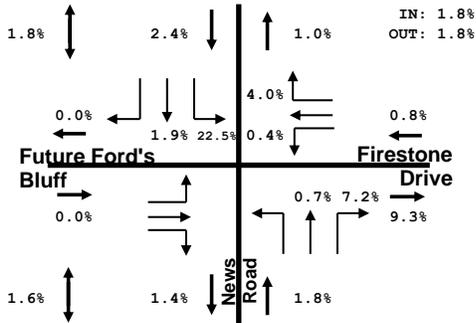
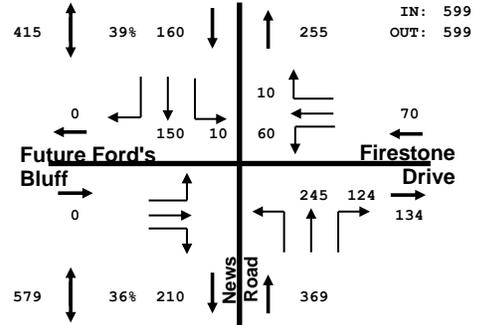
**Exhibit A**



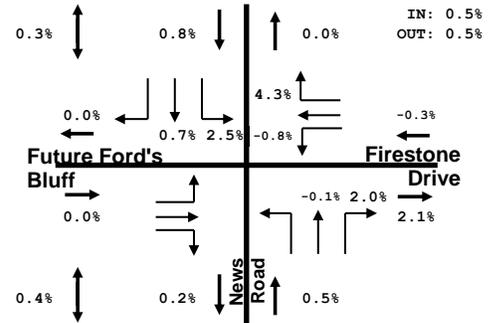
**April 2007 Counts**



**June 2017 Counts**



**% Increase/Year  
2007 To 2017**



**AM PEAK HOUR**

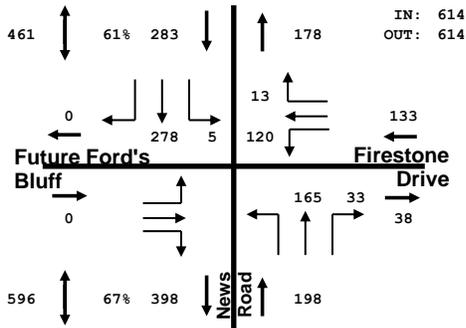
Exhibit Reference

**PM PEAK HOUR**

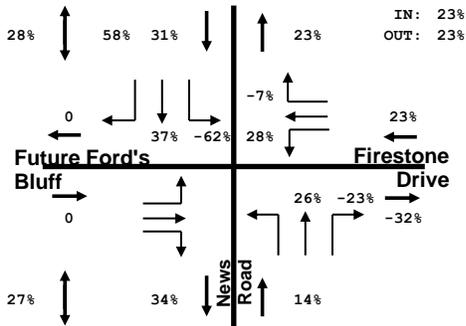
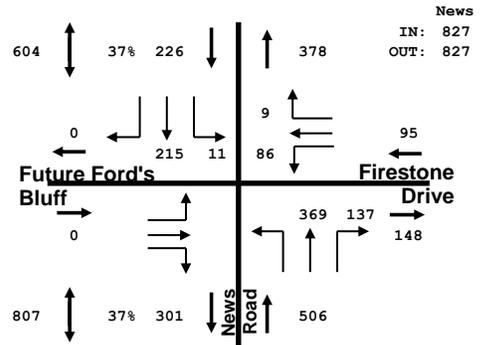
NEWS ROAD 2007/2017 PEAK HOUR COUNT COMPARISON

DRW Consultants, LLC  
804-794-7312

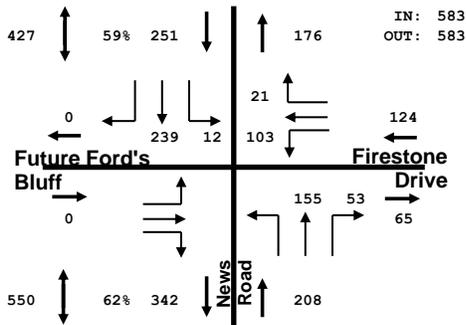
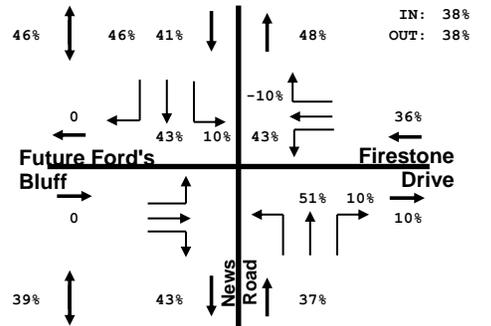
**Exhibit B**



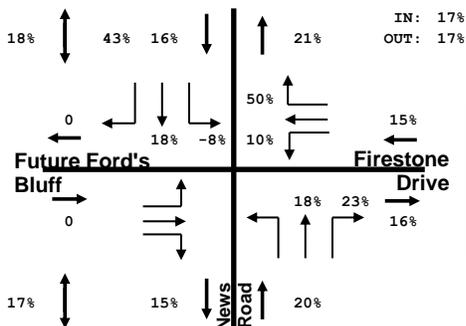
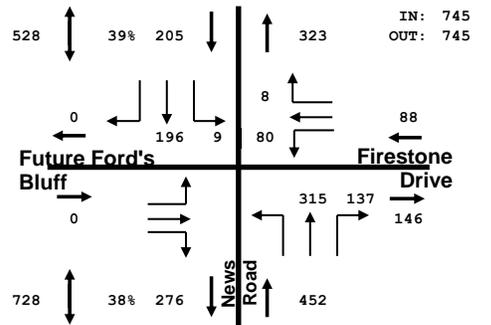
**2008 Study Build Out Forecast**



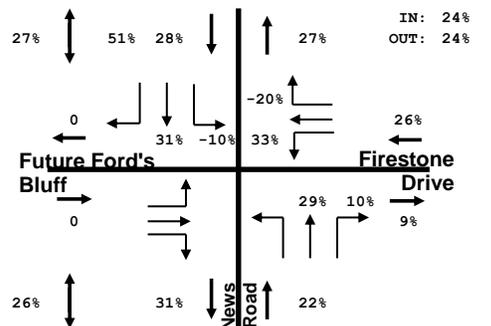
**2008 Study % Increase Over 2017 Counts**



**2020 Study Forecast To 2027**



**2020 Study % Increase Over 2017 Counts**



**AM PEAK HOUR**

Exhibit Reference

**PM PEAK HOUR**

NEWS ROAD TRAFFIC FORECASTS WITHOUT FORD'S BLUFF AND PERCENT INCREASE OVER 2017 COUNTS

DRW Consultants, LLC  
804-794-7312

**Exhibit C**



TRAFFIC IMPACT STUDY (TIS) UPDATE

## **Ford's Colony Master Plan – Phased Development**

James City County, Virginia

**Prepared for:**

Ford's Colony Home Owners Association (FCHOA)

**Prepared by:**

**Kimley»»Horn**

**January 2020**



**Traffic Impact Study (TIS) Update  
for  
Ford's Colony Master Plan – Phased Development  
James City County, Virginia**

**Prepared for:**  
Ford's Colony Home Owners Association (FCHOA)

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**117079000  
January 2020**

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# 1 EXECUTIVE SUMMARY

Ford's Colony Homeowners Association (FCHOA), with support of REDUS VA Housing, LLC (REDUS) is pursuing a Master Plan and Proffer Amendment which includes proposing the construction of 60 residential condominium/townhouse units (Eaglescliff) within the Ford's Colony development (i.e., Ford's Colony) in James City County, Virginia. Ford's Colony is a master planned community bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential areas, and Humelsine Parkway (State Route 199) to the east.

Through conversations with FCHOA, REDUS, and James City County staff as well as our review of the Ford's Colony Proffers (MP-2-87) dated June 20, 1988 and the Amended and Restated Ford's Colony Proffers (Z-04-98/MP-3-98) dated January 24, 1999, it was determined that a traffic impact study (TIS) must be prepared every five (5) years and/or prior to any proposed expansion or development within the Ford's Colony Master Planned residential development. The previous update was the *Ford's Colony Traffic Impact Study 2003-2004 Update*, completed in February 2004.

The purpose of this report is to satisfy the TIS requirement of the aforementioned proffers by summarizing existing and projected future traffic volumes as well as the associated operational conditions to determine if any of the identified off-site roadway, intersection, or traffic control (i.e., intersection signalization) improvements have been triggered for construction and/or may require accelerated implementation. In addition to the 60 residential condominium/townhouse units, the following units were included in this TIS as part of the background traffic to represent the totality of the Ford's Colony Master Plan.

- 295 platted, unbuilt lots
- 30 un-platted Windsor development lots
- 14 un-platted Brian Ford's property lots

This study will identify the potential impacts to the intersections and roadway network as a result of the proposed development.

Based on the analysis of the existing traffic volumes and operation findings provided in this traffic study, the following recommendations were identified and are summarized below for the Existing conditions:

- **Longhill Road at Williamsburg W. Drive/Lane Place Drive**
  - Maintain the existing geometric configuration and traffic control measures
  - Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
  - It is noted that the Longhill Road Phase 1 Widening Project (VDOT UPC – 100921) includes improvements that will enhance the capacity at this intersection, is fully funded, and currently under construction
- **Longhill Road at Fords Colony Drive**
  - Relocate and restripe the northbound approach STOP bar so driver sight distance is not impeded by the Ford's Colony monument sign and/or vegetation located in the median
  - Restripe the 24-foot wide northbound approach to consist of a 12-foot shared through/left-turn lane and a 12-foot exclusive right-turn lane with 150 feet of storage

- Continue to monitor traffic volumes to identify when/if the full turn-lane warrant for the eastbound right-turn movement is satisfied
  - Existing traffic volumes and the associated operational conditions (i.e., level of service (LOS)/side street delay) do not warrant or justify the installation of the traffic signal at this time.
  - Although the installation of a traffic signal is specifically referenced in the Ford's Colony proffers, per VDOT policy and roadway design manual guidelines, should volumes warrant the consideration of a traffic signal the intersection will also need to be analyzed for the consideration of a roundabout.
- **Centerville Road at Manchester Drive**
    - Maintain the existing geometric configuration and traffic control measures
  - **News Road at Firestone Drive**
    - Maintain the existing geometric configuration and traffic control measures

From the analysis of the Build conditions which included the background traffic growth and approved developments, the following recommendations were identified and are summarized below for the Build conditions:

- **Longhill Road at Williamsburg W. Drive/Lane Place Drive**
  - Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
  - The Longhill Road Phase 1 Widening Project (UPC – 100921) is currently under construction. The widening project includes the following improvements to this intersection:
    - Widen Longhill Road to a four-lane divided typical section
    - Upgrade the traffic signal equipment to accommodate the additional through lanes
    - Pedestrian accommodations such as crosswalks, ADA ramps, and pedestrian signal displays for the crossing of select legs of the intersection
    - Eastbound Longhill Road
        - Widen and construct an additional approach and receiving through lane
      - Westbound Longhill Road
          - Widen and construct an additional approach and receiving through lane
    - Improvements associated with Longhill Road Phase 1 Widening Project (UPC – 100921) address several of the proffered improvements associated with the Ford's Colony Master Plan. Proffers should be updated/modified to account for/recognize these changes in responsibility.
  - **Longhill Road at Fords Colony Drive**
    - Based on future traffic volume projections, construct a full width right-turn lane consisting of 200-feet of storage and a 200-foot taper for the eastbound approach.

- Future traffic volumes and the associated future operational conditions (i.e., level of service (LOS)/side street delay) continue to reflect that a traffic signal is not warranted and do not justify the installation of a traffic signal at this intersection.
  - It is noted that the installation of a traffic signal is specifically referenced in the Ford's Colony proffers. However, per VDOT policy and roadway design manual guidelines, if volumes warrant the consideration of a traffic signal then the intersection will also need to be analyzed for the consideration of a roundabout.
  - Additionally, it is noted that the Longhill Road Corridor Study, completed in October 2014, did not recommended the installation of a traffic signal at this intersection as part of the long term (horizon year 2034) improvements. Therefore, it is recommended that a traffic signal should no longer be proffered as a means of traffic control for this intersection.
- **Centerville Road at Manchester Drive**
    - Maintain the existing geometric configuration and traffic control measures.
  - **News Road at Firestone Drive**
    - Maintain the existing geometric configuration and traffic control measures.

Given the minimal residual development potential in Ford's Colony, no additional or proffered improvements are triggered beyond those that were identified under the Existing or Build operational conditions.

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## 2 INTRODUCTION

Ford's Colony Homeowners Association (FCHOA), with support of REDUS VA Housing, LLC (REDUS) is pursuing a Master Plan and Proffer Amendment which includes proposing the construction of 60 residential condominium/townhouse units within the Ford's Colony development (i.e., Ford's Colony) in James City County, Virginia. Ford's Colony is a master planned community bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential areas, and Humelsine Parkway (State Route 199) to the east.

Through conversations with FCHOA, REDUS, and James City County staff as well as our review of the Ford's Colony Proffers (MP-2-87) dated June 20, 1988 and the Amended and Restated Ford's Colony Proffers (Z-04-98/MP-3-98) dated January 24, 1999, it was determined that a traffic impact study (TIS) must be prepared every five (5) years and/or prior to any proposed expansion or development within the Ford's Colony Master Planned residential development. The previous update was the *Ford's Colony Traffic Impact Study 2003-2004 Update*, completed in February 2004.

The purpose of this report is to satisfy the TIS requirement of the aforementioned proffers by summarizing existing and projected future traffic volumes as well as the associated operational conditions to determine if any of the identified off-site roadway, intersection, or traffic control (i.e., intersection signalization) improvements have been triggered for construction and/or may require acceleration. In addition, this study will identify the impacts to the intersections and roadway network due to the proposed development.

The proposed development will be located south of the roundabout intersection of Fords Colony Drive at St. Andrews Drive and is bounded by Eaglescliffe Condominiums to the west, single family units to the south, and the Marriott Manor Club at Ford's Colony to the east. **Figure 1** illustrates the proposed development's location. It is anticipated that the construction of the 60 residential condominium/townhouse units will be completed and operational for business by 2021. In addition to the 60 residential condominium/townhouse units, the following units were included in this TIS as part of the background traffic to represent the totality of the Ford's Colony Master Plan.

- 295 platted, unbuilt lots
- 30 un-platted Windsor development lots
- 14 un-platted Ford's property lots

Kimley-Horn has been retained to prepare a report that meets the requirements of updating the Ford's Colony TIS per the proffers as well as provides an assessment of the traffic impacts associated with the proposed development of the site. This report has been prepared for submittal to James City County and the Virginia Department of Transportation (VDOT) to evaluate existing conditions as well as future traffic conditions that include development related traffic volumes. Assumptions regarding the study area, access, and trip distribution were discussed with and approved by James City County staff prior to the completion of this analysis. The assumptions document is provided in **Appendix A**.

## 3 PROJECT BACKGROUND

### 3.1 STUDY AREA

Consistent with the previously completed TIS, the study area for this analysis, as illustrated in **Figure 1**, includes the following intersections:

#### **Intersections**

- Longhill Road at Williamsburg W. Drive/Lane Place Drive (signalized)
- Longhill Road at Fords Colony Drive (unsignalized)
- Centerville Road at Manchester Drive (unsignalized)
- News Road at Firestone Drive (unsignalized)

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NOT TO SCALE



**Legend**

- Signalized Intersection
- Unsignalized Intersection
- Intersection ID
- Roads
- Proposed Site



### 3.2 PREVIOUS STUDIES

As mentioned in **Chapter 2**, the previous *Ford’s Colony Traffic Impact Study 2003-2004 Update*, was completed in February 2004. This study was conducted pursuant to the proffer requirements and included a schedule of roadway improvements at the four (4) intersections that provide access to/from the Ford’s Colony development, as shown in **Table 1**.

**Table 1: Ford’s Colony Traffic Impact Study 2003-2004 Update Recommendations**

Proffered Improvement Description		Recommended Action
<b>(a)</b>	<b>Installation of Traffic Signals</b>	
(i)	Longhill Road at Williamsburg W. Drive	Monitor traffic volumes in future to determine signal warrant justification
(ii)	News Road at Firestone Drive	Not warranted
(iii)	Longhill Road at Fords Colony Drive	Not warranted
<b>(d)</b>	<b>Construction of Longhill Road at Williamsburg W. Drive Intersection</b>	
(ii)	Add two through lanes on Longhill Road	Operational analysis determined improvement was not required
(iii)	Add second westbound left-turn lane on Longhill Road	Operational analysis determined improvement was not required
(iv)	Add second northbound right-turn lane on Williamsburg W. Drive	Operational analysis determined improvement was not required
<b>(e)</b>	<b>Construct eastbound right-turn lane on Longhill road at Fords Colony Drive</b>	<b>Continue to monitor traffic volumes in future to determine turn lane warrant justification.</b>
<b>(f)</b>	<b>Dedication of a 15-foot strip of land and construction of four lanes on Longhill Road from Williamsburg W. to Route 199</b>	<b>Operational analysis determined improvement was not required</b>

### 3.3 EXISTING ZONING

The project site for the proposed development is located within the Ford’s Colony Master Planned development. This parcel is currently unoccupied and is zoned as Residential Planned Community (R4). **Figure 2** illustrates the existing zoning adjacent to the site.

Zoning in this area primarily consists of the following districts: General Residential (R2), Residential Planned Community (R4), Rural Residential (R8), and General Agriculture (A1). The Marriott’s Manor Club at Ford’s Colony is located to the east of the proposed site and the Ford’s Colony Country Club is located to the north of the proposed site, which contains hotel accommodations, restaurants, services, and various recreational golf uses. To the south and west of the proposed residential condominium/townhouse site are additional residential areas.

### 3.4 EXISTING CONDITIONS

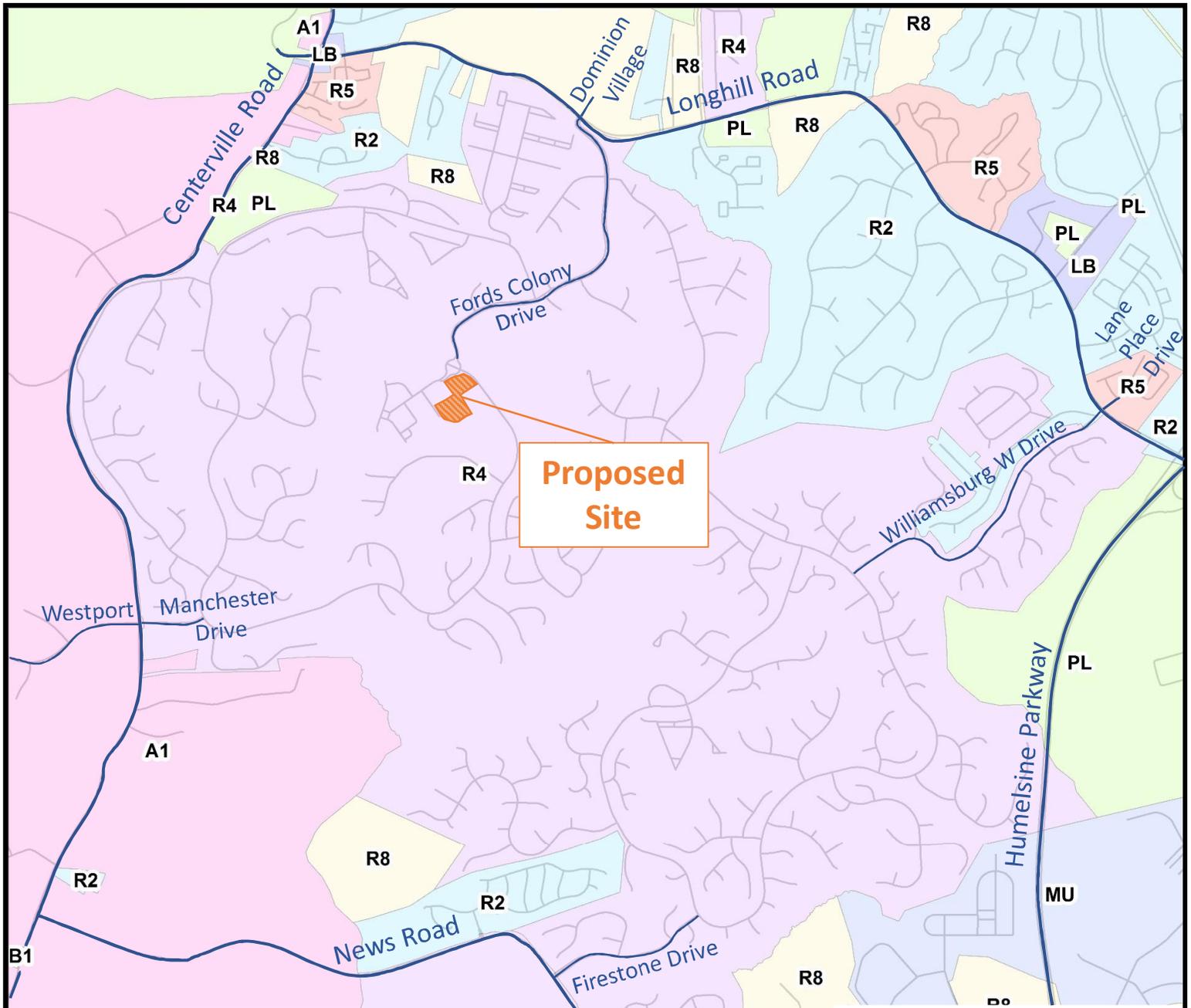
Longhill Road, Centerville Road, and News Road are the primary thoroughfares within the study area that provide connections to Williamsburg W. Drive, Ford's Colony Drive, Manchester Drive, and Firestone Drive, which provide access to/from the Ford's Colony community. **Figure 3** depicts existing roadway geometry, lane assignments, and conditions for study area roadways and intersections. The following provides a brief description of existing roadway characteristics for each facility:

**Longhill Road** (State Route 612) is a two-lane, undivided minor arterial that runs in an approximate east/west direction between Centerville Road to the west and the Humelsine Parkway (Route 199) interchange to the east. Traffic counts collected by VDOT in 2018 indicate that Longhill Road carried approximately 7,600 vehicles per day (vpd) between Centerville Road and Season's Trace and approximately 16,000 vpd between Season's Trace and Humelsine Parkway. The posted speed limit along this segment of roadway within the study area is 45 miles per hour (mph).

**Centerville Road** (State Route 614) is a two-lane, undivided minor arterial in James City County. Centerville Road runs in an approximate north/south direction in the study area between Longhill Road to the north and News Road to the south. Traffic counts collected by VDOT in 2018 indicate that Centerville Road carried approximately 4,900 vpd between News Road and Jolly Pond Road. The posted speed limit along this segment of Centerville Road is 45 mph.

**News Road** (State Route 613) is a two-lane, undivided major collector road that runs in an approximate east/west direction that extends from Centerville Road in the west to Ironbound Road in the east. Traffic counts collected by VDOT in 2018 indicate that News Road carried approximately 3,900 vpd within the study area. The posted speed limit is 45 mph.

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**Legend**

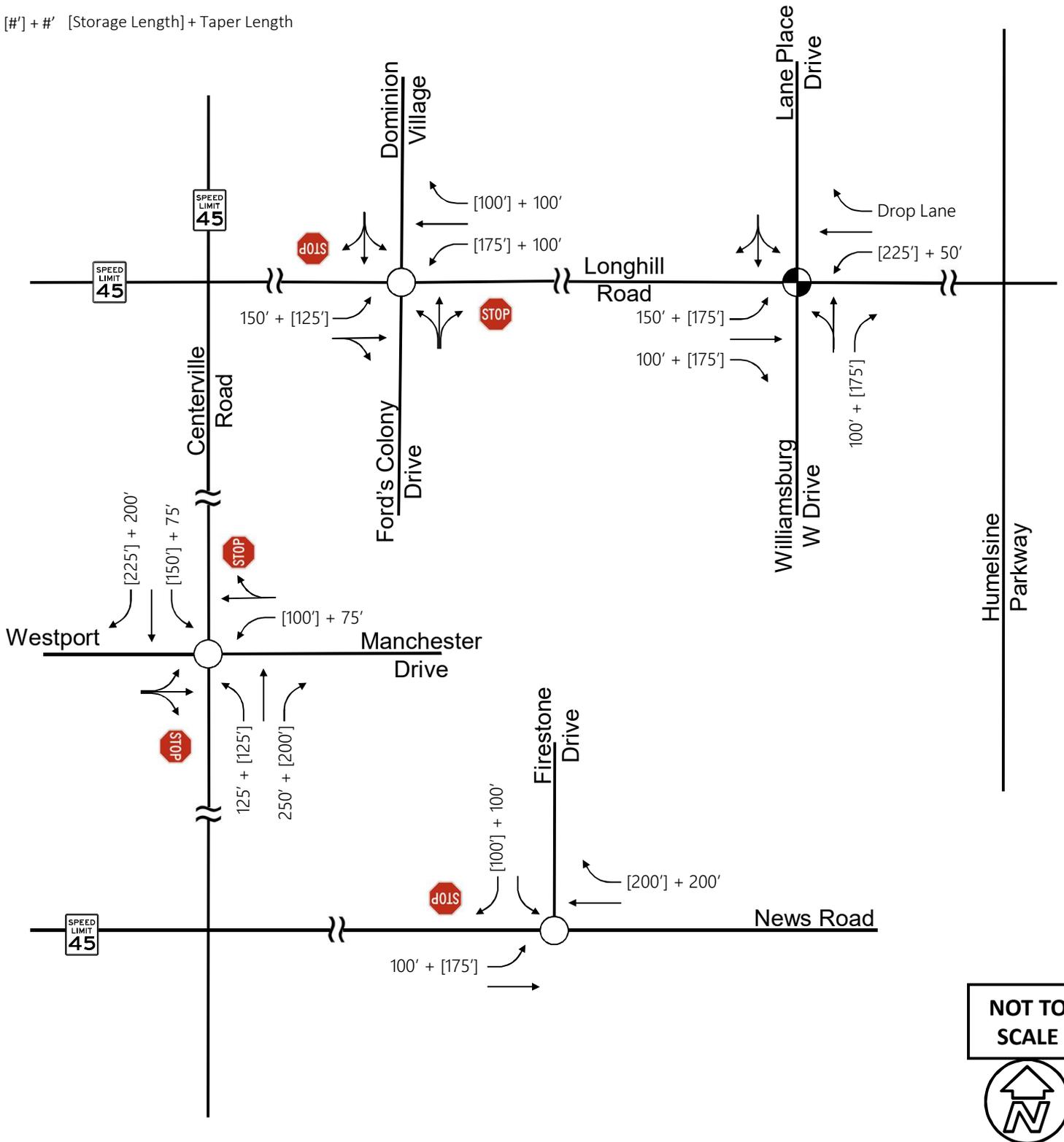
- |                                  |  |
|----------------------------------|--|
| General Agriculture (A1)         | Mixed Use (MU)                               |
| General Business (B1)            | Multi-Family Residential (R5)                |
| General Industrial (M2)          | Planned Unit Development Commercial (PUD-C)  |
| General Residential (R2)         | Planned Unit Development Residential (PUD-R) |
| Limited Business (LB)            | Public Lands (PL)                            |
| Limited Business/Industrial (M1) | Residential Planned Community (R4)           |
| Limited Residential (R1)         | Rural Residential (R8)                       |
| Low-Density Residential (R6)     |  |

Source: James City County GIS Zoning Layer

**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment

[#] + #' [Storage Length] + Taper Length



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### 3.5 EXISTING PEDESTRIAN AND BICYCLE ACCOMMODATIONS

Pedestrian accommodations (i.e., crosswalks, pedestrian signal heads) are not provided at any of the study intersections. However, sidewalk is provided on the north side of Longhill Road from Williamsburg W. Drive/Lane Place Drive to Warhill Trail. Portions of sidewalk are located along Centerville Road but lack connectivity throughout the study area.

In addition, paved shoulders allow for bicycle traffic on Longhill Road from Williamsburg W. Drive to Old Towne Road. Dedicated bike lane pavement markings traversing through the intersections are provided at major intersections along Longhill Road to enhance the visibility and safety of the bicyclists. A dedicated bike lane is provided along southbound Centerville Road from Longhill Road to just north of Mallory Place. Paved shoulders allow for bicyclist traffic on Centerville Road, south of Mallory Place. Pedestrian and bicycle accommodations are not provided along either side of News Road.

### 3.6 EXISTING TRAFFIC

Consistent with the previously completed TIS, AM and PM peak conditions were analyzed to evaluate potential impacts of the proposed development. To coincide with these times, turning movement counts (TMC) which included vehicular, truck, and pedestrian traffic were collected at the following study area intersections on June 8, 2017:

- Longhill Road at Williamsburg W. Drive/Lane Place Drive
- Longhill Road at Fords Colony Drive
- Centerville Road at Manchester Drive
- News Road at Firestone Drive

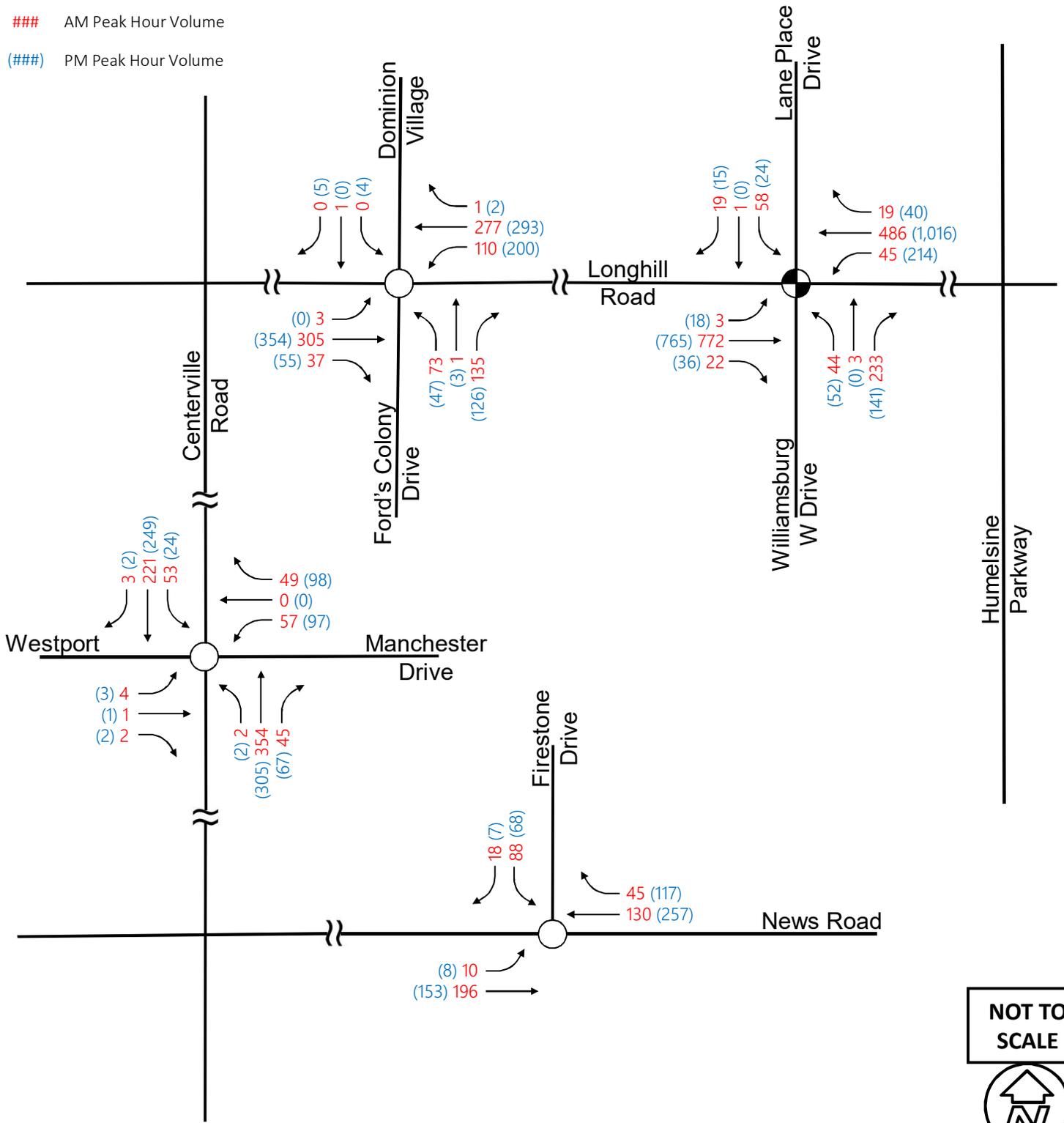
The uniform peak hours for these intersections were found to be 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM for the AM and PM peak hours, respectively. It should be noted that peak hour volumes were not adjusted and/or balanced, due to the location and number of access driveways between study area intersections.

Each movement of the 2017 TMCs were grown using annualized growth rates detailed in **Section 6.1** to calculate the 2019 volumes for each intersection. The AM and PM peak hour turning movement volumes from the abovementioned data sources are shown in **Figure 4**. Detailed count data is also provided in **Appendix B**.

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**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
- ###** AM Peak Hour Volume
- (###)** PM Peak Hour Volume



**NOT TO SCALE**



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## 4 TRIP GENERATION

To determine the anticipated number of trips generated by the proposed residential condominium/townhouse development, the *Trip Generation Manual*, published by the Institute of Transportation Engineers [ITE], 10<sup>th</sup> Edition, 2017 was used to estimate the new traffic on the adjacent roadway network.

The proposed development will consist of 60 residential condominium/townhouse units. Based on this land use type and intensity, trip generation estimates were calculated as shown in **Table 2**.

**Table 2: ITE Trip Generation Summary (10<sup>th</sup> Edition)**

ITE Code	ITE Description	Density	Daily	AM Peak Hour			PM Peak Hour		
				Enter (23%)	Exit (77%)	Total	Enter (63%)	Exit (37%)	Total
220	Multifamily Housing (Low-Rise)	60 Dwelling Units	413	7	22	29	23	14	37

*Source: ITE Trip Generation Manual, 10<sup>th</sup> Edition*

The total amount of traffic generated by the proposed development is anticipated to consist of 413 daily trips, of which 29 trips will occur during the AM peak and 37 trips will occur during the PM peak hour, respectively. No pass-by or internal capture rate reductions were included as part of this analysis.

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## 5 TRAFFIC DISTRIBUTION AND ASSIGNMENT

The directional distribution and assignment of trips generated by the proposed redevelopment was based on a review of existing traffic volumes, site access, the *Ford's Colony Traffic Impact Study 2003-2004 Update*, and an understanding of travel patterns within the study area. From this review and conversations with VDOT, the following traffic distributions were derived for the analysis of the study area:

- AM Peak Hour
  - 80% of the trips generated will travel to/from the north on Ford's Colony Drive
    - 60% to/from the east on Longhill Road
    - 20% to/from the west on Longhill Road
  - 20% of the trips generated will travel to/from the west on Manchester Drive
  
- PM Peak Hour
  - 70% of the trips generated will travel to/from the north on Ford's Colony Drive
    - 55% to/from the east on Longhill Road
    - 15% to/from the west on Longhill Road
  - 30% of the trips generated will travel to/from the west on Manchester Drive

Based on conversations with VDOT, this TIS assumes site trips will not utilize the Williamsburg W. Drive or Firestone Drive access points due to the distance to/from the proposed development site.

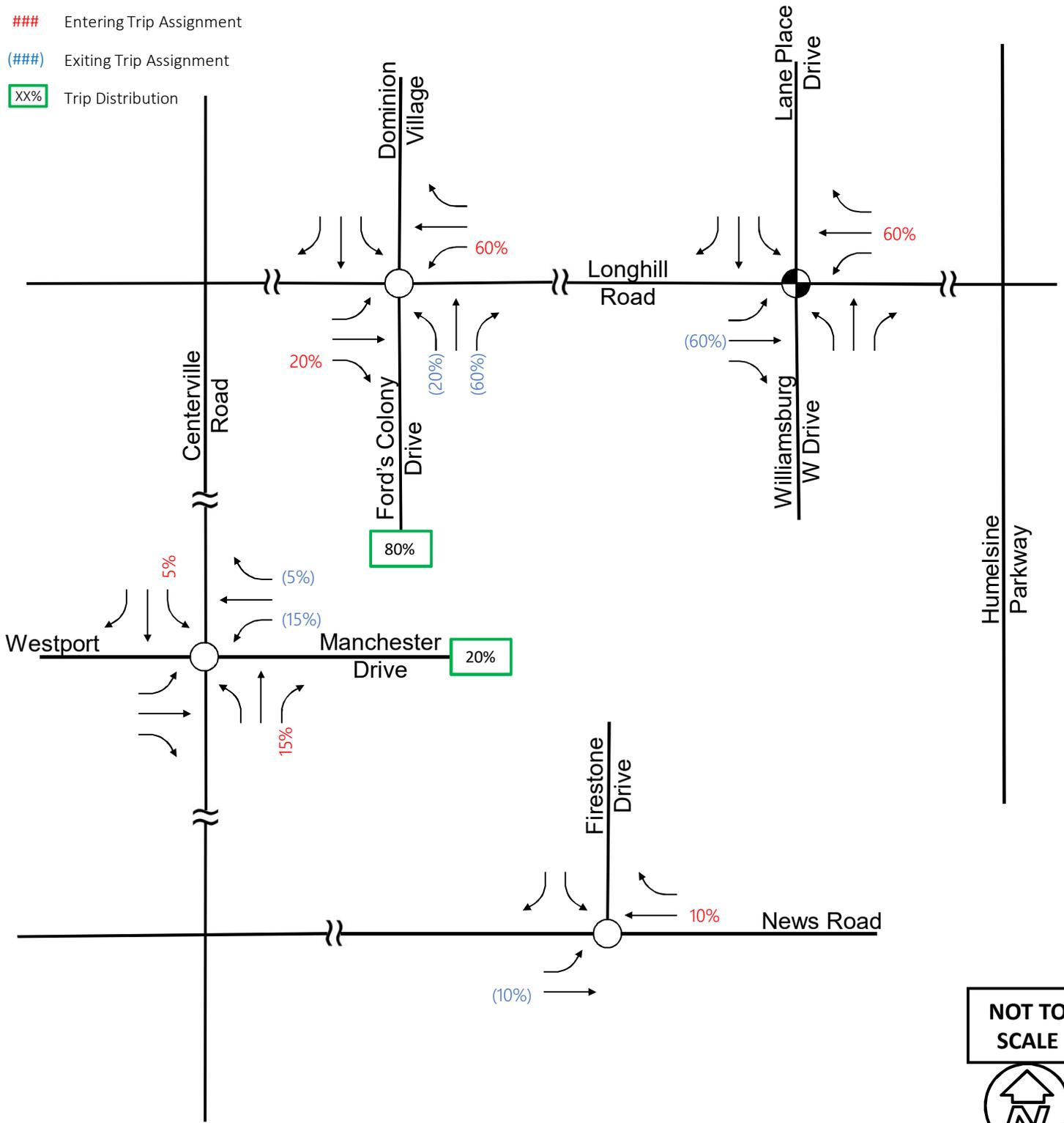
As shown previously in and consistent with the previous TIS, the proposed development site will not introduce any new access points to existing/adjacent study area roadways.

Detailed AM and PM peak hour trip distribution and trip assignment is shown in **Figure 5** and **Figure 6**, respectively.

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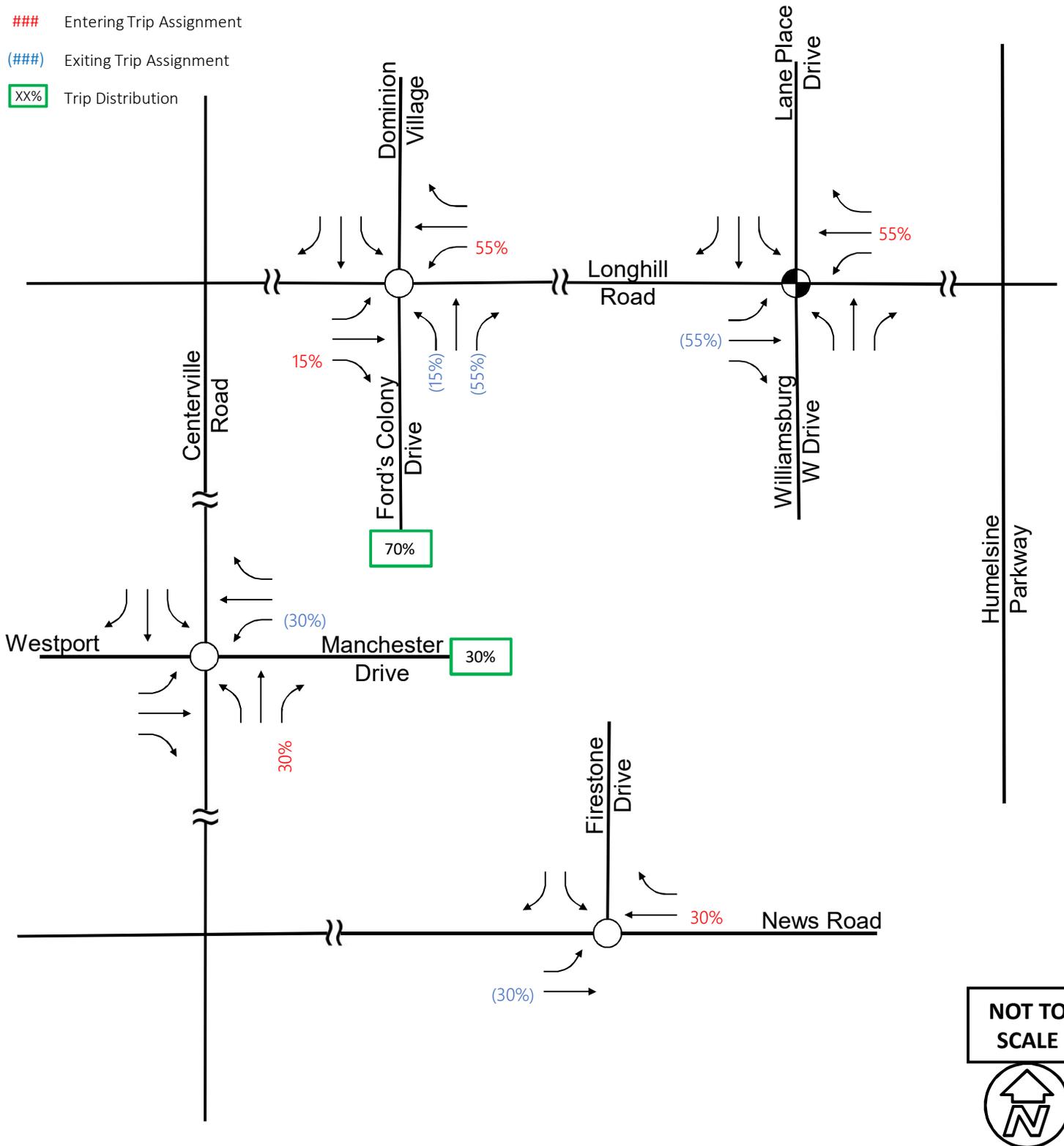
**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
-  Entering Trip Assignment
-  Exiting Trip Assignment
-  Trip Distribution



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
-  Entering Trip Assignment
-  Exiting Trip Assignment
-  Trip Distribution



## 6 PROJECTED TRAFFIC VOLUMES

Based on discussions with James City County, the following existing and horizon year scenarios were agreed to and analyzed to determine future impacts of the proposed development based on the anticipated schedule for construction and opening:

- Scenario 1 – 2019 Existing traffic conditions
- Scenario 2 – 2021 Opening Year No-Build conditions – Build-out year traffic conditions with only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 3 – 2021 Opening Year Build conditions – Build-out year traffic conditions with background development trips applied plus traffic volumes generated by the proposed development
- Scenario 4 – 2027 Opening Year +6 years No-Build conditions – Build-out year traffic conditions with only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 5 – 2027 Opening Year +6 years Build conditions – Build-out year traffic conditions with background development trips applied plus traffic volumes generated by the proposed development

### 6.1 BACKGROUND TRAFFIC GROWTH

Background traffic growth rates were determined by using rates developed as part of the *Longhill Road Corridor Study*, completed and adopted in October 2014, and historical traffic volume trends over the previous six (6) years (i.e., 2011 to 2016) from VDOT data.

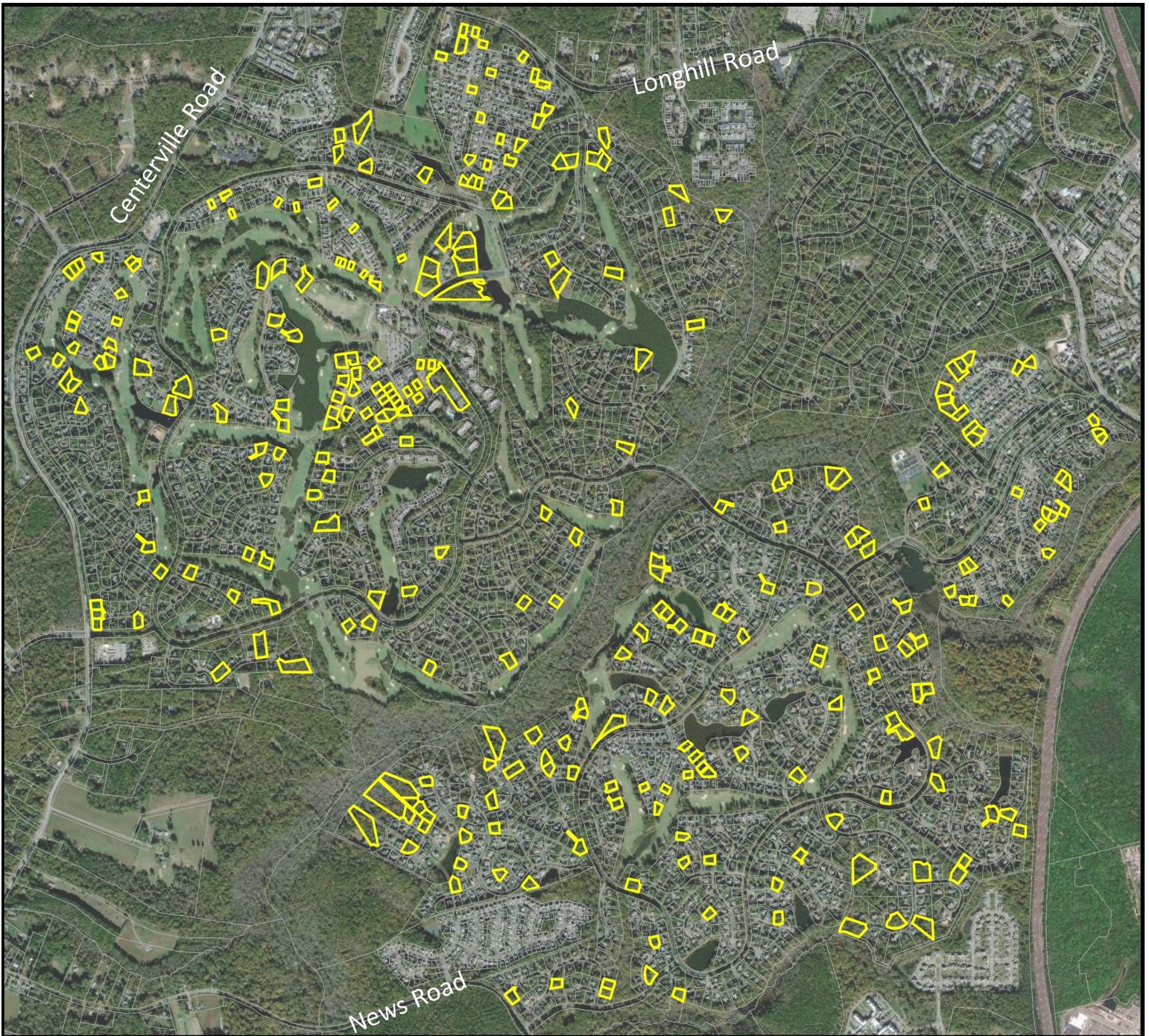
- Longhill Road – 2.0% per year (consistent with *Longhill Road Corridor Study*)
- Centerville Road – 2.5% per year
- News Road – 2.0% per year

Since November 2019, approximately 2,851 of 3,250 total units have been built within Ford's Colony with a remainder of 399 unbuilt units, as shown in **Figure 7**. The 399 unbuilt units are as follows:

- 295 platted, unbuilt lots
- 60 un-platted Eaglescliff development lots
- 30 un-platted Windsor development lots
- 14 un-platted Ford's property lots

With the addition of 90 units, Ford's Colony has a remainder of 309 units available. The additional 90 units consist of 60 units in the Eaglescliff development (described in Chapter 4) and 30 units in the Windsor development (described in Section 6.1.1.). The aforementioned traffic growth rates were applied to all intersection movements to account for the trip generation potential of the remaining 309 units; thus, accounting for the full build-out of Ford's Colony.

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**Kimley»Horn**

Ford's Colony TIS Update  
James City County, VA

Ford's Colony Unbuilt Lots

FIGURE  
7

### 6.1.1 OTHER DEVELOPMENT TRAFFIC

Since the 2004 study was completed, there has been minimal to no residential development/expansion occurring within the Ford's Colony Master Plan development. However, three additional developments adjacent to Ford's Colony were provided by James City County for inclusion in the analysis of future traffic operational conditions: The Villages at Ford's Colony (The Villages), Westport Subdivision at Ford's Colony (Westport), and Windsor Property (Windsor).

Per the *News Road Corridor Traffic Forecast and Analysis*, completed in April 2008, the Villages at Ford's Colony has a proposed entrance on the northbound approach of the News Road at Firestone Drive intersection. The Westport development's entrance is currently located on the eastbound approach (west leg) of the Manchester Drive at Centerville Road intersection.

In addition, the Windsor development is anticipated to be located along Ford's Colony Drive across from N. Knob Hill. Future traffic volumes associated with these other approved developments were accounted for and calculated using the most recent version of the *ITE Trip Generation Manual*.

Trip generation densities as well as the trip distribution and assignment percentages for The Villages and Westport developments will remain consistent with the *News Road Corridor Traffic Forecast and Analysis*. The trip distribution and assignment for the Windsor property will be consistent with the proposed redevelopment as detailed in **Chapter 5**.

The Villages development will consist of attached and detached senior adult housing, congregate care housing, assisted living, and a nursing home, for a total of 739 units. The trip generation was calculated, and the results are shown in **Table 3**. The total amount of traffic generated by The Villages development consisted of 2,078 daily trips, of which 101 and 161 trips will occur during the AM and PM peak hours, respectively.

**Table 3: ITE Trip Generation Summary for The Villages at Ford's Colony Development**

ITE Code	ITE Description	Density	Unit	Daily	AM Peak Hour			PM Peak Hour		
					Enter	Exit	Total	Enter	Exit	Total
251	Senior Adult Housing - Detached	38	Dwelling Units	240	7	13	20	14	9	23
252	Senior Adult Housing - Attached	168	Dwelling Units	650	12	21	33	24	19	43
253	Congregate Care Housing	390	Dwelling Units	788	13	9	22	32	28	60
254	Assisted Living	83	Beds/Rooms	216	10	6	16	8	14	22
620	Nursing Home	60	Beds/Rooms	184	7	3	10	4	9	13
<b>Total</b>		<b>739</b>		<b>2,078</b>	<b>49</b>	<b>52</b>	<b>101</b>	<b>82</b>	<b>79</b>	<b>161</b>

*Note: It is assumed that there is one bed per room, and therefore each bed is considered one dwelling unit.*

The Westport development will consist of 43 units of single-family detached housing. The trip generation estimates for the proposed Westport development are shown in **Table 4**. The total amount of traffic generated by the Westport development consisted of 478 daily trips, of which 35 will occur during the AM peak hour and 45 will occur during the PM peak hour, respectively.

**Table 4: ITE Trip Generation Summary for Westport Subdivision at Ford's Colony Development**

ITE Code	ITE Description	Density	Unit	Daily	AM Peak Hour			PM Peak Hour		
					Enter	Exit	Total	Enter	Exit	Total
210	Single-Family Detached Housing	43	Dwelling Units	478	9	26	35	28	17	45

The Windsor development will consist of 30 units of multifamily attached housing. The trip generation estimates for the proposed Windsor development are shown in **Table 5**. The total amount of traffic generated by the Windsor development consisted of 186 daily trips, of which 15 will occur during the AM peak hour and 20 will occur during the PM peak hour, respectively. **Figure 8** through **Figure 13** illustrate the approved development site trip distributions and assignments.

**Table 5: ITE Trip Generation Summary for Windsor Development**

ITE Code	ITE Description	Density	Unit	Daily	AM Peak Hour			PM Peak Hour		
					Enter	Exit	Total	Enter	Exit	Total
220	Multifamily Housing (Low-Rise)	30	Dwelling Units	186	3	12	15	13	7	20

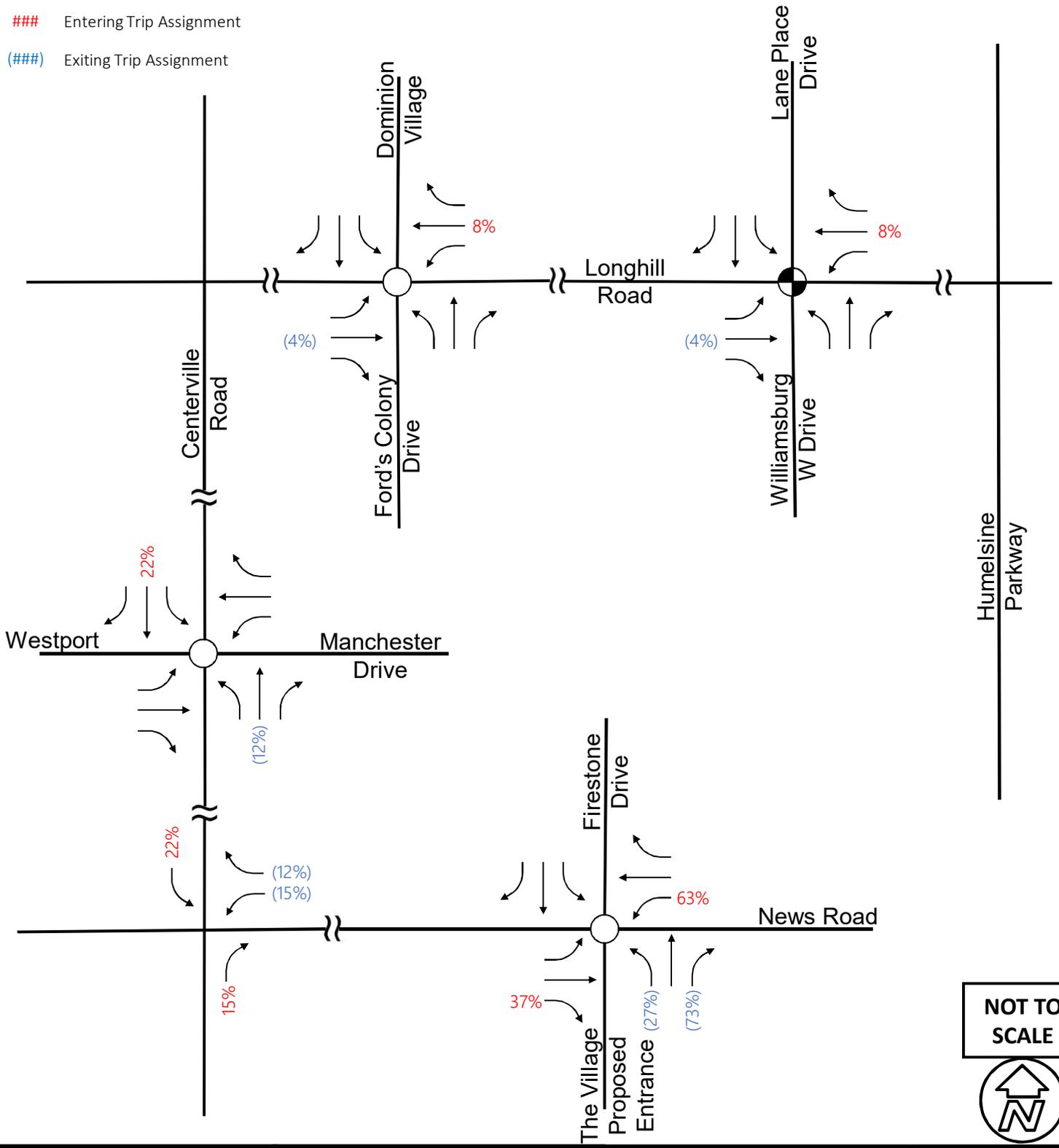
## 6.2 TOTAL TRAFFIC

Traffic associated with the proposed residential condominium/townhouse development was added to the future background traffic volumes as well as the approved development traffic volumes to develop the total traffic volumes for 2021 and 2027 future Build conditions. **Figure 14** through **Figure 17** illustrate the peak hour traffic volumes used in the analysis of future conditions (i.e., No-Build and Build). Worksheets detailing the volumes for the study area intersections are provided in **Appendix C**.

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**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
- ### Entering Trip Assignment
- (###) Exiting Trip Assignment



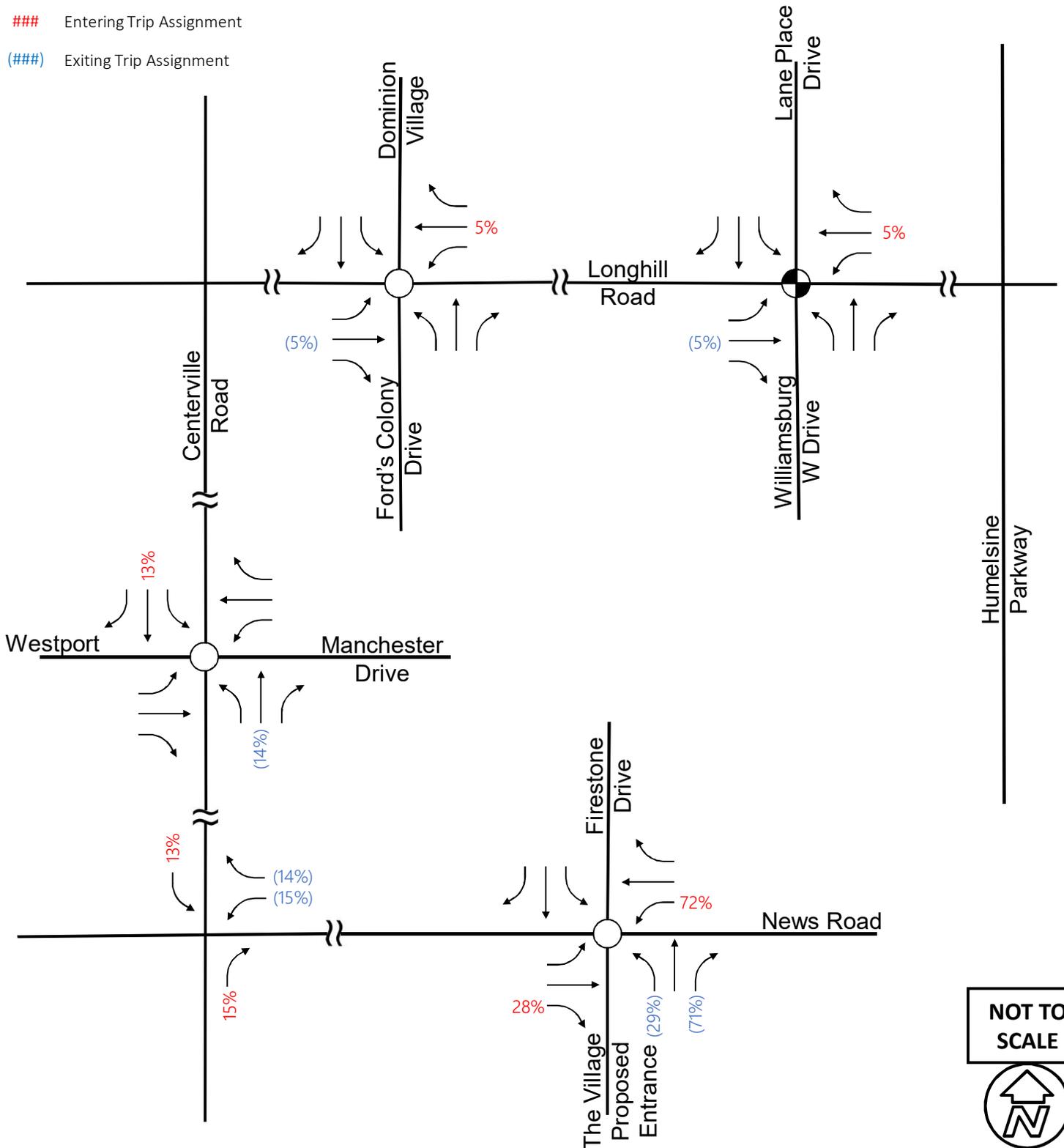
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**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
- ### Entering Trip Assignment
- (###) Exiting Trip Assignment

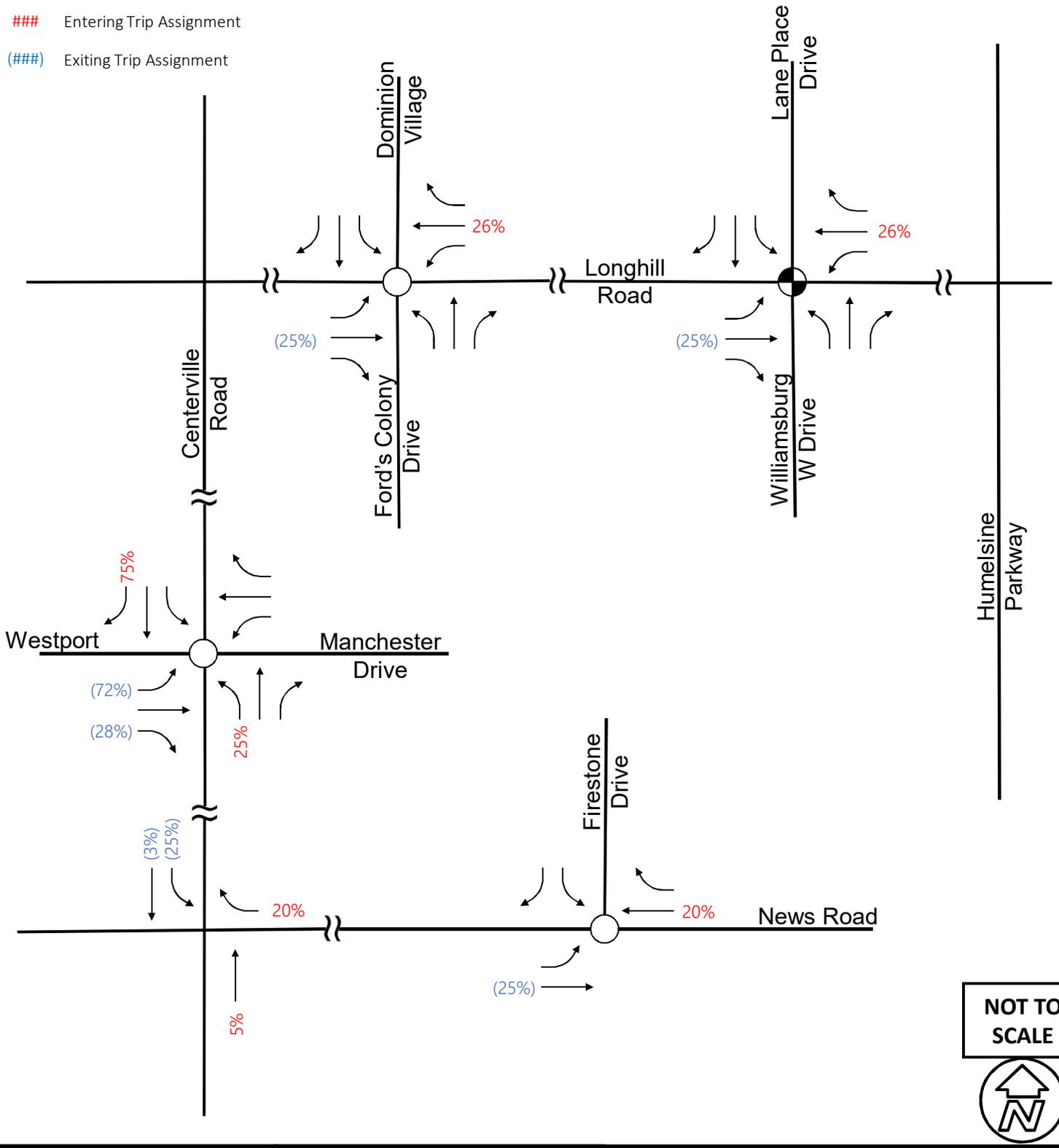


NOT TO SCALE



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
- ### Entering Trip Assignment
- (###) Exiting Trip Assignment

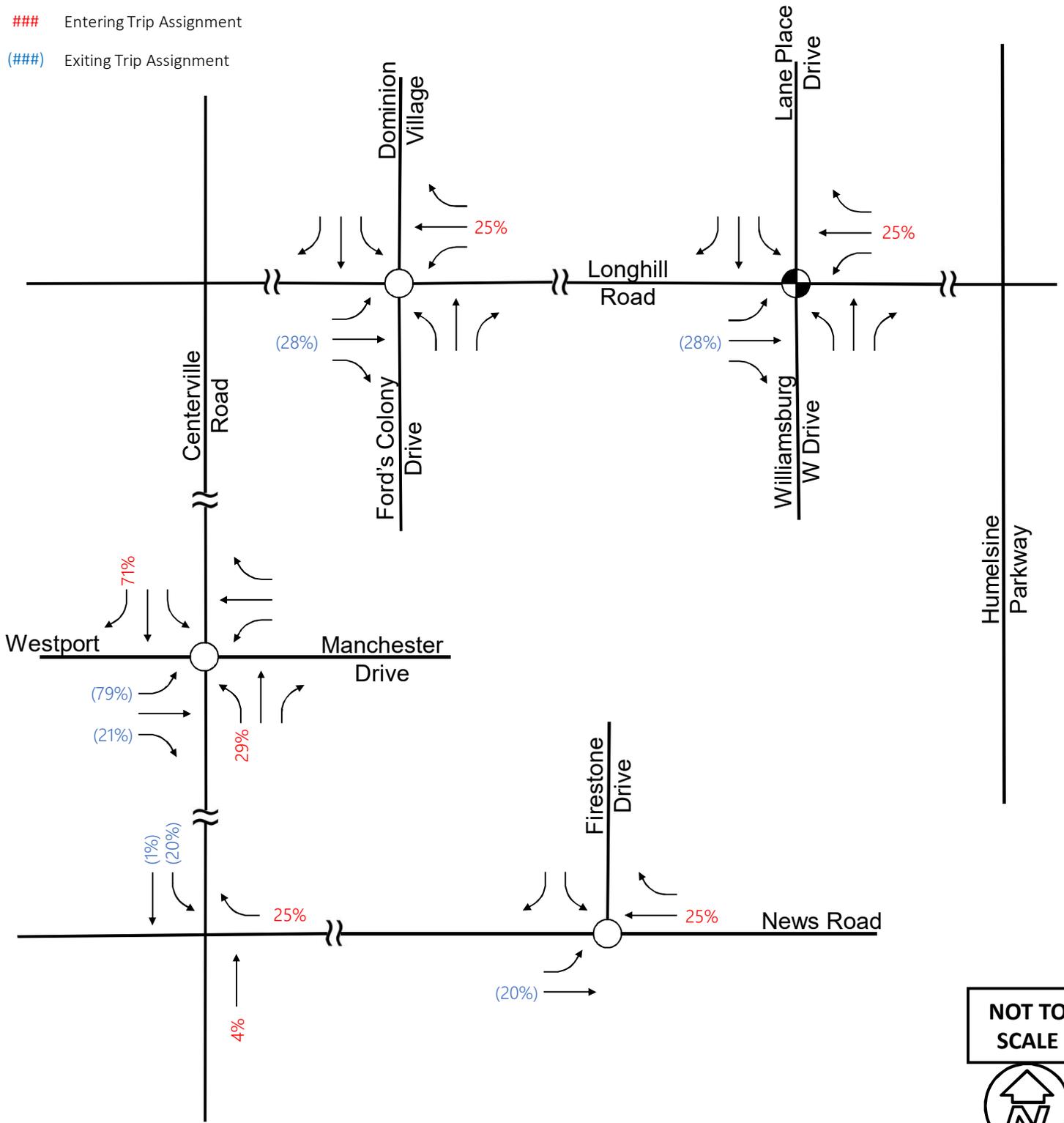


NOT TO SCALE



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
- ### Entering Trip Assignment
- (###) Exiting Trip Assignment

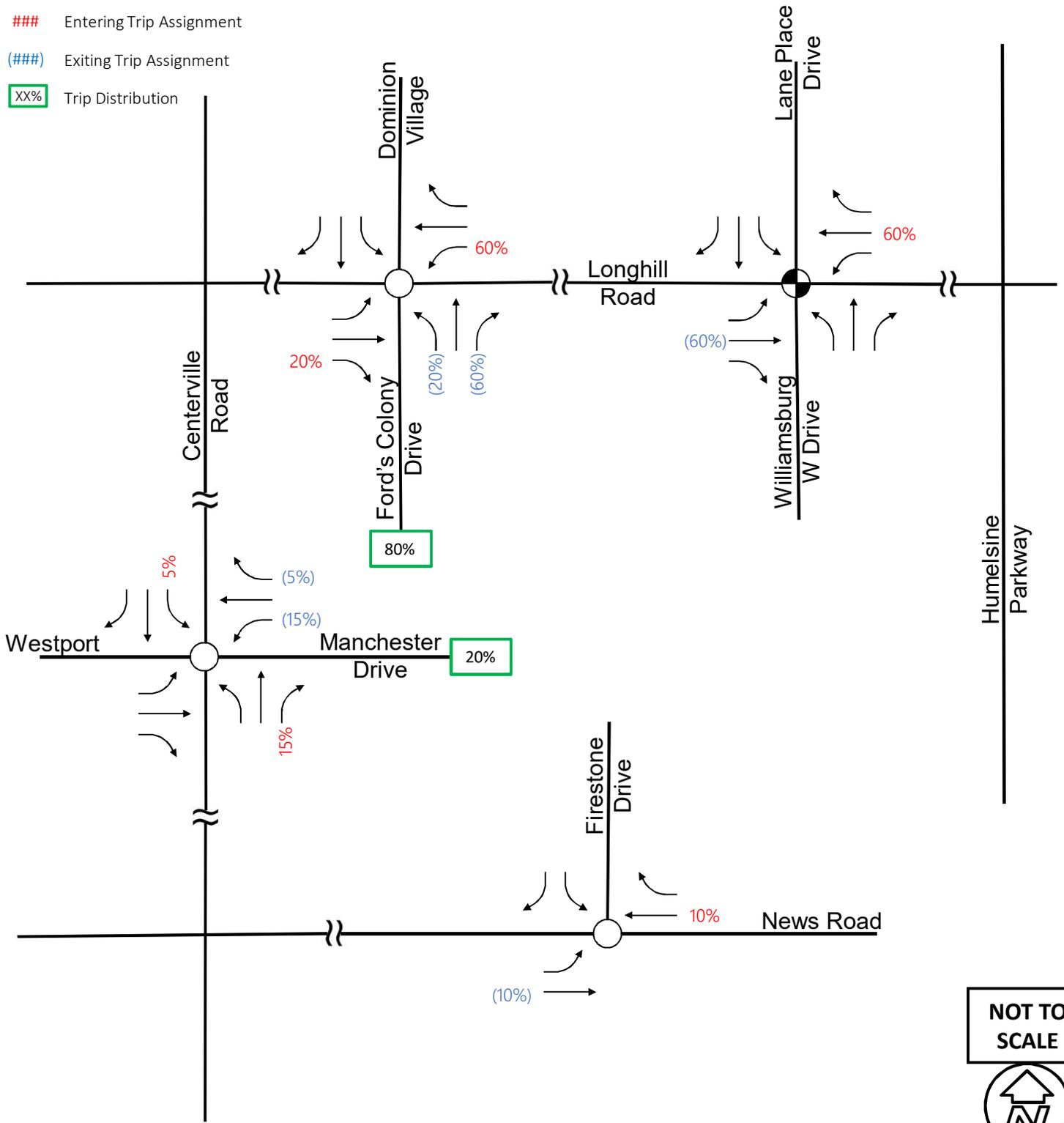


**NOT TO SCALE**



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
-  Entering Trip Assignment
-  Exiting Trip Assignment
-  Trip Distribution

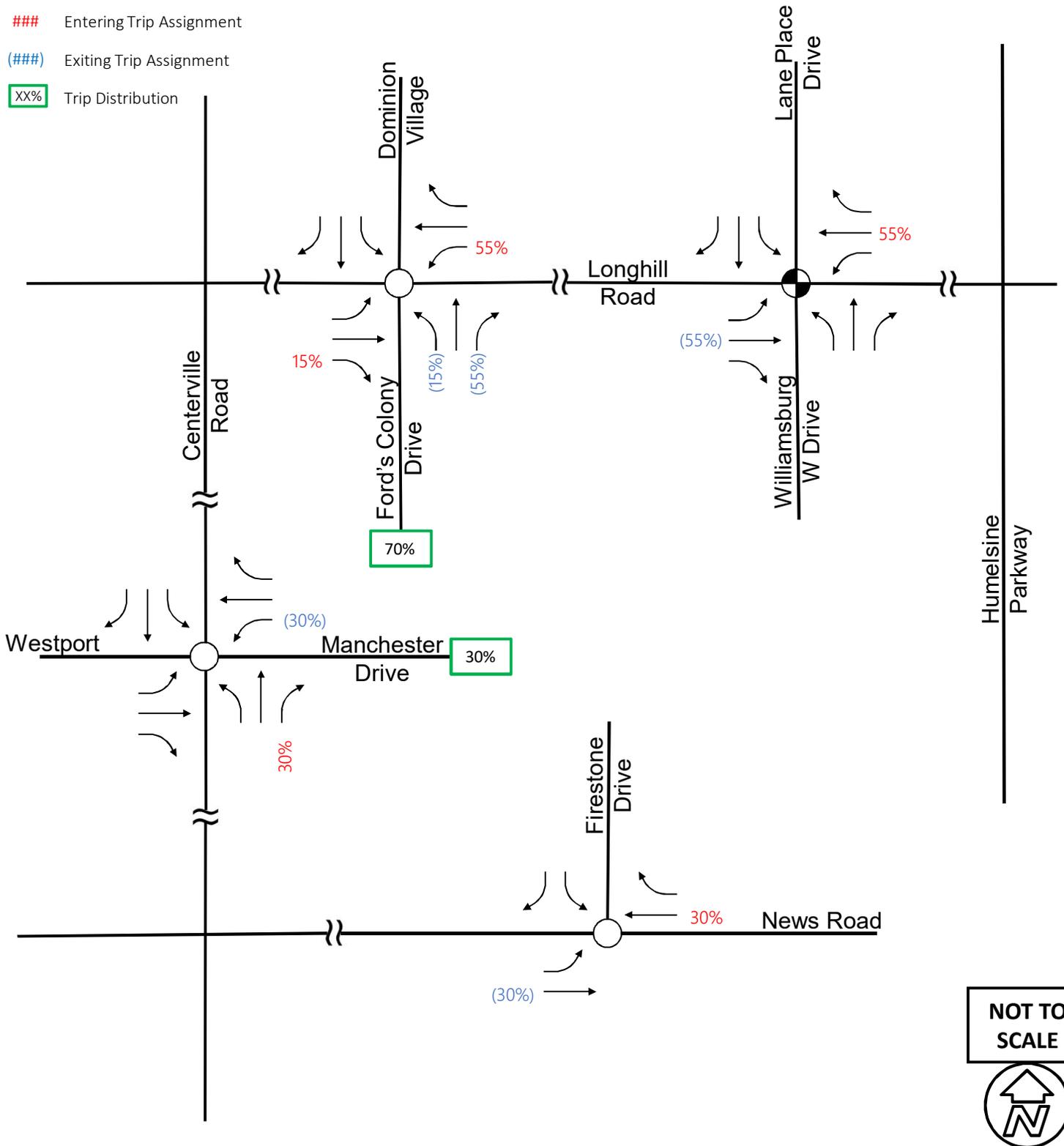


NOT TO SCALE



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Turning Movement
-  Entering Trip Assignment
-  Exiting Trip Assignment
-  Trip Distribution



**NOT TO SCALE**



**Legend**

Signalized Intersection

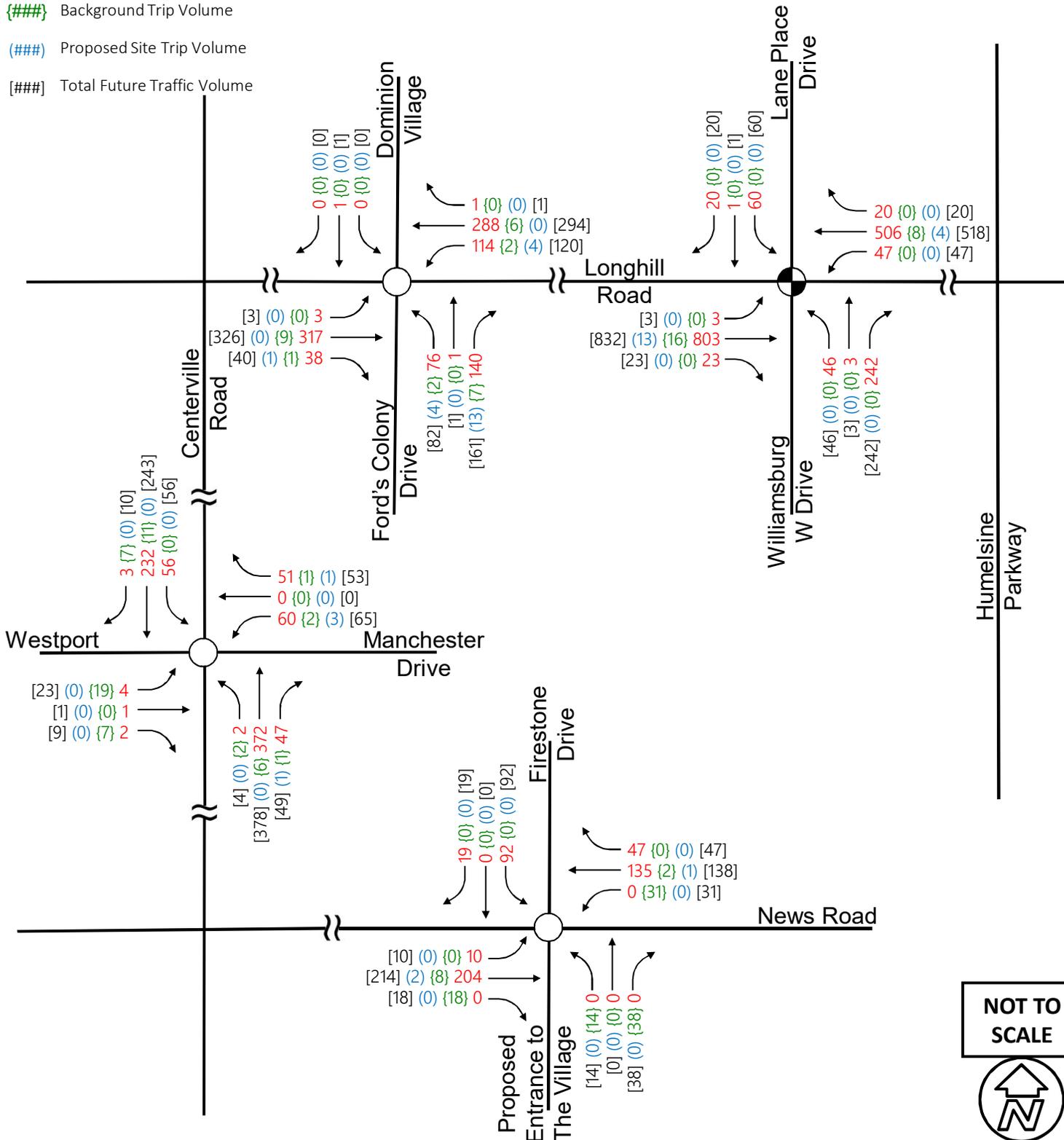
Unsignalized Intersection

### Existing Traffic Volume with Growth Rate Applied

{###} Background Trip Volume

{###} Proposed Site Trip Volume

[###] Total Future Traffic Volume



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**Legend**

Signalized Intersection

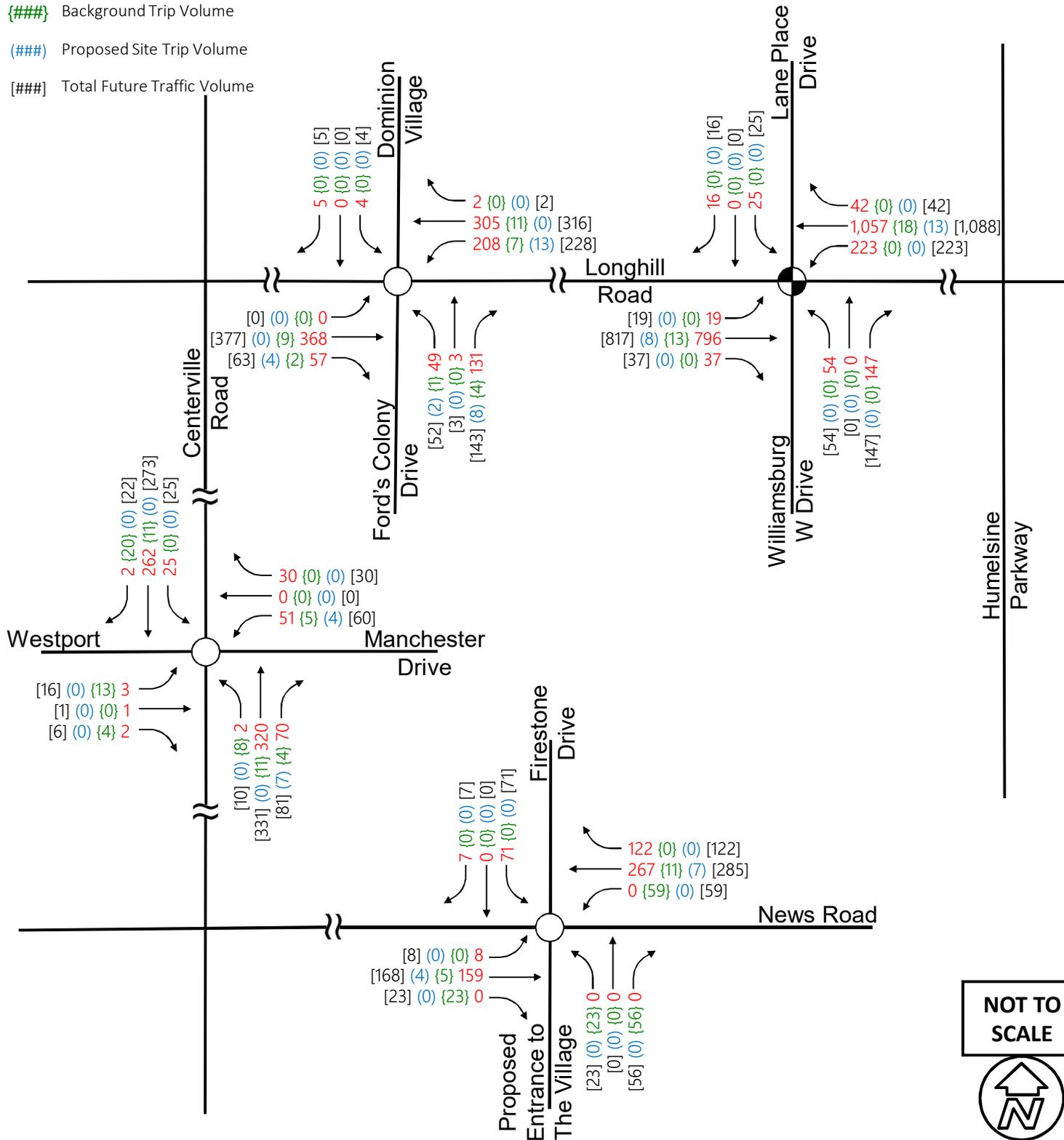
Unsignalized Intersection

### Existing Traffic Volume with Growth Rate Applied

{###} Background Trip Volume

(###) Proposed Site Trip Volume

[###] Total Future Traffic Volume

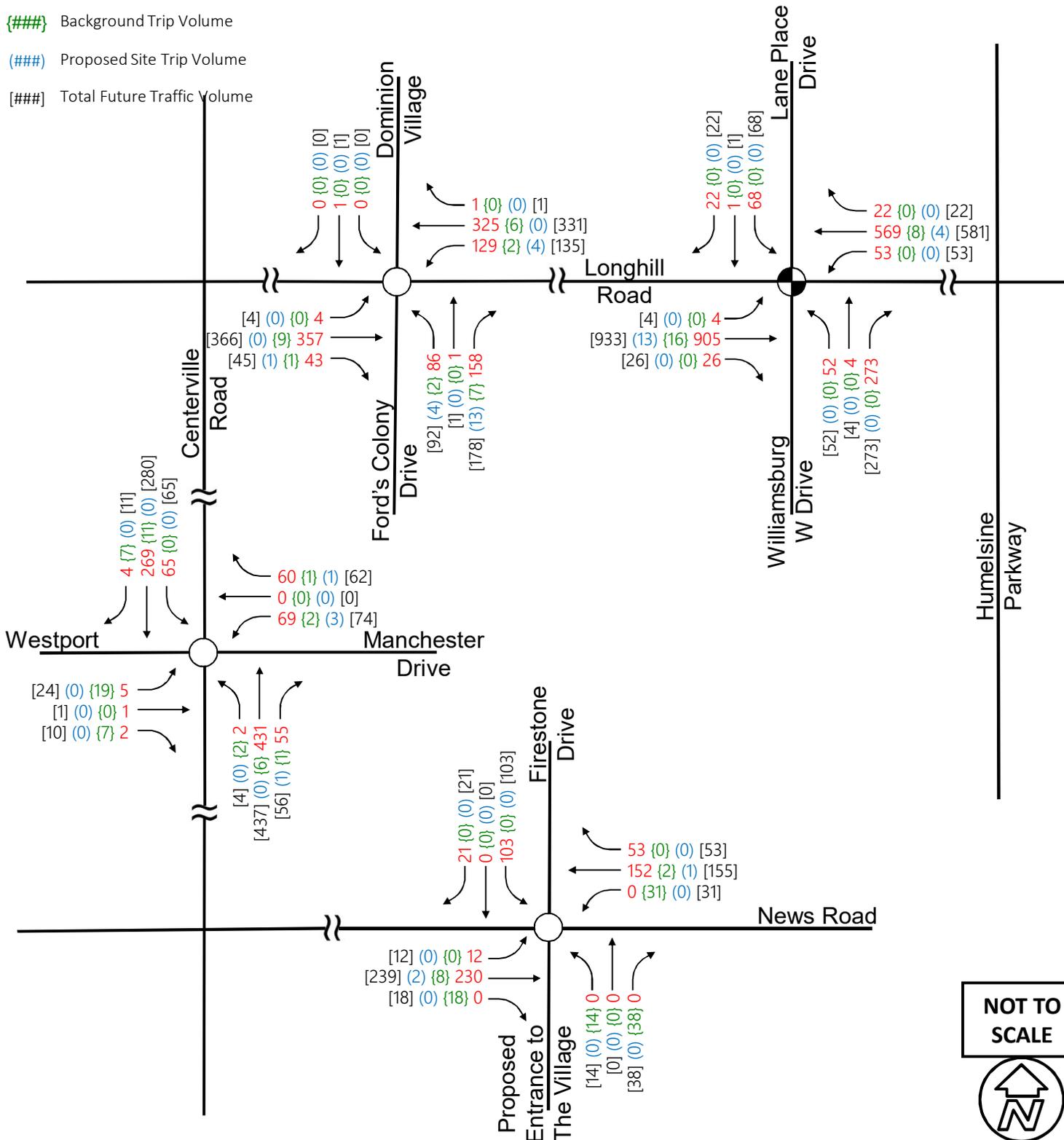


**NOT TO SCALE**



**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
- ### Existing Traffic Volume with Growth Rate Applied
- {###} Background Trip Volume
- {###} Proposed Site Trip Volume
- [###] Total Future Traffic Volume



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**Legend**

Signalized Intersection

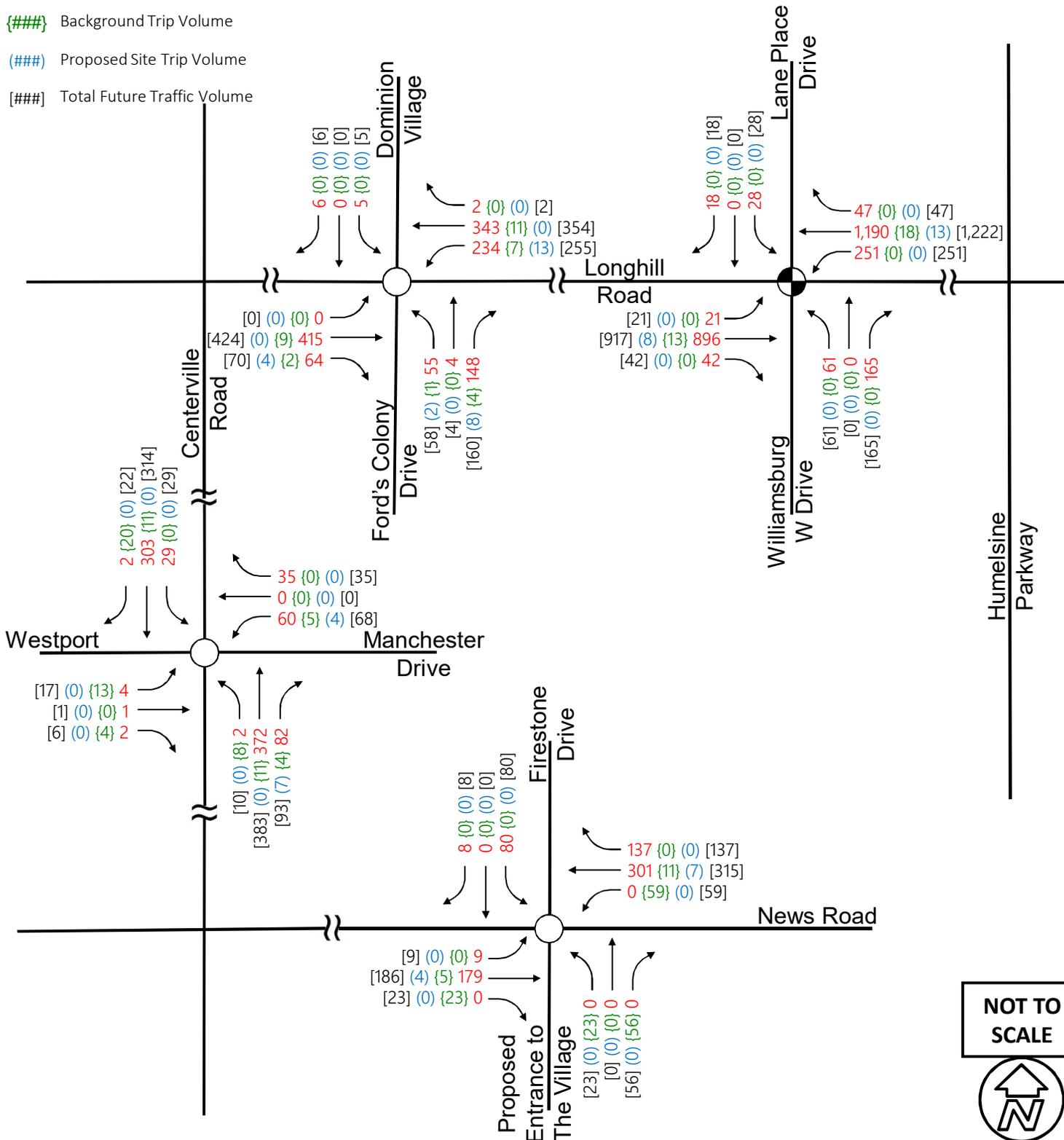
Unsignalized Intersection

### Existing Traffic Volume with Growth Rate Applied

{###} Background Trip Volume

{###} Proposed Site Trip Volume

[###] Total Future Traffic Volume



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## 7 TRAFFIC ANALYSIS

The traffic analysis for the proposed condominium/townhouse development as well as the improvements outlined in the proffers consisted of right-turn lane warrants, traffic signal warrants, and intersection operations. Analyses of study area intersections for AM and PM peak hours were performed for the following scenarios:

- 2019 Existing
- 2021 No-Build (background traffic only)
- 2021 Build (background traffic with proposed development trips)
- 2027 No-Build (background traffic only) – *Includes planned Longhill Road widening and intersection improvements currently under construction*
- 2027 Build (background traffic with proposed development trips) – *Includes planned Longhill Road widening and intersection improvements currently under construction*

The planned Longhill Road widening and intersection improvements currently under construction included in the study area are shown in **Figure 18**.

**Figure 18: Longhill Road Widening and Intersection Improvements**



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## 7.1 RIGHT-TURN LANE WARRANT

A right-turn lane warrant analysis was performed for the eastbound approach of Longhill Road at the Fords Colony Drive intersection to assess the need for a full-width exclusive right-turn treatment, as outlined by the proffers. This was conducted in accordance with VDOT right-turn-lane warrant analysis guidelines per *Appendix F Access Management Design Standards for Entrances and Intersections*. Detailed data sheets for the turn lane warrant under each scenario are provided in **Appendix D**. Based on these guidelines, **Table 6** illustrates that a full-width, right-turn lane and taper is warranted for the PM peak hour under 2021 Build, 2027 No Build, and 2027 Build scenarios.. Based on these turn-lane warrant analysis findings, it is recommended that a full width right-turn lane be constructed for the eastbound approach Longhill Road at Fords Colony Drive.

**Table 6: Summary of Right-Turn Lane Warrant Analysis for Fords Colony Drive at Longhill Road**

Scenario	Warrants Analysis	
	Right-Turn Lane Warrant	
	AM	PM
<b>Existing (2019)</b>	✓ (taper required)	✓ (taper required)
<b>No Build (2021)</b>	✓ (taper required)	✓ (taper required)
<b>Build (2021)</b>	✓ (taper required)	✓ (full-width turn lane and taper required)
<b>No Build (2027)</b>	✓ (taper required)	✓ (full-width turn lane and taper required)
<b>Build (2027)</b>	✓ (taper required)	✓ (full-width turn lane and taper required)

Notes: ✗ - Warrant not met  
 ✓ - Warrant met

## 7.2 TRAFFIC SIGNAL WARRANT ANALYSIS

Traffic signal warrant analyses were performed for the unsignalized intersection of Longhill Road at Fords Colony Drive and the unsignalized intersection of News Road at Firestone Drive, consistent with the methodologies provided in the *Manual on Uniform Traffic Control Devices (MUTCD)*, to evaluate the need for traffic signalization under existing and future traffic conditions. These warrants are based on mainline and minor street traffic volumes, the number of travel lanes, approach turn-lanes, and mainline posted speed limit. According to the MUTCD, a traffic control signal should not be installed unless one or more of the signal warrants are met. The warrants used in this analysis are as follows:

- **Warrant 1 (Eight-Hour Vehicular Volume)** - is satisfied if ONE of the following conditions exists for any eight hours of an average day:
  - Condition A (Minimum Vehicular Volume) - volumes meet or exceed the necessary hourly thresholds for any eight hours of an average day. Thresholds may be modified based on vehicle speeds and population of the local community.

- Condition B (Interruption of Continuous Traffic) - volumes meet or exceed the necessary hourly thresholds for any eight hours of an average day. Thresholds may be modified based on vehicle speeds and population of the local community.
- Combination of Condition A and B - intended to be used where Conditions A and B are not individually met and where volume thresholds may be reduced based on anticipated traffic delay at the intersection.
- **Warrant 2 (Four-Hour Vehicular Volume)** - volumes meet or exceed the necessary hourly thresholds for any four hours of an average day. Thresholds are typically higher than those for Warrant 1 and may be applicable when high traffic volumes are concentrated over a shorter time period (less than eight hours). The thresholds may also be modified based on vehicle speeds and population of the local community
- **Warrant 3 (Peak Hour Volume)** - volumes meet or exceed the necessary hourly thresholds for any one hour of an average day. This warrant should only be applied in unusual cases where an area is expected to discharge a large volume of traffic over a short period of time. Thresholds may be modified based on vehicle speeds and population of the local community.

Under each warrant analysis, existing turning movement volumes were used to determine if the volume thresholds provided in the MUTCD were met. This provides a baseline to establish the potential for needing a signal under current traffic loads. For future No-Build and Build conditions, the signal warrant analysis was performed accounting for future growth in traffic associated with and without the proposed development traffic. For the Longhill Road at Fords Colony Drive intersection, the westbound right-turn volumes were not accounted for as part of this analysis under the existing and future conditions since an exclusive right-turn lane is provided to accommodate this movement. In addition, the northbound right-turn lane volumes on Fords Colony Drive were not included in the signal warrant analysis as drivers are utilizing the 24-foot pavement width to turn right as other vehicles are stopped for the through or left-turn movements. For the News Road at Firestone Drive intersection, the southbound and westbound right-turn vehicles were not accounted for as part of this analysis under the existing conditions. In addition, the northbound right-turn vehicles were not included as part of this analysis for the Villages driveway under the future conditions.

To assign the hourly site traffic for the future warrant analysis, all assumptions and methods (i.e., trip generation, pass-by reduction, distribution, background traffic growth, other development traffic) were followed, with an additional step of applying hourly variations to the daily trip generation total. The hourly variation breakdown for Multifamily Housing (Low-Rise) (220), as provided in the ITE Trip Generation Manual, were used for this purpose, as shown in **Table 7**.

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**Table 7: Hourly Variations in Residential Traffic**

Time	Average Weekday	
	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic
6 am – 7 am	1.6%	5.7%
7 am – 8 am	2.5%	9.0%
8 am – 9 am	3.7%	9.1%
9 am – 10 am	3.7%	6.5%
10 am – 11 am	4.1%	5.5%
11 am – 12 pm	4.5%	5.7%
12 pm – 1 pm	5.3%	5.3%
1 pm – 2 pm	5.4%	5.7%
2 pm – 3 pm	6.5%	5.9%
3 pm – 4 pm	8.1%	6.3%
4 pm – 5 pm	9.8%	6.3%
5 pm – 6 pm	10.8%	6.5%

Source: ITE Trip Generation Manual, 10<sup>th</sup> Edition

The results of the signal warrant analyses are provided in **Table 8** and **Table 9**, with complete tables outlining the traffic volumes used, in **Appendix D**.

**Table 8: Summary of Warrant Analysis for Longhill Road at Fords Colony Drive**

Scenario	Warrants Analysis				
	Warrant 1 (8 Hour)			Warrant 2 (4 Hour)	Warrant 3 (1 Hour)
	Condition A	Condition B	Combination (A & B)		
<b>Existing (2019)</b>	✗ (0 out of 8)	✗ (4 out of 8)	✗ (0 out of 8)	✗	✗
<b>No Build (2021)</b>	✗ (0 out of 8)	✗ (6 out of 8)	✗ (0 out of 8)	✗	✗
<b>Build (2021)</b>	✗ (0 out of 8)	✓	✗ (1 out of 8)	✗	✗
<b>No Build (2027)</b>	✗ (0 out of 8)	✓	✗ (1 out of 8)	✓	✗
<b>Build (2027)</b>	✗ (0 out of 8)	✓	✗ (3 out of 8)	✓	✗

Notes: ✗ - Warrant not met

✓ - Warrant met

(# out of 8) – Number of hours that could meet the 8-hour warrant requirement

The warrant analysis for the Longhill Road at Fords Colony Drive intersection indicate that under the Existing and No Build future scenarios, Condition A, Condition B, and the Combination (A & B) Condition were not met except for the 2021 Build, 2027 No Build, and Build models, where Condition B was met.

Warrant 2 (4-hour volume) was not met under Existing and 2021 future scenarios for the Longhill Road at Fords Colony Drive intersection but was met for 2027 No Build and Build scenarios. From the warrant analysis, the traffic volumes on Longhill Road did not meet the minimum thresholds under Condition A and a maximum of 3 out of 8 volumes were met for the Combination Warrant. Since the intersection does not meet both Warrant 1 Condition A and Condition B or the Combination as well as low demand on Longhill Road, the traffic signal is not warranted and not recommended for further consideration as a part of the Fords Colony Master Plan.

**Table 9: Summary of Warrant Analysis for News Road at Firestone Drive**

Scenario	Warrants Analysis				
	Warrant 1 (8 Hour)			Warrant 2 (4 Hour)	Warrant 3 (1 Hour)
	Condition A	Condition B	Combination (A & B)*		
<b>Existing (2019)</b>	✗ (0 out of 8)	✗ (0 out of 8)	✗ (0 out of 8)	✗	✗
<b>No Build (2021)</b>	✗ (1 out of 8)	✗ (0 out of 8)	✗ (3 out of 8)	✗	✗
<b>Build (2021)</b>	✗ (1 out of 8)	✗ (0 out of 8)	✗ (3 out of 8)	✗	✗
<b>No Build (2027)</b>	✗ (6 out of 8)	✗ (3 out of 8)	✗ (6 out of 8)	✗	✗
<b>Build (2027)</b>	✗ (6 out of 8)	✗ (3 out of 8)	✗ (7 out of 8)	✗	✗

Notes: ✗ - Warrant not met

✓ - Warrant met

(# out of 8) – Number of hours that could meet the 8-hour warrant requirements

The warrant analysis for the News Road at Firestone Drive indicated that under existing, No Build future, and Build future scenarios, conditions for Warrant 1 were not met. Under these scenarios, traffic generated by the current developments in Ford's Colony and approved developments were not high enough to meet the volume thresholds. Additionally, the 4-hour volume warrant was not met under existing conditions the News Road at Firestone Drive intersection. When taking into consideration the future site traffic generated by the background development and proposed residential condominium/townhouse development, a traffic signal is not warranted at the intersection for News Road at Firestone Drive.

### 7.3 PROFFER SCHEDULE OF IMPROVEMENTS

In addition to the turn lane and signal warrant analyses, the proffers identified the schedule of improvements based on the number of residential building permits when the hotel was or was not built. Since the hotel has not been constructed, the number of remaining undeveloped parcels was identified as 399 undeveloped within Ford's Colony out of the total 3,250 parcels identified from the previously completed TIS. The 399 undeveloped units consist of the following:

- 295 platted, unbuilt lots
- 60 un-platted Eaglescliff development lots
- 30 un-platted Windsor development lots

- 14 un-platted Brian Ford's property lots

Therefore, 2,841 parcels have been developed to date. **Table 10** illustrates the schedule of improvements, satisfaction of schedule, and construction of improvements.

Under Proffer Item A, the Longhill Road at Fords Colony Drive intersection satisfies the number of units, but the intersection of News Road at Firestone Drive does not satisfy the number of units. The Proffer Item E improvement is satisfied by the number of units constructed. Although several of the schedule of improvements are satisfied by the number of units, traffic operations and warrant analyses results proceed this schedule of improvements as the traffic operations are acceptable and warrants are not met for signalization.

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Table 10: Proffered Improvements Triggered by Ford's Colony Permits

Proffer Item	Proffer Improvement	Residential Building Permits if Hotel Not Built	Number of Units Constructed	Number of Units Satisfied	Improvement Constructed	Improvement for Full Build Out (3,250 Units)
<b>A. Installation of Traffic Signals</b>						
i	Longhill Road at Williamsburg W. Drive	2,236	2,851	✓	✓	-
ii	News Road at Firestone Drive	3,250	2,851	✗	✗	✗
iii	Longhill Road at Fords Colony Drive	947	2,851	✓	✗	✗
<b>B. Installation of Left and Right-Turn Lanes</b>						
i	News Road at Firestone Drive (Left-Turn)	2,603	2,851	✓	✓	-
	News Road at Firestone Drive (Right-Turn)		2,851	✓	✓	-
ii	Centerville Road at Manchester Drive (Left-Turn)	947	2,851	✓	✓	-
	Centerville Road at Manchester Drive (Right-Turn)		2,851	✓	✓	-
<b>C. Construct Williamsburg W. Drive</b>						
i.	Establish right-of-way for four-lane road to Longhill Road	1,545	2,851	✓	✓	-
ii.	Construct two-lane private road Williamsburg W. Drive to Longhill Road	1,545	2,851	✓	✓	-
iii.	If VDOT does not permit construction of an intersection with Route 199 as set forth in paragraph below, widen the initial two-lane road to a four-lane road	2,928	2,851	✗	✗	✗
<b>D. Longhill Road at Williamsburg W. Drive Intersection Improvements</b>						
i.	Construct intersection of Williamsburg W. Drive and Longhill Road with: Right-turn lane on Williamsburg W. Drive onto Longhill Road; Right turn-lane on Longhill Road onto Williamsburg W. Drive; and left-turn lane on Longhill Road onto Williamsburg W. Drive	1,545	2,851	✓	✓	-
ii.	Add two through lanes on Longhill Road	2,603	2,851	✓	Under construction	-
iii.	Add lane for dual left-turn lanes on westbound Longhill Road onto Williamsburg W. Drive	2,928	2,851	✓	✗	✗
iv.	Add lane for dual right-turn on Williamsburg W. Drive onto Longhill Road	3,250	2,851	✗	✗	✗
<b>E. Installation of right-turn lane on Longhill Road onto Ford's Colony Drive</b>						
		947	2,851	✓	✗	✓

## 7.4 INTERSECTION OPERATIONAL ANALYSIS

Operational analyses were conducted for the study area intersections for the AM and PM peak hours under the existing and future scenarios. The existing signal timings, including cycle lengths, clearance intervals, and splits, were provided by VDOT. Under 2019 No Build and Build conditions, all signal timings, coordination offsets, and phasing were optimized. Additionally, splits were generally kept similar between scenario as well, with only minor changes made to compensate for additional site traffic.

In addition, the peak hour factor (PHF) used for the existing (2019) conditions represents the actual PHF based on recent traffic count data. Per VDOT's Traffic Operations and Safety Analysis Manual (TOSAM) guidance, PHFs less than 0.92 should be adjusted up to 0.92 for all future analyses. Therefore, under future conditions, the intersections with PHFs less than 0.92 were adjusted up to 0.92 for this purpose of this study.

Analyses were completed to determine the operating characteristics of the study area intersections using *Synchro Professional 10.0* modeling software, which uses methodologies contained in the 2010 Highway Capacity Manual (HCM) [TRB Special Report 209, 2000]. The intersection operational analysis inputs and analysis methodologies were consistent with VDOT's TOSAM. Intersection turning movement counts were used with information about the number of lanes, current traffic control, and signal timings to determine the operational conditions of each study area intersection. Level of service (LOS) is reported for each of the study area intersections.

LOS describes the amount of traffic congestion at an intersection or on a roadway and ranges from A to F (A indicating a condition of little to no congestion and F a condition with severe congestion, unstable traffic flow, and stop-and-go conditions). LOS is based on the average delay experienced by all traffic using the intersection during the busiest (peak) 15-minute period. Generally, LOS A through LOS D are considered acceptable. Delay and associated LOS for both signalized and unsignalized intersections are reported from the Synchro analysis. In the LOS/delay tables for each of the study area intersections, values highlighted in "bold" represent movements operating at LOS E or worse. **Table 11** shows the corresponding thresholds in delay for unsignalized and signalized intersections.

The queuing results represent the maximum simulated queues for each movement as they compare to the effective storage lengths. Effective storage lengths represent the amount of distance available to vehicles to queue without generally impacting the adjacent lanes and consist of the full width storage, plus half of the taper distance. By using the effective storage, vehicles that can use a portion of the taper length as additional room for storage can be accounted for. All traffic models were developed and analyzed with the effective storage lengths coded into the network. Values highlighted as "bold" represent queue lengths that exceed the available storage lengths/spill back to an upstream intersection. As part of the queuing analysis, "percent blocking" was noted in instances where queues impact adjacent turn-and/or through-lanes. This percentage represents the approximate amount of time during the peak hour when a lane was observed to be blocked (e.g., "10% blocking" indicates that during the peak hour, the turn-lane storage was exceeded and impacted 10 percent of the adjacent lane volume). The results are presented in the following summaries and supporting calculations are presented in **Appendix E**.

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**Table 11: LOS Control Delay Thresholds**

LOS	Signalized Intersections Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections Average Control Delay [sec/veh]	Relative Delay
A	≤ 10	≤ 10	Short Delays
	Free-flow traffic operations at average travel speeds. Vehicles completely unimpeded in ability to maneuver. Minimal delay at signalized intersections.		
B	> 10 – 20	> 10 – 15	
	Reasonably unimpeded traffic operations at average travel speeds. Vehicle maneuverability slightly restricted. Low traffic delays.		
C	> 20 – 35	> 15 – 25	
	Stable traffic operations. Lane changes becoming more restricted. Travel speeds reduced to half of average free flow travel speeds. Longer intersection delays.		
D	>35 – 55	> 25 – 35	Moderate Delays
	Small increases in traffic flow can cause increased delays. Delays likely attributable to increase traffic, reduced signal progression and adverse timing.		
E	>55 – 80	> 35 – 50	
	Significant delays. Travel speeds reduced to one third of average free flow travel speed.		
F	> 80	> 50	Long Delays
	Extremely low speeds. Intersection congestion. Long delays. Extensive traffic queues at intersections.		

Source: *Highway Capacity Manual*, Transportation Research Board, Washington, D.C., 2010

The following sections summarizes each study area intersection’s operations as it relates to vehicle traffic demand for the analysis scenarios. Results are presented in **Table 12** through **Table 19** and **Figure 19** through **Figure 28**.

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## 7.4.1 LONGHILL ROAD AT WILLIAMSBURG W. DRIVE/LANE PLACE DRIVE

Results of the capacity and queuing analysis for this signalized intersection are shown in **Table 12** and **Table 13**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall intersection LOS D or better with individual movements also expected to operate at LOS D or better. The overall intersection LOS improves to LOS C or better under 2027 No-Build and Build conditions due to the Longhill Road widening improvements.

Queuing results indicate that the intersection does not currently, nor is it projected to experience significant queuing or blocking. **Table 13** does show that the westbound left-turn and right-turn lanes have the potential to periodically meet or exceed its available storage length during the PM peak hour under 2019 Existing, 2021 No Build, and 2021 Build conditions. However, this is attributed to the adjacent through-lane stacking up and blocking access to this turn lane, and not due to the capacity of the turn lane. It has been observed with the SimTraffic software, that maximum queues can be recorded when vehicles are blocked from being able to enter a turn lane, because as soon as a vehicle is able to enter the turn lane, it meets the speed thresholds that the software uses to record maximum queue, which always happens at the back of the turn lane (i.e., 250 feet in this case).

**Table 12: Longhill Road at Williamsburg W. Drive/Lane Place Drive Intersection Level of Service**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM Peak Hour</b>													
2019 Existing	C (28.5)	A (9.8)	C (33.7)	B (10.9)	B (17.9)	B (14.5)	A (9.4)	D (39.7)	D (38.5)	D (44.0)			
		C (33.0)			B (14.6)			D (38.7)			D (44.0)		
2021 No Build	C (27.8)	A (9.3)	C (33.0)	B (10.1)	B (17.2)	B (14.1)	A (9.0)	D (38.0)	D (37.5)	D (44.8)			
		C (32.3)			B (14.1)			D (37.6)			D (44.8)		
2021 Build	C (28.9)	A (9.4)	D (35.2)	B (10.1)	B (17.7)	B (14.1)	A (9.0)	D (38.0)	D (37.6)	D (44.8)			
		C (34.5)			B (14.2)			D (37.7)			D (44.8)		
2027 No Build	C (21.0)	B (10.8)	B (19.1)	B (13.0)	B (12.7)	B (13.8)	B (11.2)	C (32.5)	D (35.2)	D (47.2)			
		B (18.9)			B (13.6)			D (34.7)			D (47.2)		
2027 Build	C (21.1)	B (10.8)	B (19.2)	B (12.9)	B (12.8)	B (13.8)	B (11.2)	C (32.6)	D (35.5)	D (47.5)			
		B (19.0)			B (13.6)			D (35.0)			D (47.5)		
<b>PM Peak Hour</b>													
2019 Existing	C (31.2)	C (20.46)	C (26.0)	B (10.8)	C (25.7)	D (36.1)	A (7.9)	D (40.9)	D (39.0)	D (42.9)			
		C (25.2)			C (33.5)			D (39.5)			D (42.9)		
2021 No Build	D (41.2)	C (22.3)	C (29.2)	B (10.9)	D (48.6)	D (51.4)	A (7.6)	D (42.4)	D (40.1)	D (44.4)			
		C (28.3)			D (49.5)			D (40.7)			D (44.4)		
2021 Build	D (43.0)	C (22.4)	C (29.6)	B (10.9)	D (52.4)	D (54.2)	A (7.5)	D (42.6)	D (40.2)	D (44.6)			
		C (28.7)			D (52.4)			D (40.9)			D (44.6)		
2027 No Build	B (17.3)	A (9.0)	B (17.7)	B (12.6)	B (14.4)	B (13.3)	A (8.1)	D (39.3)	D (37.3)	D (42.7)			
		B (17.3)			B (13.4)			D (37.8)			D (42.7)		
2027 Build	B (17.3)	A (9.1)	B (17.7)	B (12.6)	B (14.6)	B (13.4)	A (8.1)	D (39.4)	D (37.4)	D (42.8)			
		B (17.3)			B (13.5)			D (38.0)			D (42.8)		

**Table 13: Longhill Road at Williamsburg W. Drive/Lane Place Drive Maximum Queuing**

Scenario	Maximum Queue Length by Movement (feet)											
	Eastbound			Westbound			Northbound			Southbound		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Effective Storage Length	250	Cont.	225	250	Cont.	250*	Cont.			225	Cont.	
<b>AM Peak Hour</b>												
2019 Existing	69	479	164	81	230	41	92	120			112	
2021 No Build	46	563	205	67	206	51	93	133			115	
2021 Build	66	561	187	65	217	49	92	141			124	
2027 No Build	27	233	67	78	157	55	94	168			132	
2027 Build	49	264	29	67	166	44	98	167			124	
<b>PM Peak Hour</b>												
2019 Existing	148	519	206	<b>250</b>	763	<b>690</b>	97	109			81	
2021 No Build	167	562	224	<b>250</b>	772	<b>777</b>	115	83			88	
2021 Build	209	553	204	<b>250</b>	784	<b>777</b>	140	87			83	
2027 No Build	59	238	33	211	251	73	109	110			90	
2027 Build	69	262	53	215	244	115	128	103			88	

Notes: Results displayed are the average results across 10 microsimulation runs

\*denotes the No Build and Build effective storage length associated with the Longhill Road widening

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#### 7.4.2 LONGHILL ROAD AT FORDS COLONY DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 14** and **Table 15**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience an overall intersection LOS B or better with all movements at LOS D or better with the exception of the following movements/approaches:

- AM Peak Hour
  - 2019 Existing – Northbound Approach (LOS E)
  - 2027 No Build - Northbound Approach (LOS F)
  
- PM Peak Hour
  - 2021 No Build – Northbound Approach (LOS E)
  - 2027 No Build – Northbound Approach (LOS F)/Southbound Approach (LOS E)
  - 2027 Build – Northbound Approach (LOS E)/Southbound Approach (LOS E)

Restriping the northbound approach noticeably improves operations under the future 2027 No Build conditions from LOS F during the AM and PM peak hours to LOS D and LOS E respectively, under the 2027 Build conditions. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues. Based on these operational conditions (i.e., existing and future) the existing two-way STOP configuration provides sufficient traffic control for this intersection.

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**Table 14: Longhill Road at Fords Colony Drive Intersection Level of Service**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM Peak Hour</b>													
2019 Existing	A (8.9)	A (7.9)	A (0.0)		A (8.6)	A (0.0)	A (0.0)	<b>E (35.5)</b>			C (22.2)		
		A (0.1)			A (2.4)			<b>E (35.5)</b>			C (22.2)		
2021 No Build	A (7.8)	A (7.9)	A (0.0)		A (8.5)	A (0.0)	A (0.0)	D (30.1)			C (21.0)		
		A (0.1)			A (2.4)			D (30.1)			C (21.0)		
2021 Build	A (5.6)	A (7.9)	A (0.0)	A (0.0)	A (8.5)	A (0.0)	A (0.0)	C (19.2)		A (0.0)	C (21.3)		
		A (0.1)			A (2.5)			C (19.2)		C (21.3)			
2027 No Build	B (13.5)	A (8.0)	A (0.0)		A (8.7)	A (0.0)	A (0.0)	<b>F (55.5)</b>			C (24.4)		
		A (0.1)			A (2.5)			<b>F (55.5)</b>			C (24.4)		
2027 Build	A (7.1)	A (8.0)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)	D (25.9)		A (0.0)	C (24.8)		
		A (0.1)			A (2.5)			D (25.9)		C (24.8)			
<b>PM Peak Hour</b>													
2019 Existing	A (6.5)	A (0.0)	A (0.0)		A (8.9)	A (0.0)	A (0.0)	D (28.8)			C (24.5)		
		A (0.0)			A (3.6)			D (28.8)			C (24.5)		
2021 No Build	B (8.3)	A (0.0)	A (0.0)		A (9.2)	A (0.0)	A (0.0)	<b>E (39.7)</b>			D (28.3)		
		A (0.0)			A (3.7)			<b>E (39.7)</b>			D (28.3)		
2021 Build	A (6.1)	A (0.0)	A (0.0)	A (0.0)	A (9.3)	A (0.0)	A (0.0)	C (24.7)		A (0.0)	D (27.3)		
		A (0.0)			A (3.9)			C (24.7)		D (27.3)			
2027 No Build	B (17.0)	A (0.0)	A (0.0)		A (9.6)	A (0.0)	A (0.0)	<b>F (92.0)</b>			E (39.8)		
		A (0.0)			A (3.9)			<b>F (92.0)</b>			E (39.8)		
2027 Build	A (8.6)	A (0.0)	A (0.0)	A (0.0)	A (9.7)	A (0.0)	A (0.0)	<b>E (38.8)</b>		A (0.0)	E (37.7)		
		A (0.0)			A (4.0)			<b>E (38.8)</b>		E (37.7)			

**Table 15: Longhill Road at Fords Colony Drive Maximum Queuing**

Scenario	Maximum Queue Length by Movement (feet)												
	Eastbound			Westbound			Northbound			Southbound			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Effective Storage Length	200	Cont.		225	Cont.	150	Cont.		175*	Cont.			
<b>AM Peak Hour</b>													
2019 Existing	14	10		70	0	0	192			6			
2021 No Build	5	22		77	0	0	209			14			
2021 Build	9	8	0	103	0	0	115		93	14			
2027 No Build	7	19		84	0	0	291			5			
2027 Build	16	4	8	87	0	0	196		132	9			
<b>PM Peak Hour</b>													
2019 Existing	0	21		88	4	0	156			17			
2021 No Build	0	33		105	0	0	246			22			
2021 Build	0	2	17	125	0	0	155		106	26			
2027 No Build	0	32		138	0	0	500			26			
2027 Build	0	5	19	134	0	0	357		156	24			

Notes: Results displayed are the average results across 10 microsimulation runs  
 \*denotes the Build effective storage length associated with the Fords Colony Drive widening

### 7.4.3 CENTERVILLE ROAD AT MANCHESTER DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 16** and **Table 17**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience movements with LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

**Table 16: Centerville Road at Manchester Drive Intersection Level of Service**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)												
		Eastbound			Westbound			Northbound			Southbound			
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
<b>AM Peak Hour</b>														
2019 Existing	A (2.8)	C (16.0)			C (19.7)	B (11.0)			A (7.7)	A (0.0)	A (0.0)	A (8.6)	A (0.0)	A (0.0)
		C (16.0)			C (15.7)			A (0.0)			A (1.6)			
2021 No Build	A (3.5)	C (18.7)			C (22.2)	B (11.2)			A (7.8)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)
		C (18.7)			C (17.2)			A (0.1)			A (1.6)			
2021 Build	A (3.6)	C (18.7)			C (22.6)	B (11.2)			A (7.8)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)
		C (18.7)			C (17.5)			A (0.1)			A (1.6)			
2027 No Build	A (4.1)	C (22.6)			D (29.4)	B (11.9)			A (7.9)	A (0.0)	A (0.0)	A (9.0)	A (0.0)	A (0.0)
		C (22.6)			C (21.3)			A (0.1)			A (1.7)			
2027 Build	A (4.2)	C (22.7)			D (29.9)	B (11.9)			A (7.9)	A (0.0)	A (0.0)	A (9.0)	A (0.0)	A (0.0)
		C (22.7)			C (21.7)			A (0.1)			A (1.7)			
<b>PM Peak Hour</b>														
2019 Existing	A (1.9)	B (13.5)			C (15.9)	B (10.3)			A (7.7)	A (0.0)	A (0.0)	A (8.1)	A (0.0)	A (0.0)
		B (13.5)			B (13.8)			A (0.0)			A (0.7)			
2021 No Build	A (2.4)	C (15.6)			C (18.2)	B (10.5)			A (7.9)	A (0.0)	A (0.0)	A (8.5)	A (0.0)	A (0.0)
		C (15.6)			C (15.5)			A (0.2)			A (0.7)			
2021 Build	A (2.4)	C (15.6)			C (18.4)	B (10.5)			A (7.9)	A (0.0)	A (0.0)	A (8.5)	A (0.0)	A (0.0)
		C (15.6)			C (15.7)			A (0.2)			A (0.7)			
2027 No Build	A (2.6)	C (17.9)			C (22.0)	B (10.9)			A (8.0)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)
		C (17.9)			C (18.1)			A (0.2)			A (0.7)			
2027 Build	A (2.7)	C (17.9)			C (22.5)	B (10.9)			A (8.0)	A (0.0)	A (0.0)	A (8.7)	A (0.0)	A (0.0)
		C (17.9)			C (18.5)			A (0.2)			A (0.7)			

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**Table 17: Centerville Road at Manchester Drive Maximum Queuing**

Scenario	Maximum Queue Length by Movement (feet)												
	Eastbound			Westbound			Northbound			Southbound			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Effective Storage Length	Cont.			Cont.	140		190	Cont.	325		190	Cont.	325
<b>AM Peak Hour</b>													
2019 Existing	30			60	54		8	0	0		64	0	0
2021 No Build	45			72	52		9	0	0		60	0	0
2021 Build	47			68	55		7	2	0		64	0	0
2027 No Build	47			69	58		10	2	5		72	0	0
2027 Build	51			77	56		8	2	4		69	0	0
<b>PM Peak Hour</b>													
2019 Existing	28			42	46		4	0	0		30	0	0
2021 No Build	40			56	46		16	0	0		50	0	0
2021 Build	39			58	47		16	0	0		53	0	0
2027 No Build	38			70	46		14	0	0		54	0	0
2027 Build	42			63	49		19	0	0		49	0	2

Notes: Results displayed are the average results across 10 microsimulation runs

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## 7.4.4 NEWS ROAD AT FIRESTONE DRIVE

Results of the capacity and queuing analysis for this unsignalized intersection are shown in **Table 18** and **Table 19**. Under existing and future conditions, the AM and PM peak hours are anticipated to experience movements with LOS C or better. Queuing results also indicate that the intersection is not projected to experience significant queuing or blocking issues.

**Table 18: News Road at Firestone Drive Intersection Level of Service**

Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh) AM Peak Hour											
		Eastbound			Westbound			Northbound			Southbound		
		LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM Peak Hour</b>													
2019 Existing	A (2.6)	A (7.8)	A (0.0)	-	-	A (0.0)	A (0.0)	-	-	-	B (11.2)	-	A (0.0)
		A (0.4)			A (0.0)			-			B (11.2)		
2021 No Build	A (4.0)	A (7.8)	A (0.0)	-	A (7.8)	A (0.0)	-	-	B (10.5)	A (0.0)	B (14.2)	-	A (0.0)
		A (0.3)			A (1.1)			B (10.5)			B (14.2)		
2021 Build	A (4.0)	A (7.8)	A (0.0)	-	A (7.8)	A (0.0)	-	-	B (10.6)	A (0.0)	B (14.2)	-	A (0.0)
		A (0.3)			A (1.1)			B (10.6)			B (14.2)		
2027 No Build	A (4.1)	A (7.9)	A (0.0)	-	A (7.9)	A (0.0)	-	-	B (10.8)	A (0.0)	C (15.5)	-	A (0.0)
		A (0.4)			A (1.0)			B (10.8)			C (15.5)		
2027 Build	A (4.1)	A (7.9)	A (0.0)	-	A (7.9)	A (0.0)	-	-	B (10.9)	A (0.0)	C (15.6)	-	A (0.0)
		A (0.4)			A (1.0)			B (10.9)			C (15.6)		
<b>PM Peak Hour</b>													
2019 Existing	A (1.6)	A (8.1)	A (0.0)	-	-	A (0.0)	A (0.0)	-	-	-	B (12.0)	-	A (0.0)
		A (0.4)			A (0.0)			-			B (12.0)		
2021 No Build	A (3.5)	A (8.4)	A (0.0)	-	A (7.7)	A (0.0)	-	-	B (11.1)	A (0.0)	C (18.6)	-	A (0.0)
		A (0.3)			A (1.0)			B (11.1)			C (18.6)		
2021 Build	A (3.5)	A (8.5)	A (0.0)	-	A (7.7)	A (0.0)	-	-	B (11.2)	A (0.0)	C (18.9)	-	A (0.0)
		A (0.3)			A (1.0)			B (11.2)			C (18.9)		
2027 No Build	A (3.7)	A (8.6)	A (0.0)	-	A (7.8)	A (0.0)	-	-	B (11.5)	A (0.0)	C (21.0)	-	A (0.0)
		A (0.3)			A (0.9)			B (11.5)			C (21.0)		
2027 Build	A (3.7)	A (8.6)	A (0.0)	-	A (7.8)	A (0.0)	-	-	B (11.5)	A (0.0)	C (21.4)	-	A (0.0)
		A (0.3)			A (0.9)			B (11.5)			C (21.4)		

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**Table 19: News Road at Firestone Drive Maximum Queuing**

Scenario	Maximum Queue Length by Movement (feet)												
	Eastbound			Westbound			Northbound			Southbound			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Effective Storage Length	225	Cont.		225	Cont.		300	Cont.			150	Cont.	
<b>AM Peak Hour</b>													
2019 Existing	40	0	-	-	4	0	-	-	-	69	-	31	
2021 No Build	28	0		31	0		40	54		82	33		
2021 Build	30	0		28	0		40	54		71	33		
2027 No Build	28	0		26	0		38	54		79	33		
2027 Build	37	0		26	0		36	52		82	37		
<b>PM Peak Hour</b>													
2019 Existing	27	0	-	-	0	5	-	-	-	71	-	31	
2021 No Build	35	1		34	4		57	68		76	33		
2021 Build	33	1		34	0		49	59		87	32		
2027 No Build	37	0		32	0		52	67		99	33		
2027 Build	44	0		37	6		54	54		94	33		

Notes: Results displayed are the average results across 10 microsimulation runs

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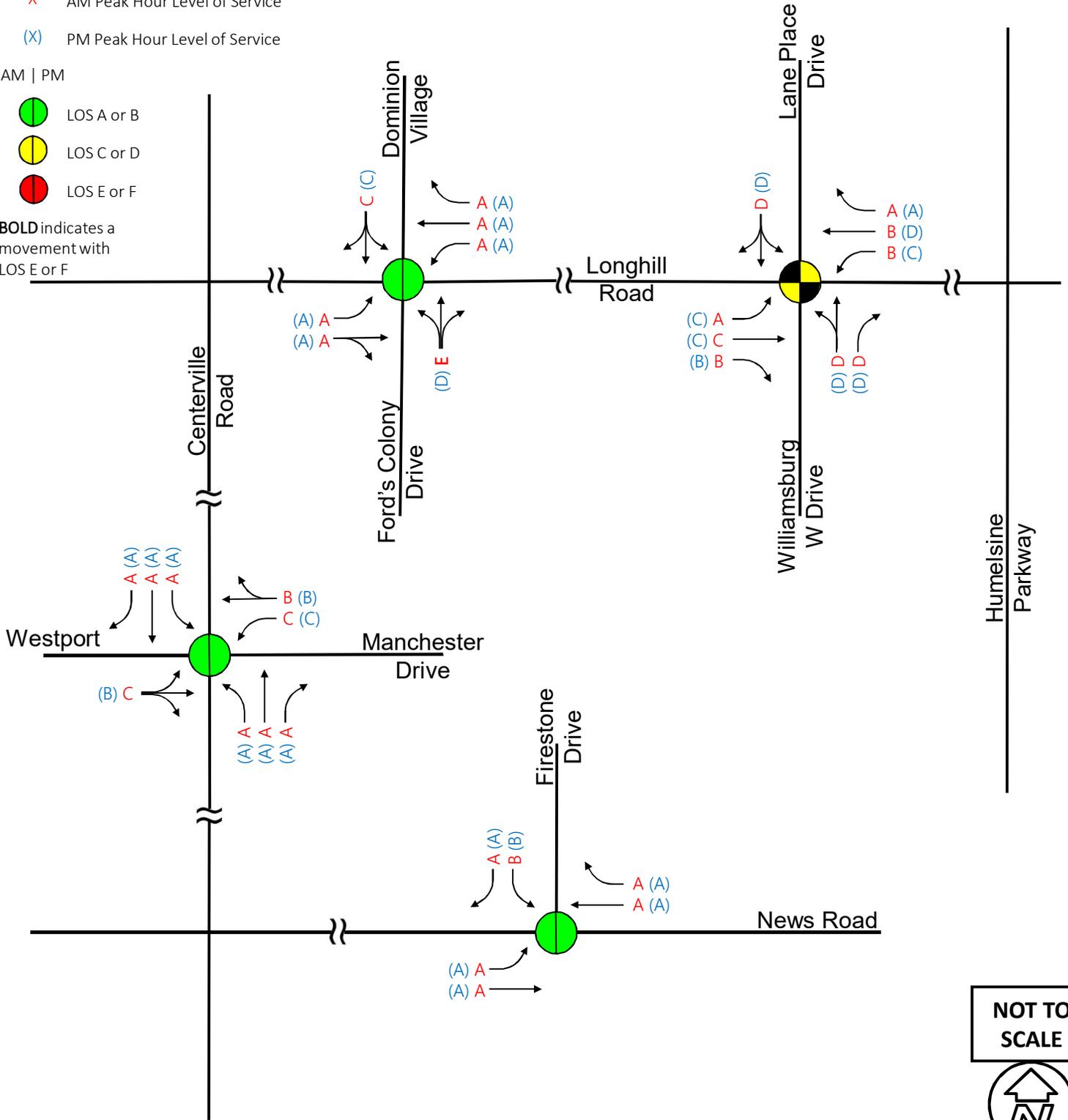
**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment
-  AM Peak Hour Level of Service
-  PM Peak Hour Level of Service

AM | PM

-  LOS A or B
-  LOS C or D
-  LOS E or F

**BOLD** indicates a movement with LOS E or F



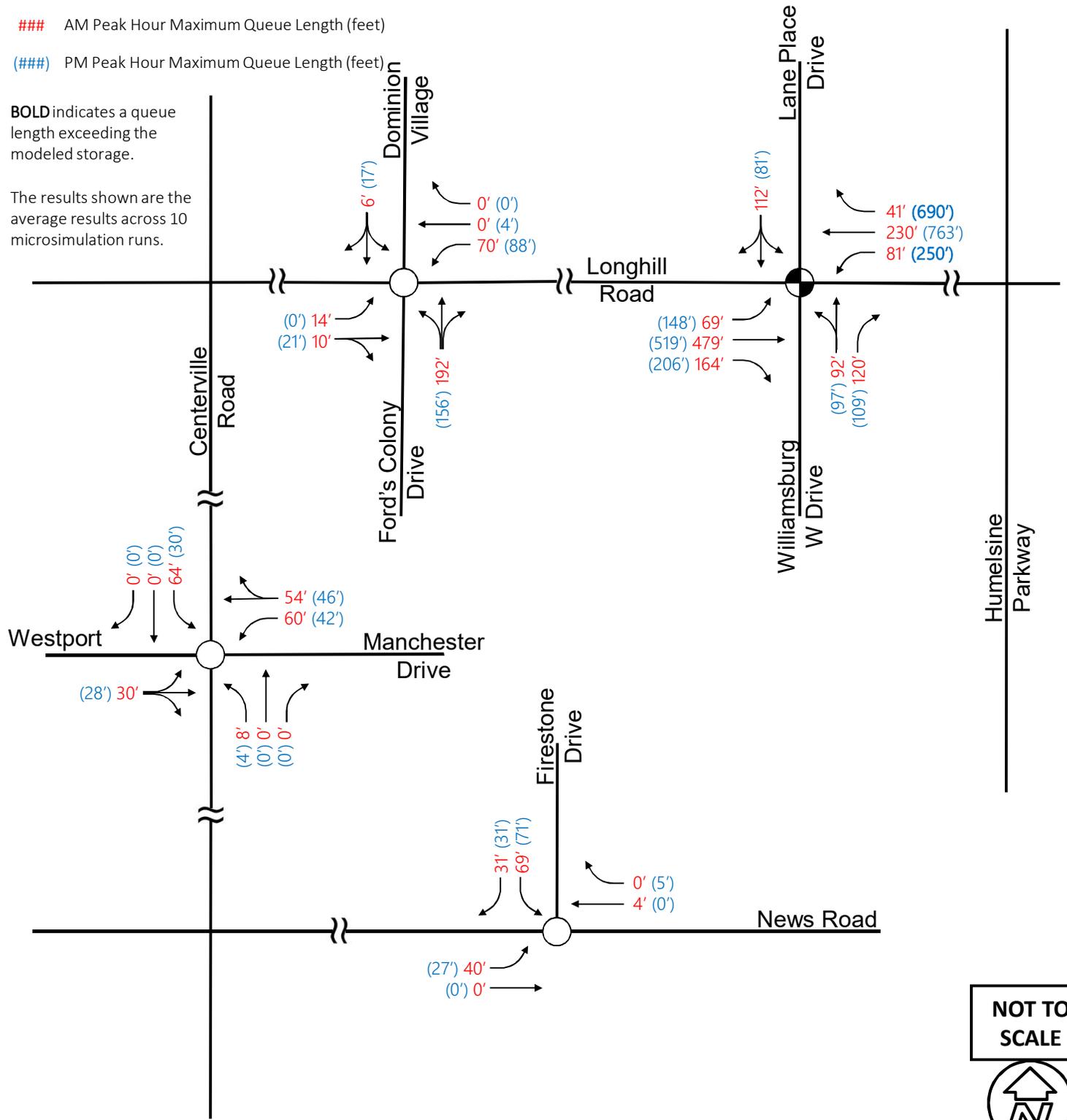
**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment

### AM Peak Hour Maximum Queue Length (feet)  
 (###) PM Peak Hour Maximum Queue Length (feet)

**BOLD** indicates a queue length exceeding the modeled storage.

The results shown are the average results across 10 microsimulation runs.



**NOT TO SCALE**



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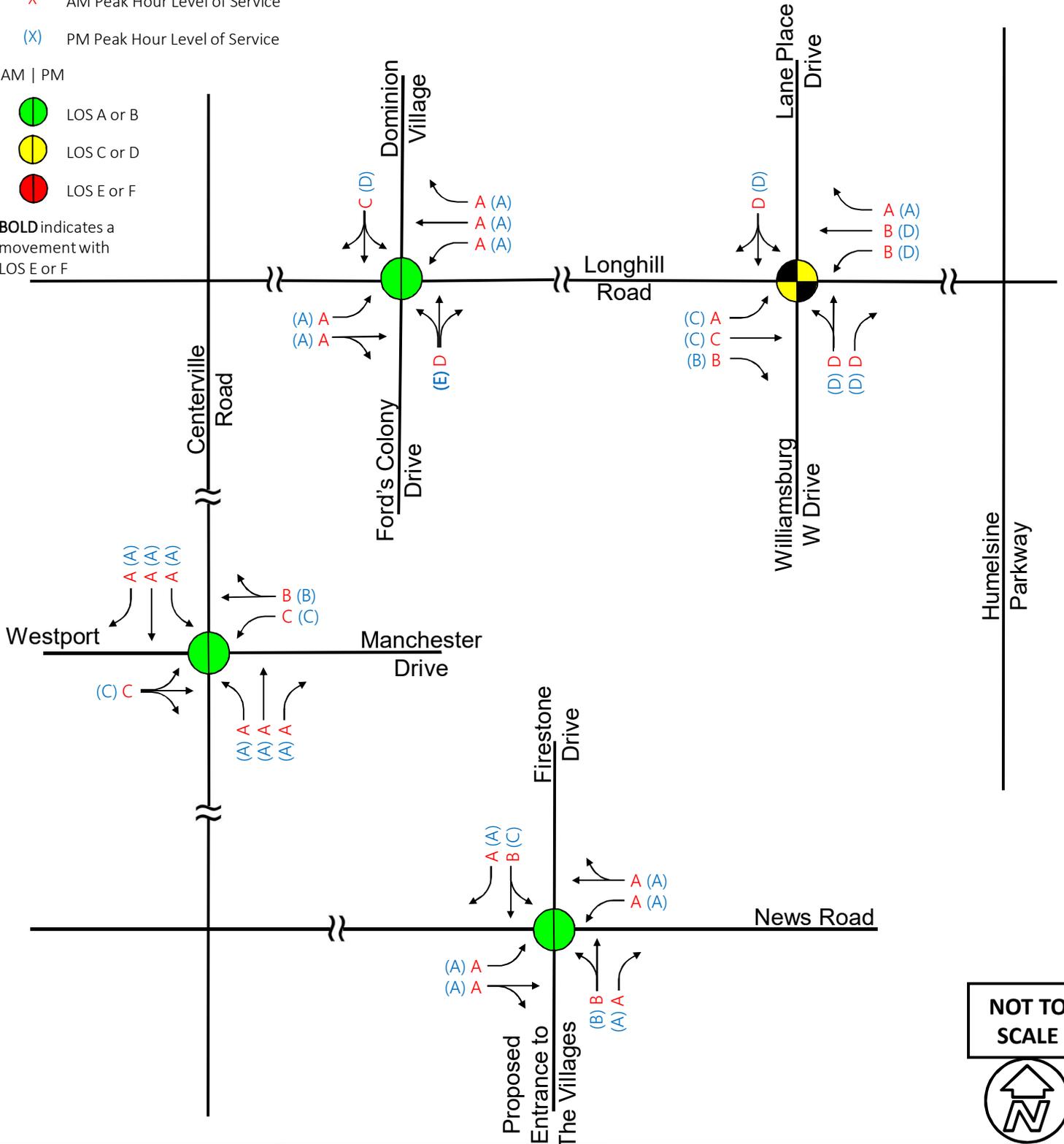
**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment
- X** AM Peak Hour Level of Service
- (X)** PM Peak Hour Level of Service

AM | PM

-  LOS A or B
-  LOS C or D
-  LOS E or F

**BOLD** indicates a movement with LOS E or F



**NOT TO SCALE**



**Legend**

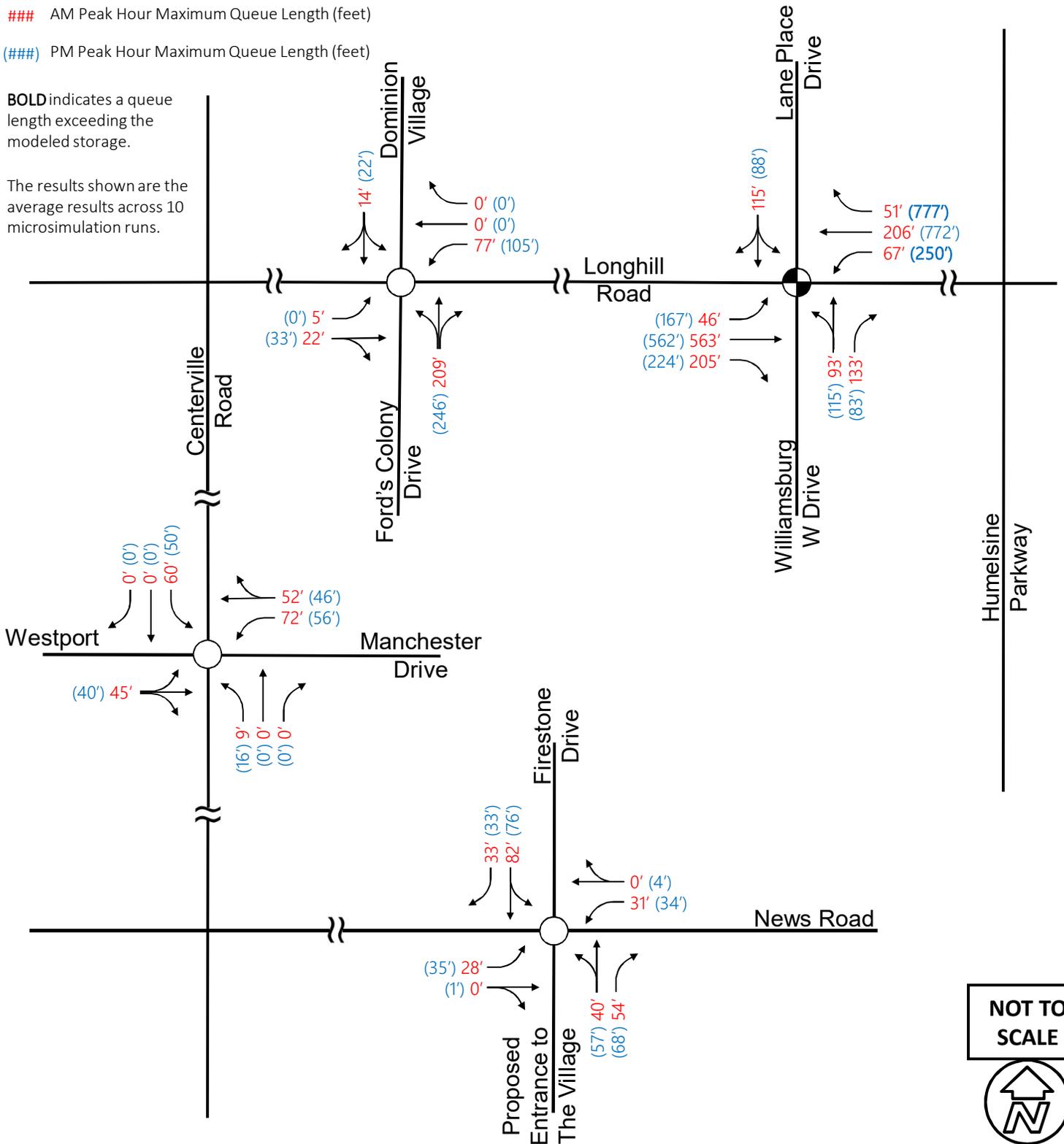
-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment

### AM Peak Hour Maximum Queue Length (feet)

(###) PM Peak Hour Maximum Queue Length (feet)

**BOLD** indicates a queue length exceeding the modeled storage.

The results shown are the average results across 10 microsimulation runs.



**NOT TO SCALE**



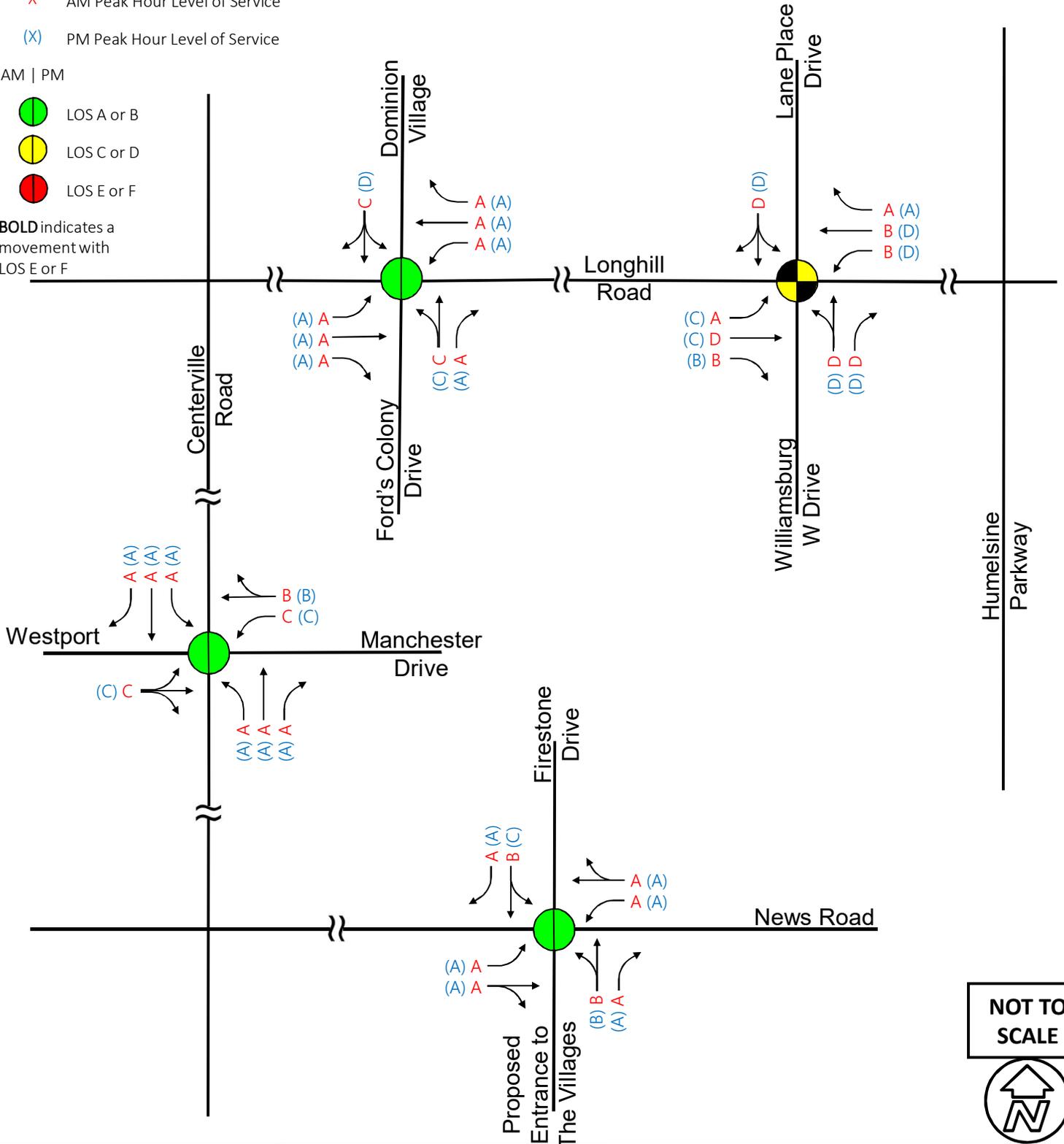
**Legend**

-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment
-  AM Peak Hour Level of Service
-  PM Peak Hour Level of Service

AM | PM

-  LOS A or B
-  LOS C or D
-  LOS E or F

**BOLD** indicates a movement with LOS E or F



**Legend**

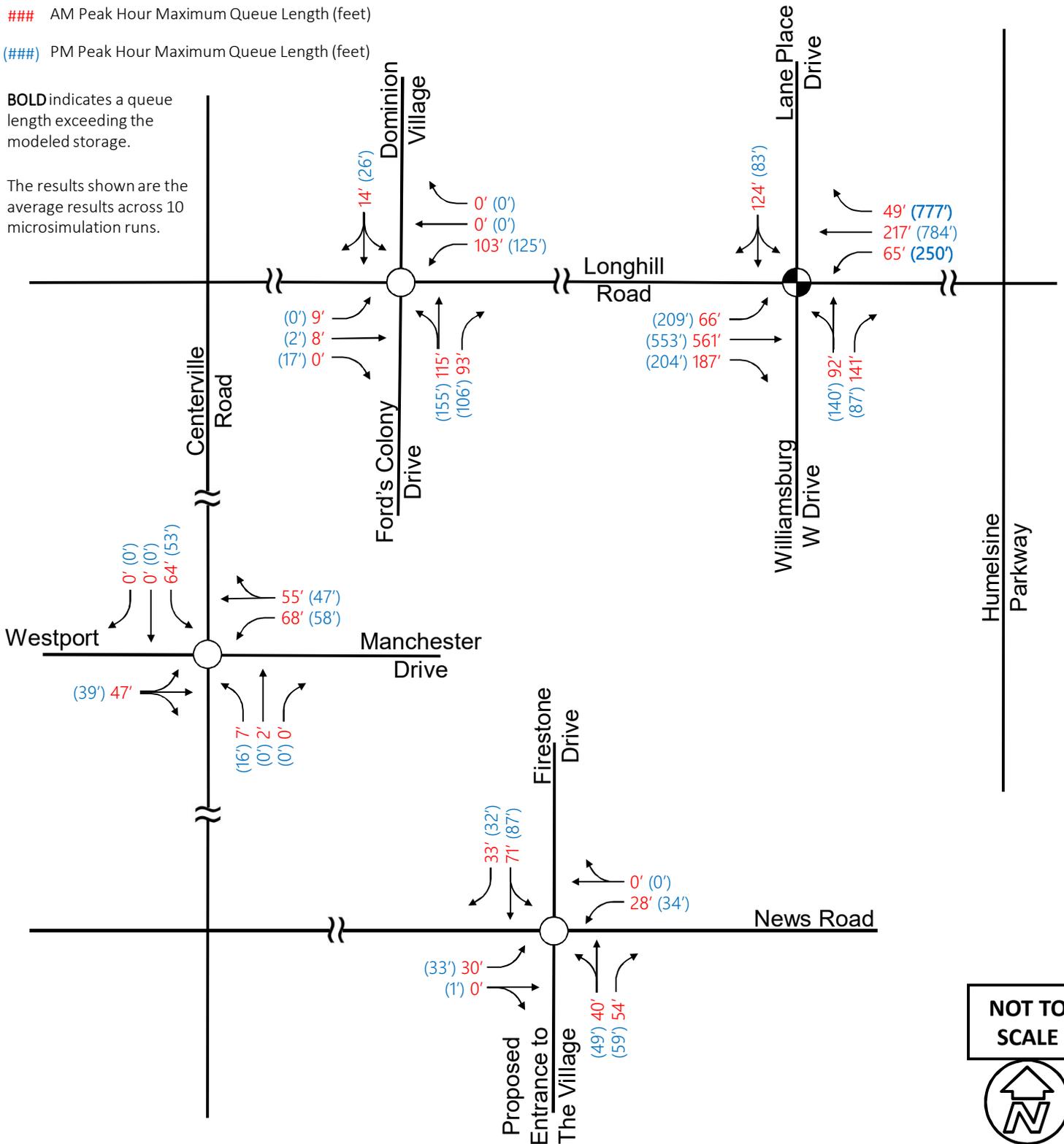
-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment

### AM Peak Hour Maximum Queue Length (feet)

(###) PM Peak Hour Maximum Queue Length (feet)

**BOLD** indicates a queue length exceeding the modeled storage.

The results shown are the average results across 10 microsimulation runs.



**NOT TO SCALE**



**Legend**

X AM Peak Hour Level of Service

(X) PM Peak Hour Level of Service

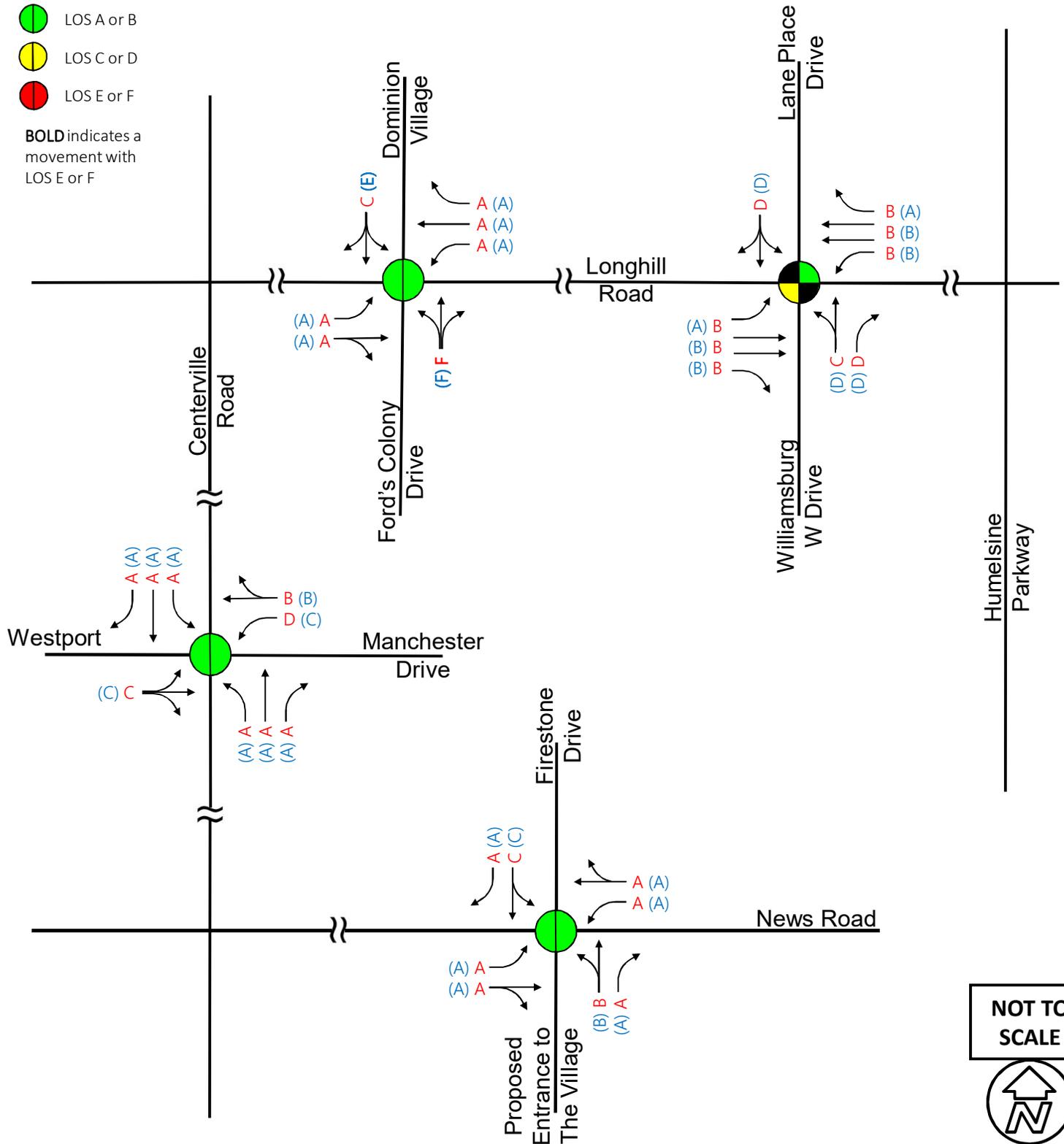
AM | PM

LOS A or B

LOS C or D

LOS E or F

**BOLD** indicates a movement with LOS E or F





**Legend**

X AM Peak Hour Level of Service

(X) PM Peak Hour Level of Service

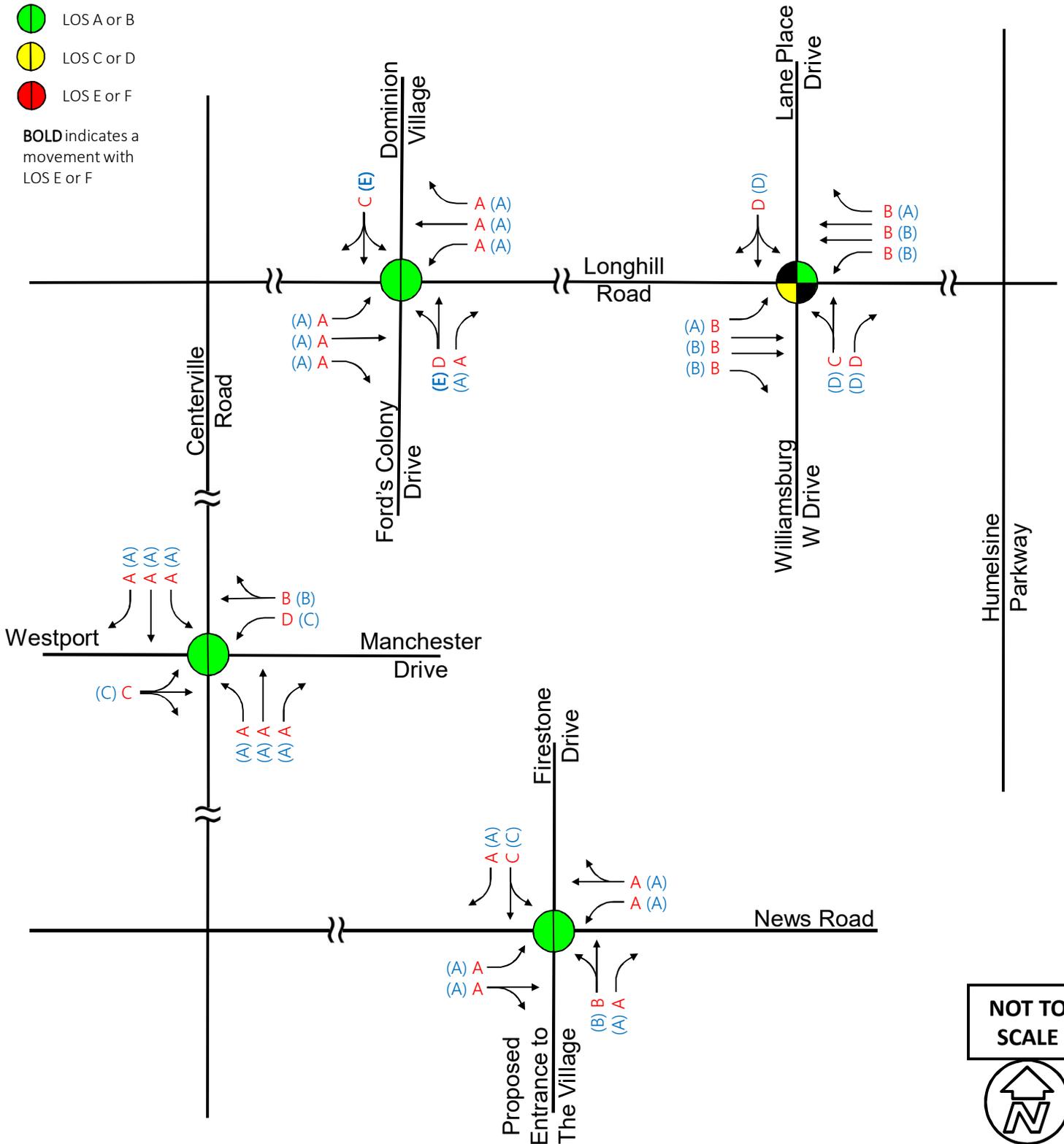
AM | PM

LOS A or B

LOS C or D

LOS E or F

**BOLD** indicates a movement with LOS E or F



NOT TO SCALE



**Legend**

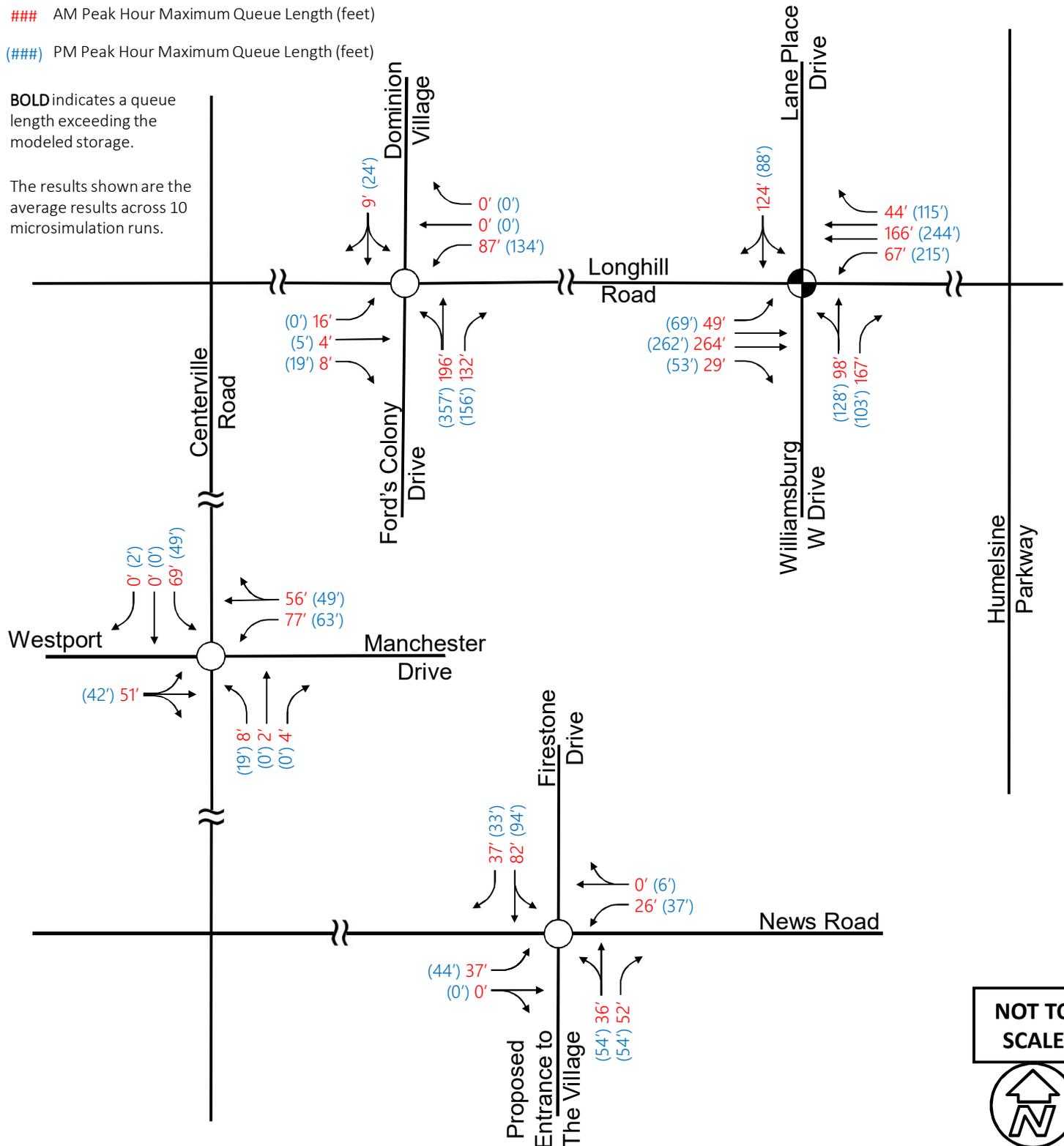
-  Signalized Intersection
-  Unsignalized Intersection
-  Existing Lane Assignment

### AM Peak Hour Maximum Queue Length (feet)

(###) PM Peak Hour Maximum Queue Length (feet)

**BOLD** indicates a queue length exceeding the modeled storage.

The results shown are the average results across 10 microsimulation runs.



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## 8 CONCLUSIONS AND RECOMMENDATIONS

This traffic study examined the existing operational characteristics of the Ford's Colony study area intersections as well as the anticipated impacts associated with the proposed residential condominium/townhouse development located in Ford's Colony in James City County, Virginia. Additionally, this study was completed to meet the requirements of the original proffers (i.e., FCHOA to prepare and submit an updated Traffic Impact Study every five (5)), as well as determine if any of the identified proffered off-site roadway, intersection, or traffic control improvements have been triggered for construction and/or may require accelerated implementation. Based on the results of the No Build and Build traffic analysis, the future impacts of vehicular traffic associated with the background traffic and the proposed development are anticipated to be minimal, with conditions at the study area intersections expected to be maintained at levels comparable to that under existing conditions. Based on the analysis of the existing traffic volumes and operation findings provided in this traffic study, the following recommendations were identified and are summarized below for the Existing conditions:

- **Longhill Road at Williamsburg W. Drive/Lane Place Drive**
  - Maintain the existing geometric configuration and traffic control measures
  - Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
  - It is noted that the Longhill Road Phase 1 Widening Project (VDOT UPC – 100921) includes improvements that will enhance the capacity at this intersection, is fully funded, and currently under construction
- **Longhill Road at Fords Colony Drive**
  - Relocate and restripe the northbound approach STOP bar so driver sight distance is not impeded by the Ford's Colony monument sign and/or vegetation located in the median
  - Restripe the 24-foot wide northbound approach to consist of a 12-foot shared through/left-turn lane and a 12-foot exclusive right-turn lane with 150 feet of storage
  - Continue to monitor traffic volumes to identify when/if the full turn-lane warrant for the eastbound right-turn movement is satisfied
  - Existing traffic volumes and the associated operational conditions (i.e., level of service (LOS)/side street delay) do not warrant or justify the installation of the traffic signal at this time.
  - Although the installation of a traffic signal is specifically referenced in the Ford's Colony proffers, per VDOT policy and roadway design manual guidelines, should volumes warrant the consideration of a traffic signal the intersection will also need to be analyzed for the consideration of a roundabout.
- **Centerville Road at Manchester Drive**
  - Maintain the existing geometric configuration and traffic control measures
- **News Road at Firestone Drive**
  - Maintain the existing geometric configuration and traffic control measures

From the analysis of the Build conditions which included the background traffic growth and approved developments, the following recommendations were identified and are summarized below for the Build conditions:

■ **Longhill Road at Williamsburg W. Drive/Lane Place Drive**

- Continue to monitor and implement new timing and coordination plans as part of regular VDOT operations and maintenance
- The Longhill Road Phase 1 Widening Project (UPC – 100921) is currently construction. The widening project includes the following improvements to this intersection:
  - Widen Longhill Road to a four-lane divided typical section
  - Upgrade the traffic signal equipment to accommodate the additional through lanes
  - Pedestrian accommodations such as crosswalks, ADA ramps, and pedestrian signal displays for the crossing of select legs of the intersection

Eastbound Longhill Road

- Widen and construct an additional approach and receiving through lane

Westbound Longhill Road

- Widen and construct an additional approach and receiving through lane

- Improvements associated with Longhill Road Phase 1 Widening Project (UPC – 100921) address several of the proffered improvements associated with the Ford's Colony Master Plan. Proffers should be updated/modified to account for/recognize these changes in responsibility.

■ **Longhill Road at Fords Colony Drive**

- Based on future traffic volume projections, construct a full width right-turn lane consisting of 200-feet of storage and 200-foot taper for the eastbound approach.
- Future traffic volumes and the associated future operational conditions (i.e., level of service (LOS)/side street delay) continue to reflect that a traffic signal is not warranted and do not justify the installation of a traffic signal at this intersection.
- It is noted that the installation of a traffic signal is specifically referenced in the Ford's Colony proffers. However, per VDOT policy and roadway design manual guidelines, if volumes warrant the consideration of a traffic signal then the intersection will also need to be analyzed for the consideration of a roundabout.
- Additionally, it is noted that the Longhill Road Corridor Study, completed in October 2014, did not recommended the installation of a traffic signal at this intersection as part of the long term (horizon year 2034) improvements. Therefore, it is recommended that a traffic signal should no longer be proffered as a means of traffic control for this intersection.

■ **Centerville Road at Manchester Drive**

- Maintain the existing geometric configuration and traffic control measures

■ **News Road at Firestone Drive**

- Maintain the existing geometric configuration and traffic control measures

Given the minimal residual development potential in Ford's Colony, no additional or proffered improvements are triggered beyond those that were identified under the Existing or Build operational conditions.

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TRAFFIC IMPACT STUDY (TIS) UPDATE

## **Ford's Colony Master Plan – Phased Development**

James City County, Virginia

# **Technical Appendices**

**Prepared for:**

Ford's Colony Home Owners Association (FCHOA)

**Prepared by:**

**Kimley»»Horn**

**January 2020**

# **Appendix A: Assumptions Document**

The following documentation outlines our proposed traffic impact study (TIS) assumptions for the Ford's Colony Master Plan development, located in James City County and bounded by Longhill Road (State Route 612) to the north, Centerville Road (State Route 614) to the west, News Road (State Route 613) to the south, and a combination of retail/commercial land uses, residential land uses, and Route 199 to the east. As part of this analysis, existing traffic data will be collected and future traffic volumes developed to identify if any of the proffered but unbuilt roadway, intersection, or traffic control improvements at the four (4) access points/study area intersections are experiencing or will experience traffic conditions that are or will trigger the need for construction. Proffered improvements are those described in the Ford's Colony original proffers dated March 11, 1987 and the associated Ford's Colony Phasing Plan for Roadway Improvements agreement approved by the County on June 20, 1988. This includes traffic signal and turn-lane warrant analyses that will be conducted at the defined study area intersections. Recommendations and opinions of probable cost for relevant improvements associated with the potential development will be described in the DRAFT and FINAL report.

**Study Area**

The study area for the TIS update and the associated proposed development site includes the following signalized and unsignalized intersections:

- County Club Drive/Williamsburg W. Drive at Longhill Road (*signalized*)
- Ford's Colony Drive at Longhill Road (*unsignalized*)
- Manchester Drive at Centerville Road (*unsignalized*)
- Firestone Drive at News Road (*unsignalized*)

**Data Collection**

Turning movement counts (TMC) were collected at the study area intersections on Thursday, June 8, 2017 which included vehicular, truck, and pedestrian volumes. Four-hour TMCs were conducted during the AM and PM peak periods (6:30 AM to 8:30 AM and 4:00 PM to 6:00 PM) at the following intersections:

- Manchester Drive at Centerville Road
- Country Club Drive/Williamsburg W. Drive at Longhill Road

In preparation for potential signal warrant analysis, 12-hour TMCs (i.e., 6:00 AM to 6:00 PM) were performed at the following intersections:

- Ford's Colony Drive at Longhill Road
- Firestone Drive at News Road

**Future Traffic**

The proposed development will have an opening year of 2019. Future analyses will coincide with this year. Growth rates will be determined by using rates developed as part of the *Longhill Road Corridor Study*, completed and adopted in October 2014, and historical traffic volume trends over the previous six (6) years (i.e., 2011 to 2016) from the Virginia Department of Transportation (VDOT) data.

Ford's Colony TIS Update

- Longhill Road – 2.0% per year (consistent with Longhill Road Corridor Study)
- Centerville Road – 2.5% per year
- News Road – 2.0% per year

Two additional developments adjacent to Ford's Colony have been approved for development and were provided by James City County: The Village's at Ford's Colony and Westport Subdivision at Ford's Colony. These two developments will be included in the background traffic projections in addition to the general traffic growth. For the Villages at Ford's Colony, Kimley-Horn will use *ITE Trip Generation 9<sup>th</sup> Edition* (2012) Trip Generation Rates and Land Use Code 251: Senior Adult Housing-Detached, Code 252: Senior Adult Housing-Attached, Code 253: Congregate Care Housing, Code 254: Assisted Living, and Code 620: Nursing Home. For the Westport Subdivision at Ford's Colony, Kimley-Horn will use Code 210: Single-Family Detached-Housing. This is consistent with the land use provided in the *Ford's Colony Traffic Impact Study 2003-2004 Update*. The trip distribution and assignment for these approved developments will be based on the previous study's trip distribution percentages. Trip generation calculations for the approved developments are shown in **Table 1 and Table 2**.

**Table 1: Trip Generation for The Villages at Ford's Colony Development**

ITE Code	ITE Description	Density	Unit	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
251	Senior Adult Housing - Detached	38	Dwelling Units	200	13	23	36	13	9	22
252	Senior Adult Housing - Attached	168	Dwelling Units	522	11	22	33	23	19	42
253	Congregate Care Housing	390	Dwelling Units	788	14	9	23	36	30	66
254	Assisted Living	83	Beds/Rooms	256	8	4	12	8	10	18
620	Nursing Home	60	Beds/Rooms	120	7	3	10	4	9	13
<b>Total</b>		<b>739</b>		<b>1,886</b>	<b>53</b>	<b>61</b>	<b>114</b>	<b>84</b>	<b>77</b>	<b>161</b>

*Note: It is assumed that there is one bed per room, and therefore each bed is considered one dwelling unit.*

**Table 2: Trip Generation for Westport Subdivision at Ford's Colony Development**

ITE Code	ITE Description	Density	Unit	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
210	Single-Family Detached Housing	43	Dwelling Units	483	10	30	40	31	18	49

**Proposed Land Use**

Kimley-Horn will use *ITE Trip Generation 9<sup>th</sup> Edition (2012)* Trip Generation Rates and Land Use Code 230: Residential Condominium/Townhouse. This is consistent with the land use provided in the *Ford's Colony Traffic Impact Study 2003-2004 Update*. Trip generation calculations for the proposed development are shown in **Table 3**. No pass-by or internal capture rate reductions will be included as part of this analysis.

**Table 3: Trip Generation for Residential Development**

Land Use (ITE Code)	Dwelling Units	Weekday Total	AM			PM		
			Total	Enter (17%)	Exit (83%)	Total	Enter (67%)	Exit (33%)
Residential Condominium/Townhouse (230)	60 units	412	34	6	28	40	27	13

To assign the hourly site traffic for the future traffic signal warrant analysis, hourly variations will be used for Residential Uses Combined – Excluding Senior-Oriented Facilities as provided in the *Hourly Variation in Trip Generation for Office and Residential Land Uses* article published in the ITE Journal January 2015, as shown in **Table 4** below. It is noted that the hourly trip generation variation for residential land uses is proposed since it is a similar land use and ITE does not provide an applicable hourly variation breakdown for Residential Condominium/Townhouse (230).

**Table 4: Hourly Trip Generation Variations for Residential Land Uses**

Time	Average Weekday	
	Percent of 24-Hour Entering Traffic	Percent of 24-Hour Exiting Traffic
6 AM – 7 AM	1.6	5.7
7 AM – 8 AM	2.5	9.0
8 AM – 9 AM	3.7	9.1
9 AM – 10 AM	3.7	6.5
10 AM – 11 AM	4.1	5.5
11 AM – 12 PM	4.5	5.7
12 PM – 1 PM	5.3	5.3
1 PM – 2 PM	5.4	5.7
2 PM – 3 PM	6.5	5.9
3 PM – 4 PM	8.1	6.3
4 PM – 5 PM	9.8	6.3
5 PM – 6 PM	10.8	6.5

Site traffic distributions will be determined from existing travel patterns, site location within Ford's Colony, access to/from the external adjacent street network, and employment/activity center destinations in the surrounding area. Based on this, we are assuming that the following distributions will be used for the proposed development:

- 65% of the trips generated will travel to/from the north on Ford's Colony Drive
- 20% of the trips generated will travel to/from the west on Manchester Drive
- 10% of the trips generated will travel to/from the east on Williamsburg W. Drive
- 5% of the trips generated will travel to/from the south on Firestone Drive

### **Analysis Years**

The proposed development is anticipated to be completed in 2019. Therefore, the following analysis scenarios for the AM and PM peak hours will be studied as part of this TIS update.

- Scenario 1 – Existing (2017) traffic conditions
- Scenario 2 – Opening Year (2019) No-Build conditions – Build-out year traffic conditions with only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 3 – Opening Year (2019) Build-out conditions – Build-out year traffic conditions with background development trips applied plus traffic volumes generated by the proposed development
- Scenario 4 – Opening Year +6 years (2025) No-Build conditions – Build-out year traffic conditions with only background development trips applied (i.e., approved adjacent development traffic)
- Scenario 5 – Opening Year +6 years (2025) Build-out conditions – Build-out year traffic conditions with background development trips applied plus traffic volumes generated by the proposed development

### **Traffic Operations Analysis**

Proposed inputs and analysis methodologies will be consistent with VDOT's Traffic Operations and Safety Analysis Manual (TOSAM). Operational analyses for the study area intersections will be conducted using traffic analysis tools (e.g., Synchro 9.1 Professional, SimTraffic 9.1) and Highway Capacity Manual (HCM) methodologies.

The following warrants will be analyzed for the study area intersections for future no-build and build conditions: *Warrant 1 – Eight Hour* and *Warrant 2 – Four Hour*. Kimley-Horn will conduct a traffic signal warrant analysis using the standards provided in the *Manual of Uniform Traffic Control Devices (MUTCD)*. The traffic signal warrant analysis will be performed for the following intersections:

- Ford's Colony Drive at Longhill Road
- Firestone Drive at News Road

Turn-lane warrant analyses will be prepared and evaluated for the intersection of Ford's Colony Drive at Longhill Road. The turn-lane warrant analysis will be consistent with methodologies shown in Appendix C of the VDOT Road Design Manual as well as guidelines provided in Appendix F of the VDOT Access Management Design Standards for Entrances and Intersections. Should a turn-lane be warranted, recommendations for storage length and taper length will be provided.

The future conditions analyses will confirm the need and define the geometric configurations necessary for the proposed roadway and intersection capacity improvements. Measures of effectiveness that will be reported for each scenario will consist of delay per vehicle, level of service (LOS), and maximum queue lengths. These measures of effectiveness will be presented in tabular format. Vehicle delay and LOS will be summarized by movement, approach, and overall intersection, while maximum queue lengths will be summarized for each movement.

**Reporting**

A TIS report with an accompanying appendix (including all analysis files) will be prepared that summarizes the analysis methodology and results. The report and associated analysis files will be provided in electronic format as a part of the FINAL traffic analysis submittal.

## **Appendix B: Traffic Count Data**

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Country Club

Site Code :

Start Date : 6/8/2017

Page No : 1

### Groups Printed- Passenger Veh - Trucks

Start Time	Lane Place From North					Longhill From East					Country Club From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30 AM	4	0	4	0	8	2	71	1	0	74	26	0	5	0	31	1	84	0	0	85	198
06:45 AM	3	0	9	0	12	3	123	4	0	130	35	1	11	0	47	1	107	0	0	108	297
Total	7	0	13	0	20	5	194	5	0	204	61	1	16	0	78	2	191	0	0	193	495
07:00 AM	1	1	12	0	14	2	147	6	0	155	57	0	15	0	72	4	164	0	0	168	409
07:15 AM	3	0	8	0	11	4	100	7	0	111	52	0	6	0	58	4	158	1	0	163	343
07:30 AM	4	0	17	0	21	5	92	10	0	107	53	1	15	0	69	3	168	1	0	172	369
07:45 AM	9	0	19	0	28	7	121	9	0	137	77	2	10	0	89	9	200	1	0	210	464
Total	17	1	56	0	74	18	460	32	0	510	239	3	46	0	288	20	690	3	0	713	1585
08:00 AM	5	1	11	0	17	4	125	10	0	139	50	0	11	0	61	4	182	1	0	187	404
08:15 AM	0	0	9	0	9	2	129	14	0	145	44	0	6	0	50	5	192	0	0	197	401
Total	5	1	20	0	26	6	254	24	0	284	94	0	17	0	111	9	374	1	0	384	805
04:00 PM	2	0	6	0	8	11	192	45	0	248	33	0	7	0	40	10	155	6	0	171	467
04:15 PM	2	0	4	0	6	7	227	61	0	295	33	0	9	0	42	13	174	4	0	191	534
04:30 PM	8	0	6	0	14	11	211	50	0	272	27	1	5	0	33	11	180	3	0	194	513
04:45 PM	4	0	7	0	11	6	239	61	0	306	33	0	12	0	45	10	181	3	0	194	556
Total	16	0	23	0	39	35	869	217	0	1121	126	1	33	0	160	44	690	16	0	750	2070
05:00 PM	2	0	4	0	6	10	237	49	0	296	34	0	10	0	44	8	198	9	0	215	561
05:15 PM	4	0	6	0	10	16	266	60	0	342	29	0	14	0	43	8	182	2	0	192	587
05:30 PM	4	0	6	0	10	6	235	36	0	277	40	0	14	0	54	9	174	3	0	186	527
05:45 PM	5	0	1	0	6	11	244	44	0	299	32	0	10	0	42	8	172	5	0	185	532
Total	15	0	17	0	32	43	982	189	0	1214	135	0	48	0	183	33	726	19	0	778	2207
Grand Total	60	2	129	0	191	107	2759	467	0	3333	655	5	160	0	820	108	2671	39	0	2818	7162
Apprch %	31.4	1	67.5	0		3.2	82.8	14	0		79.9	0.6	19.5	0		3.8	94.8	1.4	0		
Total %	0.8	0	1.8	0	2.7	1.5	38.5	6.5	0	46.5	9.1	0.1	2.2	0	11.4	1.5	37.3	0.5	0	39.3	
Passenger Veh	55	2	126	0	183	103	2688	464	0	3255	650	2	154	0	806	107	2602	37	0	2746	6990
% Passenger Veh	91.7	100	97.7	0	95.8	96.3	97.4	99.4	0	97.7	99.2	40	96.2	0	98.3	99.1	97.4	94.9	0	97.4	97.6
Trucks	5	0	3	0	8	4	71	3	0	78	5	3	6	0	14	1	69	2	0	72	172
% Trucks	8.3	0	2.3	0	4.2	3.7	2.6	0.6	0	2.3	0.8	60	3.8	0	1.7	0.9	2.6	5.1	0	2.6	2.4

# Data Collection Group

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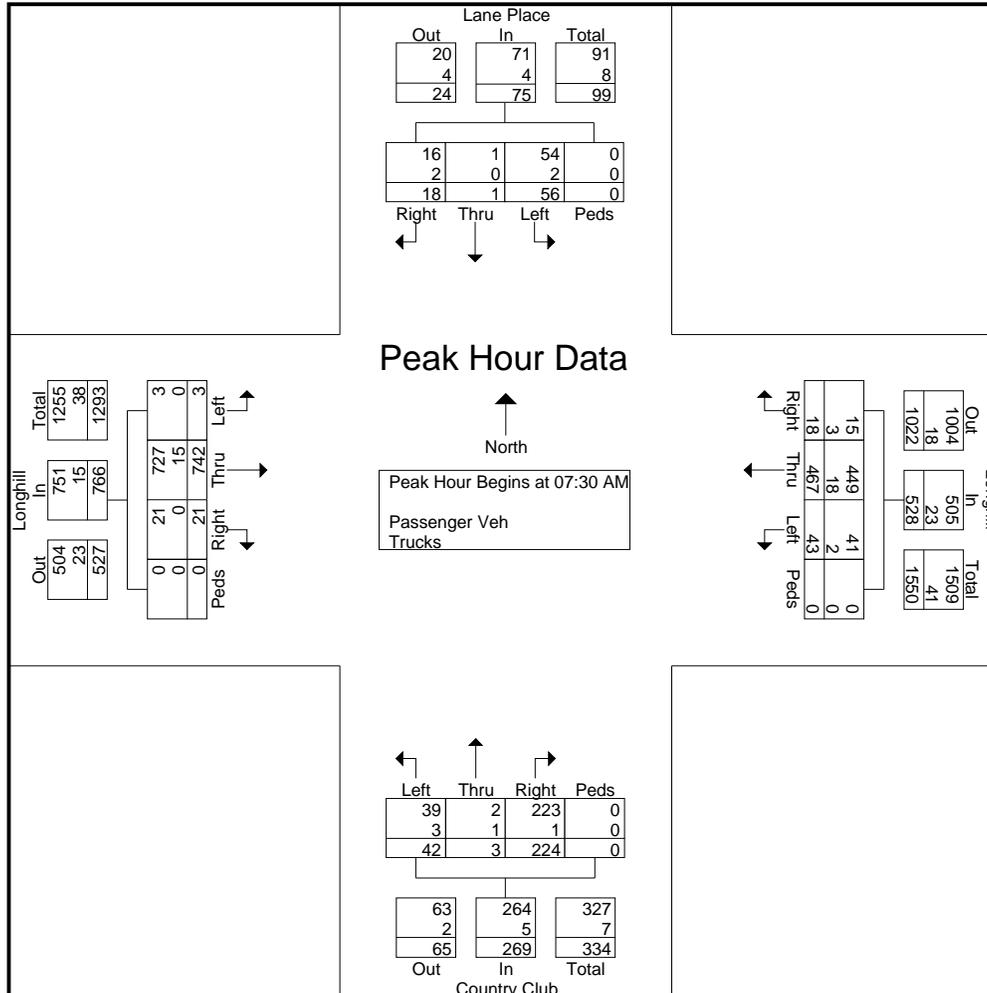
File Name : Longhill and Country Club  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 2

Start Time	Lane Place From North					Longhill From East					Country Club From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:30 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	0	17	0	21	5	92	10	0	107	53	1	15	0	69	3	168	1	0	172	369
07:45 AM	<b>9</b>	0	<b>19</b>	0	<b>28</b>	<b>7</b>	121	9	0	137	<b>77</b>	<b>2</b>	10	0	<b>89</b>	<b>9</b>	<b>200</b>	1	0	<b>210</b>	<b>464</b>
08:00 AM	5	<b>1</b>	11	0	17	4	125	10	0	139	50	0	11	0	61	4	182	1	0	187	404
08:15 AM	0	0	9	0	9	2	<b>129</b>	<b>14</b>	0	<b>145</b>	44	0	6	0	50	5	192	0	0	197	401
Total Volume	18	1	56	0	75	18	467	43	0	528	224	3	42	0	269	21	742	3	0	766	1638
% App. Total	24	1.3	74.7	0		3.4	88.4	8.1	0		83.3	1.1	15.6	0		2.7	96.9	0.4	0		
PHF	.500	.250	.737	.000	.670	.643	.905	.768	.000	.910	.727	.375	.700	.000	.756	.583	.928	.750	.000	.912	.883
Passenger Veh	16	1	54	0	71	15	449	41	0	505	223	2	39	0	264	21	727	3	0	751	1591
% Passenger Veh	88.9	100	96.4	0	94.7	83.3	96.1	95.3	0	95.6	99.6	66.7	92.9	0	98.1	100	98.0	100	0	98.0	97.1
Trucks	2	0	2	0	4	3	18	2	0	23	1	1	3	0	5	0	15	0	0	15	47
% Trucks	11.1	0	3.6	0	5.3	16.7	3.9	4.7	0	4.4	0.4	33.3	7.1	0	1.9	0	2.0	0	0	2.0	2.9

# Data Collection Group

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File Name : Longhill and Country Club  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 3



# Data Collection Group

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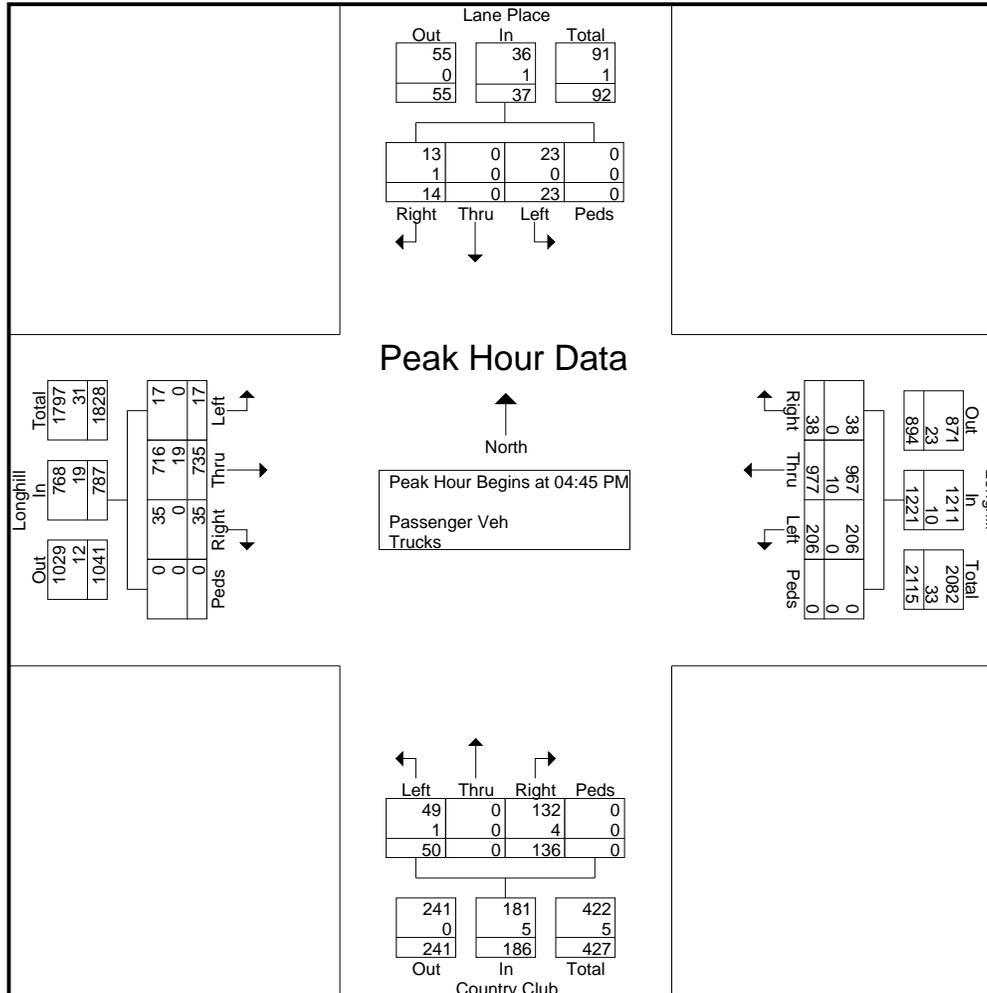
File Name : Longhill and Country Club  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 4

Start Time	Lane Place From North					Longhill From East					Country Club From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	4	0	7	0	11	6	239	61	0	306	33	0	12	0	45	10	181	3	0	194	556
05:00 PM	2	0	4	0	6	10	237	49	0	296	34	0	10	0	44	8	198	9	0	215	561
05:15 PM	4	0	6	0	10	16	266	60	0	342	29	0	14	0	43	8	182	2	0	192	587
05:30 PM	4	0	6	0	10	6	235	36	0	277	40	0	14	0	54	9	174	3	0	186	527
Total Volume	14	0	23	0	37	38	977	206	0	1221	136	0	50	0	186	35	735	17	0	787	2231
% App. Total	37.8	0	62.2	0		3.1	80	16.9	0		73.1	0	26.9	0		4.4	93.4	2.2	0		
PHF	.875	.000	.821	.000	.841	.594	.918	.844	.000	.893	.850	.000	.893	.000	.861	.875	.928	.472	.000	.915	.950
Passenger Veh	13	0	23	0	36	38	967	206	0	1211	132	0	49	0	181	35	716	17	0	768	2196
% Passenger Veh	92.9	0	100	0	97.3	100	99.0	100	0	99.2	97.1	0	98.0	0	97.3	100	97.4	100	0	97.6	98.4
Trucks	1	0	0	0	1	0	10	0	0	10	4	0	1	0	5	0	19	0	0	19	35
% Trucks	7.1	0	0	0	2.7	0	1.0	0	0	0.8	2.9	0	2.0	0	2.7	0	2.6	0	0	2.4	1.6

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Country Club  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 5



# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony  
 Site Code : 13333333  
 Start Date : 6/8/2017  
 Page No : 1

Groups Printed- Passenger Veh - Trucks

Start Time	Entrance From North					Longhill From East					Fords Colony From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:00 AM	0	0	0	0	0	1	10	3	0	14	8	0	4	0	12	3	16	0	0	19	45
06:15 AM	1	0	1	0	2	1	13	1	0	15	6	0	2	0	8	2	21	1	0	24	49
06:30 AM	0	0	0	0	0	1	19	7	0	27	7	0	2	0	9	0	26	0	0	26	62
06:45 AM	0	0	0	0	0	1	36	9	0	46	25	0	6	0	31	2	55	1	0	58	135
<b>Total</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>78</b>	<b>20</b>	<b>0</b>	<b>102</b>	<b>46</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>60</b>	<b>7</b>	<b>118</b>	<b>2</b>	<b>0</b>	<b>127</b>	<b>291</b>
07:00 AM	0	0	1	0	1	1	46	11	0	58	39	1	3	0	43	2	51	0	0	53	155
07:15 AM	1	0	0	0	1	0	55	20	0	75	26	0	16	0	42	8	64	0	0	72	190
07:30 AM	0	0	0	0	0	0	68	19	0	87	28	0	15	0	43	4	56	0	0	60	190
07:45 AM	0	0	0	0	0	0	55	30	0	85	37	0	15	0	52	7	84	1	0	92	229
<b>Total</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>224</b>	<b>80</b>	<b>0</b>	<b>305</b>	<b>130</b>	<b>1</b>	<b>49</b>	<b>0</b>	<b>180</b>	<b>21</b>	<b>255</b>	<b>1</b>	<b>0</b>	<b>277</b>	<b>764</b>
08:00 AM	0	0	0	0	0	1	53	28	0	82	36	0	15	0	51	10	69	2	0	81	214
08:15 AM	0	1	0	0	1	0	90	29	0	119	29	1	25	0	55	15	84	0	0	99	274
08:30 AM	0	0	0	0	0	0	63	39	0	102	42	0	10	0	52	14	80	0	0	94	248
08:45 AM	0	0	1	0	1	1	52	45	0	98	32	0	10	0	42	12	56	0	0	68	209
<b>Total</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>258</b>	<b>141</b>	<b>0</b>	<b>401</b>	<b>139</b>	<b>1</b>	<b>60</b>	<b>0</b>	<b>200</b>	<b>51</b>	<b>289</b>	<b>2</b>	<b>0</b>	<b>342</b>	<b>945</b>
09:00 AM	0	0	0	0	0	1	56	27	0	84	22	0	11	0	33	12	58	1	0	71	188
09:15 AM	0	0	0	0	0	0	48	25	0	73	25	0	9	0	34	10	66	0	0	76	183
09:30 AM	0	0	1	0	1	1	36	20	0	57	37	0	12	0	49	11	61	1	0	73	180
09:45 AM	0	0	0	0	0	0	38	48	0	86	43	0	10	0	53	12	63	0	0	75	214
<b>Total</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>178</b>	<b>120</b>	<b>0</b>	<b>300</b>	<b>127</b>	<b>0</b>	<b>42</b>	<b>0</b>	<b>169</b>	<b>45</b>	<b>248</b>	<b>2</b>	<b>0</b>	<b>295</b>	<b>765</b>
10:00 AM	1	0	0	0	1	0	53	30	0	83	44	0	17	0	61	9	36	0	0	45	190
10:15 AM	0	0	1	0	1	0	41	28	0	69	41	0	16	0	57	14	49	0	0	63	190
10:30 AM	1	0	0	0	1	1	41	20	0	62	34	0	14	0	48	5	39	1	0	45	156
10:45 AM	1	0	1	0	2	0	40	28	0	68	29	3	14	0	46	10	42	1	0	53	169
<b>Total</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>175</b>	<b>106</b>	<b>0</b>	<b>282</b>	<b>148</b>	<b>3</b>	<b>61</b>	<b>0</b>	<b>212</b>	<b>38</b>	<b>166</b>	<b>2</b>	<b>0</b>	<b>206</b>	<b>705</b>
11:00 AM	1	0	1	0	2	1	37	32	0	70	35	0	6	0	41	15	39	1	0	55	168
11:15 AM	0	0	0	0	0	2	38	30	0	70	24	0	9	0	33	11	48	0	0	59	162
11:30 AM	0	0	1	0	1	0	45	33	0	78	25	2	14	0	41	12	53	1	0	66	186
11:45 AM	0	0	3	0	3	0	49	41	0	90	33	0	12	0	45	17	49	0	0	66	204
<b>Total</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>169</b>	<b>136</b>	<b>0</b>	<b>308</b>	<b>117</b>	<b>2</b>	<b>41</b>	<b>0</b>	<b>160</b>	<b>55</b>	<b>189</b>	<b>2</b>	<b>0</b>	<b>246</b>	<b>720</b>
12:00 PM	1	1	0	0	2	2	56	51	0	109	29	1	13	0	43	9	44	0	0	53	207
12:15 PM	2	0	0	0	2	3	48	33	0	84	30	0	5	0	35	18	34	2	0	54	175
12:30 PM	0	1	0	0	1	0	46	33	0	79	29	1	9	0	39	11	37	0	0	48	167
12:45 PM	0	0	0	0	0	0	46	34	0	80	36	0	19	0	55	21	52	0	0	73	208
<b>Total</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>196</b>	<b>151</b>	<b>0</b>	<b>352</b>	<b>124</b>	<b>2</b>	<b>46</b>	<b>0</b>	<b>172</b>	<b>59</b>	<b>167</b>	<b>2</b>	<b>0</b>	<b>228</b>	<b>757</b>

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony  
 Site Code : 13333333  
 Start Date : 6/8/2017  
 Page No : 2

Groups Printed- Passenger Veh - Trucks

Start Time	Entrance From North					Longhill From East					Fords Colony From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
01:00 PM	2	0	0	0	2	1	35	31	0	67	38	0	15	0	53	12	38	0	0	50	172
01:15 PM	0	0	1	0	1	4	62	40	0	106	28	0	10	0	38	11	59	0	0	70	215
01:30 PM	0	1	3	0	4	2	45	27	0	74	20	0	8	0	28	11	38	0	0	49	155
01:45 PM	2	0	3	0	5	2	32	20	0	54	28	0	9	0	37	8	59	1	0	68	164
<b>Total</b>	<b>4</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>12</b>	<b>9</b>	<b>174</b>	<b>118</b>	<b>0</b>	<b>301</b>	<b>114</b>	<b>0</b>	<b>42</b>	<b>0</b>	<b>156</b>	<b>42</b>	<b>194</b>	<b>1</b>	<b>0</b>	<b>237</b>	<b>706</b>
02:00 PM	0	0	0	0	0	1	64	42	0	107	42	1	18	0	61	12	51	3	0	66	234
02:15 PM	1	0	1	0	2	1	60	51	0	112	29	0	5	0	34	15	43	0	0	58	206
02:30 PM	2	0	2	0	4	1	83	37	0	121	29	0	10	0	39	16	55	1	0	72	236
02:45 PM	2	0	0	0	2	0	86	51	0	137	34	0	19	0	53	8	55	1	0	64	256
<b>Total</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>293</b>	<b>181</b>	<b>0</b>	<b>477</b>	<b>134</b>	<b>1</b>	<b>52</b>	<b>0</b>	<b>187</b>	<b>51</b>	<b>204</b>	<b>5</b>	<b>0</b>	<b>260</b>	<b>932</b>
03:00 PM	1	0	2	0	3	0	58	41	0	99	31	0	15	0	46	16	45	0	0	61	209
03:15 PM	1	0	4	0	5	1	73	32	0	106	29	0	14	0	43	30	105	0	0	135	289
03:30 PM	3	0	1	0	4	1	77	45	0	123	30	0	14	0	44	20	75	1	0	96	267
03:45 PM	0	0	1	0	1	0	60	43	0	103	36	2	27	0	65	15	63	1	0	79	248
<b>Total</b>	<b>5</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>268</b>	<b>161</b>	<b>0</b>	<b>431</b>	<b>126</b>	<b>2</b>	<b>70</b>	<b>0</b>	<b>198</b>	<b>81</b>	<b>288</b>	<b>2</b>	<b>0</b>	<b>371</b>	<b>1013</b>
04:00 PM	0	1	0	0	1	0	68	31	0	99	32	0	16	0	48	12	77	0	0	89	237
04:15 PM	0	0	1	0	1	1	61	37	0	99	27	0	9	0	36	16	84	6	0	106	242
04:30 PM	1	0	0	0	1	0	74	38	0	112	27	1	13	0	41	9	77	1	0	87	241
04:45 PM	1	0	0	0	1	0	65	50	0	115	30	1	14	0	45	19	93	0	0	112	273
<b>Total</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>268</b>	<b>156</b>	<b>0</b>	<b>425</b>	<b>116</b>	<b>2</b>	<b>52</b>	<b>0</b>	<b>170</b>	<b>56</b>	<b>331</b>	<b>7</b>	<b>0</b>	<b>394</b>	<b>993</b>
05:00 PM	3	0	0	0	3	1	63	39	0	103	31	2	4	0	37	11	78	0	0	89	232
05:15 PM	0	0	1	0	1	1	79	47	0	127	25	0	14	0	39	9	86	0	0	95	262
05:30 PM	1	0	3	0	4	0	75	56	0	131	35	0	13	0	48	14	83	0	0	97	280
05:45 PM	0	0	0	0	0	0	53	44	0	97	39	0	5	0	44	13	81	0	0	94	235
<b>Total</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>270</b>	<b>186</b>	<b>0</b>	<b>458</b>	<b>130</b>	<b>2</b>	<b>36</b>	<b>0</b>	<b>168</b>	<b>47</b>	<b>328</b>	<b>0</b>	<b>0</b>	<b>375</b>	<b>1009</b>
<b>Grand Total</b>	<b>29</b>	<b>5</b>	<b>34</b>	<b>0</b>	<b>68</b>	<b>35</b>	<b>2551</b>	<b>1556</b>	<b>0</b>	<b>4142</b>	<b>1451</b>	<b>16</b>	<b>565</b>	<b>0</b>	<b>2032</b>	<b>553</b>	<b>2777</b>	<b>28</b>	<b>0</b>	<b>3358</b>	<b>9600</b>
Apprch %	42.6	7.4	50	0		0.8	61.6	37.6	0		71.4	0.8	27.8	0		16.5	82.7	0.8	0		
Total %	0.3	0.1	0.4	0	0.7	0.4	26.6	16.2	0	43.1	15.1	0.2	5.9	0	21.2	5.8	28.9	0.3	0	35	
Passenger Veh	29	4	34	0	67	35	2433	1538	0	4006	1443	15	551	0	2009	537	2645	27	0	3209	9291
% Passenger Veh	100	80	100	0	98.5	100	95.4	98.8	0	96.7	99.4	93.8	97.5	0	98.9	97.1	95.2	96.4	0	95.6	96.8
Trucks	0	1	0	0	1	0	118	18	0	136	8	1	14	0	23	16	132	1	0	149	309
% Trucks	0	20	0	0	1.5	0	4.6	1.2	0	3.3	0.6	6.2	2.5	0	1.1	2.9	4.8	3.6	0	4.4	3.2

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony  
 Site Code : 13333333  
 Start Date : 6/8/2017  
 Page No : 3

Start Time	Entrance From North					Longhill From East					Fords Colony From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	0	55	30	0	85	37	0	15	0	52	7	<b>84</b>	1	0	92	229
08:00 AM	0	0	0	0	0	1	53	28	0	82	36	0	15	0	51	10	69	2	0	81	214
08:15 AM	0	1	0	0	1	0	<b>90</b>	29	0	<b>119</b>	29	1	<b>25</b>	0	<b>55</b>	<b>15</b>	84	0	0	<b>99</b>	<b>274</b>
08:30 AM	0	0	0	0	0	0	63	<b>39</b>	0	102	<b>42</b>	0	10	0	52	14	80	0	0	94	248
Total Volume	0	1	0	0	1	1	261	126	0	388	144	1	65	0	210	46	317	3	0	366	965
% App. Total	0	100	0	0		0.3	67.3	32.5	0		68.6	0.5	31	0		12.6	86.6	0.8	0		
PHF	.000	.250	.000	.000	.250	.250	.725	.808	.000	.815	.857	.250	.650	.000	.955	.767	.943	.375	.000	.924	.880
Passenger Veh	0	1	0	0	1	1	244	123	0	368	143	1	59	0	203	44	296	3	0	343	915
% Passenger Veh	0	100	0	0	100	100	93.5	97.6	0	94.8	99.3	100	90.8	0	96.7	95.7	93.4	100	0	93.7	94.8
Trucks	0	0	0	0	0	0	17	3	0	20	1	0	6	0	7	2	21	0	0	23	50
% Trucks	0	0	0	0	0	0	6.5	2.4	0	5.2	0.7	0	9.2	0	3.3	4.3	6.6	0	0	6.3	5.2

# Data Collection Group

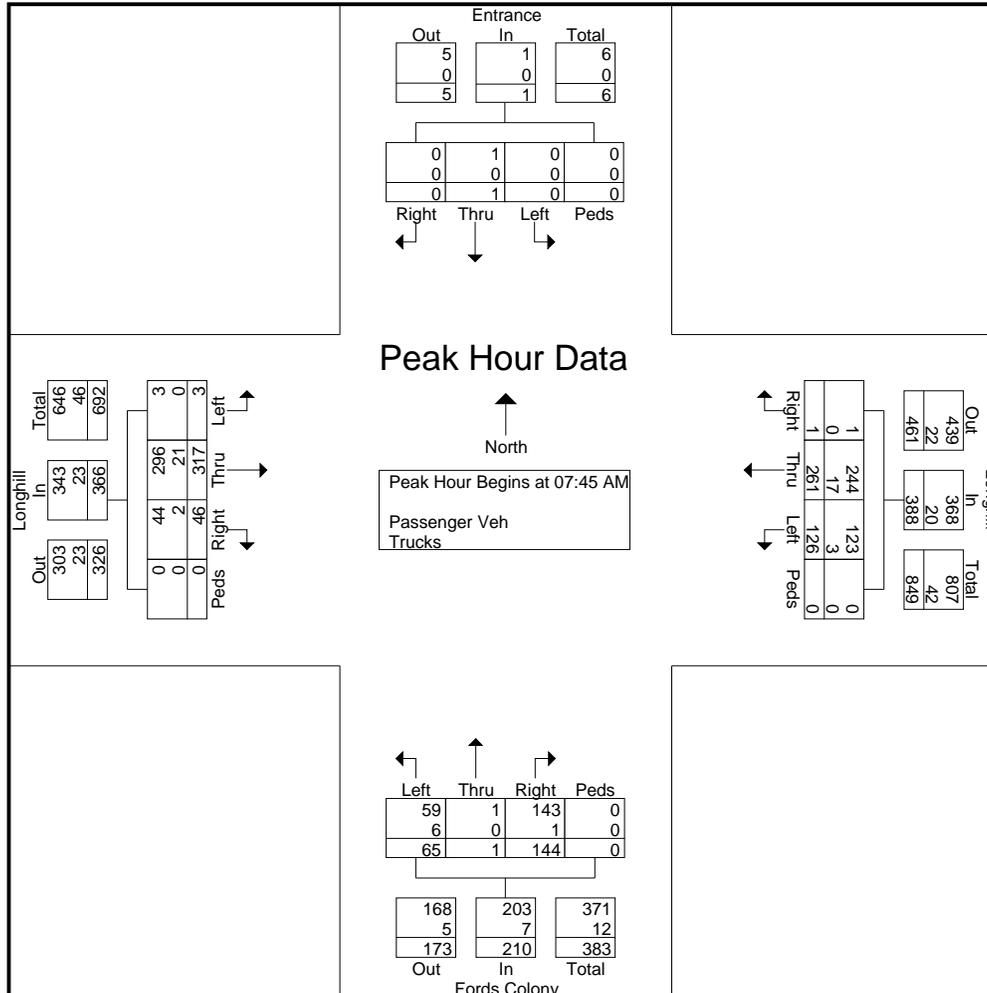
## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony

Site Code : 13333333

Start Date : 6/8/2017

Page No : 4



# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony

Site Code : 13333333

Start Date : 6/8/2017

Page No : 5

Start Time	Entrance From North					Longhill From East					Fords Colony From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	0	1	0	1	0	45	33	0	78	25	2	14	0	41	12	53	1	0	66	186
11:45 AM	0	0	3	0	3	0	49	41	0	90	33	0	12	0	45	17	49	0	0	66	204
12:00 PM	1	1	0	0	2	2	56	51	0	109	29	1	13	0	43	9	44	0	0	53	207
12:15 PM	2	0	0	0	2	3	48	33	0	84	30	0	5	0	35	18	34	2	0	54	175
Total Volume	3	1	4	0	8	5	198	158	0	361	117	3	44	0	164	56	180	3	0	239	772
% App. Total	37.5	12.5	50	0		1.4	54.8	43.8	0		71.3	1.8	26.8	0		23.4	75.3	1.3	0		
PHF	.375	.250	.333	.000	.667	.417	.884	.775	.000	.828	.886	.375	.786	.000	.911	.778	.849	.375	.000	.905	.932
Passenger Veh	3	1	4	0	8	5	193	154	0	352	117	3	44	0	164	56	177	2	0	235	759
% Passenger Veh	100	100	100	0	100	100	97.5	97.5	0	97.5	100	100	100	0	100	100	98.3	66.7	0	98.3	98.3
Trucks	0	0	0	0	0	0	5	4	0	9	0	0	0	0	0	0	3	1	0	4	13
% Trucks	0	0	0	0	0	0	2.5	2.5	0	2.5	0	0	0	0	0	0	1.7	33.3	0	1.7	1.7

# Data Collection Group

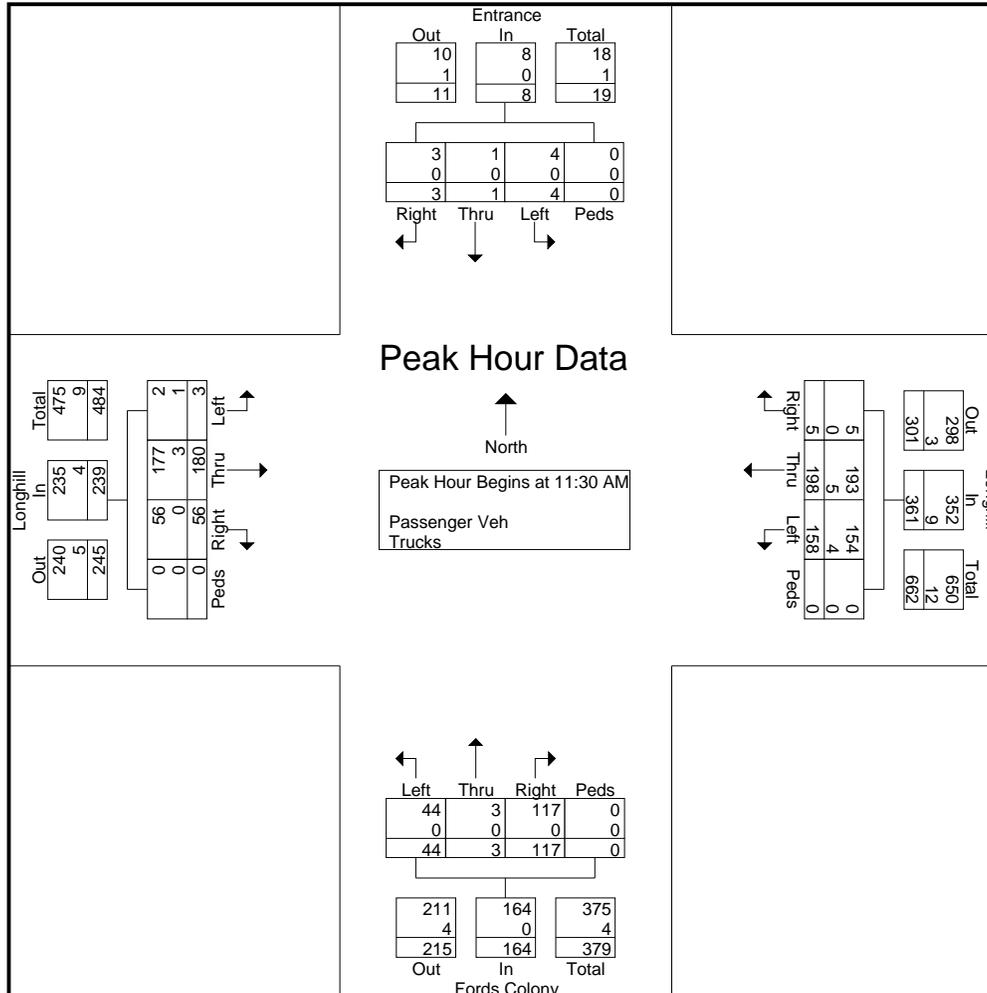
## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony

Site Code : 13333333

Start Date : 6/8/2017

Page No : 6



# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Longhill and Fords Colony  
 Site Code : 13333333  
 Start Date : 6/8/2017  
 Page No : 7

Start Time	Entrance From North					Longhill From East					Fords Colony From South					Longhill From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	0	0	0	1	0	65	50	0	115	30	1	14	0	45	19	93	0	0	112	273
05:00 PM	3	0	0	0	3	1	63	39	0	103	31	2	4	0	37	11	78	0	0	89	232
05:15 PM	0	0	1	0	1	1	79	47	0	127	25	0	14	0	39	9	86	0	0	95	262
05:30 PM	1	0	3	0	4	0	75	56	0	131	35	0	13	0	48	14	83	0	0	97	280
Total Volume	5	0	4	0	9	2	282	192	0	476	121	3	45	0	169	53	340	0	0	393	1047
% App. Total	55.6	0	44.4	0		0.4	59.2	40.3	0		71.6	1.8	26.6	0		13.5	86.5	0	0		
PHF	.417	.000	.333	.000	.563	.500	.892	.857	.000	.908	.864	.375	.804	.000	.880	.697	.914	.000	.000	.877	.935
Passenger Veh	5	0	4	0	9	2	277	192	0	471	119	2	45	0	166	53	337	0	0	390	1036
% Passenger Veh	100	0	100	0	100	100	98.2	100	0	98.9	98.3	66.7	100	0	98.2	100	99.1	0	0	99.2	98.9
Trucks	0	0	0	0	0	0	5	0	0	5	2	1	0	0	3	0	3	0	0	3	11
% Trucks	0	0	0	0	0	0	1.8	0	0	1.1	1.7	33.3	0	0	1.8	0	0.9	0	0	0.8	1.1



# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Centerville and Manchester  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 1

### Groups Printed- Passenger Veh - Trucks

Start Time	Centerville From North					Manchester From East					Centerville From South					Westport From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30 AM	0	19	6	0	25	3	0	4	0	7	2	31	1	0	34	1	0	0	0	1	67
06:45 AM	0	28	10	0	38	7	0	7	0	14	4	54	0	0	58	0	0	0	0	0	110
<b>Total</b>	<b>0</b>	<b>47</b>	<b>16</b>	<b>0</b>	<b>63</b>	<b>10</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>21</b>	<b>6</b>	<b>85</b>	<b>1</b>	<b>0</b>	<b>92</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>177</b>
07:00 AM	1	29	1	0	31	7	0	9	0	16	5	57	0	0	62	1	0	0	0	1	110
07:15 AM	0	52	7	0	59	10	0	13	0	23	6	77	2	0	85	0	0	0	0	0	167
07:30 AM	2	36	9	0	47	11	0	12	0	23	11	123	1	0	135	0	1	2	0	3	208
07:45 AM	0	58	10	0	68	10	0	15	0	25	10	85	1	0	96	0	0	1	0	1	190
<b>Total</b>	<b>3</b>	<b>175</b>	<b>27</b>	<b>0</b>	<b>205</b>	<b>38</b>	<b>0</b>	<b>49</b>	<b>0</b>	<b>87</b>	<b>32</b>	<b>342</b>	<b>4</b>	<b>0</b>	<b>378</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>675</b>
08:00 AM	0	55	14	0	69	8	0	16	0	24	10	61	0	0	71	0	0	1	0	1	165
08:15 AM	1	61	17	0	79	18	0	11	0	29	12	68	0	0	80	2	0	0	0	2	190
<b>Total</b>	<b>1</b>	<b>116</b>	<b>31</b>	<b>0</b>	<b>148</b>	<b>26</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>53</b>	<b>22</b>	<b>129</b>	<b>0</b>	<b>0</b>	<b>151</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>355</b>
04:00 PM	0	59	11	0	70	5	2	11	0	18	17	74	0	0	91	1	0	1	0	2	181
04:15 PM	0	58	4	0	62	1	0	9	0	10	16	65	0	0	81	0	0	1	0	1	154
04:30 PM	1	45	5	0	51	6	0	7	0	13	13	85	0	0	98	2	1	0	0	3	165
04:45 PM	0	61	5	0	66	7	0	15	0	22	21	71	0	0	92	1	1	2	0	4	184
<b>Total</b>	<b>1</b>	<b>223</b>	<b>25</b>	<b>0</b>	<b>249</b>	<b>19</b>	<b>2</b>	<b>42</b>	<b>0</b>	<b>63</b>	<b>67</b>	<b>295</b>	<b>0</b>	<b>0</b>	<b>362</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>10</b>	<b>684</b>
05:00 PM	0	60	6	0	66	9	0	12	0	21	16	66	0	0	82	0	0	0	0	0	169
05:15 PM	2	59	7	0	68	5	0	8	0	13	14	74	2	0	90	1	0	0	0	1	172
05:30 PM	0	57	5	0	62	7	0	12	0	19	13	79	0	0	92	0	0	1	0	1	174
05:45 PM	1	58	9	0	68	5	0	13	0	18	13	46	2	0	61	1	0	2	0	3	150
<b>Total</b>	<b>3</b>	<b>234</b>	<b>27</b>	<b>0</b>	<b>264</b>	<b>26</b>	<b>0</b>	<b>45</b>	<b>0</b>	<b>71</b>	<b>56</b>	<b>265</b>	<b>4</b>	<b>0</b>	<b>325</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>665</b>
<b>Grand Total</b>	<b>8</b>	<b>795</b>	<b>126</b>	<b>0</b>	<b>929</b>	<b>119</b>	<b>2</b>	<b>174</b>	<b>0</b>	<b>295</b>	<b>183</b>	<b>1116</b>	<b>9</b>	<b>0</b>	<b>1308</b>	<b>10</b>	<b>3</b>	<b>11</b>	<b>0</b>	<b>24</b>	<b>2556</b>
Apprch %	0.9	85.6	13.6	0		40.3	0.7	59	0		14	85.3	0.7	0		41.7	12.5	45.8	0		
Total %	0.3	31.1	4.9	0	36.3	4.7	0.1	6.8	0	11.5	7.2	43.7	0.4	0	51.2	0.4	0.1	0.4	0	0.9	
Passenger Veh	6	752	117	0	875	114	2	170	0	286	165	1050	8	0	1223	9	3	10	0	22	2406
% Passenger Veh	75	94.6	92.9	0	94.2	95.8	100	97.7	0	96.9	90.2	94.1	88.9	0	93.5	90	100	90.9	0	91.7	94.1
Trucks	2	43	9	0	54	5	0	4	0	9	18	66	1	0	85	1	0	1	0	2	150
% Trucks	25	5.4	7.1	0	5.8	4.2	0	2.3	0	3.1	9.8	5.9	11.1	0	6.5	10	0	9.1	0	8.3	5.9

# Data Collection Group

## LSmith@DataCollectionGroup.net

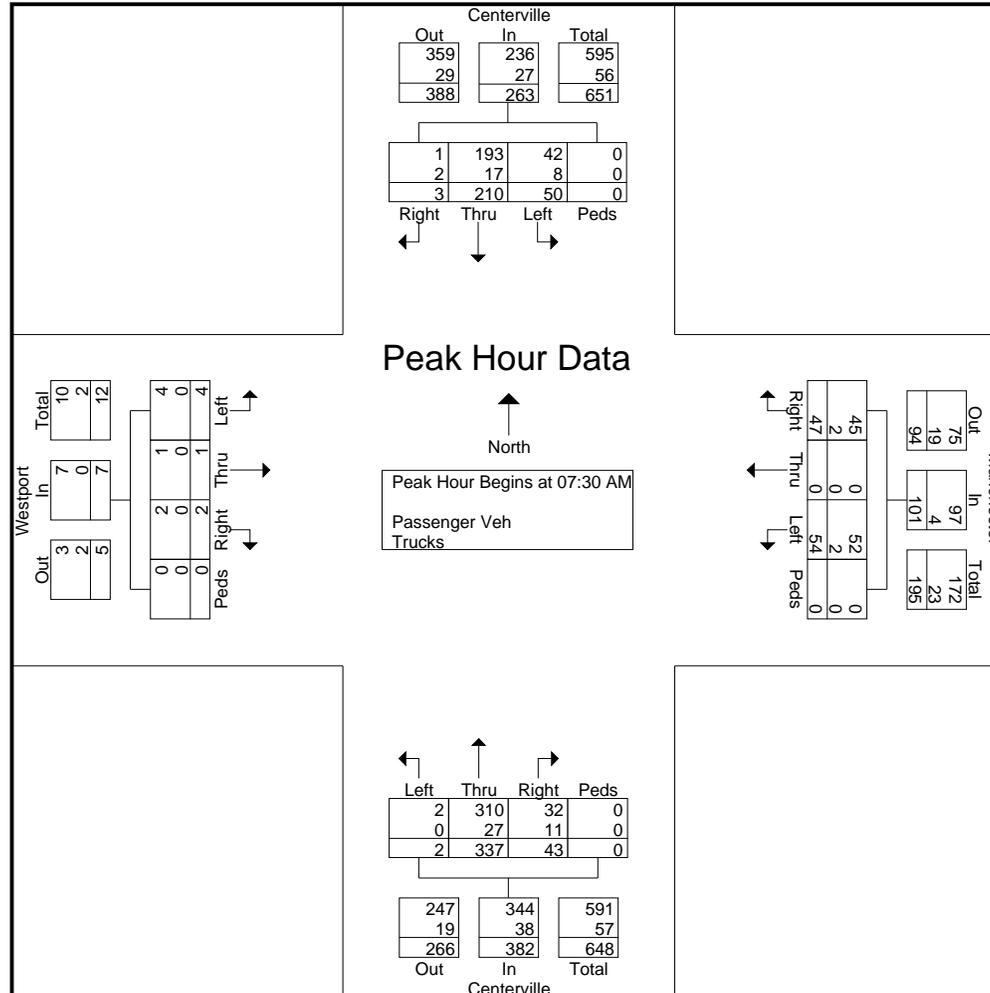
File Name : Centerville and Manchester  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 2

Start Time	Centerville From North					Manchester From East					Centerville From South					Westport From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:30 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	2	36	9	0	47	11	0	12	0	23	11	123	1	0	135	0	1	2	0	3	208
07:45 AM	0	58	10	0	68	10	0	15	0	25	10	85	1	0	96	0	0	1	0	1	190
08:00 AM	0	55	14	0	69	8	0	16	0	24	10	61	0	0	71	0	0	1	0	1	165
08:15 AM	1	61	17	0	79	18	0	11	0	29	12	68	0	0	80	2	0	0	0	2	190
Total Volume	3	210	50	0	263	47	0	54	0	101	43	337	2	0	382	2	1	4	0	7	753
% App. Total	1.1	79.8	19	0		46.5	0	53.5	0		11.3	88.2	0.5	0		28.6	14.3	57.1	0		
PHF	.375	.861	.735	.000	.832	.653	.000	.844	.000	.871	.896	.685	.500	.000	.707	.250	.250	.500	.000	.583	.905
Passenger Veh	1	193	42	0	236	45	0	52	0	97	32	310	2	0	344	2	1	4	0	7	684
% Passenger Veh	33.3	91.9	84.0	0	89.7	95.7	0	96.3	0	96.0	74.4	92.0	100	0	90.1	100	100	100	0	100	90.8
Trucks	2	17	8	0	27	2	0	2	0	4	11	27	0	0	38	0	0	0	0	0	69
% Trucks	66.7	8.1	16.0	0	10.3	4.3	0	3.7	0	4.0	25.6	8.0	0	0	9.9	0	0	0	0	0	9.2

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Centerville and Manchester  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 3



# Data Collection Group

## LSmith@DataCollectionGroup.net

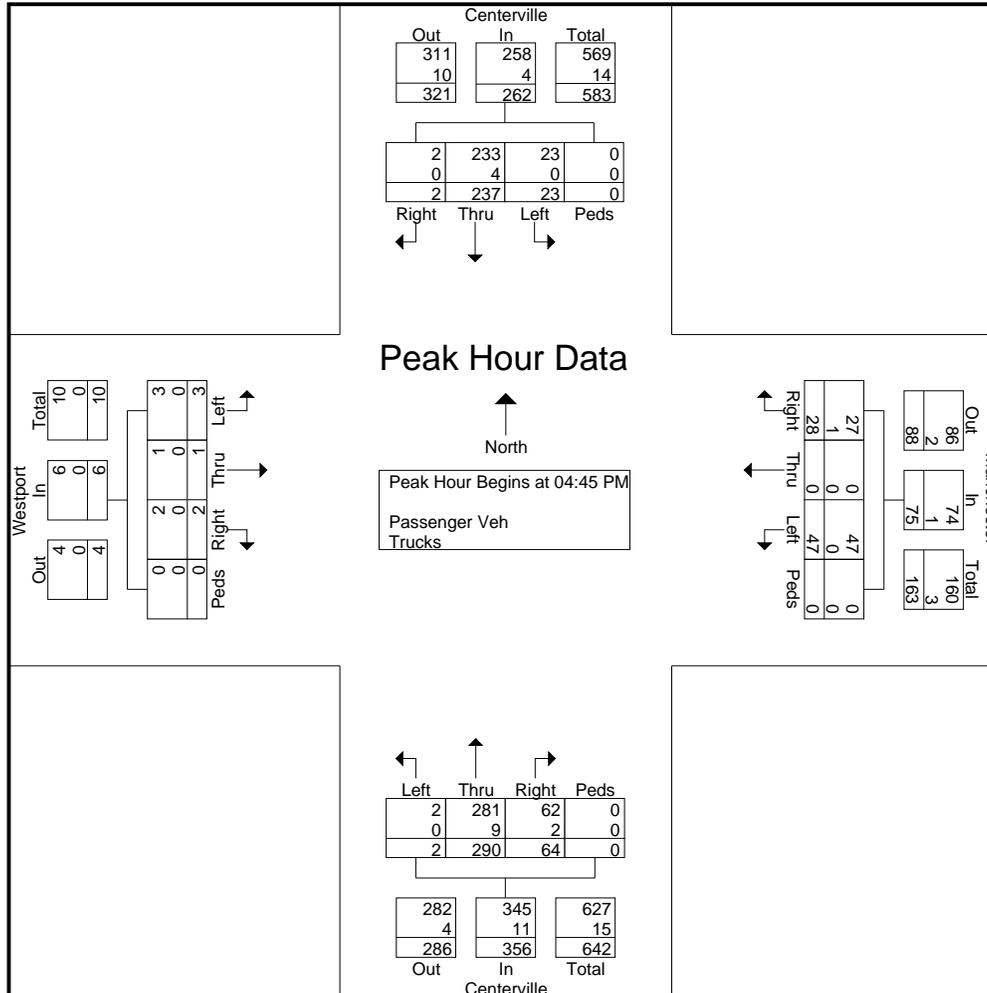
File Name : Centerville and Manchester  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 4

Start Time	Centerville From North					Manchester From East					Centerville From South					Westport From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	61	5	0	66	7	0	15	0	22	21	71	0	0	92	1	1	2	0	4	184
05:00 PM	0	60	6	0	66	9	0	12	0	21	16	66	0	0	82	0	0	0	0	0	169
05:15 PM	2	59	7	0	68	5	0	8	0	13	14	74	2	0	90	1	0	0	0	1	172
05:30 PM	0	57	5	0	62	7	0	12	0	19	13	79	0	0	92	0	0	1	0	1	174
Total Volume	2	237	23	0	262	28	0	47	0	75	64	290	2	0	356	2	1	3	0	6	699
% App. Total	0.8	90.5	8.8	0		37.3	0	62.7	0		18	81.5	0.6	0		33.3	16.7	50	0		
PHF	.250	.971	.821	.000	.963	.778	.000	.783	.000	.852	.762	.918	.250	.000	.967	.500	.250	.375	.000	.375	.950
Passenger Veh	2	233	23	0	258	27	0	47	0	74	62	281	2	0	345	2	1	3	0	6	683
% Passenger Veh	100	98.3	100	0	98.5	96.4	0	100	0	98.7	96.9	96.9	100	0	96.9	100	100	100	0	100	97.7
Trucks	0	4	0	0	4	1	0	0	0	1	2	9	0	0	11	0	0	0	0	0	16
% Trucks	0	1.7	0	0	1.5	3.6	0	0	0	1.3	3.1	3.1	0	0	3.1	0	0	0	0	0	2.3

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : Centerville and Manchester  
 Site Code :  
 Start Date : 6/8/2017  
 Page No : 5



# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 1

Groups Printed- Passenger Veh - Trucks

Start Time	Firestone From North					News From East					From South					News From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:00 AM	0	0	7	0	7	0	3	0	0	3	0	0	0	0	0	0	17	0	0	17	27
06:15 AM	0	0	5	0	5	1	6	0	0	7	0	0	0	0	0	0	21	0	0	21	33
06:30 AM	1	0	16	0	17	3	6	0	0	9	0	0	0	0	0	0	26	0	0	26	52
06:45 AM	1	0	14	0	15	1	14	0	0	15	0	0	0	0	0	0	27	0	0	27	57
Total	2	0	42	0	44	5	29	0	0	34	0	0	0	0	0	0	91	0	0	91	169
07:00 AM	2	0	18	0	20	2	23	0	0	25	0	0	0	0	0	0	36	0	0	36	81
07:15 AM	2	0	15	0	17	2	21	0	0	23	0	0	0	0	0	0	47	0	0	47	87
07:30 AM	1	0	24	0	25	9	30	0	0	39	0	0	0	0	0	0	49	0	0	49	113
07:45 AM	5	0	15	0	20	11	29	0	0	40	0	0	0	0	0	0	55	2	0	57	117
Total	10	0	72	0	82	24	103	0	0	127	0	0	0	0	0	0	187	2	0	189	398
08:00 AM	4	0	27	0	31	11	31	0	0	42	0	0	0	0	0	0	39	3	0	42	115
08:15 AM	7	0	19	0	26	12	35	0	0	47	0	0	0	0	0	0	45	5	0	50	123
08:30 AM	1	0	30	0	31	9	25	0	0	34	0	0	0	0	0	0	58	4	0	62	127
08:45 AM	2	0	18	0	20	11	40	0	0	51	0	0	0	0	0	0	61	1	0	62	133
Total	14	0	94	0	108	43	131	0	0	174	0	0	0	0	0	0	203	13	0	216	498
09:00 AM	3	0	25	0	28	13	46	0	0	59	0	0	0	0	0	0	66	0	0	66	153
09:15 AM	5	0	22	0	27	16	25	0	0	41	0	0	0	0	0	0	38	1	0	39	107
09:30 AM	4	0	18	0	22	13	29	0	0	42	0	0	0	0	0	0	36	1	0	37	101
09:45 AM	4	0	22	0	26	19	22	0	0	41	0	0	0	0	0	0	35	0	0	35	102
Total	16	0	87	0	103	61	122	0	0	183	0	0	0	0	0	0	175	2	0	177	463
10:00 AM	1	0	19	0	20	22	28	0	0	50	0	0	0	0	0	0	34	2	0	36	106
10:15 AM	4	0	29	0	33	10	32	0	0	42	0	0	0	0	0	0	37	0	0	37	112
10:30 AM	3	0	27	0	30	13	22	0	0	35	0	0	0	0	0	0	39	1	0	40	105
10:45 AM	3	0	35	0	38	33	35	0	0	68	0	0	0	0	0	0	43	1	0	44	150
Total	11	0	110	0	121	78	117	0	0	195	0	0	0	0	0	0	153	4	0	157	473
11:00 AM	3	0	22	0	25	31	30	0	0	61	0	0	0	0	0	0	31	2	0	33	119
11:15 AM	6	0	22	0	28	20	35	0	0	55	0	0	0	0	0	0	41	1	0	42	125
11:30 AM	0	0	31	0	31	21	52	0	0	73	0	0	0	0	0	0	43	0	0	43	147
11:45 AM	2	0	29	0	31	33	35	0	0	68	0	0	0	0	0	0	31	3	0	34	133
Total	11	0	104	0	115	105	152	0	0	257	0	0	0	0	0	0	146	6	0	152	524
12:00 PM	3	0	19	0	22	29	23	0	0	52	0	0	0	0	0	0	32	3	0	35	109
12:15 PM	3	0	26	0	29	33	40	0	0	73	0	0	0	0	0	0	36	2	0	38	140
12:30 PM	0	0	21	0	21	29	44	0	0	73	0	0	0	0	0	0	33	2	0	35	129
12:45 PM	6	0	17	0	23	35	65	0	0	100	0	0	0	0	0	0	41	4	0	45	168
Total	12	0	83	0	95	126	172	0	0	298	0	0	0	0	0	0	142	11	0	153	546

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 2

Groups Printed- Passenger Veh - Trucks

Start Time	Firestone From North					News From East					From South					News From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
01:00 PM	6	0	32	0	38	28	39	0	0	67	0	0	0	0	0	0	47	0	0	47	152
01:15 PM	0	0	30	0	30	25	44	0	0	69	0	0	0	0	0	0	31	4	0	35	134
01:30 PM	1	0	27	0	28	21	34	0	0	55	0	0	0	0	0	0	40	0	0	40	123
01:45 PM	3	0	25	0	28	32	41	0	0	73	0	0	0	0	0	0	28	1	0	29	130
<b>Total</b>	<b>10</b>	<b>0</b>	<b>114</b>	<b>0</b>	<b>124</b>	<b>106</b>	<b>158</b>	<b>0</b>	<b>0</b>	<b>264</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>146</b>	<b>5</b>	<b>0</b>	<b>151</b>	<b>539</b>
02:00 PM	4	0	28	0	32	22	40	0	1	63	0	0	0	0	0	0	49	6	0	55	150
02:15 PM	2	0	32	0	34	29	46	0	0	75	0	0	0	0	0	0	29	0	0	29	138
02:30 PM	3	0	26	0	29	37	66	0	0	103	0	0	0	0	0	0	43	2	0	45	177
02:45 PM	8	0	26	0	34	30	59	0	0	89	0	0	0	0	0	0	37	2	0	39	162
<b>Total</b>	<b>17</b>	<b>0</b>	<b>112</b>	<b>0</b>	<b>129</b>	<b>118</b>	<b>211</b>	<b>0</b>	<b>1</b>	<b>330</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>158</b>	<b>10</b>	<b>0</b>	<b>168</b>	<b>627</b>
03:00 PM	2	0	18	0	20	27	48	0	0	75	0	0	0	0	0	0	30	5	0	35	130
03:15 PM	1	0	24	0	25	38	56	0	0	94	0	0	0	0	0	0	35	0	0	35	154
03:30 PM	2	0	19	0	21	34	60	0	0	94	0	0	0	0	0	0	64	8	0	72	187
03:45 PM	3	0	20	0	23	24	56	0	0	80	0	0	0	0	0	0	44	3	0	47	150
<b>Total</b>	<b>8</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>89</b>	<b>123</b>	<b>220</b>	<b>0</b>	<b>0</b>	<b>343</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>173</b>	<b>16</b>	<b>0</b>	<b>189</b>	<b>621</b>
04:00 PM	4	0	14	0	18	39	51	0	0	90	0	0	0	0	0	0	52	5	0	57	165
04:15 PM	1	0	20	0	21	36	52	0	0	88	0	0	0	0	0	0	37	4	0	41	150
04:30 PM	6	0	16	0	22	33	61	0	0	94	0	0	0	0	0	0	38	5	0	43	159
04:45 PM	3	0	15	0	18	27	67	0	0	94	0	0	0	0	0	0	37	3	0	40	152
<b>Total</b>	<b>14</b>	<b>0</b>	<b>65</b>	<b>0</b>	<b>79</b>	<b>135</b>	<b>231</b>	<b>0</b>	<b>0</b>	<b>366</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>164</b>	<b>17</b>	<b>0</b>	<b>181</b>	<b>626</b>
05:00 PM	0	0	17	0	17	39	60	0	0	99	0	0	0	0	0	0	34	2	0	36	152
05:15 PM	1	0	12	0	13	25	57	0	0	82	0	0	0	0	0	0	41	0	0	41	136
05:30 PM	3	0	21	0	24	21	63	0	0	84	0	0	0	0	0	0	35	3	0	38	146
05:45 PM	2	0	24	0	26	35	70	0	0	105	0	0	0	0	0	0	34	4	0	38	169
<b>Total</b>	<b>6</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>80</b>	<b>120</b>	<b>250</b>	<b>0</b>	<b>0</b>	<b>370</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>144</b>	<b>9</b>	<b>0</b>	<b>153</b>	<b>603</b>
<b>Grand Total</b>	<b>131</b>	<b>0</b>	<b>1038</b>	<b>0</b>	<b>1169</b>	<b>1044</b>	<b>1896</b>	<b>0</b>	<b>1</b>	<b>2941</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1882</b>	<b>95</b>	<b>0</b>	<b>1977</b>	<b>6087</b>
Apprch %	11.2	0	88.8	0		35.5	64.5	0	0		0	0	0	0		0	95.2	4.8	0		
Total %	2.2	0	17.1	0	19.2	17.2	31.1	0	0	48.3	0	0	0	0	0	0	30.9	1.6	0	32.5	
Passenger Veh	122	0	1024	0	1146	1034	1819	0	1	2854	0	0	0	0	0	0	1827	90	0	1917	5917
% Passenger Veh	93.1	0	98.7	0	98	99	95.9	0	100	97	0	0	0	0	0	0	97.1	94.7	0	97	97.2
Trucks	9	0	14	0	23	10	77	0	0	87	0	0	0	0	0	0	55	5	0	60	170
% Trucks	6.9	0	1.3	0	2	1	4.1	0	0	3	0	0	0	0	0	0	2.9	5.3	0	3	2.8

# Data Collection Group

## LSmith@DataCollectionGroup.net

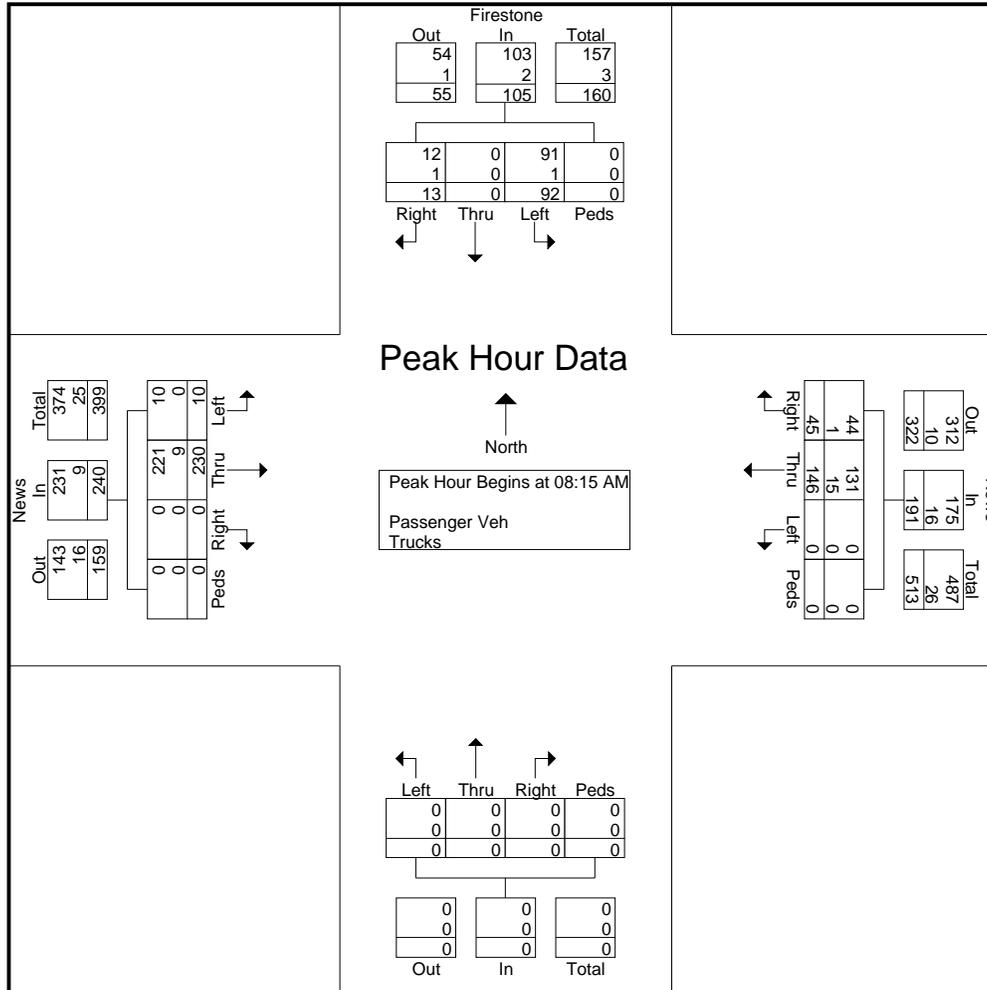
File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 3

Start Time	Firestone From North					News From East					From South					News From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:15 AM																					
08:15 AM	7	0	19	0	26	12	35	0	0	47	0	0	0	0	0	0	45	5	0	50	123
08:30 AM	1	0	30	0	31	9	25	0	0	34	0	0	0	0	0	0	58	4	0	62	127
08:45 AM	2	0	18	0	20	11	40	0	0	51	0	0	0	0	0	0	61	1	0	62	133
09:00 AM	3	0	25	0	28	13	46	0	0	59	0	0	0	0	0	0	66	0	0	66	153
Total Volume	13	0	92	0	105	45	146	0	0	191	0	0	0	0	0	0	230	10	0	240	536
% App. Total	12.4	0	87.6	0		23.6	76.4	0	0		0	0	0	0	0	0	95.8	4.2	0		
PHF	.464	.000	.767	.000	.847	.865	.793	.000	.000	.809	.000	.000	.000	.000	.000	.000	.871	.500	.000	.909	.876
Passenger Veh	12	0	91	0	103	44	131	0	0	175	0	0	0	0	0	0	221	10	0	231	509
% Passenger Veh	92.3	0	98.9	0	98.1	97.8	89.7	0	0	91.6	0	0	0	0	0	0	96.1	100	0	96.3	95.0
Trucks	1	0	1	0	2	1	15	0	0	16	0	0	0	0	0	0	9	0	0	9	27
% Trucks	7.7	0	1.1	0	1.9	2.2	10.3	0	0	8.4	0	0	0	0	0	0	3.9	0	0	3.8	5.0

# Data Collection Group

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File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 4



# Data Collection Group

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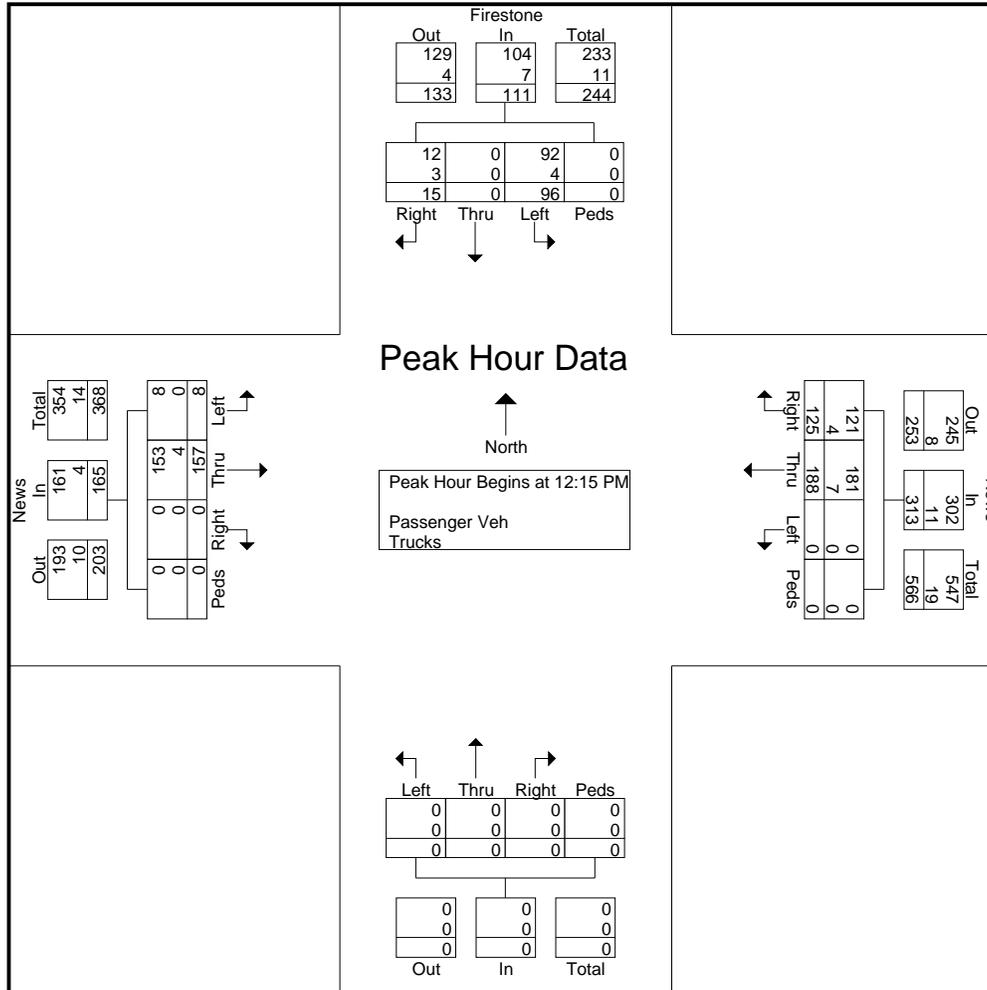
File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 5

Start Time	Firestone From North					News From East					From South					News From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	3	0	26	0	29	33	40	0	0	73	0	0	0	0	0	0	36	2	0	38	140
12:30 PM	0	0	21	0	21	29	44	0	0	73	0	0	0	0	0	0	33	2	0	35	129
12:45 PM	<b>6</b>	0	17	0	23	<b>35</b>	<b>65</b>	0	0	<b>100</b>	0	0	0	0	0	0	41	<b>4</b>	0	<b>45</b>	<b>168</b>
01:00 PM	6	0	<b>32</b>	0	<b>38</b>	28	39	0	0	67	0	0	0	0	0	0	<b>47</b>	0	0	<b>47</b>	152
Total Volume	15	0	96	0	111	125	188	0	0	313	0	0	0	0	0	0	157	8	0	165	589
% App. Total	13.5	0	86.5	0		39.9	60.1	0	0		0	0	0	0	0	0	95.2	4.8	0		
PHF	.625	.000	.750	.000	.730	.893	.723	.000	.000	.783	.000	.000	.000	.000	.000	.000	.835	.500	.000	.878	.876
Passenger Veh	12	0	92	0	104	121	181	0	0	302	0	0	0	0	0	0	153	8	0	161	567
% Passenger Veh	80.0	0	95.8	0	93.7	96.8	96.3	0	0	96.5	0	0	0	0	0	0	97.5	100	0	97.6	96.3
Trucks	3	0	4	0	7	4	7	0	0	11	0	0	0	0	0	0	4	0	0	4	22
% Trucks	20.0	0	4.2	0	6.3	3.2	3.7	0	0	3.5	0	0	0	0	0	0	2.5	0	0	2.4	3.7

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 6



# Data Collection Group

## LSmith@DataCollectionGroup.net

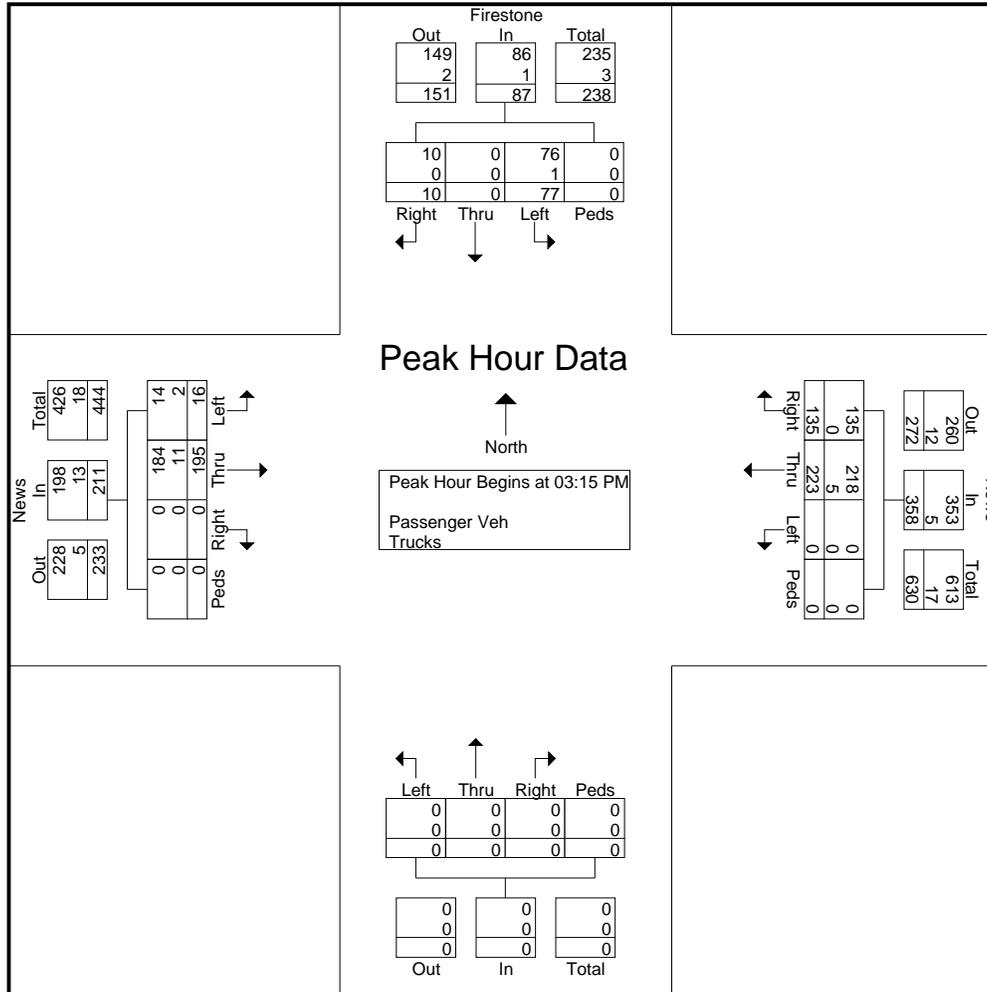
File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 7

Start Time	Firestone From North					News From East					From South					News From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:15 PM																					
03:15 PM	1	0	24	0	25	38	56	0	0	94	0	0	0	0	0	0	35	0	0	35	154
03:30 PM	2	0	19	0	21	34	60	0	0	94	0	0	0	0	0	0	64	8	0	72	187
03:45 PM	3	0	20	0	23	24	56	0	0	80	0	0	0	0	0	0	44	3	0	47	150
04:00 PM	4	0	14	0	18	39	51	0	0	90	0	0	0	0	0	0	52	5	0	57	165
Total Volume	10	0	77	0	87	135	223	0	0	358	0	0	0	0	0	0	195	16	0	211	656
% App. Total	11.5	0	88.5	0		37.7	62.3	0	0		0	0	0	0		0	92.4	7.6	0		
PHF	.625	.000	.802	.000	.870	.865	.929	.000	.000	.952	.000	.000	.000	.000	.000	.000	.762	.500	.000	.733	.877
Passenger Veh	10	0	76	0	86	135	218	0	0	353	0	0	0	0	0	0	184	14	0	198	637
% Passenger Veh	100	0	98.7	0	98.9	100	97.8	0	0	98.6	0	0	0	0	0	0	94.4	87.5	0	93.8	97.1
Trucks	0	0	1	0	1	0	5	0	0	5	0	0	0	0	0	0	11	2	0	13	19
% Trucks	0	0	1.3	0	1.1	0	2.2	0	0	1.4	0	0	0	0	0	0	5.6	12.5	0	6.2	2.9

# Data Collection Group

## LSmith@DataCollectionGroup.net

File Name : News and Firestone  
 Site Code : 00681114  
 Start Date : 6/8/2017  
 Page No : 8



## **Appendix C: Volume Worksheets**

**VOLUME DEVELOPMENT SHEET**

**Longhill Road at Williamsburg W. Drive/Lane Place Drive  
AM Peak Hour  
(7:30 AM to 8:30 AM)**

Description	Longhill Road <b>Eastbound</b>			Longhill Road <b>Westbound</b>			Williamsburg W. Drive <b>Northbound</b>			Lane Place Drive <b>Southbound</b>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017</b> <b>Counts</b>												
Cars	3	727	21	41	449	15	39	2	223	54	1	16
Trucks	0	15	0	2	18	3	3	1	1	2	0	2
<b>Total Existing 2017 Traffic</b>	<b>3</b>	<b>742</b>	<b>21</b>	<b>43</b>	<b>467</b>	<b>18</b>	<b>42</b>	<b>3</b>	<b>224</b>	<b>56</b>	<b>1</b>	<b>18</b>
Truck %	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
PHF	0.88											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	3	772	22	45	486	19	44	3	233	58	1	19
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution					26%							
Exiting Distribution		25%										
Entering Assignment					2							
Exiting Assignment		7										
<b>Windsor</b>												
Entering Distribution					60%							
Exiting Distribution		60%										
Entering Assignment					2							
Exiting Assignment		7										
<b>The Village</b>												
Entering Distribution					8%							
Exiting Distribution		4%										
Entering Assignment					4							
Exiting Assignment		2										
<b>2021 No Build</b>	3	819	23	47	514	20	46	3	242	60	1	20
<b>2027 No Build</b>	4	920	26	53	577	22	52	4	273	68	1	22
<b>Proposed Trips</b>												
Entering Distribution					60%							
Exiting Distribution		60%										
Entering Assignment					4							
Exiting Assignment		13										
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	3	832	23	47	518	20	46	3	242	60	1	20
<b>2027 Total Traffic</b>	4	933	26	53	581	22	52	4	273	68	1	22

**PM Peak Hour  
(4:45 PM to 5:45 PM)**

Description	Longhill Road <b>Eastbound</b>			Longhill Road <b>Westbound</b>			Williamsburg W. Drive <b>Northbound</b>			Lane Place Drive <b>Southbound</b>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017</b> <b>Counts</b>												
Cars	17	716	35	206	967	38	49	0	132	23	0	13
Trucks	0	19	0	0	10	0	1	0	4	0	0	1
<b>Total Existing 2017 Traffic</b>	<b>17</b>	<b>735</b>	<b>35</b>	<b>206</b>	<b>977</b>	<b>38</b>	<b>50</b>	<b>0</b>	<b>136</b>	<b>23</b>	<b>0</b>	<b>14</b>
Truck %	0%	3%	0%	0%	1%	0%	2%	-	3%	0%	-	7%
PHF	0.95											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	18	765	36	214	1,016	40	52	0	141	24	0	15
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution					25%							
Exiting Distribution		28%										
Entering Assignment					7							
Exiting Assignment		5										
<b>Windsor</b>												
Entering Distribution					55%							
Exiting Distribution		55%										
Entering Assignment					7							
Exiting Assignment		4										
<b>The Village</b>												
Entering Distribution					5%							
Exiting Distribution		5%										
Entering Assignment					4							
Exiting Assignment		4										
<b>2021 No Build</b>	19	809	37	223	1,075	42	54	0	147	25	0	16
<b>2027 No Build</b>	21	909	42	251	1,209	47	61	0	165	28	0	18
<b>Proposed Trips</b>												
Entering Distribution					55%							
Exiting Distribution		55%										
Entering Assignment					13							
Exiting Assignment		8										
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	19	817	37	223	1,088	42	54	0	147	25	0	16
<b>2027 Total Traffic</b>	21	917	42	251	1,222	47	61	0	165	28	0	18

**VOLUME DEVELOPMENT SHEET**

**Longhill Road at Ford's Colony Drive  
AM Peak Hour  
(7:30 AM to 8:30 AM)**

Description	Longhill Road <u>Eastbound</u>			Longhill Road <u>Westbound</u>			Fords Colony Drive <u>Northbound</u>			Dominion Village Entrance <u>Southbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017 Counts</b>												
Cars	3	277	34	103	247	1	63	1	130	0	1	0
Trucks	0	16	2	3	19	0	7	0	0	0	0	0
<b>Total Existing 2017 Traffic</b>	3	293	36	106	266	1	70	1	130	0	1	0
Truck %	0%	5%	6%	3%	7%	0%	10%	0%	0%	-	0%	-
PHF	0.83											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	3	305	37	110	277	1	73	1	135	0	1	0
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution				26%								
Exiting Distribution	25%											
Entering Assignment				2								
Exiting Assignment	7											
<b>Windsor</b>												
Entering Distribution			20%	60%								
Exiting Distribution							20%		60%			
Entering Assignment			1	2								
Exiting Assignment							2		7			
<b>The Village</b>												
Entering Distribution				8%								
Exiting Distribution		4%										
Entering Assignment				4								
Exiting Assignment		2										
<b>2021 No Build</b>	3	326	39	116	294	1	78	1	148	0	1	0
<b>2027 No Build</b>	4	366	44	131	331	1	88	1	165	0	1	0
<b>Proposed Trips</b>												
Entering Distribution			20%	60%								
Exiting Distribution							20%		60%			
Entering Assignment			1	4								
Exiting Assignment							4		13			
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	3	326	40	120	294	1	82	1	161	0	1	0
<b>2027 Total Traffic</b>	4	366	45	135	331	1	92	1	178	0	1	0

**PM Peak Hour  
(4:45 PM to 5:45 PM)**

Description	Longhill Road <u>Eastbound</u>			Longhill Road <u>Westbound</u>			Fords Colony Drive <u>Northbound</u>			Dominion Village Entrance <u>Southbound</u>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017 Counts</b>												
Cars	0	337	53	192	277	2	45	2	119	4	0	5
Trucks	0	3	0	0	5	0	0	1	2	0	0	0
<b>Total Existing 2017 Traffic</b>	0	340	53	192	282	2	45	3	121	4	0	5
Truck %	-	1%	0%	0%	2%	0%	0%	33%	2%	0%	-	0%
PHF	0.94											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	0	354	55	200	293	2	47	3	126	4	0	5
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution				25%								
Exiting Distribution		28%										
Entering Assignment				7								
Exiting Assignment		5										
<b>Windsor</b>												
Entering Distribution			15%	55%								
Exiting Distribution							15%		55%			
Entering Assignment			2	7								
Exiting Assignment							1		4			
<b>The Village</b>												
Entering Distribution				5%								
Exiting Distribution		5%										
Entering Assignment				4								
Exiting Assignment		4										
<b>2021 No Build</b>	0	377	59	215	316	2	50	3	135	4	0	5
<b>2027 No Build</b>	0	424	66	242	354	2	56	4	152	5	0	6
<b>Proposed Trips</b>												
Entering Distribution			15%	55%								
Exiting Distribution							15%		55%			
Entering Assignment			4	13								
Exiting Assignment							2		8			
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	0	377	63	228	316	2	52	3	143	4	0	5
<b>2027 Total Traffic</b>	0	424	70	255	354	2	58	4	160	5	0	6

**VOLUME DEVELOPMENT SHEET**

**Centerville Road at Manchester Drive  
AM Peak Hour  
(7:30 AM to 8:30 AM)**

Description	Westport <b>Eastbound</b>			Manchester Drive <b>Westbound</b>			Centerville Road <b>Northbound</b>			Centerville Road <b>Southbound</b>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017</b> Counts												
Cars	4	1	2	52	0	45	2	310	32	42	193	1
Trucks	0	0	0	2	0	2	0	27	11	8	17	2
<b>total Existing 2017 Traffic</b>	4	1	2	54	0	47	2	337	43	50	210	3
Truck %	0%	0%	0%	4%	-	4%	0%	8%	26%	16%	8%	67%
PHF	0.91											
Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
<b>Existing</b>												
<b>2019</b> Existing	4	1	2	57	0	49	2	354	45	53	221	3
Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution							25%					75%
Exiting Distribution	72%		28%									
Entering Assignment							2					7
Exiting Assignment	19		7									
<b>Windsor</b>												
Entering Distribution									15%	5%		
Exiting Distribution				15%		5%						
Entering Assignment									1	0		
Exiting Assignment				2		1						
<b>The Village</b>												
Entering Distribution											22%	
Exiting Distribution								12%				
Entering Assignment											11	
Exiting Assignment								6				
<b>2021</b> No Build	23	1	9	62	0	52	4	378	48	56	243	10
<b>2027</b> No Build	24	1	10	71	0	61	4	437	55	65	280	11
<b>Proposed Trips</b>												
Entering Distribution									15%	5%		
Exiting Distribution				15%		5%						
Entering Assignment									1	0		
Exiting Assignment				3		1						
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	23	1	9	65	0	53	4	378	49	56	243	10
<b>2027 Total Traffic</b>	24	1	10	74	0	62	4	437	56	65	280	11

**PM Peak Hour  
(4:45 PM to 5:45 PM)**

Description	Westport <b>Eastbound</b>			Manchester Drive <b>Westbound</b>			Centerville Road <b>Northbound</b>			Centerville Road <b>Southbound</b>		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017</b> Counts												
Cars	3	1	2	47	0	27	2	281	62	23	233	2
Trucks	0	0	0	0	0	1	0	9	2	0	4	0
<b>total Existing 2017 Traffic</b>	3	1	2	47	0	28	2	290	64	23	237	2
Truck %	0%	0%	0%	0%	-	4%	0%	3%	3%	0%	2%	0%
PHF	0.95											
Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
<b>Existing</b>												
<b>2019</b> Existing	3	1	2	49	0	29	2	305	67	24	249	2
Growth Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution							29%					71%
Exiting Distribution	79%		21%									
Entering Assignment							8					20
Exiting Assignment	13		4									
<b>Windsor</b>												
Entering Distribution									30%			
Exiting Distribution				30%								
Entering Assignment									4			
Exiting Assignment				5								
<b>The Village</b>												
Entering Distribution											13%	
Exiting Distribution								14%				
Entering Assignment											11	
Exiting Assignment								11				
<b>2021</b> No Build	16	1	6	56	0	30	10	331	74	25	273	22
<b>2027</b> No Build	17	1	6	64	0	35	10	383	86	29	314	22
<b>Proposed Trips</b>												
Entering Distribution									30%			
Exiting Distribution				30%								
Entering Assignment									7			
Exiting Assignment				4								
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	16	1	6	60	0	30	10	331	81	25	273	22
<b>2027 Total Traffic</b>	17	1	6	68	0	35	10	383	93	29	314	22

**VOLUME DEVELOPMENT SHEET**

**Firestone Drive at News Road  
AM Peak Hour  
(7:30 AM to 8:30 AM)**

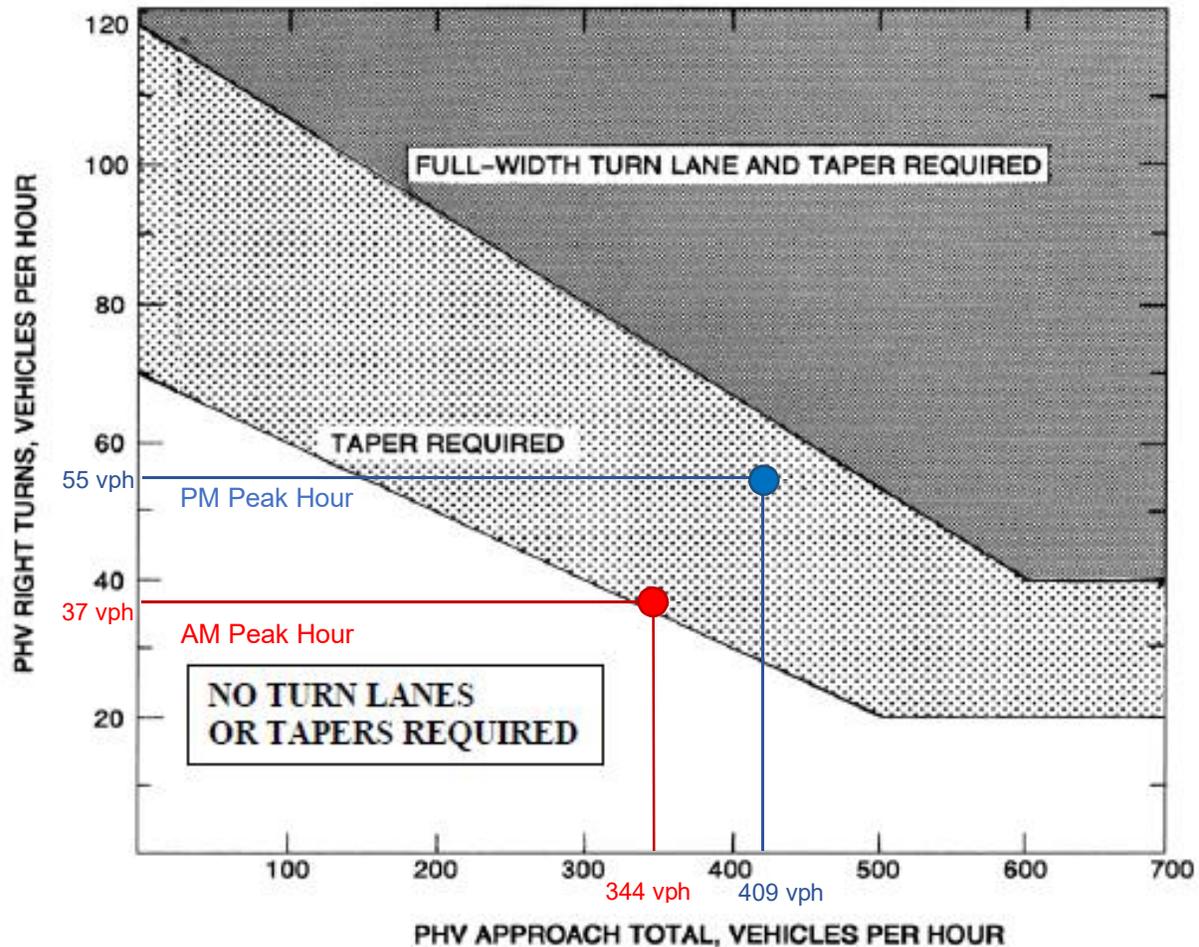
Description	News Road Eastbound			News Road Westbound			Proposed Entrance Northbound			Firestone Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017 Counts</b>												
Cars	8	182	0	0	109	42	-	-	-	85	0	17
Trucks	2	6	0	0	16	1	-	-	-	0	0	0
<b>Total Existing 2017 Traffic</b>	10	188	0	0	125	43	0	0	0	85	0	17
Truck %	20%	3%	-	-	13%	2%	-	-	-	0%	-	0%
PHF	0.95											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	10	196	0	0	130	45	0	0	0	88	0	18
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution					20%							
Exiting Distribution		25%										
Entering Assignment					2							
Exiting Assignment		7										
<b>Windsor</b>												
Entering Distribution					10%							
Exiting Distribution		10%										
Entering Assignment					0							
Exiting Assignment		1										
<b>The Village</b>												
Entering Distribution			37%	63%			27%		73%			
Exiting Distribution												
Entering Assignment			18	31								
Exiting Assignment							14		38			
<b>2021 No Build</b>	10	212	18	31	137	47	14	0	38	92	0	19
<b>2027 No Build</b>	12	237	18	31	154	53	14	0	38	103	0	21
<b>Proposed Trips</b>												
Entering Distribution					10%							
Exiting Distribution		10%										
Entering Assignment					1							
Exiting Assignment		2										
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	10	214	18	31	138	47	14	0	38	92	0	19
<b>2027 Total Traffic</b>	12	239	18	31	155	53	14	0	38	103	0	21

**PM Peak Hour  
(4:45 PM to 5:45 PM)**

Description	News Road Eastbound			News Road Westbound			Proposed Entrance Northbound			Firestone Drive Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
<b>2017 Counts</b>												
Cars	8	144	0	0	243	112	-	-	-	64	0	7
Trucks	0	3	0	0	4	0	-	-	-	1	0	0
<b>Total Existing 2017 Traffic</b>	8	147	0	0	247	112	0	0	0	65	0	7
Truck %	0%	2%	-	-	2%	0%	-	-	-	2%	-	0%
PHF	0.96											
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Existing</b>												
<b>2019 Existing</b>	8	153	0	0	257	117	0	0	0	68	0	7
Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
<b>Background Traffic</b>												
<b>Westport</b>												
Entering Distribution					25%							
Exiting Distribution		20%										
Entering Assignment					7							
Exiting Assignment		3										
<b>Windsor</b>												
Entering Distribution					30%							
Exiting Distribution		30%										
Entering Assignment					4							
Exiting Assignment		2										
<b>The Village</b>												
Entering Distribution			28%	72%			29%		71%			
Exiting Distribution												
Entering Assignment			23	59								
Exiting Assignment							23		56			
<b>2021 No Build</b>	8	164	23	59	278	122	23	0	56	71	0	7
<b>2027 No Build</b>	9	182	23	59	308	137	23	0	56	80	0	8
<b>Proposed Trips</b>												
Entering Distribution					30%							
Exiting Distribution		30%										
Entering Assignment					7							
Exiting Assignment		4										
<b>Proposed + Background</b>												
<b>2021 Total Traffic</b>	8	168	23	59	285	122	23	0	56	71	0	7
<b>2027 Total Traffic</b>	9	186	23	59	315	137	23	0	56	80	0	8

## **Appendix D: Turn Lane and Signal Warrant Worksheets**

2019 Existing Conditions – Longhill Road EBRT



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

**LEGEND**

**PHV** - Peak Hour Volume (also Design Hourly Volume equivalent)

**Adjustment for Right Turns**

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula:  $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

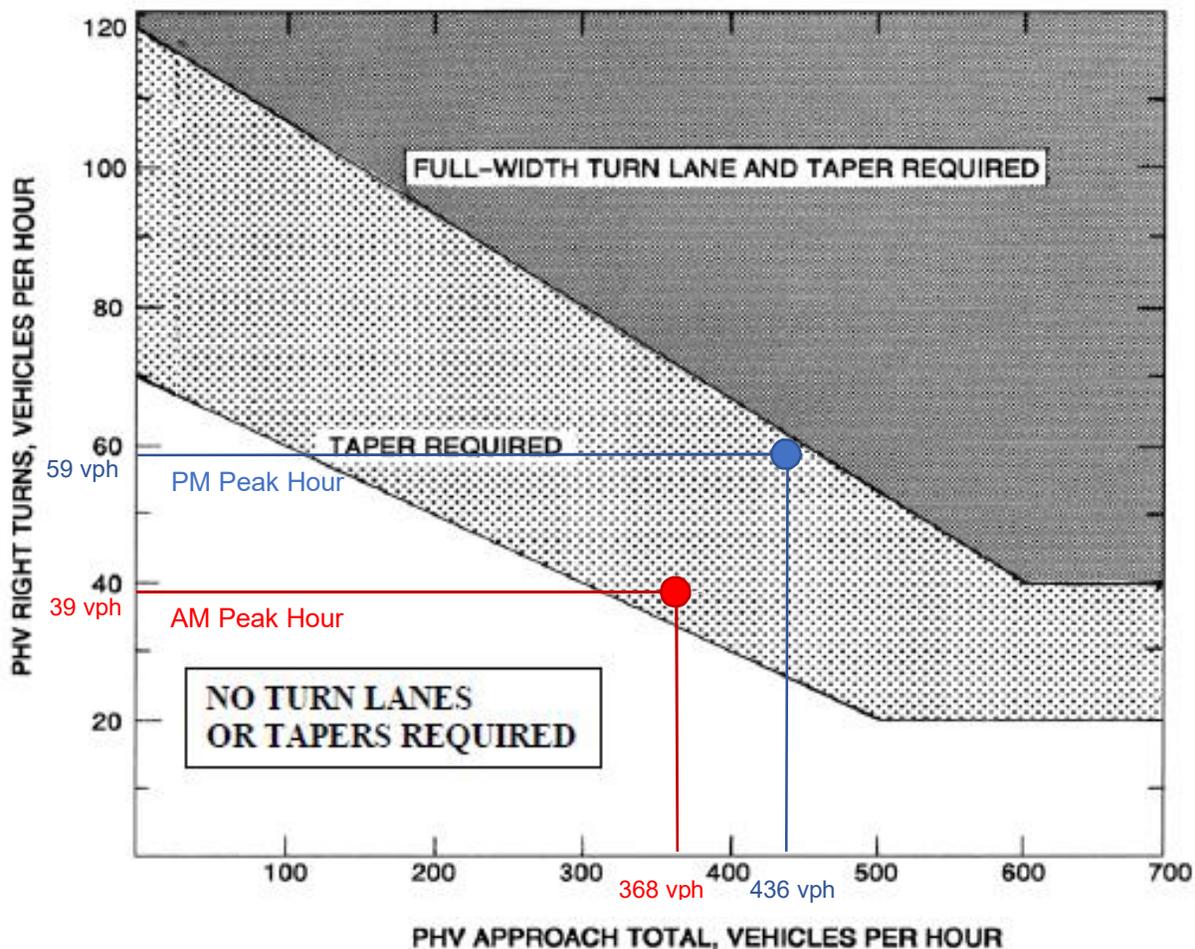
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.\*

**FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**

2021 No Build Conditions – Longhill Road EBRT



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

**LEGEND**

**PHV** - Peak Hour Volume (also Design Hourly Volume equivalent)

**Adjustment for Right Turns**

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula:  $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

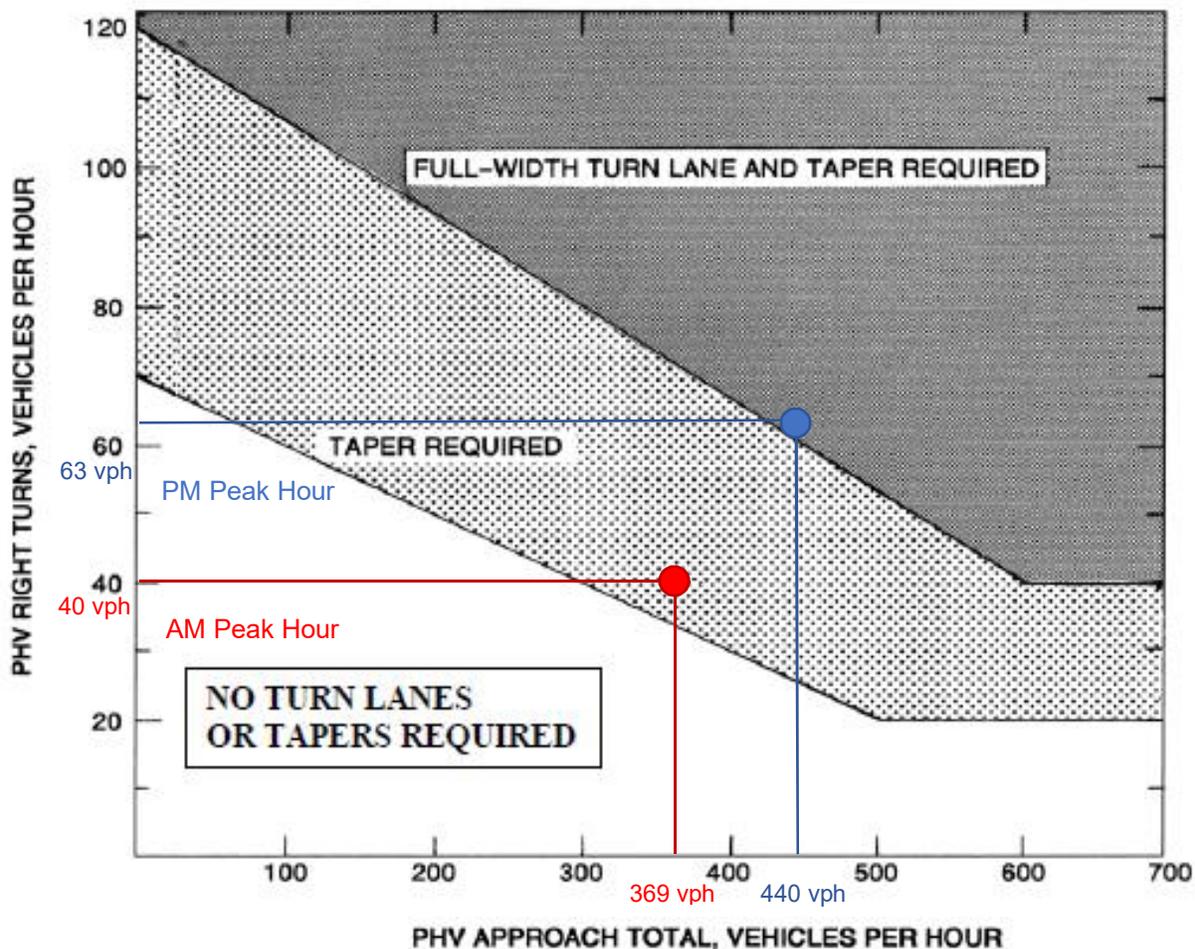
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

**FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**

2021 Build Conditions – Longhill Road EBRT



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

**LEGEND**

**PHV** - Peak Hour Volume (also Design Hourly Volume equivalent)

**Adjustment for Right Turns**

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula:  $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

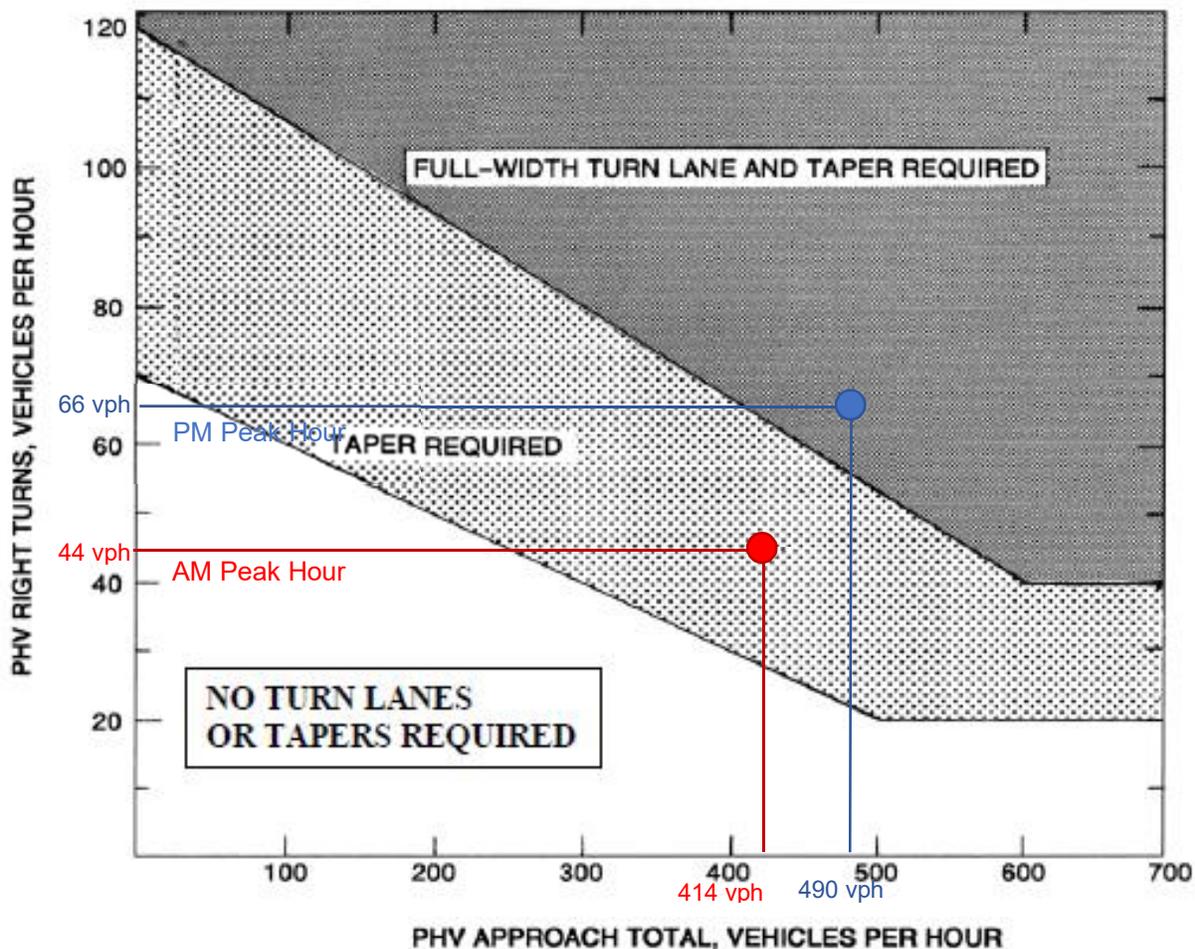
D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

**FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**

2027 No Build Conditions – Longhill Road EBRT



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

**LEGEND**

**PHV** - Peak Hour Volume (also Design Hourly Volume equivalent)

**Adjustment for Right Turns**

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula:  $PHV = ADT \times K \times D$

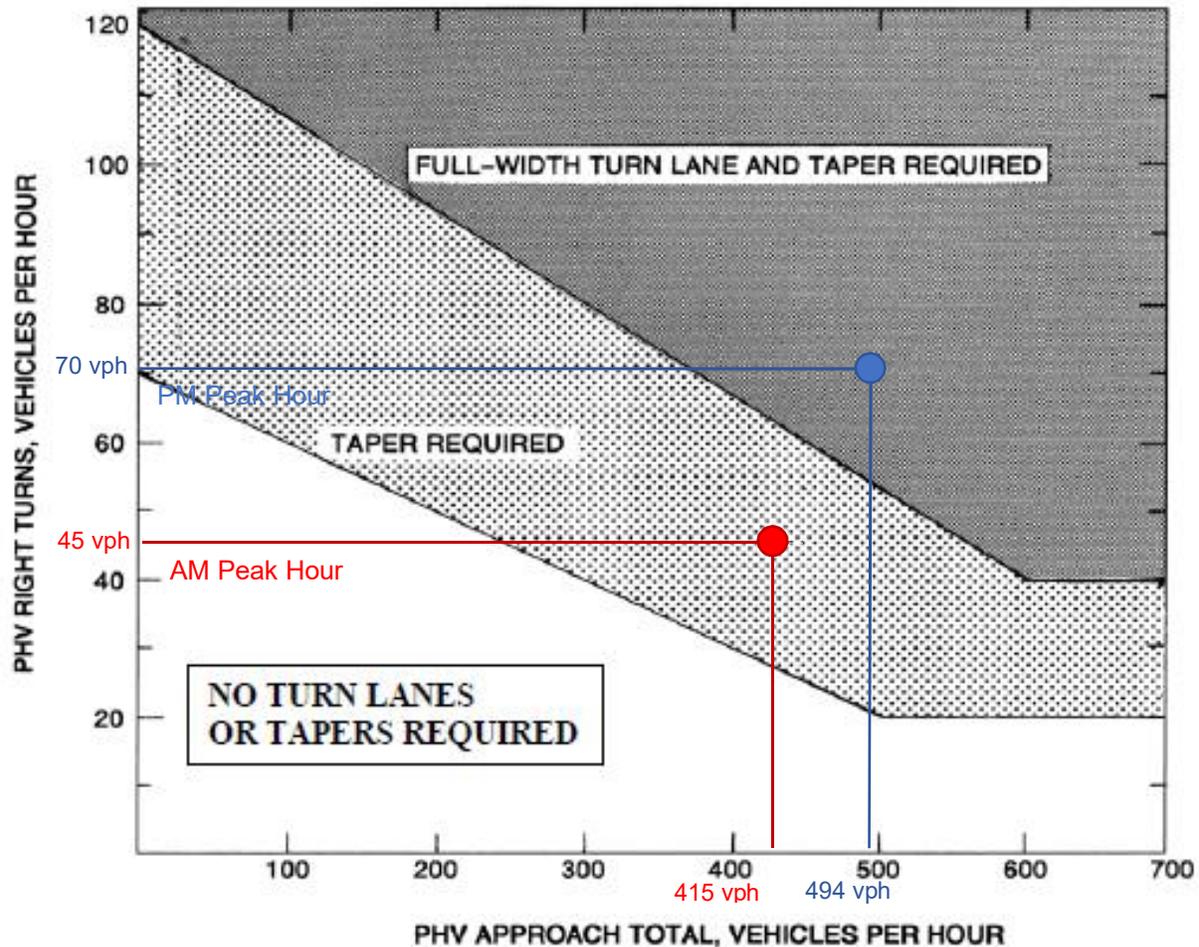
- K = the percent of AADT occurring in the peak hour
- D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

**FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**

2027 Build Conditions – Longhill Road EBRT



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

**LEGEND**

**PHV** - Peak Hour Volume (also Design Hourly Volume equivalent)

**Adjustment for Right Turns**

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula:  $PHV = ADT \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.

**FIGURE 3-26 WARRANTS FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**

## **Firestone Drive at News Road**









## Firestone Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Firestone Drive at News Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2027 Build (No SBR, WBR, or NBR)

MAJOR STREET: News Road  
 MINOR STREET: Firestone Drive/The Villages Driveway

# OF APPROACH LANES: 2  
 # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH		WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3		
				MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B						
										MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET				
<b>THRESHOLD VALUES</b>	EB/WB	SB	NB	420	105		630	53		336	84		504	42					
06:00 AM TO 07:00 AM	188	43	32											Y					
07:00 AM TO 08:00 AM	420	74	50	Y				Y		Y				Y					
08:00 AM TO 09:00 AM	511	96	51	Y				Y		Y	Y	Y	Y	Y	Y				
09:00 AM TO 10:00 AM	453	88	36	Y				Y		Y	Y	Y		Y					
10:00 AM TO 11:00 AM	429	111	31	Y	Y	Y		Y		Y	Y	Y		Y					
11:00 AM TO 12:00 AM	474	105	32	Y	Y	Y		Y		Y	Y	Y		Y					
12:00 PM TO 01:00 PM	515	84	32	Y				Y		Y	Y	Y	Y	Y	Y				
01:00 PM TO 02:00 PM	499	115	34	Y	Y	Y		Y		Y	Y	Y		Y					
02:00 PM TO 03:00 PM	609	113	36	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y				
03:00 PM TO 04:00 PM	679	82	38	Y			Y	Y	Y	Y			Y	Y	Y				
04:00 PM TO 05:00 PM	720	66	38	Y			Y	Y	Y	Y			Y	Y	Y				
05:00 PM TO 06:00 PM	733	75	39	Y			Y	Y	Y	Y			Y	Y	Y				
	0	0	0																
	0	0	0																
	0	0	0																
	0	0	0																
	6,230	1,052	449	4			3			7			6			0	0		
				<b>8 HOURS NEEDED NOT SATISFIED</b>			<b>8 HOURS NEEDED NOT SATISFIED</b>			<b>8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED</b>						<b>4 HRS NEEDED NOT SATISFIED</b>		<b>1 HR NEEDED NOT SATISFIED</b>	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant  
 Condition A : Minimum Vehicular Volume  
 Condition B : Interruption of Continuous Traffic  
 Combination : Combination of Condition A and Condition B  
 WARRANT 2 -- Four-Hour Vehicular Volume Warrant  
 WARRANT 3 -- Peak Hour Warrant

## **Fords Colony Drive at Longhill Road**

## Fords Colony Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Fords Colony Drive at Longhill Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2019 Existing (No WBR or NBR)

MAJOR STREET: Longhill Road  
 MINOR STREET: Fords Colony Drive

# OF APPROACH LANES: 2  
 # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH		WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
				MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
										MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO 07:00 AM	234	15	2														
07:00 AM TO 08:00 AM	604	52	2	Y						Y			Y	Y	Y		
08:00 AM TO 09:00 AM	771	63	2	Y			Y	Y	Y	Y			Y	Y	Y		
09:00 AM TO 10:00 AM	617	44	1	Y						Y			Y	Y	Y		
10:00 AM TO 11:00 AM	507	66	5	Y				Y		Y			Y	Y	Y		
11:00 AM TO 12:00 AM	573	45	6	Y						Y			Y	Y	Y		
12:00 PM TO 01:00 PM	598	50	5	Y						Y			Y	Y	Y		
01:00 PM TO 02:00 PM	551	44	12	Y						Y			Y	Y	Y		
02:00 PM TO 03:00 PM	763	55	8	Y			Y	Y	Y	Y			Y	Y	Y		
03:00 PM TO 04:00 PM	833	75	13	Y			Y	Y	Y	Y			Y	Y	Y	Y	
04:00 PM TO 05:00 PM	850	56	4	Y			Y	Y	Y	Y			Y	Y	Y		
05:00 PM TO 06:00 PM	865	39	8	Y			Y			Y			Y				
	0	0	0														
	0	0	0														
	0	0	0														
	0	0	0														
	7,766	604	68	0			4			0			10			1	0
				8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED			1 HR NEEDED NOT SATISFIED	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant  
 Condition A : Minimum Vehicular Volume  
 Condition B : Interruption of Continuous Traffic  
 Combination : Combination of Condition A and Condition B  
 WARRANT 2 -- Four-Hour Vehicular Volume Warrant  
 WARRANT 3 -- Peak Hour Warrant

## Fords Colony Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Fords Colony Drive at Longhill Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2021 No Build (No WBR or NBR)

MAJOR STREET: Longhill Road  
 MINOR STREET: Fords Colony Drive

# OF APPROACH LANES: 2  
 # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH		WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
				MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
										MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO 07:00 AM	268	18	2														
07:00 AM TO 08:00 AM	665	57	2	Y			Y	Y	Y	Y			Y	Y	Y		
08:00 AM TO 09:00 AM	843	69	2	Y			Y	Y	Y	Y			Y	Y	Y		
09:00 AM TO 10:00 AM	674	48	1	Y			Y			Y			Y	Y	Y		
10:00 AM TO 11:00 AM	560	71	5	Y				Y		Y			Y	Y	Y		
11:00 AM TO 12:00 AM	631	49	6	Y			Y			Y			Y	Y	Y		
12:00 PM TO 01:00 PM	656	54	5	Y			Y	Y	Y	Y			Y	Y	Y		
01:00 PM TO 02:00 PM	608	48	12	Y						Y			Y	Y	Y		
02:00 PM TO 03:00 PM	831	59	8	Y			Y	Y	Y	Y			Y	Y	Y		
03:00 PM TO 04:00 PM	909	80	14	Y			Y	Y	Y	Y			Y	Y	Y	Y	
04:00 PM TO 05:00 PM	932	60	4	Y			Y	Y	Y	Y			Y	Y	Y	Y	
05:00 PM TO 06:00 PM	950	43	8	Y			Y			Y			Y	Y	Y		
	0	0	0														
	0	0	0														
	0	0	0														
	0	0	0														
	8,527	656	69	0			6			0			11			2	0
				8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED			1 HR NEEDED NOT SATISFIED	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant  
 Condition A : Minimum Vehicular Volume  
 Condition B : Interruption of Continuous Traffic  
 Combination : Combination of Condition A and Condition B  
 WARRANT 2 -- Four-Hour Vehicular Volume Warrant  
 WARRANT 3 -- Peak Hour Warrant

## Fords Colony Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Fords Colony Drive at Longhill Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2021 Build (No WBR or NBR)

MAJOR STREET: Longhill Road

# OF APPROACH LANES: 2

MINOR STREET: Fords Colony Drive

# OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH		WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
				MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
										MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO 07:00 AM	273	23	2														
07:00 AM TO 08:00 AM	673	64	2	Y			Y	Y	Y	Y			Y	Y	Y		
08:00 AM TO 09:00 AM	855	77	2	Y			Y	Y	Y	Y			Y	Y	Y	Y	
09:00 AM TO 10:00 AM	686	53	1	Y			Y	Y	Y	Y			Y	Y	Y		
10:00 AM TO 11:00 AM	573	76	5	Y				Y		Y			Y	Y	Y		
11:00 AM TO 12:00 AM	646	54	6	Y			Y	Y	Y	Y			Y	Y	Y		
12:00 PM TO 01:00 PM	671	57	5	Y			Y	Y	Y	Y			Y	Y	Y		
01:00 PM TO 02:00 PM	623	52	12	Y					Y				Y	Y	Y		
02:00 PM TO 03:00 PM	850	63	8	Y			Y	Y	Y	Y			Y	Y	Y		
03:00 PM TO 04:00 PM	932	84	14	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
04:00 PM TO 05:00 PM	960	64	4	Y			Y	Y	Y	Y			Y	Y	Y	Y	
05:00 PM TO 06:00 PM	982	47	8	Y			Y			Y			Y	Y	Y		
	0	0	0														
	0	0	0														
	0	0	0														
	0	0	0														
	8,724	714	69	0			8			1			11			3	0
				8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED			4 HRS NEEDED NOT SATISFIED			1 HR NEEDED NOT SATISFIED	

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 WARRANT 3 -- Peak Hour Warrant

## Fords Colony Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Fords Colony Drive at Longhill Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2027 No Build (No WBR or NBR)

MAJOR STREET: Longhill Road  
 MINOR STREET: Fords Colony Drive

# OF APPROACH LANES: 2  
 # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

	MAJOR ST BOTH APPROACHES	MINOR ST HIGHEST APPROACH			WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
					MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
											MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES	EB/WB	NB	SB	420	105		630	53		336	84		504	42				
06:00 AM TO 07:00 AM	300	20	2															
07:00 AM TO 08:00 AM	743	64	2	Y			Y	Y	Y	Y			Y	Y	Y			
08:00 AM TO 09:00 AM	944	77	2	Y			Y	Y	Y	Y			Y	Y	Y	Y		
09:00 AM TO 10:00 AM	755	54	1	Y			Y	Y	Y	Y			Y	Y	Y			
10:00 AM TO 11:00 AM	626	79	6	Y				Y		Y			Y	Y	Y			
11:00 AM TO 12:00 AM	706	55	7	Y			Y	Y	Y	Y			Y	Y	Y			
12:00 PM TO 01:00 PM	734	61	6	Y			Y	Y	Y	Y			Y	Y	Y			
01:00 PM TO 02:00 PM	680	54	14	Y			Y	Y	Y	Y			Y	Y	Y			
02:00 PM TO 03:00 PM	931	66	9	Y			Y	Y	Y	Y			Y	Y	Y	Y		
03:00 PM TO 04:00 PM	1,018	90	15	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
04:00 PM TO 05:00 PM	1,043	68	5	Y			Y	Y	Y	Y			Y	Y	Y	Y		
05:00 PM TO 06:00 PM	1,064	48	9	Y			Y			Y			Y	Y	Y			
	0																	
	0	0	0															
	0	0	0															
	0	0	0															
	9,544	736	78	0			9			1			11			4	0	
				8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED			4 HRS NEEDED SATISFIED			1 HR NEEDED NOT SATISFIED		

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant  
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 WARRANT 3 -- Peak Hour Warrant

## Fords Colony Drive Traffic Signal Warrant Analysis

### TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Fords Colony Drive at Longhill Road

COUNT DATE: 6/8/2017

INTERSECTION CONDITION: 2027 Build (No WBR or NBR)

MAJOR STREET: Longhill Road  
 MINOR STREET: Fords Colony Drive

# OF APPROACH LANES: 2  
 # OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N  
 85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): Y

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				MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
										MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES	EB/WB	NB	SB	420	105		630	53		336	84		504	42			
06:00 AM TO 07:00 AM	305	25	2														
07:00 AM TO 08:00 AM	751	71	2	Y			Y	Y	Y	Y			Y	Y	Y		
08:00 AM TO 09:00 AM	956	85	2	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
09:00 AM TO 10:00 AM	767	59	1	Y			Y	Y	Y	Y			Y	Y	Y		
10:00 AM TO 11:00 AM	639	84	6	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y		
11:00 AM TO 12:00 AM	721	60	7	Y			Y	Y	Y	Y			Y	Y	Y		
12:00 PM TO 01:00 PM	749	64	6	Y			Y	Y	Y	Y			Y	Y	Y		
01:00 PM TO 02:00 PM	695	58	14	Y			Y	Y	Y	Y			Y	Y	Y		
02:00 PM TO 03:00 PM	950	70	9	Y			Y	Y	Y	Y			Y	Y	Y	Y	
03:00 PM TO 04:00 PM	1,041	94	15	Y			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
04:00 PM TO 05:00 PM	1,071	72	5	Y			Y	Y	Y	Y			Y	Y	Y	Y	
05:00 PM TO 06:00 PM	1,096	52	9	Y			Y			Y			Y	Y	Y		
	0	0	0														
	0	0	0														
	0	0	0														
	0	0	0														
	9,741	794	78	0			10			3			11			4	0
				8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED			4 HRS NEEDED SATISFIED			1 HR NEEDED NOT SATISFIED	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant  
 Condition A : Minimum Vehicular Volume  
 Condition B : Interruption of Continuous Traffic  
 Combination : Combination of Condition A and Condition B  
 WARRANT 2 -- Four-Hour Vehicular Volume Warrant  
 WARRANT 3 -- Peak Hour Warrant

## **Appendix E: Synchro and SimTraffic Reports**

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2019 Existing

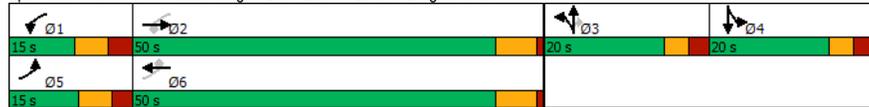


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Traffic Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Future Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't			0.850			0.850			0.850			0.967
Flt Protected	0.950			0.950				0.955				0.964
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1676	0
Flt Permitted	0.346			0.084				0.955				0.964
Satd. Flow (perm)	657	1863	1615	152	1827	1380	0	1673	1615	0	1676	0
Satd. Flow (RTOR)				156				265				13
Adj. Flow (vph)	3	877	25	51	552	22	50	3	265	66	1	22
Lane Group Flow (vph)	3	877	25	51	552	22	0	53	265	0	89	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	15.0	50.0	50.0	15.0	50.0	50.0	20.0	20.0	20.0	20.0	20.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	51.1	45.5	45.5	47.9	50.8	50.8		9.2	9.2		9.9	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.11	0.11		0.12	
v/c Ratio	0.01	0.89	0.03	0.27	0.51	0.03		0.30	0.65		0.44	
Control Delay	9.3	35.7	0.0	13.1	15.4	0.1		43.8	13.5		41.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	9.3	35.7	0.0	13.1	15.4	0.1		43.8	13.5		41.3	
LOS	A	D	A	B	B	A		D	B		D	
Approach Delay		34.6			14.7			18.5			41.3	
Approach LOS		C			B			B			D	

Intersection Summary

Cycle Length: 105  
 Actuated Cycle Length: 85.9  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 25.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 75.1%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2019 Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Traffic Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Future Volume (vph)	3	772	22	45	486	19	44	3	233	58	1	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Fr't	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1676	
Flt Permitted	0.35	1.00	1.00	0.08	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	658	1863	1615	152	1827	1380		1673	1615		1676	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88		0.88	0.88		0.88	
Adj. Flow (vph)	3	877	25	51	552	22	50	3	265	66	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	239	0	12	0
Lane Group Flow (vph)	3	877	13	51	552	12	0	53	26	0	77	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	51.5	47.6	47.6	51.0	50.7	50.7		9.2	9.2		8.0	
Effective Green, g (s)	51.5	47.6	47.6	51.0	50.7	50.7		9.2	9.2		8.0	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.09	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	377	961	833	141	1004	758		166	161		145	
v/s Ratio Prot	0.00	c0.47		c0.01	c0.30			c0.03			c0.05	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.02			
v/c Ratio	0.01	0.91	0.02	0.36	0.55	0.02		0.32	0.16		0.53	
Uniform Delay, d1	9.8	20.4	10.9	17.3	13.4	9.4		38.6	38.0		40.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	13.3	0.0	0.6	1.1	0.0		1.1	0.5		3.7	
Delay (s)	9.8	33.7	10.9	17.9	14.5	9.4		39.7	38.5		44.0	
Level of Service	A	C	B	B	B	A		D	D		D	
Approach Delay (s)		33.0			14.6			38.7			44.0	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay 28.5  
 HCM 2000 Level of Service C  
 HCM 2000 Volume to Capacity ratio 0.76  
 Actuated Cycle Length (s) 92.2  
 Sum of lost time (s) 24.0  
 Intersection Capacity Utilization 75.1%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 c Critical Lane Group

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2019 Existing



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔	↔		↔	↔
Traffic Volume (vph)	3	305	37	110	277	1	73	1	135	0	1	0
Future Volume (vph)	3	305	37	110	277	1	73	1	135	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.850			0.913						
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1648	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1648	0	0	1900	0
Adj. Flow (vph)	4	367	45	133	334	1	88	1	163	0	1	0
Lane Group Flow (vph)	4	412	0	133	334	1	0	252	0	0	1	0
Sign Control	Free		Free			Stop			Stop			

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 53.5%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2019 Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔	↔		↔	↔
Traffic Volume (veh/h)	3	305	37	110	277	1	73	1	135	0	1	0
Future Volume (Veh/h)	3	305	37	110	277	1	73	1	135	0	1	0
Sign Control	Free		Free			Stop			Stop			
Grade	0%		0%			0%			0%			
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	367	45	133	334	1	88	1	163	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None		None									
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	335	412			998			998	390	1138	1020	334
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	335	412			998			998	390	1138	1020	334
tC, single (s)	4.1	4.1			7.2			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.6			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	88			55			100	75	100	100	100
cM capacity (veh/h)	1236	1142			195			216	663	123	210	712

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	412	133	334	1	252	1
Volume Left	4	0	133	0	0	88	0
Volume Right	0	45	0	0	1	163	0
cSH	1236	1700	1142	1700	1700	359	210
Volume to Capacity	0.00	0.24	0.12	0.20	0.00	0.70	0.00
Queue Length 95th (ft)	0	0	10	0	0	128	0
Control Delay (s)	7.9	0.0	8.6	0.0	0.0	35.5	22.2
Lane LOS	A		A			E	C
Approach Delay (s)	0.1	2.4		35.5			22.2
Approach LOS		E		E			C

Intersection Summary

Average Delay

8.9

Intersection Capacity Utilization

53.5%

ICU Level of Service

A

Analysis Period (min)

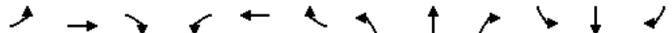
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Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2019 Existing



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	4	1	2	57	0	49	2	354	45	53	221	3
Future Volume (vph)	4	1	2	57	0	49	2	354	45	53	221	3
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.961		0.850			0.950		0.850		0.850		
Flt Protected	0.972		0.950			0.950		0.950			0.950	
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted	0.972		0.950			0.950		0.950		0.950		
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	4	1	2	63	0	54	2	389	49	58	243	3
Lane Group Flow (vph)	0	7	0	63	54	0	2	389	49	58	243	3
Sign Control	Stop		Stop			Free		Free		Free		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 36.9%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2019 Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	4	1	2	57	0	49	2	354	45	53	221	3	
Future Volume (Veh/h)	4	1	2	57	0	49	2	354	45	53	221	3	
Sign Control	Stop		Stop			Free		Free		Free			
Grade	0%		0%			0%		0%		0%			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	4	1	2	63	0	54	2	389	49	58	243	3	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	806	801	243	754	755	389	246						438
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	806	801	243	754	755	389	246						438
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	98	100	100	79	100	92	100						94
cM capacity (veh/h)	266	302	801	307	321	655	1332						1051

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	7	63	54	2	389	49	58	243	3	
Volume Left	4	63	0	2	0	0	58	0	0	
Volume Right	2	0	54	0	0	49	0	0	3	
cSH	336	307	655	1332	1700	1700	1051	1700	1700	
Volume to Capacity	0.02	0.21	0.08	0.00	0.23	0.03	0.06	0.14	0.00	
Queue Length 95th (ft)	2	19	7	0	0	0	4	0	0	
Control Delay (s)	16.0	19.7	11.0	7.7	0.0	0.0	8.6	0.0	0.0	
Lane LOS	C	C	B	A						A
Approach Delay (s)	16.0	15.7	0.0							1.6
Approach LOS	C	C								

Intersection Summary

Average Delay

2.8

Intersection Capacity Utilization

36.9%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2019 Existing

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↗
Traffic Volume (vph)	10	196	130	45	88	18
Future Volume (vph)	10	196	130	45	88	18
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt			0.850		0.850	
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1504	1845	1681	1583	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1504	1845	1681	1583	1805	1615
Adj. Flow (vph)	11	206	137	47	93	19
Lane Group Flow (vph)	11	206	137	47	93	19
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Control Type: Unsignalized						
Intersection Capacity Utilization 21.9%						
Analysis Period (min) 15						
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2019 Existing

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↗
Traffic Volume (veh/h)	10	196	130	45	88	18
Future Volume (Veh/h)	10	196	130	45	88	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	206	137	47	93	19
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						6
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	184				365	137
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	184				365	137
tC, single (s)	4.3				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.3
p0 queue free %	99				85	98
cM capacity (veh/h)	1290				633	917
<b>Direction, Lane #</b>						
Volume Total	11	206	137	47	112	
Volume Left	11	0	0	0	93	
Volume Right	0	0	0	47	19	
cSH	1290	1700	1700	1700	762	
Volume to Capacity	0.01	0.12	0.08	0.03	0.15	
Queue Length 95th (ft)	1	0	0	0	13	
Control Delay (s)	7.8	0.0	0.0	0.0	11.2	
Lane LOS	A				B	
Approach Delay (s)	0.4		0.0		11.2	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			21.9%		ICU Level of Service	A
Analysis Period (min)			15			

Queuing and Blocking Report

Fords Colony TIS Update  
2019 Existing

Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	69	479	164	81	230	41	92	120	112
Average Queue (ft)	3	197	13	24	93	6	35	61	43
95th Queue (ft)	39	398	82	62	182	26	76	101	88
Link Distance (ft)	1007				741	741	405	475	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		225		250		225		
Storage Blk Time (%)	0	6	0	0	0				
Queuing Penalty (veh)	0	1	0	0	0				

Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	14	10	70	192	6
Average Queue (ft)	1	0	21	69	0
95th Queue (ft)	7	6	51	148	4
Link Distance (ft)	2032		736		278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	30	60	54	8	64
Average Queue (ft)	5	23	19	0	14
95th Queue (ft)	22	48	41	5	45
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

Fords Colony TIS Update  
2019 Existing

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	SB	SB
Directions Served	L	T	L	R
Maximum Queue (ft)	40	4	69	31
Average Queue (ft)	2	0	34	14
95th Queue (ft)	18	4	57	39
Link Distance (ft)	493		375	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225		150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 2

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 No Build

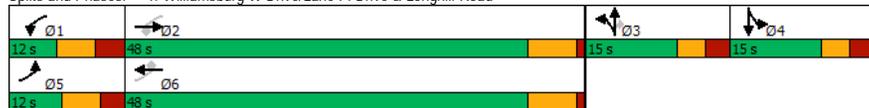


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Future Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850			0.966	
Flt Protected	0.950			0.950				0.955				0.964
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1674	0
Flt Permitted	0.342			0.088				0.955				0.964
Satd. Flow (perm)	650	1863	1615	159	1827	1380	0	1673	1615	0	1674	0
Satd. Flow (RTOR)			182		182			244			15	
Adj. Flow (vph)	3	890	25	51	559	22	50	3	263	65	1	22
Lane Group Flow (vph)	3	890	25	51	559	22	0	53	263	0	88	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	15.0	15.0	15.0	15.0	15.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	47.8	43.0	43.0	44.7	47.5	47.5		8.3	8.3		8.5	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.10	0.10		0.11	
v/c Ratio	0.01	0.89	0.03	0.27	0.52	0.02		0.31	0.68		0.46	
Control Delay	7.7	34.1	0.0	12.0	14.1	0.1		41.9	17.0		40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.7	34.1	0.0	12.0	14.1	0.1		41.9	17.0		40.3	
LOS	A	C	A	B	B	A		D	B		D	
Approach Delay		33.1			13.4			21.2			40.3	
Approach LOS		C			B			C			D	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 80.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Future Volume (vph)	3	819	23	47	514	20	46	3	242	60	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1675	
Flt Permitted	0.34	1.00	1.00	0.09	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	650	1863	1615	160	1827	1380		1673	1615		1675	
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)	3	890	25	51	559	22	50	3	263	65	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	221	0	14	0
Lane Group Flow (vph)	3	890	13	51	559	12	0	53	263	0	74	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Effective Green, g (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	373	969	840	136	998	754		159	154		129	
v/s Ratio Prot	0.00	c0.48		c0.01	0.31			c0.03			c0.04	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.03			
v/c Ratio	0.01	0.92	0.02	0.38	0.56	0.02		0.33	0.27		0.57	
Uniform Delay, d1	9.3	19.2	10.1	16.5	12.9	9.0		36.7	36.5		38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	13.8	0.0	0.6	1.2	0.0		1.2	1.0		6.1	
Delay (s)	9.3	33.0	10.1	17.2	14.1	9.0		38.0	37.5		44.8	
Level of Service	A	C	B	B	B	A		D	D		D	
Approach Delay (s)		32.3			14.1			37.6			44.8	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔	↔		↔			↔	
Traffic Volume (vph)	3	326	39	116	294	1	78	1	148	0	1	0
Future Volume (vph)	3	326	39	116	294	1	78	1	148	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.850			0.912						
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1647	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1647	0	0	1900	0
Adj. Flow (vph)	3	354	42	126	320	1	85	1	161	0	1	0
Lane Group Flow (vph)	3	396	0	126	320	1	0	247	0	0	1	0
Sign Control	Free		Free			Stop		Stop		Stop		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 56.1%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔		↔	↔	↔		↔			↔	
Traffic Volume (veh/h)	3	326	39	116	294	1	78	1	148	0	1	0
Future Volume (Veh/h)	3	326	39	116	294	1	78	1	148	0	1	0
Sign Control	Free		Free			Stop		Stop		Stop		
Grade	0%		0%			0%		0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	354	42	126	320	1	85	1	161	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None		None									
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	321			396			954	954	375	1094	974	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	321			396			954	954	375	1094	974	320
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			60	100	76	100	100	100
cM capacity (veh/h)	1250			1157			210	232	676	134	226	725

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	3	396	126	320	1	247	1
Volume Left	3	0	126	0	0	85	0
Volume Right	0	42	0	0	1	161	0
cSH	1250	1700	1157	1700	1700	382	226
Volume to Capacity	0.00	0.23	0.11	0.19	0.00	0.65	0.00
Queue Length 95th (ft)	0	0	9	0	0	109	0
Control Delay (s)	7.9	0.0	8.5	0.0	0.0	30.1	21.0
Lane LOS	A		A			D	C
Approach Delay (s)	0.1		2.4			30.1	21.0
Approach LOS						D	C

Intersection Summary

Average Delay 7.8

Intersection Capacity Utilization 56.1%

ICU Level of Service B

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	23	1	9	62	0	52	4	378	48	56	243	10
Future Volume (vph)	23	1	9	62	0	52	4	378	48	56	243	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.962		0.850			0.950			0.850		0.850	
Flt Protected	0.966		0.950			0.950			0.950			
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted	0.966		0.950			0.950			0.950			
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	25	1	10	67	0	57	4	411	52	61	264	11
Lane Group Flow (vph)	0	36	0	67	57	0	4	411	52	61	264	11
Sign Control	Stop		Stop			Free			Free			

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 41.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	23	1	9	62	0	52	4	378	48	56	243	10	
Future Volume (Veh/h)	23	1	9	62	0	52	4	378	48	56	243	10	
Sign Control	Stop		Stop			Free			Free				
Grade	0%		0%			0%			0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	25	1	10	67	0	57	4	411	52	61	264	11	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	862	857	264	816	816	411	275						463
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	862	857	264	816	816	411	275						463
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	90	100	99	76	100	91	100						94
cM capacity (veh/h)	241	279	780	275	294	636	1300						1029

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	36	67	57	4	411	52	61	264	11
Volume Left	25	67	0	4	0	0	61	0	0
Volume Right	10	0	57	0	0	52	0	0	11
cSH	299	275	636	1300	1700	1700	1029	1700	1700
Volume to Capacity	0.12	0.24	0.09	0.00	0.24	0.03	0.06	0.16	0.01
Queue Length 95th (ft)	10	23	7	0	0	0	5	0	0
Control Delay (s)	18.7	22.2	11.2	7.8	0.0	0.0	8.7	0.0	0.0
Lane LOS	C	C	B	A				A	
Approach Delay (s)	18.7	17.2	0.1					1.6	
Approach LOS	C	C							

Intersection Summary

Average Delay

3.5

Intersection Capacity Utilization

41.8%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (vph)	10	212	18	31	137	47	14	0	38	92	0	19
Future Volume (vph)	10	212	18	31	137	47	14	0	38	92	0	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.988		0.962				0.850				0.850	
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1824	0	1770	1659	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1824	0	1770	1659	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	11	223	19	33	144	49	15	0	40	97	0	20
Lane Group Flow (vph)	11	242	0	33	193	0	0	15	40	0	97	20
Sign Control	Free		Free				Stop				Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 37.3%				ICU Level of Service A								
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (veh/h)	10	212	18	31	137	47	14	0	38	92	0	19
Future Volume (Veh/h)	10	212	18	31	137	47	14	0	38	92	0	19
Sign Control	Free				Free				Stop		Stop	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	223	19	33	144	49	15	0	40	97	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6		6	
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	193			242			474	514	232	500	498	168
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	193			242			474	514	232	500	498	168
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	100	95	78	100	98
cM capacity (veh/h)	1279			1324			477	449	807	449	458	881

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	11	242	33	193	55	117
Volume Left	11	0	33	0	15	97
Volume Right	0	19	0	49	40	20
cSH	1279	1700	1324	1700	1109	542
Volume to Capacity	0.01	0.14	0.02	0.11	0.05	0.22
Queue Length 95th (ft)	1	0	2	0	4	20
Control Delay (s)	7.8	0.0	7.8	0.0	10.5	14.2
Lane LOS	A		A		B	B
Approach Delay (s)	0.3		1.1		10.5	14.2
Approach LOS					B	B

Intersection Summary						
Average Delay		4.0				
Intersection Capacity Utilization			37.3%		ICU Level of Service A	
Analysis Period (min)		15				

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	46	563	205	67	206	51	93	133	115
Average Queue (ft)	2	241	18	30	94	7	38	63	46
95th Queue (ft)	28	465	106	58	179	30	80	105	94
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)		10	0		0				
Queuing Penalty (veh)		3	0		0				

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	5	22	77	209	14
Average Queue (ft)	0	1	23	72	1
95th Queue (ft)	4	9	56	151	6
Link Distance (ft)		2032		736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	45	72	52	9	60
Average Queue (ft)	19	25	19	0	15
95th Queue (ft)	41	50	40	4	45
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	28	31	40	54	82	33
Average Queue (ft)	2	6	12	24	35	14
95th Queue (ft)	15	23	37	49	63	39
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Network Summary

Network wide Queuing Penalty: 3

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 Build

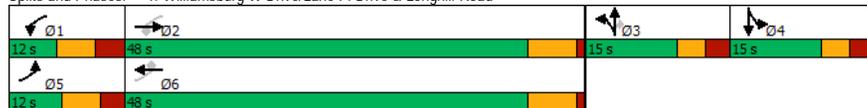


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Future Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850		0.850		0.966
Flt Protected	0.950		0.950				0.955				0.964	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1673	1615	0	1674	0
Flt Permitted	0.339			0.088			0.955				0.964	
Satd. Flow (perm)	644	1863	1615	159	1827	1380	0	1673	1615	0	1674	0
Satd. Flow (RTOR)			182		182			241			15	
Adj. Flow (vph)	3	904	25	51	563	22	50	3	263	65	1	22
Lane Group Flow (vph)	3	904	25	51	563	22	0	53	263	0	88	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6		3				
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	15.0	15.0	15.0	15.0	15.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	47.8	43.0	43.0	44.7	47.5	47.5		8.3	8.3		8.5	
Actuated g/C Ratio	0.59	0.53	0.53	0.56	0.59	0.59		0.10	0.10		0.11	
v/c Ratio	0.01	0.91	0.03	0.27	0.52	0.02		0.31	0.69		0.46	
Control Delay	7.7	35.8	0.0	12.0	14.1	0.1		41.9	17.5		40.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.7	35.8	0.0	12.0	14.1	0.1		41.9	17.5		40.3	
LOS	A	D	A	B	B	A		D	B		D	
Approach Delay		34.7			13.5			21.6			40.3	
Approach LOS		C			B			C			D	

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 80.4	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 78.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Future Volume (vph)	3	832	23	47	518	20	46	3	242	60	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380		1673	1615		1675	
Flt Permitted	0.34	1.00	1.00	0.09	1.00	1.00		0.95	1.00		0.96	
Satd. Flow (perm)	645	1863	1615	160	1827	1380		1673	1615		1675	
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)	3	904	25	51	563	22	50	3	263	65	1	22
RTOR Reduction (vph)	0	0	12	0	0	10	0	0	218	0	14	0
Lane Group Flow (vph)	3	904	13	51	563	12	0	53	45	0	74	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6		3				
Actuated Green, G (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Effective Green, g (s)	48.4	45.2	45.2	47.9	47.5	47.5		8.3	8.3		6.7	
Actuated g/C Ratio	0.56	0.52	0.52	0.55	0.55	0.55		0.10	0.10		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	371	969	840	136	998	754		159	154		129	
v/s Ratio Prot	0.00	c0.49		c0.01	0.31			c0.03			c0.04	
v/s Ratio Perm	0.00		0.01	0.19		0.01			0.03			
v/c Ratio	0.01	0.93	0.02	0.38	0.56	0.02		0.33	0.29		0.57	
Uniform Delay, d1	9.4	19.4	10.1	17.0	12.9	9.0		36.7	36.6		38.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	15.8	0.0	0.6	1.2	0.0		1.2	1.1		6.1	
Delay (s)	9.4	35.2	10.1	17.7	14.1	9.0		38.0	37.6		44.8	
Level of Service	A	D	B	B	B	A		D	D		D	
Approach Delay (s)		34.5			14.2			37.7			44.8	
Approach LOS		C			B			D			D	

Intersection Summary

HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	24.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	3	326	40	120	294	1	82	1	161	0	1	0
Future Volume (vph)	3	326	40	120	294	1	82	1	161	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt		0.850			0.850			0.850				
Flt Protected	0.950			0.950			0.953					
Satd. Flow (prot)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Flt Permitted	0.950			0.950			0.953					
Satd. Flow (perm)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Adj. Flow (vph)	3	354	43	130	320	1	89	1	175	0	1	0
Lane Group Flow (vph)	3	354	43	130	320	1	0	90	175	0	1	0
Sign Control	Free			Free			Stop			Stop		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 45.1%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Movement													
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (veh/h)	3	326	40	120	294	1	82	1	161	0	1	0	
Future Volume (Veh/h)	3	326	40	120	294	1	82	1	161	0	1	0	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	3	354	43	130	320	1	89	1	175	0	1	0	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)											7		
Median type	None			None									
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	321				397			940	941	354	1028	983	320
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	321				397			940	941	354	1028	983	320
tC, single (s)	4.1				4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)													
tF (s)	2.2				2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100				89			58	100	75	100	100	100
cM capacity (veh/h)	1250				1156			214	235	694	146	222	725

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	
Volume Total	3	354	43	130	320	1	265	1	
Volume Left	3	0	0	130	0	0	89	0	
Volume Right	0	0	43	0	0	1	175	0	
cSH	1250	1700	1700	1156	1700	1700	631	222	
Volume to Capacity	0.00	0.21	0.03	0.11	0.19	0.00	0.42	0.00	
Queue Length 95th (ft)	0	0	0	9	0	0	52	0	
Control Delay (s)	7.9	0.0	0.0	8.5	0.0	0.0	19.2	21.3	
Lane LOS	A			A			C	C	
Approach Delay (s)	0.1				2.5			19.2	21.3
Approach LOS								C	C

Intersection Summary

Average Delay 5.6

Intersection Capacity Utilization 45.1%

ICU Level of Service A

A

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	23	1	9	65	0	53	4	378	49	56	243	10
Future Volume (vph)	23	1	9	65	0	53	4	378	49	56	243	10
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected		0.962			0.850				0.850			0.850
Flt Permitted		0.966		0.950		0.950			0.950			0.950
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	25	1	10	71	0	58	4	411	53	61	264	11
Lane Group Flow (vph)	0	36	0	71	58	0	4	411	53	61	264	11
Sign Control	Stop			Stop			Free			Free		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 41.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	23	1	9	65	0	53	4	378	49	56	243	10	
Future Volume (Veh/h)	23	1	9	65	0	53	4	378	49	56	243	10	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	25	1	10	71	0	58	4	411	53	61	264	11	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	863	858	264	816	816	411	275						464
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	863	858	264	816	816	411	275						464
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	90	100	99	74	100	91	100						94
cM capacity (veh/h)	240	278	780	275	294	636	1300						1028

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	
Volume Total	36	71	58	4	411	53	61	264	11	
Volume Left	25	71	0	4	0	0	61	0	0	
Volume Right	10	0	58	0	0	53	0	0	11	
cSH	298	275	636	1300	1700	1700	1028	1700	1700	
Volume to Capacity	0.12	0.26	0.09	0.00	0.24	0.03	0.06	0.16	0.01	
Queue Length 95th (ft)	10	25	7	0	0	0	5	0	0	
Control Delay (s)	18.7	22.6	11.2	7.8	0.0	0.0	8.7	0.0	0.0	
Lane LOS	C	C	B	A						A
Approach Delay (s)	18.7	17.5	0.1							1.6
Approach LOS	C	C								

Intersection Summary

Average Delay

3.6

Intersection Capacity Utilization

41.8%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	10	214	18	31	138	47	14	0	38	92	0	19
Future Volume (vph)	10	214	18	31	138	47	14	0	38	92	0	19
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1824	0	1770	1658	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1824	0	1770	1658	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	11	225	19	33	145	49	15	0	40	97	0	20
Lane Group Flow (vph)	11	244	0	33	194	0	0	15	40	0	97	20
Sign Control		Free			Free			Stop			Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 37.5%												
Analysis Period (min) 15												
ICU Level of Service A												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	10	214	18	31	138	47	14	0	38	92	0	19
Future Volume (Veh/h)	10	214	18	31	138	47	14	0	38	92	0	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	225	19	33	145	49	15	0	40	97	0	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	194			244			478	516	234	502	502	170
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	194			244			478	516	234	502	502	170
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			97	100	95	78	100	98
cM capacity (veh/h)	1278			1322			474	447	805	447	456	880

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	11	244	33	194	55	117
Volume Left	11	0	33	0	15	97
Volume Right	0	19	0	49	40	20
cSH	1278	1700	1322	1700	1106	539
Volume to Capacity	0.01	0.14	0.02	0.11	0.05	0.22
Queue Length 95th (ft)	1	0	2	0	4	20
Control Delay (s)	7.8	0.0	7.8	0.0	10.6	14.2
Lane LOS	A		A		B	B
Approach Delay (s)	0.3		1.1		10.6	14.2
Approach LOS					B	B

Intersection Summary						
Average Delay 4.0						
Intersection Capacity Utilization 37.5%						
ICU Level of Service A						
Analysis Period (min) 15						

Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	66	561	187	65	217	49	92	141	124
Average Queue (ft)	3	255	19	28	93	7	36	65	46
95th Queue (ft)	38	499	106	57	181	31	75	108	96
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)		11	0		0				
Queuing Penalty (veh)		3	1		0				

Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	R	L	LT	R	LTR
Maximum Queue (ft)	9	8	103	115	93	14
Average Queue (ft)	1	0	32	42	35	1
95th Queue (ft)	6	5	72	90	67	6
Link Distance (ft)				723		278
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	200	300	225		175	
Storage Blk Time (%)				0	0	
Queuing Penalty (veh)				0	0	

Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	NB	SB
Directions Served	LTR	L	TR	L	T	L
Maximum Queue (ft)	47	68	55	7	2	64
Average Queue (ft)	18	27	19	0	0	15
95th Queue (ft)	41	54	40	4	2	47
Link Distance (ft)	247	762			622	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190		190
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	30	28	40	54	71	33
Average Queue (ft)	3	5	12	24	35	14
95th Queue (ft)	17	21	37	49	59	39
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 4

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Future Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.950		0.850		0.850		0.967		
Flt Protected	0.950			0.950				0.955				0.964
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1669	1615	0	1676	0
Flt Permitted	0.377			0.186				0.955				0.964
Satd. Flow (perm)	716	3539	1615	337	3471	1380	0	1669	1615	0	1676	0
Satd. Flow (RTOR)			164		164			207			13	
Adj. Flow (vph)	4	1000	28	58	627	24	57	4	297	74	1	24
Lane Group Flow (vph)	4	1000	28	58	627	24	0	61	297	0	99	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	24.0	24.0	24.0	16.0	16.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	40.9	34.0	34.0	36.4	40.7	40.7		12.0	12.0		9.8	
Actuated g/C Ratio	0.52	0.43	0.43	0.46	0.52	0.52		0.15	0.15		0.12	
v/c Ratio	0.01	0.65	0.04	0.23	0.35	0.03		0.24	0.71		0.45	
Control Delay	10.5	22.1	0.1	12.9	13.4	0.1		37.2	22.6		42.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	10.5	22.1	0.1	12.9	13.4	0.1		37.2	22.6		42.3	
LOS	B	C	A	B	B	A		D	C		D	
Approach Delay		21.5		12.9		25.1		42.3				
Approach LOS		C		B		C		D				

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 78.6	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Future Volume (vph)	4	920	26	53	577	22	52	4	273	68	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1670	1615		1677	
Flt Permitted	0.38	1.00	1.00	0.19	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (perm)	716	3539	1615	336	3471	1380		1670	1615		1677	
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)	4	1000	28	58	627	24	57	4	297	74	1	24
RTOR Reduction (vph)	0	0	16	0	0	12	0	0	177	0	12	0
Lane Group Flow (vph)	4	1000	12	58	627	12	0	61	120	0	87	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	41.5	37.4	37.4	41.0	40.7	40.7		12.0	12.0		6.8	
Effective Green, g (s)	41.5	37.4	37.4	41.0	40.7	40.7		12.0	12.0		6.8	
Actuated g/C Ratio	0.50	0.45	0.45	0.49	0.49	0.49		0.14	0.14		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	364	1579	720	223	1685	670		239	231		136	
v/s Ratio Prot	0.00	c0.28		c0.01	c0.18			0.04			c0.05	
v/s Ratio Perm	0.01		0.01	0.12		0.01					c0.07	
v/c Ratio	0.01	0.63	0.02	0.26	0.37	0.02		0.26	0.52		0.64	
Uniform Delay, d1	10.8	17.9	12.9	12.5	13.5	11.2		31.9	33.2		37.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.2	0.0	0.2	0.3	0.0		0.6	2.0		9.9	
Delay (s)	10.8	19.1	13.0	12.7	13.8	11.2		32.5	35.2		47.2	
Level of Service	B	B	B	B	B	B		C	D		D	
Approach Delay (s)		18.9		13.6		34.7		47.2				
Approach LOS		B		B		C		D				

Intersection Summary

HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	
Traffic Volume (vph)	4	366	44	131	331	1	88	1	165	0	1	0
Future Volume (vph)	4	366	44	131	331	1	88	1	165	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt	0.984		0.850			0.912						
Flt Protected	0.950			0.950				0.983				
Satd. Flow (prot)	1805	1779	0	1752	1776	1615	0	1646	0	0	1900	0
Flt Permitted	0.950			0.950				0.983				
Satd. Flow (perm)	1805	1779	0	1752	1776	1615	0	1646	0	0	1900	0
Adj. Flow (vph)	4	398	48	142	360	1	96	1	179	0	1	0
Lane Group Flow (vph)	4	446	0	142	360	1	0	276	0	0	1	0
Sign Control	Free		Free			Stop		Stop		Stop		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔							
Traffic Volume (veh/h)	4	366	44	131	331	1	88	1	165	0	1	0						
Future Volume (Veh/h)	4	366	44	131	331	1	88	1	165	0	1	0						
Sign Control	Free			Free			Stop		Stop									
Grade	0%			0%			0%		0%									
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	4	398	48	142	360	1	96	1	179	0	1	0						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)																		
pX, platoon unblocked																		
vC, conflicting volume	361			446			1074		1075		422		1230		1098		360	
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	361			446			1074		1075		422		1230		1098		360	
tC, single (s)	4.1			4.1			7.2		6.5		6.2		7.1		6.5		6.2	
tC, 2 stage (s)																		
tF (s)	2.2			2.2			3.6		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	100			87			44		99		72		100		99		100	
cM capacity (veh/h)	1209			1109			171		192		636		100		186		689	

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	446	142	360	1	276	1
Volume Left	4	0	142	0	0	96	0
Volume Right	0	48	0	0	1	179	0
cSH	1209	1700	1109	1700	1700	325	186
Volume to Capacity	0.00	0.26	0.13	0.21	0.00	0.85	0.01
Queue Length 95th (ft)	0	0	11	0	0	189	0
Control Delay (s)	8.0	0.0	8.7	0.0	0.0	55.5	24.4
Lane LOS	A		A			F	C
Approach Delay (s)	0.1		2.5			55.5	24.4
Approach LOS						F	C

Intersection Summary

Average Delay 13.5

Intersection Capacity Utilization 60.9%

ICU Level of Service

B

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	24	1	10	71	0	61	4	437	55	65	280	11
Future Volume (vph)	24	1	10	71	0	61	4	437	55	65	280	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected		0.967		0.950			0.950			0.950		
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.967		0.950			0.950			0.950		
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	26	1	11	77	0	66	4	475	60	71	304	12
Lane Group Flow (vph)	0	38	0	77	66	0	4	475	60	71	304	12
Sign Control		Stop		Stop			Free			Free		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 45.3%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (veh/h)	24	1	10	71	0	61	4	437	55	65	280	11
Future Volume (Veh/h)	24	1	10	71	0	61	4	437	55	65	280	11
Sign Control		Stop		Stop			Free			Free		
Grade		0%		0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	1	11	77	0	66	4	475	60	71	304	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	995	989	304	940	941	475	316			535		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	995	989	304	940	941	475	316			535		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	86	100	99	66	100	89	100			93		
cM capacity (veh/h)	188	230	740	223	245	586	1256			966		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	77	66	4	475	60	71	304	12
Volume Left	26	77	0	4	0	0	71	0	0
Volume Right	11	0	66	0	0	60	0	0	12
cSH	242	223	586	1256	1700	1700	966	1700	1700
Volume to Capacity	0.16	0.34	0.11	0.00	0.28	0.04	0.07	0.18	0.01
Queue Length 95th (ft)	14	37	9	0	0	0	6	0	0
Control Delay (s)	22.6	29.4	11.9	7.9	0.0	0.0	9.0	0.0	0.0
Lane LOS	C	D	B	A			A		
Approach Delay (s)	22.6	21.3		0.1			1.7		
Approach LOS	C	C							

Intersection Summary

Average Delay 4.1

Intersection Capacity Utilization 45.3%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (vph)	12	237	18	31	154	53	14	0	38	103	0	21
Future Volume (vph)	12	237	18	31	154	53	14	0	38	103	0	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.989		0.961					0.850				0.850
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1826	0	1770	1657	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1826	0	1770	1657	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	13	249	19	33	162	56	15	0	40	108	0	22
Lane Group Flow (vph)	13	268	0	33	218	0	0	15	40	0	108	22
Sign Control	Free			Free			Stop			Stop		

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 39.3%				ICU Level of Service A								
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Movement													
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔	
Traffic Volume (veh/h)	12	237	18	31	154	53	14	0	38	103	0	21	
Future Volume (Veh/h)	12	237	18	31	154	53	14	0	38	103	0	21	
Sign Control	Free				Free				Stop				
Grade	0%				0%				0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	13	249	19	33	162	56	15	0	40	108	0	22	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)									6		6		
Median type	None				None								
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	218		268			524		568		258		551	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	218		268			524		568		258		551	
tC, single (s)	4.3		4.1			7.1		6.5		6.2		7.1	
tC, 2 stage (s)													
tF (s)	2.4		2.2			3.5		4.0		3.3		3.5	
p0 queue free %	99		97			97		100		95		74	
cM capacity (veh/h)	1252		1296			440		417		780		414	

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	13	268	33	218	55	130
Volume Left	13	0	33	0	15	108
Volume Right	0	19	0	56	40	22
cSH	1252	1700	1296	1700	1073	498
Volume to Capacity	0.01	0.16	0.03	0.13	0.05	0.26
Queue Length 95th (ft)	1	0	2	0	4	26
Control Delay (s)	7.9	0.0	7.9	0.0	10.8	15.5
Lane LOS	A		A		B	C
Approach Delay (s)	0.4		1.0		10.8	15.5
Approach LOS					B	C

Intersection Summary						
Average Delay		4.1				
Intersection Capacity Utilization			39.3%		ICU Level of Service A	
Analysis Period (min)		15				

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LTR
Maximum Queue (ft)	27	233	229	67	78	157	132	55	94	168	132
Average Queue (ft)	2	114	107	8	28	84	39	10	37	73	49
95th Queue (ft)	14	197	189	43	61	143	92	38	79	133	101
Link Distance (ft)		1006	1006			738	738		392		461
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			225	250			250		225	
Storage Blk Time (%)		0	0	0						0	
Queuing Penalty (veh)		0	0	0						0	

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	L	LTR	LTR
Maximum Queue (ft)	7	19	84	291	5
Average Queue (ft)	1	1	26	106	0
95th Queue (ft)	6	11	60	233	3
Link Distance (ft)		2032		736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	200		225		
Storage Blk Time (%)					
Queuing Penalty (veh)					

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	NB	NB	SB
Directions Served	LTR	L	TR	L	T	R	L
Maximum Queue (ft)	47	69	58	10	2	5	72
Average Queue (ft)	20	28	20	1	0	0	19
95th Queue (ft)	42	56	41	6	2	5	52
Link Distance (ft)	247	762			622		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			140	190	325	190	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	28	26	38	54	79	33
Average Queue (ft)	3	5	12	24	40	16
95th Queue (ft)	16	20	37	51	67	40
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 0

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 Build

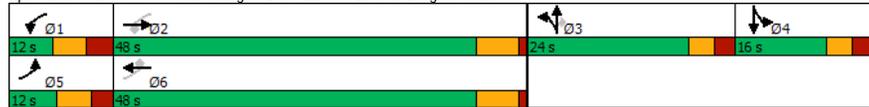


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Future Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.950		0.850		0.850		0.967		
Flt Protected	0.950			0.950				0.955				0.964
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1669	1615	0	1676	0
Flt Permitted	0.374			0.181				0.955				0.964
Satd. Flow (perm)	711	3539	1615	328	3471	1380	0	1669	1615	0	1676	0
Satd. Flow (RTOR)			164		164			206			13	
Adj. Flow (vph)	4	1014	28	58	632	24	57	4	297	74	1	24
Lane Group Flow (vph)	4	1014	28	58	632	24	0	61	297	0	99	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	48.0	48.0	12.0	48.0	48.0	24.0	24.0	24.0	16.0	16.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	41.1	34.1	34.1	36.5	40.9	40.9		12.0	12.0		9.8	
Actuated g/C Ratio	0.52	0.43	0.43	0.46	0.52	0.52		0.15	0.15		0.12	
v/c Ratio	0.01	0.66	0.04	0.23	0.35	0.03		0.24	0.71		0.45	
Control Delay	10.5	22.3	0.1	12.9	13.5	0.1		37.2	22.8		42.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	10.5	22.3	0.1	12.9	13.5	0.1		37.2	22.8		42.5	
LOS	B	C	A	B	B	A		D	C		D	
Approach Delay		21.7		13.0		25.2		42.5				
Approach LOS		C		B		C		D				

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 78.8	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 20.4	Intersection LOS: C
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Future Volume (vph)	4	933	26	53	581	22	52	4	273	68	1	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
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		0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380		1670	1615		1677	
Flt Permitted	0.37	1.00	1.00	0.18	1.00	1.00		0.96	1.00		0.96	
Satd. Flow (perm)	711	3539	1615	327	3471	1380		1670	1615		1677	
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)	4	1014	28	58	632	24	57	4	297	74	1	24
RTOR Reduction (vph)	0	0	15	0	0	12	0	0	177	0	12	0
Lane Group Flow (vph)	4	1014	13	58	632	12	0	61	120	0	87	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	41.7	37.6	37.6	41.2	40.9	40.9		12.0	12.0		6.8	
Effective Green, g (s)	41.7	37.6	37.6	41.2	40.9	40.9		12.0	12.0		6.8	
Actuated g/C Ratio	0.50	0.45	0.45	0.49	0.49	0.49		0.14	0.14		0.08	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	363	1584	722	220	1690	671		238	230		135	
v/s Ratio Prot	0.00	c0.29		c0.01	c0.18			0.04			c0.05	
v/s Ratio Perm	0.01		0.01	0.12		0.01					c0.07	
v/c Ratio	0.01	0.64	0.02	0.26	0.37	0.02		0.26	0.52		0.64	
Uniform Delay, d1	10.8	18.0	12.9	12.5	13.5	11.2		32.0	33.4		37.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.0	1.2	0.0	0.2	0.3	0.0		0.6	2.1		10.1	
Delay (s)	10.8	19.2	12.9	12.8	13.8	11.2		32.6	35.5		47.5	
Level of Service	B	B	B	B	B	B		C	D		D	
Approach Delay (s)		19.0		13.6		35.0		47.5				
Approach LOS		B		B		D		D				

Intersection Summary

HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	4	366	45	135	331	1	92	1	178	0	1	0
Future Volume (vph)	4	366	45	135	331	1	92	1	178	0	1	0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt			0.850			0.850			0.850			
Flt Protected	0.950			0.950				0.953				
Satd. Flow (prot)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Flt Permitted	0.950			0.950				0.953				
Satd. Flow (perm)	1805	1810	1524	1752	1776	1615	0	1648	1615	0	1900	0
Adj. Flow (vph)	4	398	49	147	360	1	100	1	193	0	1	0
Lane Group Flow (vph)	4	398	49	147	360	1	0	101	193	0	1	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 48.6%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	4	366	45	135	331	1	92	1	178	0	1	0
Future Volume (Veh/h)	4	366	45	135	331	1	92	1	178	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	398	49	147	360	1	100	1	193	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	361			447			1060	1061	398	1157	1109	360
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			447			1060	1061	398	1157	1109	360
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			42	99	71	100	99	100
cM capacity (veh/h)	1209			1108			174	195	656	110	183	689

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	4	398	49	147	360	1	294	1
Volume Left	4	0	0	147	0	0	100	0
Volume Right	0	0	49	0	0	1	193	0
cSH	1209	1700	1700	1108	1700	1700	507	183
Volume to Capacity	0.00	0.23	0.03	0.13	0.21	0.00	0.58	0.01
Queue Length 95th (ft)	0	0	0	11	0	0	91	0
Control Delay (s)	8.0	0.0	0.0	8.7	0.0	0.0	25.9	24.8
Lane LOS	A			A			D	C
Approach Delay (s)	0.1			2.5			25.9	24.8
Approach LOS							D	C

Intersection Summary

Average Delay

7.1

Intersection Capacity Utilization

48.6%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	24	1	10	74	0	62	4	437	56	65	280	11
Future Volume (vph)	24	1	10	74	0	62	4	437	56	65	280	11
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.961		0.850			0.850			0.850		0.850	
Flt Protected	0.967		0.950			0.950			0.950			
Satd. Flow (prot)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted	0.967		0.950			0.950			0.950			
Satd. Flow (perm)	0	1766	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	26	1	11	80	0	67	4	475	61	71	304	12
Lane Group Flow (vph)	0	38	0	80	67	0	4	475	61	71	304	12
Sign Control	Stop		Stop			Free			Free			

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 45.3%

ICU Level of Service A

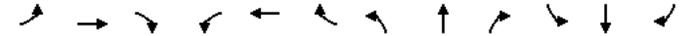
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	24	1	10	74	0	62	4	437	56	65	280	11	
Future Volume (Veh/h)	24	1	10	74	0	62	4	437	56	65	280	11	
Sign Control	Stop		Stop			Free			Free				
Grade	0%		0%			0%			0%				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	26	1	11	80	0	67	4	475	61	71	304	12	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	996	990	304	940	941	475	316						536
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	996	990	304	940	941	475	316						536
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	86	100	99	64	100	89	100						93
cM capacity (veh/h)	188	229	740	223	245	586	1256						965

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	38	80	67	4	475	61	71	304	12
Volume Left	26	80	0	4	0	0	71	0	0
Volume Right	11	0	67	0	0	61	0	0	12
cSH	241	223	586	1256	1700	1700	965	1700	1700
Volume to Capacity	0.16	0.36	0.11	0.00	0.28	0.04	0.07	0.18	0.01
Queue Length 95th (ft)	14	39	10	0	0	0	6	0	0
Control Delay (s)	22.7	29.9	11.9	7.9	0.0	0.0	9.0	0.0	0.0
Lane LOS	C	D	B	A				A	
Approach Delay (s)	22.7	21.7	0.1					1.7	
Approach LOS	C	C							

Intersection Summary

Average Delay 4.2

Intersection Capacity Utilization 45.3%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (vph)	12	239	18	31	155	53	14	0	38	103	0	21
Future Volume (vph)	12	239	18	31	155	53	14	0	38	103	0	21
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt	0.989		0.962				0.850				0.850	
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1826	0	1770	1659	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1826	0	1770	1659	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	13	252	19	33	163	56	15	0	40	108	0	22
Lane Group Flow (vph)	13	271	0	33	219	0	0	15	40	0	108	22
Sign Control	Free		Free				Stop				Stop	

Intersection Summary		
Control Type:	Unsignalized	
Intersection Capacity Utilization	39.4%	ICU Level of Service A
Analysis Period (min)	15	

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (veh/h)	12	239	18	31	155	53	14	0	38	103	0	21
Future Volume (Veh/h)	12	239	18	31	155	53	14	0	38	103	0	21
Sign Control	Free				Free		Stop				Stop	
Grade	0%				0%		0%				0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	252	19	33	163	56	15	0	40	108	0	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	219			271			528	572	262	555	554	191
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	219			271			528	572	262	555	554	191
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			97	100	95	74	100	97
cM capacity (veh/h)	1251			1292			437	415	777	411	425	856

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	13	271	33	219	55	130
Volume Left	13	0	33	0	15	108
Volume Right	0	19	0	56	40	22
cSH	1251	1700	1292	1700	1069	495
Volume to Capacity	0.01	0.16	0.03	0.13	0.05	0.26
Queue Length 95th (ft)	1	0	2	0	4	26
Control Delay (s)	7.9	0.0	7.9	0.0	10.9	15.6
Lane LOS	A		A		B	C
Approach Delay (s)	0.4	1.0		10.9		15.6
Approach LOS		B		C		

Intersection Summary		
Average Delay	4.1	
Intersection Capacity Utilization	39.4%	ICU Level of Service A
Analysis Period (min)	15	

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LTR
Maximum Queue (ft)	49	250	264	29	67	166	140	44	98	167	124
Average Queue (ft)	4	122	118	7	26	80	44	8	35	77	52
95th Queue (ft)	32	211	211	24	55	141	101	32	76	138	99
Link Distance (ft)		1006	1006			738	738		392		461
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			225	250			250		225	
Storage Blk Time (%)	0	0	0							0	
Queuing Penalty (veh)	0	0	0							0	

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	EB	EB	WB	NB	NB	SB
Directions Served	L	T	R	L	LT	R	LTR
Maximum Queue (ft)	16	4	8	87	196	132	9
Average Queue (ft)	1	0	0	34	58	44	0
95th Queue (ft)	9	4	6	69	146	102	5
Link Distance (ft)		2030			723		278
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	200		300	225		175	
Storage Blk Time (%)					1	0	
Queuing Penalty (veh)					3	0	

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	NB	NB	SB
Directions Served	LTR	L	TR	L	T	R	L
Maximum Queue (ft)	51	77	56	8	2	4	69
Average Queue (ft)	19	30	20	1	0	0	20
95th Queue (ft)	44	61	42	7	2	5	53
Link Distance (ft)	247	762			622		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			140	190		325	190
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	NB	NB	SB	SB
Directions Served	L	L	LT	R	LT	R
Maximum Queue (ft)	37	26	36	52	82	37
Average Queue (ft)	3	4	13	24	40	17
95th Queue (ft)	17	18	38	48	68	42
Link Distance (ft)			372		374	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225	225		150		150
Storage Blk Time (%)						
Queuing Penalty (veh)						

Network Summary

Network wide Queuing Penalty: 3

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

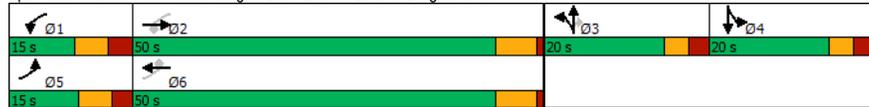
2019 Existing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Future Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.950			0.950				0.950				0.970
Satd. Flow (prot)	1805	1845	1615	1805	1881	1615	0	1770	1568	0	1699	0
Flt Permitted	0.073			0.138				0.950				0.970
Satd. Flow (perm)	139	1845	1615	262	1881	1615	0	1770	1568	0	1699	0
Satd. Flow (RTOR)			156			156			161		161	
Adj. Flow (vph)	19	805	38	225	1069	42	55	0	148	25	0	16
Lane Group Flow (vph)	19	805	38	225	1069	42	0	55	148	0	41	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	15.0	50.0	50.0	15.0	50.0	50.0	20.0	20.0	20.0	20.0	20.0	
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Act Effct Green (s)	56.6	44.4	44.4	51.4	55.1	55.1		8.5	8.5		7.1	
Actuated g/C Ratio	0.65	0.51	0.51	0.59	0.64	0.64		0.10	0.10		0.08	
v/c Ratio	0.10	0.85	0.04	0.75	0.89	0.04		0.32	0.49		0.14	
Control Delay	7.8	31.0	0.1	30.3	29.5	0.1		43.1	11.6		1.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay	7.8	31.0	0.1	30.3	29.5	0.1		43.1	11.6		1.1	
LOS	A	C	A	C	C	A		D	B		A	
Approach Delay		29.2			28.7			20.1			1.1	
Approach LOS		C			C			C			A	

Intersection Summary

Cycle Length: 105  
 Actuated Cycle Length: 86.6  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 27.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.6%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2019 Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Future Volume (vph)	18	765	36	214	1016	40	52	0	141	24	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (prot)	1805	1845	1615	1805	1881	1615		1770	1568		1700	
Flt Permitted	0.07	1.00	1.00	0.14	1.00	1.00		0.95	1.00		0.97	
Satd. Flow (perm)	138	1845	1615	262	1881	1615		1770	1568		1700	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95		0.95	
Adj. Flow (vph)	19	805	38	225	1069	42	55	0	148	25	0	16
RTOR Reduction (vph)	0	0	18	0	0	17		0	134		39	
Lane Group Flow (vph)	19	805	20	225	1069	25	0	55	14	0	2	0
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%		2%	0%		0%	7%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	57.1	48.5	48.5	56.6	55.1	55.1		8.5	8.5		3.9	
Effective Green, g (s)	57.1	48.5	48.5	56.6	55.1	55.1		8.5	8.5		3.9	
Actuated g/C Ratio	0.61	0.52	0.52	0.61	0.59	0.59		0.09	0.09		0.04	
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0		5.5	5.5		5.5	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	120	962	842	293	1114	956		161	143		71	
v/s Ratio Prot	0.00	0.44		c0.07	c0.57			c0.03			c0.00	
v/s Ratio Perm	0.09		0.01	0.40		0.02			0.01			
v/c Ratio	0.16	0.84	0.02	0.77	0.96	0.03		0.34	0.09		0.02	
Uniform Delay, d1	20.3	18.9	10.8	15.3	17.9	7.8		39.6	38.7		42.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2	0.2	7.1	0.0	10.4	18.2	0.0		1.3	0.3		0.1	
Delay (s)	20.6	26.0	10.8	25.7	36.1	7.9		40.9	39.0		42.9	
Level of Service	C	C	B	C	D	A		D	D		D	
Approach Delay (s)		25.2			33.5			39.5			42.9	
Approach LOS		C			C			D			D	

Intersection Summary

HCM 2000 Control Delay 31.2  
 HCM 2000 Level of Service C  
 HCM 2000 Volume to Capacity ratio 0.88  
 Actuated Cycle Length (s) 93.0  
 Sum of lost time (s) 24.0  
 Intersection Capacity Utilization 81.6%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 c Critical Lane Group

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2019 Existing



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	0	354	55	200	293	2	47	3	126	4	0	5
Future Volume (vph)	0	354	55	200	293	2	47	3	126	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.980		0.850			0.903		0.925				
Flt Protected			0.950			0.987		0.978				
Satd. Flow (prot)	1900	1846	0	1805	1863	1615	0	1661	0	0	1719	0
Flt Permitted			0.950			0.987		0.978				
Satd. Flow (perm)	1900	1846	0	1805	1863	1615	0	1661	0	0	1719	0
Adj. Flow (vph)	0	377	59	213	312	2	50	3	134	4	0	5
Lane Group Flow (vph)	0	436	0	213	312	2	0	187	0	0	9	0
Sign Control	Free		Free			Stop		Stop		Stop		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 54.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2019 Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (veh/h)	0	354	55	200	293	2	47	3	126	4	0	5
Future Volume (Veh/h)	0	354	55	200	293	2	47	3	126	4	0	5
Sign Control	Free		Free			Stop		Stop		Stop		
Grade	0%		0%			0%		0%		0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	377	59	213	312	2	50	3	134	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None		None									
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	314	436			1150	1146	406	1250	1174	312		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	314	436			1150	1146	406	1250	1174	312		
tC, single (s)	4.1	4.1			7.1	6.8	6.2	7.1	6.5	6.2		
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5	4.3	3.3	3.5	4.0	3.3		
p0 queue free %	100	81			67	98	79	96	100	99		
cM capacity (veh/h)	1258	1134			150	142	644	101	157	733		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	436	213	312	2	187	9
Volume Left	0	0	213	0	0	50	4
Volume Right	0	59	0	0	2	134	5
cSH	1700	1700	1134	1700	1700	333	193
Volume to Capacity	0.00	0.26	0.19	0.18	0.00	0.56	0.05
Queue Length 95th (ft)	0	0	17	0	0	81	4
Control Delay (s)	0.0	0.0	8.9	0.0	0.0	28.8	24.5
Lane LOS			A			D	C
Approach Delay (s)	0.0	3.6		28.8		24.5	
Approach LOS			D	C			

Intersection Summary

Average Delay 6.5

Intersection Capacity Utilization 54.8%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2019 Existing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	3	1	2	49	0	29	2	305	67	24	249	2
Future Volume (vph)	3	1	2	49	0	29	2	305	67	24	249	2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.955		0.850		0.950		0.850		0.950		0.850	
Flt Protected	0.976		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	0	1771	0	1805	1553	0	1805	1845	1568	1805	1863	1615
Flt Permitted	0.976		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	0	1771	0	1805	1553	0	1805	1845	1568	1805	1863	1615
Adj. Flow (vph)	3	1	2	52	0	31	2	321	71	25	262	2
Lane Group Flow (vph)	0	6	0	52	31	0	2	321	71	25	262	2
Sign Control	Stop		Stop		Free		Free		Free		Free	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 31.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2019 Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	3	1	2	49	0	29	2	305	67	24	249	2	
Future Volume (Veh/h)	3	1	2	49	0	29	2	305	67	24	249	2	
Sign Control	Stop		Stop		Free		Free		Free		Free		
Grade	0%		0%		0%		0%		0%		0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	3	1	2	52	0	31	2	321	71	25	262	2	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	668	708	262	640	639	321	264						392
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	668	708	262	640	639	321	264						392
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	99	100	100	86	100	96	100						98
cM capacity (veh/h)	352	354	782	383	388	715	1312						1178

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	6	52	31	2	321	71	25	262	2
Volume Left	3	52	0	2	0	0	25	0	0
Volume Right	2	0	31	0	0	71	0	0	2
cSH	431	383	715	1312	1700	1700	1178	1700	1700
Volume to Capacity	0.01	0.14	0.04	0.00	0.19	0.04	0.02	0.15	0.00
Queue Length 95th (ft)	1	12	3	0	0	0	2	0	0
Control Delay (s)	13.5	15.9	10.3	7.7	0.0	0.0	8.1	0.0	0.0
Lane LOS	B	C	B	A			A		
Approach Delay (s)	13.5	13.8	0.0				0.7		
Approach LOS	B	B							

Intersection Summary

Average Delay

1.9

Intersection Capacity Utilization

31.4%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2019 Existing

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↗
Traffic Volume (vph)	8	153	257	117	68	7
Future Volume (vph)	8	153	257	117	68	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr't				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1805	1863	1863	1615	1770	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	1863	1615	1770	1615
Adj. Flow (vph)	8	159	268	122	71	7
Lane Group Flow (vph)	8	159	268	122	71	7
Sign Control		Free	Free		Stop	
<b>Intersection Summary</b>						
Control Type: Unsignalized						
Intersection Capacity Utilization 24.0%						
Analysis Period (min) 15						
ICU Level of Service A						

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2019 Existing

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↗
Traffic Volume (veh/h)	8	153	257	117	68	7
Future Volume (Veh/h)	8	153	257	117	68	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	159	268	122	71	7
<b>Pedestrians</b>						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						6
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	390				443	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	390				443	268
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	99
cM capacity (veh/h)	1180				568	776
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>SB 1</b>	
Volume Total	8	159	268	122	78	
Volume Left	8	0	0	0	71	
Volume Right	0	0	0	122	7	
cSH	1180	1700	1700	1700	624	
Volume to Capacity	0.01	0.09	0.16	0.07	0.12	
Queue Length 95th (ft)	1	0	0	0	11	
Control Delay (s)	8.1	0.0	0.0	0.0	12.0	
Lane LOS	A				B	
Approach Delay (s)	0.4		0.0		12.0	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay 1.6						
Intersection Capacity Utilization 24.0%						
ICU Level of Service A						
Analysis Period (min) 15						

Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	148	519	206	250	763	690	97	109	81
Average Queue (ft)	16	228	25	124	330	110	39	47	26
95th Queue (ft)	74	445	120	248	758	532	78	81	61
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)					7	3			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)	0	9	0	1	7				
Queuing Penalty (veh)	0	5	1	7	15				

Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	T	LTR	LTR
Maximum Queue (ft)	21	88	4	156	17
Average Queue (ft)	2	34	0	58	4
95th Queue (ft)	11	71	4	118	14
Link Distance (ft)	2032		1469	736	278
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		225			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Centerville Road & Westport/Manchester Drive

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	28	42	46	4	30
Average Queue (ft)	6	20	13	0	6
95th Queue (ft)	23	37	34	3	23
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

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Intersection: 4: News Road & Firestone Drive

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Movement	EB	WB	SB	SB
Directions Served	L	R	L	R
Maximum Queue (ft)	27	5	71	31
Average Queue (ft)	3	0	34	6
95th Queue (ft)	16	5	60	26
Link Distance (ft)			375	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	300		150
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Network Summary

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Network wide Queuing Penalty: 28

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Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

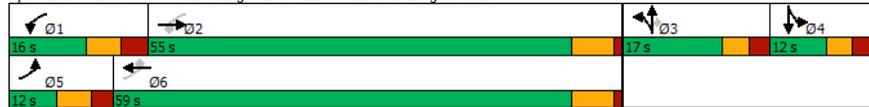
2021 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Future Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850		0.850		0.947
Flt Protected	0.950		0.950			0.950		0.950			0.971	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1687	1615	0	1636	0
Flt Permitted	0.069			0.106			0.950			0.971		
Satd. Flow (perm)	131	1863	1615	192	1827	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			158			158			164		164	
Adj. Flow (vph)	20	852	39	235	1132	44	57	0	155	26	0	17
Lane Group Flow (vph)	20	852	39	235	1132	44	0	57	155	0	43	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	55.0	55.0	16.0	59.0	59.0	17.0	17.0	12.0	12.0		
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5	5.5		
Act Effct Green (s)	59.2	45.7	45.7	53.9	57.8	57.8	8.6	8.6	6.6			
Actuated g/C Ratio	0.67	0.51	0.51	0.61	0.65	0.65	0.10	0.10	0.07			
v/c Ratio	0.11	0.89	0.04	0.86	0.95	0.05	0.35	0.51	0.16			
Control Delay	7.4	34.2	0.1	49.7	36.6	0.1	46.6	12.4	1.2			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	7.4	34.2	0.1	49.7	36.6	0.1	46.6	12.4	1.2			
LOS	A	C	A	D	D	A	D	B	A			
Approach Delay		32.1			37.7			21.6				1.2
Approach LOS		C			D			C				A

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 88.9	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 33.8	Intersection LOS: C
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 No Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Future Volume (vph)	19	809	37	223	1075	42	54	0	147	25	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0			5.5	5.5		5.5
Lane Util. Factor	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		0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00			0.95	1.00		0.97
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380			1687	1615		1635
Flt Permitted	0.07	1.00	1.00	0.11	1.00	1.00			0.95	1.00		0.97
Satd. Flow (perm)	131	1863	1615	192	1827	1380			1687	1615		1635
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)	20	852	39	235	1132	44	57	0	155	26	0	17
RTOR Reduction (vph)	0	0	19	0	0	17	0	0	141	0	41	0
Lane Group Flow (vph)	20	852	20	235	1132	27	0	57	14	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	59.7	50.0	50.0	59.2	57.8	57.8			8.6	8.6		3.5
Effective Green, g (s)	59.7	50.0	50.0	59.2	57.8	57.8			8.6	8.6		3.5
Actuated g/C Ratio	0.63	0.52	0.52	0.62	0.61	0.61			0.09	0.09		0.04
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0			5.5	5.5		5.5
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0			3.0	3.0		3.0
Lane Grp Cap (vph)	115	977	847	266	1108	836			152	145		60
v/s Ratio Prot	0.00	0.46		c0.09	c0.62				c0.03			c0.00
v/s Ratio Perm	0.10		0.01	0.46		0.02				0.01		
v/c Ratio	0.17	0.87	0.02	0.88	1.02	0.03			0.38	0.10		0.03
Uniform Delay, d1	22.1	19.8	10.9	21.9	18.8	7.5			40.8	39.8		44.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2	0.3	9.3	0.0	26.7	32.6	0.0			1.6	0.3		0.2
Delay (s)	22.3	29.2	10.9	48.6	51.4	7.6			42.4	40.1		44.4
Level of Service	C	C	B	D	D	A			D	D		D
Approach Delay (s)		28.3			49.5				40.7			44.4
Approach LOS		C			D				D			D

Intersection Summary

HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	0	377	59	215	316	2	50	3	135	4	0	5
Future Volume (vph)	0	377	59	215	316	2	50	3	135	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't	0.980				0.850			0.903			0.925	
Flt Protected			0.950				0.987				0.978	
Satd. Flow (prot)	1900	1771	0	1752	1776	1615	0	1650	0	0	1719	0
Flt Permitted			0.950				0.987				0.978	
Satd. Flow (perm)	1900	1771	0	1752	1776	1615	0	1650	0	0	1719	0
Adj. Flow (vph)	0	401	63	229	336	2	53	3	144	4	0	5
Lane Group Flow (vph)	0	464	0	229	336	2	0	200	0	0	9	0
Sign Control	Free				Free		Stop				Stop	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 57.8%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 No Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (veh/h)	0	377	59	215	316	2	50	3	135	4	0	5
Future Volume (Veh/h)	0	377	59	215	316	2	50	3	135	4	0	5
Sign Control	Free				Free				Stop		Stop	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	401	63	229	336	2	53	3	144	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	338			464			1232	1228	432	1340	1258	336
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	338			464			1232	1228	432	1340	1258	336
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			79			57	98	77	95	100	99
cM capacity (veh/h)	1232			1092			124	142	627	83	136	711

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	464	229	336	2	200	9
Volume Left	0	0	229	0	0	53	4
Volume Right	0	63	0	0	2	144	5
cSH	1700	1700	1092	1700	1700	294	163
Volume to Capacity	0.00	0.27	0.21	0.20	0.00	0.68	0.06
Queue Length 95th (ft)	0	0	20	0	0	115	4
Control Delay (s)	0.0	0.0	9.2	0.0	0.0	39.7	28.3
Lane LOS			A			E	D
Approach Delay (s)	0.0		3.7			39.7	28.3
Approach LOS						E	D

Intersection Summary

Average Delay 8.3

Intersection Capacity Utilization 57.8%

ICU Level of Service B

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	16	1	6	56	0	30	10	331	74	25	273	22
Future Volume (vph)	16	1	6	56	0	30	10	331	74	25	273	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected		0.966		0.950			0.950			0.950		
Satd. Flow (prot)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted		0.966		0.950			0.950			0.950		
Satd. Flow (perm)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	17	1	6	59	0	32	11	348	78	26	287	23
Lane Group Flow (vph)	0	24	0	59	32	0	11	348	78	26	287	23
Sign Control		Stop		Stop			Free			Free		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 35.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 No Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (veh/h)	16	1	6	56	0	30	10	331	74	25	273	22
Future Volume (Veh/h)	16	1	6	56	0	30	10	331	74	25	273	22
Sign Control		Stop		Stop			Free			Free		
Grade		0%		0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	17	1	6	59	0	32	11	348	78	26	287	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	741	787	287	716	732	348	310			426		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	741	787	287	716	732	348	310			426		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	95	100	99	82	100	95	99			98		
cM capacity (veh/h)	311	315	757	331	339	691	1262			1062		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	24	59	32	11	348	78	26	287	23
Volume Left	17	59	0	11	0	0	26	0	0
Volume Right	6	0	32	0	0	78	0	0	23
cSH	365	331	691	1262	1700	1700	1062	1700	1700
Volume to Capacity	0.07	0.18	0.05	0.01	0.20	0.05	0.02	0.17	0.01
Queue Length 95th (ft)	5	16	4	1	0	0	2	0	0
Control Delay (s)	15.6	18.2	10.5	7.9	0.0	0.0	8.5	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	15.6	15.5		0.2			0.7		
Approach LOS	C	C							

Intersection Summary

Average Delay

2.4

Intersection Capacity Utilization

35.4%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	8	164	23	59	278	122	23	0	56	71	0	7
Future Volume (vph)	8	164	23	59	278	122	23	0	56	71	0	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt	0.982		0.954		0.950		0.850		0.850		0.850	
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1504	1814	0	1770	1653	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950				0.950
Satd. Flow (perm)	1504	1814	0	1770	1653	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	8	171	24	61	290	127	24	0	58	74	0	7
Lane Group Flow (vph)	8	195	0	61	417	0	0	24	58	0	74	7
Sign Control	Free		Free		Stop		Stop		Stop		Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 46.0%				ICU Level of Service A								
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 No Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	8	164	23	59	278	122	23	0	56	71	0	7
Future Volume (Veh/h)	8	164	23	59	278	122	23	0	56	71	0	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	8	171	24	61	290	127	24	0	58	74	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)										6	6	
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	417			195			614	738	183	692	686	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	417			195			614	738	183	692	686	354
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			94	100	93	77	100	99
cM capacity (veh/h)	1052			1378			384	328	859	324	351	695

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	8	195	61	417	82	81
Volume Left	8	0	61	0	24	74
Volume Right	0	24	0	127	58	7
cSH	1052	1700	1378	1700	1215	354
Volume to Capacity	0.01	0.11	0.04	0.25	0.07	0.23
Queue Length 95th (ft)	1	0	3	0	5	22
Control Delay (s)	8.4	0.0	7.7	0.0	11.1	18.6
Lane LOS	A		A		B	C
Approach Delay (s)	0.3	1.0		11.1		18.6
Approach LOS		B		C		

Intersection Summary						
Average Delay		3.5				
Intersection Capacity Utilization		46.0%	ICU Level of Service			A
Analysis Period (min)		15				

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	167	562	224	250	772	777	115	83	88
Average Queue (ft)	19	251	25	145	397	204	45	45	30
95th Queue (ft)	85	474	120	271	843	748	93	74	68
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)					13	7			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)	0	10	0	1	9				
Queuing Penalty (veh)	0	6	1	6	19				

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	33	105	246	22
Average Queue (ft)	3	39	84	4
95th Queue (ft)	18	79	193	16
Link Distance (ft)	2032		736	278
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		225		
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	40	56	46	16	50
Average Queue (ft)	14	24	13	1	6
95th Queue (ft)	37	47	32	8	30
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: News Road & Firestone Drive

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	LT	R	LT	R
Maximum Queue (ft)	35	1	34	4	57	68	76	33
Average Queue (ft)	2	0	7	0	18	31	34	6
95th Queue (ft)	16	0	26	3	47	55	61	25
Link Distance (ft)		1230		492	372		374	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	225		225		150		150	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 32

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 Build

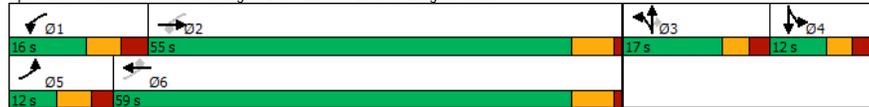


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Future Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850		0.850		0.947
Flt Protected	0.950			0.950				0.950				0.971
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	0	1687	1615	0	1636	0
Flt Permitted	0.069			0.101				0.950				0.971
Satd. Flow (perm)	131	1863	1615	183	1827	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			158		158			164		164		
Adj. Flow (vph)	20	860	39	235	1145	44	57	0	155	26	0	17
Lane Group Flow (vph)	20	860	39	235	1145	44	0	57	155	0	43	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6		3				
Total Split (s)	12.0	55.0	55.0	16.0	59.0	59.0	17.0	17.0	12.0	12.0		
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5	5.5		
Act Effct Green (s)	59.5	46.0	46.0	54.2	58.1	58.1	8.6	8.6	6.6			
Actuated g/C Ratio	0.67	0.52	0.52	0.61	0.65	0.65	0.10	0.10	0.07			
v/c Ratio	0.11	0.90	0.04	0.88	0.96	0.05	0.35	0.51	0.16			
Control Delay	7.4	34.7	0.1	53.4	38.3	0.1	46.8	12.5	1.2			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	7.4	34.7	0.1	53.4	38.3	0.1	46.8	12.5	1.2			
LOS	A	C	A	D	D	A	D	B	A			
Approach Delay		32.7			39.6		21.7		1.2			
Approach LOS		C			D		C		A			

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 89.2	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 85.5%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2021 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Future Volume (vph)	19	817	37	223	1088	42	54	0	147	25	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5	5.5		
Lane Util. Factor	1.00	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	0.95	0.85	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	0.97	
Satd. Flow (prot)	1805	1863	1615	1719	1827	1380	1687	1615	1635	1635	1635	
Flt Permitted	0.07	1.00	1.00	0.10	1.00	1.00	0.95	1.00	0.97	1.00	0.97	
Satd. Flow (perm)	131	1863	1615	184	1827	1380	1687	1615	1635	1635	1635	
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)	20	860	39	235	1145	44	57	0	155	26	0	17
RTOR Reduction (vph)	0	0	18	0	0	17	0	0	141	0	41	0
Lane Group Flow (vph)	20	860	21	235	1145	27	0	57	14	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6		3				
Actuated Green, G (s)	60.0	50.3	50.3	59.5	58.1	58.1	8.6	8.6	3.5			
Effective Green, g (s)	60.0	50.3	50.3	59.5	58.1	58.1	8.6	8.6	3.5			
Actuated g/C Ratio	0.63	0.53	0.53	0.62	0.61	0.61	0.09	0.09	0.04			
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5			
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	115	980	849	262	1110	838	151	145	59			
v/s Ratio Prot	0.00	0.46		c0.09	c0.63		c0.03		c0.00			
v/s Ratio Perm	0.11		0.01	0.47		0.02		0.01				
v/c Ratio	0.17	0.88	0.02	0.90	1.03	0.03	0.38	0.10	0.03			
Uniform Delay, d1	22.2	19.9	10.9	23.0	18.7	7.5	41.0	39.9	44.4			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.3	9.7	0.0	29.4	35.4	0.0	1.6	0.3	0.2			
Delay (s)	22.4	29.6	10.9	52.4	54.2	7.5	42.6	40.2	44.6			
Level of Service	C	C	B	D	D	A	D	D	D			
Approach Delay (s)		28.7			52.4		40.9		44.6			
Approach LOS		C			D		D		D			

Intersection Summary

HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	24.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	377	63	228	316	2	52	3	143	4	0	5
Future Volume (vph)	0	377	63	228	316	2	52	3	143	4	0	5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt			0.850			0.850			0.850			0.925
Flt Protected				0.950			0.955					0.978
Satd. Flow (prot)	1900	1810	1524	1752	1776	1615	0	1657	1615	0	1719	0
Flt Permitted				0.950			0.955					0.978
Satd. Flow (perm)	1900	1810	1524	1752	1776	1615	0	1657	1615	0	1719	0
Adj. Flow (vph)	0	401	67	243	336	2	55	3	152	4	0	5
Lane Group Flow (vph)	0	401	67	243	336	2	0	58	152	0	9	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 48.2%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	377	63	228	316	2	52	3	143	4	0	5
Future Volume (Veh/h)	0	377	63	228	316	2	52	3	143	4	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	401	67	243	336	2	55	3	152	4	0	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	338			468			1228	1225	401	1300	1290	336
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	338			468			1228	1225	401	1300	1290	336
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			78			55	98	77	95	100	99
cM capacity (veh/h)	1232			1088			123	140	653	87	128	711

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	401	67	243	336	2	210	9
Volume Left	0	0	0	243	0	0	55	4
Volume Right	0	0	67	0	0	2	152	5
cSH	1700	1700	1700	1088	1700	1700	447	170
Volume to Capacity	0.00	0.24	0.04	0.22	0.20	0.00	0.47	0.05
Queue Length 95th (ft)	0	0	0	21	0	0	61	4
Control Delay (s)	0.0	0.0	0.0	9.3	0.0	0.0	24.7	27.3
Lane LOS				A			C	D
Approach Delay (s)	0.0			3.9			24.7	27.3
Approach LOS				C			C	D

Intersection Summary

Average Delay

6.1

Intersection Capacity Utilization

48.2%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	16	1	6	60	0	30	10	331	81	25	273	22
Future Volume (vph)	16	1	6	60	0	30	10	331	81	25	273	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.966		0.850			0.950			0.850		0.850	
Flt Protected	0.966		0.950			0.950			0.950			
Satd. Flow (prot)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted	0.966		0.950			0.950			0.950			
Satd. Flow (perm)	0	1773	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	17	1	6	63	0	32	11	348	85	26	287	23
Lane Group Flow (vph)	0	24	0	63	32	0	11	348	85	26	287	23
Sign Control	Stop		Stop			Free			Free			

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 35.4%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2021 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	16	1	6	60	0	30	10	331	81	25	273	22	
Future Volume (Veh/h)	16	1	6	60	0	30	10	331	81	25	273	22	
Sign Control	Stop		Stop			Free			Free				
Grade	0%		0%			0%			0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	17	1	6	63	0	32	11	348	85	26	287	23	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	741	794	287	716	732	348	310						433
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	741	794	287	716	732	348	310						433
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	95	100	99	81	100	95	99						98
cM capacity (veh/h)	311	312	757	331	339	691	1262						1056

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	24	63	32	11	348	85	26	287	23
Volume Left	17	63	0	11	0	0	26	0	0
Volume Right	6	0	32	0	0	85	0	0	23
cSH	365	331	691	1262	1700	1700	1056	1700	1700
Volume to Capacity	0.07	0.19	0.05	0.01	0.20	0.05	0.02	0.17	0.01
Queue Length 95th (ft)	5	17	4	1	0	0	2	0	0
Control Delay (s)	15.6	18.4	10.5	7.9	0.0	0.0	8.5	0.0	0.0
Lane LOS	C	C	B	A				A	
Approach Delay (s)	15.6	15.7	0.2					0.7	
Approach LOS	C	C							

Intersection Summary

Average Delay 2.4

Intersection Capacity Utilization 35.4%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔
Traffic Volume (vph)	8	168	23	59	285	122	23	0	56	71	0	7
Future Volume (vph)	8	168	23	59	285	122	23	0	56	71	0	7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt	0.982		0.955				0.850				0.850	
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1504	1814	0	1770	1654	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950				0.950
Satd. Flow (perm)	1504	1814	0	1770	1654	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	8	175	24	61	297	127	24	0	58	74	0	7
Lane Group Flow (vph)	8	199	0	61	424	0	0	24	58	0	74	7
Sign Control	Free		Free				Stop				Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 46.4%				ICU Level of Service A								
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2021 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Movement																		
Lane Configurations	↔	↔		↔	↔			↔	↔		↔	↔						
Traffic Volume (veh/h)	8	168	23	59	285	122	23	0	56	71	0	7						
Future Volume (Veh/h)	8	168	23	59	285	122	23	0	56	71	0	7						
Sign Control	Free		Free				Stop				Stop							
Grade	0%		0%				0%				0%							
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96						
Hourly flow rate (vph)	8	175	24	61	297	127	24	0	58	74	0	7						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)									6		6							
Median type	None				None													
Median storage (veh)																		
Upstream signal (ft)																		
pX, platoon unblocked																		
vC, conflicting volume	424		199				626		749		187		702		698		360	
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	424		199				626		749		187		702		698		360	
tC, single (s)	4.3		4.1				7.1		6.5		6.2		7.1		6.5		6.2	
tC, 2 stage (s)																		
tF (s)	2.4		2.2				3.5		4.0		3.3		3.5		4.0		3.3	
p0 queue free %	99		96				94		100		93		77		100		99	
cM capacity (veh/h)	1045		1373				377		323		855		318		346		689	

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	8	199	61	424	82	81
Volume Left	8	0	61	0	24	74
Volume Right	0	24	0	127	58	7
cSH	1045	1700	1373	1700	1209	348
Volume to Capacity	0.01	0.12	0.04	0.25	0.07	0.23
Queue Length 95th (ft)	1	0	3	0	5	22
Control Delay (s)	8.5	0.0	7.7	0.0	11.2	18.9
Lane LOS	A		A		B	C
Approach Delay (s)	0.3		1.0		11.2	18.9
Approach LOS					B	C

Intersection Summary						
Average Delay		3.5				
Intersection Capacity Utilization		46.4%		ICU Level of Service		A
Analysis Period (min)		15				

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	R	L	T	R	LT	R	LTR
Maximum Queue (ft)	209	553	204	250	784	777	140	87	83
Average Queue (ft)	23	266	23	144	454	253	45	47	28
95th Queue (ft)	105	491	111	270	929	835	98	74	63
Link Distance (ft)		1007			741	741	405		475
Upstream Blk Time (%)					18	10			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (ft)	250		225	250				225	
Storage Blk Time (%)	0	12	0	1	10				
Queuing Penalty (veh)	0	7	0	8	22				

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	EB	WB	NB	NB	SB
Directions Served	T	R	L	LT	R	LTR
Maximum Queue (ft)	2	17	125	155	106	26
Average Queue (ft)	0	1	53	45	34	5
95th Queue (ft)	2	9	98	110	74	18
Link Distance (ft)	2030			723		278
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		300	225		175	
Storage Blk Time (%)				0	0	
Queuing Penalty (veh)				0	0	

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	39	58	47	16	53
Average Queue (ft)	15	24	14	1	6
95th Queue (ft)	37	49	33	9	29
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: News Road & Firestone Drive

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	LT	R	LT	R
Maximum Queue (ft)	33	1	34	49	59	87	32
Average Queue (ft)	3	0	8	18	30	35	6
95th Queue (ft)	17	0	28	46	52	67	26
Link Distance (ft)	1230		372		374		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225		225		150		150
Storage Blk Time (%)							
Queuing Penalty (veh)							

Network Summary

Network wide Queuing Penalty: 37

Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 No Build

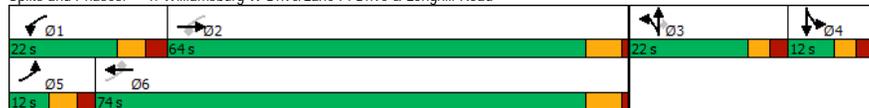


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Future Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850			0.947	
Flt Protected	0.950			0.950				0.950				0.971
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1687	1615	0	1636	0
Flt Permitted	0.151			0.214				0.950				0.971
Satd. Flow (perm)	287	3539	1615	387	3471	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			195			132			200			200
Adj. Flow (vph)	22	957	44	264	1273	49	64	0	174	29	0	19
Lane Group Flow (vph)	22	957	44	264	1273	49	0	64	174	0	48	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	64.0	64.0	22.0	74.0	74.0	22.0	22.0	12.0	12.0		
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5			
Act Effcl Green (s)	54.4	38.6	38.6	48.2	53.4	53.4	9.6	9.6	7.1			
Actuated g/C Ratio	0.64	0.45	0.45	0.57	0.63	0.63	0.11	0.11	0.08			
v/c Ratio	0.08	0.60	0.05	0.68	0.59	0.05	0.34	0.48	0.15			
Control Delay	6.8	19.6	0.1	18.5	12.7	0.1	47.4	9.4	1.0			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	6.8	19.6	0.1	18.5	12.7	0.1	47.4	9.4	1.0			
LOS	A	B	A	B	B	A	D	A	A			
Approach Delay		18.5			13.3			19.6			1.0	
Approach LOS		B			B			B			A	

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 85.2  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 15.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 63.8%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Future Volume (vph)	21	909	42	251	1209	47	61	0	165	28	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	0.95	1.00	0.85	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	0.97	0.97
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	1687	1615	1635			1635
Flt Permitted	0.15	1.00	1.00	0.21	1.00	1.00	0.95	1.00	0.97			0.97
Satd. Flow (perm)	286	3539	1615	387	3471	1380	1687	1615	1635			1635
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)	22	957	44	264	1273	49	64	0	174	29	0	19
RTOR Reduction (vph)	0	0	23	0	0	20	0	0	156	0	46	0
Lane Group Flow (vph)	22	957	21	264	1273	29	0	64	18	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	55.0	43.8	43.8	54.5	53.4	53.4	9.6	9.6	3.3			
Effective Green, g (s)	55.0	43.8	43.8	54.5	53.4	53.4	9.6	9.6	3.3			
Actuated g/C Ratio	0.60	0.48	0.48	0.60	0.58	0.58	0.11	0.11	0.04			
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5			
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	198	1695	773	386	2027	806	177	169	59			
v/s Ratio Prot	0.00	0.27		c0.08	c0.37		c0.04		c0.00			
v/s Ratio Perm	0.06		0.01	c0.33		0.02			0.01			
v/c Ratio	0.11	0.56	0.03	0.68	0.63	0.04	0.36	0.11	0.03			
Uniform Delay, d1	8.9	17.0	12.6	10.5	12.5	8.1	38.0	37.0	42.5			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.1	0.7	0.0	4.0	0.9	0.0	1.3	0.3	0.2			
Delay (s)	9.0	17.7	12.6	14.4	13.3	8.1	39.3	37.3	42.7			
Level of Service	A	B	B	B	B	A	D	D	D			
Approach Delay (s)		17.3			13.4			37.8			42.7	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay 17.3  
 HCM 2000 Level of Service B  
 HCM 2000 Volume to Capacity ratio 0.62  
 Actuated Cycle Length (s) 91.4  
 Sum of lost time (s) 24.0  
 Intersection Capacity Utilization 63.8%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 c Critical Lane Group

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (vph)	0	424	66	242	354	2	56	4	152	5	0	6
Future Volume (vph)	0	424	66	242	354	2	56	4	152	5	0	6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected				0.950		0.850		0.903			0.926	
Satd. Flow (prot)	1900	1771	0	1752	1776	1615	0	1650	0	0	1721	0
Flt Permitted				0.950		0.987		0.987			0.978	
Satd. Flow (perm)	1900	1771	0	1752	1776	1615	0	1650	0	0	1721	0
Adj. Flow (vph)	0	451	70	257	377	2	60	4	162	5	0	6
Lane Group Flow (vph)	0	521	0	257	377	2	0	226	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 63.7%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Traffic Volume (veh/h)	0	424	66	242	354	2	56	4	152	5	0	6
Future Volume (Veh/h)	0	424	66	242	354	2	56	4	152	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	451	70	257	377	2	60	4	162	5	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume		379			521			1383	1379	486	1506	1412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol		379			521			1383	1379	486	1506	1412
tC, single (s)		4.1			4.1			7.2	6.5	6.2	7.1	6.5
tC, 2 stage (s)												
tF (s)		2.2			2.2			3.6	4.0	3.3	3.5	4.0
p0 queue free %		100			75			36	96	72	91	100
cM capacity (veh/h)		1191			1040			93	110	585	57	105

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	521	257	377	2	226	11
Volume Left	0	0	257	0	0	60	5
Volume Right	0	70	0	0	2	162	6
cSH	1700	1700	1040	1700	1700	236	114
Volume to Capacity	0.00	0.31	0.25	0.22	0.00	0.96	0.10
Queue Length 95th (ft)	0	0	24	0	0	215	8
Control Delay (s)	0.0	0.0	9.6	0.0	0.0	92.0	39.8
Lane LOS			A			F	E
Approach Delay (s)	0.0		3.9			92.0	39.8
Approach LOS						F	E

Intersection Summary

Average Delay 17.0

Intersection Capacity Utilization 63.7%

ICU Level of Service

B

Analysis Period (min) 15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 No Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	17	1	6	64	0	35	10	383	86	29	314	22
Future Volume (vph)	17	1	6	64	0	35	10	383	86	29	314	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt	0.968		0.850			0.850			0.850		0.850	
Flt Protected	0.965		0.950			0.950			0.950			
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Flt Permitted	0.965		0.950			0.950			0.950			
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	18	1	6	67	0	37	11	403	91	31	331	23
Lane Group Flow (vph)	0	25	0	67	37	0	11	403	91	31	331	23
Sign Control	Stop		Stop			Free			Free			

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 No Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕	
Traffic Volume (veh/h)	17	1	6	64	0	35	10	383	86	29	314	22	
Future Volume (Veh/h)	17	1	6	64	0	35	10	383	86	29	314	22	
Sign Control	Stop		Stop			Free			Free				
Grade	0%		0%			0%			0%				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	18	1	6	67	0	37	11	403	91	31	331	23	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	855	909	331	824	841	403	354						494
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	855	909	331	824	841	403	354						494
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1						4.3
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.3
p0 queue free %	93	100	99	76	100	94	99						97
cM capacity (veh/h)	256	266	715	278	291	643	1216						1001

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	25	67	37	11	403	91	31	331	23
Volume Left	18	67	0	11	0	0	31	0	0
Volume Right	6	0	37	0	0	91	0	0	23
cSH	304	278	643	1216	1700	1700	1001	1700	1700
Volume to Capacity	0.08	0.24	0.06	0.01	0.24	0.05	0.03	0.19	0.01
Queue Length 95th (ft)	7	23	5	1	0	0	2	0	0
Control Delay (s)	17.9	22.0	10.9	8.0	0.0	0.0	8.7	0.0	0.0
Lane LOS	C	C	B	A				A	
Approach Delay (s)	17.9	18.1	0.2					0.7	
Approach LOS	C	C							

Intersection Summary

Average Delay 2.6

Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 No Build

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	9	182	23	59	308	137	23	0	56	80	0	8
Future Volume (vph)	9	182	23	59	308	137	23	0	56	80	0	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt	0.983		0.954				0.950		0.850		0.850	
Flt Protected	0.950			0.950				0.950				0.950
Satd. Flow (prot)	1504	1815	0	1770	1654	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950				0.950
Satd. Flow (perm)	1504	1815	0	1770	1654	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	9	190	24	61	321	143	24	0	58	83	0	8
Lane Group Flow (vph)	9	214	0	61	464	0	0	24	58	0	83	8
Sign Control	Free		Free				Stop				Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 49.0%						ICU Level of Service A						
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 No Build

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔	
Traffic Volume (veh/h)	9	182	23	59	308	137	23	0	56	80	0	8	
Future Volume (Veh/h)	9	182	23	59	308	137	23	0	56	80	0	8	
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Hourly flow rate (vph)	9	190	24	61	321	143	24	0	58	83	0	8	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)									6	6			
Median type	None			None									
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	464			214			667	806	202	752	746	392	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	464			214			667	806	202	752	746	392	
tC, single (s)	4.3			4.1			7.1		6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)													
tF (s)	2.4			2.2			3.5		4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			93		100	93	72	100	99
cM capacity (veh/h)	1009			1356			353		299	839	294	323	661

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	214	61	464	82	91
Volume Left	9	0	61	0	24	83
Volume Right	0	24	0	143	58	8
cSH	1009	1700	1356	1700	1186	322
Volume to Capacity	0.01	0.13	0.04	0.27	0.07	0.28
Queue Length 95th (ft)	1	0	4	0	6	28
Control Delay (s)	8.6	0.0	7.8	0.0	11.5	21.0
Lane LOS	A		A		B	C
Approach Delay (s)	0.3	0.9		11.5		21.0
Approach LOS		B		C		

Intersection Summary						
Average Delay		3.7				
Intersection Capacity Utilization			49.0%		ICU Level of Service A	
Analysis Period (min)		15				

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LTR
Maximum Queue (ft)	59	238	228	33	211	251	230	73	109	110	90
Average Queue (ft)	15	123	113	9	93	110	93	12	45	47	31
95th Queue (ft)	48	203	204	29	170	212	185	49	91	87	66
Link Distance (ft)		1006	1006			738	738		390		461
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			225	250			250		225	
Storage Blk Time (%)		0	0		0	0	0	0			
Queuing Penalty (veh)		0	0		1	1	0	0			

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	32	138	500	26
Average Queue (ft)	4	52	216	5
95th Queue (ft)	19	102	508	18
Link Distance (ft)	2032		736	278
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)	225			
Storage Blk Time (%)				
Queuing Penalty (veh)				

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	L	L
Maximum Queue (ft)	38	70	46	14	54
Average Queue (ft)	15	27	15	1	8
95th Queue (ft)	38	57	35	10	33
Link Distance (ft)	247	762			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			140	190	190
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	LT	R	LT	R
Maximum Queue (ft)	37	32	2	52	67	99	33
Average Queue (ft)	4	8	0	18	30	40	7
95th Queue (ft)	20	27	2	46	56	76	29
Link Distance (ft)			492	372		374	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225	225			150		150
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Network Summary

Network wide Queuing Penalty: 1
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Lanes, Volumes, Timings

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 Build

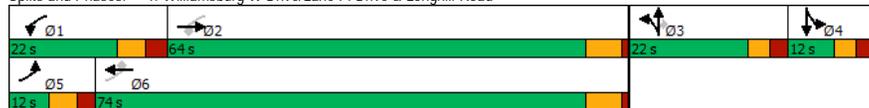


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Future Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850			0.850			0.947	
Flt Protected	0.950			0.950				0.950				0.971
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	0	1687	1615	0	1636	0
Flt Permitted	0.147			0.211				0.950				0.971
Satd. Flow (perm)	279	3539	1615	382	3471	1380	0	1687	1615	0	1636	0
Satd. Flow (RTOR)			195			132			200			200
Adj. Flow (vph)	22	965	44	264	1286	49	64	0	174	29	0	19
Lane Group Flow (vph)	22	965	44	264	1286	49	0	64	174	0	48	0
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Total Split (s)	12.0	64.0	64.0	22.0	74.0	74.0	22.0	22.0	12.0	12.0		
Total Lost Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	6.5	6.0		
Act Effct Green (s)	54.7	38.9	38.9	48.5	53.6	53.6	9.6	9.6	7.1			
Actuated g/C Ratio	0.64	0.45	0.45	0.57	0.63	0.63	0.11	0.11	0.08			
v/c Ratio	0.08	0.60	0.05	0.69	0.59	0.05	0.34	0.48	0.15			
Control Delay	6.8	19.6	0.1	18.9	12.8	0.1	47.5	9.4	1.0			
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total Delay	6.8	19.6	0.1	18.9	12.8	0.1	47.5	9.4	1.0			
LOS	A	B	A	B	B	A	D	A	A			
Approach Delay		18.5			13.4			19.6			1.0	
Approach LOS		B			B			B			A	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 85.5	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 15.5	Intersection LOS: B
Intersection Capacity Utilization 64.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road



HCM Signalized Intersection Capacity Analysis

Fords Colony TIS Update

1: Williamsburg W Drive/Lane PI Drive & Longhill Road

2027 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Future Volume (vph)	21	917	42	251	1222	47	61	0	165	28	0	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	6.5	6.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	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	0.85	1.00	0.95
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	1.00	0.97	0.97
Satd. Flow (prot)	1805	3539	1615	1719	3471	1380	1687	1615	1635	1635	1635	1635
Flt Permitted	0.15	1.00	1.00	0.21	1.00	1.00	0.95	1.00	0.97	1.00	0.97	0.97
Satd. Flow (perm)	280	3539	1615	382	3471	1380	1687	1615	1635	1635	1635	1635
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)	22	965	44	264	1286	49	64	0	174	29	0	19
RTOR Reduction (vph)	0	0	23	0	0	20	0	0	156	0	46	0
Lane Group Flow (vph)	22	965	21	264	1286	29	0	64	18	0	2	0
Heavy Vehicles (%)	0%	2%	0%	5%	4%	17%	7%	33%	0%	4%	0%	11%
Turn Type	D,P+P	NA	Perm	D,P+P	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	6		2	2		6			3			
Actuated Green, G (s)	55.2	44.0	44.0	54.7	53.6	53.6	9.6	9.6	3.3			
Effective Green, g (s)	55.2	44.0	44.0	54.7	53.6	53.6	9.6	9.6	3.3			
Actuated g/C Ratio	0.60	0.48	0.48	0.60	0.59	0.59	0.10	0.10	0.04			
Clearance Time (s)	6.5	6.0	6.0	7.0	6.0	6.0	5.5	5.5	5.5			
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	195	1699	775	384	2031	807	176	169	58			
v/s Ratio Prot	0.00	0.27		c0.08	c0.37		c0.04		c0.00			
v/s Ratio Perm	0.07		0.01	c0.33		0.02		0.01				
v/c Ratio	0.11	0.57	0.03	0.69	0.63	0.04	0.36	0.11	0.03			
Uniform Delay, d1	9.0	17.0	12.5	10.5	12.5	8.0	38.2	37.1	42.6			
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	0.1	0.7	0.0	4.0	0.9	0.0	1.3	0.3	0.2			
Delay (s)	9.1	17.7	12.6	14.6	13.4	8.1	39.4	37.4	42.8			
Level of Service	A	B	B	B	B	A	D	D	D			
Approach Delay (s)		17.3			13.5			38.0			42.8	
Approach LOS		B			B			D			D	

Intersection Summary

HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	24.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	424	70	255	354	2	58	4	160	5	0	6
Future Volume (vph)	0	424	70	255	354	2	58	4	160	5	0	6
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt			0.850			0.850			0.850			0.926
Flt Protected				0.950			0.955					0.978
Satd. Flow (prot)	1900	1810	1524	1752	1776	1615	0	1659	1615	0	1721	0
Flt Permitted				0.950			0.955					0.978
Satd. Flow (perm)	1900	1810	1524	1752	1776	1615	0	1659	1615	0	1721	0
Adj. Flow (vph)	0	451	74	271	377	2	62	4	170	5	0	6
Lane Group Flow (vph)	0	451	74	271	377	2	0	66	170	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 52.7%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

2: Fords Colony Drive/Dominon Village & Longhill Road

2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	424	70	255	354	2	58	4	160	5	0	6
Future Volume (Veh/h)	0	424	70	255	354	2	58	4	160	5	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	451	74	271	377	2	62	4	170	5	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									7			
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	379			525			1376	1372	451	1457	1444	377
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379			525			1376	1372	451	1457	1444	377
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			74			33	96	72	92	100	99
cM capacity (veh/h)	1191			1037			93	109	613	61	98	674

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	451	74	271	377	2	236	11
Volume Left	0	0	0	271	0	0	62	5
Volume Right	0	0	74	0	0	2	170	6
cSH	1700	1700	1700	1037	1700	1700	336	121
Volume to Capacity	0.00	0.27	0.04	0.26	0.22	0.00	0.70	0.09
Queue Length 95th (ft)	0	0	0	26	0	0	126	7
Control Delay (s)	0.0	0.0	0.0	9.7	0.0	0.0	38.8	37.7
Lane LOS				A			E	E
Approach Delay (s)	0.0			4.0			38.8	37.7
Approach LOS							E	E

Intersection Summary

Average Delay

8.6

Intersection Capacity Utilization

52.7%

ICU Level of Service

A

Analysis Period (min)

15

Lanes, Volumes, Timings

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 Build



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	17	1	6	68	0	35	10	383	93	29	314	22
Future Volume (vph)	17	1	6	68	0	35	10	383	93	29	314	22
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected		0.968			0.850				0.850			0.850
Flt Permitted		0.965		0.950			0.950			0.950		
Satd. Flow (prot)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Satd. Flow (perm)	0	1775	0	1736	1553	0	1805	1759	1282	1556	1759	967
Adj. Flow (vph)	18	1	6	72	0	37	11	403	98	31	331	23
Lane Group Flow (vph)	0	25	0	72	37	0	11	403	98	31	331	23
Sign Control		Stop		Stop			Free			Free		

Intersection Summary

Control Type: Unsignalized

Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

Fords Colony TIS Update

3: Centerville Road & Westport/Manchester Drive

2027 Build



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕	↕	↕	↕	↕
Traffic Volume (veh/h)	17	1	6	68	0	35	10	383	93	29	314	22
Future Volume (Veh/h)	17	1	6	68	0	35	10	383	93	29	314	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	18	1	6	72	0	37	11	403	98	31	331	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	855	916	331	824	841	403	354			501		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	855	916	331	824	841	403	354			501		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.3		
p0 queue free %	93	100	99	74	100	94	99			97		
cM capacity (veh/h)	256	263	715	278	291	643	1216			995		

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	25	72	37	11	403	98	31	331	23
Volume Left	18	72	0	11	0	0	31	0	0
Volume Right	6	0	37	0	0	98	0	0	23
cSH	303	278	643	1216	1700	1700	995	1700	1700
Volume to Capacity	0.08	0.26	0.06	0.01	0.24	0.06	0.03	0.19	0.01
Queue Length 95th (ft)	7	25	5	1	0	0	2	0	0
Control Delay (s)	17.9	22.5	10.9	8.0	0.0	0.0	8.7	0.0	0.0
Lane LOS	C	C	B	A			A		
Approach Delay (s)	17.9	18.5		0.2			0.7		
Approach LOS	C	C							

Intersection Summary

Average Delay 2.7

Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	9	186	23	59	315	137	23	0	56	80	0	8
Future Volume (vph)	9	186	23	59	315	137	23	0	56	80	0	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flt Protected	0.950			0.950				0.950			0.950	
Satd. Flow (prot)	1504	1815	0	1770	1653	0	0	1770	1583	0	1805	1615
Flt Permitted	0.950			0.950				0.950			0.950	
Satd. Flow (perm)	1504	1815	0	1770	1653	0	0	1770	1583	0	1805	1615
Adj. Flow (vph)	9	194	24	61	328	143	24	0	58	83	0	8
Lane Group Flow (vph)	9	218	0	61	471	0	0	24	58	0	83	8
Sign Control		Free		Free				Stop			Stop	

Intersection Summary												
Control Type: Unsignalized												
Intersection Capacity Utilization 49.4%						ICU Level of Service A						
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis  
4: News Road & Firestone Drive

Fords Colony TIS Update  
2027 Build

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement	↔	↔		↔	↔		↔	↔		↔	↔	↔
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (veh/h)	9	186	23	59	315	137	23	0	56	80	0	8
Future Volume (Veh/h)	9	186	23	59	315	137	23	0	56	80	0	8
Sign Control		Free		Free				Stop			Stop	
Grade		0%		0%				0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	194	24	61	328	143	24	0	58	83	0	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)									6			6
Median type		None		None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	471			218			678	817	206	762	758	400
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			218			678	817	206	762	758	400
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			93	100	93	71	100	99
cM capacity (veh/h)	1003			1352			347	294	835	289	319	655

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	218	61	471	82	91
Volume Left	9	0	61	0	24	83
Volume Right	0	24	0	143	58	8
cSH	1003	1700	1352	1700	1180	317
Volume to Capacity	0.01	0.13	0.05	0.28	0.07	0.29
Queue Length 95th (ft)	1	0	4	0	6	29
Control Delay (s)	8.6	0.0	7.8	0.0	11.5	21.4
Lane LOS	A		A		B	C
Approach Delay (s)	0.3		0.9		11.5	21.4
Approach LOS					B	C

Intersection Summary						
Average Delay 3.7						
Intersection Capacity Utilization 49.4%			ICU Level of Service A			
Analysis Period (min) 15						

**Intersection: 1: Williamsburg W Drive/Lane PI Drive & Longhill Road**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LTR
Maximum Queue (ft)	69	262	253	53	215	242	244	115	128	103	88
Average Queue (ft)	15	129	120	11	94	108	96	12	45	42	32
95th Queue (ft)	50	229	219	40	166	203	189	59	97	80	69
Link Distance (ft)		1006	1006			738	738		390		461
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250			225	250			250		225	
Storage Blk Time (%)	0	0	1	0	0	0	0	0			
Queuing Penalty (veh)	0	0	0	0	0	0	0	0			

**Intersection: 2: Fords Colony Drive/Dominon Village & Longhill Road**

Movement	EB	EB	WB	B11	NB	NB	SB
Directions Served	T	R	L	T	LT	R	LTR
Maximum Queue (ft)	5	19	134	54	357	156	24
Average Queue (ft)	0	1	62	2	107	56	5
95th Queue (ft)	5	8	112	55	362	145	18
Link Distance (ft)	2030			2988	723		278
Upstream Blk Time (%)					1		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)		300	225			175	
Storage Blk Time (%)					10	1	
Queuing Penalty (veh)					16	0	

**Intersection: 3: Centerville Road & Westport/Manchester Drive**

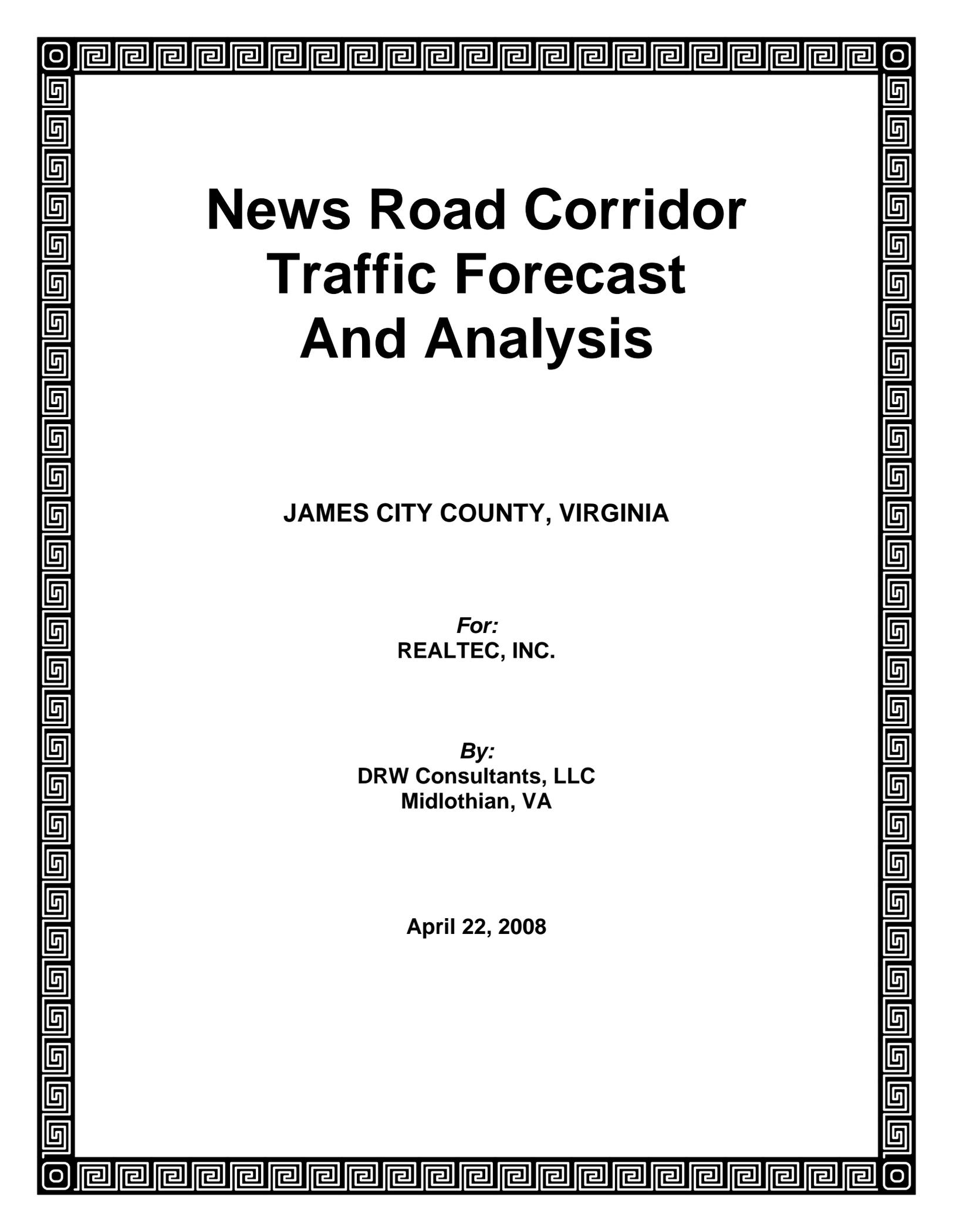
Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	L	TR	L	L	R
Maximum Queue (ft)	42	63	49	19	49	2
Average Queue (ft)	15	27	16	2	9	0
95th Queue (ft)	39	52	36	11	33	0
Link Distance (ft)	247	762				
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			140	190	190	325
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: News Road & Firestone Drive

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	LT	R	LT	R
Maximum Queue (ft)	44	37	6	54	54	94	33
Average Queue (ft)	4	10	0	18	28	40	7
95th Queue (ft)	23	31	3	46	50	76	29
Link Distance (ft)			492	372		374	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	225	225		150		150	
Storage Blk Time (%)						0	
Queuing Penalty (veh)						0	

Network Summary

Network wide Queuing Penalty: 18

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# **News Road Corridor Traffic Forecast And Analysis**

**JAMES CITY COUNTY, VIRGINIA**

*For:*  
**REALTEC, INC.**

*By:*  
**DRW Consultants, LLC  
Midlothian, VA**

**April 22, 2008**

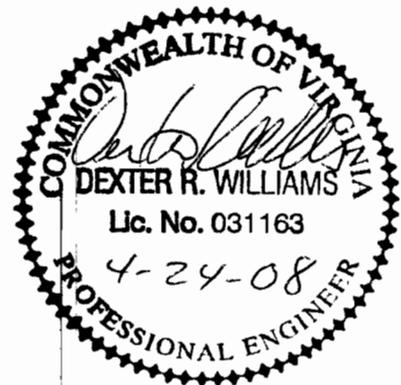
# News Road Corridor Traffic Forecast And Analysis

JAMES CITY COUNTY, VIRGINIA

*For:*  
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Midlothian, VA

April 22, 2008



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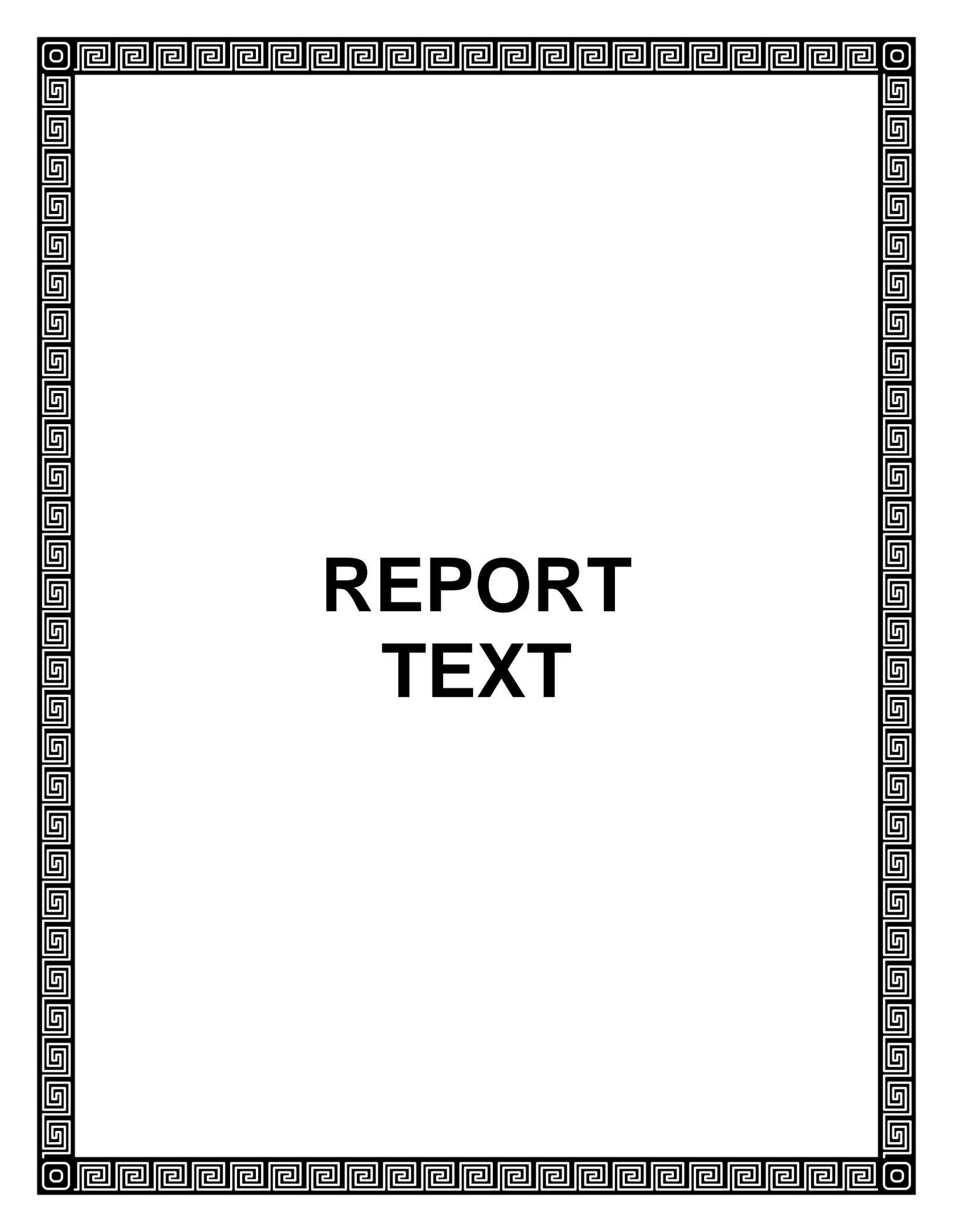
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# **REPORT TEXT**

## EXECUTIVE SUMMARY

This traffic study was prepared in response to comments received at the February 27, 2008 meeting of the James City County Planning Commission regarding the proposed rezoning of The Village At Ford's Colony (The Village). The primary principle discussed at the meeting was that a traffic study for the News Road corridor should be prepared based on an accounting of traffic from approved development to date as well as the proposed development of The Village At Ford's Colony and other likely proposals for development. This approach to accounting for other anticipated development traffic in the area is a corridor build out approach to traffic forecasting as opposed to the previous July 12, 2007 "Traffic Analysis For Ford's Colony CRCC". The July 12, 2007 used a forecast year with growth factor approach to traffic forecasting, which does not account for other development directly.

The July 12, 2007 report focused only on the The Village (CCRC) connection to the News Road/Firestone Drive intersection. As discussed at the Planning Commission meeting, counts were available for the News Road intersections at Centerville Road, Old News Road and Monticello Avenue and thus were available to be included in a News Road corridor study. This corridor study includes traffic forecasts for the News Road intersections at Centerville Road, Firestone Drive, Old News Road and Monticello Avenue.

The Village is a retirement community with various types of housing for seniors. These include:

1. Townhomes. 32 units are included in this report. (Note: the number of planned townhome units has been reduced to 24 since the completion of traffic analysis in this report).
2. Independent Living Units. 332 units included in this report.
3. Congregate Case Apartments. 290 units included in this report.
4. Assisted Living/Skill Care. 118 beds included in this report.
5. Nursing Home. 180 beds included in this report.

The existing two lane sections of News Road have adequate capacity for traffic to be generated by all approved and proposed development (including The Village) in the News Road corridor. Ford's Colony, the developer The Village will include turn lanes on News Road at Firestone Drive for access to The Village as well as cash contributions and/or construction for turn lanes on News Road at Powhatan Village, general improvements to News Road, and to the West Monticello Avenue plan which includes improvements at the Monticello Avenue/News Road intersection.

## INTRODUCTION

Exhibit 1a shows the News Road corridor from Centerville Road on the west to Monticello Avenue on the east. Centerville Road is the periphery of the Primary Service Area and primarily serves a radial route connection between residential uses in the adjacent area and the Williamsburg region. As such, a forecast for residential development in the adjacent area can be an effective tool for forecasting future traffic on News Road.

Exhibit 1b shows the development area and inventory used in this traffic study (the Exhibit 1b development area map frame is shown on Exhibit 1a). There are 10 identified developments in the area.

There are four AM and PM peak hour traffic analysis scenarios presented in this study:

1. 2007/2008 counts.
2. All Approved Development: Addition of Ford's Colony, Powhatan Secondary north of News Road, Springhill, Westport and Liberty Ridge traffic to counts.
3. The Village: Addition of The Village traffic to all approved development traffic.
4. Proposed Development: Addition of Nixon/Graves, Richardson and Beamer traffic to The Village traffic.

Exhibit 1c shows intersections on the News Road corridor from Centerville Road to Monticello Avenue. Traffic forecasts and analysis for these intersections are addressed as follows:

1. Traffic counts and forecasts are included for the Centerville Road, Firestone Drive, Old News Road and Monticello Avenue intersections. These were the counts that were available for creation of forecasts and inclusion in this study.
2. Traffic analysis is included for the Centerville Road, Firestone Drive, Old News Road and Monticello Avenue intersections. A more thorough traffic analysis for the Monticello Avenue corridor, including the News Road intersection, is included in the March 1, 2008 traffic study for Section 12 of New Town for the 2015 PM peak hour. The March 1, 2008 traffic study includes traffic growth from sources other than News Road area development, and includes recommendations for improvements for West Monticello Avenue (including the News Road intersection) that were originally developed in conjunction with the 2006 rezoning of Section 9 of New Town.
3. Recommendations for turn lane additions at intersections are included for all unsignalized intersections. (See March 1, 2008 report for signalized intersection at Monticello Avenue).

## 2007/2008 AM AND PM PEAK HOUR TRAFFIC COUNTS

Exhibit 3 shows AM and PM peak hour counts for the News Road corridor. The Centerville Road intersection turning movement counts are tabulated on Appendix Exhibit A series and shown graphically on the upper row of Exhibit 3. These counts were conducted in April 2007, but have not been published before.

The Firestone Drive intersection turning movement counts are tabulated on Appendix Exhibit B series and shown graphically on the second row of Exhibit 3. These counts were conducted in April 2007 and were used in the July 12, 2007 traffic study for The Village.

The Old News Road intersection turning movement counts are tabulated on Appendix Exhibit C series and shown graphically on the third row of Exhibit 3. These counts were conducted in January 2008 by LandMark Design Group and haven not been published before.

The Old News Road intersection turning movement counts are tabulated on Appendix Exhibit D series and shown graphically on the bottom row of Exhibit 3. The PM counts were conducted in April 2007 and were used in the March 1, 2008 traffic study for Section 12 of New Town. The AM counts were conducted on March 11, 2008 and have not been published before. (Note: the Appendix Exhibit D exhibit uses a north/south orientation for News Road; all other areas of this report use an east/west orientation for News Road).

Peak hour intersection levels of service are calculated using Synchro. Synchro reports are presented in the technical appendix. Following are peak hour LOS for 2007/2008 counts on the News Road corridor:

1. Centerville Road (Appendix Exhibits G1 and G2). There are no auxiliary lanes at this three-way, unsignalized intersection, with single lane approaches in all three directions and a stop sign for the westbound approach on News Road. News Road westbound approach: LOS B for AM and PM, Centerville Road southbound approach: LOS A for AM and PM. Right turn and left turn lane warrants are included in the technical appendix for existing counts (Appendix Exhibits J1 and J2 for AM and PM peak hour right turn lane warrants on northbound Centerville Road, and Appendix Exhibit K for left turn lanes warrants on southbound Centerville Road). A right turn taper is warranted for existing counts, and a left turn lane is warranted on southbound Centerville Road for 2007 PM peak hour counts.
2. Firestone Drive (Appendix Exhibits H1 and H2). There are auxiliary lanes on all approaches at this three-way, unsignalized intersection, with an eastbound left turn lane and a westbound right turn lane on News Road, and separate right and left turn lanes and a stop sign for the southbound approach on Firestone Drive. Firestone Drive southbound approach: LOS B AM and PM, News Road eastbound left turn: LOS A AM and PM.
3. Old News Road (Appendix Exhibits I1 and I2). This is a four-way, unsignalized intersection with stop signs on the northbound and southbound approaches. Southbound Old News Road and northbound Lake Powhatan have single approach lanes to the stop signs. Westbound News Road has two through lanes with a left turn

lane and a right turn lane. Eastbound News Road has two through lanes with a separate left turn lane. Old News Road southbound approach: LOS B AM and PM, Lake Powhatan northbound approach: LOS B AM and LOS C PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.

4. Monticello Avenue (Appendix Exhibit P1 and P2). This is a signalized intersection with overall LOS C and LOS D or better for all turning movements for AM and PM peak hours.

Traffic on News Road progressively increases from west to east. The lowest traffic volumes are on News Road east of Centerville Road. The peak hour two-way two lane highway segment LOS is B in the AM and PM peak hours. The highest traffic on the two lane sections of News Road is from Powhatan Secondary to Old News Road. The peak hour two-way two lane highway segment LOS is C in the AM peak hour and LOS D in the PM peak hour.

## FORD'S COLONY TRIP DISTRIBUTION

Peak hour traffic counts were conducted at all access points to Ford's Colony in 2003 with results reported in a traffic study dated February 28, 2004 by DRW Consultants, Inc. The 2004 report was an update of previous reports in 1993 and 1998. The report documented that Ford's Colony peak hour trip generation in 1998 and 2003 varied from 54% to 64% of values in Trip Generation, 6<sup>th</sup> Edition by the Institute of Transportation Engineers (ITE). The traffic forecast for Ford's Colony in the 2004 study used a percentage of ITE values for trip generation. The percentage of ITE values was the average of 1998 and 2003 peak hour entering and exiting traffic.

The 2003 counts also provide a basis for determining trip distribution for Ford's Colony for use as a basis for other development trip distribution. The upper sections of Exhibits 2a and 2b respectively show the 2003 AM and PM peak hour counts for traffic entering and existing Ford's Colony four points of access. The lower sections of Exhibits 2a and 2b respectively

show the percentages of total entering and exiting traffic for the AM and PM peak hours at the four points of access.

There are four points of access to Ford’s Colony:

1. Williamsburg West Drive on Longhill Road: This access also provides access to Williamsburg West subdivision. Ford’s Colony access is via a card-operated gate.
2. Ford’s Colony Drive on Longhill Road: This access is open in Ford’s Colony for about 1,000 feet, with manned and card-operated gates thereafter for access to Ford’s Colony.
3. Firestone Drive on News Road: This access is a card-operated gate.
4. Manchester Drive on Centerville Road: This is a manned gate access, and is the designated access for construction and outside service traffic.

To determine east-west trip distribution splits for new development traffic with access on News Road, Ford’s Colony traffic on Longhill Road and News Road (direct east-west access roads) is aggregated. These access points include Ford’s Colony Drive and Williamsburg West Drive on Longhill Road and Firestone Drive on News Road. The east-west split delineation of traffic at these three points of access is shown on Exhibit 2c (east in blue arrows, west in red arrows).

East-west splits using these three points of access are calculated for the AM and PM peak hours on Exhibits 2a and 2b. The following table summarizes the results for the east-west directional split of Ford’s Colony traffic:

TABLE ONE: FORD’S COLONY EAST-WEST DIRECTIONAL SPLIT

	EAST	WEST
AM ENTERING	73%	27%
AM EXITING	83%	17%
PM ENTERING	82%	18%
PM EXITING	81%	19%

To determine north-south trip distribution splits for new development traffic with access on Centerville Road, all Ford’s Colony traffic is aggregated. The north-south split delineation of traffic at these three points of access is shown on Exhibit 2d (north in blue arrows, south in red arrows).

North-south splits using these three points of access are calculated for the AM and PM peak hours using the three access points. The following table summarizes the results for the north-south directional split of Ford’s Colony traffic:

TABLE TWO: FORD’S COLONY NORTH-SOUTH DIRECTIONAL SPLIT

	NORTH	SOUTH
AM ENTERING	75%	25%
AM EXITING	72%	28%
PM ENTERING	71%	29%
PM EXITING	79%	21%

The Table One results for the east-west split are remarkably consistent for the AM exiting, PM entering and PM exiting traffic, with 2% or less difference between any of the three conditions. The AM entering traffic has a higher west split which may be related to relatively higher trip generation for Ford’s Colony service-oriented, AM entering traffic.

The Table Two results for the north-south split are also relatively consistent, with 8% or less difference between any of the four conditions. These results are applied to new developments in this study.

## APPROVED DEVELOPMENT TRAFFIC FORECAST

Ford’s Colony has access to News Road directly at Firestone Drive only. Traffic studies in 1993, 1998 and 2003 have shown Ford’s Colony trip generation to vary substantially from conventional trip generate equations and average rates in Trip Generation, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> Editions (TG5 through TG7), published by the Institute of Transportation Engineers (ITE).

The approach to forecasting build out traffic from Ford's Colony on News Road is to calculate the percentage increase in TG7 traffic values between April 2007 development and build out, and apply the percentage increase to Ford's Colony traffic counts at Firestone Drive.

Table One on Exhibit 4 shows Ford's Colony trip generation for 2007 and build out using TG7. Percentage increases for build out over 2007 development are in the 32% range. These percentages have been applied to Ford's Colony traffic on Firestone Drive. The increase in Firestone Drive traffic is assigned to the four News Road intersections on Appendix Exhibit E1.

For the 30 unbuilt single family housing units in Powhatan Secondary north of News Road, 100% of TG7 values are assigned as new traffic onto News Road at Powhatan Secondary. Trip generation and distribution for these units are shown on Table 2 on Exhibit 4. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E2.

For the 74 unbuilt units in Greensprings, these are assumed to be the Exhibit 2 Greensprings area with access to Centerville Road south of News Road as shown on Exhibit 2. Table 3 on Exhibit 4 shows trip generation for these 74 units, and trip distribution from these units north on Centerville Road. 60% of traffic is assigned to the north, with 40% assigned to News Road. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E3. The Ford's Colony trip distribution was not applied completely to Greensprings because of the relative ease of access to Monticello Avenue at Centerville Road.

For the 108 unbuilt units in Westport, Ford's Colony trip generation factors are used and results are assigned as new traffic. Westport has access to Centerville Road north of News Road. Table 1 on Exhibit 5 shows trip generation using the Ford's Colony north-south trip distribution split. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E4.

For the 138 unbuilt units in Liberty Ridge, 100% of TG7 values are assigned as new traffic. Liberty Ridge has access to Centerville Road north of Westport. Table 2 on Exhibit 5 shows trip generation using the Ford's Colony north-south trip distribution split. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E5.

Exhibit 8 shows the traffic forecast on News Road for all approved development. Traffic assignment for unbuilt units in Ford's Colony, Powhatan Secondary, Greensprings, Westport and Liberty Ridge have been added to the 2007/2008 counts.

Following are peak hour LOS for traffic forecast with all approved development on the News Road corridor:

1. Centerville Road (Appendix Exhibits G3 and G4). With existing lane configuration, News Road westbound approach: LOS B for AM and LOS C PM, Centerville Road southbound approach: LOS A for AM and PM. Right turn warrants are included in the technical appendix for the approved development forecast (Appendix Exhibits J1 and J2 for AM and PM peak hour right turn lane warrants on northbound Centerville Road). A right turn taper is warranted for the approved development forecast, and a left turn lane was warranted on southbound Centerville Road for 2007 PM peak hour counts.
2. Firestone Drive (Appendix Exhibits H3 and H4). With existing lane configuration, Firestone Drive southbound approach: LOS B AM and LOS B PM, News Road eastbound left turn: LOS A AM and PM.
3. Old News Road (Appendix Exhibits I3 and I4). With existing lane configuration, Old News Road southbound approach: LOS B AM and LOS C PM, Lake Powhatan northbound approach: LOS B AM and LOS C PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.
4. Monticello Avenue (Appendix Exhibit P3 and P4). This is a signalized intersection with overall LOS D for the AM peak hour and LOS C for the PM peak hour and LOS D or better for all turning movements for AM and PM peak hours.

On News Road east of Centerville Road, the peak hour two-way two lane highway segment LOS is C in the AM and PM peak hours. On News Road from Powhatan Secondary to Old News Road, the peak hour two-way two lane highway segment LOS is C in the AM peak hour and LOS D in the PM peak hour.

## THE VILLAGE AT FORD'S COLONY TRAFFIC FORECAST

Trip generation for The Village is shown in Table 1 on Exhibit 6 using Trip Generation, 7<sup>th</sup> Edition (TG7), by the Institute of Transportation Engineers (ITE). Trip generation has increased from the July 12, 2007 report by the addition of 180 nursing home beds which were not included in the development inventory provided for that report.

Trip distribution for The Village is also shown on Exhibit 6. The Ford's Colony east-west trip distribution split is used. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E6.

Exhibit 9 shows the traffic forecast on News Road for The Village. Traffic assignment for The Village has been added to the approved development forecast.

Following are peak hour LOS for traffic forecast with all approved development on the News Road corridor:

1. Centerville Road (Appendix Exhibits G5 and G6). With existing lane configuration, News Road westbound approach: LOS B for AM and LOS C PM, Centerville Road southbound approach: LOS A for AM and PM.
2. Firestone Drive (Appendix Exhibits H5 and H6). Firestone Drive southbound approach: LOS C AM and LOS B PM, The Village northbound approach: LOS B AM and LOS C PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.
3. Old News Road (Appendix Exhibits I5 and I6). With existing lane configuration, Old News Road southbound approach: LOS B AM and LOS C PM, Lake Powhatan

northbound approach: LOS B AM and LOS C PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.

4. Monticello Avenue (Appendix Exhibit P5 and P6). This is a signalized intersection with overall LOS D for the AM peak hour and LOS C for the PM peak hour and LOS D or better for all turning movements for AM and PM peak hours.

On News Road east of Centerville Road, the peak hour two-way two lane highway segment LOS is C in the AM and PM peak hours. On News Road from Powhatan Secondary to Old News Road, the peak hour two-way two lane highway segment LOS is C in the AM peak hour and LOS D in the PM peak hour.

## PROPOSED DEVELOPMENT TRAFFIC FORECAST

The Nixon/Graves property lies west of The Village with access via News Road. There is no specific development plan for this property. Development density at one single family unit per acre is used, yielding 60 units. Trip generation for the 60 units is shown on Table 1 on Exhibit 7. The Ford's Colony east-west trip distribution split is used. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E7.

The Richardson property lies west of the Nixon/Graves property. There is no specific development plan for this property. Development density at one single family unit per three acres is used, yielding 39 units. Trip generation for the 39 units is shown on Table 2 on Exhibit 7. The Ford's Colony east-west trip distribution split is used. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E8.

The Beamer property is adjacent to Powhatan Secondary north of News Road. 70 townhouses are proposed for this property. Trip generation for the 39 units is shown on Table 3 on Exhibit 7. All access is via Jester Lane to Old News Road, traffic to Centerville Road, News Road east and Monticello Avenue south is assigned to News Road at Old News Road. Trip assignments to the four News Road intersections are shown on Appendix Exhibit E8.

Exhibit 10 shows the traffic forecast on News Road for proposed development. Traffic assignment for the three proposed developments has been added to The Village forecast.

Following are peak hour LOS for traffic forecast with all approved development on the News Road corridor:

1. Centerville Road (Appendix Exhibits G7 and G8). With existing lane configuration, News Road westbound approach: LOS B for AM and LOS C PM, Centerville Road southbound approach: LOS A for AM and PM. Right turn warrants are included in the technical appendix for the proposed development forecast (Appendix Exhibits J1 and J2 for AM and PM peak hour right turn lane warrants on northbound Centerville Road). A right turn taper is warranted for the proposed development forecast, and a left turn lane was warranted on southbound Centerville Road for 2007 PM peak hour counts.
2. Firestone Drive (Appendix Exhibits H7 and H8). With westbound left turn lane, Firestone Drive southbound approach: LOS C AM and LOS D PM, The Village northbound approach: LOS B AM and PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.
3. Old News Road (Appendix Exhibits I7 and I8). With existing lane configuration, Old News Road southbound approach: LOS B AM and LOS D PM, Lake Powhatan northbound approach: LOS B AM and LOS D PM, News Road eastbound left turn: LOS A AM and PM, News Road westbound left turn: LOS A AM and PM.
4. Monticello Avenue (Appendix Exhibit P7 and P8). This is a signalized intersection with overall LOS D for the AM and PM peak hours and LOS D or better for all turning movements for AM peak hour and LOS E or better for PM peak hour.

On News Road east of Centerville Road, the peak hour two-way two lane highway segment LOS is C in the AM and PM peak hours. On News Road from Powhatan Secondary to Old News Road, the peak hour two-way two lane highway segment LOS is D in the AM and PM peak hours.

## SUMMARY AND CONCLUSIONS

At the News Road/Centerville Road intersection, existing counts warrant a southbound left turn lane on Centerville Road. For all scenarios, a right turn lane taper is warranted on northbound Centerville Road at the intersection. The proposed development forecast shows traffic very nearly warranting a full right turn lane. The westbound single lane on News Road at the stop sign show LOS C or better for all scenarios, but the volumes are such that widening to provide two lanes on the stop approach is desirable. The following table shows the intersection LOS for all scenarios:

**TABLE THREE  
UNSIGNALIZED INTERSECTION LOS AT  
CENTERVILLE ROAD/NEWS ROAD**

CONDITION	AM PEAK HOUR LOS		PM PEAK HOUR LOS	
	Westbound Left/Right	Southbound Left/Thru	Westbound Left/Right	Southbound Left/Thru
2007/2008	B – 12.1	A – 2.5	B – 13.6	A – 2.5
Approved	B – 13.5	A – 3.4	C – 16.7	A – 3.1
The Village	B – 14.1	A – 3.7	C – 17.9	A – 3.4
Proposed	B – 14.6	A – 3.9	C – 19.2	A – 3.7

Notes: Numeric values in seconds delay, with increasing value for decreasing LOS.

At the News Road/Springhill Drive intersection, counts were not available. There is a right turn lane on westbound News Road and there is no eastbound left turn lane on News Road. The proposed development forecast is a 58% increase over existing counts on News Road west of Firestone and the potential for a left turn lane warrant increases with increasing traffic.

At the News Road/Firestone Drive, the progressive increase in traffic from existing counts to the proposed development forecast shows a corresponding increase in delay for the southbound Firestone Drive approach. There is an existing left turn lane on westbound News Road to serve the access connection of The Village at this intersection. An eastbound right turn lane on News Road is not warranted (Appendix Exhibit J3). The following table shows the intersection LOS for all scenarios:

**TABLE FOUR  
UNSIGNALIZED INTERSECTION LOS AT  
FIRESTONE DRIVE/NEWS ROAD**

CONDITION	AM PEAK HOUR LOS				PM PEAK HOUR LOS			
	SB Left	NB Left	EB Left	WB Left	SB Left	NB Left	EB Left	WB Left
2007/2008	B – 11.3	n/a	A – 7.5	n/a	B – 12.2	n/a	A – 8.1	n/a
Approved	B – 12.7	n/a	A – 7.5	n/a	B – 14.0	n/a	A – 8.4	n/a
The Village	C – 17.9	B – 13.5	A – 7.6	A – 7.9	D – 26.1	C – 17.2	A – 8.4	A – 7.8
Proposed	C – 20.3	B – 14.5	A – 7.7	A – 8.0	D – 33.0	C – 19.7	A – 8.6	A – 7.9

Notes: Numeric values in seconds delay, with increasing value for decreasing LOS.

At the News Road/Powhatan Parkway intersection, there is a westbound right turn lane. There is no eastbound right turn lane or left turn lanes in either direction. While counts were not available for this intersection, the 2008 counts on News Road west of Old News Road probably warrant a westbound left turn lane, and the proposed development forecast almost certainly will warrant a left turn lane. A full eastbound right turn lane may not be warranted under any condition due to the trend towards most trip distribution to and from the east on News Road.

At the News Road/Old News Road, the progressive increase in traffic from existing counts to the proposed development forecast shows a corresponding decline in LOS for the southbound Old News Road approach. There are existing eastbound and westbound left turn lanes on News Road, and a westbound right turn lane. An eastbound right turn lane on News Road is not warranted (right turn volume of 2 vph less than 10 vph minimum to warrant a right turn taper on a four lane road). The addition of a second southbound lane on Old News Road may not show a LOS improvement, but the volumes are such that improvements to provide two lanes on the stop approach are desirable. The following table shows the intersection LOS for all scenarios:

**TABLE FIVE  
UNSIGNALIZED INTERSECTION LOS AT  
OLD NEWS ROAD/NEWS ROAD**

CONDITION	AM PEAK HOUR LOS				PM PEAK HOUR LOS			
	SB App.	NB App.	EB Left	WB Left	SB App.	NB App.	EB Left	WB Left
2007/2008	B – 10.3	B – 10.8	A – 7.7	A – 8.1	B – 15.0	C – 15.2	A – 8.5	A – 0.0
Approved	B – 10.7	B – 11.8	A – 7.8	A – 8.4	C – 18.3	C – 18.7	A – 8.8	A – 0.0
The Village	B – 11.0	B – 12.4	A – 7.9	A – 8.5	C – 22.6	C – 23.1	A – 9.1	A – 0.0
Proposed	B – 11.7	B – 13.1	A – 7.9	A – 8.7	D – 28.6	D – 27.5	A – 9.4	A – 0.0

Notes: Numeric values in seconds delay, with increasing value for decreasing LOS.

The following table shows the two-way two lane highway segment traffic LOS and volume/capacity (v/c) ratios for New Road east of Centerville Road (lowest volumes) and from Powhatan Secondary to Old News Road (highest volumes):

**TABLE SIX  
TWO-WAY TWO LANE HIGHWAY SEGMENT LOS ON NEWS ROAD**

CONDITION	EAST OF CENTERVILLE		POW. SEC. TO OLD NEWS	
	AM PEAK HOUR	PM PEAK HOUR	AM PEAK HOUR	PM PEAK HOUR
2007/2008	B – 0.12	B – 0.15	C – 0.23	D – 0.32
Approved	C – 0.16	C – 0.15	C – 0.28	D – 0.35
The Village	C – 0.18	C – 0.17	C – 0.31	D – 0.40
Proposed	C – 0.19	C – 0.18	D – 0.34	D – 0.44

Notes: Numeric values in volume capacity ratios (v/c), with increasing value for decreasing LOS.

Needed improvements for News Road at Monticello Avenue were addressed with the West Monticello Plan prepared in 2006 and included in the March 1, 2008 traffic study for Section 12 of New Town. The March 1, 2008 traffic study includes a traffic forecast beyond the News Road corridor with resulting large volumes. Any changes needed for the Monticello Marketplace driveway on News Road should be addressed with the design for the West Monticello Plan. For the purposes of comparison, the following table presents signalized intersection LOS results for the traffic counts and forecasts presented in this report:

**TABLE SEVEN  
SIGNALIZED INTERSECTION LOS AT  
NEWS ROAD/MONTICELLO AVENUE**

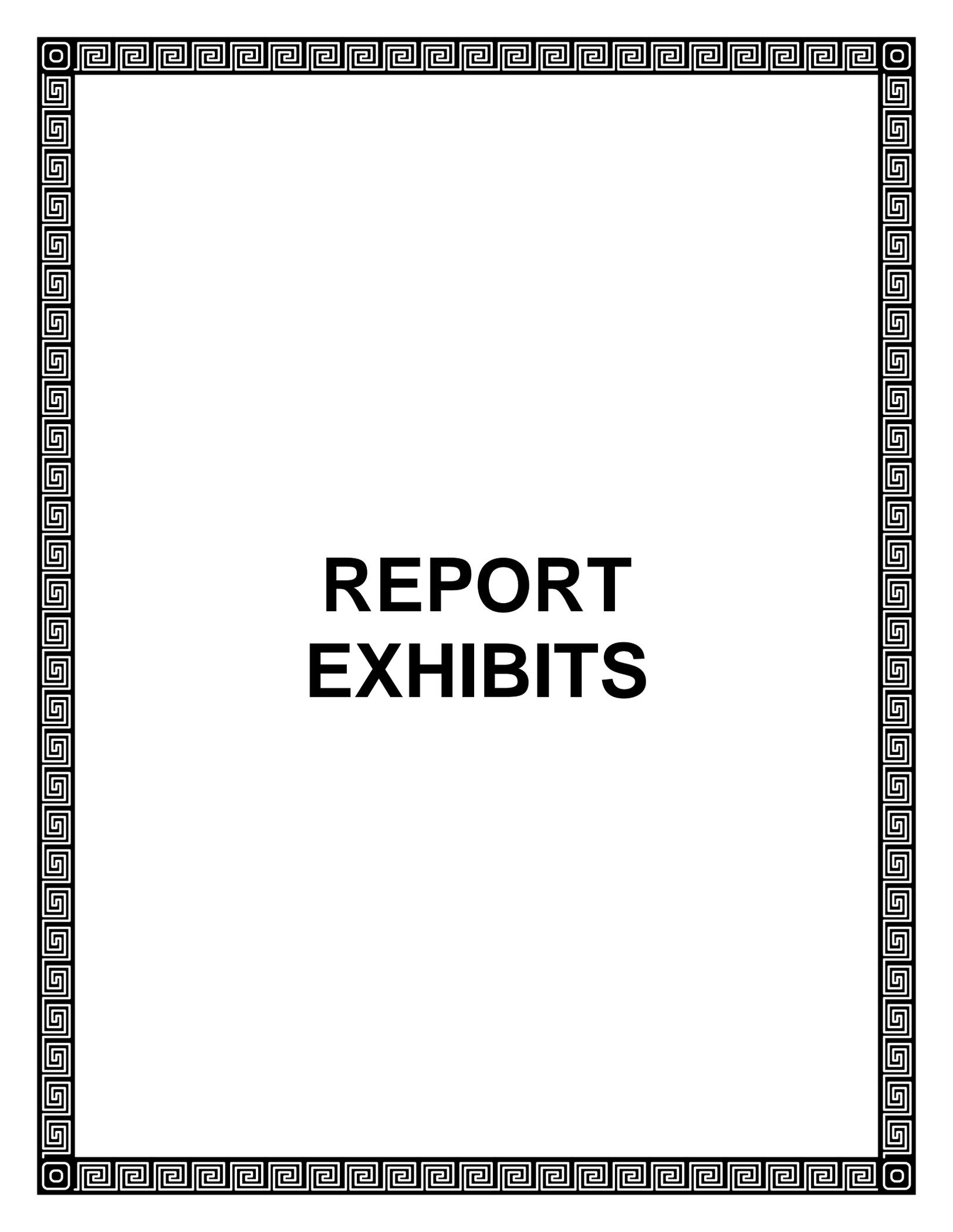
CONDITIO N	AM PEAK HOUR LOS									
	Overall	EB Left	EB Thru	WB Left	WB Thru	NB Left	NB Thru	NB Right	SB Left	SB L/T/R
2007/2008	C – 34.0	D – 45.4	D – 36.9	C – 25.0	B – 12.3	D– 41.2	D – 42.2	D – 42.2	D – 45.3	D – 39.8
Approved	D – 35.2	D – 45.4	D – 38.9	C – 25.0	B – 13.1	D– 41.2	D – 42.5	D – 42.2	D – 47.4	D – 39.5
The Village	D – 35.9	D – 45.4	D – 39.9	C – 24.9	B – 13.5	D– 40.9	D – 42.6	D – 41.8	D – 49.3	D – 40.1
Proposed	D – 36.8	D – 45.4	D – 41.3	C – 24.9	B – 14.0	D– 40.7	D – 42.7	D – 41.7	D – 51.3	D – 41.0
CONDITIO N	PM PEAK HOUR LOS									
	Overall	EB Left	EB Thru	WB Left	WB Thru	NB Left	NB Thru	NB Right	SB Left	SB L/T/R
2007/2008	C – 32.1	D – 44.5	D – 38.0	C – 28.0	B – 17.3	D– 40.1	D – 45.9	D – 39.7	D – 46.4	D – 43.2
Approved	C – 33.1	D – 44.8	D – 39.1	C – 27.9	B – 18.0	D– 39.7	D – 50.0	D – 39.3	D – 48.6	D – 44.7
The Village	C – 34.7	D – 43.3	D – 38.0	C – 29.5	B – 19.4	D– 39.4	D – 54.5	D – 39.1	D – 53.9	D – 47.4
Proposed	D – 35.9	D – 43.7	D – 38.5	C – 29.5	B – 19.8	D– 39.2	E – 60.0	D – 38.9	E – 57.1	D – 49.1

Notes: Numeric values in seconds delay, with increasing value for decreasing LOS.

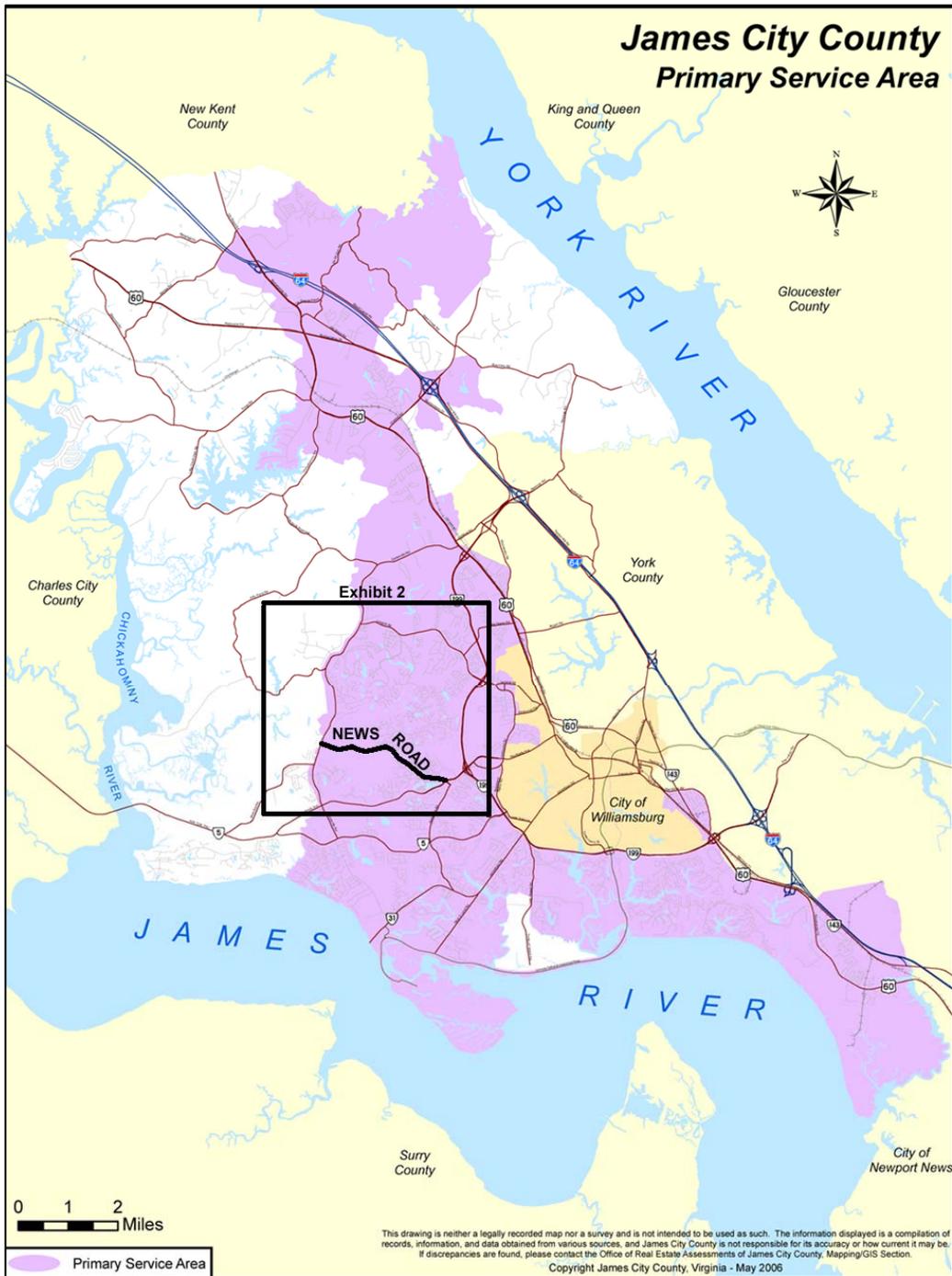
Overall, the total traffic forecast on News Road will be within the capacity of two lane News Road. Stop-sign controlled traffic will experience LOS B through D, with LOS D occurring only in the PM peak hour.

At Firestone Drive, Ford’s Colony will include an eastbound right turn lane for The Village development as well as a westbound left turn lane. Ford’s Colony previously proffered the installation of a traffic signal at News Road/Firestone Drive at such time that traffic at the intersection warrants the traffic signal.

Ford’s Colony also intends to provide a westbound left turn lane on News Road at Powhatan Secondary. This westbound left turn lane will provide improved convenience to the residents of Powhatan Secondary and reduced delay for all westbound traffic on News Road.

A decorative border surrounds the page, featuring a Greek key (meander) pattern. The top and bottom borders are composed of a continuous sequence of squares, while the left and right borders are composed of a continuous sequence of squares rotated 90 degrees.

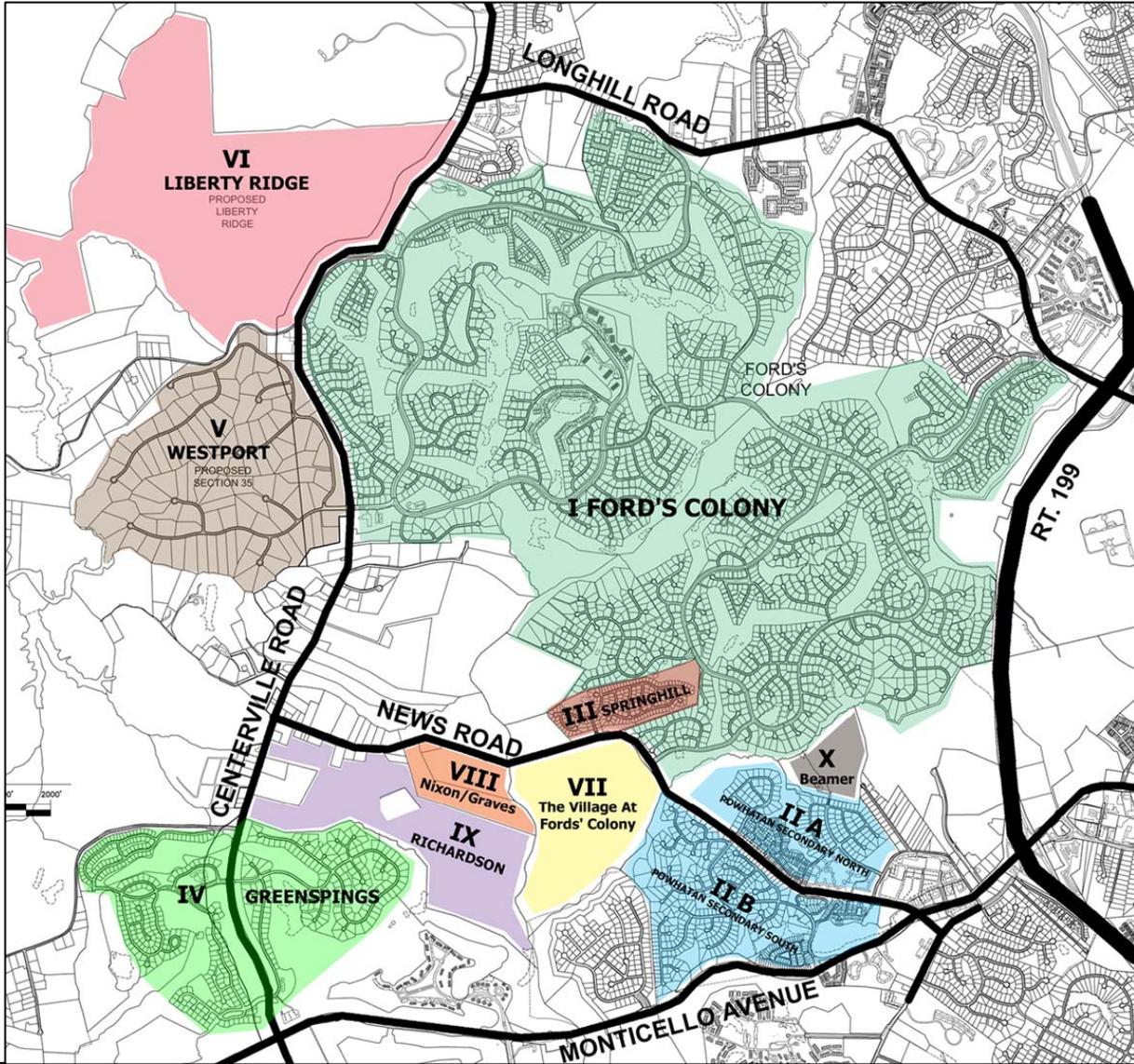
# **REPORT EXHIBITS**



NEWS ROAD CORRIDOR  
REGIONAL LOCATION

DRW Consultants, LLC  
804-794-7312

Exhibit 1a

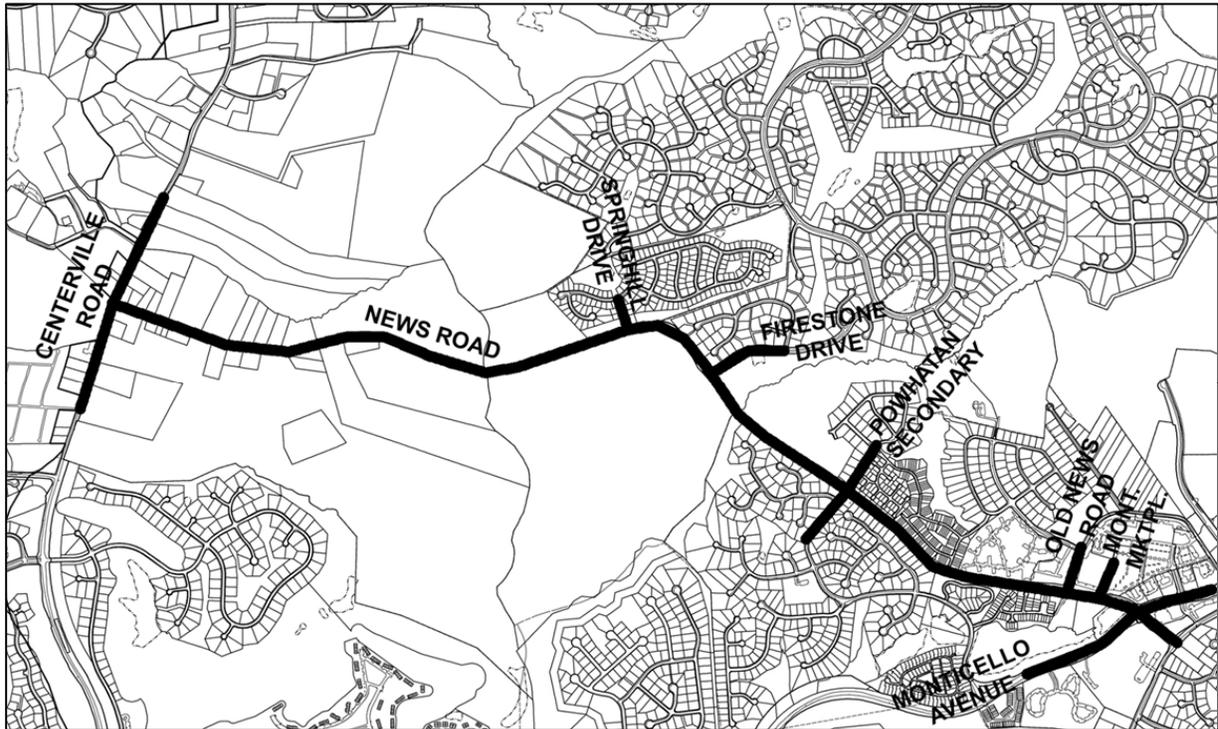


Development		Inventory Source	Forecast Technique
Map #	Name		
I	Ford's Colony	Ford's Colony	Increase News Road/Firestone counts by buildout (3050 units)/April 07 (2272 units) ratio
IIA	Powhatan Secondary North of News Road	Ford's Colony	Assign trips for 30 unbuilt units
IIB	Powhatan Secondary South of News Road	Ford's Colony	Built out; no assignment
III	Springhill	Ford's Colony	Built out; no assignment
IV	Greensprings	AES	Assign trips for 74 unbuilt units
V	Westport	Ford's Colony	Assign trips for 108 unbuilt units
VI	Liberty Ridge	Ford's Colony	Assign trips for 139 unbuilt units
VII	The Village At Ford's Colony	Ford's Colony	Assign proposed development trips
VIII	Nixon/Graves (Realtec)	Ford's Colony	Assign trips for one SF unit per 3 ac. (60 units)
IX	Richardson	Ford's Colony	Assign trips for one SF unit per 1 ac. (20 units)
X	Beamer	Ford's Colony	Assign trips for 70 new units

NEWS ROAD CORRIDOR  
DEVELOPMENT INVENTORY

DRW Consultants, LLC  
804-794-7312

Exhibit 1b

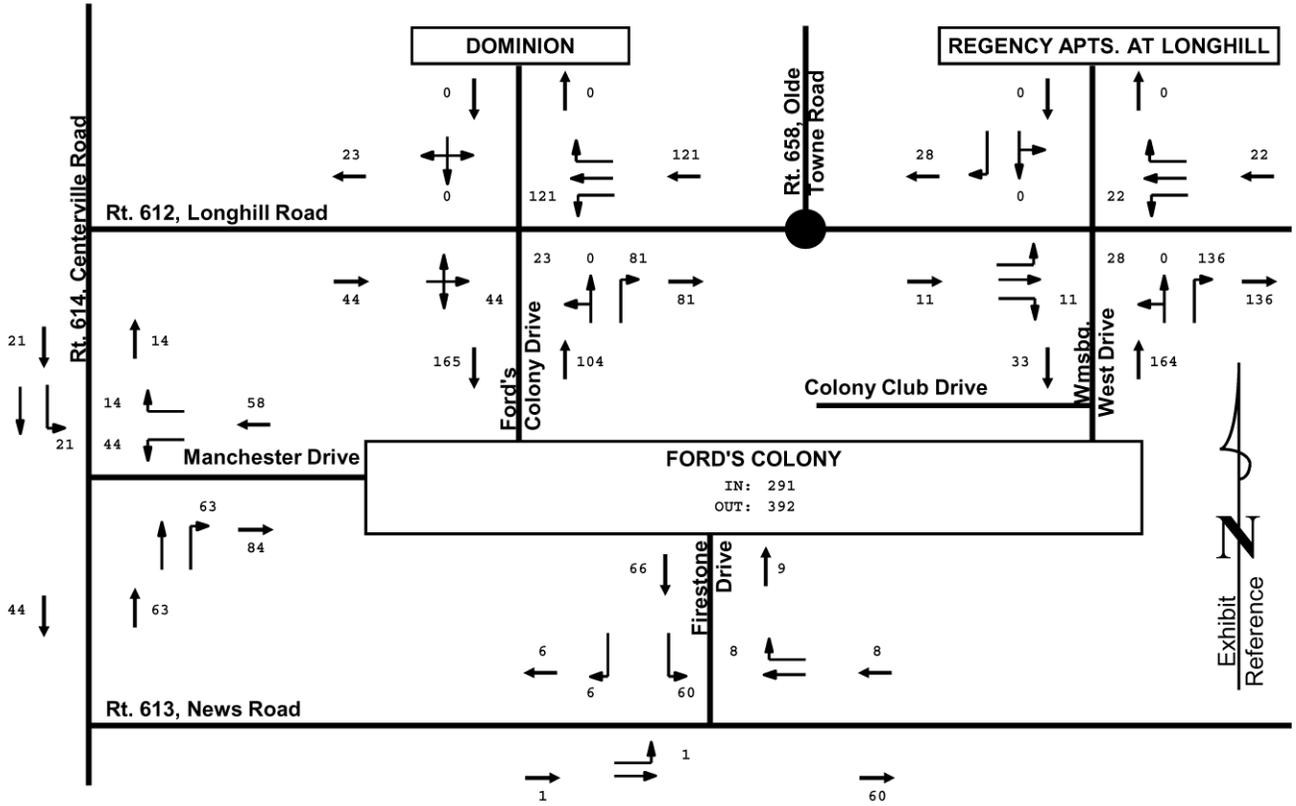


NEWS ROAD CORRIDOR  
INTERSECTIONS

DRW Consultants, LLC  
804-794-7312

Exhibit 1c

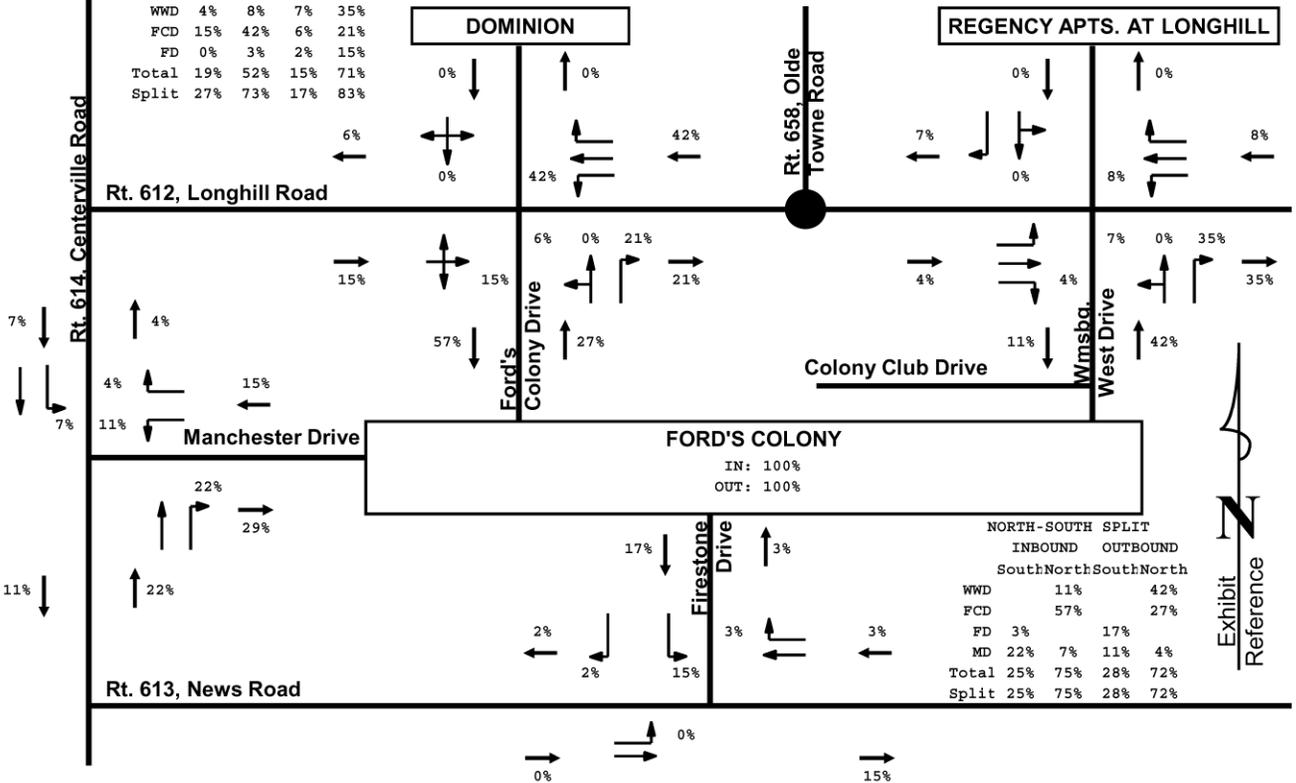
# 2003 AM Peak Hour Counts



EAST-WEST SPLIT

	INBOUND		OUTBOUND	
	West	East	West	East
WWD	4%	8%	7%	35%
FCD	15%	42%	6%	21%
FD	0%	3%	2%	15%
Total	19%	52%	15%	71%
Split	27%	73%	17%	83%

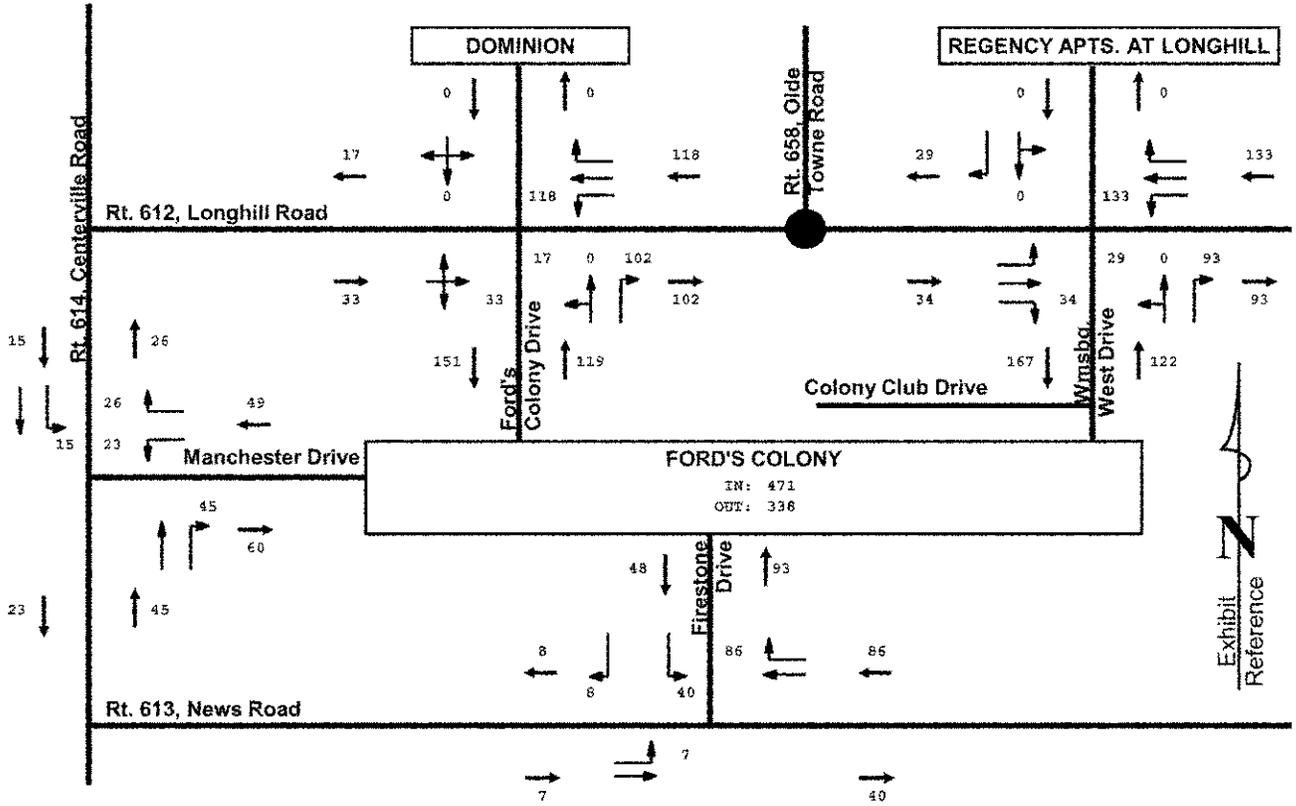
# 2003 AM PEAK HOUR DISTRIBUTION



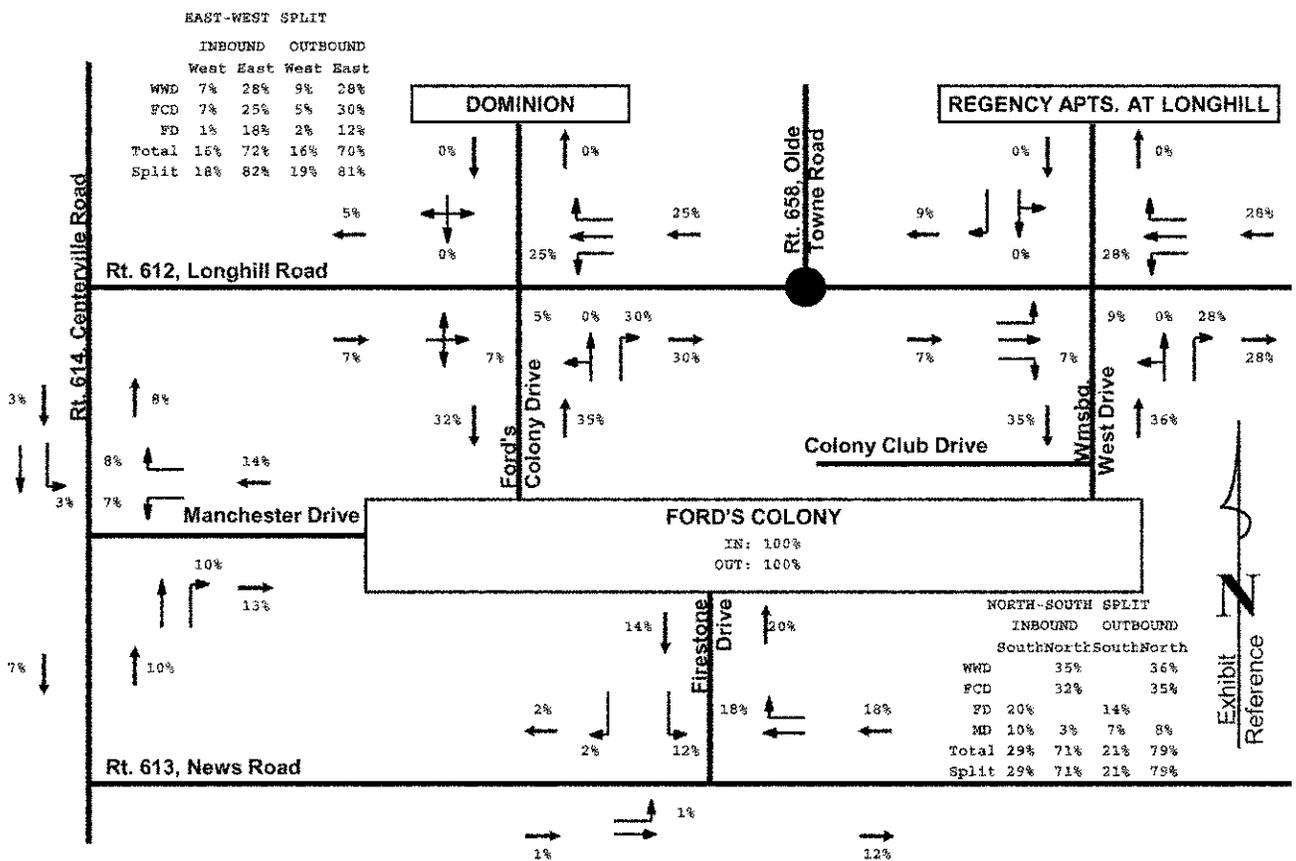
NORTH-SOUTH SPLIT

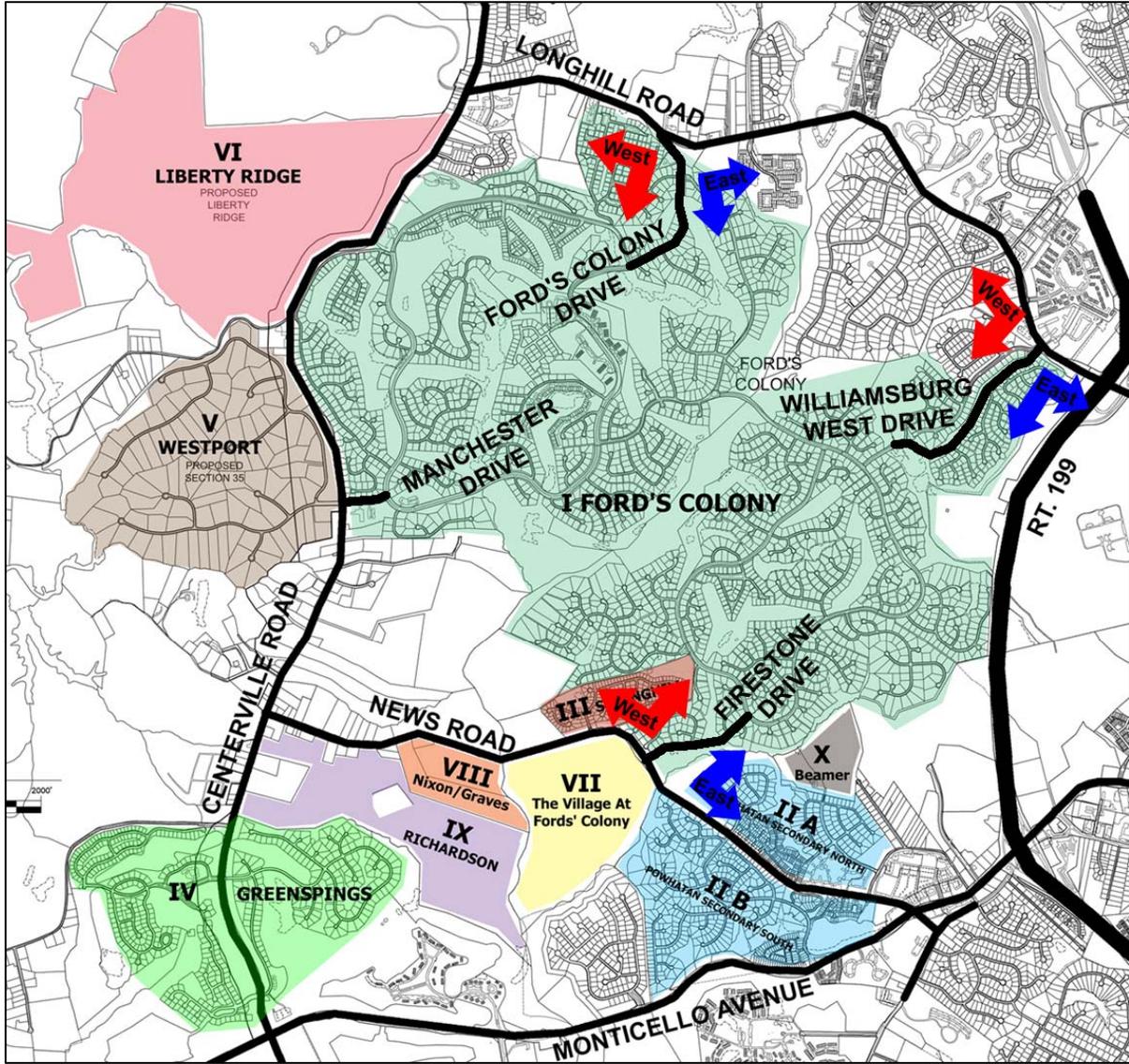
	INBOUND		OUTBOUND	
	South	North	South	North
WWD	11%	42%		
FCD	57%	27%		
FD	3%	17%		
MD	22%	7%	11%	4%
Total	25%	75%	28%	72%
Split	25%	75%	28%	72%

# 2003 PM Peak Hour Counts



# 2003 PM PEAK HOUR DISTRIBUTION

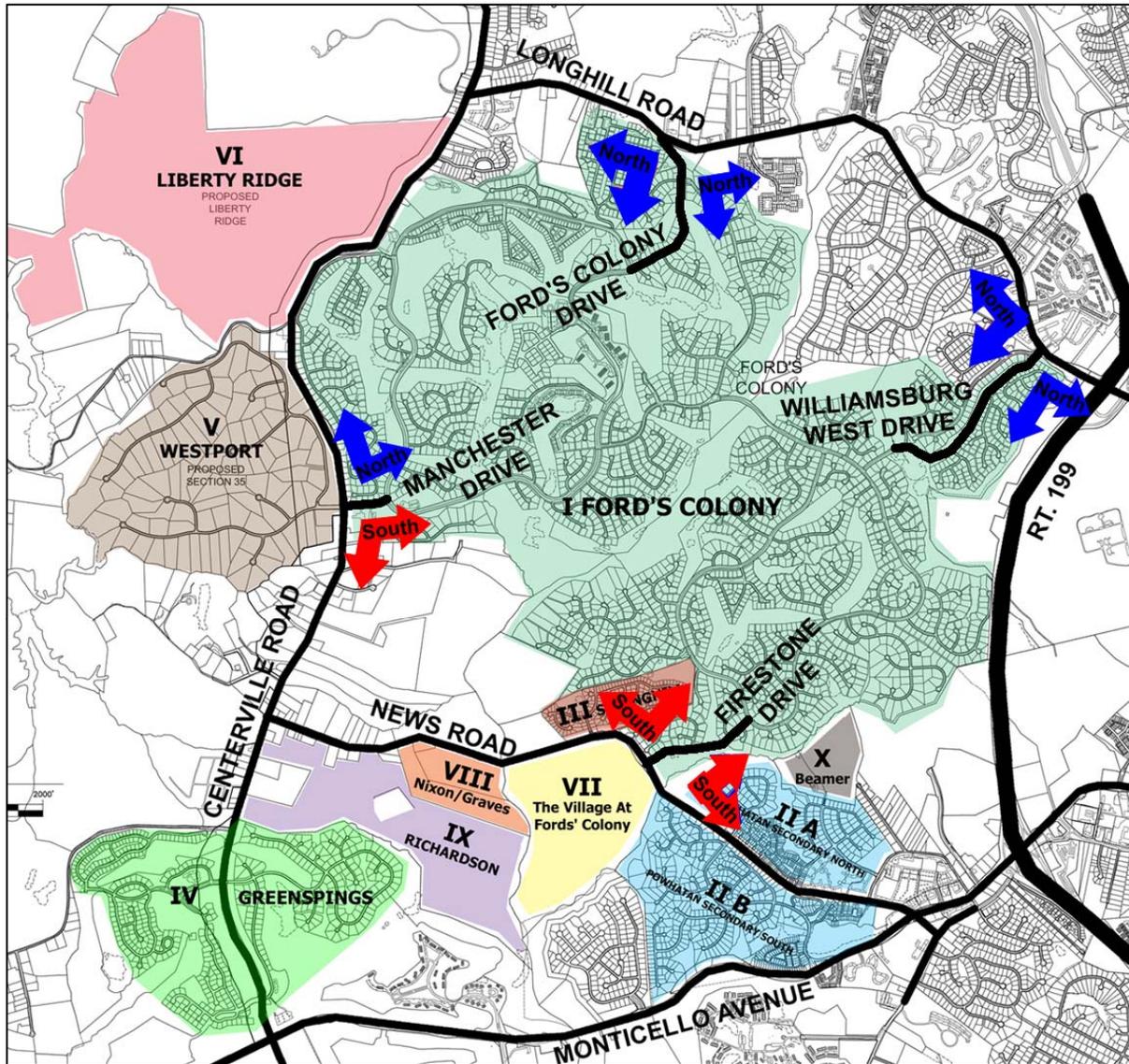




FORD'S COLONY EAST- WEST DISTRIBUTION SPLIT  
TRAFFIC LOCATIONS

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804-794-7312

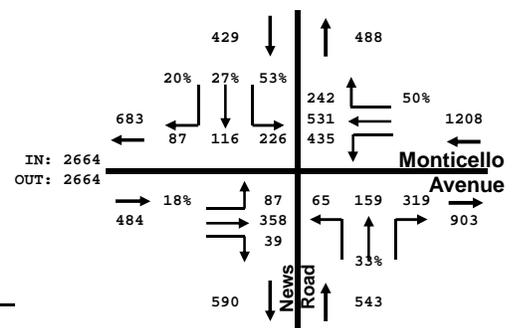
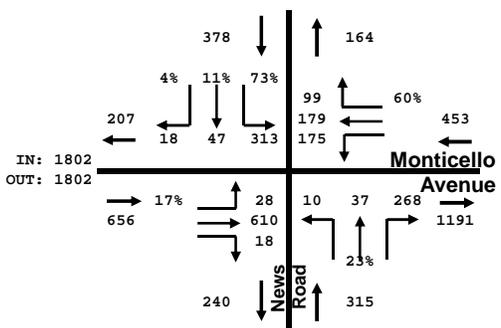
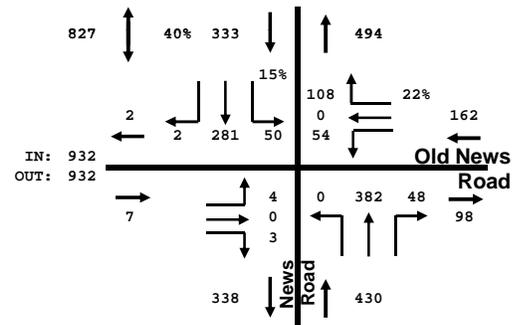
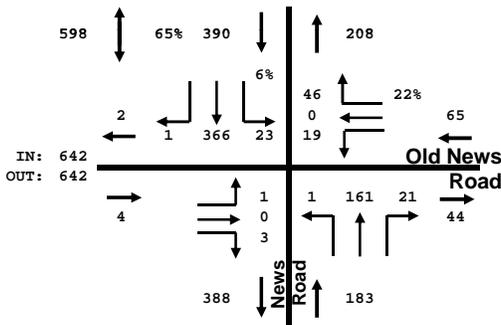
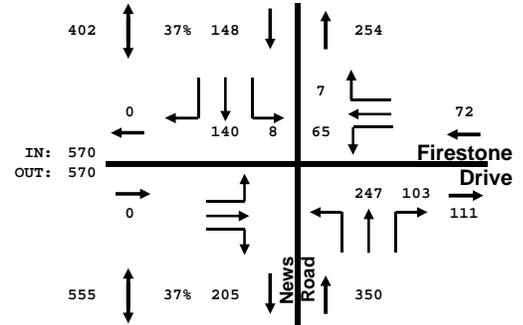
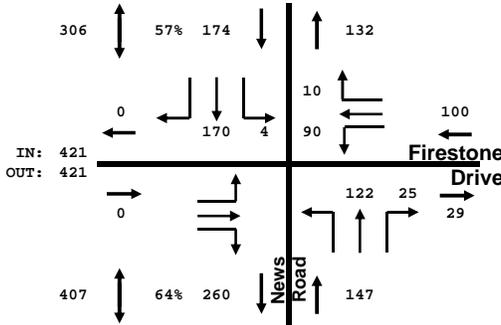
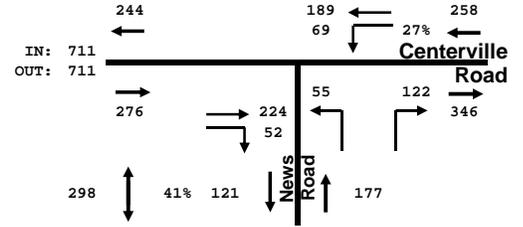
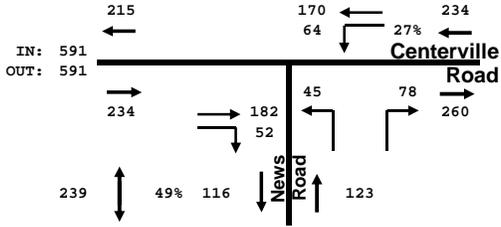
Exhibit 2c



FORD'S COLONY NORTH-SOUTH DISTRIBUTION SPLIT  
TRAFFIC LOCATIONS

DRW Consultants, LLC  
804-794-7312

Exhibit 2d



TOTAL IN: 3456

TOTAL IN: 4877

Exhibit Reference

**AM PEAK HOUR**

**PM PEAK HOUR**

2007/2008 PEAK HOUR COUNTS

DRW Consultants, LLC  
 804-794-7312

Exhibit 3

TRACT	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE 1 - FORD'S COLONY TRIP GENERATION (I)**

<b>2007</b>										
avg. rate-adj. st.	Single-Family	210	2,180 units	409	1226	1635	1387	815	2202	20863
eq.-adj. st.	Condo/Townhouse	230	92 units	8	40	48	38	18	56	598
<b>2007 TOTAL</b>			<b>2272 units</b>	<b>417</b>	<b>1266</b>	<b>1683</b>	<b>1425</b>	<b>833</b>	<b>2258</b>	<b>21461</b>
<b>BUILD OUT</b>										
avg. rate-adj. st.	Single-Family	210	2,862 units	537	1610	2147	1821	1070	2891	27389
eq.-adj. st.	Condo/Townhouse	230	188 units	15	71	86	68	33	101	1098
<b>BUILDOUT TOTAL</b>			<b>3050 units</b>	<b>552</b>	<b>1681</b>	<b>2233</b>	<b>1889</b>	<b>1103</b>	<b>2992</b>	<b>28487</b>
<b>% INCREASE</b>				<b>32.4%</b>	<b>32.8%</b>	<b>32.7%</b>	<b>32.6%</b>	<b>32.4%</b>	<b>32.5%</b>	<b>32.7%</b>

**TABLE 2 - POWHATAN SECONDARY NORTH (IIA) - East West Split**

eq.-adj. st.	Single-Family	210	30 units	8	22	30	23	13	36	343
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction		% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	
Centerville North		22%	2	12%	3	13%	3	14%	2	
Centerville South		5%	0	5%	1	5%	1	5%	1	
Old News North		20%	2	5%	1	20%	5	15%	2	
Monticello North		20%	2	45%	10	30%	7	35%	5	
News East		23%	2	23%	5	22%	5	21%	3	
Monticello South		10%	1	10%	2	10%	2	10%	1	
		100%	9	100%	22	100%	23	100%	14	

NOTE: ALL TRAFFIC ASSIGNED TO NEWS ROAD VIA POWHATAN SECONDARY

**TABLE 3 - GREENSPRINGS (IV) - 40% To News Road**

eq.-adj. st.	Single-Family	210	74 units	15	46	61	52	30	82	788
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction		% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	
Centerville South		40%	6	40%	18	40%	21	40%	12	
Centerville North		20%	3	20%	9	20%	10	20%	6	
Old News North		10%	2	10%	5	10%	5	10%	3	
Monticello North		20%	3	20%	9	20%	10	20%	6	
News East		10%	2	10%	5	10%	5	10%	3	
		100%	16	100%	46	100%	51	100%	30	

NOTE: TRAFFIC ASSIGNED TO NEWS ROAD VIA CENTERVILLE ROAD

Trip generation rates from Trip Generation, 7th Edition (TG7) by the Institute of Transportation Engineers (ITE)

FORD'S COLONY, POWHATAN SECONDARY, GREENSPRINGS  
TRIP GENERATION AND DISTRIBUTION

DRW Consultants, LLC  
804-794-7312

Exhibit 4

TRACT	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE 1 - WESTPORT (V) - North-South Split**

eq.-adj. st.	Single-Family	210	108 units	21	64	85	72	43	115	1116
Average of % ITE avg. trip rate for 1998 and 2003 - Ford's Colony				95%	46%	58%	49%	74%	58%	
Ford's Colony Trip Generation Rates				108 units	20	30	49	35	32	67
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips		
Centerville North	75%	15	72%	22	71%	25	79%	25		
Centerville South	0%	0	0%	0	0%	0	0%	0		
Old News North	5%	1	5%	2	5%	2	5%	2		
Monticello North	10%	2	15%	5	15%	5	10%	3		
News East	5%	1	5%	2	5%	2	5%	2		
Monticello South	5%	1	3%	1	4%	1	1%	0		
	100%	20	100%	32	100%	35	100%	32		

NOTE: TRAFFIC ASSIGNED TO NEWS ROAD VIA CENTERVILLE ROAD

**TABLE 2 - LIBERTY RIDGE (VI) - North-South Split**

eq.-adj. st.	Single-Family	210	138 units	27	79	106	90	53	143	1398
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips		
Centerville North	75%	20	72%	57	71%	64	79%	42		
Centerville South	0%	0	0%	0	0%	0	0%	0		
Old News North	5%	1	5%	4	5%	5	5%	3		
Monticello North	10%	3	15%	12	15%	14	10%	5		
News East	5%	1	5%	4	5%	5	5%	3		
Monticello South	5%	1	3%	2	4%	4	1%	1		
	100%	26	100%	79	100%	92	100%	54		

NOTE: TRAFFIC ASSIGNED TO NEWS ROAD VIA CENTERVILLE ROAD

Trip generation rates from Trip Generation, 7th Edition (TG7) by the Institute of Transportation Engineers (ITE)

WESTPORT, LIBERTY RIDGE  
TRIP GENERATION AND DISTRIBUTION

DRW Consultants, LLC  
804-794-7312

Exhibit 5

TRACT	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE 1 - THE VILLAGE TRIP GENERATION**

	Elderly Detached	251	32 units	4	6	10	13	9	22	206
	Elderly Attached	252	332 units	12	15	27	23	14	37	1155
	Congregate Care	253	290 units	10	7	17	27	22	49	586
	Assisted Living	254	118 occ.bed	15	5	20	18	16	34	323
rate/adj. st.	Nursing Home	620	180 beds	21	10	31	13	27	40	427
	<b>TOTAL</b>		<b>952 units</b>	<b>62</b>	<b>43</b>	<b>105</b>	<b>94</b>	<b>88</b>	<b>182</b>	<b>2697</b>
<b>TG 7 Definitions</b>	Elderly Detached	251	may have recreation, but not central dining or health care							
	Elderly Attached	252	apartment-like residential units							
	Congregate Care	253	centralized amenities: dining, house keeping, trans., social/rec							
	Assisted Living	254	protective oversight, ALS and Alzheimers may be included							

ITE USE CODE	253	254			251	252		
FORD'S COLONY CCRC DEFINITIONS	CCRC Apt	Asst. Liv. Skill Care	CCRC Total		Town Homes	Ind. L.U.	Non CCRC	
Community 1	154	18	172		6			
Community 2		100	100		26	214		
Community 3	136		136			118		
	290	118	408		32	332	364	

**TABLE 2 - THE VILLAGE SITE TRIP DISTRIBUTION - East West Split**

Direction	62		43		105		94		88		182	
	AM Peak Hour						PM Peak Hour					
	Entering Traffic			Exiting Traffic			Entering Traffic			Exiting Traffic		
	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips
Centerville North	22%	14	12%	5			13%	12	14%	12		
Centerville South	5%	3	5%	2			5%	5	5%	4		
Old News North	20%	12	5%	2			20%	19	15%	13		
Monticello North	20%	12	45%	19			30%	28	35%	31		
News East	23%	14	23%	10			22%	21	21%	18		
Monticello South	10%	6	10%	4			10%	9	10%	9		
	100%	61	100%	42			100%	94	100%	87		

Trip generation rates from Trip Generation, 7th Edition (TG7) by the Institute of Transportation Engineers (ITE)

THE VILLAGE AT FORD'S COLONY (VII)  
TRIP GENERATION AND DISTRIBUTION

DRW Consultants, LLC  
804-794-7312

Exhibit 6

TRACT	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE 1 - NIXON-GRAVES (VIII) - East-West Split**

eq.-adj. st.	Single-Family	210	60 units	13	38	51	43	25	68	650
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips
Centerville North	22%	3	12%	5	13%	6	14%	4		
Centerville South	5%	1	5%	2	5%	2	5%	1		
Old News North	20%	3	5%	2	20%	9	15%	4		
Monticello North	20%	3	45%	17	30%	13	35%	9		
News East	23%	3	23%	9	22%	9	21%	5		
Monticello South	10%	1	10%	4	10%	4	10%	3		
	100%	14	100%	39	100%	43	100%	26		

NOTE: ALL TRAFFIC ASSIGNED TO NEWS ROAD

**TABLE 2 - RICHARDSON (IX) - East-West Split**

eq.-adj. st.	Single-Family	210	39 units	9	28	37	29	17	46	437
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips
Centerville North	22%	2	12%	3	13%	4	14%	2		
Centerville South	5%	0	5%	1	5%	1	5%	1		
Old News North	20%	2	5%	1	20%	6	15%	3		
Monticello North	20%	2	45%	13	30%	9	35%	6		
News East	23%	2	23%	6	22%	6	21%	4		
Monticello South	10%	1	10%	3	10%	3	10%	2		
	100%	9	100%	27	100%	29	100%	18		

NOTE: ALL TRAFFIC ASSIGNED TO NEWS ROAD

**TABLE 3 - BEAMER (X) - North-South Split**

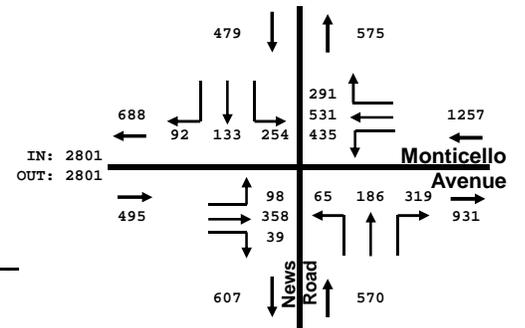
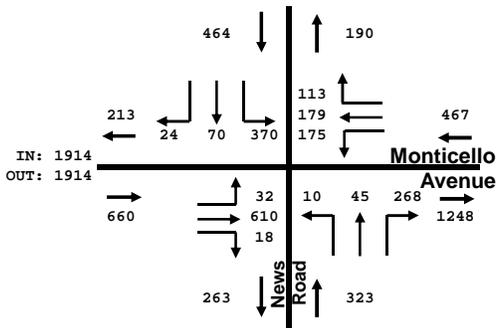
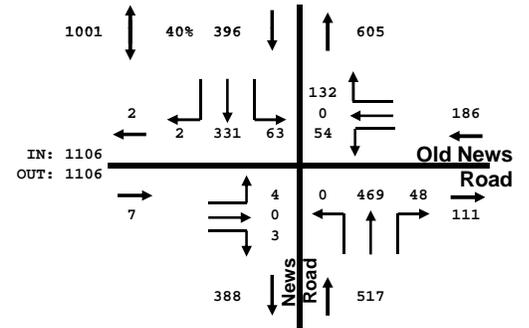
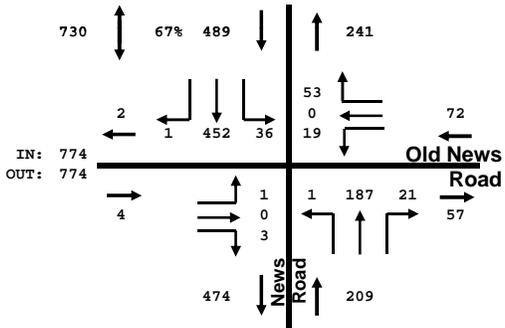
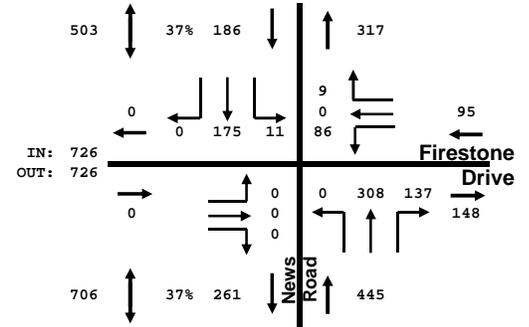
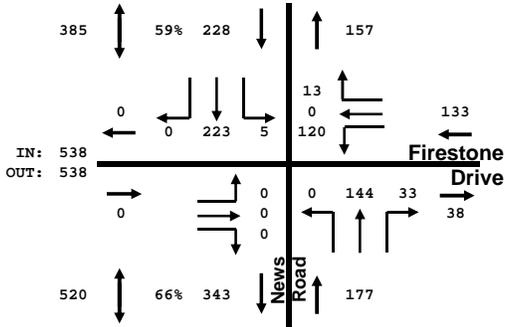
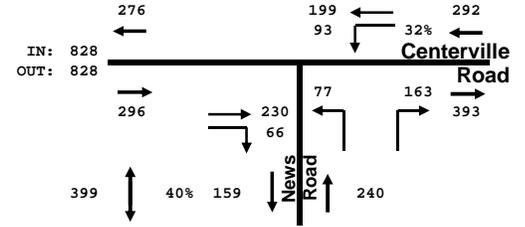
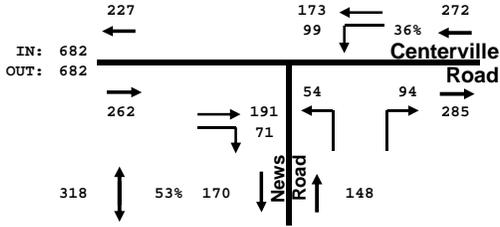
eq.-adj. st.	Condo/Townhouse	230	70 units	7	32	39	30	15	45	474
		AM Peak Hour				PM Peak Hour				
		Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic		
Direction	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips
Centerville North	5%	0	5%	2	5%	2	5%	1		
Centerville South	5%	0	5%	2	5%	2	5%	1		
Old News North	75%	5	72%	23	71%	21	79%	12		
Monticello North	0%	0	0%	0	0%	0	0%	0		
News East	10%	1	13%	4	10%	3	10%	2		
Monticello South	5%	0	5%	2	9%	3	1%	0		
	100%	6	100%	33	100%	31	100%	16		

Trip generation rates from Trip Generation, 7th Edition (TG7) by the Institute of Transportation Engineers (ITE)

NIXON-GRAVES, RICHARDSON, BEAMER  
TRIP GENERATION AND DISTRIBUTION

DRW Consultants, LLC  
804-794-7312

Exhibit 7



TOTAL IN: 3908

TOTAL IN: 5461

**AM PEAK HOUR**

**PM PEAK HOUR**

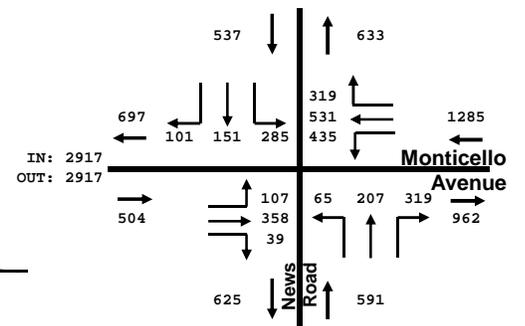
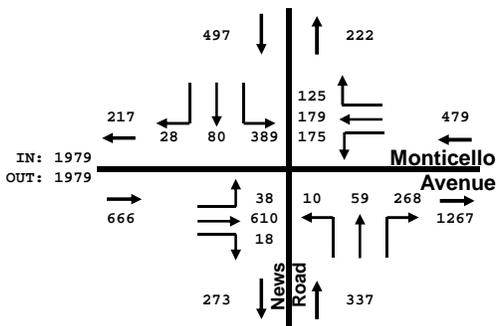
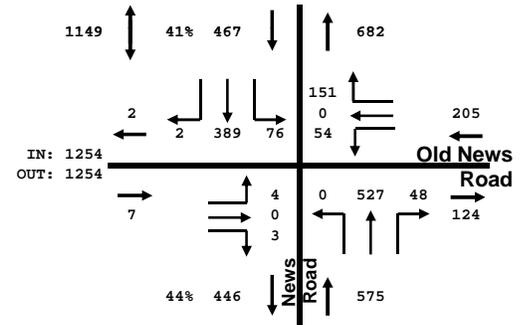
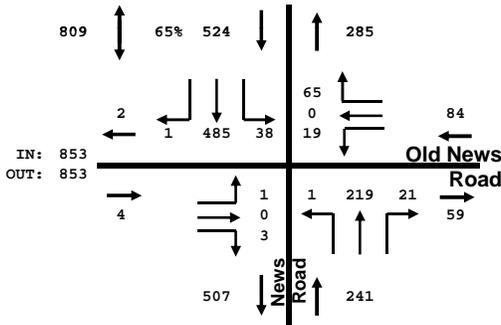
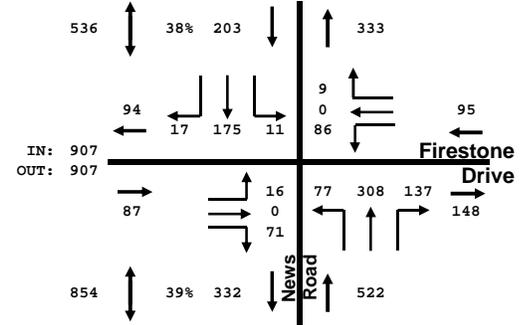
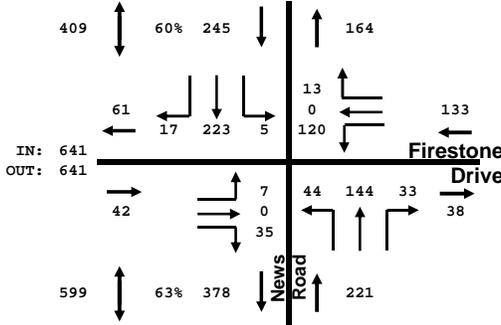
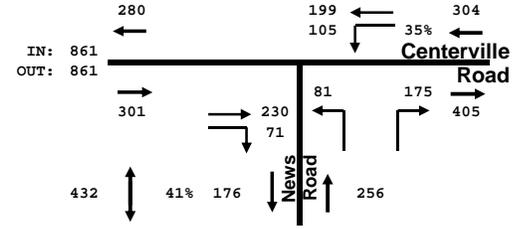
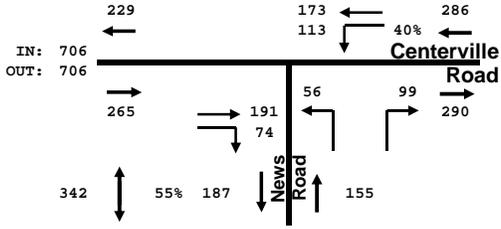


Exhibit Reference

TOTAL IN: 4179

TOTAL IN: 5939

AM PEAK HOUR

PM PEAK HOUR

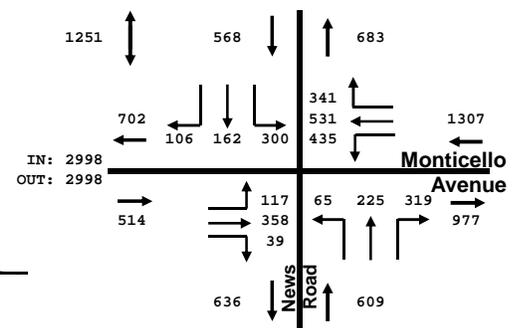
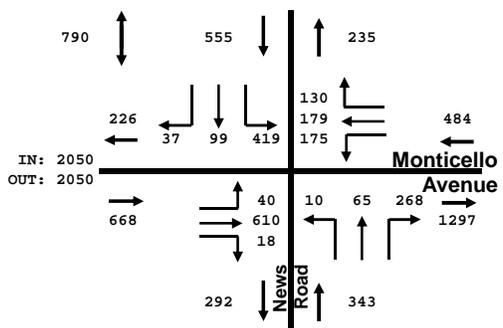
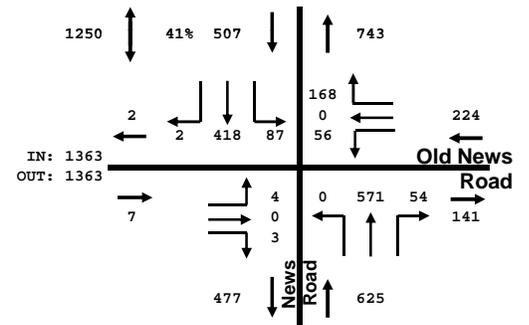
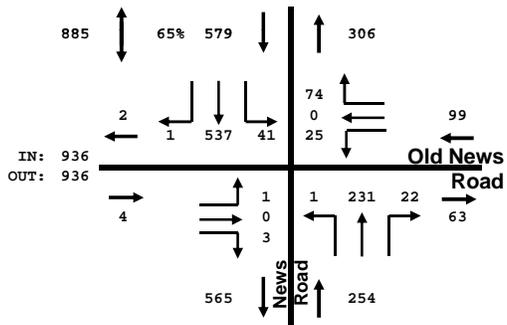
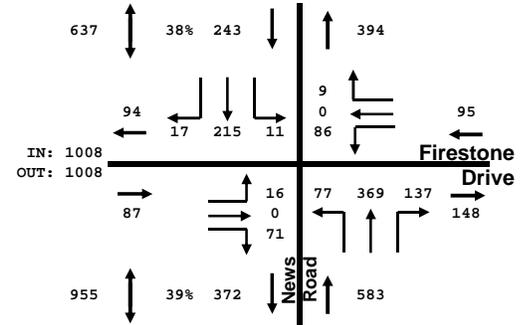
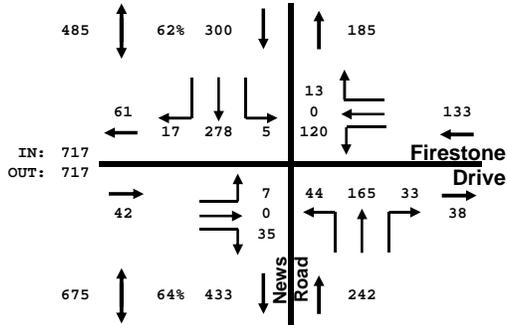
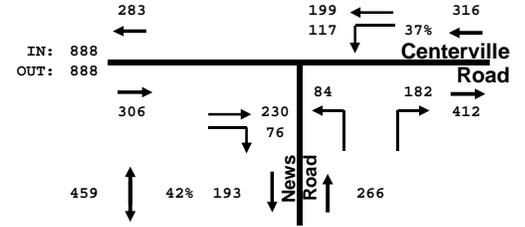
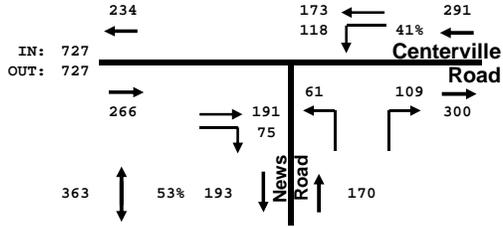


Exhibit Reference

TOTAL IN: 4430

TOTAL IN: 6257

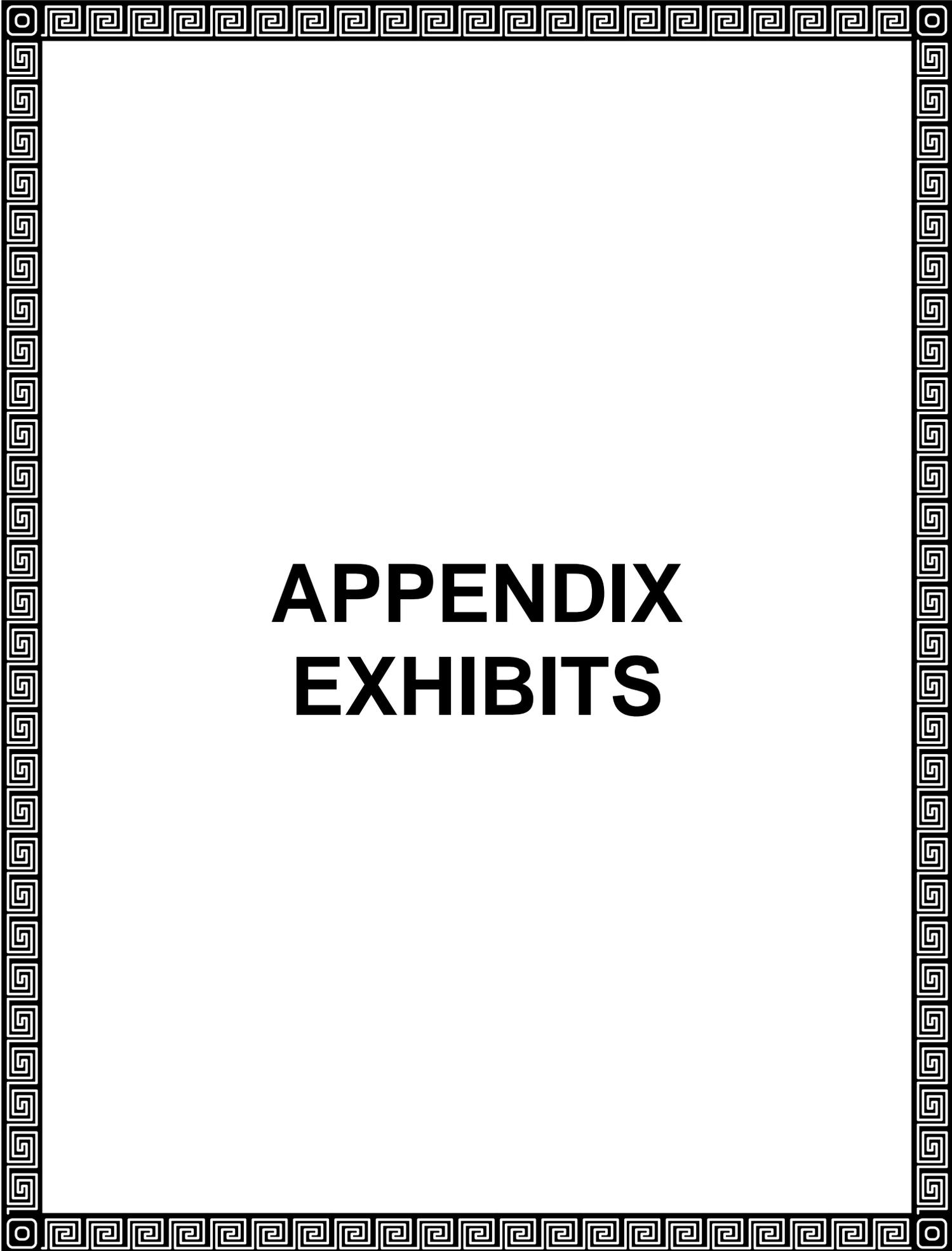
**AM PEAK HOUR**

**PM PEAK HOUR**

PROPOSED DEVELOPMENT TRAFFIC FORECAST (I THRU X)  
(The Village Forecast With Proposed Development Traffic)

DRW Consultants, LLC  
804-794-7312

Exhibit 10



# **APPENDIX EXHIBITS**

# APPENDIX

## TABLE OF CONTENTS

APPENDIX EXHIBITS	Number
<b>Peak Hour Traffic Count</b> .....	<b>AM PM</b>
News Road/Centerville Road .....	A1 .... A2
News Road/Firestone Drive.....	B1 .... B2
News Road/Old News Road .....	C1 .... C2
News Road/Monticello Avenue.....	D1 .... D2
<b>Development Trip Assignments</b>	
Ford's Colony Build Out Trips.....	E1
Powhatan Secondary North Trip Assignments .....	E2
Greensprings Trip Assignments .....	E3
Westport Trip Assignments .....	E4
Liberty Ridge Trip Assignments .....	E5
The Village At Ford's Colony Trip Assignments.....	E6
Nixon-Graves Trip Assignments .....	E7
Richardson Trip Assignments.....	E8
Beamer Trip Assignments .....	E9
<b>Synchro Unsignalized Intersection LOS (HCM)</b> .....	<b>AM PM</b>
<b>News Road/Centerville Road</b>	
2007/2008 Counts.....	G1 .... G2
Approved Development Forecast .....	G3 .... G4
The Village Forecast.....	G5 .... G6
Proposed Development Forecast .....	G7 .... G8
<b>News Road/Firestone Drive</b>	
2007/2008 Counts.....	H1 .... H2
Approved Development Forecast .....	H3 .... H4
The Village Forecast.....	H5 .... H6
Proposed Development Forecast .....	H7 .... H8
<b>News Road/Old News Road</b>	
2007/2008 Counts.....	I1 .... I2
Approved Development Forecast .....	I3 .... I4
The Village Forecast.....	I5 .... I6
Proposed Development Forecast .....	I7 .... I8
<b>Right Turn Lane Warrants</b> .....	<b>AM PM</b>
News Road/Centerville Road (Counts And All Forecasts).....	J1 .... J2
News Road/Firestone Drive (Counts And All Forecasts).....	J3 .... J3
<b>Left Turn Lane Warrants</b>	
News Road/Centerville Road (2007).....	K
<b>News Road Two Lane Highway LOS</b> .....	<b>AM PM</b>
<b>East Of Centerville Road</b>	
2007/2008 Counts.....	L1 .... L2
Approved Development Forecast .....	L3 .... L4
The Village Forecast.....	L5 .... L6
Proposed Development Forecast .....	L7 .... L8
<b>Powhatan Secondary to Old News Road</b>	
2007/2008 Counts.....	O1 .... O2
Approved Development Forecast .....	O3 .... O4
The Village Forecast.....	O5 .... O6
Proposed Development Forecast .....	O7 .... O8
<b>Synchro Signalized Intersection LOS (HCM)</b> .....	<b>AM PM</b>
<b>News Road/Monticello Avenue</b>	
2007/2008 Counts.....	P1 .... P2
Approved Development Forecast .....	P3 .... P4
The Village Forecast.....	P5 .... P6
Proposed Development Forecast .....	P7 .... P8

**AM PEAK HOUR**

Date: Thu, 4/26/07

LOCATION: Centerville Road/News Road

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15		34	10	19	44					14		20	141
7:15 to 7:30		91	19	35	83					26		33	287
7:30 to 7:45		133	36	46	128					38		60	441
7:45 to 8:00		182	52	64	170					45		78	591
8:00 to 8:15		216	66	79	195					54		87	697
8:15 to 8:30		267	70	103	228					61		117	846
8:30 to 8:45		308	80	120	262					66		139	975
8:45 to 9:00		357	90	134	296					73		157	1107
Count Sheet		F	E	B	A					D		C	

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15	0	34	10	19	44	0	0	0	0	14	0	20	141
7:15 to 7:30	0	57	9	16	39	0	0	0	0	12	0	13	146
7:30 to 7:45	0	42	17	11	45	0	0	0	0	12	0	27	154
7:45 to 8:00	0	49	16	18	42	0	0	0	0	7	0	18	150
8:00 to 8:15	0	34	14	15	25	0	0	0	0	9	0	9	106
8:15 to 8:30	0	51	4	24	33	0	0	0	0	7	0	30	149
8:30 to 8:45	0	41	10	17	34	0	0	0	0	5	0	22	129
8:45 to 9:00	0	49	10	14	34	0	0	0	0	7	0	18	132

**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 8:00	0	182	52	64	170	0	0	0	0	45	0	78	591
7:15 to 8:15	0	182	56	60	151	0	0	0	0	40	0	67	556
7:30 to 8:30	0	176	51	68	145	0	0	0	0	35	0	84	559
7:45 to 8:45	0	175	44	74	134	0	0	0	0	28	0	79	534
8:00 to 9:00	0	175	38	70	126	0	0	0	0	28	0	79	516

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 8:00	0	182	52	64	170	0	0	0	0	45	0	78	591
8:00 to 9:00	0	175	38	70	126	0	0	0	0	28	0	79	516

**PM PEAK HOUR**

Date: Wed, 4/25/07

LOCATION: Centerville Road/News Road

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
3:45 to 4:00													
4:00 to 4:15		46	15	12	44					18		22	157
4:15 to 4:30		112	28	28	97					30		50	345
4:30 to 4:45		160	35	45	133					48		78	499
4:45 to 5:00		212	44	67	174					64		106	667
5:00 to 5:15		274	62	84	227					79		140	866
5:15 to 5:30		337	75	96	277					90		172	1047
5:30 to 5:45		384	87	114	322					103		200	1210
5:45 to 6:00		425	96	121	371					112		221	1346
Count Sheet		F	E	B	A					D		C	

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 4:15	0	46	15	12	44	0	0	0	0	18	0	22	157
4:15 to 4:30	0	66	13	16	53	0	0	0	0	12	0	28	188
4:30 to 4:45	0	48	7	17	36	0	0	0	0	18	0	28	154
4:45 to 5:00	0	52	9	22	41	0	0	0	0	16	0	28	168
5:00 to 5:15	0	62	18	17	53	0	0	0	0	15	0	34	199
5:15 to 5:30	0	63	13	12	50	0	0	0	0	11	0	32	181
5:30 to 5:45	0	47	12	18	45	0	0	0	0	13	0	28	163
5:45 to 6:00	0	41	9	7	49	0	0	0	0	9	0	21	136

**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 5:00	0	212	44	67	174	0	0	0	0	64	0	106	667
4:15 to 5:15	0	228	47	72	183	0	0	0	0	61	0	118	709
4:30 to 5:30	0	225	47	68	180	0	0	0	0	60	0	122	702
4:45 to 5:45	0	224	52	69	189	0	0	0	0	55	0	122	711
5:00 to 6:00	0	213	52	54	197	0	0	0	0	48	0	115	679

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:45 to 5:45	0	224	52	69	189	0	0	0	0	55	0	122	711

Exhibit A2

**AM PEAK HOUR**

LOCATION: News Road/Firestone Drive

DATE: Thu, 4/26/07
-----------------------

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15				10		1	0	54			29	3	97
7:15 to 7:30				23		2	1	109			53	6	194
7:30 to 7:45				37		6	1	142			89	10	285
7:45 to 8:00				55		6	2	197			113	17	390
8:00 to 8:15				72		9	3	244			140	26	494
8:15 to 8:30				88		12	4	252			180	30	566
8:30 to 8:45				119		14	4	320			209	36	702
8:45 to 9:00				145		16	6	367			235	42	811
Count Sheet				C		D	E	F			A	B	

**15 MINUTE INCREMENT COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15	0	0	0	10	0	1	0	54	0	0	29	3	97
7:15 to 7:30	0	0	0	13	0	1	1	55	0	0	24	3	97
7:30 to 7:45	0	0	0	14	0	4	0	33	0	0	36	4	91
7:45 to 8:00	0	0	0	18	0	0	1	55	0	0	24	7	105
8:00 to 8:15	0	0	0	17	0	3	1	47	0	0	27	9	104
8:15 to 8:30	0	0	0	16	0	3	1	8	0	0	40	4	72
8:30 to 8:45	0	0	0	31	0	2	0	68	0	0	29	6	136
8:45 to 9:00	0	0	0	26	0	2	2	47	0	0	26	6	109

**HOUR INCREMENT**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 8:00	0	0	0	55	0	6	2	197	0	0	113	17	390
7:15 to 8:15	0	0	0	62	0	8	3	190	0	0	111	23	397
7:30 to 8:30	0	0	0	65	0	10	3	143	0	0	127	24	372
7:45 to 8:45	0	0	0	82	0	8	3	178	0	0	120	26	417
8:00 to 9:00	0	0	0	90	0	10	4	170	0	0	122	25	421

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
8:00 to 9:00	0	0	0	90	0	10	4	170	0	0	122	25	421

**PM PEAK HOUR**

LOCATION: News Road/Firestone Drive

DATE:  
Wed, 4/25/07

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB			SB			EB			WB			Total	
	Left	Thru	Right											
4:00 to 4:15				19		4	3	27				53	24	130
4:15 to 4:30				36		7	3	58				91	49	244
4:30 to 4:45				47		7	5	91				148	80	378
4:45 to 5:00				69		13	7	127				202	101	519
5:00 to 5:15				84		14	8	166				274	130	676
5:15 to 5:30				101		14	11	198				338	152	814
5:30 to 5:45				111		18	14	230				393	173	939
5:45 to 6:00				122		20	16	259				438	191	1046
Count Sheet				C		D	E	F				A	B	

**15 MINUTE INCREMENT COUNTS**

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
4:00 to 4:15	0	0	0	19	0	4	3	27	0	0	53	24	130
4:15 to 4:30	0	0	0	17	0	3	0	31	0	0	38	25	114
4:30 to 4:45	0	0	0	11	0	0	2	33	0	0	57	31	134
4:45 to 5:00	0	0	0	22	0	6	2	36	0	0	54	21	141
5:00 to 5:15	0	0	0	15	0	1	1	39	0	0	72	29	157
5:15 to 5:30	0	0	0	17	0	0	3	32	0	0	64	22	138
5:30 to 5:45	0	0	0	10	0	4	3	32	0	0	55	21	125
5:45 to 6:00	0	0	0	11	0	2	2	29	0	0	45	18	107

**HOUR INCREMENT**

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
4:00 to 5:00	0	0	0	69	0	13	7	127	0	0	202	101	519
4:15 to 5:15	0	0	0	65	0	10	5	139	0	0	221	106	546
4:30 to 5:30	0	0	0	65	0	7	8	140	0	0	247	103	570
4:45 to 5:45	0	0	0	64	0	11	9	139	0	0	245	93	561
5:00 to 6:00	0	0	0	53	0	7	9	132	0	0	236	90	527

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
4:30 to 5:30	0	0	0	65	0	7	8	140	0	0	247	103	570

**AM PEAK HOUR**

Date: Tue, 1/29/08

LOCATION: News Road/Old News Road

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15													0
7:15 to 7:30													0
7:30 to 7:45													0
7:45 to 8:00													0
8:00 to 8:15													0
8:15 to 8:30													0
8:30 to 8:45													0
8:45 to 9:00													0

Count Sheet

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15	0	0	0	0	0	4	2	46	0	0	12	7	71
7:15 to 7:30	0	0	0	2	0	5	4	91	0	0	37	2	141
7:30 to 7:45	0	0	0	14	0	13	4	84	0	0	18	1	134
7:45 to 8:00	0	0	0	2	0	8	7	108	0	0	34	2	161
8:00 to 8:15	0	0	0	5	0	16	9	104	0	0	65	7	206
8:15 to 8:30	1	0	0	2	0	8	2	54	0	0	34	6	107
8:30 to 8:45	0	0	0	4	0	14	3	87	0	0	32	3	143
8:45 to 9:00	0	0	3	8	0	8	9	121	1	1	30	5	186

**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 8:00	0	0	0	18	0	30	17	329	0	0	101	12	507
7:15 to 8:15	0	0	0	23	0	42	24	387	0	0	154	12	642
7:30 to 8:30	1	0	0	23	0	45	22	350	0	0	151	16	608
7:45 to 8:45	1	0	0	13	0	46	21	353	0	0	165	18	617
8:00 to 9:00	1	0	3	19	0	46	23	366	1	1	161	21	642

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:15 to 8:15	0	0	0	23	0	42	24	387	0	0	154	12	642
8:00 to 9:00	1	0	3	19	0	46	23	366	1	1	161	21	642

Exhibit C1

**PM PEAK HOUR**

Date: Tue, 1/29/08

LOCATION: News Road/Old News Road

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
3:45 to 4:00													
4:00 to 4:15													0
4:15 to 4:30													0
4:30 to 4:45													0
4:45 to 5:00													0
5:00 to 5:15													0
5:15 to 5:30													0
5:30 to 5:45													0
5:45 to 6:00													0

Count Sheet

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 4:15	0	0	0	5	0	19	11	47	1	0	53	8	144
4:15 to 4:30	1	0	0	8	0	26	9	56	0	1	99	11	211
4:30 to 4:45	0	0	0	25	0	29	14	81	2	0	112	19	282
4:45 to 5:00	0	0	0	8	0	13	11	66	0	0	77	2	177
5:00 to 5:15	0	0	2	7	0	31	12	71	0	0	86	11	220
5:15 to 5:30	4	0	1	14	0	35	13	63	0	0	107	16	253
5:30 to 5:45	1	0	0	6	0	26	8	82	0	0	106	16	245
5:45 to 6:00	0	0	1	9	0	29	8	66	4	0	80	10	207

**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 5:00	1	0	0	46	0	87	45	250	3	1	341	40	814
4:15 to 5:15	1	0	2	48	0	99	46	274	2	1	374	43	890
4:30 to 5:30	4	0	3	54	0	108	50	281	2	0	382	48	932
4:45 to 5:45	5	0	3	35	0	105	44	282	0	0	376	45	895
5:00 to 6:00	5	0	4	36	0	121	41	282	4	0	379	53	925

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:30 to 5:30	4	0	3	54	0	108	50	281	2	0	382	48	932

Exhibit C2

**AM PEAK HOUR**

Date: Tue, 3/11/08

LOCATION: MONTICELLO AVENUE/NEWS ROAD

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15	5	12	44	59	14	9	9	112	5	37	49	14	369
7:15 to 7:30	8	24	112	143	24	11	21	237	6	72	89	29	776
7:30 to 7:45	11	35	175	217	32	17	23	398	13	111	134	44	1210
7:45 to 8:00	11	41	251	316	45	20	29	586	19	160	176	74	1728
8:00 to 8:15	15	49	312	372	61	27	37	722	23	212	228	113	2171
8:15 to 8:30	19	60	375	428	75	32	41	838	26	258	281	143	2576
8:30 to 8:45	27	75	428	489	95	37	48	921	31	309	324	172	2956
8:45 to 9:00	33	86	486	569	126	46	55	1039	42	373	380	193	3428
Count Sheet	J	K	L	G	H	I	A	B	C	D	E	F	

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 7:15	5	12	44	59	14	9	9	112	5	37	49	14	369
7:15 to 7:30	3	12	68	84	10	2	12	125	1	35	40	15	407
7:30 to 7:45	3	11	63	74	8	6	2	161	7	39	45	15	434
7:45 to 8:00	0	6	76	99	13	3	6	188	6	49	42	30	518
8:00 to 8:15	4	8	61	56	16	7	8	136	4	52	52	39	443
8:15 to 8:30	4	11	63	56	14	5	4	116	3	46	53	30	405
8:30 to 8:45	8	15	53	61	20	5	7	83	5	51	43	29	380
8:45 to 9:00	6	11	58	80	31	9	7	118	11	64	56	21	472

**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:00 to 8:00	11	41	251	316	45	20	29	586	19	160	176	74	1728
7:15 to 8:15	10	37	268	313	47	18	28	610	18	175	179	99	1802
7:30 to 8:30	11	36	263	285	51	21	20	601	20	186	192	114	1800
7:45 to 8:45	16	40	253	272	63	20	25	523	18	198	190	128	1746
8:00 to 9:00	22	45	235	253	81	26	26	453	23	213	204	119	1700

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
7:15 to 8:15	10	37	268	313	47	18	28	610	18	175	179	99	1802

Exhibit D1

**PM PEAK HOUR**

Date: Thu, 4/19/07

LOCATION: MONTICELLO AVENUE/NEWS ROAD

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
3:45 to 4:00													
4:00 to 4:15	8	40	57	34	20	15	8	60	7	107	101	39	496
4:15 to 4:30	16	88	141	72	49	29	25	148	17	221	206	93	1105
4:30 to 4:45	24	122	211	115	81	42	37	218	27	304	318	133	1632
4:45 to 5:00	35	162	291	165	116	56	52	319	32	406	437	190	2261
5:00 to 5:15	47	208	384	233	152	71	73	393	45	520	564	251	2941
5:15 to 5:30	69	259	448	291	183	84	93	505	55	646	702	321	3656
5:30 to 5:45	83	287	528	339	205	107	120	584	61	738	819	372	4243
5:45 to 6:00	100	321	607	388	232	133	139	675	71	823	952	423	4864
Count Sheet	D	E	F	A	B	C	J	K	L	G	H	I	

**15 MINUTE INTERVAL COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 4:15	8	40	57	34	20	15	8	60	7	107	101	39	496
4:15 to 4:30	8	48	84	38	29	14	17	88	10	114	105	54	609
4:30 to 4:45	8	34	70	43	32	13	12	70	10	83	112	40	527
4:45 to 5:00	11	40	80	50	35	14	15	101	5	102	119	57	629
5:00 to 5:15	12	46	93	68	36	15	21	74	13	114	127	61	680
5:15 to 5:30	22	51	64	58	31	13	20	112	10	126	138	70	715
5:30 to 5:45	14	28	80	48	22	23	27	79	6	92	117	51	587
5:45 to 6:00	17	34	79	49	27	26	19	91	10	85	133	51	621

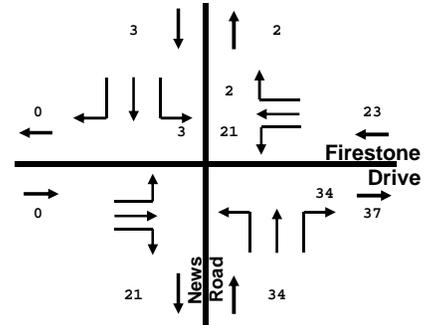
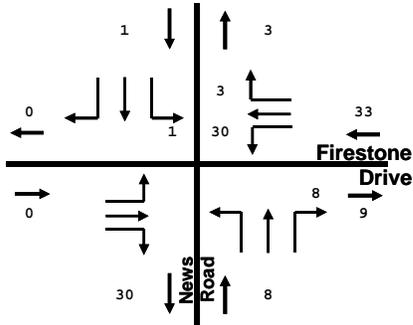
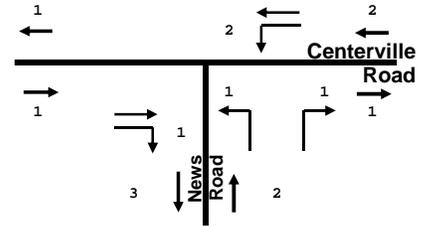
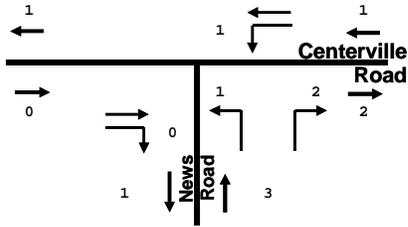
**HOUR INTERVAL**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 5:00	35	162	291	165	116	56	52	319	32	406	437	190	2261
4:15 to 5:15	39	168	327	199	132	56	65	333	38	413	463	212	2445
4:30 to 5:30	53	171	307	219	134	55	68	357	38	425	496	228	2551
4:45 to 5:45	59	165	317	224	124	65	83	366	34	434	501	239	2611
5:00 to 6:00	65	159	316	223	116	77	87	356	39	417	515	233	2603

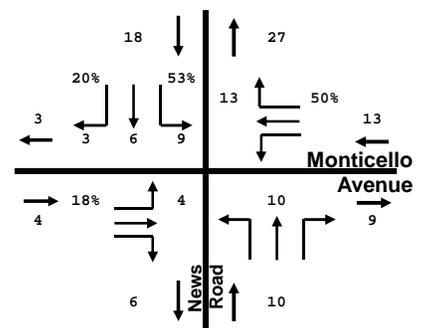
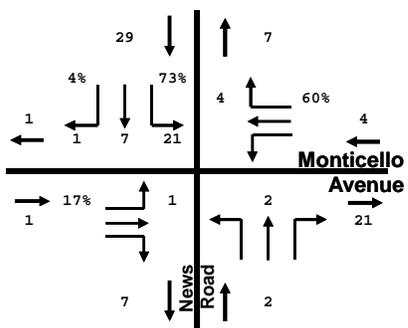
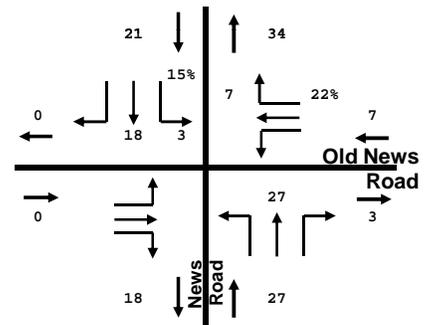
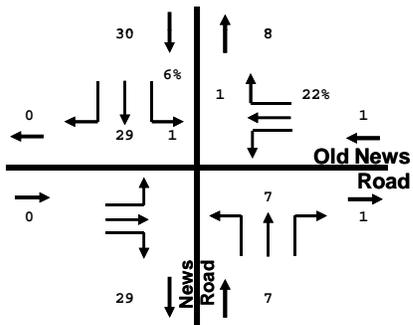
**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:45 to 5:45	59	165	317	224	124	65	83	366	34	434	501	239	2611

Exhibit D2

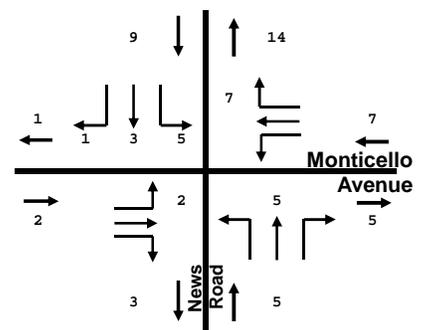
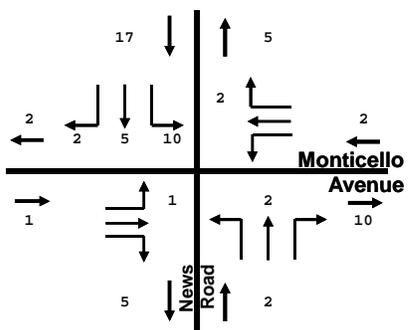
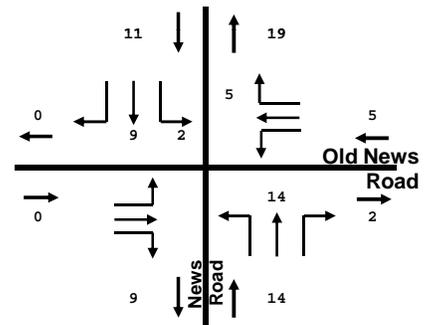
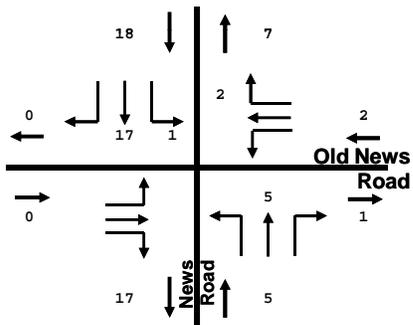
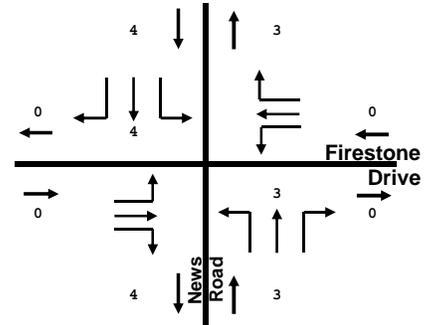
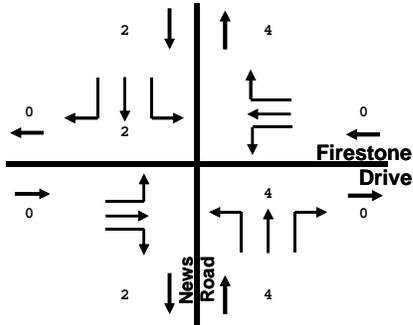
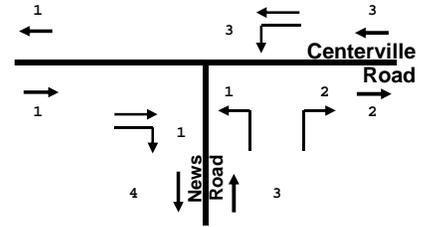
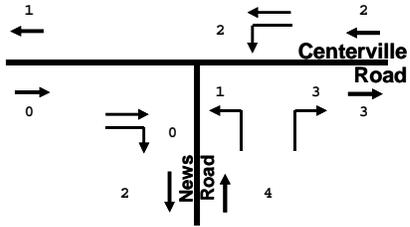


GROWTH FACTOR  
 AM IN 32.4%  
 AM OUT 32.8%  
 PM IN 32.6%  
 PM OUT 32.4%



**AM PEAK HOUR**

**PM PEAK HOUR**



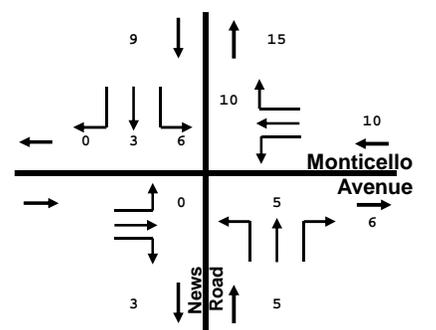
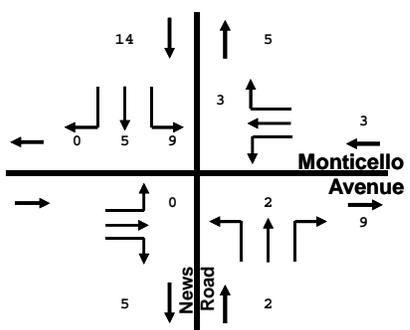
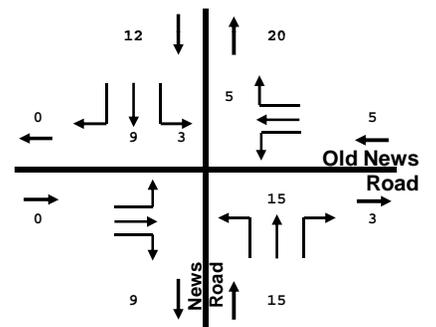
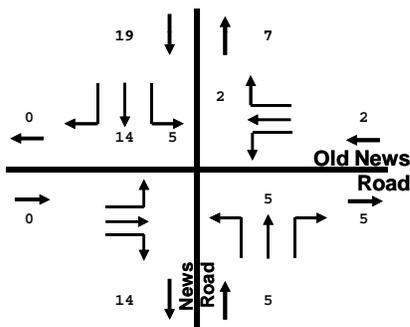
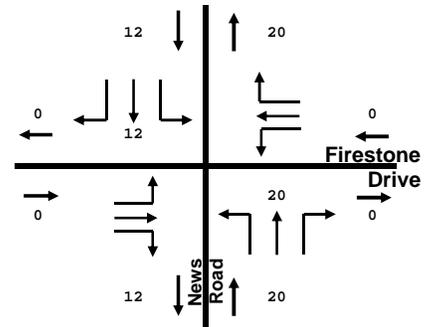
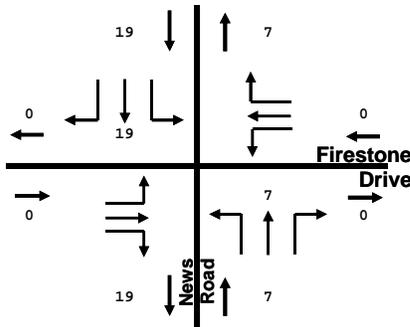
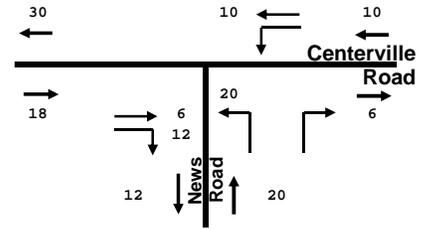
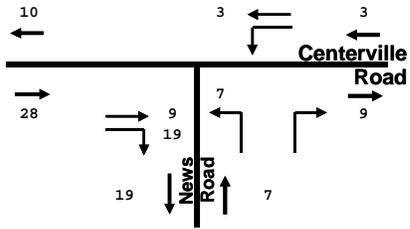
**AM PEAK HOUR**

**PM PEAK HOUR**

POWHATAN SECONDARY NORTH TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E2



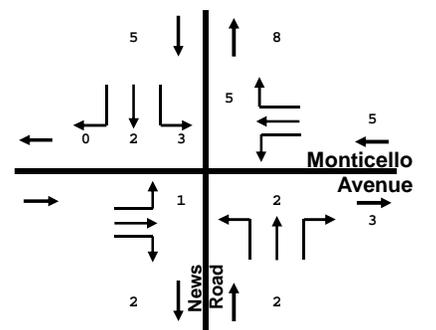
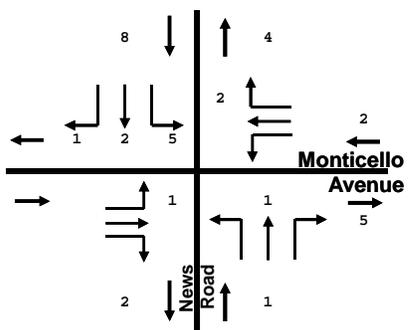
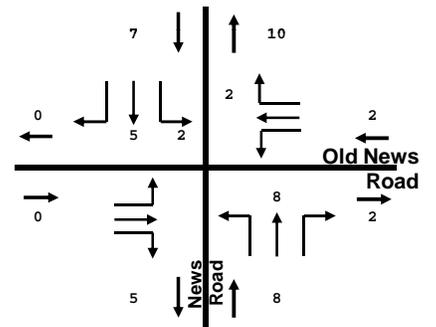
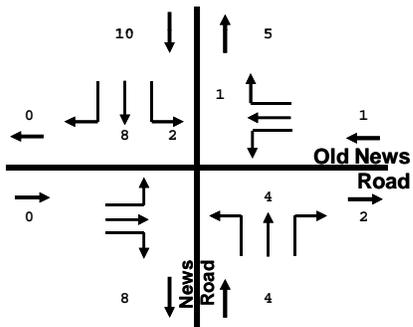
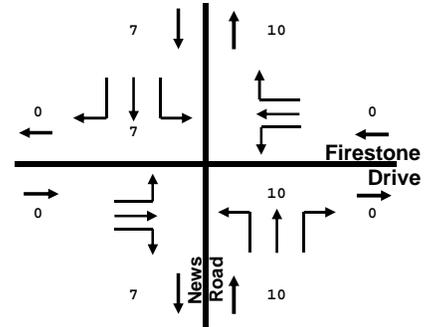
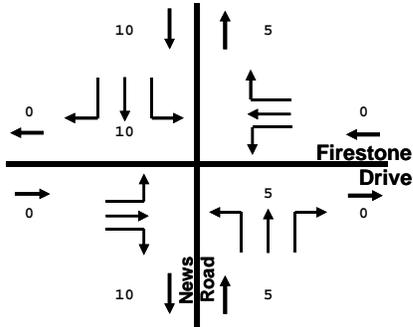
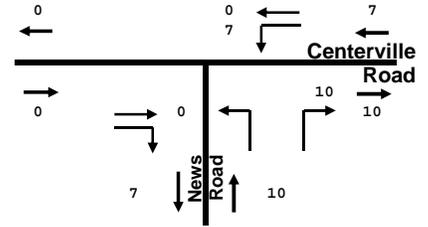
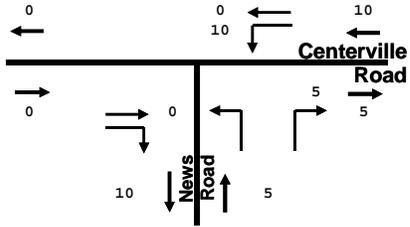
**AM PEAK HOUR**

**PM PEAK HOUR**

GREENSPRINGS TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E3



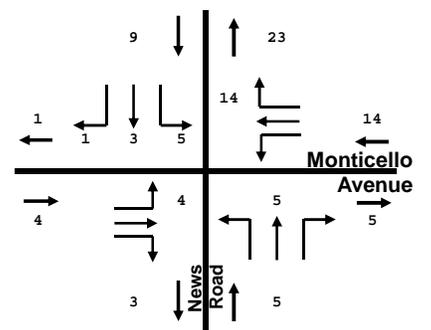
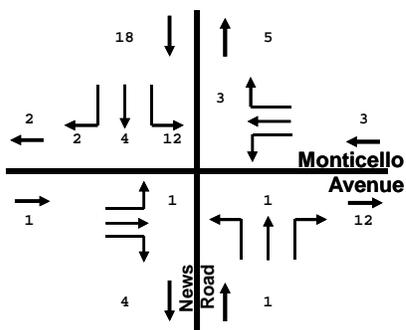
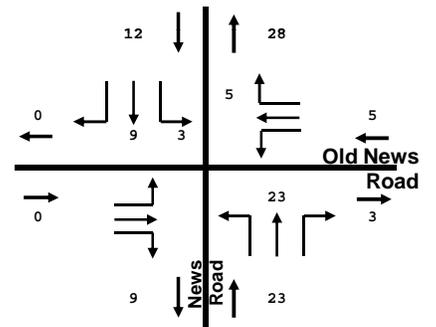
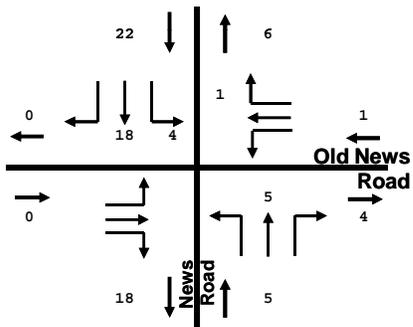
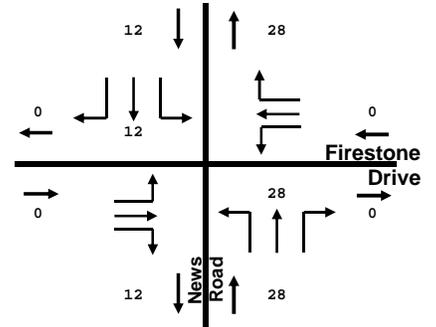
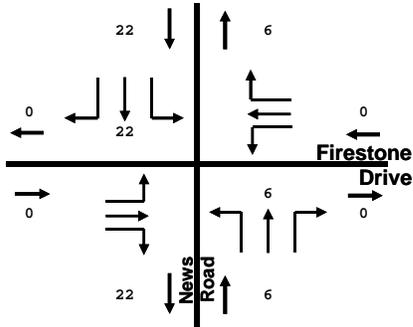
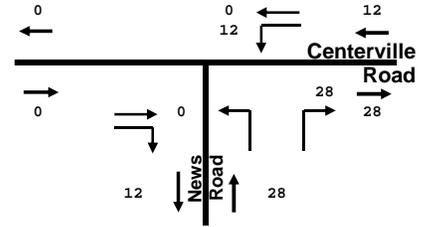
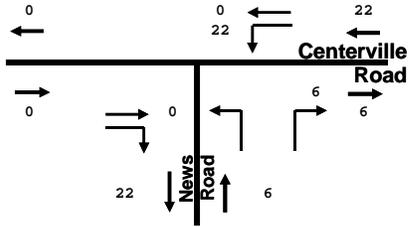
**AM PEAK HOUR**

**PM PEAK HOUR**

WESTPORT TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E4



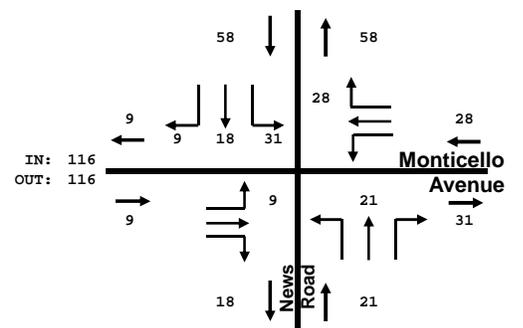
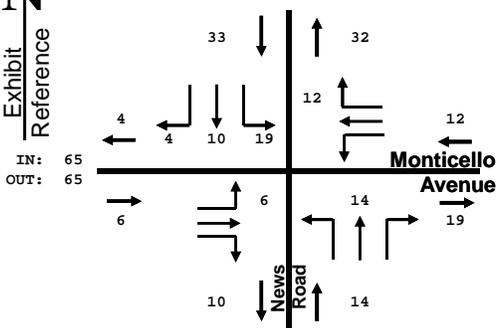
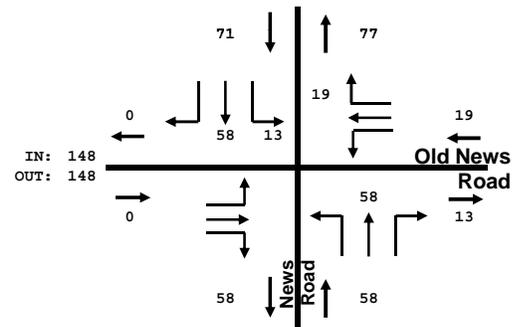
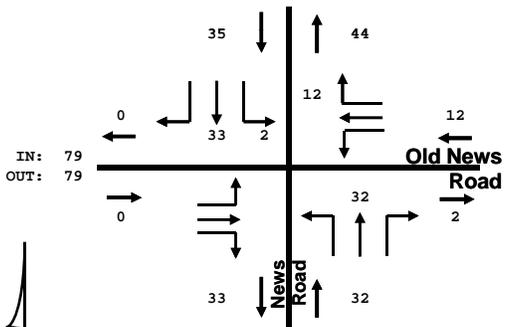
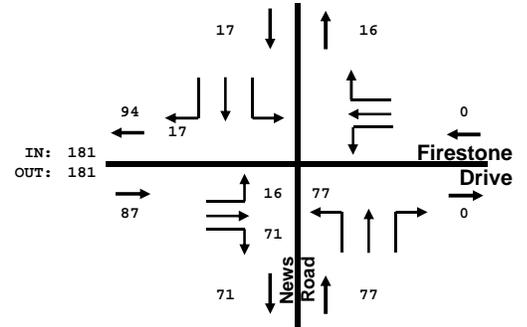
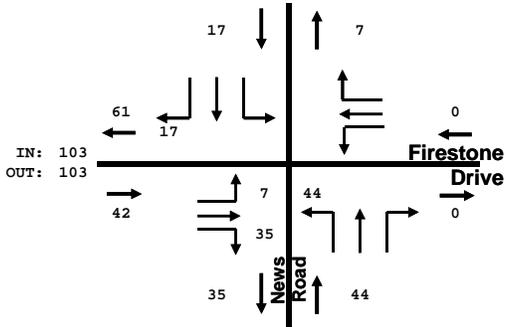
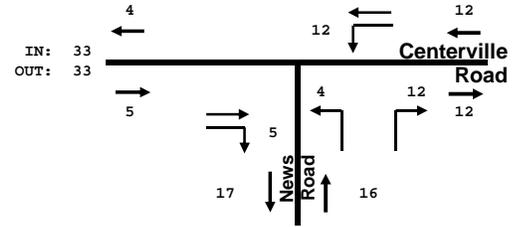
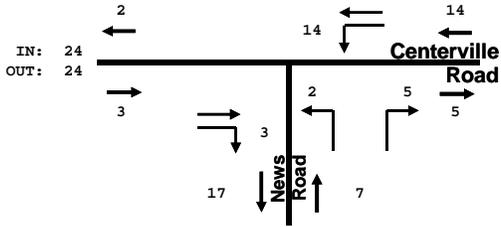
**AM PEAK HOUR**

**PM PEAK HOUR**

LIBERTY RIDGE TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E5



TOTAL IN: 271

TOTAL IN: 478

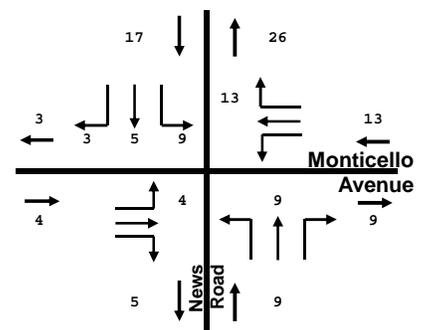
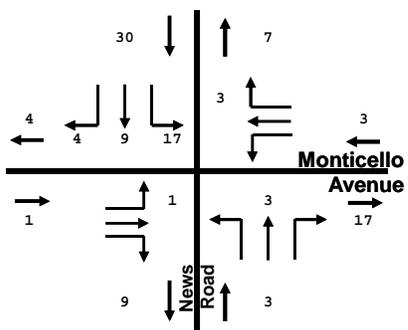
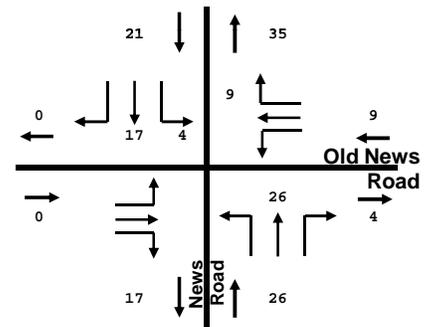
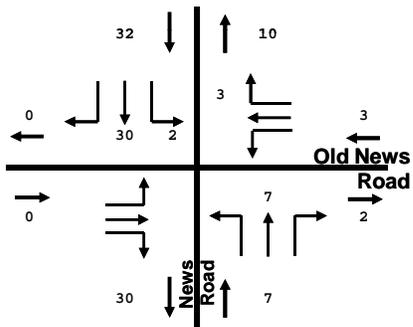
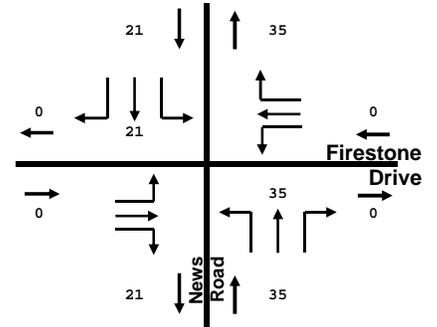
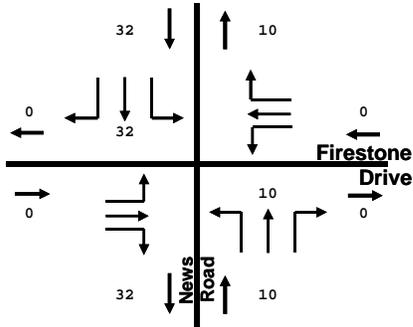
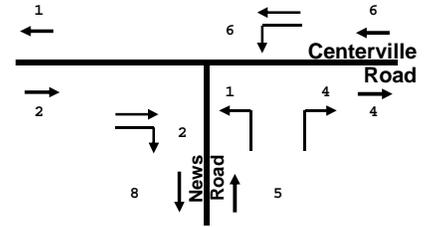
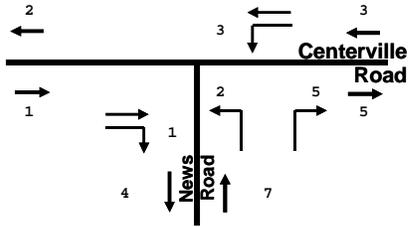
**AM PEAK HOUR**

**PM PEAK HOUR**

THE VILLAGE AT FORD'S COLONY TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E6



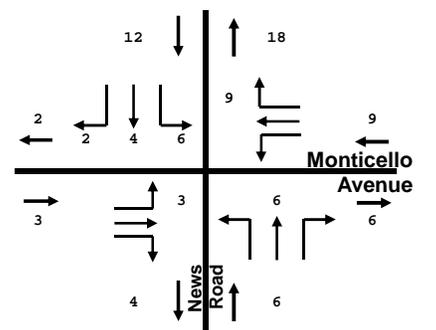
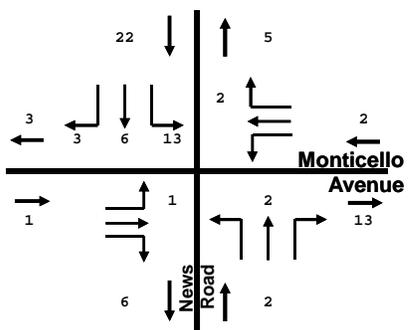
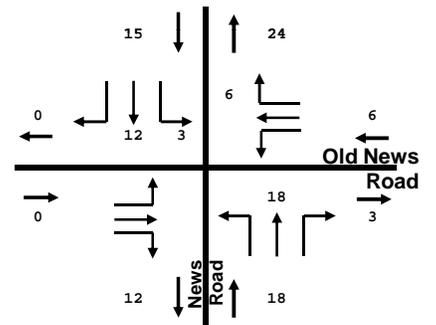
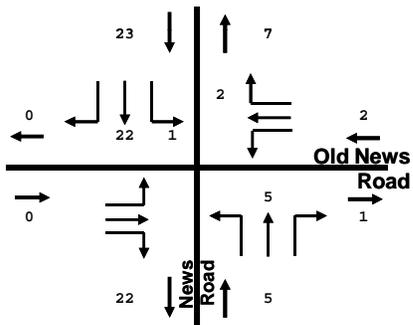
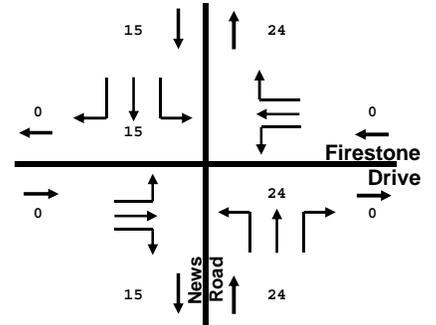
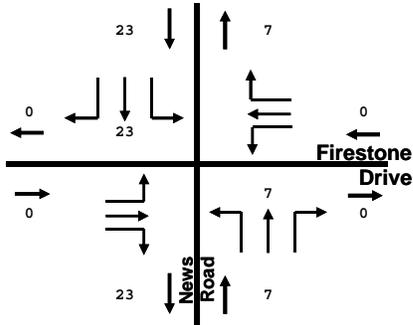
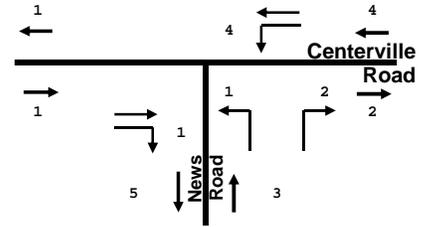
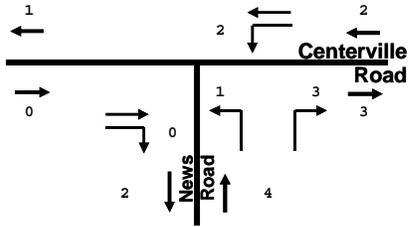
**AM PEAK HOUR**

**PM PEAK HOUR**

NIXON-GRAVES TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E7



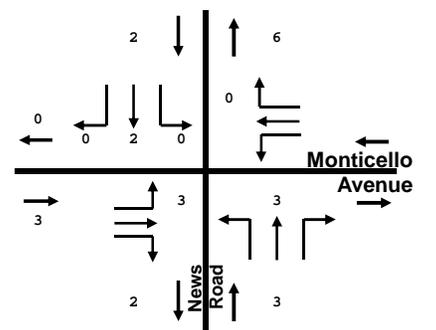
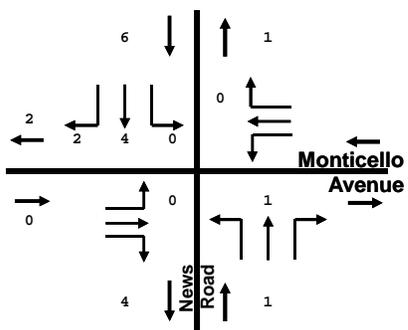
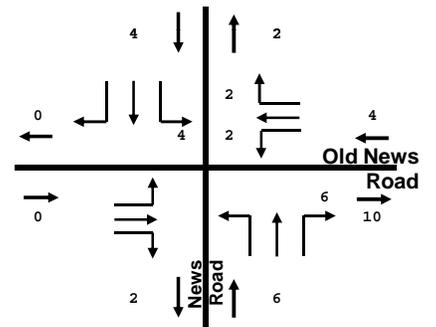
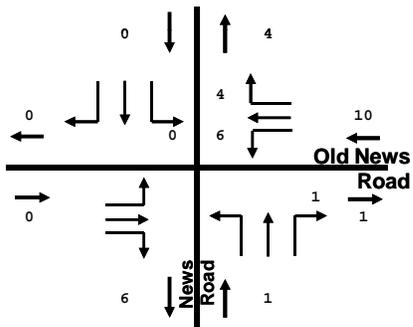
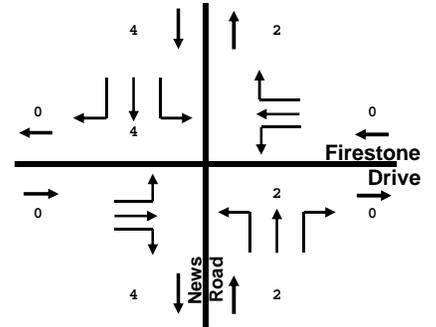
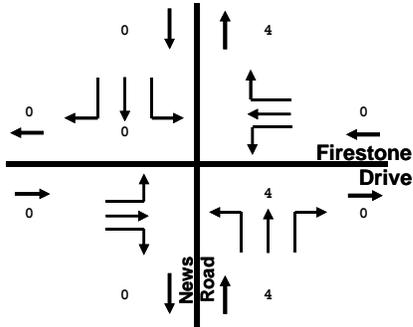
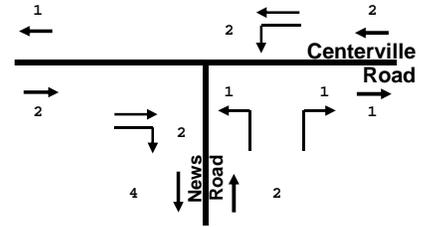
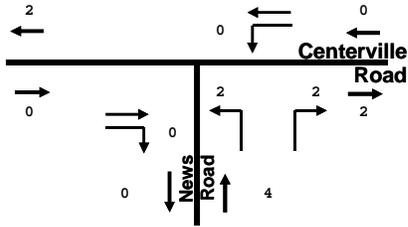
**AM PEAK HOUR**

**PM PEAK HOUR**

RICHARDSON TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E8



**AM PEAK HOUR**

**PM PEAK HOUR**

BEAMER TRIP ASSIGNMENTS

DRW Consultants, LLC  
804-794-7312

Exhibit E9



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	45	78	182	52	64	170
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	85	198	57	70	185
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	550	226			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	226			254	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	90			95	
cM capacity (veh/h)	470	813			1311	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	134	254	254
Volume Left	49	0	70
Volume Right	85	57	0
cSH	642	1700	1311
Volume to Capacity	0.21	0.15	0.05
Queue Length (ft)	20	0	4
Control Delay (s)	12.1	0.0	2.5
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	2.5
Approach LOS	B		

Intersection Summary			
Average Delay			3.5
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)			15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	55	122	224	52	69	189
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	133	243	57	75	205
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	627	272			300	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	627	272			300	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	83			94	
cM capacity (veh/h)	421	767			1261	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	192	300	280			
Volume Left	60	0	75			
Volume Right	133	57	0			
cSH	611	1700	1261			
Volume to Capacity	0.32	0.18	0.06			
Queue Length (ft)	34	0	5			
Control Delay (s)	13.6	0.0	2.5			
Lane LOS	B		A			
Approach Delay (s)	13.6	0.0	2.5			
Approach LOS	B					
Intersection Summary						
Average Delay			4.3			
Intersection Capacity Utilization			49.3%	ICU Level of Service		A
Analysis Period (min)	15					



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	54	94	191	71	99	173
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	102	208	77	108	188
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	649	246			285	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	649	246			285	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	87			92	
cM capacity (veh/h)	398	793			1277	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	161	285	296
Volume Left	59	0	108
Volume Right	102	77	0
cSH	582	1700	1277
Volume to Capacity	0.28	0.17	0.08
Queue Length (ft)	28	0	7
Control Delay (s)	13.5	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	13.5	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay			4.3
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)			15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	77	163	230	66	93	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	84	177	250	72	101	216
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	704	286			322	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	704	286			322	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	76			92	
cM capacity (veh/h)	370	753			1238	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	261	322	317
Volume Left	84	0	101
Volume Right	177	72	0
cSH	565	1700	1238
Volume to Capacity	0.46	0.19	0.08
Queue Length (ft)	60	0	7
Control Delay (s)	16.7	0.0	3.1
Lane LOS	C		A
Approach Delay (s)	16.7	0.0	3.1
Approach LOS	C		

Intersection Summary			
Average Delay			5.9
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)			15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	56	99	191	74	113	173
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	108	208	80	123	188
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	682	248			288	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	248			288	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	86			90	
cM capacity (veh/h)	376	791			1274	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	168	288	311
Volume Left	61	0	123
Volume Right	108	80	0
cSH	565	1700	1274
Volume to Capacity	0.30	0.17	0.10
Queue Length (ft)	31	0	8
Control Delay (s)	14.1	0.0	3.7
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	3.7
Approach LOS	B		

Intersection Summary			
Average Delay			4.6
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)			15



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	81	175	230	71	105	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	88	190	250	77	114	216
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	733	289			327	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	733	289			327	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	75			91	
cM capacity (veh/h)	352	751			1232	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	278	327	330			
Volume Left	88	0	114			
Volume Right	190	77	0			
cSH	552	1700	1232			
Volume to Capacity	0.50	0.19	0.09			
Queue Length (ft)	70	0	8			
Control Delay (s)	17.9	0.0	3.4			
Lane LOS	C		A			
Approach Delay (s)	17.9	0.0	3.4			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			58.0%	ICU Level of Service	B	
Analysis Period (min)			15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	61	109	191	75	118	173
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	66	118	208	82	128	188
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	693	248			289	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	693	248			289	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	85			90	
cM capacity (veh/h)	368	790			1273	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	185	289	316			
Volume Left	66	0	128			
Volume Right	118	82	0			
cSH	560	1700	1273			
Volume to Capacity	0.33	0.17	0.10			
Queue Length (ft)	36	0	8			
Control Delay (s)	14.6	0.0	3.9			
Lane LOS	B		A			
Approach Delay (s)	14.6	0.0	3.9			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			4.9			
Intersection Capacity Utilization			50.3%		ICU Level of Service	A
Analysis Period (min)			15			



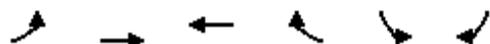
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Volume (veh/h)	84	182	230	76	117	199
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	91	198	250	83	127	216
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	762	291			333	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762	291			333	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	74			90	
cM capacity (veh/h)	334	748			1227	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	289	333	343
Volume Left	91	0	127
Volume Right	198	83	0
cSH	538	1700	1227
Volume to Capacity	0.54	0.20	0.10
Queue Length (ft)	79	0	9
Control Delay (s)	19.2	0.0	3.7
Lane LOS	C		A
Approach Delay (s)	19.2	0.0	3.7
Approach LOS	C		

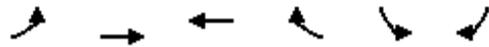
Intersection Summary			
Average Delay			7.1
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)			15



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	170	122	25	90	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	185	133	27	98	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160				326	133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160				326	133
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	99
cM capacity (veh/h)	1419				666	917
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	4	185	133	27	98	11
Volume Left	4	0	0	0	98	0
Volume Right	0	0	0	27	0	11
cSH	1419	1700	1700	1700	666	917
Volume to Capacity	0.00	0.11	0.08	0.02	0.15	0.01
Queue Length (ft)	0	0	0	0	13	1
Control Delay (s)	7.5	0.0	0.0	0.0	11.3	9.0
Lane LOS	A				B	A
Approach Delay (s)	0.2		0.0		11.1	
Approach LOS					B	
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			20.6%		ICU Level of Service	A
Analysis Period (min)			15			



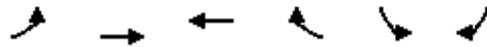
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↑	↗	↗	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	8	140	247	103	65	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	152	268	112	71	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	380				438	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380				438	268
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	99
cM capacity (veh/h)	1178				572	770
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	9	152	268	112	71	8
Volume Left	9	0	0	0	71	0
Volume Right	0	0	0	112	0	8
cSH	1178	1700	1700	1700	572	770
Volume to Capacity	0.01	0.09	0.16	0.07	0.12	0.01
Queue Length (ft)	1	0	0	0	11	1
Control Delay (s)	8.1	0.0	0.0	0.0	12.2	9.7
Lane LOS	A				B	A
Approach Delay (s)	0.4		0.0		11.9	
Approach LOS					B	
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			23.3%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	5	223	144	33	120	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	242	157	36	130	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	192				410	157
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	192				410	157
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	98
cM capacity (veh/h)	1381				596	889

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	5	242	157	36	130	14
Volume Left	5	0	0	0	130	0
Volume Right	0	0	0	36	0	14
cSH	1381	1700	1700	1700	596	889
Volume to Capacity	0.00	0.14	0.09	0.02	0.22	0.02
Queue Length (ft)	0	0	0	0	21	1
Control Delay (s)	7.6	0.0	0.0	0.0	12.7	9.1
Lane LOS	A				B	A
Approach Delay (s)	0.2		0.0		12.4	
Approach LOS					B	

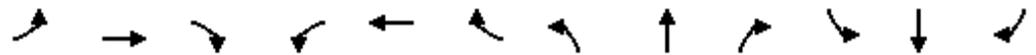
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization		25.1%		ICU Level of Service		A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	11	175	308	137	86	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	190	335	149	93	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	484				549	335
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	484				549	335
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				81	99
cM capacity (veh/h)	1079				491	707

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	12	190	335	149	93	10
Volume Left	12	0	0	0	93	0
Volume Right	0	0	0	149	0	10
cSH	1079	1700	1700	1700	491	707
Volume to Capacity	0.01	0.11	0.20	0.09	0.19	0.01
Queue Length (ft)	1	0	0	0	17	1
Control Delay (s)	8.4	0.0	0.0	0.0	14.0	10.2
Lane LOS	A				B	B
Approach Delay (s)	0.5		0.0		13.7	
Approach LOS					B	

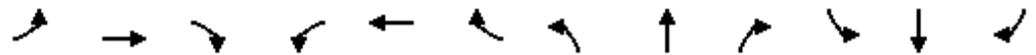
Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization	27.6%		ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free		Free		Stop		Stop				Stop	
Grade	0%		0%		0%		0%				0%	
Volume (veh/h)	5	223	17	44	155	33	7	0	35	120	0	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	242	18	48	168	36	8	0	38	130	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	204			261			541	562	252	555	536	168
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	204			261			541	562	252	555	536	168
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			98	100	95	68	100	98
cM capacity (veh/h)	1367			1304			431	418	787	408	433	876

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	5	261	48	168	36	8	38	130	14
Volume Left	5	0	48	0	0	8	0	130	0
Volume Right	0	18	0	0	36	0	38	0	14
cSH	1367	1700	1304	1700	1700	431	787	408	876
Volume to Capacity	0.00	0.15	0.04	0.10	0.02	0.02	0.05	0.32	0.02
Queue Length (ft)	0	0	3	0	0	1	4	34	1
Control Delay (s)	7.6	0.0	7.9	0.0	0.0	13.5	9.8	17.9	9.2
Lane LOS	A	A				B	A	C	A
Approach Delay (s)	0.2	1.5				10.4	17.1		
Approach LOS						B	C		

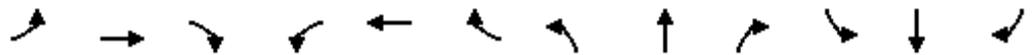
Intersection Summary		
Average Delay	4.7	
Intersection Capacity Utilization	39.4%	ICU Level of Service A
Analysis Period (min)	15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free		Free		Stop		Stop				Stop	
Grade	0%		0%		0%		0%				0%	
Volume (veh/h)	11	175	17	77	308	137	16	0	71	86	0	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	190	18	84	335	149	17	0	77	93	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	484			209			735	874	199	793	735	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484			209			735	874	199	793	735	335
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			94	100	91	64	100	99
cM capacity (veh/h)	1079			1362			312	267	842	263	322	707

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	12	209	84	335	149	17	77	93	10
Volume Left	12	0	84	0	0	17	0	93	0
Volume Right	0	18	0	0	149	0	77	0	10
cSH	1079	1700	1362	1700	1700	312	842	263	707
Volume to Capacity	0.01	0.12	0.06	0.20	0.09	0.06	0.09	0.36	0.01
Queue Length (ft)	1	0	5	0	0	4	8	39	1
Control Delay (s)	8.4	0.0	7.8	0.0	0.0	17.2	9.7	26.1	10.2
Lane LOS	A	A				C	A	D	B
Approach Delay (s)	0.5	1.2				11.1	24.6		
Approach LOS						B	C		

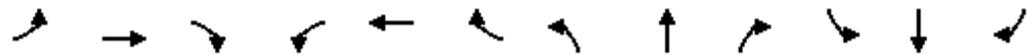
Intersection Summary		
Average Delay	4.4	
Intersection Capacity Utilization	41.0%	ICU Level of Service A
Analysis Period (min)	15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷	↶		↶	↷		↶	↷
Sign Control		Free		Free				Stop			Stop	
Grade		0%		0%				0%			0%	
Volume (veh/h)	5	278	17	44	165	33	7	0	35	120	0	13
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	302	18	48	179	36	8	0	38	130	0	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	215			321			611	633	311	626	607	179
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	215			321			611	633	311	626	607	179
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			98	100	95	64	100	98
cM capacity (veh/h)	1355			1239			386	380	729	364	394	863

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	5	321	48	179	36	8	38	130	14
Volume Left	5	0	48	0	0	8	0	130	0
Volume Right	0	18	0	0	36	0	38	0	14
cSH	1355	1700	1239	1700	1700	386	729	364	863
Volume to Capacity	0.00	0.19	0.04	0.11	0.02	0.02	0.05	0.36	0.02
Queue Length (ft)	0	0	3	0	0	2	4	40	1
Control Delay (s)	7.7	0.0	8.0	0.0	0.0	14.5	10.2	20.3	9.2
Lane LOS	A		A			B	B	C	A
Approach Delay (s)	0.1		1.5			10.9		19.2	
Approach LOS						B		C	

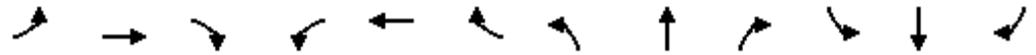
Intersection Summary		
Average Delay		4.8
Intersection Capacity Utilization	42.3%	ICU Level of Service
Analysis Period (min)		15
		A



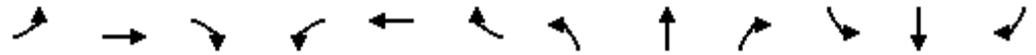
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free		Free		Stop		Stop				Stop	
Grade	0%		0%		0%		0%				0%	
Volume (veh/h)	11	215	17	77	369	137	16	0	71	86	0	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	234	18	84	401	149	17	0	77	93	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	550		252		845		984		243		903	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	550		252		845		984		243		903	
tC, single (s)	4.1		4.1		7.1		6.5		6.2		7.1	
tC, 2 stage (s)												
tF (s)	2.2		2.2		3.5		4.0		3.3		3.5	
p0 queue free %	99		94		93		100		90		57	
cM capacity (veh/h)	1020		1313		262		230		796		220	

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2	
Volume Total	12	252	84	401	149	17	77	93	10	
Volume Left	12	0	84	0	0	17	0	93	0	
Volume Right	0	18	0	0	149	0	77	0	10	
cSH	1020	1700	1313	1700	1700	262	796	220	649	
Volume to Capacity	0.01	0.15	0.06	0.24	0.09	0.07	0.10	0.43	0.02	
Queue Length (ft)	1	0	5	0	0	5	8	49	1	
Control Delay (s)	8.6	0.0	7.9	0.0	0.0	19.7	10.0	33.0	10.6	
Lane LOS	A		A			C	B	D	B	
Approach Delay (s)	0.4		1.0		11.8		30.9			
Approach LOS					B		D			

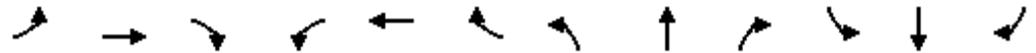
Intersection Summary		
Average Delay	4.6	
Intersection Capacity Utilization	44.2%	ICU Level of Service A
Analysis Period (min)	15	



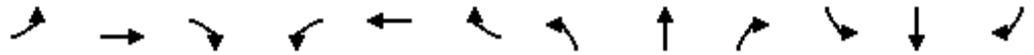
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷		
Sign Control	Free		Free				Stop				Stop		
Grade	0%		0%				0%				0%		
Volume (veh/h)	23	366	1	1	161	21	1	0	3	19	0	46	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	25	398	1	1	175	23	1	0	3	21	0	50	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	198			399			588	648	199	429	626	88	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	198			399			588	648	199	429	626	88	
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	98			100			100	100	100	96	100	95	
cM capacity (veh/h)	1372			1156			366	380	808	500	391	953	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>	<b>SB 1</b>				
Volume Total	25	265	134	1	88	88	23	4	71				
Volume Left	25	0	0	1	0	0	0	1	21				
Volume Right	0	0	1	0	0	0	23	3	50				
cSH	1372	1700	1700	1156	1700	1700	1700	621	754				
Volume to Capacity	0.02	0.16	0.08	0.00	0.05	0.05	0.01	0.01	0.09				
Queue Length (ft)	1	0	0	0	0	0	0	1	8				
Control Delay (s)	7.7	0.0	0.0	8.1	0.0	0.0	0.0	10.8	10.3				
Lane LOS	A			A				B	B				
Approach Delay (s)	0.5			0.0				10.8	10.3				
Approach LOS								B	B				
<b>Intersection Summary</b>													
Average Delay			1.4										
Intersection Capacity Utilization			29.0%	ICU Level of Service					A				
Analysis Period (min)			15										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷	
Sign Control	Free		Free				Stop				Stop	
Grade	0%		0%				0%				0%	
Volume (veh/h)	50	281	2	0	382	48	4	0	3	54	0	108
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	305	2	0	415	52	4	0	3	59	0	117
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	467			308			740	883	154	680	832	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	467			308			740	883	154	680	832	208
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			98	100	100	82	100	85
cM capacity (veh/h)	1090			1250			250	269	865	323	288	798
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	54	204	104	0	208	208	52	8	176			
Volume Left	54	0	0	0	0	0	0	4	59			
Volume Right	0	0	2	0	0	0	52	3	117			
cSH	1090	1700	1700	1700	1700	1700	1700	360	536			
Volume to Capacity	0.05	0.12	0.06	0.00	0.12	0.12	0.03	0.02	0.33			
Queue Length (ft)	4	0	0	0	0	0	0	2	36			
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	0.0	0.0	15.2	15.0			
Lane LOS	A							C	B			
Approach Delay (s)	1.3			0.0				15.2	15.0			
Approach LOS							C		B			
<b>Intersection Summary</b>												
Average Delay			3.2									
Intersection Capacity Utilization			34.1%		ICU Level of Service				A			
Analysis Period (min)			15									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷		
Sign Control	Free		Free				Stop				Stop		
Grade	0%		0%				0%				0%		
Volume (veh/h)	36	452	1	1	187	21	1	0	3	19	0	53	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	39	491	1	1	203	23	1	0	3	21	0	58	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type							None			None			
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	226			492			732	798	246	533	776	102	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	226			492			732	798	246	533	776	102	
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	97			100			100	100	100	95	100	94	
cM capacity (veh/h)	1340			1067			284	308	754	418	317	934	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1				
Volume Total	39	328	165	1	102	102	23	4	78				
Volume Left	39	0	0	1	0	0	0	1	21				
Volume Right	0	0	1	0	0	0	23	3	58				
cSH	1340	1700	1700	1067	1700	1700	1700	533	705				
Volume to Capacity	0.03	0.19	0.10	0.00	0.06	0.06	0.01	0.01	0.11				
Queue Length (ft)	2	0	0	0	0	0	0	1	9				
Control Delay (s)	7.8	0.0	0.0	8.4	0.0	0.0	0.0	11.8	10.7				
Lane LOS	A			A				B	B				
Approach Delay (s)	0.6			0.0				11.8	10.7				
Approach LOS								B	B				
Intersection Summary													
Average Delay			1.4										
Intersection Capacity Utilization			31.7%	ICU Level of Service						A			
Analysis Period (min)			15										



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷	
Sign Control	Free		Free				Stop				Stop	
Grade	0%		0%				0%				0%	
Volume (veh/h)	63	331	2	0	469	48	4	0	3	54	0	132
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	360	2	0	510	52	4	0	3	59	0	143
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	562			362			896	1060	181	830	1009	255
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	562			362			896	1060	181	830	1009	255
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			100			98	100	100	76	100	81
cM capacity (veh/h)	1005			1193			180	208	831	248	223	744

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	68	240	122	0	255	255	52	8	202
Volume Left	68	0	0	0	0	0	0	4	59
Volume Right	0	0	2	0	0	0	52	3	143
cSH	1005	1700	1700	1700	1700	1700	1700	271	471
Volume to Capacity	0.07	0.14	0.07	0.00	0.15	0.15	0.03	0.03	0.43
Queue Length (ft)	5	0	0	0	0	0	0	2	53
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	0.0	0.0	18.7	18.3
Lane LOS	A						C		C
Approach Delay (s)	1.4			0.0			18.7	18.3	
Approach LOS							C	C	

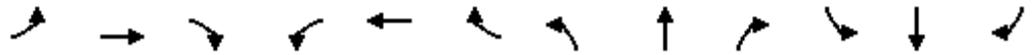
Intersection Summary		
Average Delay	3.7	
Intersection Capacity Utilization	38.1%	ICU Level of Service
Analysis Period (min)	15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷	
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Volume (veh/h)	38	485	1	1	219	21	1	0	3	19	0	65
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	527	1	1	238	23	1	0	3	21	0	71
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	261			528			802	873	264	590	851	119
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	261			528			802	873	264	590	851	119
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			100	100	100	95	100	92
cM capacity (veh/h)	1301			1035			247	277	734	380	286	910

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	41	351	177	1	119	119	23	4	91
Volume Left	41	0	0	1	0	0	0	1	21
Volume Right	0	0	1	0	0	0	23	3	71
cSH	1301	1700	1700	1035	1700	1700	1700	492	692
Volume to Capacity	0.03	0.21	0.10	0.00	0.07	0.07	0.01	0.01	0.13
Queue Length (ft)	2	0	0	0	0	0	0	1	11
Control Delay (s)	7.9	0.0	0.0	8.5	0.0	0.0	0.0	12.4	11.0
Lane LOS	A			A				B	B
Approach Delay (s)	0.6			0.0				12.4	11.0
Approach LOS								B	B

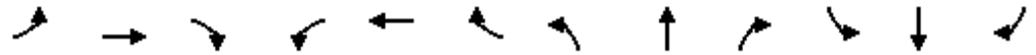
Intersection Summary		
Average Delay	1.5	
Intersection Capacity Utilization	33.3%	ICU Level of Service
Analysis Period (min)	15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷	
Sign Control	Free		Free				Stop				Stop	
Grade	0%		0%				0%				0%	
Volume (veh/h)	76	389	2	0	527	48	4	0	3	54	0	151
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	423	2	0	573	52	4	0	3	59	0	164
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	625		425				1040		1214		286	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	625		425				1040		1214		286	
tC, single (s)	4.1		4.1				7.5		6.5		6.9	
tC, 2 stage (s)												
tF (s)	2.2		2.2				3.5		4.0		3.3	
p0 queue free %	91		100				97		100		77	
cM capacity (veh/h)	952		1131				133		165		710	

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	83	282	143	0	286	286	52	8	223
Volume Left	83	0	0	0	0	0	0	4	59
Volume Right	0	0	2	0	0	0	52	3	164
cSH	952	1700	1700	1700	1700	1700	1700	206	423
Volume to Capacity	0.09	0.17	0.08	0.00	0.17	0.17	0.03	0.04	0.53
Queue Length (ft)	7	0	0	0	0	0	0	3	75
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	0.0	0.0	23.1	22.6
Lane LOS	A						C		C
Approach Delay (s)	1.5		0.0				23.1		22.6
Approach LOS							C		C

Intersection Summary		
Average Delay	4.4	
Intersection Capacity Utilization	41.5%	ICU Level of Service
Analysis Period (min)	15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↶↷		↶	↶↷	↶		↷			↷	
Sign Control	Free		Free				Stop				Stop	
Grade	0%		0%				0%				0%	
Volume (veh/h)	41	537	1	1	231	22	1	0	3	25	0	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	45	584	1	1	251	24	1	0	3	27	0	80
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	275			585			882	951	292	638	927	126
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			585			882	951	292	638	927	126
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			100			99	100	100	92	100	91
cM capacity (veh/h)	1285			986			213	249	704	350	257	901
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	45	389	196	1	126	126	24	4	108			
Volume Left	45	0	0	1	0	0	0	1	27			
Volume Right	0	0	1	0	0	0	24	3	80			
cSH	1285	1700	1700	986	1700	1700	1700	447	645			
Volume to Capacity	0.03	0.23	0.12	0.00	0.07	0.07	0.01	0.01	0.17			
Queue Length (ft)	3	0	0	0	0	0	0	1	15			
Control Delay (s)	7.9	0.0	0.0	8.7	0.0	0.0	0.0	13.1	11.7			
Lane LOS	A			A				B	B			
Approach Delay (s)	0.6			0.0				13.1	11.7			
Approach LOS								B	B			
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			36.2%		ICU Level of Service				A			
Analysis Period (min)			15									

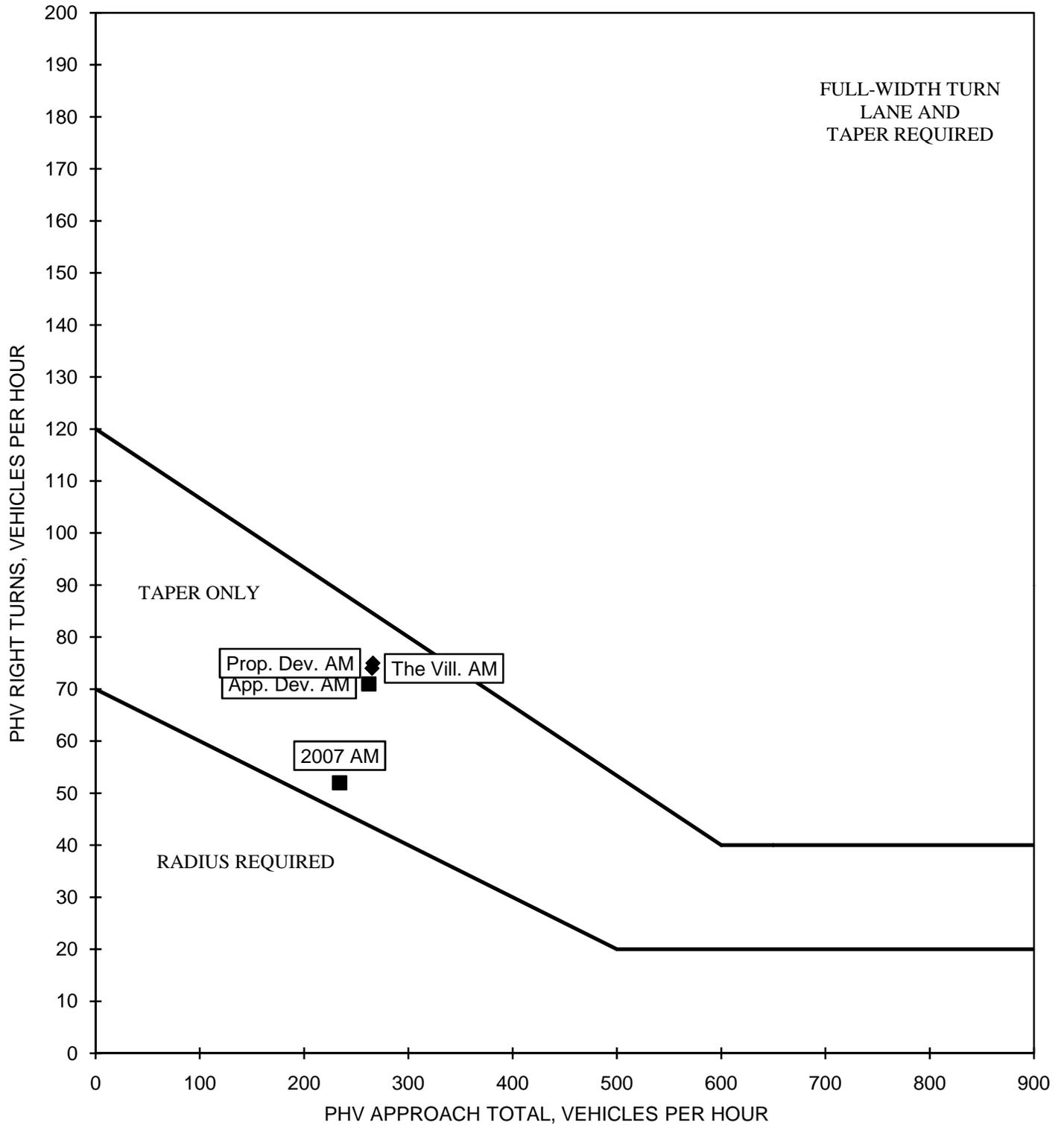


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↖		↕			↕	
Sign Control	Free		Free		Free		Stop		Stop		Stop	
Grade	0%		0%		0%		0%		0%		0%	
Volume (veh/h)	87	418	2	0	571	54	4	0	3	56	0	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	95	454	2	0	621	59	4	0	3	61	0	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	679			457			1138	1324	228	1040	1266	310
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	679			457			1138	1324	228	1040	1266	310
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			100			96	100	100	64	100	73
cM capacity (veh/h)	909			1101			106	139	774	169	150	686

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	95	303	154	0	310	310	59	8	243
Volume Left	95	0	0	0	0	0	0	4	61
Volume Right	0	0	2	0	0	0	59	3	183
cSH	909	1700	1700	1700	1700	1700	1700	168	389
Volume to Capacity	0.10	0.18	0.09	0.00	0.18	0.18	0.03	0.05	0.63
Queue Length (ft)	9	0	0	0	0	0	0	4	103
Control Delay (s)	9.4	0.0	0.0	0.0	0.0	0.0	0.0	27.5	28.6
Lane LOS	A							D	D
Approach Delay (s)	1.6			0.0				27.5	28.6
Approach LOS								D	D

Intersection Summary		
Average Delay	5.4	
Intersection Capacity Utilization	44.4%	ICU Level of Service A
Analysis Period (min)	15	

Guidelines for Right Turn Treatments 2 - Lane Highway



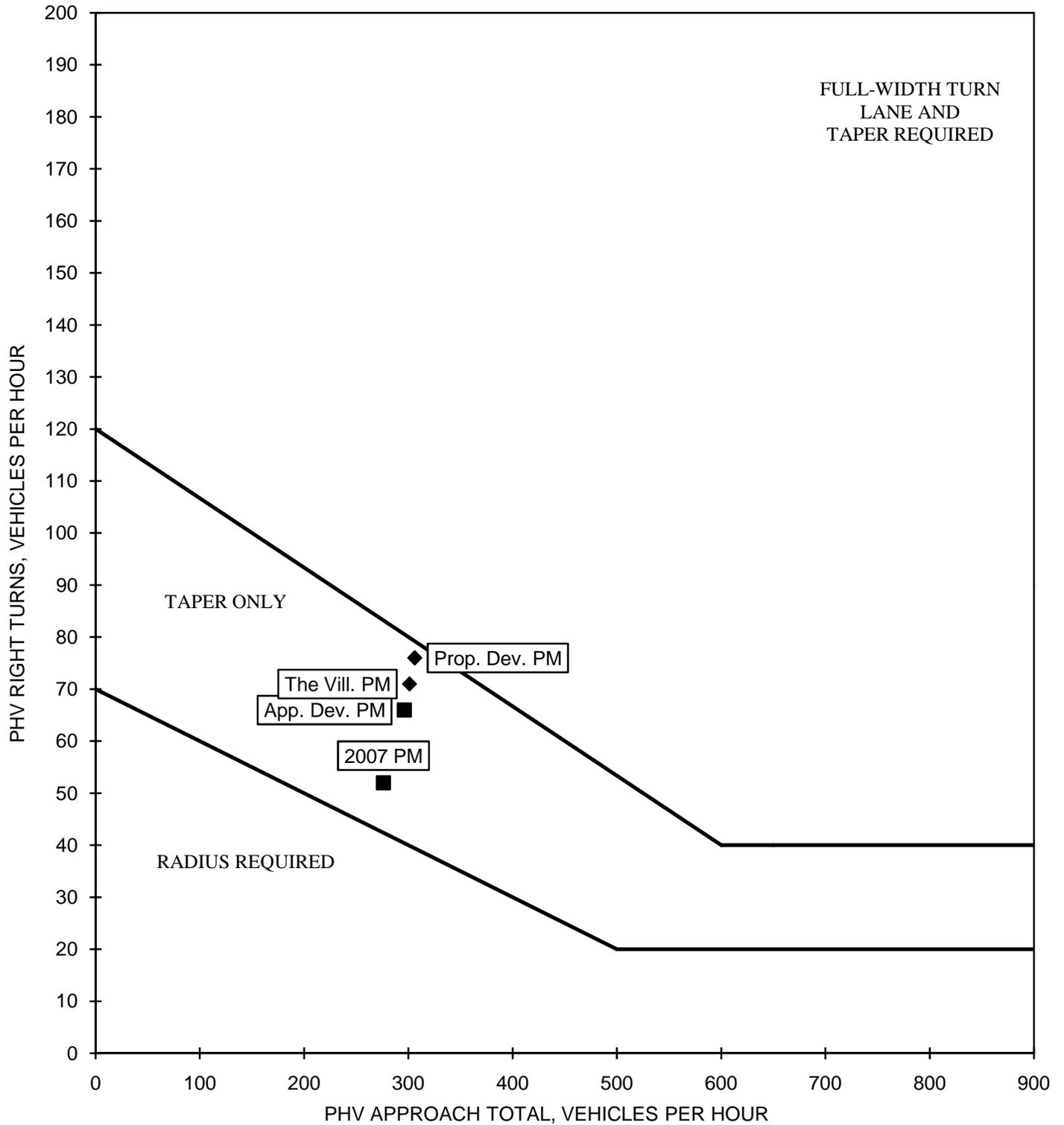
Source: VDOT Road Design Manual, Vol. 1, Page C-15, Figure C-1-8

VDOT RIGHT TURN LANE WARRANT  
 NORTHBOUND CENTERVILLE ROAD AT NEWS ROAD  
 AM PEAK HOUR COUNTS AND FORECAST

DRW Consultants, LLC  
 804-794-7312

Exhibit J1

Guidelines for Right Turn Treatments 2 - Lane Highway



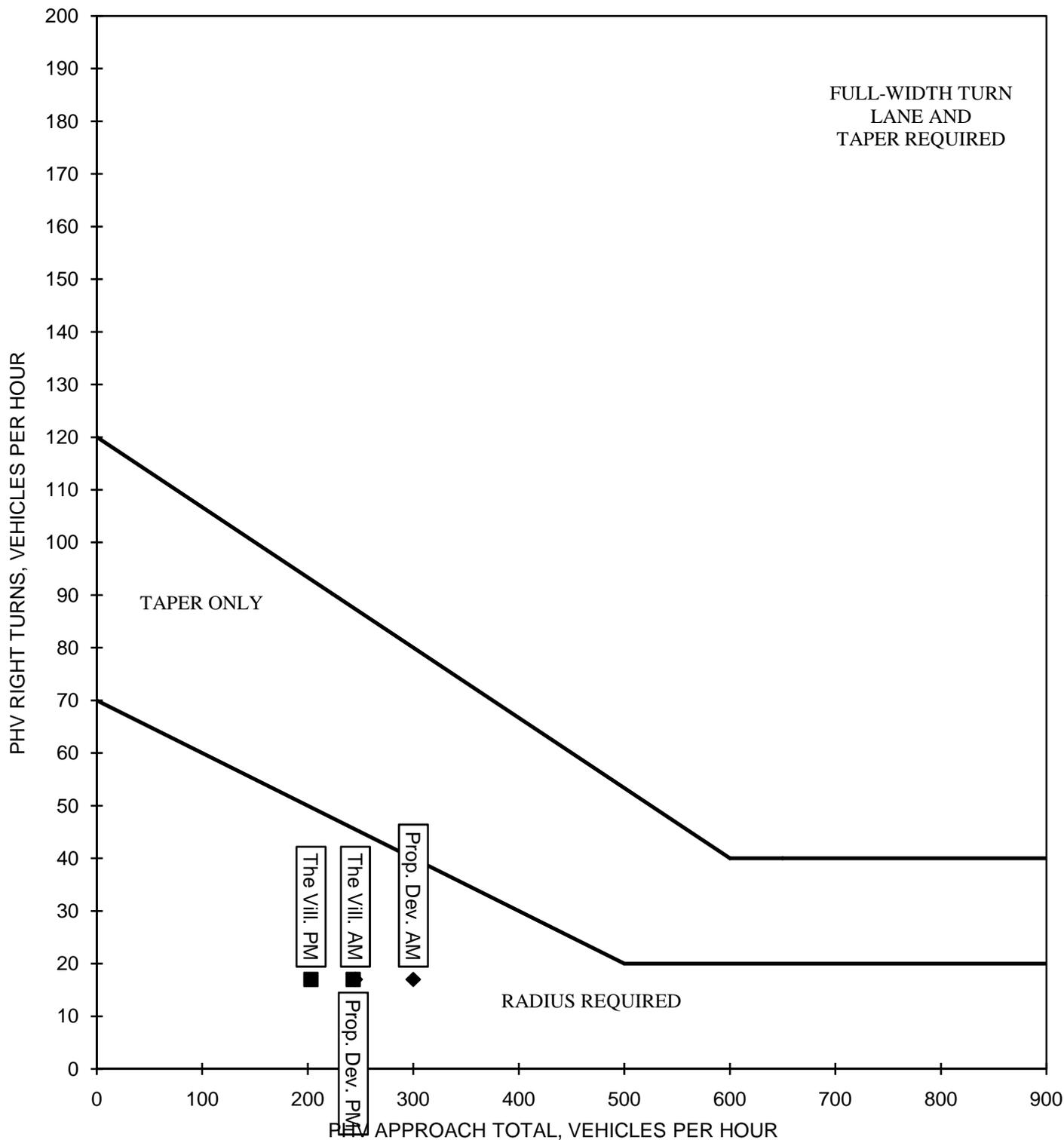
Source: VDOT Road Design Manual, Vol. 1, Page C-15, Figure C-1-8

VDOT RIGHT TURN LANE WARRANT  
 NORTHBOUND CENTERVILLE ROAD AT NEWS ROAD  
 PM PEAK HOUR COUNTS AND FORECAST

DRW Consultants, LLC  
 804-794-7312

Exhibit J2

Guidelines for Right Turn Treatments 2 - Lane Highway



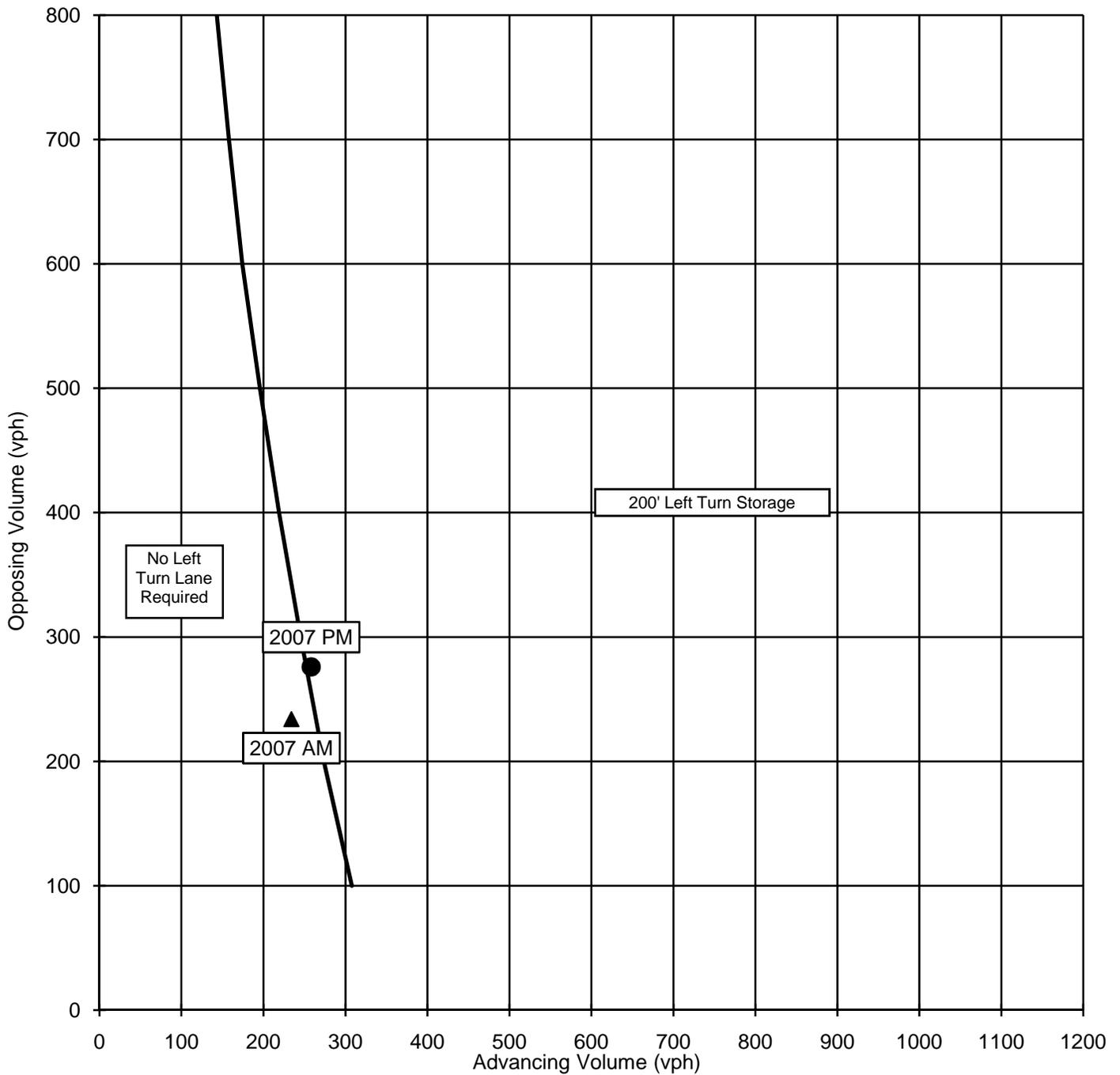
Source: VDOT Road Design Manual, Vol. 1, Page C-15, Figure C-1-8

VDOT RIGHT TURN LANE WARRANT  
EASTBOUND NEWS ROAD AT FIRESTONE DRIVE

DRW Consultants, LLC  
804-794-7312

Exhibit J3

**LEFT TURN LANE WARRANT**  
**50 mph Design Speed**  
**% Left Turns = 27%**



Source: Interpolated from VDOT Road Design Manual, Appendix C, derived from Highway Research Record Number 211

VDOT LEFT TURN LANE WARRANTS  
 NORTHBOUND CENTERVILLE ROAD AT NEWS ROAD  
 AM AND PM PEAK HOUR COUNTS

*DRW Consultants, LLC*  
 804-794-7312

**Exhibit K**

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>East of Centerville</i>
Date Performed <i>4/3/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>2007/2008 COUNTS AM</i>	Analysis Year <i>Exhibit L1</i>

Project Description: *News Road Corridor Study - Exhibit L1*

### Input Data

<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling
Two-way hourly volume	239 veh/h
Directional split	51 / 49
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses, $P_T$	5%
% Recreational vehicles, $P_R$	0%
Access points/ mi	10

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.71
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	2.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.930
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	393
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	200
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.5
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	37.0

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	351
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	179
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	26.5
Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$	23.9
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dhp}$	50.5

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c=V_p/3,200$	0.12
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	91
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	335
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	2.5

### Notes

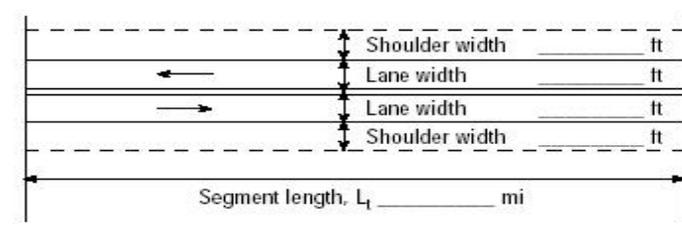
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	2007/2008 COUNTS PM	Analysis Year	Exhibit L2

Project Description: News Road Corridor Study - Exhibit L2

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>298 veh/h</td> </tr> <tr> <td>Directional split</td> <td>59 / 41</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	298 veh/h	Directional split	59 / 41	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	298 veh/h																		
Directional split	59 / 41																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.71
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	2.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.930
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	490
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	289
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.2
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.5

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	437
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	258
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	31.9
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	22.1
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	54.0

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	B
Volume to capacity ratio, $v/c=V_p/3,200$	0.15
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	113
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	417
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.1

### Notes

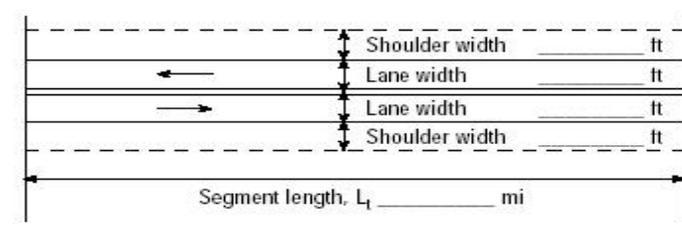
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	APPROVED DEVELOPMENT AM	Analysis Year	Exhibit L3

Project Description: News Road Corridor Study - Exhibit L3

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;"><input type="checkbox"/> Class I highway</td> <td style="width: 15%;"><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain</td> <td><input type="checkbox"/> Level <input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>318 veh/h</td> </tr> <tr> <td>Directional split</td> <td>53 / 47</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain	<input type="checkbox"/> Level <input checked="" type="checkbox"/> Rolling	Two-way hourly volume	318 veh/h	Directional split	53 / 47	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain	<input type="checkbox"/> Level <input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	318 veh/h																		
Directional split	53 / 47																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.71
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	2.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.930
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	523
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	277
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.1
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.3

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	467
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	248
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	33.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	22.9
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	56.5

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.16
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	121
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	445
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.3

### Notes

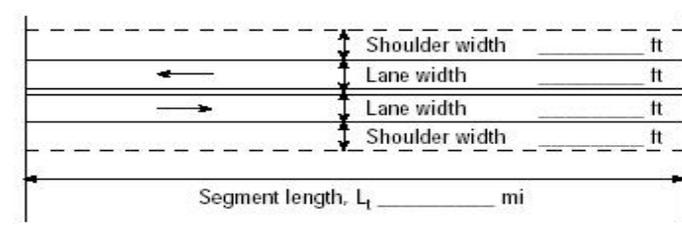
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	Approved Development PM	Analysis Year	Exhibit L4

Project Description: News Road Corridor Study - Exhibit L4

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>399 veh/h</td> </tr> <tr> <td>Directional split</td> <td>60 / 40</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	399 veh/h	Directional split	60 / 40	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	399 veh/h																		
Directional split	60 / 40																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	487
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	292
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.2
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.5

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	586
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	352
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	40.3
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	20.8
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	61.1

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.15
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	152
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	559
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	4.2

### Notes

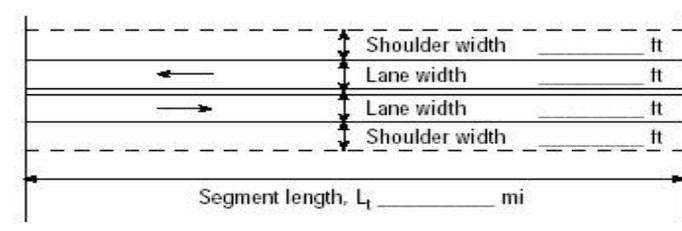
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	The Village DEVELOPMENT AM	Analysis Year	Exhibit L5

Project Description: News Road Corridor Study - Exhibit L5

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>342 veh/h</td> </tr> <tr> <td>Directional split</td> <td>55 / 45</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	342 veh/h	Directional split	55 / 45	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	342 veh/h																		
Directional split	55 / 45																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.71
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	2.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.930
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	563
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	310
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.0
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.1

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	502
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	276
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	35.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	22.0
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	57.7

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.18
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	130
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	479
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.6

### Notes

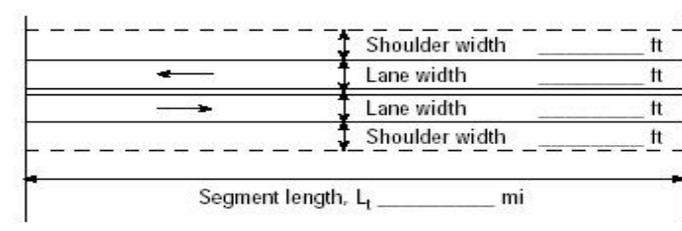
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	The Village DEVELOPMENT PM	Analysis Year	Exhibit L6

Project Description: News Road Corridor Study - Exhibit L6

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>432 veh/h</td> </tr> <tr> <td>Directional split</td> <td>59 / 41</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	432 veh/h	Directional split	59 / 41	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	432 veh/h																		
Directional split	59 / 41																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	528
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	312
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, FFS ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.1
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.3

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	512
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	302
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	36.2
Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$	21.5
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dhp}$	57.7

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.17
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	164
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	605
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	4.5

### Notes

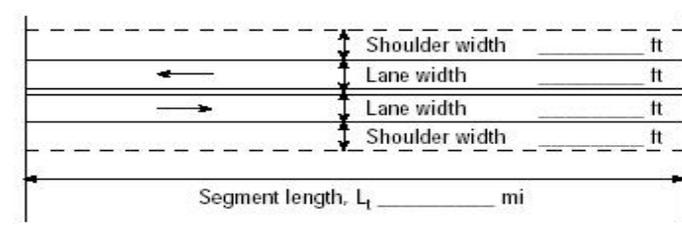
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>East of Centerville</i>
Date Performed <i>4/3/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>PROPOSED DEVELOPMENT AM</i>	Analysis Year <i>Exhibit L7</i>

Project Description: *News Road Corridor Study - Exhibit L7*

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td style="text-align: right;">363 veh/h</td> </tr> <tr> <td>Directional split</td> <td style="text-align: right;">53 / 47</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td style="text-align: right;">0.92</td> </tr> <tr> <td>No-passing zone</td> <td style="text-align: right;">100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td style="text-align: right;">5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td style="text-align: right;">0%</td> </tr> <tr> <td>Access points/ mi</td> <td style="text-align: right;">10</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	363 veh/h	Directional split	53 / 47	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	10
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	363 veh/h																		
Directional split	53 / 47																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	10																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.71
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	2.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.930
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	597
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	316
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, FFS ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	3.9
Average travel speed, ATS (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.0

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.77
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.8
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.962
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	533
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	282
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	37.4
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	21.7
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	59.1

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.19
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	138
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	508
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.8

### Notes

1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	East of Centerville
Date Performed	4/3/2008	Jurisdiction	JCC
Analysis Time Period	PROPOSED DEVELOPMENT PM	Analysis Year	Exhibit L8

Project Description: News Road Corridor Study - Exhibit L8

### Input Data

<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling
Two-way hourly volume	459 veh/h
Directional split	58 / 42
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses, $P_T$	5%
% Recreational vehicles, $P_R$	0%
Access points/ mi	10

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	561
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	325
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">2.5 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">44.5 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	4.0
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.1

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	544
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	316
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	38.0
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	21.2
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	59.2

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.18
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	175
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	643
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	4.8

### Notes

1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>Old News Road/Powhatan Seconda</i>
Date Performed <i>3/12/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>2007/2008 COUNTS AM</i>	Analysis Year <i>Exhibit O1</i>

Project Description: *News Road Corridor Study - Exhibit O1*

### Input Data



### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	730
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	475
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <i>mi/h</i>	Base free-flow speed, $BFFS_{FM}$ 50.0 <i>mi/h</i>
Observed volume, $V_f$ <i>veh/h</i>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5)    3.0 <i>mi/h</i>
Free-flow speed, FFS $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <i>mi/h</i>	Adj. for access points, $f_A$ (Exhibit 20-6)    0.3 <i>mi/h</i>
	Free-flow speed, FFS ( $FSS=BFFS \cdot f_{LS} \cdot f_A$ )    46.8 <i>mi/h</i>
Adj. for no-passing zones, $f_{np}$ ( <i>mi/h</i> ) (Exhibit 20-11)	3.3
Average travel speed, ATS ( <i>mi/h</i> ) $ATS=FFS-0.00776v_p \cdot f_{np}$	37.8

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	709
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	461
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	46.4
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	17.4
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	63.7

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.23
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	98
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	359
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	2.6

### Notes

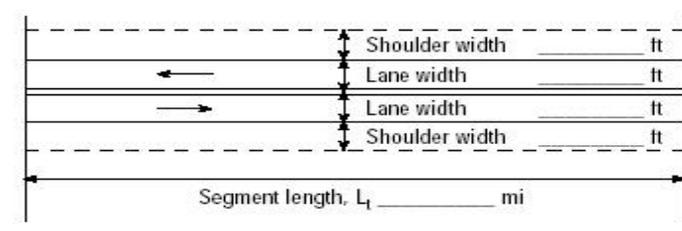
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	Old News Road/Powhatan Seconda
Date Performed	3/12/2008	Jurisdiction	JCC
Analysis Time Period	2007/2008 COUNTS PM	Analysis Year	Exhibit O2

Project Description: News Road Corridor Study - Exhibit O2

### Input Data

 <p style="text-align: center;">Segment length, <math>L_t</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>827 veh/h</td> </tr> <tr> <td>Directional split</td> <td>60 / 40</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>1</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	827 veh/h	Directional split	60 / 40	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	1
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	827 veh/h																		
Directional split	60 / 40																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	1																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1010
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	606
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">4.8 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">45.0 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	2.6
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	34.5

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	980
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	588
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	57.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	12.5
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	70.3

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	D
Volume to capacity ratio, $v/c=V_p/3,200$	0.32
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_t(V/PHF)$	135
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_t$	496
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.9

### Notes

1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>Old News Road/Powhatan Seconda</i>
Date Performed <i>3/12/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>Approved Development AM</i>	Analysis Year <i>Exhibit O3</i>

Project Description: *News Road Corridor Study - Exhibit O3*

### Input Data

<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling
Two-way hourly volume	730 veh/h
Directional split	67 / 33
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses, $P_T$	5%
% Recreational vehicles, $P_R$	0%
Access points/ mi	1

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	892
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	598
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	2.8
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	37.0

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	865
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	580
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	53.2
Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$	13.9
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dhp}$	67.1

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.28
Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- mi)= $0.25L_1(V/PHF)$	119
Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- mi)= $V \cdot L_1$	438
Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$	3.2

### Notes

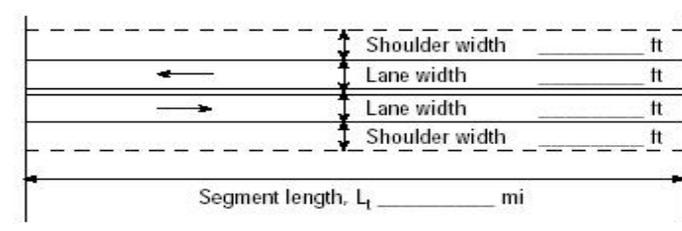
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst: DRW	Highway: News Road
Agency or Company: DRW Consultants, LLC	From/To: Old News Road/Powhatan Seconda
Date Performed: 3/12/2008	Jurisdiction: JCC
Analysis Time Period: Approved Development PM	Analysis Year: Exhibit O4

Project Description: News Road Corridor Study - Exhibit O4

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%; border: none;"> <tr> <td style="width: 20px;"><input type="checkbox"/></td> <td>Class I highway</td> <td style="width: 20px;"><input checked="" type="checkbox"/></td> <td>Class II highway</td> </tr> <tr> <td colspan="2">Terrain</td> <td><input type="checkbox"/></td> <td>Level</td> </tr> <tr> <td colspan="2"></td> <td><input checked="" type="checkbox"/></td> <td>Rolling</td> </tr> <tr> <td colspan="2">Two-way hourly volume</td> <td colspan="2" style="text-align: right;">1001 veh/h</td> </tr> <tr> <td colspan="2">Directional split</td> <td colspan="2" style="text-align: right;">60 / 40</td> </tr> <tr> <td colspan="2">Peak-hour factor, PHF</td> <td colspan="2" style="text-align: right;">0.92</td> </tr> <tr> <td colspan="2">No-passing zone</td> <td colspan="2" style="text-align: right;">100</td> </tr> <tr> <td colspan="2">% Trucks and Buses, <math>P_T</math></td> <td colspan="2" style="text-align: right;">5%</td> </tr> <tr> <td colspan="2">% Recreational vehicles, <math>P_R</math></td> <td colspan="2" style="text-align: right;">0%</td> </tr> <tr> <td colspan="2">Access points/ mi</td> <td colspan="2" style="text-align: right;">1</td> </tr> </table>	<input type="checkbox"/>	Class I highway	<input checked="" type="checkbox"/>	Class II highway	Terrain		<input type="checkbox"/>	Level			<input checked="" type="checkbox"/>	Rolling	Two-way hourly volume		1001 veh/h		Directional split		60 / 40		Peak-hour factor, PHF		0.92		No-passing zone		100		% Trucks and Buses, $P_T$		5%		% Recreational vehicles, $P_R$		0%		Access points/ mi		1	
<input type="checkbox"/>	Class I highway	<input checked="" type="checkbox"/>	Class II highway																																						
Terrain		<input type="checkbox"/>	Level																																						
		<input checked="" type="checkbox"/>	Rolling																																						
Two-way hourly volume		1001 veh/h																																							
Directional split		60 / 40																																							
Peak-hour factor, PHF		0.92																																							
No-passing zone		100																																							
% Trucks and Buses, $P_T$		5%																																							
% Recreational vehicles, $P_R$		0%																																							
Access points/ mi		1																																							

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.99
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1127
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	676
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	2.3
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	35.7

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1186
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	712
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	64.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	10.3
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	75.1

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	D
Volume to capacity ratio, $v/c=V_p/3,200$	0.35
Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- mi)= $0.25L_1(V/PHF)$	163
Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- mi)= $V \cdot L_1$	601
Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$	4.6

### Notes

1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	Old News Road/Powhatan Seconda
Date Performed	3/12/2008	Jurisdiction	JCC
Analysis Time Period	The Village Development AM	Analysis Year	Exhibit O5

Project Description: News Road Corridor Study - Exhibit O5

### Input Data

<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling
Two-way hourly volume	809 veh/h
Directional split	65 / 35
Peak-hour factor, PHF	0.92
No-passing zone	100
% Trucks and Buses, $P_T$	5%
% Recreational vehicles, $P_R$	0%
Access points/ mi	1

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	988
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	642
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	2.6
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.5

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	959
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	623
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	57.0
Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$	12.8
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dhp}$	69.8

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	C
Volume to capacity ratio, $v/c=V_p/3,200$	0.31
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	132
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	485
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	3.6

### Notes

1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>Old News Road/Powhatan Seconda</i>
Date Performed <i>3/12/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>The Village Development PM</i>	Analysis Year <i>Exhibit O6</i>

Project Description: *News Road Corridor Study - Exhibit O6*

### Input Data

<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	
Two-way hourly volume	1149 veh/h	
Directional split	59 / 41	
Peak-hour factor, PHF	0.92	
No-passing zone	100	
% Trucks and Buses, $P_T$	5%	
% Recreational vehicles, $P_R$	0%	
Access points/ mi	1	

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.99
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1293
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	763
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	1.9
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	34.8

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1249
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	737
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	66.6
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	9.7
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	76.3

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	D
Volume to capacity ratio, $v/c=V_p/3,200$	0.40
Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- mi)= $0.25L_1(V/PHF)$	187
Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- mi)= $V \cdot L_1$	689
Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$	5.4

### Notes

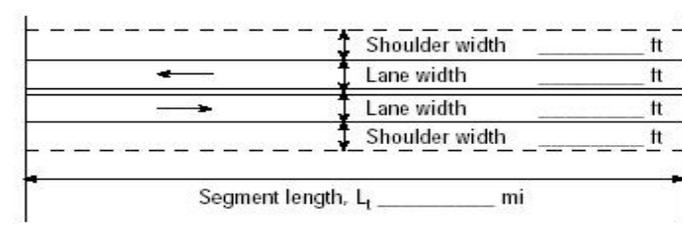
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	DRW	Highway	News Road
Agency or Company	DRW Consultants, LLC	From/To	Old News Road/Powhatan Seconda
Date Performed	3/12/2008	Jurisdiction	JCC
Analysis Time Period	Proposed Development AM	Analysis Year	Exhibit 07

Project Description: News Road Corridor Study - Exhibit 07

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td>885 veh/h</td> </tr> <tr> <td>Directional split</td> <td>65 / 35</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td>0.92</td> </tr> <tr> <td>No-passing zone</td> <td>100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td>5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td>0%</td> </tr> <tr> <td>Access points/ mi</td> <td>1</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	885 veh/h	Directional split	65 / 35	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	1
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	885 veh/h																		
Directional split	65 / 35																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	1																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.93
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.9
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.957
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1081
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	703
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	2.4
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	36.0

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	0.94
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1049
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	682
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	60.2
Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$	11.9
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dhp}$	72.1

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	D
Volume to capacity ratio, $v/c=V_p/3,200$	0.34
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_1(V/PHF)$	144
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_1$	531
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	4.0

### Notes

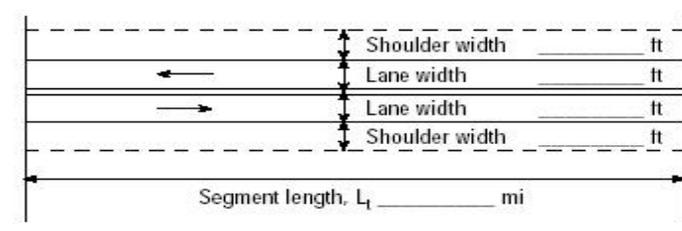
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.

## TWO-WAY TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information	Site Information
Analyst <i>DRW</i>	Highway <i>News Road</i>
Agency or Company <i>DRW Consultants, LLC</i>	From/To <i>Old News Road/Powhatan Seconda</i>
Date Performed <i>3/12/2008</i>	Jurisdiction <i>JCC</i>
Analysis Time Period <i>Proposed Development PM</i>	Analysis Year <i>Exhibit O8</i>

Project Description: *News Road Corridor Study - Exhibit O8*

### Input Data

 <p style="text-align: center;">Segment length, <math>L_1</math> _____ mi</p>	<table style="width: 100%;"> <tr> <td><input type="checkbox"/> Class I highway</td> <td><input checked="" type="checkbox"/> Class II highway</td> </tr> <tr> <td>Terrain <input type="checkbox"/> Level</td> <td><input checked="" type="checkbox"/> Rolling</td> </tr> <tr> <td>Two-way hourly volume</td> <td style="text-align: right;">1250 veh/h</td> </tr> <tr> <td>Directional split</td> <td style="text-align: right;">59 / 41</td> </tr> <tr> <td>Peak-hour factor, PHF</td> <td style="text-align: right;">0.92</td> </tr> <tr> <td>No-passing zone</td> <td style="text-align: right;">100</td> </tr> <tr> <td>% Trucks and Buses, <math>P_T</math></td> <td style="text-align: right;">5%</td> </tr> <tr> <td>% Recreational vehicles, <math>P_R</math></td> <td style="text-align: right;">0%</td> </tr> <tr> <td>Access points/ mi</td> <td style="text-align: right;">1</td> </tr> </table>	<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway	Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling	Two-way hourly volume	1250 veh/h	Directional split	59 / 41	Peak-hour factor, PHF	0.92	No-passing zone	100	% Trucks and Buses, $P_T$	5%	% Recreational vehicles, $P_R$	0%	Access points/ mi	1
<input type="checkbox"/> Class I highway	<input checked="" type="checkbox"/> Class II highway																		
Terrain <input type="checkbox"/> Level	<input checked="" type="checkbox"/> Rolling																		
Two-way hourly volume	1250 veh/h																		
Directional split	59 / 41																		
Peak-hour factor, PHF	0.92																		
No-passing zone	100																		
% Trucks and Buses, $P_T$	5%																		
% Recreational vehicles, $P_R$	0%																		
Access points/ mi	1																		

### Average Travel Speed

Grade adjustment factor, $f_G$ (Exhibit 20-7)	0.99
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-9)	1.5
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-9)	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.976
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1407
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	830
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed
Field Measured speed, $S_{FM}$ <span style="float: right;">mi/h</span>	Base free-flow speed, $BFFS_{FM}$ <span style="float: right;">50.0 mi/h</span>
Observed volume, $V_f$ <span style="float: right;">veh/h</span>	Adj. for lane width and shoulder width <sup>3</sup> , $f_{LS}$ (Exhibit 20-5) <span style="float: right;">3.0 mi/h</span>
Free-flow speed, $FFS$ $FFS=S_{FM}+0.00776(V_f/f_{HV})$ <span style="float: right;">mi/h</span>	Adj. for access points, $f_A$ (Exhibit 20-6) <span style="float: right;">0.3 mi/h</span>
	Free-flow speed, $FFS$ ( $FSS=BFFS-f_{LS}-f_A$ ) <span style="float: right;">46.8 mi/h</span>
Adj. for no-passing zones, $f_{np}$ (mi/h) (Exhibit 20-11)	1.7
Average travel speed, $ATS$ (mi/h) $ATS=FFS-0.00776v_p \cdot f_{np}$	34.1

### Percent Time-Spent-Following

Grade Adjustment factor, $f_G$ (Exhibit 20-8)	1.00
Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)	1.0
Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000
Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$	1359
$v_p$ * highest directional split proportion <sup>2</sup> (pc/h)	802
Base percent time-spent-following, $BPTSF(\%)=100(1-e^{-0.000879v_p})$	69.7
Adj. for directional distribution and no-passing zone, $f_{dnp}(\%)(Exh. 20-12)$	8.5
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{dnp}$	78.2

### Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)	D
Volume to capacity ratio, $v/c=V_p/3,200$	0.44
Peak 15-min veh-miles of travel, $VMT_{15}(\text{veh} \cdot \text{mi})=0.25L_t(V/PHF)$	204
Peak-hour vehicle-miles of travel, $VMT_{60}(\text{veh} \cdot \text{mi})=V \cdot L_t$	750
Peak 15-min total travel time, $TT_{15}(\text{veh} \cdot \text{h})=VMT_{15}/ATS$	6.0

### Notes

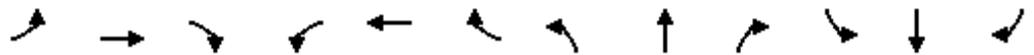
1. If  $V_p \geq 3,200$  pc/h, terminate analysis-the LOS is F.
2. If highest directional split  $V_p \geq 1,700$  pc/h, terminated analysis-the LOS is F.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑	↗	↘	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3234	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3234	
Volume (vph)	28	610	18	175	179	99	10	37	268	313	47	18
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)	29	642	19	184	188	104	11	39	282	329	49	19
RTOR Reduction (vph)	0	0	14	0	0	49	0	0	250	0	6	0
Lane Group Flow (vph)	29	642	5	184	188	55	11	39	32	165	226	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm		Split	
Protected Phases	5	2		1	6		4	4			3	3
Permitted Phases			2			6			4			
Actuated Green, G (s)	4.9	23.7	23.7	32.6	51.4	51.4	8.8	8.8	8.8	13.9	13.9	
Effective Green, g (s)	8.4	27.2	27.2	36.1	54.9	54.9	11.8	11.8	11.8	16.9	16.9	
Actuated g/C Ratio	0.08	0.26	0.26	0.35	0.53	0.53	0.11	0.11	0.11	0.16	0.16	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	143	926	414	614	1868	836	201	211	180	262	526	
v/s Ratio Prot	0.02	c0.18		c0.10	0.05		0.01	0.02		c0.10	0.07	
v/s Ratio Perm			0.01			0.07			0.18			
v/c Ratio	0.20	0.69	0.01	0.30	0.10	0.07	0.05	0.18	0.18	0.63	0.43	
Uniform Delay, d1	44.7	34.6	28.4	24.7	12.2	12.0	41.1	41.7	41.7	40.6	39.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	2.3	0.0	0.3	0.1	0.2	0.1	0.4	0.5	4.7	0.6	
Delay (s)	45.4	36.9	28.5	25.0	12.3	12.2	41.2	42.2	42.2	45.3	39.8	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		37.0			17.2			42.2			42.1	
Approach LOS		D			B			D			D	

**Intersection Summary**

HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖	↗	↖	↖	↗↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3190	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3190	
Volume (vph)	87	358	39	435	531	242	65	159	319	226	116	87
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)	92	377	41	458	559	255	68	167	336	238	122	92
RTOR Reduction (vph)	0	0	33	0	0	133	0	0	287	0	41	0
Lane Group Flow (vph)	92	377	8	458	559	122	68	167	49	143	268	0
Turn Type	Prot		Perm		Prot		Perm		Split		Perm	
Protected Phases	5	2		1	6		4	4		4	3	3
Permitted Phases			2			6			4			
Actuated Green, G (s)	8.5	17.3	17.3	37.5	46.3	46.3	12.1	12.1	12.1	12.1	12.1	12.1
Effective Green, g (s)	12.0	20.8	20.8	41.0	49.8	49.8	15.1	15.1	15.1	15.1	15.1	15.1
Actuated g/C Ratio	0.12	0.20	0.20	0.39	0.48	0.48	0.15	0.15	0.15	0.15	0.15	0.15
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	204	708	317	698	1695	758	257	270	230	234	463	
v/s Ratio Prot	0.05	c0.11		c0.26	0.16		0.04	0.09		0.09	c0.10	
v/s Ratio Perm			0.03			0.16			0.21			
v/c Ratio	0.45	0.53	0.03	0.66	0.33	0.16	0.26	0.62	0.21	0.61	0.58	
Uniform Delay, d1	42.9	37.2	33.5	25.7	16.8	15.3	39.5	41.7	39.2	41.7	41.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	0.8	0.0	2.2	0.5	0.5	0.6	4.2	0.5	4.7	1.8	
Delay (s)	44.5	38.0	33.5	28.0	17.3	15.8	40.1	45.9	39.7	46.4	43.2	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		38.8			20.8			41.5			44.2	
Approach LOS		D			C			D			D	

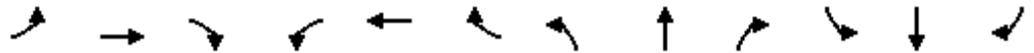
**Intersection Summary**

HCM Average Control Delay	32.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑	↗	↘	↔	↔
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3240	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3240	
Volume (vph)	32	610	18	175	179	113	10	45	268	370	70	24
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)	34	642	19	184	188	119	11	47	282	389	74	25
RTOR Reduction (vph)	0	0	14	0	0	58	0	0	250	0	7	0
Lane Group Flow (vph)	34	642	5	184	188	61	11	47	32	195	286	0
Turn Type	Prot		Perm		Prot		Perm		Split		Perm	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	5.1	22.4	22.4	32.6	49.9	49.9	8.8	8.8	8.8	15.2	15.2	
Effective Green, g (s)	8.6	25.9	25.9	36.1	53.4	53.4	11.8	11.8	11.8	18.2	18.2	
Actuated g/C Ratio	0.08	0.25	0.25	0.35	0.51	0.51	0.11	0.11	0.11	0.17	0.17	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	146	881	394	614	1817	813	201	211	180	282	567	
v/s Ratio Prot	0.02	c0.18		c0.10	0.05		0.01	0.03		c0.12	0.09	
v/s Ratio Perm			0.01			0.08			0.18			
v/c Ratio	0.23	0.73	0.01	0.30	0.10	0.08	0.05	0.22	0.18	0.69	0.51	
Uniform Delay, d1	44.6	35.8	29.4	24.7	13.0	12.8	41.1	41.9	41.7	40.3	38.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	3.0	0.0	0.3	0.1	0.2	0.1	0.5	0.5	7.1	0.7	
Delay (s)	45.4	38.9	29.4	25.0	13.1	13.0	41.2	42.5	42.2	47.4	39.5	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		38.9			17.5			42.2			42.7	
Approach LOS		D			B			D			D	

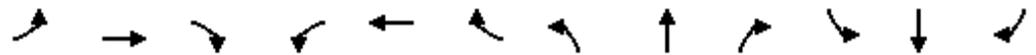
Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗↗	↖	↖	↗↗	↖	↖	↗	↖	↖	↗↗	↖
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3197	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3197	
Volume (vph)	98	358	39	435	531	291	65	186	319	254	133	92
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)	103	377	41	458	559	306	68	196	336	267	140	97
RTOR Reduction (vph)	0	0	33	0	0	163	0	0	286	0	37	0
Lane Group Flow (vph)	103	377	8	458	559	143	68	196	50	160	307	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	8.8	16.4	16.4	37.6	45.2	45.2	12.5	12.5	12.5	12.5	12.5	
Effective Green, g (s)	12.3	19.9	19.9	41.1	48.7	48.7	15.5	15.5	15.5	15.5	15.5	
Actuated g/C Ratio	0.12	0.19	0.19	0.40	0.47	0.47	0.15	0.15	0.15	0.15	0.15	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	677	303	699	1657	741	264	278	236	240	476	
v/s Ratio Prot	0.06	c0.11		c0.26	0.16		0.04	0.11		0.10	c0.11	
v/s Ratio Perm			0.03			0.19			0.21			
v/c Ratio	0.49	0.56	0.03	0.66	0.34	0.19	0.26	0.71	0.21	0.67	0.65	
Uniform Delay, d1	42.9	38.1	34.2	25.7	17.5	16.2	39.2	42.1	38.9	41.8	41.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.8	1.0	0.0	2.2	0.6	0.6	0.5	7.9	0.5	6.8	3.0	
Delay (s)	44.8	39.1	34.2	27.9	18.0	16.7	39.7	50.0	39.3	48.6	44.7	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		39.8			21.1			42.8			45.9	
Approach LOS		D			C			D			D	

**Intersection Summary**

HCM Average Control Delay	33.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↙	↑↑	↗	↙	↑↑	↗	↙	↑	↗	↙	↕↑	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3239	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3239	
Volume (vph)	38	610	18	175	179	125	10	59	268	389	80	28
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)	40	642	19	184	188	132	11	62	282	409	84	29
RTOR Reduction (vph)	0	0	14	0	0	65	0	0	249	0	7	0
Lane Group Flow (vph)	40	642	5	184	188	67	11	62	33	205	310	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	5.4	21.8	21.8	32.7	49.1	49.1	9.2	9.2	9.2	15.3	15.3	
Effective Green, g (s)	8.9	25.3	25.3	36.2	52.6	52.6	12.2	12.2	12.2	18.3	18.3	
Actuated g/C Ratio	0.09	0.24	0.24	0.35	0.51	0.51	0.12	0.12	0.12	0.18	0.18	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	151	861	385	616	1790	801	208	219	186	283	570	
v/s Ratio Prot	0.02	c0.18		c0.10	0.05		0.01	0.03		c0.13	0.10	
v/s Ratio Perm			0.01			0.08			0.18			
v/c Ratio	0.26	0.75	0.01	0.30	0.11	0.08	0.05	0.28	0.18	0.72	0.54	
Uniform Delay, d1	44.5	36.4	29.9	24.7	13.4	13.3	40.8	41.9	41.4	40.5	39.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	3.5	0.0	0.3	0.1	0.2	0.1	0.7	0.5	8.9	1.1	
Delay (s)	45.4	39.9	29.9	24.9	13.5	13.5	40.9	42.6	41.8	49.3	40.1	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		40.0			17.7			41.9			43.7	
Approach LOS		D			B			D			D	

**Intersection Summary**

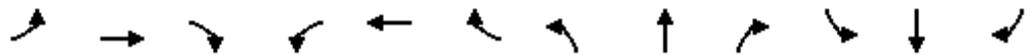
HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗	↘	↘	↗	↘	↘	↗↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3200	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3200	
Volume (vph)	107	358	39	435	531	319	65	207	319	285	151	101
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)	113	377	41	458	559	336	68	218	336	300	159	106
RTOR Reduction (vph)	0	0	33	0	0	185	0	0	285	0	35	0
Lane Group Flow (vph)	113	377	8	458	559	151	68	218	51	181	349	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	10.3	17.3	17.3	36.2	43.2	43.2	12.8	12.8	12.8	12.7	12.7	
Effective Green, g (s)	13.8	20.8	20.8	39.7	46.7	46.7	15.8	15.8	15.8	15.7	15.7	
Actuated g/C Ratio	0.13	0.20	0.20	0.38	0.45	0.45	0.15	0.15	0.15	0.15	0.15	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	235	708	317	676	1589	711	269	283	240	243	483	
v/s Ratio Prot	0.06	c0.11		c0.26	0.16		0.04	0.12		0.11	c0.12	
v/s Ratio Perm			0.03			0.21			0.21			
v/c Ratio	0.48	0.53	0.03	0.68	0.35	0.21	0.25	0.77	0.21	0.74	0.72	
Uniform Delay, d1	41.8	37.2	33.5	26.8	18.7	17.4	38.9	42.4	38.6	42.2	42.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	0.8	0.0	2.7	0.6	0.7	0.5	12.2	0.4	11.7	5.3	
Delay (s)	43.3	38.0	33.5	29.5	19.4	18.1	39.4	54.5	39.1	53.9	47.4	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		38.8			22.5			44.5			49.5	
Approach LOS		D			C			D			D	

**Intersection Summary**

HCM Average Control Delay	34.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑	↗	↘	↕	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3237	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3237	
Volume (vph)	40	610	18	175	179	130	10	65	268	419	99	37
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)	42	642	19	184	188	137	11	68	282	441	104	39
RTOR Reduction (vph)	0	0	15	0	0	69	0	0	248	0	8	0
Lane Group Flow (vph)	42	642	4	184	188	68	11	68	34	221	355	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	5.5	21.1	21.1	32.7	48.3	48.3	9.4	9.4	9.4	15.8	15.8	
Effective Green, g (s)	9.0	24.6	24.6	36.2	51.8	51.8	12.4	12.4	12.4	18.8	18.8	
Actuated g/C Ratio	0.09	0.24	0.24	0.35	0.50	0.50	0.12	0.12	0.12	0.18	0.18	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	153	837	374	616	1763	788	211	222	189	291	585	
v/s Ratio Prot	0.02	c0.18		c0.10	0.05		0.01	0.04		c0.14	0.11	
v/s Ratio Perm			0.01			0.09			0.18			
v/c Ratio	0.27	0.77	0.01	0.30	0.11	0.09	0.05	0.31	0.18	0.76	0.61	
Uniform Delay, d1	44.4	37.0	30.4	24.7	13.8	13.7	40.6	41.9	41.2	40.5	39.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.0	4.2	0.0	0.3	0.1	0.2	0.1	0.8	0.5	10.8	1.8	
Delay (s)	45.4	41.3	30.4	24.9	14.0	13.9	40.7	42.7	41.7	51.3	41.0	
Level of Service	D	D	C	C	B	B	D	D	D	D	D	
Approach Delay (s)		41.2			17.9			41.8			44.9	
Approach LOS		D			B			D			D	

**Intersection Summary**

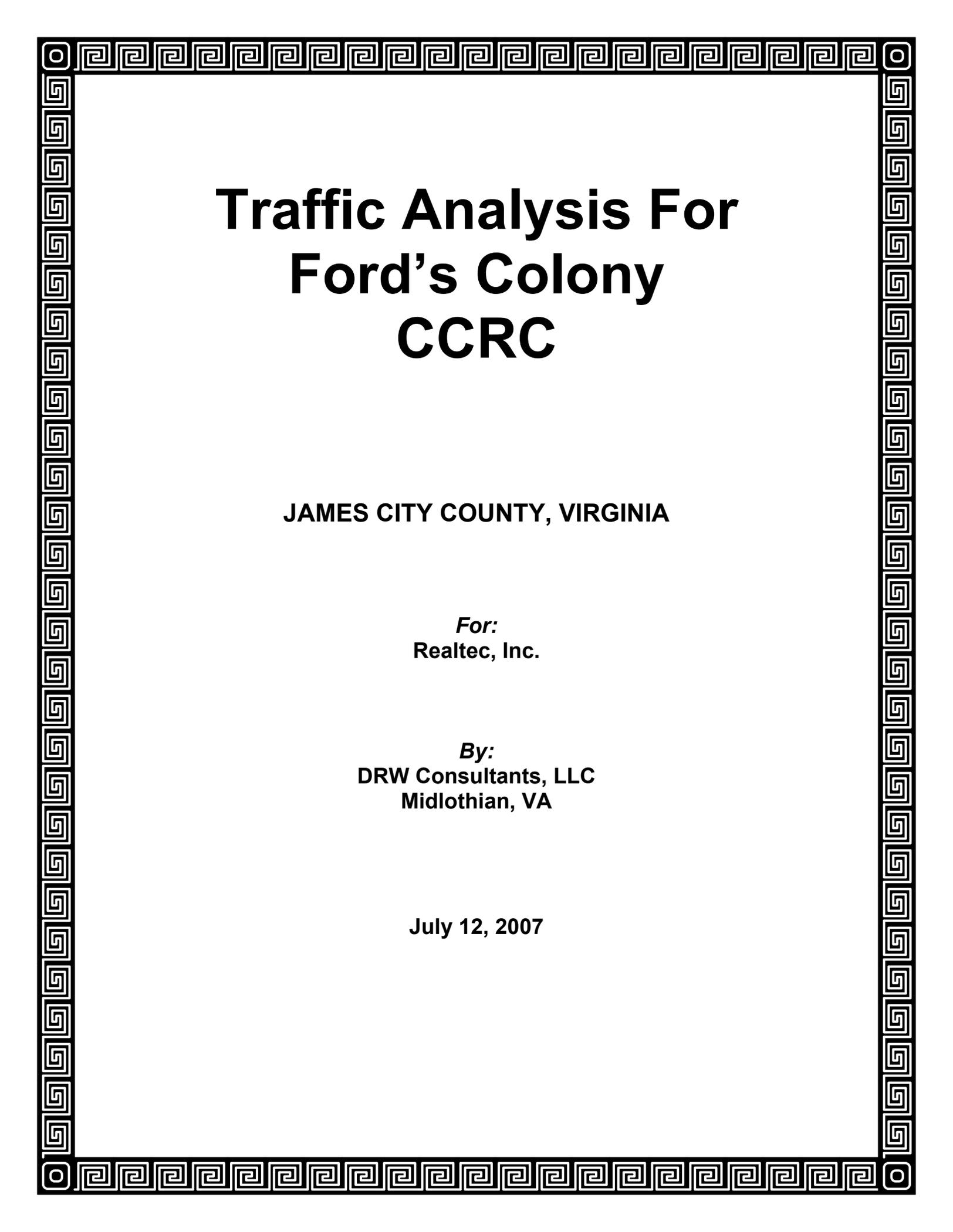
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗↗	↘	↘	↗↗	↘	↘	↗	↘	↘	↗↗	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.91	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3201	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1610	3201	
Volume (vph)	117	358	39	435	531	341	65	225	319	300	162	106
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)	123	377	41	458	559	359	68	237	336	316	171	112
RTOR Reduction (vph)	0	0	33	0	0	200	0	0	284	0	35	0
Lane Group Flow (vph)	123	377	8	458	559	159	68	237	52	192	372	0
Turn Type	Prot		Perm	Prot		Perm	Split		Perm	Split		
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2			6			4			
Actuated Green, G (s)	10.5	16.9	16.9	36.2	42.6	42.6	13.0	13.0	13.0	12.9	12.9	
Effective Green, g (s)	14.0	20.4	20.4	39.7	46.1	46.1	16.0	16.0	16.0	15.9	15.9	
Actuated g/C Ratio	0.13	0.20	0.20	0.38	0.44	0.44	0.15	0.15	0.15	0.15	0.15	
Clearance Time (s)	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	238	694	311	676	1569	702	272	287	244	246	489	
v/s Ratio Prot	0.07	c0.11		c0.26	0.16		0.04	0.13		0.12	c0.13	
v/s Ratio Perm			0.03			0.23			0.21			
v/c Ratio	0.52	0.54	0.03	0.68	0.36	0.23	0.25	0.83	0.21	0.78	0.76	
Uniform Delay, d1	41.9	37.6	33.8	26.8	19.1	17.9	38.7	42.6	38.5	42.4	42.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.9	0.9	0.0	2.7	0.6	0.8	0.5	17.3	0.4	14.8	6.9	
Delay (s)	43.7	38.5	33.8	29.5	19.8	18.7	39.2	60.0	38.9	57.1	49.1	
Level of Service	D	D	C	C	B	B	D	E	D	E	D	
Approach Delay (s)		39.3			22.7			46.7			51.7	
Approach LOS		D			C			D			D	

**Intersection Summary**

HCM Average Control Delay	35.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

A decorative border with a Greek key (meander) pattern surrounds the entire page. The border is composed of a series of interlocking squares and lines, creating a continuous geometric design.

# Traffic Analysis For Ford's Colony CCRC

JAMES CITY COUNTY, VIRGINIA

*For:*  
Realtec, Inc.

*By:*  
DRW Consultants, LLC  
Midlothian, VA

July 12, 2007

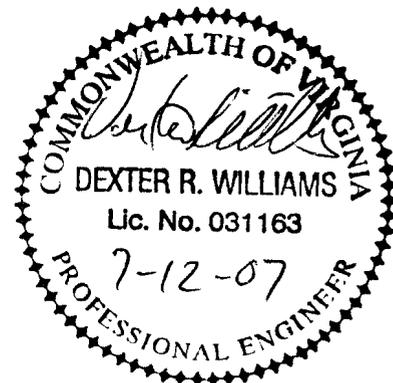
# Traffic Analysis For Ford's Colony CCRC

JAMES CITY COUNTY, VIRGINIA

*For:*  
Realtec, Inc.

*By:*  
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Midlothian, VA

July 12, 2007



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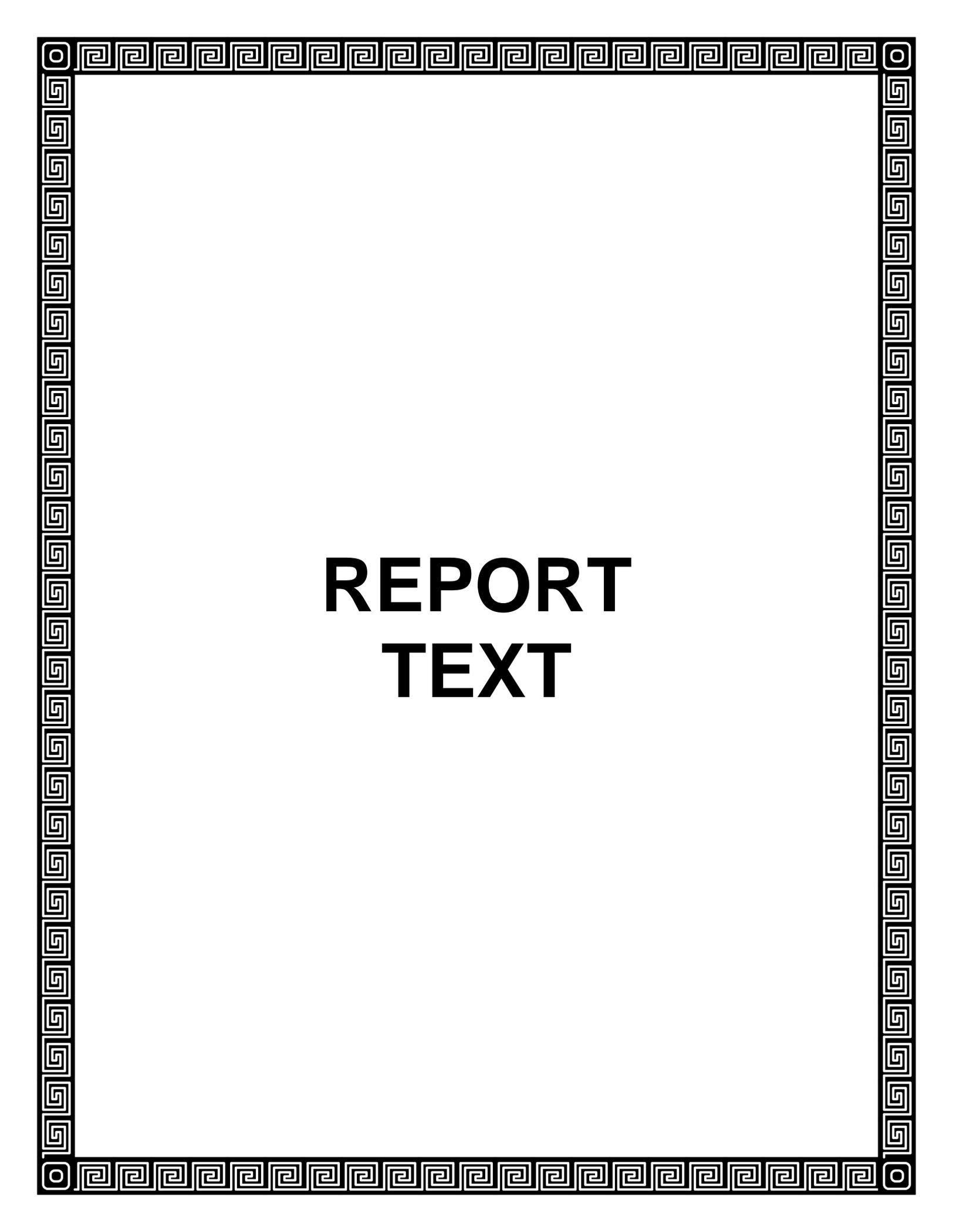
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<b>REPORT EXHIBITS</b>	<b>Number</b>
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Area Location Map .....	2
News Road Daily Traffic Counts And Trends.....	3
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A decorative border surrounds the page, featuring a Greek key (meander) pattern. The top and bottom borders are composed of a continuous horizontal line of squares, each containing a smaller square rotated 45 degrees. The left and right borders are composed of a continuous vertical line of squares, each containing a smaller square rotated 45 degrees. The corners are decorated with a circular motif containing a square.

# **REPORT TEXT**

## INTRODUCTION

Realtec, Inc. (Fords' Colony) proposes to build a Continuing Care Retirement Community (CCRC) on News Road across from the existing Firestone Drive access to Ford's Colony. This report has been prepared for review by James City County (JCC) and VDOT concurrent with the proposed rezoning of the development.

The Ford's Colony CCRC development location in the Williamsburg region is shown on Exhibit 1. The Ford's Colony CCRC development location in the local area is shown on Exhibit 2. The property is located on the south side of News Road.

Access to the Ford's Colony CCRC will be on News Road across from Firestone Drive. This traffic study addresses existing and future traffic conditions at the News Road/Firestone Drive intersection.

## EXISTING PEAK HOUR TRAFFIC

Peak hour turning movement counts were conducted at the News Road/Firestone Drive intersection. The counts were conducted from 7 to 9 AM on Thursday, April 26, 2007 and from 4 to 6 PM on Wednesday, April 25, 2007. The peak hour counts are tabulated on Appendix Exhibit A series.

The April 2007 peak hour turning movement volumes are shown on the intersection diagram on the top row of Exhibit 5. There is an existing eastbound left turn and westbound right turn on News Road serving Firestone Drive. There is also an existing westbound left turn that will serve the Ford's Colony CCRC.

2007 peak hour level of service (LOS) calculations are shown on Appendix Exhibits D1 and D2 for the AM and PM peak hours, respectively. Synchro is used for LOS calculations in this study, and Exhibits D1 and D2 are SYNCHRO HCM (Highway Capacity Manual) unsignalized intersection reports. There is LOS A overall (ICU LOS basis) and LOS B or better for all turning movements in both peak hours for 2007 conditions.

## 2012 PEAK HOUR BACKGROUND TRAFFIC

Exhibit 3 shows JCC daily traffic counts and the resulting trends on two sections of News Road. The section of News Road from Centerville Road to Springhill Subdivision has a 1.00 growth factor from 2007 to 2012, or 0% per year average increase. The section of News Road from Springhill Subdivision to Powhatan Secondary has a 1.13 growth factor from 2007 to 2012, or 2.6% per year average increase.

A 3% annual traffic growth rate is used in this study. The second row on Exhibit 5 shows 2012 peak hour background traffic at the News Road/Firestone Drive intersection with a 1.15 growth factor applied to existing peak hour counts.

2012 peak hour background traffic level of service (LOS) calculations are shown on Appendix Exhibits D3 and D4 for the AM and PM peak hours, respectively. There is LOS A overall (ICU LOS basis) and LOS B or better for all turning movements in both peak hours for 2012 background traffic.

## FORD'S COLONY CCRC TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

The Ford's Colony CCRC development includes a range of senior living accommodations. Trip generation for the Ford's Colony CCRC has been calculated using Trip Generation, 7<sup>th</sup> Edition (TG7), published by the Institute of Transportation Engineers (ITE). The terminology used in the project description of the Ford's Colony CCRC has been translated to TG7 categories as follows:

1. 32 Townhomes. For trip generation purposes, TG7 Elderly Detached, Land Use Code (LUC) 251 is used in this study. These units are not attached but LUC 251 distinguishes these units from the independent living units (apartments).
2. 332 Independent Living Units. These are described as apartments, and TG7 Elderly Attached, Land Use Code 252 is characterized as apartment-like units.

3. 290 CCRC Apartments. These units translate directly to TG7 Congregate Care, Land Use Code 253.
4. 118 Assisted Living/Skill Care. These units translate directly to TG7 Assisted Living, Land Use Code 254.

Trip generation and distribution for the Ford's Colony CCRC is shown on Exhibit 4, Table 1. Site trip distribution is shown in Table 2 on Exhibit 4. The third row on Exhibit 5 shows the assignment of Ford's Colony CCRC traffic to the News Road/Firestone Drive intersection.

## 2012 TOTAL TRAFFIC FORECAST

The bottom row on Exhibit 5 shows total 2012 peak hour traffic at the News Road/Firestone Drive intersection.

Exhibits 6a and 6b respectively show the peak hour left turn lane warrants for the westbound left turn at News Road/Firestone Drive intersection. A left turn lane is warranted in the PM peak hour.

Exhibit 7 shows the peak hour right turn lane warrants for the eastbound right turn at News Road/Firestone Drive intersection. Only a right turn radius is warranted for AM or PM peak hour traffic.

2012 peak hour total traffic level of service (LOS) calculations are shown on Appendix Exhibits D5 and D6 for the AM and PM peak hours, respectively. There is LOS A overall (ICU LOS basis) and LOS C or better for all turning movements in both peak hours.

## SUMMARY AND CONCLUSIONS

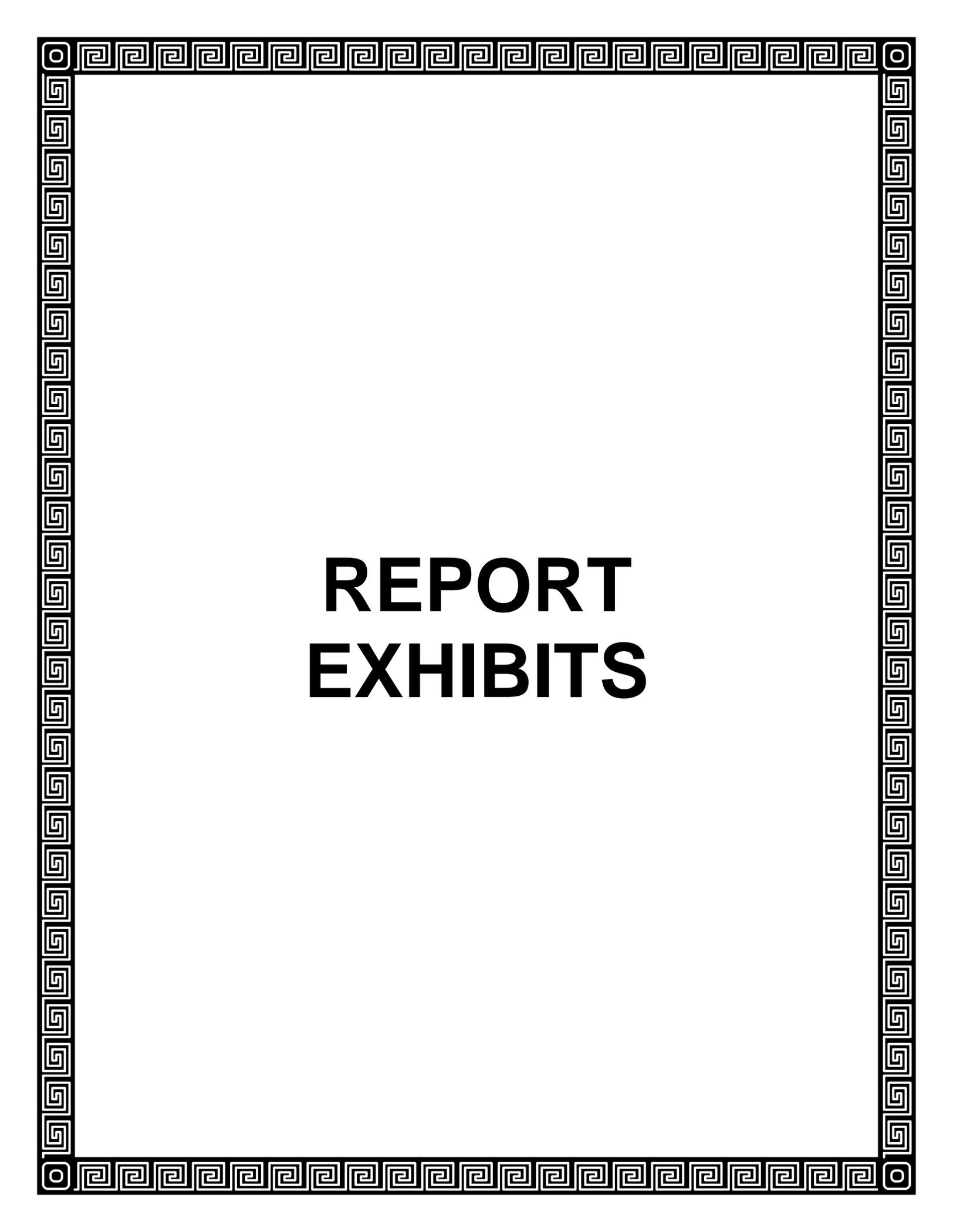
The collective effect of background traffic growth and the Ford's Colony CCRC in 2012 produces LOS C or better for all turning movements. The following table compares LOS results:

**TABLE 1: NEWS ROAD/FIRESTONE DRIVE  
UNSIGNALIZED INTERSECTION LOS RESULTS**

	AM PEAK HOUR						PM PEAK HOUR					
	2007		2012 Bkgd		2012 Total		2007		2012 Bkgd		2012 Total	
Overall	A	21%	A	23%	A	36%	A	23%	A	26%	A	39%
EBL	A	8	A	8	A	8	A	8	A	8	A	8
EBT	n/a		n/a		n/a		n/a		n/a		n/a	
EBR	n/a		n/a		n/a		n/a		n/a		n/a	
WBL	n/a		n/a		A	8	n/a		n/a		A	8
WBT	n/a		n/a		n/a		n/a		n/a		n/a	
WBR	n/a		n/a		n/a		n/a		n/a		n/a	
NBL	n/a		n/a		n/a		n/a		n/a		n/a	
NBT	n/a		n/a		B	13	n/a		n/a		C	16
NBR	n/a		n/a		A	10	n/a		n/a		A	10
SBL	B	11	B	12	n/a		B	12	B	13	n/a	
SBT	n/a		n/a		C	15	n/a		n/a		C	21
SBR	A	9	A	9	A	9	A	10	A	10	A	9

Notes: For overall intersection, numeric values in % Intersection Capacity Utilization, with increasing value for decreasing LOS. For individual movements, numeric values in seconds delay, with increasing value for decreasing LOS.

The addition of the Ford’s Colony CCRC access to align on News Road at Firestone Drive produces LOS C or better for all turning movements and does not require any additional turn lanes. The existing southbound left turn lane on Firestone Drive at News Road will be restriped to a shared left and through lane. The only other improvement at the intersection will be the connection of Ford’s Colony CCRC access.

A decorative border surrounds the page, featuring a Greek key (meander) pattern. The top and bottom borders are composed of a continuous sequence of squares, while the left and right borders are composed of a continuous sequence of squares rotated 90 degrees.

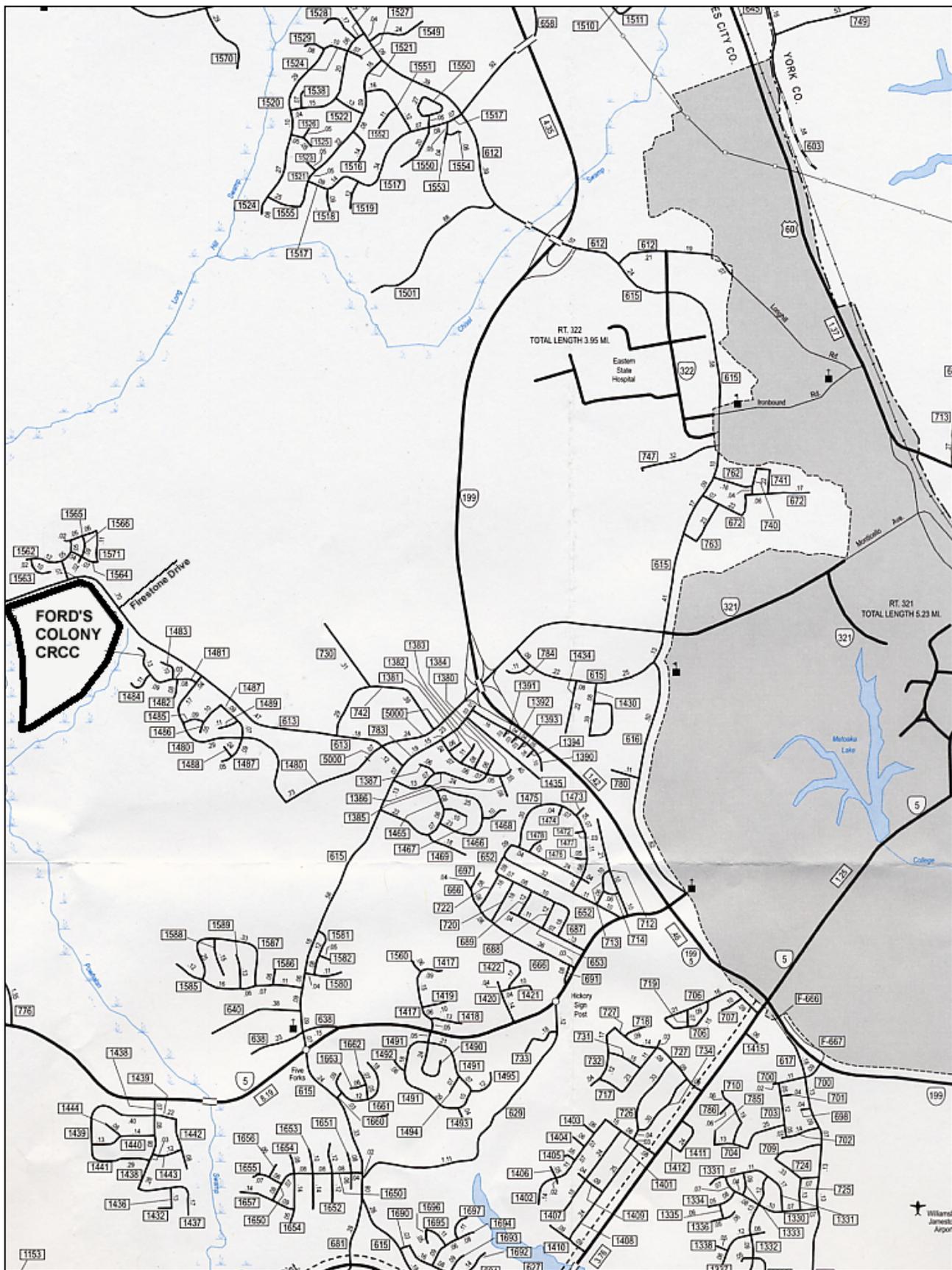
# **REPORT EXHIBITS**



REGIONAL LOCATION MAP  
 FORD'S COLONY CCRC

DRW Consultants, LLC  
 804-794-7312

Exhibit 1



AREA LOCATION MAP  
 FORD'S COLONY CRCC

DRW Consultants, LLC  
 804-794-7312

Exhibit 2

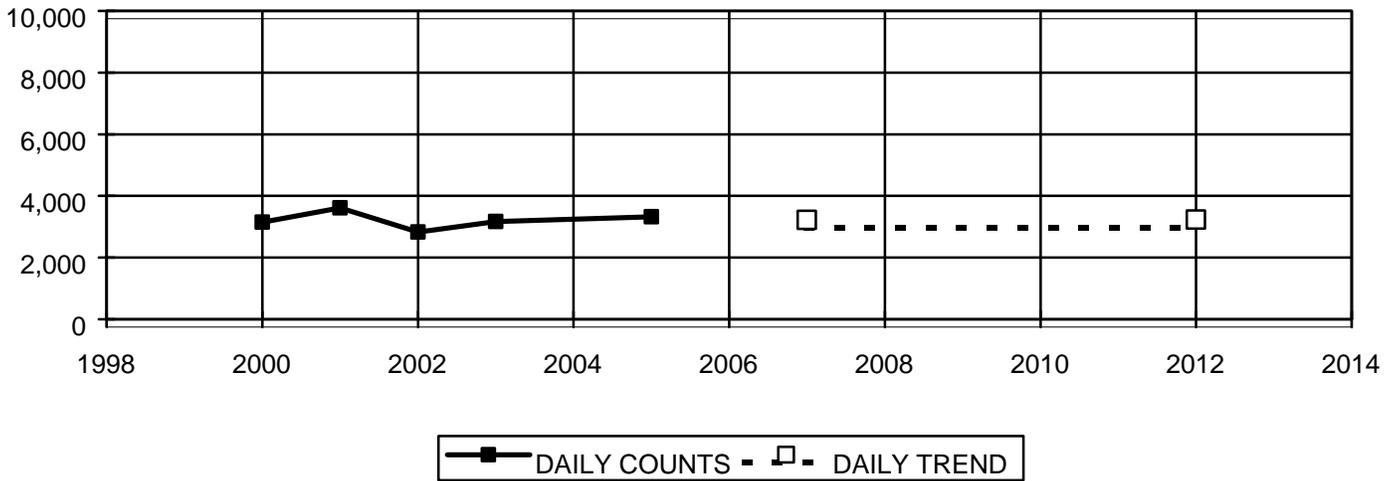
Street: News Road, Rt. 613  
 From: Centerville Road  
 To: Springhill Subdivision  
 Station: 36

Street: News Road, Rt. 613  
 From: Springhill Subdivision  
 To: Powhatan Secondary  
 Station: 37

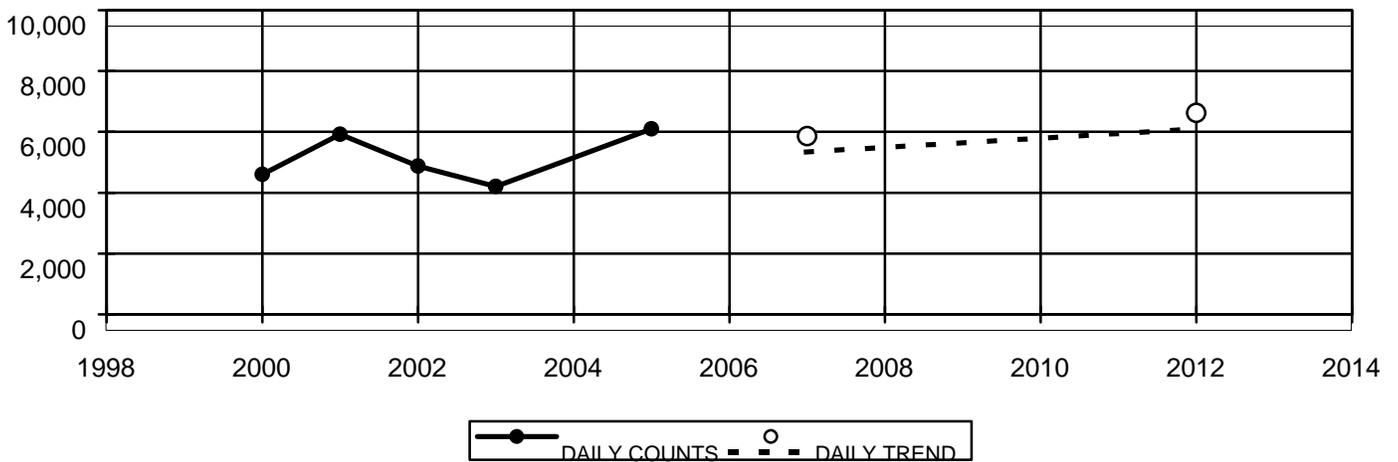
Year	DAILY COUNTS	
2000	3,147	
2001	3,611	
2002	2,830	
2003	3,168	
2005	3,323	
Year	DAILY TREND	
2007	3,221	Δ07
2012	3,227	1.00

Year	DAILY COUNTS	
2000	4,603	
2001	5,918	
2002	4,871	
2003	4,207	
2005	6,096	
Year	DAILY TREND	
2007	5,863	Δ07
2012	6,617	1.13

### Centerville Road To Springhill Subdivision



### Springhill Subdivision To Powhatan Secondary



Traffic counts published by James City County Planning Division.

TRACT	LAND USE	LAND USE CODE	SQ.FT., OTHER UNITS	WEEKDAY TRIP GENERATION						DAILY
				AM PEAK HOUR			PM PEAK HOUR			
				Enter	Exit	Total	Enter	Exit	Total	

**TABLE 1 - Total Units Trip Generation**

Elderly Detached	251	32 units	4	6	10	13	9	22	206
Elderly Attached	252	332 units	12	15	27	23	14	37	1155
Congregate Care	253	290 units	10	7	17	27	22	49	586
Assisted Living	254	118 occ.bed	15	5	20	18	16	34	323
<b>TOTAL</b>		<b>772 units</b>	<b>41</b>	<b>33</b>	<b>74</b>	<b>81</b>	<b>61</b>	<b>142</b>	<b>2270</b>

<b>TG 7 Definitions</b>	Elderly Detached	251	may have recreation, but not central dining or health care
	Elderly Attached	252	apartment-like residential units
	Congregate Care	253	centralized amenities: dining, house keeping, trans., social/rec
	Assisted Living	254	protective oversight, ALS and Alzheimers may be included

ITE USE CODE	253	254			251	252		
FORD'S COLONY CCRC DEFINITIONS	CCRC Apt	Asst. Liv. Skill Care	CCRC Total		Town Homes	Ind. L.U.	Non CCRC	
Community 1	154	18	172		6			
Community 2		100	100		26	214		
Community 3	136		136			118		
	290	118	408		32	332	364	

**TABLE 2 - SITE TRIP DISTRIBUTION**

Direction	41		33		74		81		61		142	
	AM Peak Hour				PM Peak Hour							
	Entering Traffic		Exiting Traffic		Entering Traffic		Exiting Traffic					
	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips	% Dist.	Trips				
East	85%	35	85%	28	85%	69	85%	52				
North	5%	2	5%	2	5%	4	5%	3				
West	10%	4	10%	3	10%	8	10%	6				
	100%	41	100%	33	100%	81	100%	61				

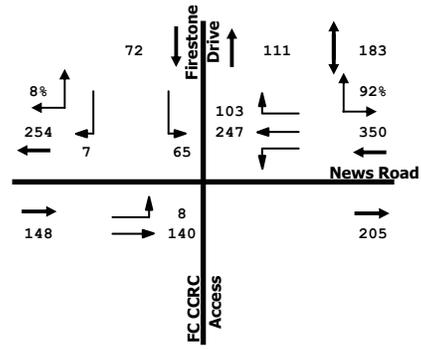
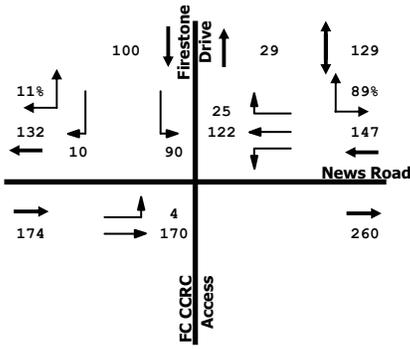
Trip generation rates from Trip Generation, 7th Edition (TG7) by the Institute of Transportation Engineers (ITE)

FORD'S COLONY CCRC  
TRIP GENERATION AND DISTRIBUTION

DRW Consultants, LLC  
804-794-7312

Exhibit 4

2007 Counts

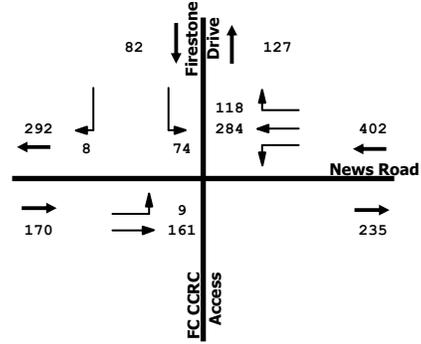
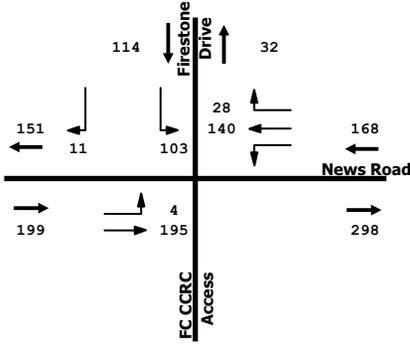


Firestone Drive  
FC CCRC Access  
News Road

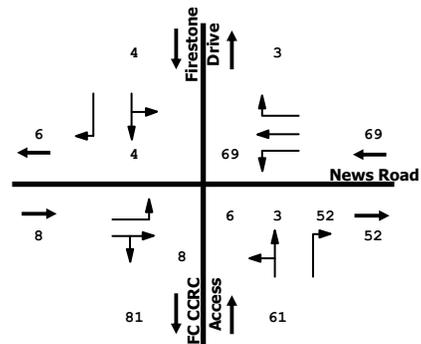
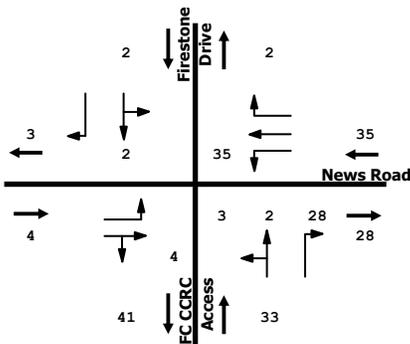
TO RT. 199

TRAFFIC GROWTH FACTOR: 1.15

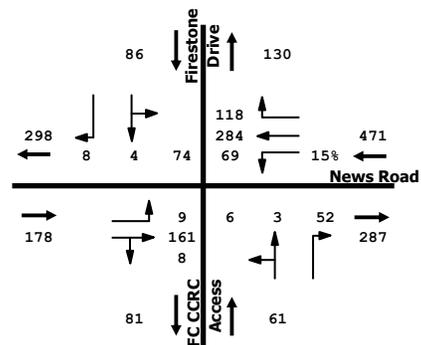
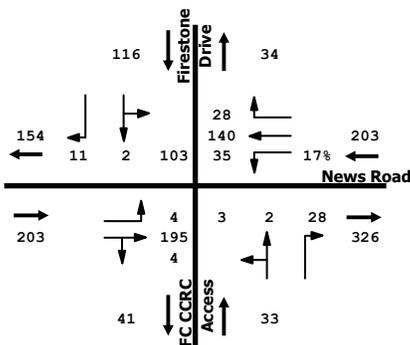
2012 Background Forecast



CCRC Site Traffic Assignment



2012 Total Traffic



AM Peak Hour

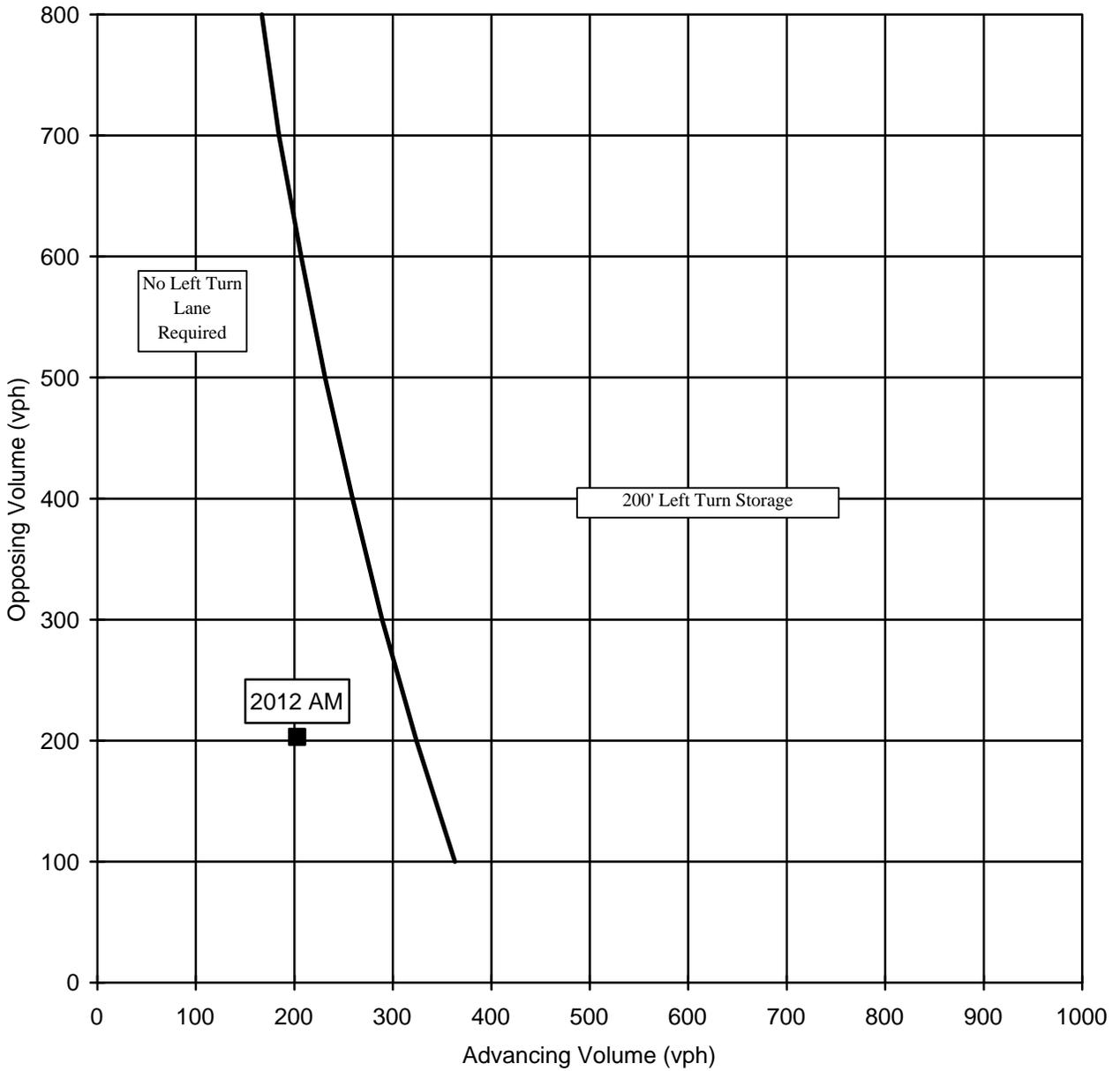
PM Peak Hour

EXISTING PEAK HOUR TRAFFIC COUNTS AND 2012 FORECAST

DRW Consultants, LLC  
804-794-7312

Exhibit 5

**LEFT TURN LANE WARRANT**  
**50 mph Design Speed**  
**% Left Turns = 17%**



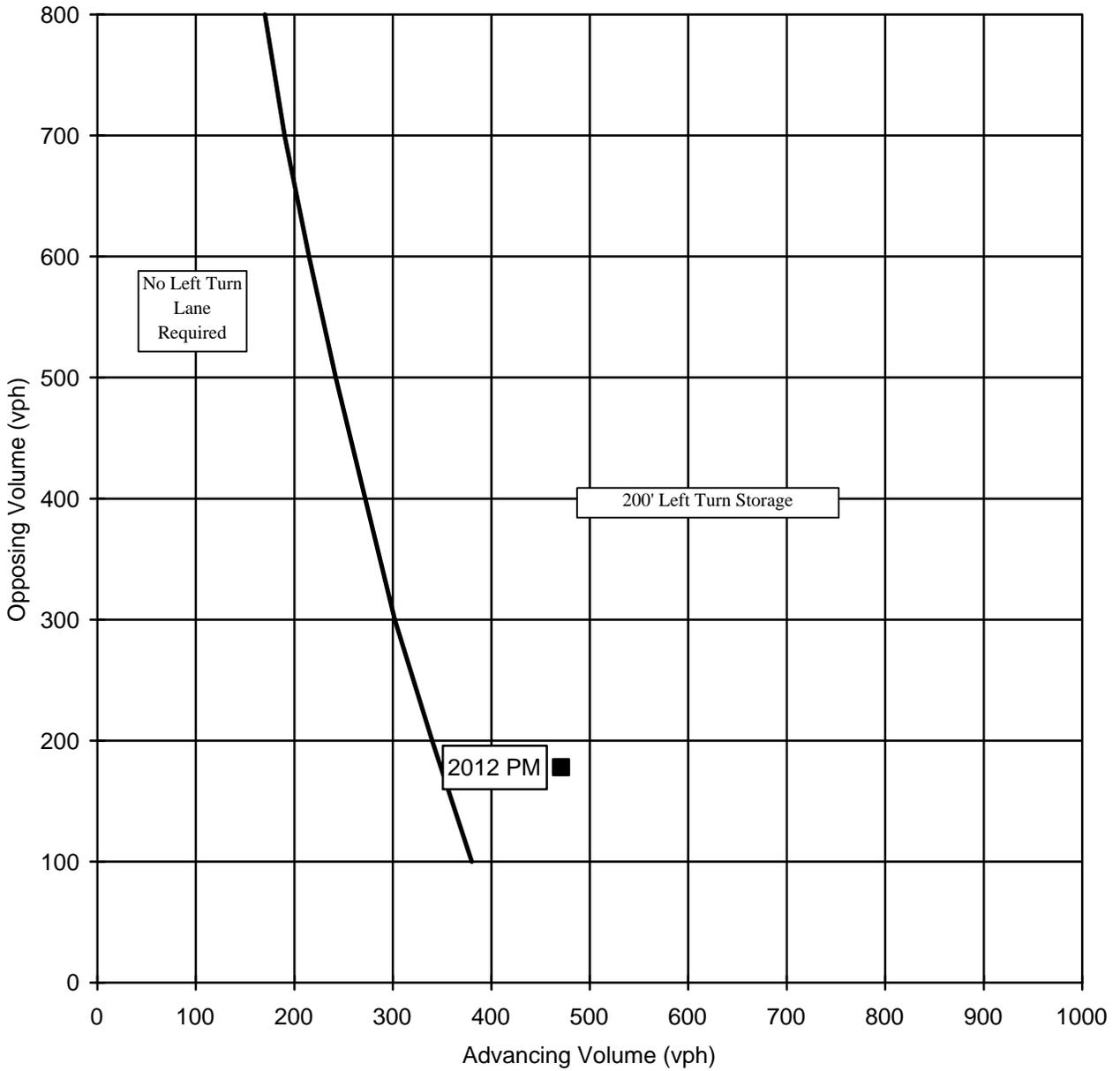
Source: Interpolated from VDOT Road Design Manual, Appendix C, derived from Highway Research Record Number 211

2012 AM PEAK HOUR  
LEFT TURN LANE WARRANT  
WESTBOUND NEWS ROAD AT FORDS'S COLONY CCRC

*DRW Consultants, LLC*  
804-794-7312

**Exhibit 6a**

**LEFT TURN LANE WARRANT**  
**50 mph Design Speed**  
**% Left Turns = 15%**



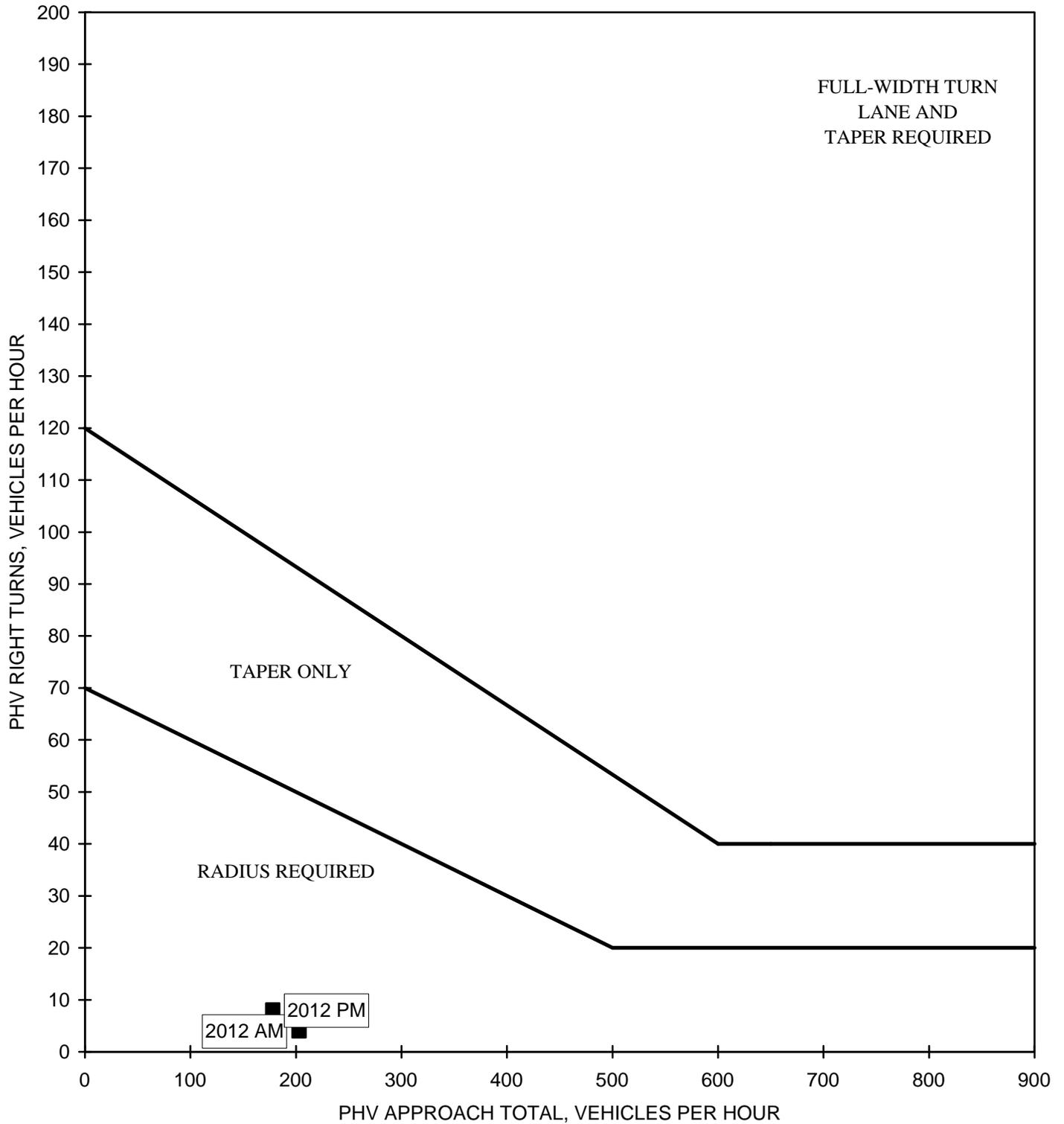
Source: Interpolated from VDOT Road Design Manual, Appendix C, derived from Highway Research Record Number 211

2012 PM PEAK HOUR  
LEFT TURN LANE WARRANT  
WESTBOUND NEWS ROAD AT FORDS'S COLONY CCRC

*DRW Consultants, LLC*  
804-794-7312

**Exhibit 6b**

Guidelines for Right Turn Treatments 2 - Lane Highway

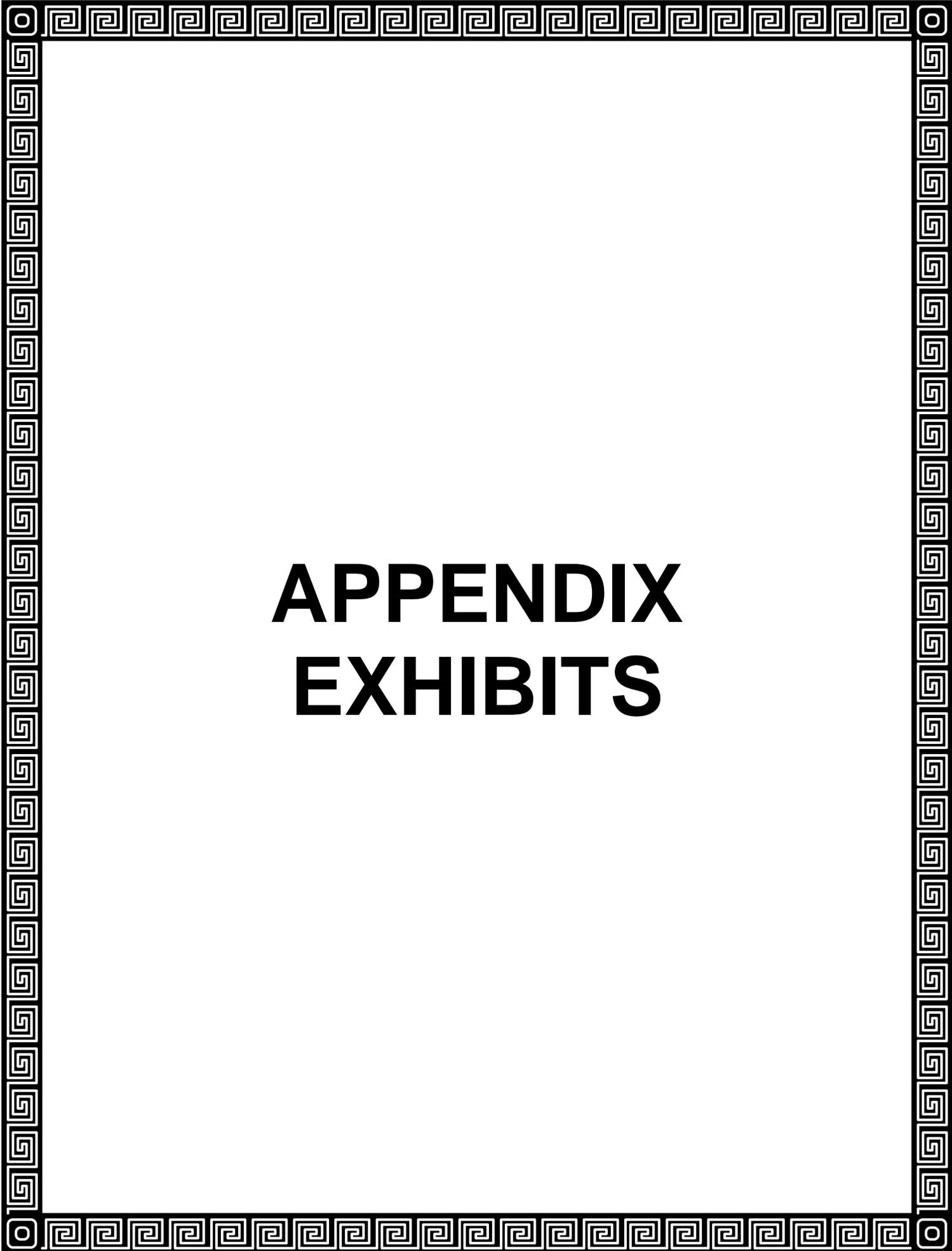


Source: VDOT Road Design Manual, Vol. 1, Page C-15, Figure C-1-8

2012 PEAK HOUR  
 RIGHT TURN LANE WARRANT  
 EASTBOUND NEWS ROAD AT FORD'S COLONY CCRC

DRW Consultants, LLC  
 804-794-7312

Exhibit 7



# **APPENDIX EXHIBITS**

APPENDIX  
TABLE OF CONTENTS

---

APPENDIX EXHIBITS	Number
<b>Peak Hour Traffic Count .....</b>	<b>AM PM</b>
News Road/Firestone Drive.....	A1.... A2
<b>News Road/Firestone Drive Unsignalized Intersection LOS .....</b>	<b>AM PM</b>
2007 Peak Hour Traffic Counts .....	D1.... D2
2012 Background Traffic.....	D3.... D4
2012 Total Traffic (With Ford's Colony CCRC) .....	D5.... D6

---

## AM PEAK HOUR

LOCATION: News Road/Firestone Drive

DATE: Thu, 4/26/07
-----------------------

### CUMULATIVE 15 MINUTE COUNTS

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
7:00 to 7:15				10		1	0	54			29	3	97
7:15 to 7:30				23		2	1	109			53	6	194
7:30 to 7:45				37		6	1	142			89	10	285
7:45 to 8:00				55		6	2	197			113	17	390
8:00 to 8:15				72		9	3	244			140	26	494
8:15 to 8:30				88		12	4	252			180	30	566
8:30 to 8:45				119		14	4	320			209	36	702
8:45 to 9:00				145		16	6	367			235	42	811
Count Sheet				C		D	E	F			A	B	

### 15 MINUTE INCREMENT COUNTS

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
7:00 to 7:15	0	0	0	10	0	1	0	54	0	0	29	3	97
7:15 to 7:30	0	0	0	13	0	1	1	55	0	0	24	3	97
7:30 to 7:45	0	0	0	14	0	4	0	33	0	0	36	4	91
7:45 to 8:00	0	0	0	18	0	0	1	55	0	0	24	7	105
8:00 to 8:15	0	0	0	17	0	3	1	47	0	0	27	9	104
8:15 to 8:30	0	0	0	16	0	3	1	8	0	0	40	4	72
8:30 to 8:45	0	0	0	31	0	2	0	68	0	0	29	6	136
8:45 to 9:00	0	0	0	26	0	2	2	47	0	0	26	6	109

### HOUR INCREMENT

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
7:00 to 8:00	0	0	0	55	0	6	2	197	0	0	113	17	390
7:15 to 8:15	0	0	0	62	0	8	3	190	0	0	111	23	397
7:30 to 8:30	0	0	0	65	0	10	3	143	0	0	127	24	372
7:45 to 8:45	0	0	0	82	0	8	3	178	0	0	120	26	417
8:00 to 9:00	0	0	0	90	0	10	4	170	0	0	122	25	421

### PEAK HOUR TURNING MOVEMENT VOLUMES

TIME	NB			SB			EB			WB			Total
	Left	Thru	Right										
8:00 to 9:00	0	0	0	90	0	10	4	170	0	0	122	25	421

**PM PEAK HOUR**

LOCATION: News Road/Firestone Drive

DATE: Wed, 4/25/07
-----------------------

**CUMULATIVE 15 MINUTE COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 4:15				19		4	3	27			53	24	130
4:15 to 4:30				36		7	3	58			91	49	244
4:30 to 4:45				47		7	5	91			148	80	378
4:45 to 5:00				69		13	7	127			202	101	519
5:00 to 5:15				84		14	8	166			274	130	676
5:15 to 5:30				101		14	11	198			338	152	814
5:30 to 5:45				111		18	14	230			393	173	939
5:45 to 6:00				122		20	16	259			438	191	1046
Count Sheet				C		D	E	F			A	B	

**15 MINUTE INCREMENT COUNTS**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 4:15	0	0	0	19	0	4	3	27	0	0	53	24	130
4:15 to 4:30	0	0	0	17	0	3	0	31	0	0	38	25	114
4:30 to 4:45	0	0	0	11	0	0	2	33	0	0	57	31	134
4:45 to 5:00	0	0	0	22	0	6	2	36	0	0	54	21	141
5:00 to 5:15	0	0	0	15	0	1	1	39	0	0	72	29	157
5:15 to 5:30	0	0	0	17	0	0	3	32	0	0	64	22	138
5:30 to 5:45	0	0	0	10	0	4	3	32	0	0	55	21	125
5:45 to 6:00	0	0	0	11	0	2	2	29	0	0	45	18	107

**HOUR INCREMENT**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:00 to 5:00	0	0	0	69	0	13	7	127	0	0	202	101	519
4:15 to 5:15	0	0	0	65	0	10	5	139	0	0	221	106	546
4:30 to 5:30	0	0	0	65	0	7	8	140	0	0	247	103	570
4:45 to 5:45	0	0	0	64	0	11	9	139	0	0	245	93	561
5:00 to 6:00	0	0	0	53	0	7	9	132	0	0	236	90	527

**PEAK HOUR TURNING MOVEMENT VOLUMES**

TIME	NB Left	NB Thru	NB Right	SB Left	SB Thru	SB Right	EB Left	EB Thru	EB Right	WB Left	WB Thru	WB Right	Total
4:30 to 5:30	0	0	0	65	0	7	8	140	0	0	247	103	570



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↑	↑	↗	↗	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	170	122	25	90	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	185	133	27	98	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160				326	133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160				326	133
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	99
cM capacity (veh/h)	1419				666	917
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	4	185	133	27	98	11
Volume Left	4	0	0	0	98	0
Volume Right	0	0	0	27	0	11
cSH	1419	1700	1700	1700	666	917
Volume to Capacity	0.00	0.11	0.08	0.02	0.15	0.01
Queue Length 95th (ft)	0	0	0	0	13	1
Control Delay (s)	7.5	0.0	0.0	0.0	11.3	9.0
Lane LOS	A				B	A
Approach Delay (s)	0.2		0.0		11.1	
Approach LOS					B	
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization			20.6%		ICU Level of Service	A
Analysis Period (min)			15			



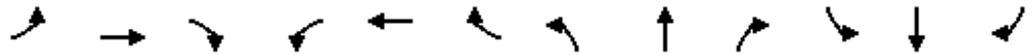
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	8	140	247	103	65	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	152	268	112	71	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	380				438	268
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	380				438	268
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	99
cM capacity (veh/h)	1178				572	770
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	9	152	268	112	71	8
Volume Left	9	0	0	0	71	0
Volume Right	0	0	0	112	0	8
cSH	1178	1700	1700	1700	572	770
Volume to Capacity	0.01	0.09	0.16	0.07	0.12	0.01
Queue Length 95th (ft)	1	0	0	0	11	1
Control Delay (s)	8.1	0.0	0.0	0.0	12.2	9.7
Lane LOS	A				B	A
Approach Delay (s)	0.4		0.0		11.9	
Approach LOS					B	
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			23.3%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	4	195	140	28	103	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	212	152	30	112	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	183				373	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183				373	152
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	99
cM capacity (veh/h)	1392				626	894
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	4	212	152	30	112	12
Volume Left	4	0	0	0	112	0
Volume Right	0	0	0	30	0	12
cSH	1392	1700	1700	1700	626	894
Volume to Capacity	0.00	0.12	0.09	0.02	0.18	0.01
Queue Length 95th (ft)	0	0	0	0	16	1
Control Delay (s)	7.6	0.0	0.0	0.0	12.0	9.1
Lane LOS	A				B	A
Approach Delay (s)	0.2		0.0		11.7	
Approach LOS					B	
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			22.6%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↑	↗	↖	↗
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	9	161	284	118	74	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	175	309	128	80	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	437				503	309
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	437				503	309
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				85	99
cM capacity (veh/h)	1123				523	731
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	10	175	309	128	80	9
Volume Left	10	0	0	0	80	0
Volume Right	0	0	0	128	0	9
cSH	1123	1700	1700	1700	523	731
Volume to Capacity	0.01	0.10	0.18	0.08	0.15	0.01
Queue Length 95th (ft)	1	0	0	0	13	1
Control Delay (s)	8.2	0.0	0.0	0.0	13.1	10.0
Lane LOS	A				B	A
Approach Delay (s)	0.4		0.0		12.8	
Approach LOS					B	
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			25.7%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↖	↗		↖	↗
Sign Control	Free		Free		Stop		Stop					
Grade	0%		0%		0%		0%					
Volume (veh/h)	4	195	4	35	140	28	3	2	28	103	2	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	212	4	38	152	30	3	2	30	112	2	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	183			216			464	482	214	480	453	152
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	183			216			464	482	214	480	453	152
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			99	100	96	76	100	99
cM capacity (veh/h)	1392			1353			488	469	826	465	487	894

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	4	216	38	152	30	5	30	114	12
Volume Left	4	0	38	0	0	3	0	112	0
Volume Right	0	4	0	0	30	0	30	0	12
cSH	1392	1700	1353	1700	1700	480	826	465	894
Volume to Capacity	0.00	0.13	0.03	0.09	0.02	0.01	0.04	0.25	0.01
Queue Length 95th (ft)	0	0	2	0	0	1	3	24	1
Control Delay (s)	7.6	0.0	7.7	0.0	0.0	12.6	9.5	15.2	9.1
Lane LOS	A		A			B	A	C	A
Approach Delay (s)	0.1	1.3				10.0	14.7		
Approach LOS				A			B		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	36.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖		↖	↗		↖	↗
Sign Control	Free		Free		Stop		Stop					
Grade	0%		0%		0%		0%					
Volume (veh/h)	9	161	8	69	284	118	6	3	52	74	4	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	10	175	9	75	309	128	7	3	57	80	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	437			184			668	786	179	711	662	309
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	437			184			668	786	179	711	662	309
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			98	99	93	74	99	99
cM capacity (veh/h)	1123			1391			346	304	863	307	358	731

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2	
Volume Total	10	184	75	309	128	10	57	85	9	
Volume Left	10	0	75	0	0	7	0	80	0	
Volume Right	0	9	0	0	128	0	57	0	9	
cSH	1123	1700	1391	1700	1700	331	863	309	731	
Volume to Capacity	0.01	0.11	0.05	0.18	0.08	0.03	0.07	0.27	0.01	
Queue Length 95th (ft)	1	0	4	0	0	2	5	27	1	
Control Delay (s)	8.2	0.0	7.7	0.0	0.0	16.2	9.5	21.0	10.0	
Lane LOS	A	A				C	A	C	A	
Approach Delay (s)	0.4	1.1				10.5	20.0			
Approach LOS						B	C			

Intersection Summary		
Average Delay	3.7	
Intersection Capacity Utilization	39.3%	ICU Level of Service A
Analysis Period (min)	15	

**GEDDY, HARRIS, FRANCK & HICKMAN, L.L.P.**

ATTORNEYS AT LAW

1177 JAMESTOWN ROAD

WILLIAMSBURG, VIRGINIA 23185

TELEPHONE: (757) 220-6500

FAX: (757) 229-5342

MAILING ADDRESS:

POST OFFICE BOX 379

WILLIAMSBURG, VIRGINIA 23187-0379

VERNON M. GEDDY, JR. (1926-2005)

STEPHEN D. HARRIS

SHELDON M. FRANCK

VERNON M. GEDDY, III

SUSANNA B. HICKMAN

ANDREW M. FRANCK

SHERRI L. NELSON

November 22, 2021

Mr. Paul Holt  
Director of Community Development  
James City County  
101-A Mounts Bay Road  
Williamsburg, Virginia 23185

Re: Ford's Village – Z-21-0012 and MP-21-0003

Dear Mr. Holt:

I write on behalf of the applicant to request an exception to the James City County Recreational Facility Development Guidelines for the referenced applications. Such an exception may be granted by the Board of Supervisors with recommendations from the Planning Director and Director of Parks and Recreation.

Ford's Village is a large-campus, continuing care retirement community. The applicants have proffered extensive age-appropriate recreation facilities designed for older adults pursuant to Proffer 13 of the Amendment to Amended and Restated Ford's Colony Proffers submitted with the applications, a copy of which is pasted below:

**13. Recreation.** The portion of the Property designated as CCRC-D on the Master Plan shall include, but shall not be limited to, the following amenities: main lobby and living room; dining room; activities/card room; fitness center; beauty/barber salon; library; multipurpose room and landscaped grounds and courtyards generally as shown on the Master Plan. CCRC-D may also include, but shall not be limited to, the following additional amenities: a bar/lounge; café/coffee shop; education room, spa and wellness center; physical therapy and/or physician's office(s), home health, and pharmacy. The amenities listed above are intended for residents and employees of Ford's Village and their guests and not the general public. The portions of the Property designated as CCRC-A, CCRC-B and CCRC-C on the Master Plan shall include the following amenities: a clubhouse with studio room for classes, and a recreation room; an outdoor pool; pocket parks; pickleball courts and walking and biking paths all generally as shown on the Master Plan. The exact recreational facilities provided in portions of the Property designated as CCRC-A, CCRC-B and CCRC-C on the Master

Plan and their location may be changed with the prior approval of the Development Review Committee.

All residents of Ford's Village will have access to all amenities within the development. As discussed with staff, there are ample recreational facilities proffered but the proffered facilities do not meet the letter of the Guidelines due to the lack of an athletic field and playground. We submit the proffered facilities more than meet the goals of the Guidelines and that strict application of the Guidelines is not appropriate in this case.

Thank you for your consideration of this request and please let me know if you need anything further from us.

Sincerely,



Vernon M. Geddy, III

Mr. Rock Bell  
Mr. Jason Grimes  
Ms. Doris-Ellie Sullivan

## Thomas Wysong

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**From:** Thomas Wysong  
**Sent:** Wednesday, November 3, 2021 3:23 PM  
**To:** Paul Holt  
**Subject:** RE: [External] [External]New Development on News Rd

Got it, thanks.

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**From:** Paul Holt <Paul.Holt@jamescitycountyva.gov>  
**Sent:** Wednesday, November 3, 2021 3:09 PM  
**To:** Thomas Wysong <Thomas.Wysong@jamescitycountyva.gov>  
**Subject:** FW: [External] [External]New Development on News Rd

For Dec. packet

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**From:** Richard Krapf <[Richard.Krapf@jamescitycountyva.gov](mailto:Richard.Krapf@jamescitycountyva.gov)>  
**Sent:** Wednesday, November 3, 2021 3:07 PM  
**To:** Jamie Shannon <[jamieshannonrealty@gmail.com](mailto:jamieshannonrealty@gmail.com)>  
**Cc:** PlanComm <[PlanComm@jamescitycountyva.gov](mailto:PlanComm@jamescitycountyva.gov)>  
**Subject:** Re: [External] [External]New Development on News Rd

Dear Ms. Shannon -

Thank you for taking the time to write, outlining your views on this land use case. Citizen feedback is an important part of our review process and will be considered along with other elements such as the Comprehensive Plan and staff report. Please note that the applicant has requested a deferral until our December 1st planning commission meeting.

Sincerely,

Rich Krapf

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**From:** Jamie Shannon <[jamieshannonrealty@gmail.com](mailto:jamieshannonrealty@gmail.com)>  
**Sent:** Wednesday, November 3, 2021 1:19 PM  
**To:** Richard Krapf  
**Subject:** [External] [External]New Development on News Rd

Mr. Krapf,

I'm a local business owner and resident. I work, live and worship here locally in Williamsburg, Virginia.

I'm opposed to the new mega-development being considered on News Road. That being said I understand that those services may be necessary for our area but feel like the area being considered isn't a good location due to the impact it will have on both the local residents, traffic patterns and lack of space to accommodate that with a major infrastructure change to the local roadways and utilities. Not to mention as a local real

estate agent I'm privy to the understanding that this could greatly affect local neighborhood values now as well as future values.

I personally live and have clients that live in neighborhoods to include Ford's Colony, Powhatan Secondary and Powhatan Woods.

I urge you to vote NO against this new development!

Jamie Shannon  
Keller Williams Realty Williamsburg  
4084 Courthouse St #3B  
Williamsburg, VA 23188  
Licensed agent in Virginia

## Thomas Wysong

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**From:** Sharon Paulson <spaul7137@gmail.com>  
**Sent:** Wednesday, November 10, 2021 9:08 AM  
**To:** Thomas Wysong  
**Subject:** [External]Input regarding proposed Ford's Village on News Road

To all members of James City County Planning Commission:

It was with great consternation that my husband and I found out this morning for the first time that there is a huge plan afoot to build a high density housing/retirement/assisted living facility off of News Road in the middle of the Powhatan Creek watershed.

While we have confidence in the wisdom of our planning council and Board of Supervisors to make the correct decision, we would have felt remiss if we did not go on record as opposing this proposed project. The list of reasons for this stance is large, but we will just highlight a few in this email as follows:

1. News Road is already a safety hazard for many drivers who venture there. It is almost unthinkable to imagine hundreds (or thousands) if you count staff, more drivers navigating that dangerous 2-lane, curvy road. This is perhaps the single most salient point against building any new construction that has an outlet to News Road.
2. The potential damage to the watershed here is immense. This location is special and we have a huge custodial responsibility for this treasure.
3. Traffic on Centerville Road, already high, would also increase due to its intersection with News Road.
4. Construction noise and traffic would impact surrounding communities directly.
5. A sudden addition of so many residents demands that an assessment of availability of both medical staff and facilities be carried out. It is already difficult to secure necessary medical appointments, and this is an extremely important, often overlooked aspect of new development, particularly of the high-density kind.
6. A study of the impact on local law enforcement would also need to be undertaken.

We would like to be informed of any information with regard to forthcoming decisions and would definitely want time to gather community support against this.

There is a feeling in the community that nobody can fight big money projects when they get set in motion. We don't believe that. We trust that the decision to accept or reject this project will be done in a thoughtful, patient way, allowing for all voices to be heard.

Thanks so much for your service.

Sincerely,  
Sharon & John Paulson

Carol A Burtis  
4509 Basswood Way  
Williamsburg VA 23188  
Burtisca@gmail.com

November 30, 2021

Re: Fords Colony Fords Village

Michael Woolson  
James City County, Virginia

Via e-mail: Michael.Woolson @jamescitycountyva.gov

Dear Mr. Woolson:

I have been a homeowner in the Powhatan Villages in Williamsburg VA for the past two years. I chose to move from the Midwest to Williamsburg, VA and selected my home based on affordability with my budget. My home backs up to News Road.

Any impact to News Road will affect my home and the homes of my neighbors. I noted the last traffic study to support the Fords Colony Fords Village project was done five years ago. In the past two years I have noted not only an increase in traffic on News Road, but a significant increase in traffic noise, to the point it can awaken me from sleep despite double honeycomb blinds AND sound blocking thermal drapes on my bedroom windows. At times, drivers hit the accelerator forcefully and do not have adequate mufflers on their vehicles, creating a noise nuisance. A current traffic study needs to be done to adequately forecast future traffic, and consideration as to reducing the speed limit and increasing police presence along News Road would be appropriate with yet another destination added to the street. It is not logical to project decreased traffic at the same time as adding yet another destination adjacent to News Road. Increasing buffers to offset additional noise along the North Side of News Road behind the Powhatan Villages homes would also be appropriate, and assurances that News Road will not be widened in the proximity of Powhatan Villages need to be addressed.

I also noted that the flood-plane measure is based on the current one-hundred year flood-plane criteria. Please be advised that this measure is being revised as one-hundred year flood-plane criteria are no longer dependable due to climate change. Until the method of measure's revision is complete, using a higher number year flood-plane criteria would be a more adequate measure. JCSA Engineer Dion Walsh's comments regarding the water main, revision of sewer manholes & uphill flow, minimizing grinder pump lots, & connection to sewer along the creek by Monticello Woods did not appear to be addressed in your project, and corrections need to be made to insure the best and safest alternatives for the area. It would also be beneficial to list prohibited chemicals that homeowners should not allow to seep into storm sewers.

Via e-mail: [Michael.Woolson@jamescitycountyva.gov](mailto:Michael.Woolson@jamescitycountyva.gov)

Page 2

My final area of concern is a possible increased real estate tax base due to this project, which will affect my Powhatan Villages community and anyone on a fixed income budget, including myself. Many of my neighbors are also retired and on fixed incomes. With inflation, any real estate property tax increase caused by the development of Ford Villages will negatively impact many Powhatan Village residents.

Mr. Woolson, if writing and presenting this letter of concern is adequate to have the issues I mentioned addressed, please so advise. If it does not, please inform me of the time and address of the meeting tonight so I may bring my concerns publicly. With the continued covid threat and an inability to see well to drive at night, I would prefer this letter meet the criteria to address the concerns. In any case, please respond via return e-mail: [Burtisca@gmail.com](mailto:Burtisca@gmail.com)

Thank you for your attention to these matters.

Sincerely,  
Carol A. Burtis

**Approved Minutes of the December 1, 2021  
Planning Commission Regular Meeting**

**Z-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village)**

Mr. Thomas Wysong, Senior Planner, stated that Mr. Vernon Geddy has applied on behalf of Frye Development to amend the adopted Master Plan and Proffers for the Continuing Care Retirement Community (CCRC) at Ford's Colony. Mr. Wysong stated that the subject parcel is zoned R-4, Residential Planned Community, is inside the Primary Service Area (PSA), and designated Low Density Residential in the Comprehensive Plan, which recommends this use.

Mr. Wysong stated that in 2008, this parcel was rezoned from R-8, Rural Residential to R-4, Residential Planned Community with Proffers to permit a CCRC known as the Village at Ford's Colony. Mr. Wysong further stated that this currently approved Master Plan for this property permits up to 741 units, rooms and beds and is accompanied by Proffers intended to mitigate community impacts.

Mr. Wysong stated that this proposal would amend the approved Master Plan and Proffers by reducing the total number of units, rooms, and beds from 741 to 516 and changing the layout of the site. Mr. Wysong stated that the applicant is proposing up to 286 residential units comprised of single-family dwellings and multifamily dwellings with an additional 230 assisted living/memory care rooms/skilled nursing beds to be located in the facility portion of the property. Mr. Wysong further stated that this development would include accessory amenities intended for the residents and employees of the development.

Mr. Wysong stated that the Proffers have been updated to include a unit mixture cap on the facility portion of the property of up to 75 apartments in this facility portion, no more than 155 assisted living rooms/memory care rooms, and no more than 40 skilled nursing beds. Mr. Wysong stated that the major changes to the proffers include the updating of the current contribution amount for community impacts, the addition of a proffer requiring a traffic signal warrant analysis for the proposed main entrance to the development, and the revision of stormwater commitments. Mr. Wysong further stated that the applicant is also proposing to remove certain proffers, including the completion of the Cold Spring Swamp Drainage Analysis and the Greenway Trail Proffer. Mr. Wysong stated that if approved, this amendment would reduce the density on the subject parcel from 3.59 units per acre to 2.17 dwelling units per acre and would also result in a marginal decrease within the overall density of Ford's Colony from 1.25 unit per acre to 1.13 units per acre.

Mr. Wysong stated that staff finds the proposal to be compatible with the Comprehensive Plan, Zoning Ordinance, and surrounding development, and recommends that the Planning Commission recommend approval of this application, subject to the amended proffers.

Mr. Polster inquired if the Stormwater Division took into account the removal of two proffers related to Stormwater mitigation when they reviewed the proposal.

Mr. Wysong stated that Stormwater staff did review the proposal and did not raise any concerns over the removal of the two proffers; however, they may not have fully considered the upstream issues, the culvert, and the flooding issues.

Mr. Krapf inquired whether the height limitation from previously approved proffers would remain in effect for new buildings.

Mr. Wysong stated that a new building not shown on the Master Plan would require a Master Plan Amendment.

Mr. Haldeman stated that there is an approved Master Plan for a CCRC on the property. Mr. Haldeman inquired if the developer could build out the CCRC according to the existing plan should this amended plan not be approved.

Mr. Wysong stated that the developer could build out the existing plan without any legislative action.

Mr. Haldeman noted that the Public Hearing remains open from the November 3, 2021 meeting.

Mr. Vernon Geddy, Geddy, Harris, Franck, & Hickman, LLP, 1177 Jamestown Road, representing the applicant, made a presentation to the Commission on the project.

Mr. Krapf inquired if there are any measures under consideration to mitigate the prolonged impact of construction vehicles on News Road.

Mr. Jason Grimes, AES Consulting Engineers, stated that nothing has been put in place; however, the most intense development will occur at the outset with the RUI building.

Mr. Krapf noted that his concern lies with the heavy equipment that brings in bulldozers, etc. and the impact on traffic flow. Mr. Krapf stated that since the bulk of the citizen concerns relate to traffic issues, this might be something that the applicant should consider.

Ms. Leverenz inquired if Frye Development has developed any other CCRC properties.

Mr. Geddy stated that this would be the first.

Ms. Leverenz further inquired if the owners of independent living units would also own the lot.

Mr. Geddy stated they would own the lot.

Ms. Leverenz inquired if the homeowners association (HOA) would provide property management services.

Mr. Geddy stated that there would be an HOA which would provide property maintenance services.

Ms. Leverenz inquired if the residents in the independent living section would have priority consideration for the assisted living option.

Mr. Geddy stated that at this time it would be based on availability.

Ms. Null inquired about the price range on the homes.

Mr. Rock Bell, Vice President for Development, Frye Properties, stated that they would be moderately high-end homes; however, it would not be feasible to give a price point at this time.

Ms. Null stated that her question stemmed from wanting to understand who might be living in that community; would it be sufficiently affordable.

Mr. Geddy stated that there would be a mix of housing types from small bungalow to larger single-family residences.

Mr. Rose inquired why there was no planning for construction traffic, given the applicant's experience in developing properties.

Mr. Geddy stated that traffic impacts had been addressed through the secondary construction entrance. Mr. Geddy further stated that the applicant would also look at options for timing of arrivals and departures, as well as what equipment could remain on the property for the duration of construction.

Mr. O'Connor inquired about the difference in intensity between the approved plan and this proposal and the resulting impact on the watershed.

Mr. Grimes stated that the original plan called for large apartment style buildings with large parking fields. Mr. Grimes stated that this proposal was developed to provide one large scale institutional style structure with single-family style development surrounding it. Mr. Grimes further stated that the resulting decrease in impervious covers allows for different stormwater mitigation options. Mr. Grimes noted that the existing proffers were no longer applicable to the proposal.

Mr. O'Connor inquired if the stormwater management would be the traditional curb and gutter with pipe and drop inlets.

Mr. Grimes stated that the current stormwater regulations would require treatment trains that take it through a series of infiltration measures, bioretention measures, and Low Impact Development (LID) swales. Mr. Grimes noted that many of the properties would have rain barrels or rain gardens as part of the stormwater management plan.

Ms. Leverenz inquired if the positive fiscal impact would come from the assisted living facility.

Mr. Geddy stated that the larger impact would come from the RUI facility; however, since there are no school children associated with the single-family dwellings, the independent living units should also have a positive impact.

\* Mr. Rose left the meeting at approximately 6:50 p.m.

Mr. Haldeman called for disclosures from the Commission.

Mr. Polster stated that he spoke with Mr. Grimes and Mr. Geddy.

Mr. Krapf, Mr. O'Connor, Mr. Haldeman, and Ms. Null each stated that they spoke with Mr. Geddy.

Ms. Susan Tisdale, 209 Governor Edward Nott Court, addressed the Commission in opposition to the application.

Ms. Leanne Sutton, 201 Old Carriage Way, addressed the Commission in opposition to the application.

Ms. Kay Krapfl, 3833 Cluster Way, addressed the Commission in opposition to the application.

Mr. David Banks, 215 Charter House Lane, addressed the Commission in opposition to the application.

Mr. Kevin Fleming, 228 Old Carriage Way, addressed the Commission in opposition to the application.

Ms. Lisa Schmidt, 108 Powhatan Overlook, addressed the Commission in opposition to the application.

Ms. Regina Walsh, 4599 Beacon Hill Drive, addressed the Commission in opposition to the application.

Mr. Jason Smith, 124 Old Carriage Way, addressed the Commission in opposition to the application.

Mr. Bob Meyers, 143 Waters Edge Drive, addressed the Commission in opposition to the application.

Mr. Eric Ganzer, 4280 Beamer's Ridge, addressed the Commission in opposition to the application.

Ms. Debbie Wright, 450 Thompson Lane, addressed the Commission in opposition to the application.

Ms. Beth Emerson, 4052 Powhatan Secondary, addressed the Commission in opposition to the application.

As no one else wished to speak, Mr. Haldeman closed the Public Hearing.

Mr. Haldeman opened the floor for discussion by the Commission.

Mr. Polster stated that he was trying to understand whether the Stormwater Division concurs with the ramifications of removing these proffers for the upstream portion of the property and what, if any, consequences might occur. Mr. Polster stated that he would like to see the Stormwater Division come to the Board of Supervisors meeting prepared to discuss any potential consequences.

Mr. Krapf stated that the initial approved plan for this property included a CCRC that could still be built out by-right if this application is not approved. Mr. Krapf stated that he considered this application with an eye toward whether it was a better design or would mitigate any impacts of the development. Mr. Krapf noted that this plan reduces the number of residential units by 40% over the adopted Master Plan. Mr. Krapf further noted that the fiscal impact of this proposal is positive. Mr. Krapf stated that the proposed design is more appealing and leaves more open space giving it the appearance of a neighborhood.

Mr. Krapf stated that he does have significant concerns about the ability of News Road to accommodate the additional traffic.

Mr. Krapf requested that Mr. Holt clarify the Virginia Department of Transportation's (VDOT) role in the construction of the proffered traffic improvements.

Mr. Holt noted that the improvements and associated warrants are in the proffers and would rely on private versus public funding. Mr. Holt stated that the developer would be responsible for constructing the improvements. Mr. Holt further stated that VDOT's approval would be for the geometric design of the improvements in an engineering level document at the site plan stage.

Ms. Leverenz stated that she is pleased with the proposed design; however, it appears that this project is something slightly different from the traditional CCRC. Ms. Leverenz stated that this proposal has two distinct components with the Assisted Living facility being one and the Independent Living Units, essentially a 55 + retirement community, the second. Ms. Leverenz stated that contrary to the most CCRCs, there is no guarantee that residents in the Independent Living Units would be given priority for space in the Assisted Living, when the need arises. Ms. Leverenz noted that if this were just an age-restricted retirement community, the Commission would not be inclined to support it.

The Commission discussed several CCRC facilities that are adjacent to, but separate from a neighboring retirement community that do not guarantee access to the Assisted Living Units.

Mr. O'Connor stated that the decision point is whether to allow the possibility that the more intense development would be built out by-right or accept a proposal that would reduce the number of units, reduce the traffic and improve stormwater mitigation.

Mr. Haldeman stated that he plans to support the application. Mr. Haldeman stated that he shares the public's concerns and those of his fellow Commissioners. Mr. Haldeman stated that the location is not well suited to this type of development; however, there is an existing plan in place and this amendment is a substantial improvement.

Ms. Null noted that she would like to see a second gate or access point to ensure that residents can leave in the event of an emergency.

Mr. Polster made a motion to recommend approval of the application.

On a roll call vote, the Commission voted to recommend approval of Z-21-0012 and MP-21-0003. Proffer and Master Plan Amendment for the Continuing Care Retirement Facility at Ford's Colony (Ford's Village) (5-1)

**ITEM SUMMARY**

DATE: 2/8/2022

TO: The Board of Supervisors

FROM: John Risinger, Planner

SUBJECT: SUP-21-0026. Living Word Church of God

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**ATTACHMENTS:**

	Description	Type
☐	Staff Report	Staff Report
☐	1. Resolution	Resolution
☐	2. Location Map	Backup Material
☐	3. Master Plan	Backup Material
☐	4. Community Impact Statement	Backup Material
☐	5. Unapproved Minutes of the February 2, 2022 Planning Commission Meeting	Backup Material

**REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	2/18/2022 - 4:54 PM
Development Management	Holt, Paul	Approved	2/18/2022 - 4:54 PM
Publication Management	Daniel, Martha	Approved	2/18/2022 - 4:59 PM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:39 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:52 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:00 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**SUMMARY FACTS**

Applicant: Mr. Darren Curtis, DJG Inc.  
Land Owner: Living Word Church of God  
Proposal: To allow the operation of a place of public assembly  
Location: 259 Ivy Hill Road  
Tax Map/Parcel No.: 1130100003A  
Project Acreage: ± 2.10 acres  
Zoning: A-1, General Agricultural  
Comprehensive Plan: Rural Lands  
Primary Service Area: Outside  
Staff Contact: John Risinger, Planner

**PUBLIC HEARING DATES**

Planning Commission: February 2, 2022, 6:00 p.m.  
Board of Supervisors: March 8, 2022, 5:00 p.m.

**FACTORS FAVORABLE**

1. Staff finds the proposal compatible with surrounding zoning and development and consistent with the *Our County, Our Shared Future: James City County 2045 Comprehensive Plan*.
2. Traffic impacts generated by this proposal are not anticipated to negatively impact surrounding zoning and development.
3. Impacts: Please see Impact Analysis on Pages 3-4.

**FACTORS UNFAVORABLE**

1. With the proposed conditions, staff finds that there are no unfavorable factors.
2. Impacts: Please see Impact Analysis on Pages 3-4.

**SUMMARY STAFF RECOMMENDATION**

Staff recommends that the Board of Supervisors approve this application subject to the proposed conditions.

**PLANNING COMMISSION RECOMMENDATION**

At its February 2, 2022, meeting, the Planning Commission recommended approval of this application subject to the proposed conditions by a vote of 5-0.

**PROPOSED CHANGES MADE SINCE THE PLANNING COMMISSION MEETING**

Non-substantive edits were made to the Special Use Permit (SUP) conditions to improve clarity.

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**PROJECT DESCRIPTION**

Mr. Darren Curtis has applied for an SUP on behalf of the Living Word Church of God to allow the operation of a place of public assembly at 259 Ivy Hill Road. The property originally had a site plan approved in 1996 for a place of public assembly; however, work was not completed on the building or associated site improvements and plan approvals have since expired. In 2017, the A-1 Zoning District was amended to require SUPs for places of public assembly. The existing building is currently vacant and will require rehabilitation prior to occupancy. The church will seat up to 150 people which will require a minimum of 30 parking spaces as shown on the proposed layout. The Master Plan shows the existing building with site improvements and an SUP amendment would be required for any further expansion.

According to the applicant, worship services will be held on Sundays at 9:45 a.m. and occasionally in the evening. Additionally, Sunday school classes will be held Sunday morning and bible study/prayer meetings will be held Wednesdays at 7 p.m. Church business meetings will be held once a month on a Saturday.

**PLANNING AND ZONING HISTORY**

- In 1996, SP-0043-1996 was approved to construct a 2,400-square-foot church building with associated site improvements.
- In 1998, S-0034-1996 was approved and recorded to subdivide the existing 2.10-acre parcel from an existing parcel.
- In 2000, SP-0025-2000 was approved to amend the original site plan to expand the church building to 3,360 square feet in size.

- In 2017, the A-1 Zoning District was amended to require SUPs for places of public assembly.

**SURROUNDING ZONING AND DEVELOPMENT**

- The properties in the immediate vicinity are all zoned A-1, General Agricultural and are designated Rural Lands on the adopted 2045 Comprehensive Plan.

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**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
<u>Public Transportation: Vehicular</u>	<u>No Mitigation Required</u>	- The proposal is not anticipated to generate traffic exceeding a typical place of public assembly use, with the majority of trips on Sunday when services are conducted. Trips projected by the ITE manual for weekdays are, 1.65 in the PM peak hour. The total daily trip generation for Sundays will only be 92.8, as projected by the ITE manual.
<u>Public Transportation: Pedestrian/Bicycle</u>	<u>No Mitigation Required</u>	- No pedestrian or bicycle improvements are shown along Ivy Hill Road on the Pedestrian Accommodations Master Plan and the Regional Bikeways Master Plan.
<u>Public Safety</u>	<u>No Mitigation Required</u>	- Subject property is located approximately 4 miles from Fire Station 1. - The proposal does not generate impacts that require mitigation to the County’s emergency services or facilities.
<u>Public Schools</u>	<u>No Mitigation Required</u>	- The proposal will not generate school children.
<u>Public Parks and Recreation</u>	<u>No Mitigation Required</u>	- The proposal does not generate impacts that require mitigation to the County’s Parks and Recreation services or facilities.
<u>Public Libraries and Cultural Centers</u>	<u>No Mitigation Required</u>	- The proposal does not generate impacts that require mitigation to public libraries or cultural centers.
<u>Groundwater and Drinking Water Resources</u>	<u>No Mitigation Required</u>	- The Virginia Department of Health will review the well and septic system at the site plan stage.
<u>Watersheds, Streams, and Reservoirs</u>	<u>No Mitigation Required</u>	- The Stormwater and Resource Protection Division has reviewed this application and had no objections. Detailed stormwater management and design will be reviewed at the site plan stage.
<u>Cultural/Historic</u>	<u>No Mitigation Required</u>	- The subject property has been previously disturbed and has no known cultural resources on-site.
<u>Nearby and Surrounding Properties</u>	<u>Mitigated</u>	- Traffic is anticipated to be typical of a church with 150 members with services generally occurring on Sundays, the subject property must adhere to the County’s Noise Ordinance, and the proposed SUP conditions address landscaping, signage, and exterior lighting. Future expansions of the use would require an SUP amendment.

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**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
<u>Community Character</u>	<u>No Mitigation Required</u>	- Ivy Hill Road is not designated as a Community Character Corridor (CCC).
<u>Covenants and Restrictions</u>	<u>No Mitigation Required</u>	- The applicant has verified that he is not aware of any covenants or restrictions on the property that prohibit the proposed use.

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**COMPREHENSIVE PLAN**

The site is designated Rural Lands on the 2045 Comprehensive Plan Land Use Map. Recommended uses include agricultural and forestal activities, agri-tourism, rural-support businesses, and certain commercial uses which require very low intensity settings. The Rural Lands Development Standards have the following guidance.

Uses in Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:

- Locating structures and uses outside of sensitive areas;

*The proposed improvements are outside of sensitive areas.*

- Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;

*The proposed improvements are generally within an existing clearing. Required building setbacks and transitional buffers serve to protect existing vegetation along the property lines.*

- Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;

*The proposed improvements do not impact farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources.*

- Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;

*The proposed improvements are not located in an open field.*

- Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;

*Site access is proposed by improving an existing driveway.*

- Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;

*The height of the existing structure is less than surrounding mature trees and the scaling of the structure is compatible with the surrounding community. The property is subject to height limitations in accordance with Section 24-418 of the Zoning Ordinance.*

- Minimizing the number of street and driveway intersections along the main road by providing common driveways; and

*The proposed conditions limit the property to one ingress/egress point along Ivy Hill Road.*

- Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.

*The proposed conditions restrict the permitted height of light poles and prohibit light trespass across property lines.*

The property is not located along a CCC.

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**SPECIAL USE PERMIT-21-0026. Living Word Church of God  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**PROPOSED SUP CONDITIONS**

Proposed conditions are provided in Attachment No. 1.

**STAFF RECOMMENDATION**

With the attached conditions, staff finds that the proposal is compatible with surrounding zoning and development and consistent with the 2045 Comprehensive Plan.

Staff recommends that the Board of Supervisors approve this application subject to the proposed conditions.

JR/ap  
SUP21-26\_LivingWrdCh

Attachments:

1. Proposed SUP Conditions
2. Location Map
3. Master Plan
4. Community Impact Statement
5. Unapproved Minutes of the February 2, 2022, Planning Commission Meeting

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

## RESOLUTION

### CASE NO. SUP-21-0026. LIVING WORD CHURCH OF GOD

WHEREAS, the Board of Supervisors of James City County, Virginia, has adopted by Ordinance specific land uses that shall be subjected to a Special Use Permit (SUP) process; and

WHEREAS, Mr. Darren Curtis of DJG Inc. has applied on behalf of the property owner, Living Word Church of God, for an SUP to allow for a place of public assembly on property located at 259 Ivy Hill Road, further identified as James City County Real Estate Tax Map Parcel No. 1130100003A (the "Property"); and

WHEREAS, the Planning Commission, following its public hearing on February 2, 2022, recommended approval of Case No. SUP-21-0026 by a vote of 5-0.

WHEREAS, a public hearing was advertised, adjoining property owners notified, and a hearing conducted on Case No. SUP-21-0026; and

WHEREAS, the Board of Supervisors of James City County, Virginia, finds this use to be consistent with good zoning practices and the 2045 Comprehensive Plan Land Use Map designation for the Property.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, after consideration of the factors in Section 24-9 of the James City County Code, does hereby approve the issuance of Case No. SUP-21-0026 as described herein with the following conditions:

1. Master Plan: This Special Use Permit (SUP) shall be valid for a place of public assembly (the "Project") located at 259 Ivy Hill Road, further identified as James City County Real Estate Tax Map No. 1130100003A (the "Property"). Development of the Project on the Property shall occur generally as shown on the exhibit drawn by DJG Inc. entitled, "Living Word Church of God SUP-21-0026," dated January 25, 2022 (the "Master Plan"), with any deviations considered pursuant to Section 24-23(a)(2) of the James City County Code, as amended ("County Code").
2. Commencement of Use: The use of the Property as a place of public assembly shall not commence prior to the issuance of a Certificate of Occupancy (CO) for the Project.
3. Landscape Plan: Transitional buffers shall be provided as shown on the Master Plan in accordance with Section 24-100 of the County Code. A landscape plan shall be reviewed and approved by the Director of Planning or designee prior to final site plan approval. All landscaping on the landscape plan shall be installed or guaranteed prior to the issuance of a final CO for the Project.
4. Ingress and Egress: Only one ingress/egress point may be constructed from Ivy Hill Road to the Property.

5. Exterior Lighting: All new exterior light fixtures on the Property, including new building lighting, shall have recessed fixtures with no lens, bulb, or globe extending below the casing. All new light poles shall not exceed 20 feet in height from finished grade. No light trespass, defined as 0.1 foot-candles or higher, shall extend across any boundary line of the Property. A lighting plan showing satisfaction of this condition shall be approved by the Director of Planning prior to site plan approval.
6. Signage: The Property shall be allowed one exterior freestanding sign. The freestanding sign shall be externally illuminated, monument style, and not exceed 8 feet in height from finished grade. The Director of Planning shall approve the design of the freestanding sign for consistency with this condition prior to the issuance of a sign permit.
7. Commencement of Construction: Final site plan approval for the Project shall be obtained within 36 months from the date of approval of the SUP or the SUP shall automatically be void.
8. Severability: The SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

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John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

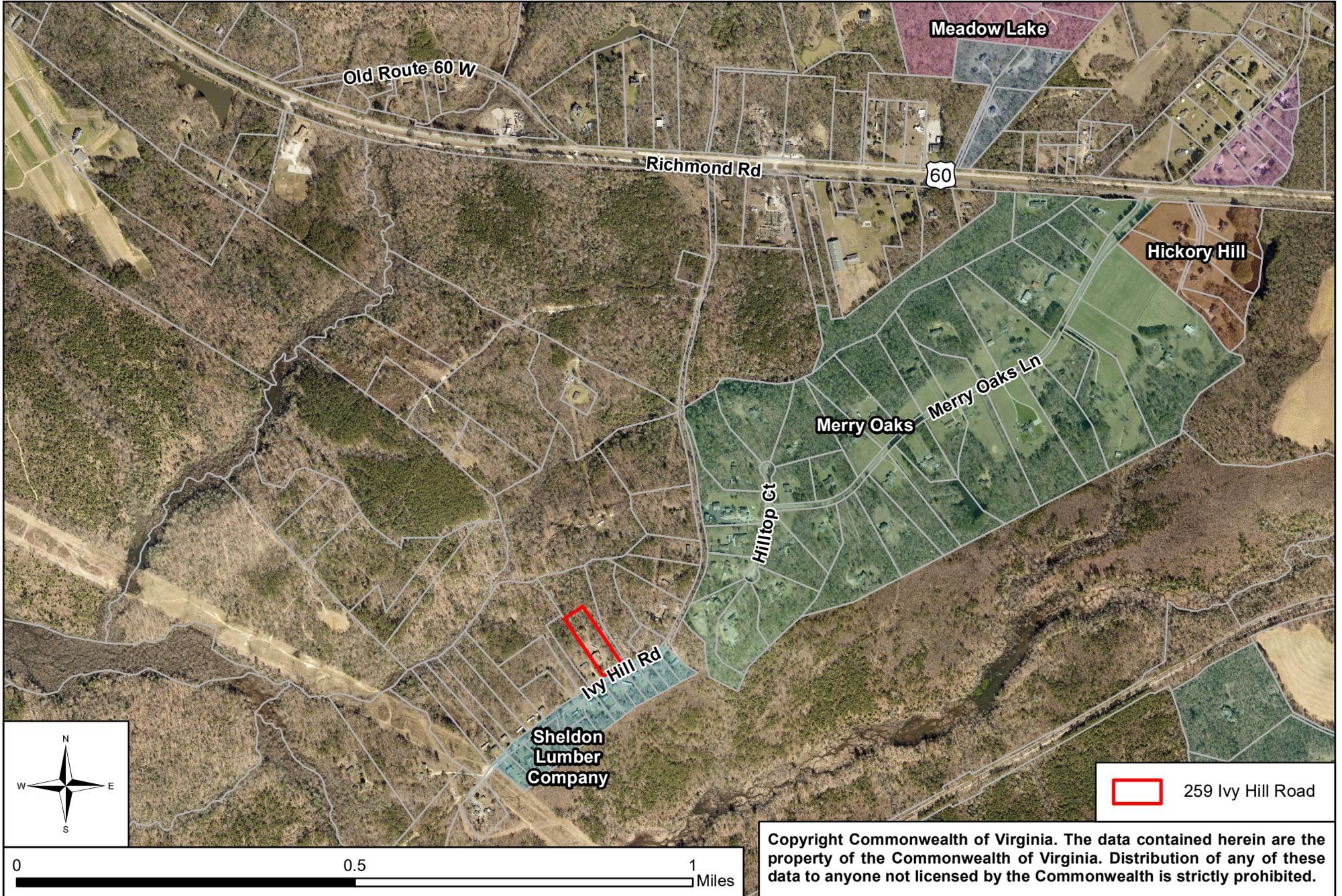
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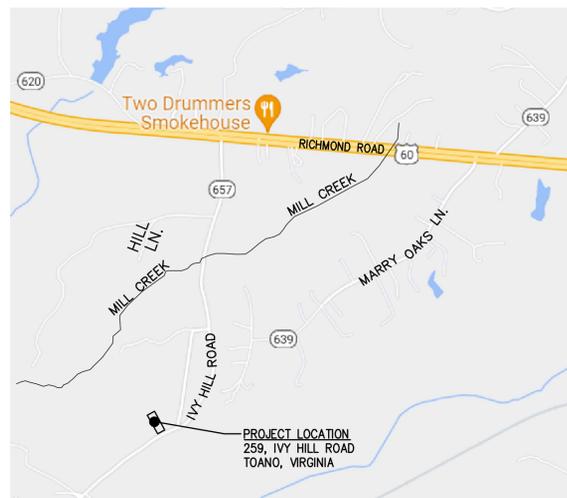
Teresa J. Saeed  
Deputy Clerk to the Board

	VOTES		
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>
ICENHOUR	_____	_____	_____
HIPPLE	_____	_____	_____
LARSON	_____	_____	_____
SADLER	_____	_____	_____
MCGLENNON	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

# JCC SUP-21-0026, Living Word Church of God





**VICINITY MAP**  
SCALE 1" = 2000 FT  
TRUE NORTH

**PROPERTY ADDRESS**

259 IVY HILL ROAD  
TOANO, VIRGINIA 23168

**PROPERTY INFORMATION:**

PROPERTY OWNER: THE LIVING WORD CHURCH OF GOD  
JAMES C. O/O ANNETTE FLOYD  
ET AL TRUSTEES

TAX MAP: 11301 00003A, LRSN: 22433

PARCEL SIZE: 2.10 ACRES

HYDROLOGIC UNIT CODE AND WATERSHED:  
VAHUS JL5 - WATERSHED, LOWER CHICKAHOMINY RIVER (HUC10-0208020606)  
VAHUG JL27- SUBWATERSHED, DIASOUND CREEK-MILL CREEK (HUC12-020802060603)

ZONING: TARGET PROPERTY  
259 IVY HILL ROAD-----A1 (GENERAL AGRICULTURE)

ADJACENT PROPERTIES  
249 IVY HILL ROAD-----A1 (GENERAL AGRICULTURE)  
265 IVY HILL ROAD-----A1 (GENERAL AGRICULTURE)

SETBACKS: FRONT YARD---75'  
SIDE YARD--- 15'  
REAR YARD---35'

PARKING SETBACK: NONE

FLOOD\_ZONE THE ENTIRE PROPERTY APPEARS TO BE IN ZONE X, AREAS OF MINIMAL FLOODING.  
(FLOOD PLAIN) REFERENCE: FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NUMBER 510201 0039D MAP NUMBER 51095C 0039D

**PROPOSED SITE NARRATIVE:**

THIS 2.10-ACRE SITE IS LOCATED ON THE NORTHWEST SIDE OF THE IVY HILL ROAD IN TOANO, VIRGINIA. THE SITE IS CURRENTLY DEVELOPED INCLUDING AN EXISTING CHURCH BUILDING, WATER WELL, SANITARY DRAINFIELD, & GRAVEL ROAD/PARKING AREA. THE PROPOSED WORK FOR THIS PROJECT INCLUDES A CONSTRUCTION OF A ±15,000 SF ASPHALT PARKING LOT INCLUDES 28 REGULAR + 2 HANDICAP PARKING SPACES. SITE WORK WILL INCLUDE DESIGN AND CONSTRUCTION OF A PARKING LOT, INCLUDING BUT NOT LIMITED TO SITE GRADING, EROSION CONTROL, SITE DRAINAGE, CONCRETE SIDEWALK AND RAMP, PEDESTRIAN AND VEHICULAR CIRCULATION AREAS, SIGNAGE, SITE LIGHTING AND LANDSCAPING.

**PARKING REQUIREMENTS:**

EXISTING CHURCH:  
USE CATEGORY: A1 (GENERAL AGRICULTURE)  
SPACES REQUIRED: 1 SPACE PER 5 SEATS  
TOTAL SEATS: 150 SEATS  
PARKING REQUIRED: 30 SPACES  
HANDICAP SPACES REQUIRED: 2 SPACES  
TOTAL PARKING SPACES PROVIDED: 28 + 2 HC = 30 SPACES

**OPEN SPACE DATA:**

TOTAL SITE ACREAGE: 2.10 AC.  
EXISTING OPEN SPACE: 1.91 AC. 90.95%  
EXISTING IMPERVIOUSNESS: 0.19 AC. 9.05%  
EXISTING BUILDING: 0.08 AC.  
GRAVEL ROAD/PARKING AREA: 0.11 AC.  
PROPOSED OPEN SPACE: 1.65 AC. 78.57%  
PROPOSED IMPERVIOUSNESS: 0.45 AC. 21.43%  
EXISTING BUILDING: 0.08 AC.  
ASPHALT PARKING LOT AREA: 0.35 AC.  
SIDEWALKS, RAMP, CURB, GUTTER: 0.02 AC.  
TOTAL DISTURBED AREA: 0.70 AC.

**ENVIRONMENTAL INVENTORY:**

IN ACCORDANCE WITH SECTION 23-10(2) OF THE CHESAPEAKE BAY PRESERVATION ORDINANCE OF JAMES CITY COUNTY, VIRGINIA

COMPONENT:	APPLICABLE:	QUANTIFIED:
1. TIDAL WETLANDS	NO	N/A
2. TIDAL SHORES	NO	N/A
3. NON-TIDAL WETLANDS IN RPA	NO	N/A
4. 100' BUFFER FOR #1 TO #3 ABOVE	NO	N/A
5. NON-TIDAL WETLANDS IN RMA	NO	N/A
6. SLOPE 25% OR GREATER	YES	±2,700 SF

**SURVEY CONTROL:**

- THIS SURVEY WAS DONE WITHOUT THE BENEFIT OF A TITLE REPORT.
- THIS SURVEY REPRESENTS AN IN-THE-FIELD BOUNDARY SURVEY.
- BOUNDARY LINES ESTABLISHED FROM RECORD PLATS AND MONUMENTATION FOUND IN THE FIELD.
- REFERENCES: DEED 980005964, PLAT BOOK 69-0003

**GENERAL NOTES:**

ALL NEW SIGNS SHALL BE IN ACCORDANCE WITH ARTICLE II, DIVISION 3 OF THE JAMES CITY COUNTY ORDINANCE.

**LEGEND**

- EXISTING: ——— RIGHT-OF-WAY  
- - - - - PROPERTY LINE  
- - - - - BUILDING SETBACK LINE  
- - - - - BUFFER TRANSITIONAL LINE  
OHE— OVERHEAD ELECTRIC LINE  
[Hatched Box] ASPHALT PAVEMENT  
[Diagonal Lines] BUILDING  
- - - - - 90— CONTOUR  
[Tree Symbol] TREE LINE  
[Well Symbol] WELL EASEMENT  
[Dotted Box] ASPHALT PAVEMENT  
[Stippled Box] CONCRETE PAVEMENT  
- - - - - 98— CONTOUR  
[Arrow] FLOW DIRECTION  
- - - - - LOD— LIMIT OF DISTURBANCE  
[Wavy Line] TREE LINE



**ENGINEERS  
ARCHITECTS  
PLANNERS**

449 McLAWS CIRCLE  
WILLIAMSBURG, VA 23185  
(757) 253-0673 VOICE  
(757) 253-2319 FAX

www.djginc.com



LIVING WORD CHURCH OF GOD

SUP-21-0026

JAMES CITY COUNTY, VA

**REVISIONS**

NO.	DATE	DESCRIPTION

COMMISSION NUMBER

2220080

SCALE: AS NOTED

DESIGNED: DJG

DRAWN: HAP/JIB

CHECKED: DRC

DATE: 01/25/2022

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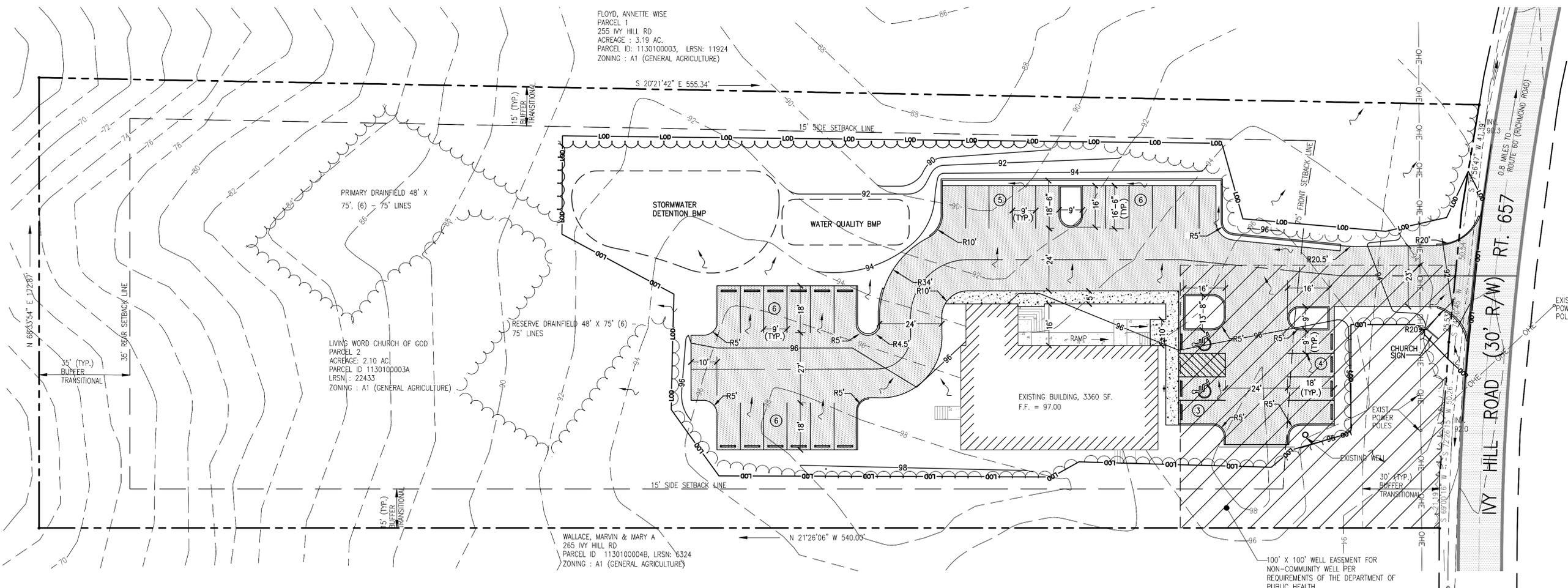
SHEET TITLE

MASTER PLAN

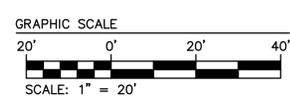
SHEET NUMBER

C-101

1 OF 1



**MASTER PLAN**  
SCALE: 1" = 20'



## Community Impact Statement

The proposed work for 259 Ivy Hill Rd, Toano, VA includes the addition of a parking lot, landscaping, site lighting, and stormwater detention and water quality BMPs as required. The existing site parcel is 2.1 acres. The property includes an existing church building and gravel entrance road. The property is within the FEMA 100-year floodplain Zone "X." The property is not within any Resource Protection Area (RPA). Furthermore, a water well easement surrounds a 100' by 100' area on the southwest side of the lot.

The evaluations below conclude that there will be no significant impact to the site or surrounding properties as a result of the proposed development. Supplementary reports and documents are attached.

### Traffic Impact Analysis

The existing 3,360 SF church seats 150 people. Calculation of the PM Peak Hour Trips at 0.49 trips per 1,000 SF GFA equals 1.65 trips for this building. This value does not exceed the 100 trips threshold; therefore, a Traffic Impact Analysis is not required. See calculations below.

*0.49 trips per 1,000 SF GFA (ITE Common Trip Generation Rates (PM Peak Hour))*

*3,360 SF Church building*

$$(3,360 \text{ SF building}) \left( \frac{0.49 \text{ trips}}{1,000 \text{ SF GFA}} \right) = 1.65 \text{ trips}$$

### Water and Sewer Impact Study

The calculated anticipated average daily flow of water and sewer equated to 2,550 GPD. This does not exceed the 15,500 GPD required to complete a water and sewer impact study. See calculations below.

*Water:*

*Three (3) Water Closets, Tank, public    5 wsfu each = 15 wsfu*

*+ Three (3) Lavatory Sinks, public            2 wsfu each = 6 wsfu*

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*21 wsfu OR 20 GPM*

*(IPC Table E103.3(3))*

$$\text{Average Daily Flow} = \frac{(20 \text{ GPM})(60 \text{ min./hr.})(6 *)}{4} = 1,800 \text{ GPD}$$

*\*Flow or demand duration in hours*

Sewer:

*Demand based off of 2001 design of sanitary sewer tank and drainfield by DJG, Inc. in 2001 at 750 GPD.*

Environmental Constraints Analysis

See supplemental document under separate cover sheet for information.

Adequate Public Facilities Report

No dwelling units are to be added to the site. Proposed site improvements will not exceedingly effect capacity necessary for additional services. Therefore, no additional service of roads, water and sewer, schools, fire stations, or libraries are required.

See supplemental document under separate cover sheet for additional information.

Archeological Study

Archeological Study not required for this site.

Natural Resource Inventory

Natural Resource Inventory not required for this site.

Fiscal Impact Analysis

Fiscal Impact Analysis not required for this site.

**Unapproved Minutes of the February 2, 2022  
Planning Commission Regular Meeting**

SUP-21-0026. Living Word Church of God

Mr. John Risinger, Planner, stated that Mr. Darren Curtis of DJG Incorporated has applied on behalf of the Living Word Church of God for an SUP to allow the operation of a place of public assembly at 259 Ivy Hill Road. Mr. Risinger stated that the property is zoned A-1, General Agricultural, is designated Rural Lands on the Comprehensive Plan Land Use Map, and is located outside the PSA.

Mr. Risinger stated that a site plan was approved for the church in 1996 and an amendment to the site plan was approved in 2000. Mr. Risinger stated that initial construction included the church building currently on the property; however, the associated permits expired prior to completing work on the interior and other site improvements. Mr. Risinger stated that as a result, a new site plan and building permit are required to resume work on the property. Mr. Risinger further stated that in 2017, the A-1 Zoning District was amended to require an SUP for places of public assembly.

Mr. Risinger stated that the existing church building will be rehabilitated prior to occupancy and is planned to have seating for up to 150 people and site improvements will include 30 parking spaces.

Mr. Risinger stated that staff finds this proposal to be compatible with surrounding development, and consistent with the 2045 Comprehensive Plan and Zoning Ordinance. Mr. Risinger stated that staff recommends that the Planning Commission recommend approval of this application to the Board of Supervisors, subject to the proposed conditions.

Mr. Haldeman inquired if there would be any changes to the footprint or height of the building or the location of the driveway.

Mr. Risinger stated that there would not be any changes to the building or the location of the driveway.

Dr. Rose inquired if there was adequate room for parking.

Mr. Risinger stated that the Zoning ordinance requires one space for every five seats which accounts for the thirty spaces shown on the master plan.

Mr. O'Connor opened the Public Hearing.

Mr. Darren Curtis, DJG, Inc., addressed the Commission in with an overview of the project and requested that the Commission support the application.

Mr. Polster noted that he served with Mr. Curtis on the Stormwater Advisory Committee for several years.

Mr. Polster commented that he was impressed with the way the design took into account stormwater features.

As no one else wished to speak, Mr. O'Connor closed the Public Hearing.

Ms. Null made a motion to recommend approval of the application.

On a roll call vote, the Commission voted to recommend approval of SUP-21-0026. Living Word Church of God. (5-0)

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Tom Leininger, Principal Planner

SUBJECT: AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal

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**ATTACHMENTS:**

	Description	Type
☐	Staff Report	Staff Report
☐	Ordinance	Ordinance
☐	Location Map	Backup Material
☐	AFD Withdrawal Request Letter (Applicant Narrative)	Backup Material
☐	Barnes Swamp AFD Map	Backup Material
☐	Barnes Swamp Ordinance No. 167A-14	Backup Material
☐	Map Showing Extent of Withdrawal Request	Backup Material
☐	Policy Governing the Withdrawals of Property from AFDs	Backup Material
☐	Proposed Solar Farm Master Plan	Backup Material
☐	Unapproved Minutes of the January 27, 2022 AFD Advisory Committee Meeting	Backup Material
☐	Unapproved Minutes of the February 2, 2022, Planning Commission Meeting	Backup Material

**REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	2/18/2022 - 4:49 PM
Development Management	Holt, Paul	Approved	2/18/2022 - 4:49 PM
Publication Management	Daniel, Martha	Approved	2/18/2022 - 4:56 PM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:37 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:50 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 10:56 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:10 PM

**AGRICULTURAL AND FORESTAL DISTRICT-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**SUMMARY FACTS**

Applicant: Mr. Brendan Grajewski, Hexagon Energy, LLC

Land Owners: Katherine Hockaday, Justin Martin, and Ann Martin

Proposal: Withdrawal of ± 26 acres of the 65.26 total acre parcel from the Barnes Swamp AFD

Location: 360 Racefield Drive

Tax Map/Parcel No.: 0310100003

Parcel Size: 65.26 acres

Zoning: A-1, General Agricultural

Comprehensive Plan: Rural Lands

Primary Service Area (PSA): Outside

Staff Contact: Tom Leininger, Principal Planner

**PUBLIC HEARING DATES**

Agricultural and Forestal District (AFD) Advisory Committee: January 27, 2022, 4:00 p.m.

Planning Commission: February 2, 2022, 6:00 p.m.

Board of Supervisors: March 8, 2022, 5:00 p.m.

**FACTORS FAVORABLE**

1. The request would not cause damage or disruption to the existing District.

**FACTORS UNFAVORABLE**

1. The request does not fully meet all four criteria set forth in the Board’s policy.

**STAFF RECOMMENDATION**

The adopted Board of Supervisors’ policy governing withdrawal of property from AFDs states that “it is the policy of the Board to discourage the withdrawal of properties from AFDs during the terms of those districts.” This withdrawal request was submitted approximately one year prior to the upcoming renewal of the Barnes Swamp AFD on October 31, 2022. Staff finds that this request for withdrawal does not fully meet all four of the criteria set forth in the Board’s policy. As such, staff recommends that the Board of Supervisors deny this withdrawal application.

**AGRICULTURAL AND FORESTAL DISTRICT ADVISORY COMMITTEE RECOMMENDATION**

At its January 27, 2022, meeting, the AFD Advisory Committee voted 5-0 to recommend the denial of the withdrawal request to the Planning Commission and the Board of Supervisors.

**PLANNING COMMISSION RECOMMENDATION**

At its February 2, 2022, meeting, the Planning Commission voted 3-2 to recommend denial of the withdrawal request to the Board of Supervisors.

**AGRICULTURAL AND FORESTAL DISTRICT-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**CHANGES SINCE PLANNING COMMISSION MEETING**

None.

**DISTRICT HISTORY**

- The Barnes Swamp AFD was created in 1986 for a term of four years and originally consisted of 33 parcels totaling ± 2,207 acres.
- The District was renewed at four-year intervals again in 1990, 1994, 1998, 2002, 2006, 2010, 2014, and 2018 with various additions and withdrawals taking place during that period.
- There have been three additions for a total ± 301.82 acres and no withdrawals from the District since its most recent renewal in 2018.

**DISTRICT DESCRIPTION**

This District is primarily forested, though records indicate that a significant portion of the land is actively in agricultural use. All the land in this District is zoned A-1, General Agricultural, located outside of the PSA, and designated Rural Lands and Community Character, Open Space and Recreation by the adopted 2045 Comprehensive Plan.

**WITHDRAWAL REQUESTS/WITHDRAWAL ANALYSIS**

Mr. Brendan Grajewski, on behalf of the owners of the property located at 360 Racefield Drive (Parcel ID No. 0310100003), has requested to withdraw 26 acres of their 65.26 total acre parcel from the AFD (Attachment No. 6). The requested withdrawal is to allow for the submittal of a Special Use Permit (SUP) for a 3-megawatt alternate current (MWac) solar farm. Per Barnes Swamp AFD Condition No. 3c (Attachment No. 5), no SUP shall be issued except for agricultural, forestal, or other activities and uses consistent with the Virginia Agricultural and Forestal District Act.

A solar farm is a specially permitted use in the A-1 Zoning District. The Applicants have submitted their SUP application (SUP-21-0022). Per the application, the project proposes approximately 8,764 solar panels that are on a single-axis tracking system, internal access roads, and stormwater management. The project would take access from Racefield Drive.

On September 28, 2010, the Board of Supervisors adopted a policy and withdrawal criteria for AFD parcels. That policy is enclosed (Attachment No. 7) and the withdrawal criteria are listed with staff comments following in italics.

- A. The request is caused by a change in circumstances that could not have been anticipated at the time the application was made for inclusion in the District.

*Historically, a change in circumstances has been interpreted to include “death of a property owner,” as stated in the State Code, but has not included new opportunities for development of a property. The withdrawal policy, as adopted by the Board of Supervisors, states that it is the policy of the Board of Supervisors to discourage the withdrawal of properties from AFDs during the terms of those districts.*

- B. The request would serve a public purpose, as opposed to the proprietary interest of the landowner, that could not otherwise be realized upon expiration of the AFD.

*Although the proposed solar farm would potentially provide a community benefit by supplying green energy to the adjacent communities, staff finds that this does not fulfill the requirement of Criteria B. Staff interprets “public purpose” as using the land for a public facility such as a school or fire station.*

- C. The request would not cause damage or disruption to the existing District.

**AGRICULTURAL AND FORESTAL DISTRICT-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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*With this withdrawal, the District will include a total of 2,181 acres, and will thus continue to meet minimum acreage requirements.*

- D. If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place, the new land use would be in conformance with the Comprehensive Plan.

*The Comprehensive Plan designates this parcel as Rural Lands (RL). The 2045 Comprehensive Plan states that land designated RL are areas containing farms, forests, and scattered houses, exclusively outside of the PSA, where a lower level of public service delivery exists or where utilities and urban services do not exist and are not planned for in the future. Rural Lands uses are intended to help protect and enhance the viability of agricultural and forestal resources and compatible rural economic development uses as important components of the local economy. Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agri-tourism, rural-based public or commercial recreation, rural-support businesses and certain public or semi-public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings. Staff finds that a solar farm is not a recommended use and not consistent with the RL designation description.*

**SURROUNDING ZONING AND DEVELOPMENT**

The Barnes Swamp AFD is widespread throughout the northern portion of the County. A majority of the land surrounding the District is zoned A-1. A portion of the District is adjacent to Planned Unit Residential. Much of the surrounding property is designated Rural Lands with an area of Low Density Residential and Economic Opportunity to the east. The District borders New Kent County to the west.

**STAFF RECOMMENDATION**

The adopted Board of Supervisors’ policy governing withdrawal of property from AFDs states that “it is the policy of the Board to discourage the withdrawal of properties from AFDs during the terms of those districts.” This withdrawal request was submitted approximately one year prior to the most upcoming expiration date of the Barnes Swamp AFD of October 31, 2022. Staff finds that this request for withdrawal does not fully meet all four of the criteria set forth in the Board’s policy. Additionally, staff finds that the use of this site would not serve a public purpose and the proposed use is not consistent with the 2045 Comprehensive Plan. Therefore, staff recommends that the Board of Supervisors deny this withdrawal application.

TL/ap  
AFD21-3\_360RacefldDr

**Attachments:**

1. Ordinance
2. Location Map
3. AFD Withdrawal Request Letter
4. Barnes Swamp AFD Map
5. Barnes Swamp Ordinance No. 167A-14
6. Map Showing Extent of Withdrawal Request
7. Policy Governing the Withdrawals of Property from AFDs
8. Proposed Solar Farm Master Plan
9. Unapproved Minutes of the January 27, 2022, AFD Advisory Committee Meeting
10. Unapproved Minutes of the January 27, 2022, AFD Planning Commission Meeting

ORDINANCE NO. \_\_\_\_\_

AGRICULTURAL AND FORESTAL DISTRICT-21-0003.

AMENDMENT OF ORDINANCE NO. 167A-14:

360 RACEFIELD DRIVE BARNES SWAMP WITHDRAWAL

WHEREAS, a request has been filed with the Board of Supervisors of James City County, Virginia (the "Board"), to withdraw ± 26 acres of land as shown on a plan titled "Racefield Solar AFD Withdrawal Map" dated October 7, 2021, from the Barnes Swamp Agricultural and Forestal District, which is currently ± 2,207 acres (the "Application"); and

WHEREAS, the ± 26 acres subject to the Application is a portion of the +/- 65.26-acre property owned by Katherine Hockaday, Justin Martin, and Ann Martin, located at 360 Racefield Drive and identified as James City County Real Estate Tax Map Parcel No. 0310100003; and

WHEREAS, at its January 27, 2022, meeting, the Agricultural and Forestal District Advisory Committee voted 5-0 to recommend denial of the Application; and

WHEREAS, a public hearing was advertised and held by the Planning Commission (the "Commission") at its February 2, 2022, meeting, pursuant to Section 15.2-4314 of the Code of Virginia, 1950, as amended (the "Virginia Code"), after which the Commission voted 3-2 to recommend denial of the Application; and

WHEREAS, pursuant to Sections 15.2-1427 and 15.2-4309 of the Virginia Code, a public hearing was advertised and held by the Board; and

WHEREAS, the Board finds that the withdrawal request meets the criteria set forth in the Board's Withdrawal Policy for Agricultural and Forestal Districts, dated September 28, 2010.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, that Ordinance No. 167A-14 is hereby amended to remove ± 26 acres owned by Katherine Hockaday, Justin Martin, and Ann Martin, as referenced herein, from the Barnes Swamp Agricultural and Forestal District.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

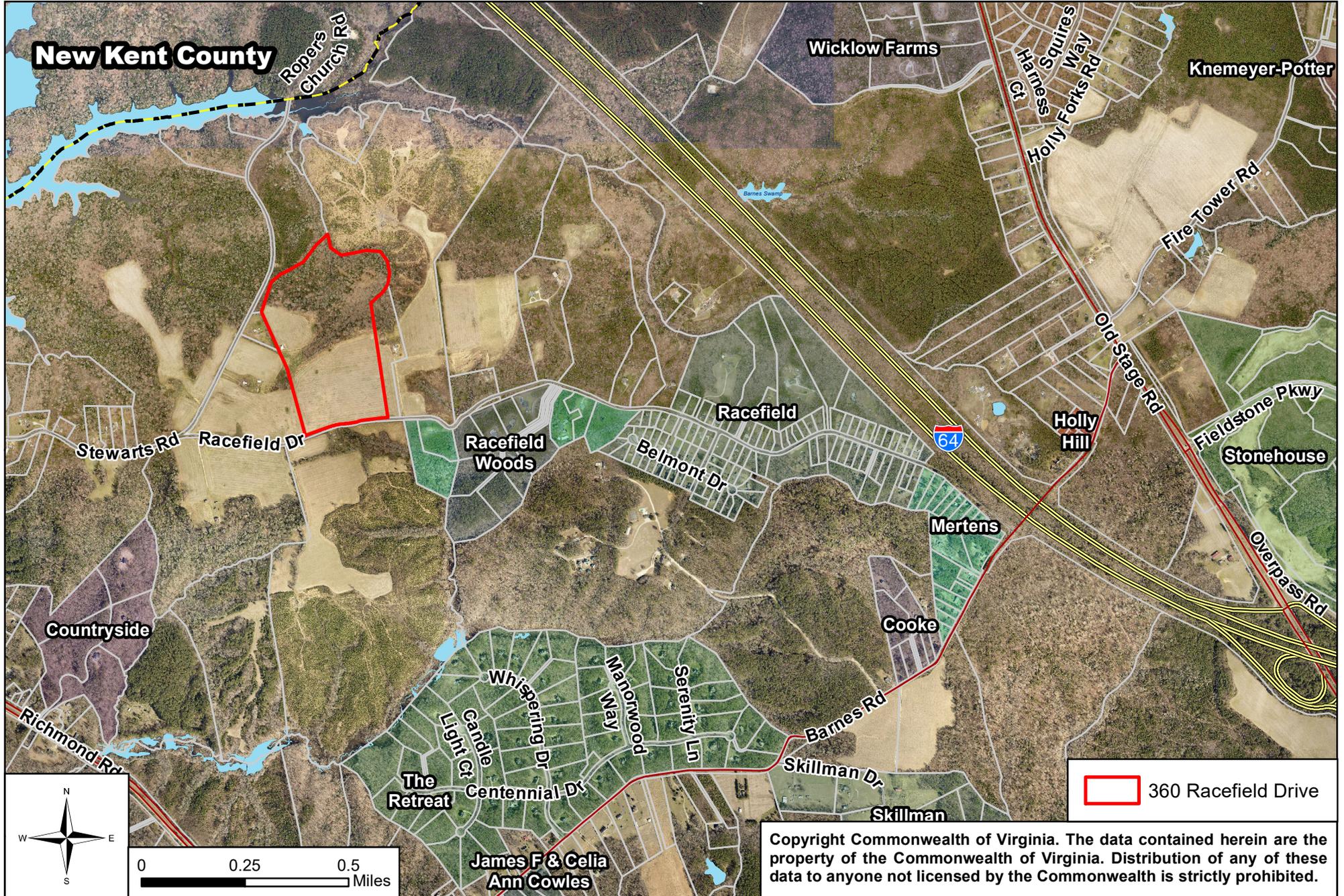
ICENHOUR  
HIPPLE  
LARSON  
SADLER  
MCGLENNON

VOTES			
<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

JCC AFD-21-0003

# 360 Racefield Drive Barnes Swamp AFD Withdrawal



Tom Leininger  
101 Mounts Bay Road  
Building A  
Williamsburg, VA 23185

**Re: 360 Racefield Drive Partial AFD Withdrawal Request**

Greetings Mr. Leininger,

On behalf of Racefield Solar, LLC, we would like to request that a 26-acre portion of property owned by Kathleen Hockaday, and Justin & Blair Martin, be withdrawn from the Barnes Swamp Agricultural & Forestal District (AFD). In order to establish good and reasonable cause for the proposed withdrawal, we demonstrate below compliance with the required criteria outlined in the Policy Governing the Withdrawals of Property from Agricultural and Forestal Districts (AFDs).

**A. The request is caused by a change in circumstances that could not have been anticipated at the time application was made for inclusion in the district.**

The Barnes Swamp district was continued for a four-year term beginning in 2018. This renewal occurred prior to the enactment of the enabling legislation (Virginia Clean Economy Act), initial conversation, and execution of the agreements allowing for the development of a proposed solar project to begin.

**B. The request would serve a public purpose, as opposed to the proprietary interest of the landowner that could not otherwise be realized upon expiration of the AFD.**

If approved, this withdrawal request would allow for the consideration of a Special Use Permit for a 3 Megawatt solar energy facility. The Virginia Clean Economy Act is legislation enacted in 2020 that sets the Commonwealth on a path to source its energy mix from 100% carbon-free sources by the year 2050, with an interim goal of constructing a number of small solar facilities across



Dominion Energy's service territory by 2035. Installation of small-scale solar projects provide the community with locally sourced, clean energy. Small distributed solar generators reduce the distance between power generation and consumption, thereby improving grid resiliency.

The project is subject to Virginia interconnection regulations and Dominion Energy's interconnection process. The project has an early 2022 interconnection deadline that, due to Virginia Regulations, cannot be suspended or delayed. The deadline requires the project to either move forward with an Interconnection Service Agreement and begin Interconnection Construction Planning or terminate. Therefore, the withdrawal from the AFD must occur prior to the October 2022 expiration to allow the project to meet the interconnection deadline and move forward.

**C. The request would not cause damage or disruption to the existing district.**

The request to remove 26 acres from the AFD represents 1.5% of the 1,653.74-acre Barnes Swamp AFD, and 0.14% of the larger 18,200-acre total AFD area (as of March, 2021). Approving the withdrawal of 26 acres would allow the AFD to remain well above the requisite 200-acre minimum identified in the Barnes Swamp Renewal document.

**D. If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place on the property, the new land use would be in conformance with the Comprehensive Plan**

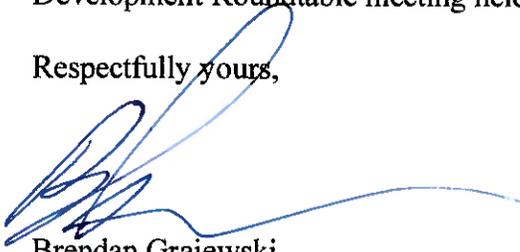
The request for withdrawal is in conjunction with a proposal to convert the land use. Concurrent with this request, Racefield Solar has submitted a Special Use Permit application request that demonstrates the proposed new land use is in conformance with the Comprehensive Plan. Virginia Code 15.2-2232 requires solar energy facilities be found in substantial accord with the locality's adopted Comprehensive Plan prior to construction. Racefield Solar's Special Use Permit application request includes a detailed analyses of how the approximate location, character, and extent thereof are in substantial accord with James City County's *Toward 2035: Leading the Way* Comprehensive Plan, pursuant to VAC15.2-2232.

We appreciate your consideration of this request. To aid in discussion of this proposal, we have attached an updated conceptual plan of Racefield Solar, the proposed project that would occupy



the withdrawn acreage. This plan considers the comments we had received in a previous Development Roundtable meeting held earlier this year.

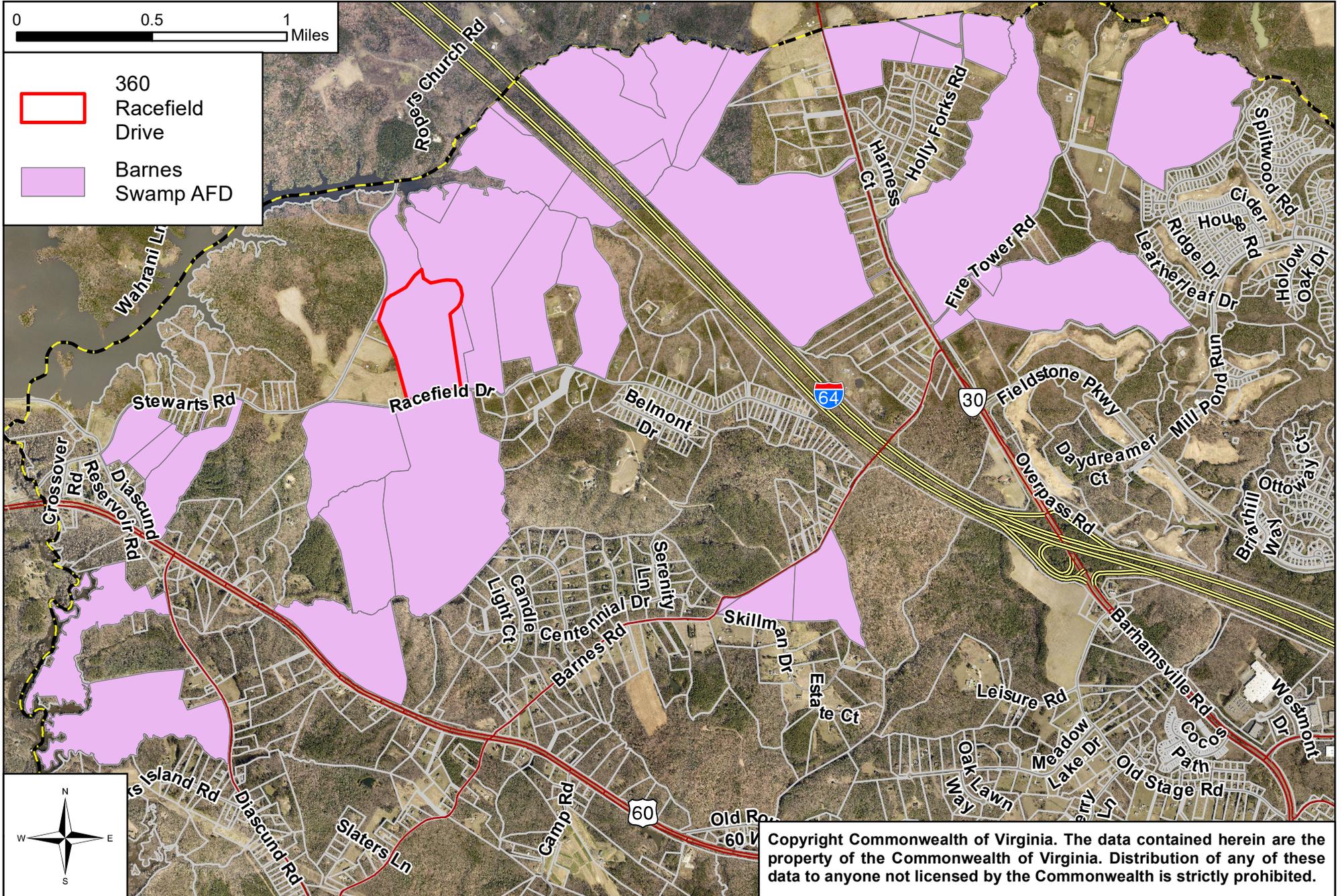
Respectfully yours,



Brendan Grajewski  
Development Manager  
Hexagon Energy, LLC  
(434) 326-4405  
BGrajewski@Hexagon-Energy.com



# Barnes Swamp AFD



# ADOPTED

SEP 11 2018

ORDINANCE NO. 167A-14

Board of Supervisors  
James City County, VA

## AGRICULTURAL AND FORESTAL DISTRICT-05-86-1-2018

### BARNES SWAMP 2018 RENEWAL

WHEREAS, James City County has completed a review of the Barnes Swamp Agricultural and Forestal District (the "District"); and

WHEREAS, in accordance with Section 15.2-4311 of the Code of Virginia, 1950, as amended (the "Virginia Code"), property owners have been notified, public notices have been filed, public hearings have been advertised, and public hearings have been held on the continuation of the District; and

WHEREAS, the Agricultural and Forestal District (AFD) Advisory Committee at its meeting on June 21, 2018, voted 9-0 to recommend renewal of the District; and

WHEREAS, the Planning Commission following its public hearing on August 1, 2018, concurred with the recommendation of staff and the AFD Advisory Committee and voted 5-0 to recommend renewal of the District with the conditions listed below.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that:

1. The Barnes Swamp Agricultural and Forestal District (the "District") is hereby continued to October 31, 2022 in accordance with the provisions of the Virginia Agricultural and Forestal District Act, Virginia Code Section 15.2-4300 et. seq. (the "Act").
2. That the District shall include the following parcels, provided, however, that all land within 25 feet of road right-of-ways is excluded from the District:

<u>Owner</u>	<u>Parcel No.</u>	<u>Acres</u>
SD & SKI, LLC	0310100001	108.47
Jane B. Farmer & Betty B. Rady	0310100002	36.00
Katherine Leon Hockaday	0310100003	65.26
Jane Farmer & Betty Rady	0330100003	70.00
Jane Farmer & Betty Rady	0330100004	70.00
Arline H. Bowmer Estate	0330100006	96.75
Arline H. Bowmer Estate	0240100012	62.19
Martha W. McMurrin & SWR-Misc, LLC	1010100001	61.61
Elizabeth O. Harwood	0320100001	43.52
Stephen E. & Rebecca Murphy, Trustee	0320100002	13.85
Frederick C. Johnson, Trustee	0320100002A	17.20
Betty L. Johnson & Lynne J. Fischer	0320100003	19.07

Betty L. Johnson & Lynne J. Fischer	0320100003A	93.98
Robert Michael Dzula	0320100004	28.07
John Avery Richardson	0410100005	42.00
John Avery Richardson	0410100006	10.00
Niceland Farm, LLC	0420100008	189.74
Cherri U. Spellmeyer	0420100014	134.00
Pamaka, LLC	0430100015	21.99
Pamaka, LLC	0430100016	52.00
Charles & Dianne Hasbrouck	0920100001	97.50
Alex Lamar Penland	0240100029	55.90
Donald A. Hazelwood	0420100020	112.44
Donald A. Hazelwood	0420100018	3.46
Donald A. Hazelwood	0440100001	6.11
John P. and Shelly D. Latoski Trustee	0310100001B	10.23
Dennis Wayne Leonituk, Jr.	0310100001A	10.00
Pamaka, LLC	0430100014A	1.34
Steven M. & Michelle T. Johnson	0340800003	52.63
Steven M. & Michelle T. Johnson	0340800005	68.43
Total:		<u>1,653.74</u>

3. That pursuant to Sections 15.2-4312 and 15.2-4313 of the Act, the Board of Supervisors requires that no parcel in the District be developed to a more intensive use without prior approval of the Board of Supervisors. Specifically, the following restrictions shall apply:
- a. The subdivision of land is limited to 25 acres or more, except where the Board of Supervisors authorizes smaller lots to be created for residential use by members of the owner's immediate family, as defined in the James City County Subdivision Ordinance. Parcels of up to five acres, including necessary access roads, may be subdivided for the siting of Wireless Communications Facilities (WCFs), provided: a) The subdivision does not result in the total acreage of the District to drop below 200 acres; and b) the subdivision does not result in a remnant parcel of less than 25 acres.
  - b. No land outside the Primary Service Area and within the District may be rezoned and no application for such rezoning shall be filed earlier than six months prior to the expiration of the District. Land within the District may be withdrawn from the District in accordance with the Board of Supervisors' Policy Governing the Withdrawal of Properties from Agricultural and Forestal Districts, adopted September 28, 2010.
  - c. No Special Use Permit (SUP) shall be issued except for agricultural, forestal, or other activities and uses consistent with the Act, which are not in conflict with the policies of this District. The Board of Supervisors, at its discretion, may issue SUPs for WCFs on properties in the District that are in accordance with the County's policies and Ordinances regulating such facilities.

*Ruth M. Larson*

Ruth M. Larson  
Chairman, Board of Supervisors

ATTEST:

*Teresa J. Fellows*  
Teresa J. Fellows  
Deputy Clerk to the Board

	VOTES		
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>
MCGLENNON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICENHOUR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SADLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIPPLE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LARSON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Adopted by the Board of Supervisors of James City County, Virginia, this 11th day of September, 2018.

AFD-BarnesSwpRnw-res



# HEXAGON ENERGY

321 East Main Street | Suite 500  
Charlottesville, VA 22902  
hexagon-energy.com

## RACEFIELD SOLAR

AFD Withdrawal Map

360 Racefield Drive  
Toano, VA 23168  
37.43120298, -76.86614779

### Legend

-  Property Boundary
-  Proposed AFD Withdrawal Area (26 acres)

Retained: 39.26 Acres

Proposed: 26 Acres

**RESOLUTION**

**POLICY GOVERNING THE WITHDRAWALS OF PROPERTY FROM AGRICULTURAL  
AND FORESTAL DISTRICTS (AFDs)**

WHEREAS, the Board of Supervisors has determined that Agricultural and Forestal Districts (AFDs) are a valuable tool to help protect the agricultural and forestal lands and industry in James City County; and

WHEREAS, premature withdrawals of land from the Districts is contrary to the intent of the Board in allowing the establishment of these Districts.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby establishes the following policy relating to the withdrawal of lands from AFDs during the terms of those Districts. This policy in no way supersedes the provisions for withdrawal by right under Sections 15.2-4311 or 15.2-4314D of the Code of Virginia.

1. It is the policy of the Board of Supervisors to discourage the withdrawal of properties from AFDs during the terms of those districts.
2. The criteria for withdrawal during the terms of the districts are as follows:

In order to establish "good and reasonable cause," a landowner requesting to withdraw property from an AFD must submit written information to demonstrate compliance with the following criteria:

- A. The request is caused by a change in circumstances that could not have been anticipated at the time application was made for inclusion in the district.
- B. The request would serve a public purpose, as opposed to the proprietary interest of the landowner that could not otherwise be realized upon expiration of the AFD.
- C. The request would not cause damage or disruption to the existing district.
- D. If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place on the property, the new land use would be in conformance with the Comprehensive Plan.

The Board shall weigh each of the above criteria in its deliberation, but may also use whatever other criteria as it deems appropriate for the individual case.

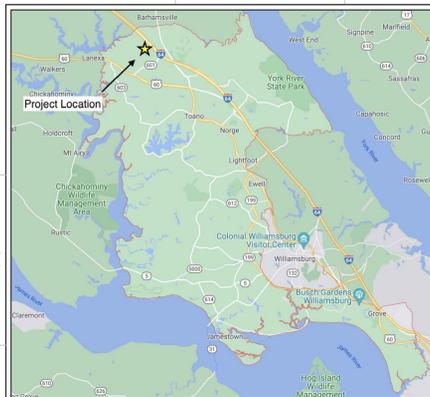
ATTEST:

  
Robert C. Middaugh  
Clerk to the Board

  
James G. Kennedy  
Chairman, Board of Supervisors

SUPERVISOR	VOTE
MCGLENNON	AYE
GOODSON	AYE
ICENHOUR	AYE
JONES	AYE
KENNEDY	AYE

Adopted by the Board of Supervisors of James City County, Virginia, this 28th day of September, 2010.

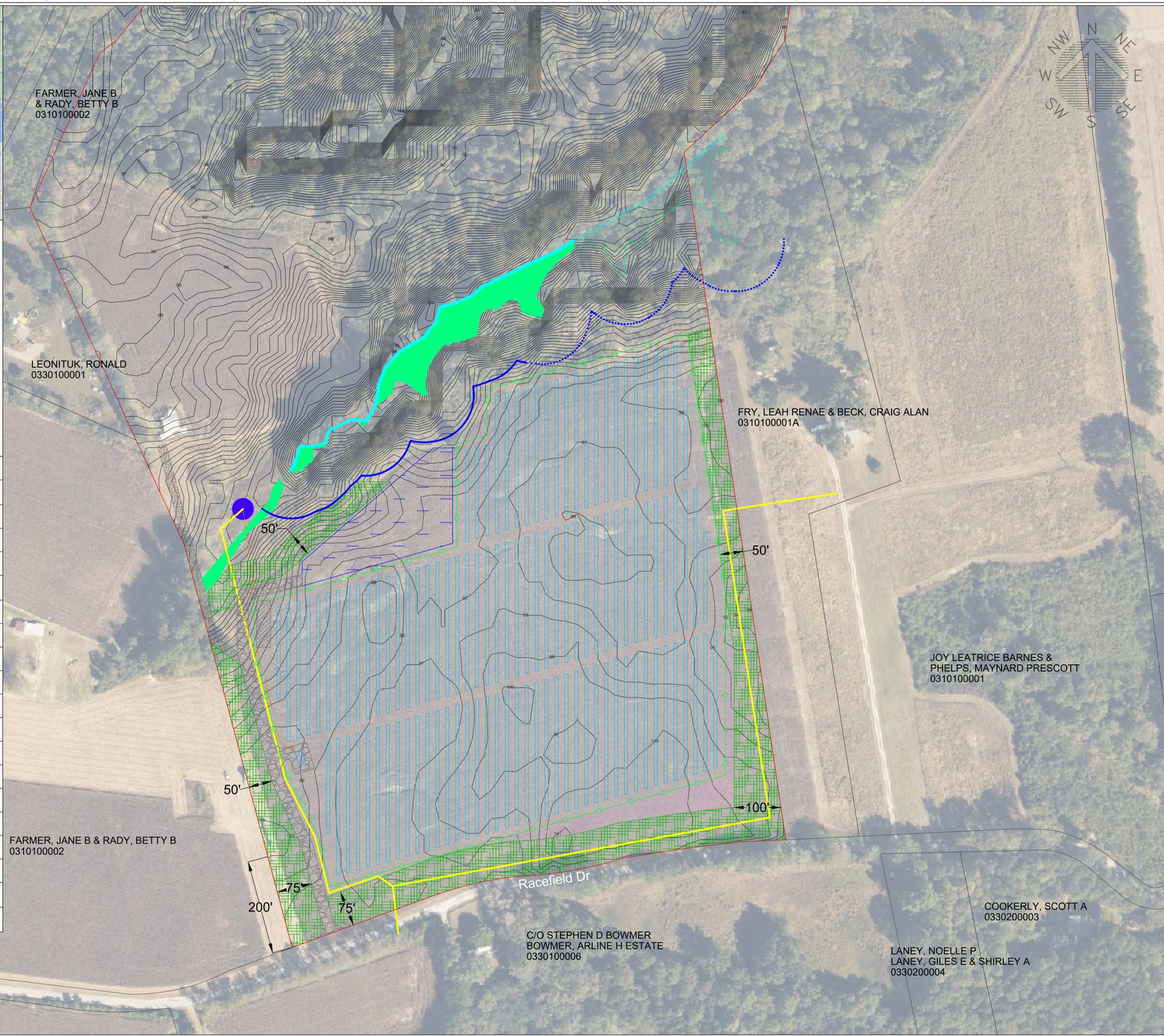


**SITE NOTES**

1. STORMWATER MANAGEMENT AND STORMWATER RUNOFF WILL MEET JAMES CITY COUNTY AND STATE NPDES STORMWATER PERMIT REQUIREMENTS BOTH DURING CONSTRUCTION AND OPERATION. THERE WILL BE NO DEVELOPMENT ON EXISTING SLOPES 25% OR GREATER WITHOUT A STEEP SLOPE WAIVER FROM JAMES CITY COUNTY
2. THE SITE IS LOCATED IN THE DIASCUND CREEK WATERSHED (HUC JL26)
3. WETLANDS AND RPA BOUNDARIES ARE BASED ON DESKTOP AND FIELD DELINEATION COMPLETED BY TIMMONS GROUP

**LEGEND**

	PROPERTY LINE (PARCEL NUMBER: 310100003) (65.26 ACRES)
	SITE AND BMP ACCESS ROAD
	LANDOWNER ACCESS ROAD
	PROPOSED FENCE AREA
	PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
	PERENNIAL WETLANDS
	RPA BUFFER (100')
	INTERMITTENT WETLANDS
	PERENNIAL WETLANDS (ESTIMATED)
	RPA BUFFER (100') (ESTIMATED)
	INTERMITTENT WETLANDS (ESTIMATED)
	POI - 13.2kV LINE TAP
	PROPOSED CUSTOMER SWITCHGEAR AND MV TRANSFORMER
	PROPOSED LINE TRENCHING
	PROPOSED VEGETATIVE SCREENING
	PROPOSED POLLINATOR SPECIES AREA
	PROPOSED EROSION & SEDIMENTATION CONTROL AREA
	GRID ATTACHMENT WIRING (TO BE TRENCHED)
	PAD MOUNTED EQUIPMENT



**HEXAGON ENERGY**

HEXAGON ENERGY, LLC  
 321 E Main St, Suite 500  
 Charlottesville, VA 22902  
 Phone: 434.227.5090  
 Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

**DRAWING TYPE**

- Preliminary  Construction  
 Customer Approval  As-built  
 Permitting  Other

**REVISIONS**

Rev	By	Description	Date
0	EO	RFP PLAN	7/30/2021
1	EO	ADD CONTOUR LABELS	9/14/2021
2	EO	PERMIT PLAN	11/12/2021
3	EO	REVISE CONTOURS AND ACCESS ROADS	1/6/2022
4	EO	REVISE ACCESS ROADS	1/19/2022
5	EO	REVISE VEGETATIVE BUFFER	1/24/2022

**SITE INFORMATION**

PARCEL ID NUMBER (PIN)	APPROX ACREAGE	ZONING	R/W SETBACK	SIDE YARD SETBACK	REAR YARD SETBACK	LANDSCAPE BUFFER
310100003	#65.26	A1	+75'	+50'	+1000'	+50'

Project Name:  
**RACEFIELD SOLAR, LLC**

Site Address:  
**360 RACEFIELD DR  
 TOANO, VA 23168  
 37.432°N, -76.868°W**

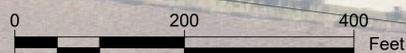
Sheet Name:

**MASTER PLAN**

Scale: 1in=100ft | Project ID: TBD

Sheet No:

**L1.1**



**MINUTES  
JAMES CITY COUNTY  
AGRICULTURAL AND FORESTAL DISTRICT ADVISORY COMMITTEE  
ORGANIZATIONAL MEETING  
101-D Mounts Bay Road, Williamsburg, VA 23185  
Building D Glass Conference Room  
January 27, 2022  
4:00 PM**

---

**A. CALL TO ORDER**

Mr. Chris Taylor called the Agricultural and Forestal District (AFD) Advisory Committee meeting to order at 4 p.m.

**B. ROLL CALL**

**Present:**

Chris Taylor, Chair  
Bruce Abbott, Vice Chair  
Richard Bradshaw  
Loretta Garrett  
Sue Sadler (by phone)  
Sandy Wanner

**Absent:**

Payten Harcum  
William Harcum  
Thomas Hitchens

**Staff:**

Tammy Rosario, Community Development Assistant Director  
Josh Crump, Principal Planner  
Tom Leininger, Principal Planner  
Thomas Wysong, Senior Planner  
Beth Klapper, Community Development Assistant  
Katie Pelletier, Community Development Assistant

**C. MINUTES**

1. Minutes of the October 21, 2021, Regular Meeting

Ms. Garrett motioned to Approve the minutes of the October 21, 2021, regular meeting.

Mr. Wanner seconded the motion.

On a voice vote, the motion was approved 6-0.

**D. OLD BUSINESS**

There was no old business for discussion.

## **E. NEW BUSINESS**

### 1. Election of Officers

Mr. Abbott motioned to Re-elect Mr. Taylor as the Committee Chairman.

Ms. Garrett seconded the motion.

The motion was approved 6-0 after a unanimous voice vote.

Mr. Taylor motioned to Re-elect Mr. Abbott as the Committee Vice Chairman.

Ms. Garrett seconded the motion.

The motion was approved 6-0 after a unanimous voice vote.

### 2. AFD Advisory Committee Proposed 2022-2023 Calendar

Mr. Taylor reviewed the proposed 2022-2023 and tentative 2023-2024 Committee Meeting dates. He noted that AFD renewal cases are scheduled for meetings on July 21, 2022, and July 28, 2022.

Mr. Bradshaw and Mr. Crump discussed the timeline for property owner notices.

### 3. Case No. AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal

Mr. Leininger stated that Mr. Brendan Grajewski from Hexagon Energy, on behalf of the property owner, has applied to withdraw a 26-acre portion of the 65.26-acre parcel within the Barnes Swamp AFD. Mr. Leininger said the parcel is located at 360 Racefield Drive, is zoned A-1 General Agriculture, and is designated Rural Lands on the 2045 Comprehensive Plan Land Use Map. He told the Committee the subject parcel is one of 33 parcels currently in the Barnes Swamp AFD, which total 2,207 acres.

Mr. Leininger explained the reason for requesting withdrawal for this portion of the parcel from the AFD is for a proposed solar farm. He explained that, outside of renewal periods, withdrawals must be approved by the Board of Supervisors according to a specific set of criteria. Mr. Leininger said the criteria had been included in the Agenda packet and state that: (1) requests should be a result of an unforeseeable change in circumstances, traditionally interpreted to include death of a property owner; (2) the request needs to serve a demonstrable public interest, i.e. schools or fire stations; (3) withdrawals should not result in a disruption of the existing district (Mr. Leininger noted this withdrawal does not bring the overall acreage below the AFD requirement); and (4) the resulting land use should be in conformance with the Comprehensive Plan's designation for that parcel (Mr. Leininger stated that a solar farm is not consistent with the recommended uses of the 2045 Comprehensive Plan in Rural Lands).

Mr. Leininger said that, based on an evaluation of the criteria listed in the Board of Supervisor's Policy governing the withdrawal of properties from AFDs, staff recommends that the AFD Advisory Committee recommend denial of this application to the Planning Commission and the Board of Supervisors. He said he would be happy to answer any questions from the Committee, and the applicant was also available to answer questions as well.

Mr. Brendan Grajewski, Development Manager with Hexagon Energy, addressed the Committee and gave a presentation outlining the applicant's withdrawal request. He said the renewable energy development company is based in Charlottesville, Virginia, and works with localities to create access to clean energy. He said they have been working on the new opportunity of smaller solar projects in Virginia for about 3.5 years.

Mr. Grajewski then described how the Racefield Solar Project and AFD withdrawal request met the criteria outlined by Mr. Leininger. Regarding change of circumstance, Mr. Grajewski noted the Barnes Swamp AFD is a large District, and the last renewal period in 2018 was before the 2020 enabling legislation for small-scale solar projects. He said this is a change of circumstance and a unique and time-sensitive opportunity for the landowner. Mr. Grajewski said there is a small margin of error for the approval and construction timeline for the solar project, with the County and Dominion Energy. Regarding the criteria of serving a public purpose, he noted the solar project would export power to the local grid, and most County residents are Dominion Energy customers. Regarding disruption to the District, Mr. Grajewski said the 26-acre withdrawal would represent just one percent of the land in the Barnes Swamp AFD, and the remaining parcel acreage would remain in the AFD and meet minimum AFD requirements. He noted the Barnes Swamp AFD would still encompass over 2,000 acres in the County.

Mr. Grajewski introduced Mr. Scott Foster, applicant attorney from Gentry Locke, to address the criteria of land use designation conformance with the County's Comprehensive Plan. Mr. Grajewski said they will also address this issue during the Planning Commission public hearing next week.

Mr. Foster addressed the Committee and noted that staff found the solar farm use inconsistent with the County's 2045 Comprehensive Plan Rural Lands designation. Mr. Foster said he comes to a different conclusion regarding the project's conformity with the Comprehensive Plan. He said the area is designated Rural Lands, with primary uses listed in Chapter 10 of the Comprehensive Plan that include certain public or semi-public uses compatible with the natural and rural surroundings. Mr. Foster argued that solar meets that definition, by letter and intent, being a passive use by nature that is not public utility intensive. He said this kind of development is very different than the commercial and residential development normally seen inside the Primary Service Area. He said it is a public utility use in keeping with State Code and is considered and meets the definition of a public utility facility, just like a water and sewer extension but does not lead to additional development. Mr. Foster said solar is a good fit and great neighbor to rural uses. He said it is not highly visible and does not make noise or light at night or complain about agricultural uses next door. Mr. Foster said he will also address the definition at the Planning Commission meeting, but he believes solar is a great way for rural landowners to monetize in the short-term in contrast to more traditional, less compatible, long-term development of rural lands. He noted after a solar project is decommissioned in 35-40 years, the land could return to an agricultural use.

Ms. Garrett asked about other localities with similar projects.

Mr. Grajewski replied a small-scale solar project was approved in Warsaw, and they are currently going through the approval process for summer projects in other areas.

Mr. Taylor asked about the economic feasibility of the project size.

Mr. Grajewski referenced the change of circumstance and new market created by the requirements and legislation regarding small-scale solar projects.

Mr. Foster added the power from this smaller project will be distributed and consumed locally.

Mr. Taylor asked if the project could be expanded.

Mr. Foster replied the legislation prevents connections and expansion.

Mr. Grajewski said they would be happy to provide additional assurances or conditions.

Mr. Abbott asked who would manufacture the solar panels.

Mr. Grajewski said that has not been identified yet, but in previous projects they have committed to stateside-manufactured panels.

Mr. Wanner said conditions would be considered in the special use permit process.

Mr. Abbott said the adjacent property owners will likely not like the view of the solar farm.

Mr. Wanner said they would likely be well-shielded. He asked staff if the County Attorney's Office had been consulted on the recommendation.

Mr. Leininger replied yes, and he explained that the solar use is not identified or addressed in the County Comprehensive Plan, except on rooftops. He noted that solar is usually viewed as a temporary use, and previously approved solar projects in the County were on land designated Economic Opportunity and Low Density Residential, not Rural Lands. Mr. Leininger said that staff did not feel the project met the definition of institutional uses for public purposes and does not preserve the character of Rural Lands.

Mr. Wanner stated he is opposed to anything not consistent with the Comprehensive Plan and cannot support the proposed timeline. He said in his experience there is flexibility in all projects.

Mr. Taylor clarified what the Committee needed to review for their recommendation.

Mr. Wanner said they could wait and request withdrawal through the normal renewal process later this year.

Mr. Bradshaw said there would not be additional local revenue from the solar project due to tax credits, or significant increased property values. He said the change in legislation does not meet the change of circumstance criteria for early withdrawal from the AFD, normally reserved for death of a taxpayer. He said it is a financial operation, with no local benefit or institution. He agreed it would not disrupt the AFD, but he would vote against the withdrawal. He said they could wait until October to remove the property from the AFD during the renewal process.

Mr. Wanner motioned to recommend denial of Case. No. AFD-21-0003, 360 Racefield Dr. Barnes Swamp Withdrawal, to the Planning Commission and Board of Supervisors.

Ms. Garrett seconded the motion.

On a voice vote of 5-0-1, with Ms. Sadler abstaining, the motion was approved to recommend denial.

#### 4. Case No. S-21-0072. Newman Road family Subdivision

Mr. Wysong addressed the Committee and stated that Mrs. Sheila Chandler submitted a family

subdivision application on behalf of Mr. Kenneth Chandler to create a 6.07-acre lot within the parcel addressed 7751 Newman Road. He said this property is approximately 50 acres, zoned A-1, General Agricultural, and is part of the Christenson's Corner AFD. Mr. Wysong stated, per the AFD Ordinance, a subdivision of land shall result in parcels greater than 25 acres except in cases where the Board of Supervisors approve of smaller lots as part of family subdivisions. He said therefore the case is before the Committee today.

Mr. Wysong said the new 6.07-acre parcel would remain within the AFD. He said there are no proposed changes to the AFD or negative impacts on surrounding property. Mr. Wysong said Staff recommends the AFD Advisory Committee recommend approval of this application to the Board of Supervisors, and he would be happy to answer any questions.

(Add discussion)

Mr. Wanner motioned to recommend approval of Case No. S-21-0072, Newman Road family Subdivision, to the Planning Commission and Board of Supervisors.

Mr. Abbott seconded the motion.

On a voice vote of 6-0, the motion was approved.

5. Case No. S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision

Mr. Wysong stated that Mr. Alister Perkinson submitted a family subdivision application on behalf of his father, Mr. Roderick Perkinson, to create a 3.8-acre lot within the parcel addressed 2188 Lake Powell Road. Mr. Wysong said this property is approximately 28 acres, zoned R-8, Rural Residential, and is part of the Gospel Spreading Church AFD. Mr. Wysong said that, per the Gospel Spreading Church AFD Ordinance, a subdivision of land shall result in parcels greater than 25 acres except in cases where the Board of Supervisors approves of smaller lots as part of family subdivisions. Mr. Wysong said this means the AFD and BOS need to approve this subdivision. He noted the new 3.8-acre parcel would remain within the AFD, and there are no proposed changes to the AFD or negative impacts on surrounding property. Mr. Wysong stated that Staff recommends the AFD Advisory Committee recommend approval of this application to the Board of Supervisors. He said he would be happy to answer any questions, and the applicant is also available to answer questions as well.

(Add discussion)

Mr. Abbott motioned to recommend approval of Case No. S-21-0072, Newman Road family Subdivision, to the Planning Commission and Board of Supervisors.

Mr. Taylor seconded the motion.

On a voice vote of 6-0, the motion was approved.

## **F. DISCUSSION ITEMS**

### **1. 2022 AFD Renewal Survey Responses**

Mr. Crump stated the Board of Supervisors has requested that the Committee survey property owners regarding their preferred length of term renewal. He reviewed the survey card responses...

## **G. ADJOURNMENT**

Mr. Wanner motioned to Adjourn the meeting.

Mr. Abbott seconded the motion.

The meeting was adjourned at 5 p.m. after a unanimous 6-0 voice vote.

DRAFT

**Unapproved Minutes of the February 2, 2022  
Planning Commission Regular Meeting**

**AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal**

AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal and SUP-21-0022. 360 Racefield Drive Solar Farm were presented to the Commission as a combined Public Hearing. Minutes of the hearing are recorded under SUP-21-0022. 360 Racefield Drive Solar Farm; however, the vote for AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal is recorded here.

Mr. Polster made a motion to recommend approval of the AFD withdrawal.

On a roll call vote the Commission did not recommend approval of AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal. (2-3)

**SUP-21-0022. 360 Racefield Drive Solar Farm**

Mr. Tom Leininger, Principal Planner, stated that Mr. Brendan Grajewski has applied, on behalf of Hexagon Energy, for a Special Use Permit (SUP) to construct a solar farm and an Agricultural and Forestal District (AFD) Withdrawal request to remove a 26-acre portion of the 65.26-acre parcel within the Barnes Swamp AFD. Mr. Leininger stated that the parcel is located at 360 Racefield Drive, is currently zoned A-1, General Agricultural and designated Rural Lands on the 2045 Comprehensive Land Use map and is located outside the Primary Service Area (PSA). Mr. Leininger stated that the subject parcel is one of 33 currently in the Barnes Swamp AFD, which totals 2,207 acres.

Mr. Leininger stated that prior to the approval of the SUP for the solar farm, the area subject to this SUP is required to be withdrawn from the AFD.

Mr. Leininger stated that outside of the AFD renewal periods, withdrawals must be approved by the Board of Supervisors according to the Policy Governing the Withdrawals of Property from AFDs.

Mr. Leininger stated that the proposed solar farm facility will consist of ground-mounted arrays of solar panels mounted on single-axis tracker. Mr. Leininger further stated that a 50-foot vegetated buffer is shown along the perimeter of the development, and the buffer is increased to 75 feet along areas nearest to Racefield Drive.

Mr. Leininger stated that the 2045 Comprehensive Plan Land Use Map designates the property Rural Lands. Mr. Leininger stated that the Comprehensive Plan does not specifically identify solar power or utilities in general, in Rural Lands. Mr. Leininger stated that Rural Land uses are intended to help protect and enhance the viability of agricultural and forestal resources with primary uses being agricultural and forestal activities and related uses. Mr. Leininger further stated that in addition to the land use designation, Racefield Drive is part of the existing, local, rural road

network. Mr. Leininger noted that the 2045 Comprehensive Plan states that capacity improvements and non-rural land uses should be avoided on rural roads.

Mr. Leininger stated that according to Virginia Code Section 15.2-2232 unless a utility facility is shown on the adopted Comprehensive Plan or other master plans for the County, the local Planning Commission and a governing body shall review the facility to determine whether the location, character, and extent of the project is substantially in accord with the adopted Comprehensive Plan.

Mr. Leininger stated that the AFD withdrawal was reviewed by staff and found that it only met 1 of the 4 criteria listed in the Board adopted Policy Governing the Withdrawals of Property from AFDs.

Mr. Leininger stated that the four criteria for AFD withdrawal are:

- The request is the result of an unforeseeable change in circumstances (traditionally interpreted to include death of a property owner)
- The request serves a public interest (typically defined as schools or fire stations as examples).
- The withdrawal should not result in a disruption of the existing district (this withdrawal does not bring the overall acreage below the AFD requirement)
- The resulting land use should be in conformance with the Comprehensive Plan's designation for that parcel

Mr. Leininger stated that staff does not find a solar farm consistent with the Rural Lands designation in the 2045 Comprehensive Plan.

Mr. Leininger stated that at the AFD Advisory Committee meeting on January 27, 2022, the Committee voted 5-0-1 with one member abstaining to recommend denial of the withdrawal request to the Planning Commission and Board of Supervisors.

Mr. Leininger stated that based on an evaluation of criteria withdrawal policy, staff recommends that the Planning Commission recommend denial of the AFD withdrawal application to the Board of Supervisors.

Mr. Leininger stated that staff also recommends that the Planning Commission not find this application consistent with the 2045 Comprehensive Plan and to recommend denial of the proposal to the Board of Supervisors. Mr. Leininger stated that should the Planning Commission recommend approval, conditions have been included that are designed to mitigate the potential impacts of this development.

Mr. Haldeman inquired if there was any correspondence from adjacent property owners.

Mr. Leininger stated that there was no formal correspondence; however, after the AFD Advisory Committee meeting, he did speak with an adjacent property owner who had general questions about the project.

Mr. Polster noted that Hexagon Energy hosted a community meeting and that there were no concerns expressed by the citizens.

Ms. Null stated that she attended the meeting and that the only discussion of note related to runoff at the back corner of the property.

Dr. Rose inquired if the property could be withdrawn during the renewal period without meeting any criteria.

Mr. Leininger stated that the property could be withdrawn by-right during the renewal period; however, the renewal period would not begin until later in the spring.

Mr. O'Connor inquired whether the decision would only be the SUP and the consistency with the Comprehensive Plan if the property were withdrawn during the renewal period.

Mr. Leininger confirmed that the Commission would still need to make a recommendation on the SUP and consistency with the Comprehensive Plan.

Mr. O'Connor opened the Public Hearing.

Mr. Brendan Grajewski, Hexagon Energy, made a presentation to the Commission on the proposed solar farm.

Mr. Haldeman inquired if there was a contract in place with Dominion Energy.

Mr. Grajewski stated that the contract is being negotiated. Mr. Grajewski further stated that they have approximately 70 days to finalize the contract. Mr. Grajewski stated that this timing seemed to be the best to meet the specified deadlines and align the project schedule with the necessary permits.

Dr. Rose inquired if this is why they are pursuing the ADF Withdrawal at this time.

Mr. Grajewski confirmed.

Dr. Rose inquired how the County would benefit from the electricity from the project.

Mr. Grajewski stated that this project will provide grid resiliency and more localized options for clean energy.

Dr. Rose inquired if the buffer could be designed to look more natural.

Mr. Grajewski stated that the plan has to comply with the County's landscape ordinance; however, they are willing to look at options that would give a less planned appearance.

Mr. O'Connor inquired about the number of homes 3 megawatts would power.

Mr. Grajewski stated that it is approximately 200 homes.

Mr. O'Connor inquired about how the facility would connect to the grid.

Mr. Grajewski stated that the tie in was close to the property and would not require new transmission lines.

As no one else wished to speak, Mr. O'Connor closed the Public Hearing.

Mr. Holt noted that there are three votes required. Mr. Holt stated that the first vote would be on the AFD Withdrawal; the second vote on the Resolution of Substantial Accord with the Comprehensive Plan; and the third on the SUP.

Mr. O'Connor opened the floor for discussion.

Mr. Polster stated that 94% of citizen responses for the Comprehensive Plan Survey ranked preservation of the rural character and environment. Mr. Polster stated that, while the County was doing well, it was not doing enough. Mr. Polster further stated that during the Comprehensive Plan update, he recommended looking at new technology for potential updates to the Zoning Ordinance to include performance standards similar to what are found in this application.

Mr. Polster further stated that looking at the benefits of this application compared to the benefits of the AF, the solar farm would protect the land for the life of the project where the AFD protection lasts only four years. Mr. Polster noted that allowing the use of renewable energy is also in keeping with the goal of finding new ways for property owners to benefit economically from their property.

Mr. Polster noted that the Commission had previously recommended approval of the Rochambeau solar project, with the same Zoning and Comprehensive Plan Land Use designation, including withdrawal of the property from an AFD.

Mr. Polster stated that the project would also be much more fiscally beneficial to the County than keeping the property in the AFD.

Mr. Polster stated that he finds the project to be consistent with the intent of the Comprehensive Plan to control development in rural lands. Mr. Polster stated that he intends to support the AFD withdrawal and the SUP application.

Mr. Haldeman stated that the Commonwealth of Virginia has set a goal to have 30% renewable energy by 2030. Mr. Haldeman stated that he voted to recommend approval of the two previous solar farms as those properties were otherwise headed for very intensive use. Mr. Haldeman stated that there are a number of benefits to a solar farm including no use of pesticides or herbicides. Mr. Haldeman stated that he found the traffic management plan, stormwater plan, and buffering plan to be well thought out. Mr. Haldeman stated that his one concern is whether this will open the gate for more applications of this kind and the impact on the rural character.

Dr. Rose stated that the County can either look back at what rural lands have always been or look ahead to a new vision for what rural lands can be. Dr. Rose stated that this application is a progressive use that benefits the landowner, the County, and the Commonwealth moving towards the renewable energy goal.

Ms. Null stated that she does not find that the proposal enhances rural lands. Ms. Null stated that, going by the Comprehensive Plan survey, citizens do not want development, they want viewshed, the lands to stay rural, and no development. Ms. Null stated that setting a precedent for future applications would change the character of the County. Ms. Null noted that the two previously approved solar farms were located in the PSA, where this property is outside the PSA. Ms. Null stated that this application would have a detrimental effect on a beautiful area of the County.

Mr. Polster stated that if the Commission finds solar farms to be something of the future, it is necessary to develop the right ordinances to ensure that these renewable energy applications conform with performance standards. Mr. Polster further stated that he appreciates the applicants use of the items recommended by the Commonwealth and willingness to consider requests from the DRRC and the Commission. Mr. Polster further stated that he appreciates the applicant's robust public engagement. Mr. Polster stated that it is these things that need to be formalized similar to short-term rentals.

Mr. O'Connor stated that he does share the concerns of opening the opportunity for many other projects to come forward and the impacts of numerous solar farms on the rural character of the County. Mr. O'Connor stated that he does not believe the public benefits of the project rise to the level of triggering a withdrawal from the AFD. Mr. O'Connor stated that allowing the withdrawal of the property could also set a precedent for other early withdrawal requests.

Mr. Polster stated that the Rochambeau Solar Farm property was also in an AFD and also rural lands. Mr. Polster stated that the precedent had already been set. Mr. Polster reiterated that it is imperative to establish an ordinance, so the Commission has criteria to fall back on.

Mr. Haldeman inquired if the Commission could recommend that the property not be withdrawn from the AFD but still find that the project is consistent with the Comprehensive Plan and recommend approval of the SUP.

Mr. Max Hlavin stated that there is nothing procedurally incorrect in recommending no withdrawal from the AFD but finding the project consistent with the Comprehensive Plan and recommending approval of the SUP.

Mr. Holt noted that there is a condition for a 48-month commencement of construction and the property owner will be able to withdraw the property by-right in October.

Mr. Polster made a motion to recommend approval of the AFD withdrawal.

On a roll call vote the Commission did not recommend approval of AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal. (2-3)

Mr. Polster made a motion to find the application consistent with the Comprehensive Plan.

On a roll call vote the Commission voted to find the application consistent with the Comprehensive Plan (4-1)

Mr. Polster made a motion to recommend approval of the SUP application.

On a roll call vote the Commission voted to recommend approval of SUP-21-0022. 360 Racefield Drive Solar Farm. (4-1)

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Tom Leininger, Principal Planner

SUBJECT: SUP-21-0022. 360 Racefield Drive Solar Farm

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**ATTACHMENTS:**

	Description	Type
☐	Staff Report	Staff Report
☐	Resolution	Resolution
☐	Location Map	Backup Material
☐	Applicant Narrative	Backup Material
☐	Master Plan	Backup Material
☐	Proposed Landscape Buffer	Backup Material
☐	Applicant Review of the 2045 Comprehensive Plan	Backup Material
☐	Adopted resolution finding the application consistent with the adopted Comprehensive Plan, per 15.2-2232	Backup Material
☐	Unapproved Minutes of the February 2, 2022, Planning Commission Meeting	Backup Material
☐	Amended Resolution	Resolution

**REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	2/18/2022 - 4:49 PM
Development Management	Holt, Paul	Approved	2/18/2022 - 4:49 PM
Publication Management	Pobiak, Amanda	Approved	2/18/2022 - 4:57 PM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:39 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:52 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:00 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**SUMMARY FACTS**

Applicant: Mr. Brendan Grajewski, Hexagon Energy, LLC

Land Owners: Katherine Hockaday, Justin Martin, and Ann Martin

Proposal: Development and construction of a solar farm facility for electrical power generation, storage, transmission, and accessory uses

Location: 360 Racefield Drive

Tax Map/Parcel No.: 0310100003

Property Acreage: 65.26 acres

Zoning: A-1, General Agricultural

Comprehensive Plan: Rural Lands

Primary Service Area: (PSA) Outside

Staff Contact: Tom Leininger, Principal Planner

**PUBLIC HEARING DATES**

Planning Commission: February 2, 2022, 6:00 p.m.

Board of Supervisors: March 8, 2022, 5:00 p.m.

**FACTORS FAVORABLE**

1. With the exception of traffic impacts to Racefield Drive, staff finds the proposed conditions will mitigate impacts to surrounding properties and development.
2. Impacts: See Impact Analysis on Pages 4-6.

**FACTORS UNFAVORABLE**

1. Staff does not find the proposal consistent with the 2045 Comprehensive Plan.
2. The proposed project site is accessed by a narrow, substandard rural road. As such, it may not be generally suitable for heavy construction traffic.
3. Should the Board of Supervisors deny the applicant’s Agricultural and Forestal District (AFD) withdrawal request, then this use would not be consistent with the terms of the AFD.
4. Impacts: See Impact Analysis on Pages 4-6.

**SUMMARY STAFF RECOMMENDATION**

Staff recommends the Board of Supervisors deny the proposed Special Use Permit (SUP). Should the Board of Supervisors approve this case, staff has included proposed conditions to mitigate the potential impacts of this development.

**PLANNING COMMISSION RECOMMENDATION**

At its February 2, 2022, meeting, the Planning Commission voted 4-1 to recommend approval of the SUP request to the Board of

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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Supervisors. The Planning Commission also approved, by a vote of 4-1, a resolution to find the proposal consistent with the Comprehensive Plan in accordance with Section 15.2-2232 of the Code of Virginia (Attachment No. 4).

**PROPOSED CHANGES MADE SINCE THE PLANNING COMMISSION MEETING**

At the February 2, 2022, Planning Commission Regular Meeting, the Commission recommended denial of AFD-21-0003, 360 Racefield Drive Barnes Swamp Withdrawal and approval of SUP-21-0022, 360 Racefield Drive Solar Farm to the Board of Supervisors. Staff has prepared the resolution (Attachment No. 1) to state that this SUP shall not be effective and no site plan may be approved until the area shown on the master plan for the project is withdrawn from the Barnes Swamp AFD enacted by Ordinance No. 167A-14 adopted on September 11, 2018.

**PROJECT DESCRIPTION**

Mr. Brendan Grajewski, Hexagon Energy, LLC, has applied for an SUP for a 3-megawatt (MW) solar farm located at 360 Racefield Drive. If approved, the proposed solar farm will be developed on 26 acres of the total 65.26 acres and would connect to the existing utility line using an on-site, pad-mounted switchgear. The panels will be on a single axis tracking system that will rotate throughout the day to track the sun.

The proposed 26-acre solar farm site is currently used as a farm and is mostly clear of mature vegetation and trees. The site will be accessed by Racefield Drive, which is a narrow rural road.

**COMPARISON TO PREVIOUSLY APPROVED SOLAR FARM FACILITY APPLICATIONS**

There have been two previously approved SUPs for solar farms, Norge Solar Farm and Rochambeau Solar Farm. These two solar farms were significantly larger, comprising of 224 acres and 193 acres, respectively.

The Norge Solar Farm was approved in 2018. The Norge Solar Farm site is zoned A-1, General Agriculture and R-2, General Residential. The properties are designated Low Density Residential and located inside of the PSA. The properties consisted of an existing mature buffer around the majority of the property to screen the facility. Additionally, the site takes access from Old Church Road and is approximately 0.25 miles from Richmond Road.

The Rochambeau Solar Farm was approved in 2019. The project site is zoned A-1, General Agriculture. The property is designated Economic Opportunity and located outside of the PSA. This site has an existing mature buffer around the majority of the project site and has direct access from Rochambeau Drive.

The solar farms for those properties were determined to be a temporary use and that the land would be restored at the end of the term and would allow for future development of the site. As noted above, these two previous solar farm projects have direct access to a primary roadway to support heavy construction traffic.

**PLANNING AND ZONING HISTORY**

The property at 360 Racefield Drive has been used as active farmland. It is located within the Barnes Swamp AFD and there have not been any previous SUPs or rezoning cases associated with the property.

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**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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**SURROUNDING ZONING AND DEVELOPMENT**

All surrounding properties are zoned A-1, General Agriculture and are designated Rural Lands on the 2045 Comprehensive Plan Land Use Map.

Properties to the east, north, and south are within the Barnes Swamp AFD.

**FINDING OF CONSISTENCY**

Section 15.2-2232 of the Code of Virginia requires that unless a utility facility is shown on the adopted Comprehensive Plan or other master plans for the County, the local Planning Commission and a governing body shall review the facility to determine whether the location, character, and extent of the project is substantially in accord with the adopted Comprehensive Plan.

The proposed solar electrical generation facility is not currently shown on the County's adopted Comprehensive Plan and, therefore, requires this additional level of review by the Planning Commission and the Board of Supervisors. For the Planning Commission's consideration, a consistency determination resolution is included as Attachment No. 6 and staff's analysis and findings as to consistency with the adopted Comprehensive Plan can be found later in this staff report.

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
<u>Public Transportation: Vehicular</u>	<u>Not Fully Mitigated</u>	<ul style="list-style-type: none"> <li>- The new solar farm would not exceed 100 peak hour trips.</li> <li>- Access to the property is from Racefield Drive. While the access road into the property will be improved, no improvements to Racefield Drive are warranted or proposed.</li> <li>- Staff finds that Racefield Drive is a narrow, substandard rural road that may not be suitable for heavy construction traffic.</li> <li>- Proposed Condition Nos. 9 and 10 address the potential damage to the existing roadway and limiting the number of employee vehicles parking on-site during construction.</li> </ul>
<u>Public Transportation: Bicycle/Pedestrian</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- Pedestrian/bicycle accommodations are not shown on the adopted Pedestrian/Bicycle Accommodations Master Plan.</li> </ul>
<u>Public Safety</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- Fire Station 1 on Forge Road serves this area of the County, approximately 6.3 miles from the proposed solar farm.</li> <li>- Proposed SUP Conditions include a condition that the Facility Operator prepare and maintain an Emergency Management Plan to address situations that may require response from public safety personnel (Condition No. 7).</li> </ul>
<u>Public Schools</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- N/A since no residential dwelling units are proposed.</li> </ul>
<u>Public Parks and Recreation</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- N/A since no residential dwelling units are proposed.</li> </ul>
<u>Public Libraries and Cultural Centers</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- Staff finds that this project does not generate impacts that require mitigation.</li> </ul>
<u>Groundwater and Drinking Water Resources</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- The property does not receive public water and sewer. The solar farm would not need water or sewer services.</li> </ul>

*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
<u>Watersheds, Streams, and Reservoirs</u> Project is located in the Diascund Creek Watershed and Diascund Creek Reservoir.	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- The Master Plan shows a conceptual layout for stormwater management facilities.</li> <li>- Should this SUP be approved, this project will need to demonstrate full compliance with environmental regulations at the development plan stage, but no other specific environmental impacts have been identified for mitigation. Language has been included for the decommissioning plan to address stormwater ponds (Condition No. 12).</li> <li>- Condition Nos. 2 and 11 address the requirement for a nutrient management plan and spill prevention control and countermeasures plan, respectively.</li> <li>- The Stormwater and Resource Protection Division provided additional SUP Conditions (Condition Nos. 15, 16, 17, 18, 19, and 20) to address off-site nutrient credits, special stormwater criteria, channel protection, flood protection, stream channel restoration, and erosion and control inspections.</li> </ul>
<u>Cultural/Historic</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- Per Section 24-145 of the Zoning Ordinance, an archaeological study and natural resource inventory will be required at the development plan stage.</li> </ul>
<u>Nearby and Surrounding Properties</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- A vegetated buffer to screen the project from nearby properties is specified in proposed SUP Condition No. 3.</li> <li>- The project will also need to demonstrate full compliance with lighting and landscaping regulations in the Zoning Ordinance at the development plan stage.</li> <li>- Following construction of the facility, staff does not anticipate significant noise, odor, lighting, or other similar impacts on nearby properties. However, to address any potential impacts of this nature, the project includes enhanced landscaping along all side and front property lines.</li> <li>- Condition Nos. 13 and 14 also limit the height of the panels and address use of materials to prevent glare.</li> <li>- Condition No. 9 requires a construction management and mitigation plan which is intended in part to address impacts to nearby properties during the construction stage.</li> <li>- Condition No. 6 limits the height and the color of the perimeter fence.</li> </ul>

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**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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<b>Impacts/Potentially Unfavorable Conditions</b>	<b>Status</b> <i>(No Mitigation Required/Mitigated/Not Fully Mitigated)</i>	<b>- Considerations/Proposed Mitigation of Potentially Unfavorable Conditions</b>
<u>Community Character</u>	<u>Mitigated</u>	<ul style="list-style-type: none"> <li>- Racefield Drive is not a designated Community Character Corridor.</li> <li>- A vegetated buffer to screen the project from the roadway and nearby properties is specified in Condition No. 3.</li> </ul>
<u>Covenants and Restrictions</u>	<u>No Mitigation Required</u>	<ul style="list-style-type: none"> <li>- The applicant has verified that he is not aware of any covenants or restrictions on the property that prohibit the proposed use.</li> </ul>

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**2045 COMPREHENSIVE PLAN**

The site is designated Rural Lands on the 2045 Comprehensive Plan Land Use Map.

Rural Lands are areas containing farms, forests, and scattered houses, exclusively outside of the PSA, where a lower level of public service delivery exists or where utilities and urban services do not exist and are not planned for in the future. Rural Lands uses are intended to help protect and enhance the viability of agricultural and forestal resources and compatible rural economic development uses as important components of the local economy.

Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agri-tourism, rural-based public or commercial recreation, rural-support businesses, and certain public or semi-public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings.

Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low intensity settings relative to the site in which it will be located may be considered based on a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.

Uses proposed in the Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:

- i. Locating structures and uses outside of sensitive areas;
- ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;
- iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;
- iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;
- v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;
- vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;
- vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways; and
- viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.

The 2045 Comprehensive Plan also recommends sitting more intensive uses in areas where the existing road network can accommodate the additional vehicle trips without the need for significant upgrades or modifications that would impact the character of the rural road network. In addition, the 2045 Comprehensive Plan discourages development on farmland, open fields, scenic roadside vistas, and other important agricultural and forestal soils and resources.

**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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Within the Transportation Chapter of the 2045 Comprehensive Plan, it is stated that capacity improvements and non-rural land uses should be avoided on rural roads. These facilities are often two lanes, have smaller typical cross sections, and have limited driveways and intersections. Such roadways are not designed for speed or capacity, but rather to provide access and complement the rural character of the area. These roads are unique because they showcase the County's mature tree canopies and rural landscapes.

Racefield Drive specifically is part of the existing, local, rural road network. The roadway is intended for two-way traffic, does not contain any centerline markings, and the pavement is approximately 14 feet wide, in total. Current Virginia Department of Transportation (VDOT) standards for rural, local roads call for a minimum width of surfacing of between 18-22 feet. VDOT standards also suggest considering using a lane width of 12 feet where substantial truck volumes are present or agricultural equipment frequently uses the road.

To the west of this property, the closest roadway intersection with a non-rural roadway is the intersection with Route 60; a distance of approximately 1.6 miles. To the east of this property, the closest roadway intersection with a non-rural roadway is the intersection of Route 30 via Barnes Road; a distance of approximately 2.2 miles.

Within the Community Character Chapter of the 2045 Comprehensive Plan, Goals, Strategies, and Actions (GSAs) GSA 1.5 calls for preserving the character of rural roads by identifying roads that should be preserved and work with VDOT to maintain their rural character while providing an acceptable level of safety.

While GSA 1.6 of the Land Use Chapter of the Comprehensive Plan calls for exploring emerging technologies in the renewable energy industry, with the intention of protecting the County's unique rural character, preserving natural resources, and mitigating impacts to

neighboring properties, GSA LU 6.16 calls for protecting farming and forestry uses from conflicting activities by encouraging buffers and open space design and by raising awareness among new rural land purchasers about existing farming and forestry uses in the County.

As noted above, staff therefore finds the proposed application not consistent with the Comprehensive Plan for the following reasons:

- Staff finds the proposed solar farm is not an appropriate primary use, as listed on the previous page of the staff report;
- The location is not on, near, or adjacent to a major thoroughfare;
- The proposed solar farm is not a direct agricultural or forestal-support use;
- Staff finds the proposed solar farm in this location is not compatible with the natural and rural character of the area;
- Staff finds that Racefield Drive is not ideally suited to accommodate the construction vehicles and related traffic;
- The proposed solar farm in this location does not reflect and enhance the rural character of the County; and
- The proposed solar farm in this location is located on an open field that provides scenic roadside vistas.

**PROPOSED SUP CONDITIONS**

The full text of the proposed conditions is provided in Attachment No. 1.

**STAFF RECOMMENDATION**

Staff recommends the Board of Supervisors not approve the proposed SUP. Should the Board of Supervisors approve this case, staff has included proposed conditions to mitigate the potential impacts of this development.

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**SPECIAL USE PERMIT-21-0022. 360 Racefield Drive Solar Farm  
Staff Report for the March 8, 2022, Board of Supervisors Public Hearing**

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TL/md

SUP21-22\_360RacefldDrSF

Attachments:

1. Resolution
2. Location Map
3. Applicant Narrative
4. Master Plan
5. Proposed Landscape Buffer
6. Applicant Review of 2045 Comprehensive Plan
7. Adopted Resolution for Consistency with Section 15.2-2232
8. Unapproved Minutes of the February 2, 2022, Planning Commission Meeting

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## RESOLUTION

### CASE NO. SUP-21-0022. 360 RACEFIELD DRIVE SOLAR FARM

WHEREAS, the Board of Supervisors of James City County, Virginia, has adopted by Ordinance specific land uses that shall be subjected to a Special Use Permit (SUP) process; and

WHEREAS, Mr. Brendan Grajewski of Hexagon Energy, LLC, on behalf of Katherine Hockaday, Justin Martin, and Ann Martin, the owners of property located at 360 Racefield Drive and further identified as James City County Tax Map Parcel No. 0310100003 (the "Property"), has applied for an SUP to allow for the construction of a solar electrical generation facility on the Property as shown on a plan titled "Racefield Solar, LLC" dated November 12, 2021, and revised January 24, 2022; and

WHEREAS, the Planning Commission, following its public hearing on February 2, 2022, recommended approval of Case No. SUP-21-0022 by a vote of 4-1; and

WHEREAS, a public hearing was advertised, adjoining property owners notified, and a hearing conducted on Case No. SUP-21-0022; and

WHEREAS, the Board of Supervisors of James City County, Virginia, finds this use to be consistent with good zoning practices and the 2045 Comprehensive Plan Land Use Map designation for the Property.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, after consideration of the factors in Section 24-9 of the James City County Code, does hereby approve the issuance of Case No. SUP-21-0022 as described herein with the following conditions:

1. Master Plan. This SUP shall be valid for the construction of a photovoltaic solar electrical generation facility (the "Facility"), electrical substations serving the Facility with a capacity of 5,000-kilovolt amperes or more, and electrical transmission lines serving the Facility capable of transmitting 69 kilovolts or more (all together, the "Project") on property located at 360 Racefield Drive and further identified as James City County Real Estate Tax Map Parcel No. 0310100003 (the "Property"). The Property shall be developed and the Project constructed substantially in accordance with the master plan titled "Racefield Solar, LLC" prepared by Hexagon Energy, LLC, and dated November 12, 2021 and revised January 24, 2022, (the "Master Plan"), with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance, as amended.
2. Nutrient Management Plan. The Facility operator shall provide a nutrient management plan (NMP) prepared by a certified nutrient management planner for all of the area within the defined limits of work (disturbance) for the Property. The purpose of the NMP is to provide for long-term establishment and maintenance of turf grass, pasture, rangeland, or other similar type vegetative cover which preserve the long-term soil health for potential future farming purposes. The NMP shall have a component which specifically identifies and maintain and protects designated Prime Farmland soil mapping units consistent with the Soil Survey of James City County and the City of Williamsburg Virginia (April 1985) and the County's Comprehensive Plan. The NMP shall be submitted for review and approval by the County's Director of Stormwater and Resource Protection prior to approval of any final site plan for the Facility. Upon approval of the NMP, the

Facility operator shall be responsible for ensuring that any nutrient applied in the area within the defined limits of work is in strict accordance with the NMP.

3. Vegetated Buffer. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a landscape plan for the Project. The landscape plan shall provide a 50-foot landscaped buffer (the "Perimeter Buffer") along the perimeter of the Project site. The Perimeter Buffer shall be increased to 75 feet in the following locations: (i) along the boundary of the Property that fronts on Racefield Drive, (ii) along approximately 200 feet of the eastern perimeter of the Project as shown on the Master Plan, and (iii) along approximately 200 feet of the western perimeter to screen the Project as shown on the Master Plan. The Perimeter Buffer shall be shown on the site plan. The Perimeter Buffer shall be provided by one of the three treatment options listed below:
  - a. In areas of the Perimeter Buffer that are currently comprised of mature forest, as determined by the Planning Director or designee, the buffer shall be left undisturbed in its natural state.
  - b. In areas of the Perimeter Buffer that are not completely comprised of mature forest, as determined by the Planning Director or designee, supplementation with evergreen shrubs and trees shall be required in accordance with Condition No. 3c.
  - c. In areas of the Perimeter Buffer where little or no vegetation exists, as determined by the Planning Director or designee, the buffer shall be landscaped to the provisions of Section 24-96 of the Zoning Ordinance for General Landscape Areas except that the required evergreen tree and shrub mixture shall be increased from 35% to at least 45%.
4. Lighting. If any lighting of the Project is proposed, the Planning Director or designee shall review and approve a lighting plan prior to final site plan approval. Any exterior site or building lighting on the Property shall be shielded and directed downward. No glare, defined as 0.1 foot-candle or higher, shall extend outside the boundaries of the Property. Lights shall be operated by a motion detector or be able to be turned on as needed by the Facility operator and shall not be routinely illuminated at night. No light poles shall exceed a height of 16 feet above finished grade unless otherwise approved in writing by the Planning Director prior to final site plan approval.
5. Signage. Unless otherwise exempt by Section 24-74 of the Zoning Ordinance, no outdoor signage related to the Project shall be permitted on the Property.
6. Fencing. Any fence on the Property shall be black or other neutral color and shall not exceed a height of 8 feet above finished grade and not consist of barbed wire. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a detail of any proposed fencing on the Property for consistency with this condition.

7. *Emergency Management Plan*. The Facility operator shall prepare and maintain an Emergency Management Plan (EMP) to address situations that may require response from James City County public safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
  - Be developed in conjunction with and approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan.
  - Provide a mutually agreed-upon schedule for the Facility operator to provide information sessions and training for James City County public safety personnel relative to possible emergency response situations at the Facility.
  - Provide pertinent contact numbers for the Facility operator emergency personnel.
  - Provide that all emergency contact information will be posted on access gates.
  
8. *Construction Management and Mitigation Plan*. Prior to final approval of any site plan, the Facility operator shall provide a Construction Management and Mitigation Plan (CMMP) for review and approval of the Planning Director or designee. The CMMP shall include those items listed below:
  - a. Construction Management:
    - Designated parking areas.
    - All piling driving activity on the Property shall be limited to the hours of 8 a.m. to 6 p.m., Monday through Friday.
    - Other construction activities, including clearing and grading of the Property shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday.
    - Construction delivery traffic to the Property shall not be allowed during pick-up/drop-off times for surrounding schools.
    - Appropriate methods for the storage, transportation, and disposal of any waste and/or hazardous materials.
  - b. Construction Mitigation:
    - Dust mitigation, such as water trucks, mulch, or similar methods.
    - Smoke and burn mitigation, such as containments or similar methods.
  
9. *Construction Traffic Mitigation Plan*. A Construction Traffic Mitigation Plan (CTMP) shall be submitted to the Virginia Department of Transportation (VDOT) and the Planning Director, or designee, for review and approval prior to the issuance of a land disturbing permit for the Facility. The CTMP shall identify all existing conditions along Racefield Drive, provide a plan to address all necessary repairs required as a result of damage from construction traffic, and provide a timeline for completion of repairs, and provide a surety in a form acceptable to the County Attorney guaranteeing such repairs. All road repairs as identified by the approved CTMP shall be completed within six months of the Facility becoming operational.

10. Off-Site Parking. Prior to issuance of a land disturbing permit, an Off-Site Parking Plan (OPP) shall be submitted to the Planning Director, or designee, for review and approval. The off-site parking area shall be used by construction workers who shall be transported to the Property via a shuttle van and/or bus. The OPP shall conform to all Zoning Ordinance requirements and shall identify elements such as, but not limited to, the number of off-site parking spaces provided and the location of the off-site parking area. In order to reduce the amount of construction-related traffic along Racefield Drive and to ensure that construction workers are parking their vehicles at the off-site parking area, no more than 20 vehicles may be parked on the Property for the Project at any time except for trucks, as defined by the Zoning Ordinance, and delivery vehicles. No on-street parking for the Project shall be allowed. The OPP shall identify the need for additional Erosion and Sediment Control measures and Stormwater measures generated by the off-site parking area and those needs be approved through an erosion and sediment control plan prior to issuance of land disturbance permit for the Facility.
11. Spill Prevention Control and Countermeasure Plan. Prior to approval of any site plan, the Facility operator shall submit a Spill Prevention Control and Countermeasure Plan (SPCCP) for the Project to the County Director of Stormwater and Resource Protection or designee for review and approval. The SPCCP shall outline spill prevention and pollutant containment measures and procedures necessary for the operation of the Facility until decommissioning.
12. Decommissioning and Restoration Plan and Agreement. Prior to final approval of any site plan, a Decommissioning and Restoration Plan (DRP) shall be submitted to the Planning Director or designee for review and approval. The DRP shall outline the required steps for removal of above and below-ground Facility components, disposal and/or recycling of wastes and materials, soil stabilization, and the revegetation and restoration of native habitat of the Property. At the time of decommissioning of the Facility, the stormwater facilities on the Property must be evaluated for continued need and the final DRP must include the close-out or remediation of stormwater facilities. The DRP shall be enforceable by a written Decommissioning Agreement in accordance with and subject to the terms of Virginia Code § 15.2-2241.2(B). To ensure sufficient funds are available to the County to conduct the DRP, a surety in an amount sufficient for decommissioning the Facility and remediating the Property shall be posted with James City County in a form acceptable to the County Attorney. The Decommissioning Agreement shall be executed prior to approval of a site plan for the Facility.
13. Height Limitation. The maximum height of all structures in the Facility, including the photovoltaic solar panel mounts, shall not exceed 16 feet above finished grade.
14. Glare. All photovoltaic solar panels on the Property shall be of made of or be coated with anti-reflective materials to prevent glare.
15. Virginia Runoff Reduction Method. The Forested Open Space land use category may be used to account for a maximum of 50% of the required water quality associated with the Project. The purchase of offsite nutrient credits toward needed water quality associated with the Project will not be allowed.
16. Special Stormwater Criteria. Special stormwater criteria measures as defined in the Special Stormwater Criteria Task Group shall be required for the Project.

17. Channel Protection. The stormwater management design shall provide channel protection for the 1-year, 24-hour storm event per energy balance, as defined in 9 VAC 25-870-66(B)(3)(a), for all outfall and discharge locations for the Project.
18. Flood Protection. The stormwater management design shall provide flood protection through attenuation of the 10-year, 24-hour storm event, per 9 VAC 25-870-66(C)(2)(b).
19. Stream Channel Restoration. The development plan for the Project must include a restoration plan for approximately 200 linear feet of the upper reaches of the perennial stream channel on the Property that is experiencing severe degradation. The restoration plan must be shown as part of the overall plan of development for the Project and be approved by the Director of Stormwater and Resource Protection prior to site plan approval. Restoration of the stream channel must be guaranteed in a manner acceptable to the County Attorney prior to site plan approval and completed prior to the Facility being operational.
20. Erosion and Sediment Control Inspection.
  - a. The person responsible for carrying out the erosion and sediment control plan on the Property shall be responsible for monitoring and inspecting the land disturbing activity in accordance with Section 8-6(a) of the County Code. All inspection documentation shall be submitted to the Stormwater and Resource Protection Division for review and approval in accordance with Chapter 8 of the County Code. Prior to the issuance of land disturbance permit, the Facility operator and any third-party inspector shall conduct a pre-construction meeting with the Stormwater and Resource Protection Division to discuss schedule, submittal requirements, and other necessary items to complete the monitoring and inspections.
  - b. At the County's sole discretion, the County may engage the services of County-contracted inspectors for inspections required by County Code Section 8-6(b), or as deemed appropriate by the County to ensure compliance with applicable codes and Ordinances. The Facility operator shall be financially responsible for the costs of any inspections contracted for by the County for the Facility or the Property.
21. Public Improvements. Pursuant to Code of Virginia § 15.2-2288.8(B), a payment of \$1,400 per megawatt, as measured in alternating current (AC) generation capacity of the nameplate capacity of the Facility, shall be made to the County on July 1 of each year following the Facility being operational to support construction of public improvements, the necessity for which need not generated solely by the Facility.
22. Commencement. The Facility shall be operational within 48 months from the date of adoption of this resolution authorizing the SUP, or this SUP shall automatically be void. The Facility operator shall submit a signed letter to the Planning Director prior to 48 months from the issuance of this SUP to confirm the operational status of the Facility.
23. Severance Clause. This SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

BE IT FURTHER RESOLVED by the Board of Supervisors of James City County, Virginia, that SUP-21-0022 authorized herein shall not be effective and no site plan may be approved until the area shown on the Master Plan for the Project is withdrawn from the Barnes Swamp Agricultural and Forestal District enacted by Ordinance No. 167A-14 adopted on September 11, 2018.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

ICENHOUR  
HIPPLE  
LARSON  
SADLER  
MCGLENNON

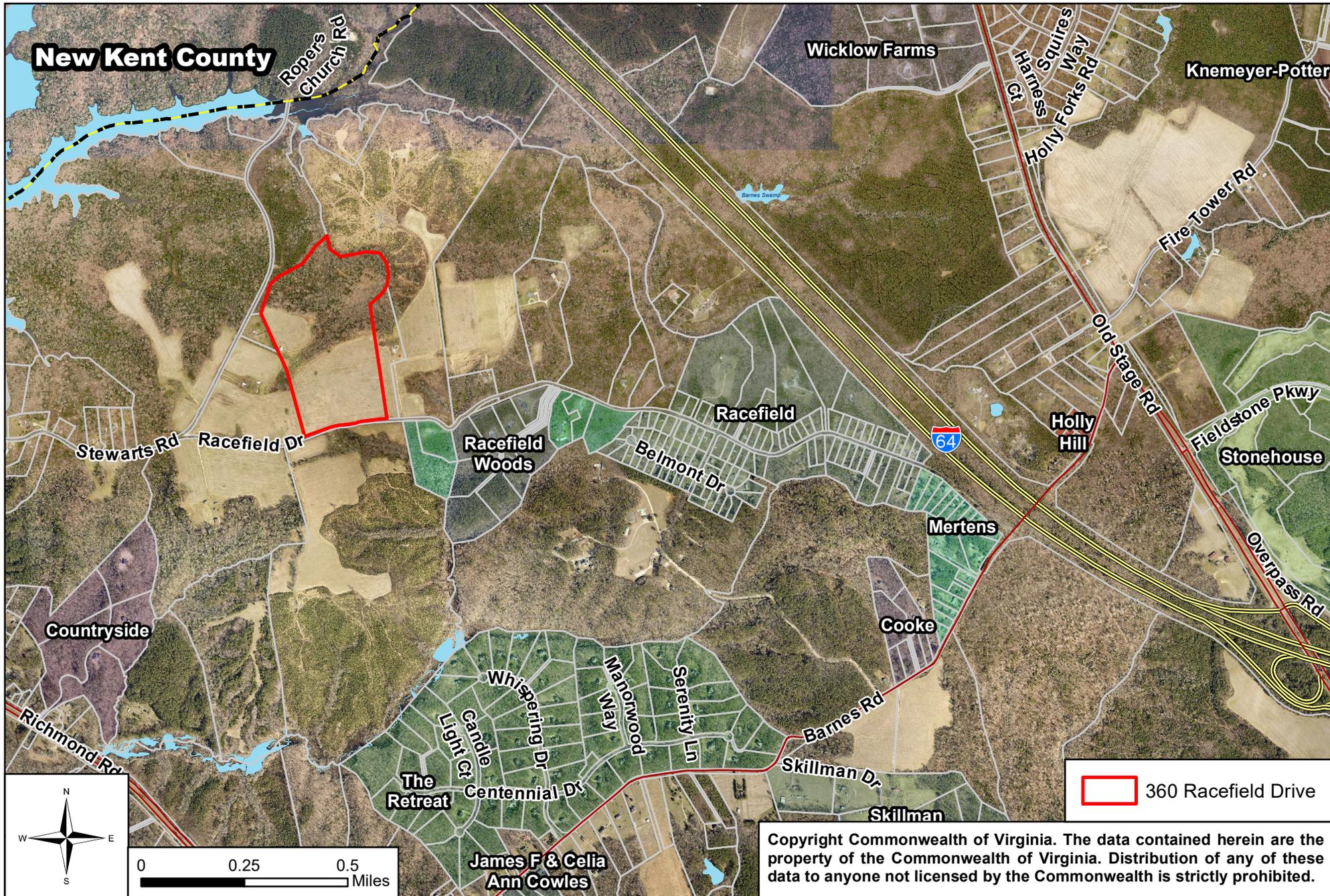
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Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

SUP21-22\_360RacefldDrSF-res

# JCC SUP-21-0022

## 360 Racefield Drive Solar Farm



# HEXAGON ENERGY

APPLICATION FOR  
RACEFIELD SOLAR  
SPECIAL USE PERMIT

PURSUANT TO

CODE OF THE COUNTY OF  
JAMES CITY, VIRGINIA

SUBMITTED NOVEMBER 17, 2021

Prepared for:  
James City County  
Planning Commission  
101 Mounts Bay Road  
Building F  
Williamsburg, VA 23185

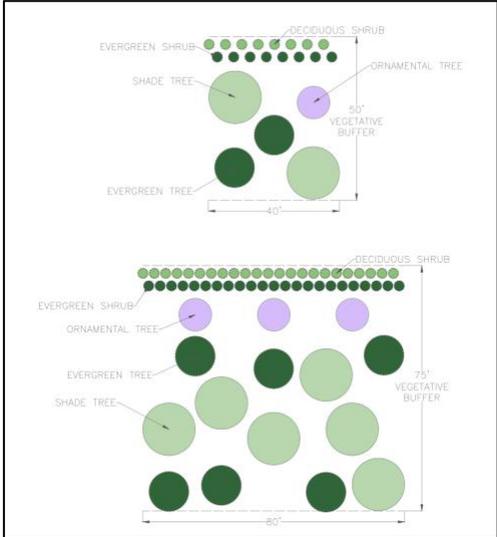
Prepared by:  
Hexagon Energy, LLC  
321 E Main St. | Suite 500 | Charlottesville, VA 22902  
Tel: 434-227-5090 | [hexagon-energy.com](http://hexagon-energy.com)

#### NOTICE OF RESTRICTIONS

This document includes data that shall not be disclosed outside of James City County and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this information. This restriction does not limit James City County's right to use information contained in this data if it is obtained from another legitimate source without restriction. The data subject to this restriction are contained in all sheets marked with the following legend: "Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal or quotation."

# PROJECT NARRATIVE

RACEFIELD SOLAR – 3MW<sub>AC</sub>  
 TOANO, VA  
 JAMES CITY COUNTY



✓ **WELL-SITED**  
 Site design mitigates adverse impacts to natural and cultural resources.

✓ **ECONOMIC DEVELOPMENT**  
 Local labor and materials will be used to the extent they are available. Virginia has over 4,400 solar jobs and the industry continues to grow faster than the overall economy (up 15.4% in 2019)

✓ **LOW IMPACT**  
 Low profile, low traffic, low sound-levels. No odor, hazardous materials, nor light pollution. No permanent structures.

✓ **BASED IN VIRGINIA**  
 We are a locally-owned Virginia company based in Charlottesville and have partnered with Virginia community colleges to create a solar jobs training program, SHINE.

✓ **PROVEN DESIGN & EQUIPMENT**  
 Fully meets Dominion's equipment and design requirements, including industry standard Tier 1 components backed by bankable warranties.



## OVERVIEW

Hexagon Energy is pleased to apply for a Special Use Permit for Racefield Solar (the Project), a small, solar photovoltaic (PV) facility of three (3) megawatts (MW) in capacity, measured in alternating-current (AC). The Project will be located at Parcel ID 310100003 (the Property), to the north of Racefield drive and approximately 1.7 miles northeast of Lanexa. The Project will encompass up to approximately 26 acres of farmland (the Site) on a larger, 65.26-acre property (the Property), located in the General Agricultural (A1) zoning district. The project has been designed in full compliance with James City County and Virginia permitting and approval requirements.

## APPLICANT & FACILITY OWNER

Racefield Solar, LLC is both the applicant and facility owner for the Project. Racefield Solar, LLC is a wholly-owned subsidiary of Hexagon Energy, LLC (Hexagon Energy), a Virginia Limited Liability Company. Hexagon Energy is a Virginia Company located in Charlottesville.

Hexagon Energy is an independent, privately owned energy development firm that believes the path to a clean energy future requires a range of new sources and technologies. We develop projects across six diverse energy solutions with one common goal—powering a clean future.

Over the past 19 years, Hexagon Energy’s principals have played a central role in building the renewable energy industry in Virginia and bringing renewable energy jobs to the Commonwealth. Our principals have advised Dominion on 232 MW of renewable energy purchases and developed nearly 600 MW of operating solar projects across the U.S., including some of the first utility-scale projects in Virginia. We are excited to work with James City County to develop a locally-based solar project that benefits Virginia communities, rate payers, and land owners.

### AT A GLANCE

- Established in 2015
- Developing energy projects since the early 1990s
- 2,875 MW of energy development experience across 17 states
- Representing over \$1.5 Billion USD in invested capital

### LOCATION & CONTACT INFO

321 E Main St | Suite 500  
Charlottesville, VA 22902  
[info@hexagon-energy.com](mailto:info@hexagon-energy.com)

## ENERGY DEVELOPMENT EXPERIENCE

Hexagon Energy’s principals have been developing energy projects since the 2000s and have a wide range of experience that guides our work. Over the past 20 years, Hexagon Energy’s principals have developed and financed nearly 3,000 MW of operating energy projects in 17 U.S. states, representing over \$1.5 billion in invested capital. The projects include utility scale wind and solar projects ranging from a few megawatts to over a gigawatt. The following table summarizes the energy development experience of Hexagon Energy’s principals, both at Hexagon and prior companies.

TYPE	SINCE	ADVISORY	OPERATING	UNDER DEVELOPMENT
<b>Solar PV</b>	2008	232 MW	597 MWac	2,317 MWac
<b>Wind</b>	2000	400 MW	2,278 MWac	550 MWac
<b>Energy Storage</b>	2013	20 MW	--	44 MWac
<b>TOTAL</b>		<b>652 MW</b>	<b>2,875 MWac</b>	<b>2,576 MWac</b>

Table 1: Hexagon Energy’s Project Development Experience



## PROJECT DESIGN

Hexagon Energy proposes to develop Racefield Solar, with a nameplate capacity of up to 3MWac. All of the clean energy generated by the facility will be delivered to the Dominion power grid (the Grid) at the existing 13.2 kilovolt (kV) distribution line crossing onto the property from the west, via Stewarts Rd. The Project proposes to sell power to Dominion Energy to serve local customers.

Racefield Solar will consist of up to approximately 8,764 crystalline silicon solar PV panels sourced from Tier 1 manufacturers. Additional equipment will include single axis tracker components, DC to AC string inverters, a medium voltage transformer and a control cabinet, project switch gear, a meter, and the interconnection to the existing distribution system.

To support the PV panels, the Project will utilize a single-axis tracking system designed to optimize power production of the panels by rotating them to follow the path of the sun. The single-axis tracker design consists of a series of mechanically linked horizontal steel support beams known as torque tubes, with a drive train system usually located in the center of the rows. The rows will be placed 21.2 feet apart (center to center) and the panels will cover approximately 33% of the Project area. The racking system will be supported by metal piles driven or screwed into the ground by a pile-driving machine to a depth of approximately 10 feet. The maximum height of the solar PV panels at full tilt is twelve feet (12').

The PV panels in each row will be wired together into a circuit (string). There will be a DC to AC string inverter for approximately every 3 rows, typically mounted on a piling adjacent to the tracker structure. AC Power will be transmitted from the string inverters via three-phase direct-buried cables, buried at a depth of approximately 36 to 48 inches, and aggregated at the AC collection switch gear and then on to the medium voltage transformer. The transformer will be mounted on a concrete slab with the project switchgear and control cabinet, and will be screened from view via the vegetative screening buffer. The transformer steps up the voltage of the electrical power to 13.2kV to match the Grid. The power is transmitted from the transformer to the Project's protective recloser and metering equipment before interconnecting with Dominion's existing infrastructure on the Property.

An internal access drive, consisting of an all-weather aggregate base, will allow access to the PV panels. Site access will be restricting by a security fence installed around the perimeter of the solar panel array in compliance with Federal and State regulations. Manual swing gates will be constructed at the main entrance and in strategic areas, as required for access by maintenance crews. National Electric Code standards for safety and signage will be met or exceeded.

The project will be screened from view with a planted vegetative buffer yard, further detailed in the landscaping plan in Appendix A. The Project's screening plan is proposed to feature a 50/50 evergreen shrub mix, and a tree mixture of 20% ornamental, 40% shade, and 40% evergreen around the perimeter of the project. The density and layout of the mix complies with the requirements set forth in the County's landscaping ordinance. The types of trees and shrubs are still to be determined. We will gather comments from neighbors and County Staff to help guide what trees and/or shrubs to use.

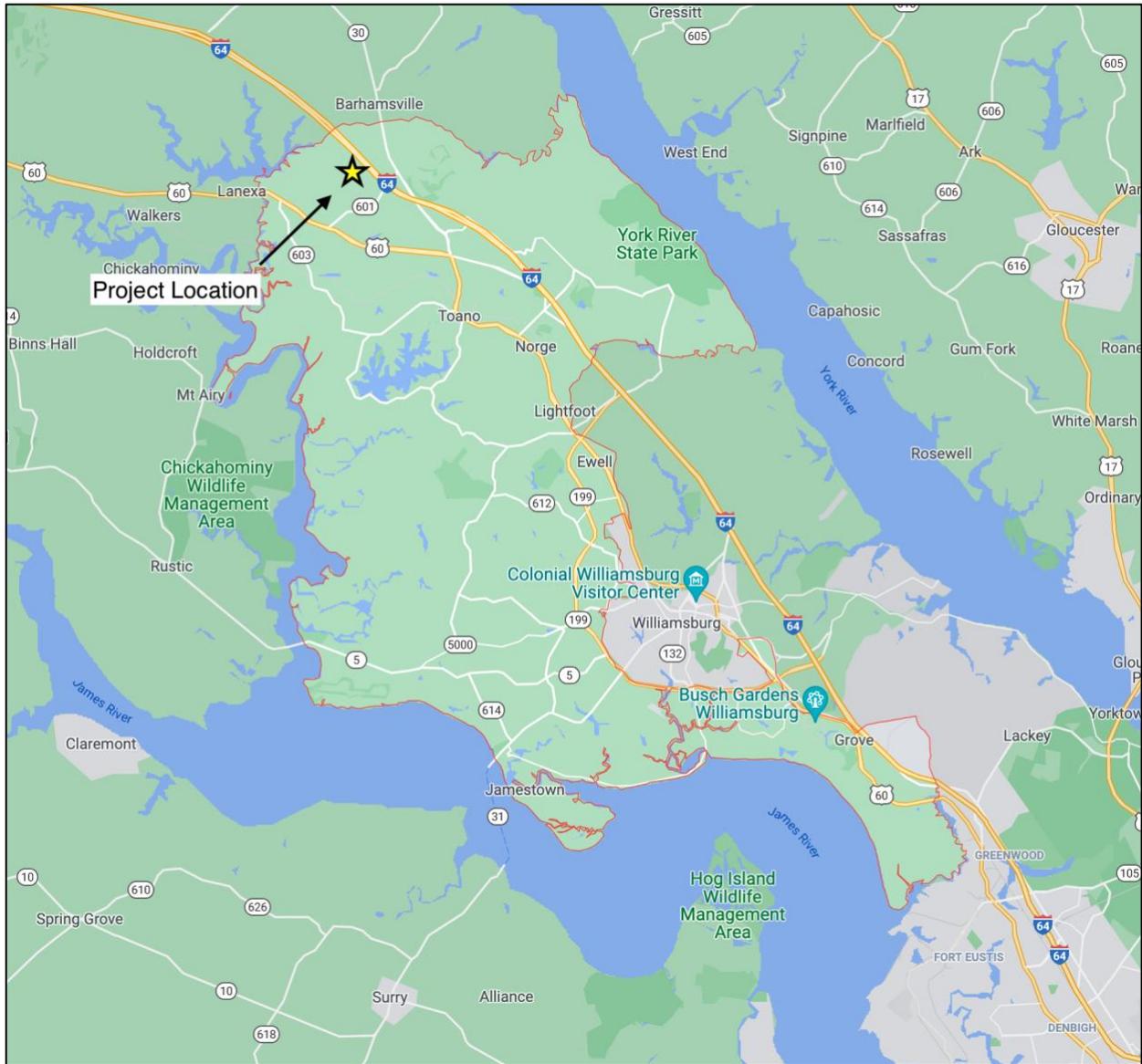
## HEALTH & SAFETY

The project will utilize passive photovoltaic (PV) cells to generate electricity and inverters to change the direct current into alternating current. They consist of common materials including glass, polymer, aluminum, copper, and silicon semi-conductor material. Solar PV panels function as a solid state, inert crystal composed of non-toxic materials and are most similar to a pane of solid glass. There are no chemicals, fluids, or materials that are capable of entering the environment. The PV and inverter technology have been utilized and studied for over 30 years and are not known to pose any significant health dangers to neighbors. Instead, the reduction in pollution from fossil-fuel-fired electric generators make solar farms a positive impact on human health.



In May 2017, researchers at NC State University published a detailed review of the Health and Safety Impacts of Solar Photovoltaics that utilizes the latest scientific literature and knowledge of solar practices in N.C. to address the health and safety risks associated with solar PV technology. "These risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity." The full report can be found in Appendix B, attached.

## SITE LOCATION AND CHARACTERISTICS



Racefield Solar will encompass up to approximately 26 acres across the 65.26-acre property. The Property is located in the General Agricultural (A1)-zoned district and has been farmed since the 1960s, and forested prior. The topography of the site area is flat, cleared land. The land slopes gently northward toward an identified resource protection area to the north of the site boundary. We do not anticipate any site grading at this time and will follow storm water management best management practices in close coordination with James City County Stormwater & Resource Protection Division.



# ENVIRONMENTAL AND CULTURAL IMPACT

## WETLANDS

The Site is located to the south of an unnamed stream/wetland feature. Qualified professionals at the Timmons Group performed a wetlands delineation and field assessment. The wetlands delineation can be found in Appendix C and will be verified by the US Army Corps of Engineers prior to facility construction. The Project will be designed and constructed to setback from, and not impact, delineated wetlands and resource protection areas (RPAs).

## WILDLIFE HABITATS

The Property has been screened, via the U.S. Fish and Wildlife Service Information, Planning, and Consultation System (IPAC System), for known critical habitats for threatened and endangered species, and none are known to be present on the Property. A desktop environmental inventory, including an official species list, generated using USFWS's tool, can be found in Appendix D, attached.

This official species list identifies the Northern Long-eared Bat (NLEB), and the Small Whorled Pogonia as two threatened species that could exist within the vicinity of the Project. We have confirmed that there are no nearby known roost habitats for the NLEB, using the Virginia Department of Game and Inland Fisheries (now known as DWR) Winter Habitat and Roost Trees map. Under the USFWS 4(d) rule, no further study is required given the DWR map result. James City County is within the range of the Small Whorled Pogonia, as illustrated on U.S. Fish and Wildlife Service's Environmental Conservation Online System (ECOS), but has not been documented as sited on the project site area according to a Virginia Fish and Wildlife Services search report. It is unlikely the Small Whorled Pogonias would be located in the Site, given that this area is currently farmed. All local, state, and federal laws shall be followed in the event the species is encountered during Project construction.

## CULTURALLY AND HISTORICALLY SIGNIFICANT RESOURCES

Qualified archeologists and architectural historians at Hurt & Proffitt, Inc. performed a preliminary desktop analysis of cultural and historical resources on the property. The full report can be found in Appendix E. This report examines the historic context of the property, in addition to previously recorded archaeological and architectural resources, identified on Virginia Department of Historic Resources' (DHR) Virginia Cultural Resource Information System (V-CRIS). Three archaeological and six architectural resources have been identified within a 0.5-mile buffer of the Property. No historic resources have been recorded on the Property.

The report determines that the Property has a moderate potential to contain prehistoric period archaeological sites, and moderate to high potential for the presence of historic period archaeological sites. Further archaeological and architectural surveys were recommended prior to construction of the Project. Therefore, the Applicant proposes to have a Phase 1 Cultural Resources Survey completed prior to Building Permit approval. This Phase 1 will be accompanied by DHR concurrence of any potential mitigation efforts that may be required.

## ENVIRONMENTALLY SENSITIVE AREAS

Racefield Solar has been reviewed by the Virginia Department of Conservation and Recreation (VADCR) for environmentally sensitive areas. VADCR initially identified that the Property boundary did not intersect with their Predictive Models for possible Natural Heritage Resources. In its report, VADCR confirmed that no natural heritage resources have been documented within a 100 ft. buffer of the property boundary. These findings from VADCR can be found in Appendix F.



## CONSTRUCTION

Based on the current project schedule, construction is forecasted to begin at the beginning of 2023. Construction is estimated to take two to three months, dependent on weather. Racefield Solar proposes to limit hours of pile driving activity during construction to the earlier of sunrise or 8 a.m. to the later of 6 p.m. or sunset, Monday through Friday. All other construction activity shall be permitted Monday through Sunday in accordance with the applicable ordinances governing noise in the County.

Following construction, the Project will undergo testing and commissioning in coordination with Dominion Energy. The Project is estimated to commence operations in the Spring of 2023.

Construction will involve minimal ground disturbance, and ingress and egress of heavy equipment and traffic will be restricted to access from Racefield Drive. Prior to site plan approval, the Applicant shall submit a traffic management plan, to be approved by the County. The traffic management plan will be designed in compliance with VDOT and County standards.

A detailed erosion and sediment control plan will be developed as a component of the final site plan. Erosion and sediment control measures will be implemented to prevent runoff from entering the surrounding environment. Erosion and sediment control measures may include straw bales, hay coil logs, run-off channels, silt fencing, and sediment basins.

Natural vegetative ground cover will be established across the Site upon construction completion. The vegetative ground cover will include native grasses and ensure erosion and sediment control throughout the life of the Project. Open-space areas of the project will be reserved, to the extent possible, for pollinator-friendly species plantings. We have identified the south-east corner of the project site as a potential location. The exact mix of species will be aligned with the criteria outlined in the Commonwealth's pollinator smart program.

## OPERATIONS AND MAINTENANCE

Once constructed, the Project will require very little maintenance and therefore traffic to the Site. Electrical engineers will service the inverters and transformers on average once per quarter. The solar panels have very low failure rates of approximately 1 in 10,000 per year. The Project output is monitored remotely and defective panels are easily replaced from inventory stores. The Project does not require on-site water or chemicals to keep the panels clean. Rain occurs with sufficient frequency and quantity in James City County to naturally keep the panels clean. Native vegetation will be maintained under and between the panels with periodic mowing during the growing season. The Site maintenance is typically contracted and performed by local companies.

## IMPACTS AND MITIGATIONS

### WATER

An on-site source of potable water will not be required during construction or operation of Racefield Solar. Any on-site water required during construction or operation will be supplied by Racefield Solar, LLC. No well-digging will be required. Please refer to the requested waiver for a water and sewer impact survey in Appendix H.

### SOUND

#### **Construction:**



During the 2-3 months of construction, we anticipate an increase in construction sound primarily from delivery of materials and installation of support beams on which the solar panels will be fixed. These impacts are mitigated by selecting site area that will require little to no groundwork, establishing limits of construction operation hours.

**Operations:**

From Racefield Drive and nearby residences, the array will be virtually inaudible. The Project is planned to feature Sungrow model SG125Hv (125kWac) inverters and DuraTrack HZ v3 racking equipment that will produce a small amount of sound (<60dBA at 1 meter away) within the Site. At just one meter away, the sound ratings of the inverters are less than outdoor air conditioning units, which are rated at over 60dB. Inverter sound ratings fall to less than 30dB at a distance of 50 feet, which is the background noise level in a rural area. The nearest residence is over approximately 250 feet from the Site, and 1,200 feet from the inverter. This house is also separated by 50' of vegetative screening. Once mature, the vegetative screening will fully mitigate any sound produced by the Project.

**GLARE**

**Construction:**

No glare hazard is anticipated during construction.

**Operations:**

In addition to being visually screened from nearby residences and Racefield Drive, the panels are designed to absorb as much sunlight as possible and are treated with an anti-glare coating.

Hexagon has utilized the Federal Aviation Administration's online Notice Criteria Tool and Racefield Solar is not in proximity to a navigation facility. No filing will be required for the Project. The results of the Notice Criteria Tool can be found in Appendix G. We have additionally performed a glare analysis of the Project for Racefield Drive, and Stewarts using ForgeSolar, a FAA Solar Glare Hazard Analysis Tool (SGHAT). The analysis concludes that no glare was produced by the proposed array, when examining Racefield Drive and Stewarts Road.

**ODOR**

**Construction:**

During construction, the EPC contractor will store, collect, and dispose of solid construction material waste such to prevent any hazards—including odors. This will mitigate any possible impact odors from the project could have on neighboring property use.

**Operations:**

During operations, no perceivable odors are generated from any equipment comprising the solar array. No impact mitigation is required.

**DUST**

**Construction:**

During construction, trucks and construction machinery may kick up existing dirt particles within the site. Dust will be mitigated by spraying water on dry dirt and by instituting a 5 MPH speed limit within the construction zone.

**Operations:**

Vegetative ground cover will be planted and maintained during operations, preventing dust.

**SECURITY & ACCESS**

The Site will be fenced in by a 6-foot-high chain-link fence topped with strands of barbed wire to deter any unauthorized access to the site. After construction concludes, the gates will remain locked, and access will be coordinated by authorized operations and maintenance personnel. The Site will also include a



“Knox Box” on the gate to provide 24/7 emergency access for fire and police personnel. Ingress and egress will be maintained off of Racefield drive, and will ensure suitable access for fire and other emergency vehicles.

## REMOVAL

The Project will be removed following the conclusion of the operations phase. Notice will be sent to the County by US mail indicating the intended abandonment or discontinuation of operations. The Project shall then be completely removed within 365 days of the communicated date. Methods to ensure project decommissioning will be established prior to building permit approval. Racefield Solar, LLC proposes to provide a surety to cover the cost of decommissioning, to be updated throughout the Project’s life. More information on project decommissioning can be found in Appendix J, in addition to the proposed SUP conditions list of Appendix I.

## ECONOMIC DEVELOPMENT

### JOBS

Local materials and labor will be used for the construction and maintenance of the Project to the extent that they are available. Racefield Solar will create approximately 20 new construction positions. The operations phase of the project will require approximately one to two, full-time positions, once facility construction is complete. This small crew will be responsible for routine upkeep of the facility throughout the project’s life. Upkeep of solar facilities generally includes vegetation management, routine single-axis tracker maintenance, and visual inspections and repair of the equipment. Once per quarter, the crew will visit the site in a pickup truck or like vehicle, to perform the upkeep.

The solar industry in Virginia is growing faster than the overall economy and presents new career opportunities throughout the Commonwealth. Hexagon Energy is on the Leadership Council of SHINE, a Virginia Solar Workforce Initiative partnered with Southside Virginia Community College that is expanding to other Community Colleges. The program not only trains new workers but pairs the training with an upcoming solar installation job. The program is aligned with upcoming solar projects and the first classes commenced in the fall of 2019. The SHINE program also has a mobile lab that can deploy local training classes. Hexagon Energy will work with the SHINE program and Thomas Nelson community college to ensure that training and job opportunities are created for interested James City residents.

### INVESTMENT

Racefield Solar will make approximately \$4,959,000 in total capital investment for construction, material, labor, and professional services. An estimate of the capital expenditures breakdown can be found below:

Expense	Amount
Solar PV Panels	\$1,653,000
Inverters	\$268,612
Mounting/Racking System	\$826,500
Transformers	\$289,275
Electrical Components	\$392,587
Site Management (fencing, vegetation, etc.)	\$82,650
Labor	\$1,281,075

The Department of Energy’s JEDI model predicts that Racefield Solar construction will contribute over \$1,117,500 in direct spending in the local economy on labor, local contractors, and locally sourced materials. The array will produce enough energy to power roughly 264 homes after it is completed.



## INCREASED COUNTY REVENUE

### Total Revenue

Racefield Solar will increase the tax revenue per acre per year by a factor of 33x over the current land use.

Current:	\$225
Proposed:	\$7,476

The tax revenue increase is attributable to both the reassessment of property at a higher rate and the annual Voluntary Payment proposed.

### Increased Real Property Assessment & Tax Revenue

The 26-acre portion of land used for Racefield Solar will increase in assessment from \$8,999.38/acre (Agricultural) to \$15,000/acre (Solar). The James City tax rate for Real Property is \$0.84/\$100 assessed. The Property is currently enrolled in the Barnes Swamp AFD, and granted tax abatement. The historically abated assessment has been roughly \$565 for the entire 65.26 acres. If approved, the real property taxes to be collected over the project's anticipated life represents over 14.5x the yearly amount to be collected under the current land use.

	Assessment Rate	Assessed Value (Acres x Assessment Rate)	Real Property Tax Rate	Annual Real Property Tax (Assessed Value x Real Property Tax Rate)	30 Year Revenue
Current (26 Acres)	\$8,999.38 / acre (Assessed)	\$587,300 (Assessed, full property)	\$0.84 / \$100 assessed value	<b>\$225 / year</b> (AFD-Abated, 26 acres)	<b>\$6,751.80</b> (AFD-Abated, 26 acres)
Racefield (26 Acres)	\$15,000 / acre	\$390,000	\$0.84 / \$100 assessed value	<b>\$3,276 / year</b>	<b>\$98,280.00</b> (Solar)

### Voluntary Payment

Virginia state code grants solar projects smaller than 5MW a 100% exemption on local personal property taxation on equipment. Racefield Solar offers a voluntary annual payment of \$1,400 per MW for the life of the project to the County's Public Works department in support of utility, transportation, and beautification work along Racefield Drive. Over a 30-year period, this would represent an additional \$126,000 to the County.

The proposed voluntary payment is consistent with Code of Virginia § 15.2-2288.8(B) and is included in the list of proposed SUP conditions. This list can be found in Appendix I. The proposed SUP condition may be amended prior to approval if the County prefers an alternate use of the voluntary payment that is similarly associated with the project.



## REGULATORY CONFORMANCE

Virginia Code § 15.2-2232 requires that the Planning Commission makes a determination as to whether or not the general location, character, and extent of a proposed solar energy facility is in substantial accord with the locality's adopted comprehensive plan, *Toward 2035: Leading the Way*.

### LOCATION

The location of Racefield Solar is substantially in accord with the County's Comprehensive Plan. The Project is located on the north side of Racefield Drive, in an area defined as Rural Lands in the County's 2035 Land Use Map. Rural Lands are areas located outside of the Primary Service Area (PSA), and are intended for low-intensity uses. New development meeting the guidelines of the Rural Lands Development Standards are encouraged, while residential development is discouraged. Once constructed, Racefield Solar will be a low-intensity, non-residential development. The Project features a proposed vegetative screening plan that has been designed in compliance with County and Rural Lands Development standards. The Site will be obscured from view, be virtually inaudible, and produce no odor – it will be a silent neighbor. Once constructed, Racefield Solar will require minimal traffic to the Site. Monthly maintenance trips will take the form of one-to-two-person crews visiting the site in a pickup truck. This is no more than what the road currently experiences in daily traffic flow.

The Project location satisfies the strategies and actions detailed in the Transportation section of the Comprehensive Plan. (T1.1) indicates the County's preference to match development intensity with respective land use areas. The Project is harmonious with the low-intensity needs of the Rural Lands district. This is also consistent with strategy LU1.1 given that solar facilities are allowed via Special Use Permit in the A1 district. Finding Racefield Solar in substantial accord with *Toward 2035: Leading the Way* satisfies LU1.4, as the proposed use is a public utility facility.

### CHARACTER AND EXTENT

The character and extent of Racefield Solar are substantially in accord with the County's Comprehensive Plan. The Project intends to provide locally generated, clean energy to Dominion customers pursuant to the Virginia Clean Economy Act of 2020, promoting infrastructure service to the County and beyond. The Project will be clean, non-disturbing, and support local job training and educational opportunities through SHINE, the Virginia Solar Workforce Initiative hosted by Southside Virginia Community College, and potential future partnerships with the local community college. This opportunity for additional renewable energy development fits the intent of ED2.5, 2.6, and 3.5. The Project's design additionally satisfies strategies ENV1.3 and 4.5, in addition to CC1.3 and 3.6, given that new and existing distribution lines are proposed to be trenched. The Project's proposed vegetative screening plan also satisfies CC3.7

Racefield Solar will provide locally generated, clean energy to Dominion customers pursuant to the Virginia Clean Economy Act of 2020, promoting infrastructure service to the County and beyond. The Project will be clean, non-disturbing, and support local job training and educational opportunities through SHINE, the Virginia Solar Workforce Initiative hosted by Southside Virginia Community College, and potential future partnerships with the local community college.



## PLANNING COMMISSION DETERMINATION REQUEST

Racefield Solar has been designed to be substantially in accord with the Comprehensive Plan and conform with all requirements set forth in the County's Zoning Ordinance. The Applicant, Racefield, LLC, requests that the Planning Commission makes this determination pursuant to VA Code § 15.2-2232 in one of three ways:

### **TO RECCOMEND APPROVAL AS IS (please say the following):**

"I move that the Planning Commission adopt to forward the application for Racefield Solar to the James City County Board of Supervisors with a favorable recommendation, as it complies with the requirements of the Zoning Ordinance and is substantially in accord with the Comprehensive Plan."

### **TO RECCOMEND APPROVAL WITH CHANGES (please say the following):**

"I move that the Planning Commission adopt to forward the application for Racefield Solar with the following changes: \_\_\_\_\_ to the James City County Board of Supervisors with a favorable recommendation, as it complies with the requirements of the Zoning Ordinance and is substantially in accord with the Comprehensive Plan."

### **TO RECOMMEND DENIAL (please say the following):**

"I move that the Planning Commission adopt to forward the application for Racefield Solar to the James City County Board of Supervisors with an unfavorable recommendation for the following reasons:



January 24, 2022

Mr. Tom Leininger  
101A Mounts Bay Road  
Williamsburg, VA 23185

**RE: SUP-21-0022, 360 Racefield Dr. Solar Farm**

Mr. Leininger, and James City County Community Development Staff,

Thank you for your continued guidance as we navigate James City County's permitting process. On behalf of Racefield Solar, LLC (the Project), I am excited to present you with an updated Master Plan and Vegetative Screening Plan for SUP-21-0022. We have made these updates after receiving comment from local stakeholders, including neighbors and department staff.

**Site and Vegetative Screening Plan Revisions:**

Following Staff discussion and a town-hall style community meeting on December 14<sup>th</sup>, we revised Racefield's Master Plan and Vegetative Screening Plan. These improvements are summarized below:

- We shifted the construction entrance eastward, to be internal to vegetative screening. The entrance dimensions have been updated in collaboration with Williamsburg's VDOT resident, Glenn Brooks, to include a 25-foot turn radius, and 24-foot-wide throat. These plans will be finalized during the Site Plan phase of permitting, but for illustrative purposes, have been added to the Master and Vegetative Screening plans.



- We have proposed additional screening in the northwest corner of the Project area, following neighbor comment. This will take the form of staggered rows of evergreen trees, 50 feet in width, per Staff request. An illustration of the additional screening can be found in the attached Vegetative Screening Plan and Master Plan.
- The species mix in the Vegetative Screening Plan has been updated to incorporate County Staff and neighbor input. We have chosen to increase the number of evergreens present in the mix to provide for additional viewshed mitigation. The mix will now be comprised of:
  - 15% ornamental trees
  - 40% shade deciduous trees, and
  - 45% evergreen trees

The shrub mix of 50% evergreen and 50% deciduous will remain the same. These percentages remain compliant with James City County Code.

We have partnered with Kimley-Horn, a consulting firm that has been involved with previous solar projects in James City County, to develop visualizations that incorporate our revised Vegetative Screening Plan. Please note that the visualizations provided by Kimley-Horn are meant to convey the general character of the proposed buffer. The actual mix of trees and shrubs has not yet been finalized. The visualizations will depict project screening directly after planting, and again at the 3-, 5-, and 10-year marks. The visualizations will capture two vantage points, one from the South of the Project, along Racefield Drive, and one from the nearest neighboring property, owned by Mr. Craig Beck. These visualizations will be delivered to County Staff once they become available.



### **Additional Revisions:**

We have solicited feedback from both County Staff and neighbors regarding the construction phase of the Project. The active construction phase will be approximately 2-3 months in duration. Access during construction will require use of Racefield Drive for deliveries.

- We are mindful of several tight curves and narrow passages along the section of Racefield Drive to the East of the Project. As such we have committed to routing construction deliveries to the Project from the West of Racefield Drive, via Stewarts Road / Route 621 from the North. Deliveries routed from the East would be inappropriate given roadway conditions; and deliveries from the South-East would push the weight limit of two wooden, single-lane bridges. This route will be finalized in a construction management plan, to be submitted to VDOT during the Site Plan phase.
- Pursuant to VA Code 15.2.2288.8(b), we propose directing annual voluntary payment funds (\$1,400 per megawatt) to the ongoing maintenance and improvement of Racefield Drive. We are open to making additional administrative changes to this proposed condition following review and comment by the County Attorney's office.



We appreciate the input we've received from County Staff and neighbors, and continue to solicit actionable feedback from all stakeholders.

Please do not hesitate to contact me should you have any questions.

Respectfully,



Brendan Grajewski  
Development Manager



February 15, 2022

Mr. Tom Leininger  
101A Mounts Bay Road  
Williamsburg, VA 23185

**RE: SUP-21-0022, 360 Racefield Dr. Solar Farm**

Mr. Leininger, and James City County Community Development Staff,

Thank you for your continued guidance as we navigate James City County's permitting process. On behalf of Racefield Solar, LLC (the Project), I am excited to present you with a Conceptual Traffic Study developed in partnership with Kimley-Horn. Kimley-Horn has been involved with two other solar projects that were approved by James City County, in addition to having extensive experience developing plans for renewable energy projects around the Commonwealth.

**Conceptual Traffic Study:**

One of the main topics of discussion for the Project has been on the construction phase, and in particular, what impacts there may be to local roadways. There are three possible routes for site access, but we feel the most appropriate route would be to access the site via Stewarts Road from the North. We plan to use the estimates below as a baseline when developing additional traffic studies in compliance with Staff proposed conditions. The analysis performed by Kimley-Horn is summarized below:



- The construction period for a project like Racefield is approximately three to four months. This represents a one-month increase from our original estimates of two to three months.
- Construction will occur in stages. The first and last months of project construction represent a “ramping” period when site preparation materials are delivered to the project site.
- An average of less than one trip per day is required during the ramping period. Single-unit and/or low-boy trucks are typically used to deliver equipment. Deliveries would likely be staggered in attempts to occur during non-peak travel periods.
- The middle one to two months represent the peak construction period. Kimley-Horn estimates that an average of one equipment delivery per day would occur during this time.
- Approximately 20 employees will be required to construct the facility, and carpooling is anticipated. Up to 14 passenger vehicle trips per day during peak construction are expected. Employees are anticipated to use passenger vehicles.
- Following the construction period, maintenance would occur on a monthly to quarterly basis. A maximum of one vehicle trip per week would be required to ensure groundcover and landscaping is orderly during the growing season.

Based on the study developed by Kimley-Horn, it is clear that traffic impacts during project construction are anticipated to be minimal. Please note that these estimates have been developed for project construction. Further revisions may be made to factor additional landscaping and site preparation activities that may be required. We are

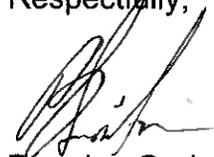


committed to ensuring that traffic impacts are mitigated, and are supportive of the three related conditions Staff has proposed. This includes proposed condition #9, which stipulates that additional analysis on any required road repairs is required to be approved prior to issuance of a land disturbance permit. These repairs would be completed within 6 months of facility operations.

We have presented these estimates to Mr. Glenn Brooks, the VDOT Resident of the County, with the goal of soliciting initial comment on the suitability of this level of traffic activity for Stewarts Road and Racefield Drive. We are interested in continuing to work with his office prior to submitting additional materials that may be required by permit conditions.

I trust that this will provide additional insight to the Project's construction stage. Please do not hesitate to contact me should you have any questions.

Respectfully,



Brendan Grajewski  
Development Manager



## MEMORANDUM

To: Brendan Grajewski – Hexagon Energy, LLC  
From: Nicholas Robertson, P.E. – Kimley-Horn  
Date: February 11, 2022  
Subject: Virginia Solar Project – Generic 3 MW<sub>ac</sub> Traffic Memorandum

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## 1 INTRODUCTION

### 1.1 Project Background

As requested by Hexagon Energy, LLC., Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared a traffic memorandum in support of future, proposed 3 MW<sub>ac</sub> Solar Photovoltaic (PV) Generation Facilities located within the state of Virginia.

The purpose of this memorandum is to discuss potential traffic impacts due to the construction of Solar Photovoltaic Generation Facilities. The memorandum includes discussion of trip generation and traffic impacts for proposed sites during construction operations and will make general recommendations for assessing and mitigating these impacts for specific projects.

## 2 SITE-GENERATED TRAFFIC

General construction traffic for a site of this size would be expected to consist of the following:

- Component deliveries (i.e., solar panels, earthwork equipment, construction waste removal, modules, etc.) via single-unit and/or low-boy trucks
- Passenger vehicles carrying personnel, tools, and minor equipment to and around the proposed development site

Construction would be anticipated to last approximately three to four months with the intensity of trucks and employees accessing the site varying over the course of construction. The first and final months of construction would be anticipated to average less than one truck per day. The peak construction period would be expected to occur during the one-to-two-month period in the middle of construction. During the first half of the peak construction period, the site would be estimated to experience one truck per day (i.e., weekdays Monday – Friday) delivering materials. Deliveries are anticipated to be staggered to meet construction needs and will attempt to occur during the non-peak travel periods.

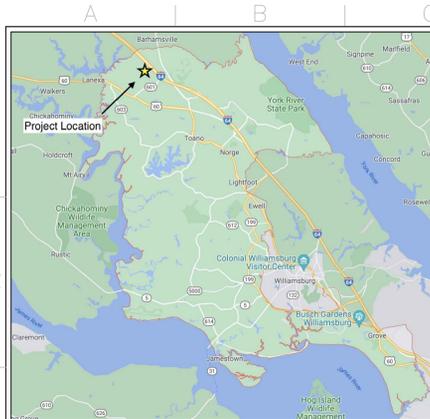
In addition, the construction site would be expected to have an estimated 20 employees during the peak period of construction. It would be expected that some employees will carpool to the site; an average vehicle occupancy of 1.5 is assumed. As a result, 14 passenger vehicle trips would be anticipated to access the site per day during the peak period of construction. All construction staging, parking, and assembly areas would be expected to be within the project boundaries.

Following the construction of the site, maintenance of the site would likely occur on a monthly, quarterly, and annual basis for different circumstances. Panel washings and general maintenance would be anticipated to occur a few times a year. This may require the presence of approximately 2 workers at the site occasionally throughout the year. During the growing season, it would be anticipated that a maximum of one vehicle per week will access the site for lawn maintenance. Therefore, operation and maintenance of the site would not be expected to generate significant traffic volumes or volumes to the level expected during the construction phase of the project.

### 3 RECOMMENDATIONS

Based on the assumptions listed above, we would make the following recommendations for each specific project:

- Existing transportation facilities (i.e., roadways) providing access and/or adjacent to the proposed project site should be reviewed to include a geometry analysis, an intersection capacity analysis, and analysis of traffic counts from the most recent Virginia Department of Transportation (VDOT) Annual Average Weekday Traffic (AAWDT) and Vehicle Classification Estimates.
- The project site's construction entrance(s) are recommended to be constructed wide enough to accommodate WB-67 trucks accessing the site.
- Warning signs are recommended along construction routes, in advance of intersections, to advise drivers of potential turning vehicles during construction.
- If all construction staging, parking, and assembly areas cannot be accommodated within the project boundaries, coordination should take place with the Authority Having Jurisdiction (AHJ) over the project during the permitting phase to make alternative arrangements that will limit impacts to residents.
- A Construction Traffic and Access Management Plan should be developed in advance of the construction phase of the project to establish safe and feasible routing, signage, and other measures to address the findings in the review of the existing transportation facilities. Preparation of the plan shall include consideration of the following: (i) prescribing truck routes to/from the project site, (ii) details of traffic safety signage plan, (iii) limiting impacts to residents and community events, and (iv) Emergency services access to the site. This process should include conversations with the AHJ to minimize impacts to school traffic and provide opportunities for input and coordination with local emergency services.
- Prior to beginning construction, it is suggested to coordinate with VDOT to perform a field assessment to document existing conditions of the construction route roadways and intersections. In addition, it is important to coordinate closely with VDOT and the AHJ throughout the construction phase to mitigate potential impacts to traffic operations on the local streets and/or to travel through the area by residents.
- VDOT will require a surety bond to be posted to protect the integrity of the roadway pavement and the developer will be responsible for ongoing maintenance during construction as well as repairs post construction.

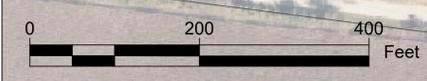
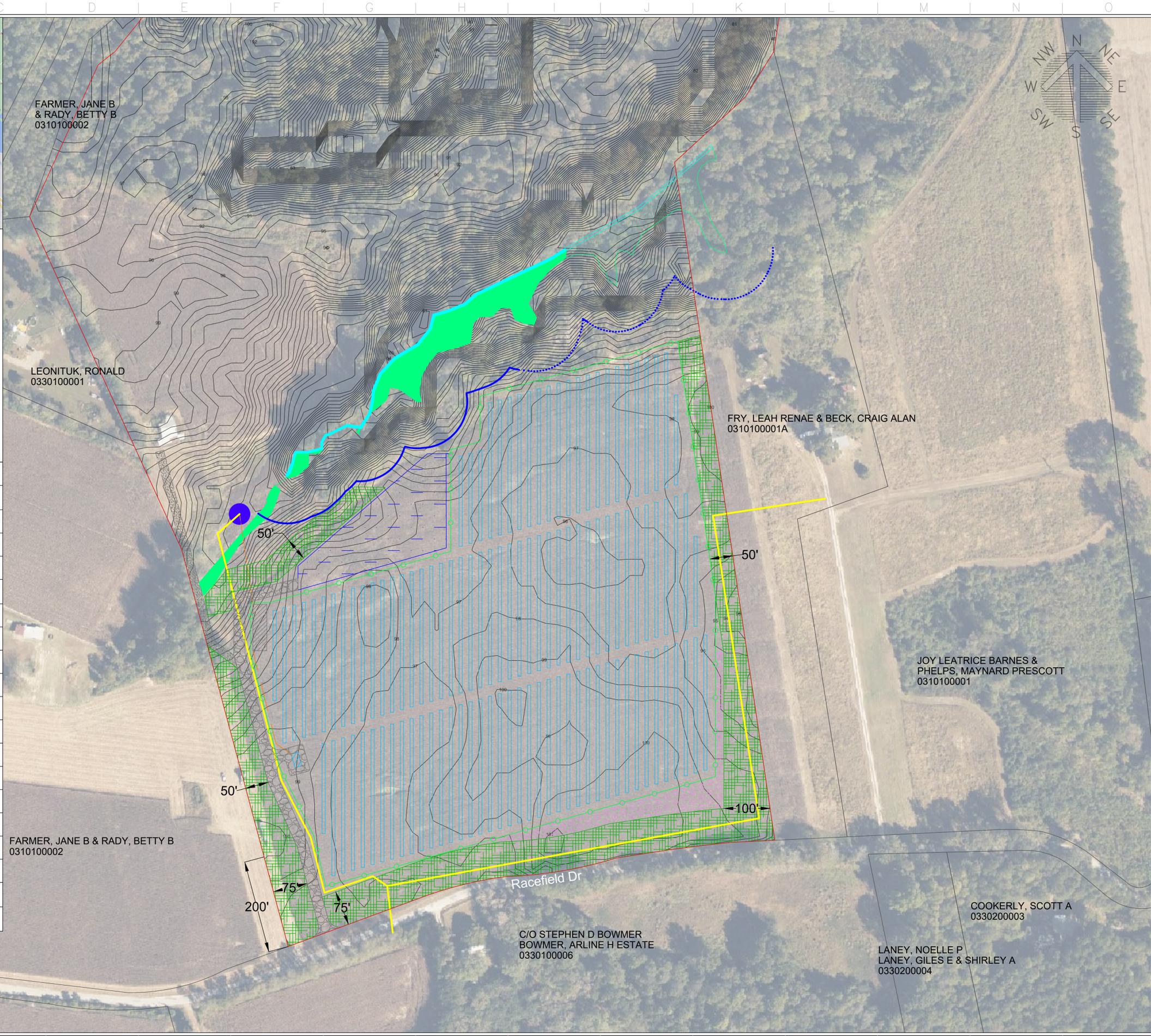


**SITE NOTES**

1. STORMWATER MANAGEMENT AND STORMWATER RUNOFF WILL MEET JAMES CITY COUNTY AND STATE NPDES STORMWATER PERMIT REQUIREMENTS BOTH DURING CONSTRUCTION AND OPERATION. THERE WILL BE NO DEVELOPMENT ON EXISTING SLOPES 25% OR GREATER WITHOUT A STEEP SLOPE WAIVER FROM JAMES CITY COUNTY
2. THE SITE IS LOCATED IN THE DIASCUND CREEK WATERSHED (HUC JL26)
3. WETLANDS AND RPA BOUNDARIES ARE BASED ON DESKTOP AND FIELD DELINEATION COMPLETED BY TIMMONS GROUP
- 4.

**LEGEND**

	PROPERTY LINE (PARCEL NUMBER: 310100003) (65.26 ACRES)
	SITE AND BMP ACCESS ROAD
	LANDOWNER ACCESS ROAD
	PROPOSED FENCE AREA
	PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
	PERENNIAL WETLANDS
	RPA BUFFER (100')
	INTERMITTENT WETLANDS
	PERENNIAL WETLANDS (ESTIMATED)
	RPA BUFFER (100') (ESTIMATED)
	INTERMITTENT WETLANDS (ESTIMATED)
	POI - 13.2kV LINE TAP
	PROPOSED CUSTOMER SWITCHGEAR AND MV TRANSFORMER
	PROPOSED LINE TRENCHING
	PROPOSED VEGETATIVE SCREENING
	PROPOSED POLLINATOR SPECIES AREA
	PROPOSED EROSION & SEDIMENTATION CONTROL AREA
	GRID ATTACHMENT WIRING (TO BE TRENCHED)
	PAD MOUNTED EQUIPMENT



**HEXAGON ENERGY**

HEXAGON ENERGY, LLC  
 321 E Main St, Suite 500  
 Charlottesville, VA 22902  
 Phone: 434.227.5090  
 Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

**DRAWING TYPE**  
 Preliminary  Construction  
 Customer Approval  As-built  
 Permitting  Other

**REVISIONS**

Rev	By	Description	Date
0	EO	RFP PLAN	7/30/2021
1	EO	ADD CONTOUR LABELS	9/14/2021
2	EO	PERMIT PLAN	11/12/2021
3	EO	REVISE CONTOURS AND ACCESS ROADS	1/6/2022
4	EO	REVISE ACCESS ROADS	1/19/2022
5	EO	REVISE VEGETATIVE BUFFER	1/24/2022

**SITE INFORMATION**

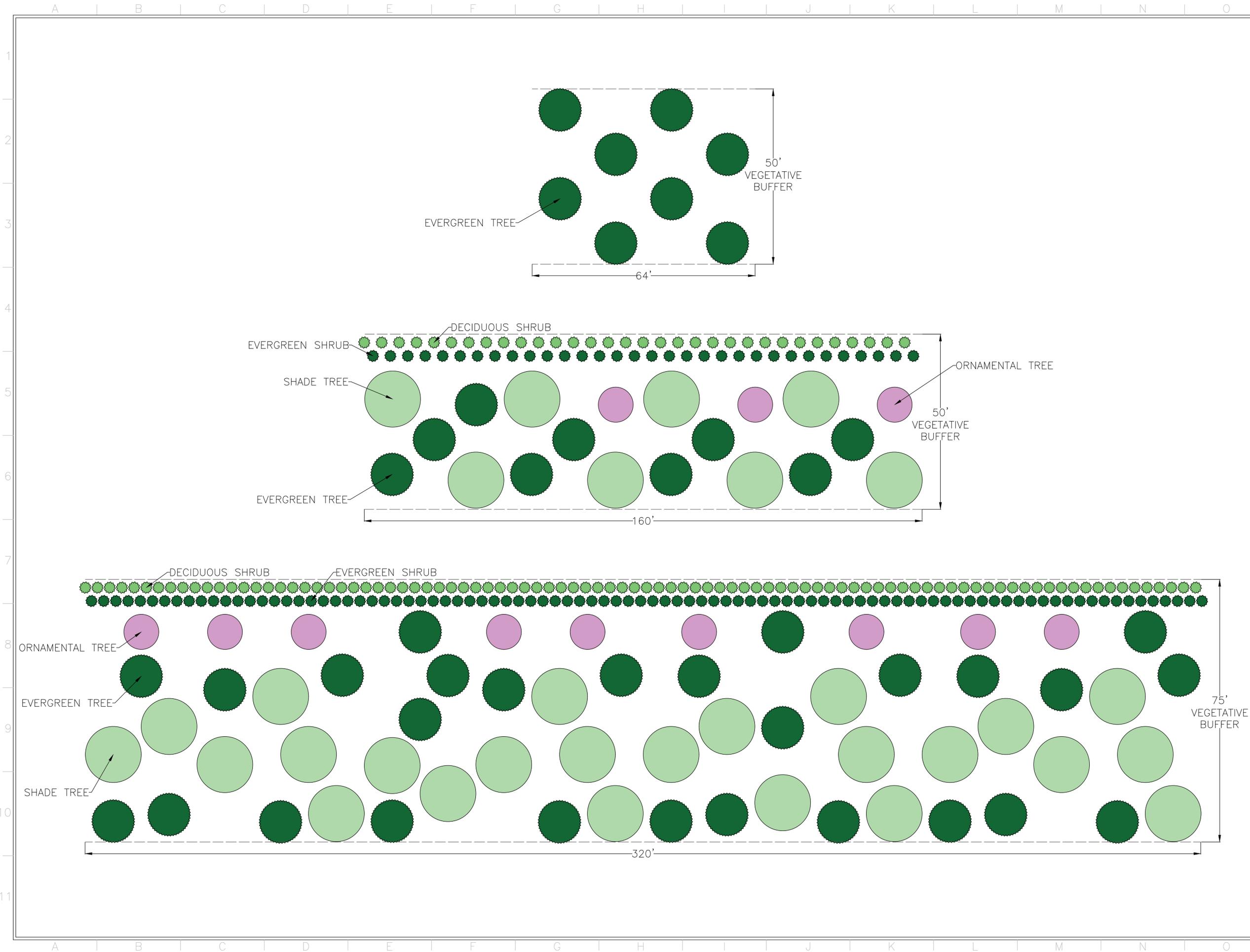
PARCEL ID NUMBER (PIN)	APPROX ACREAGE	ZONING	R/W SETBACK	SIDE YARD SETBACK	REAR YARD SETBACK	LANDSCAPE BUFFER
310100003	#65.26	A1	+75'	+50'	+1000'	+50'

Project Name:  
**RACEFIELD SOLAR, LLC**

Site Address:  
**360 RACEFIELD DR  
 TOANO, VA 23168  
 37.432°N, -76.868°W**

Sheet Name:  
**MASTER PLAN**

Scale: 1in=100ft | Project ID: TBD  
 Sheet No:  
**L1.1**



HEXAGON ENERGY, LLC  
 321 E Main St, Suite 500  
 Charlottesville, VA 22902  
 Phone: 434.227.5090  
 Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE			
<input type="checkbox"/> Preliminary	<input type="checkbox"/> Construction		
<input type="checkbox"/> Customer Approval	<input type="checkbox"/> As-built		
<input type="checkbox"/> Permitting	<input checked="" type="checkbox"/> Other		
REVISIONS			
Rev	By	Description	Date
0	EO	VEGETATIVE SCREENING PLAN	10/20/2021
1	EO	UPDATE BUFFER COMPOSITION	01/04/2022
2	EO	REVISE ACCESS ROADS	01/19/2022
3	EO	REVISE NORTHERN BUFFER	01/24/2022

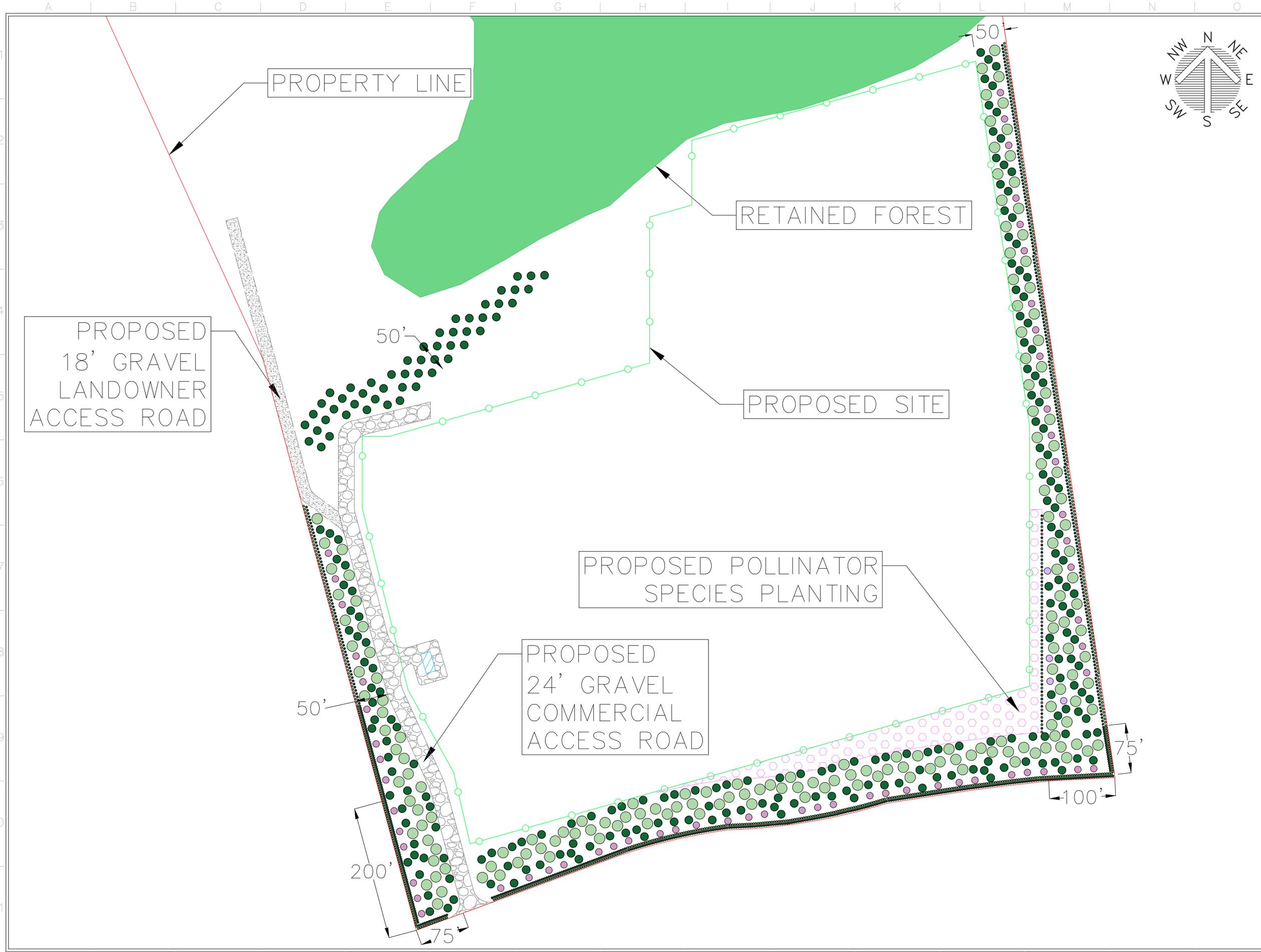
Project Name:  
RACEFIELD SOLAR, LLC

Site Address:  
360 RACEFIELD DR  
TOANO, VA 23168  
37.432°N, -76.868°W

Sheet Name:  
VEGETATIVE BUFFER DESIGN

Scale: Project ID: TBD

Sheet No:  
L2.1



**HEXAGON ENERGY**

HEXAGON ENERGY, LLC  
 321 E Main St, Suite 500  
 Charlottesville, VA 22902  
 Phone: 434.227.5090  
 Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE  
 Preliminary  Construction  
 Customer Approval  As-built  
 Permitting  Other

REVISIONS			
Rev	By	Description	Date
0	EO	VEGETATIVE SCREENING PLAN	10/20/2021
1	EO	UPDATE BUFFER COMPOSITION	01/04/2022
2	EO	REVISE ACCESS ROADS	01/19/2022
3	EO	REVISE NORTHERN BUFFER	01/24/2022

Project Name:  
RACEFIELD SOLAR, LLC

Site Address:  
360 RACEFIELD DR  
TOANO, VA 23168  
37.432°N, -76.868°W

Sheet Name:  
BUFFER OVERVIEW

Scale: Project ID: TBD

Sheet No:  
L2.2



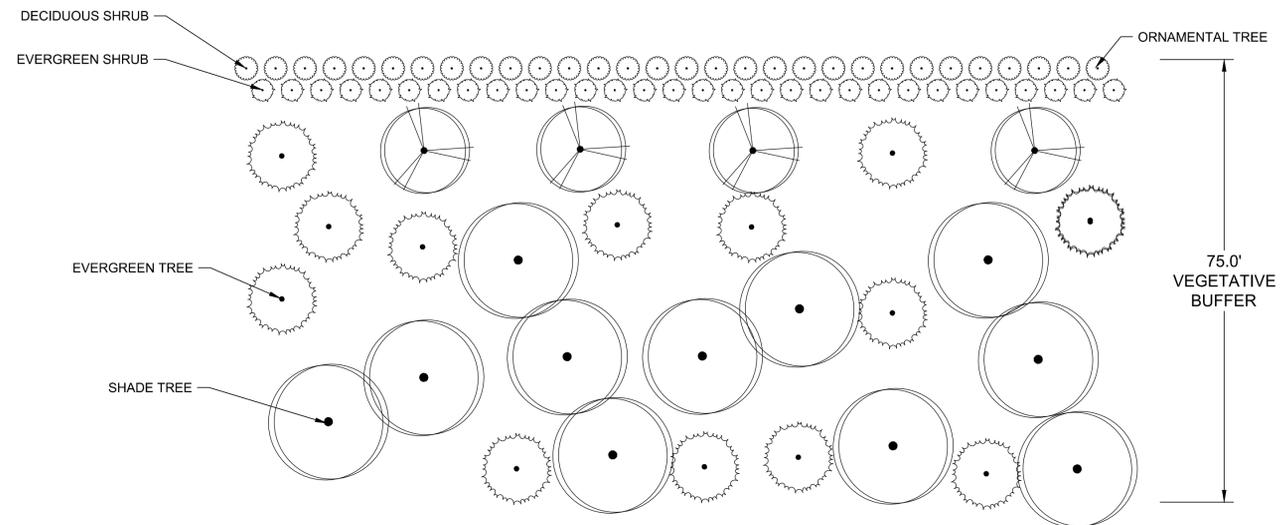
**EXISTING CONDITIONS | VIEW A**



**KEY PLAN**



**PROPOSED PANELS WITHOUT LANDSCAPE BUFFER | VIEW A**



**PROPOSED LANDSCAPE BUFFER | VIEW A**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED TIME OF PLANTING | VIEW A**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED 3 YEAR GROWTH | VIEW A**



**KEY PLAN**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED 5 YEAR GROWTH | VIEW A**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED 10 YEAR GROWTH | VIEW A**



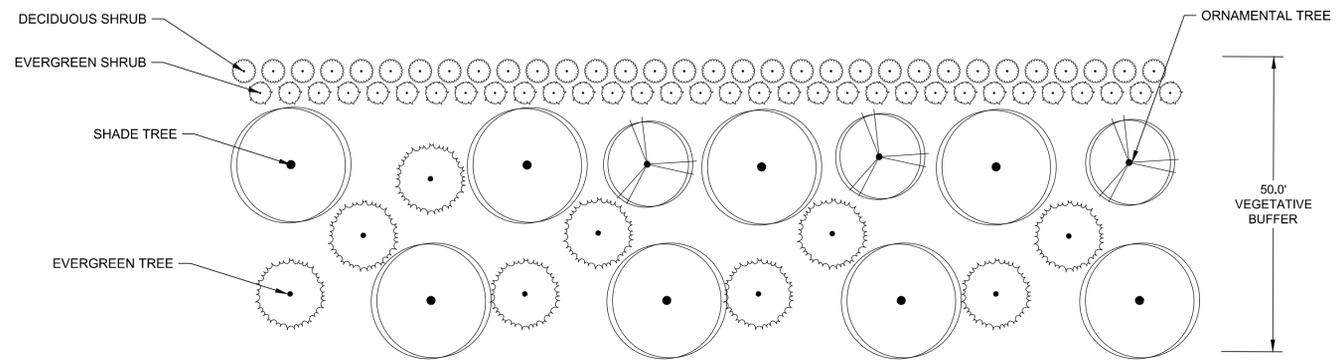
**EXISTING CONDITIONS | VIEW B**



**KEY PLAN**



**PROPOSED PANELS WITHOUT LANDSCAPE BUFFER | VIEW B**



**PROPOSED LANDSCAPE BUFFER | VIEW B**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED TIME OF PLANTING | VIEW B**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED 3 YEAR GROWTH | VIEW B**



**KEY PLAN**



**PROPOSED LANDSCAPE BUFFER - ESTIMATED 5 YEAR GROWTH | VIEW B**



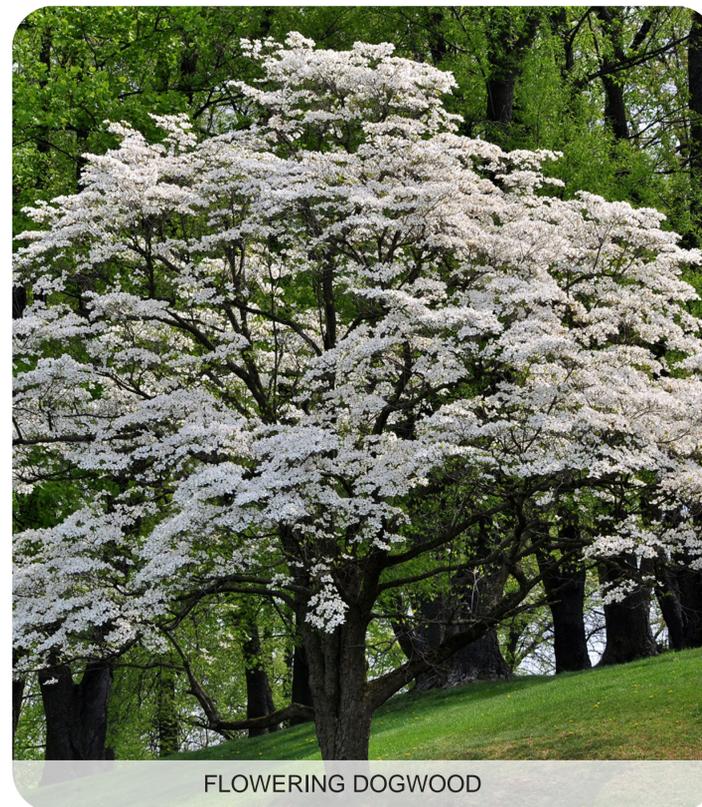
**PROPOSED LANDSCAPE BUFFER - ESTIMATED 10 YEAR GROWTH | VIEW B**



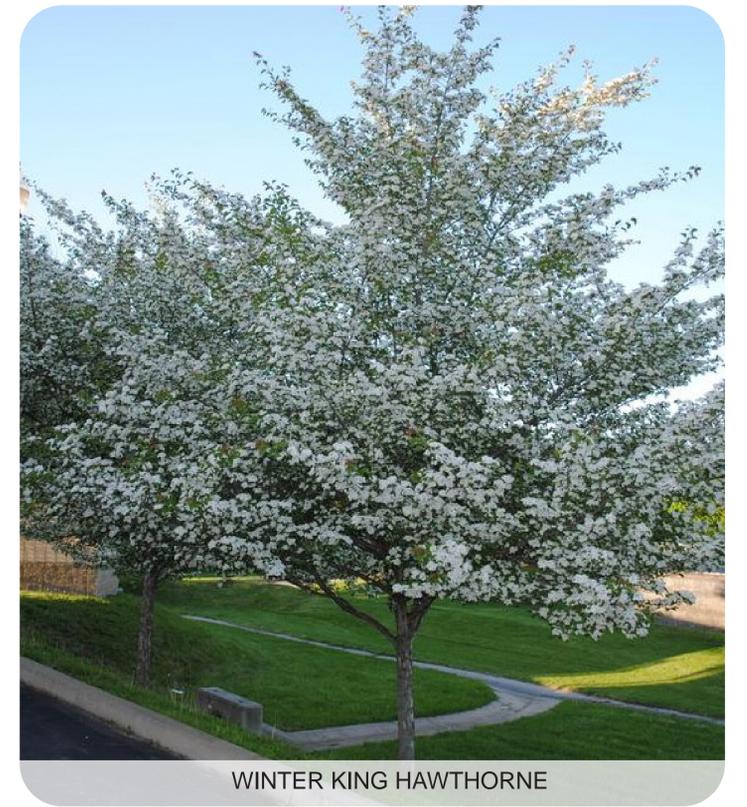
PIN OAK



RED SUNSET RED MAPLE



FLOWERING DOGWOOD



WINTER KING HAWTHORNE



EASTERN RED CEDAR



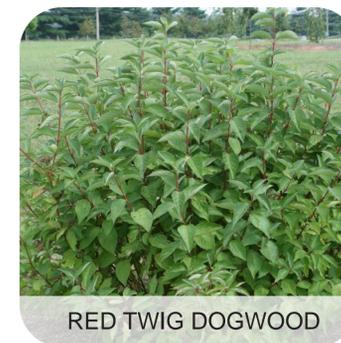
GREEN GIANT ARBORVITAE



SHAMROCK HOLLY



DON'S DWARF WAX MYRLE



RED TWIG DOGWOOD



WINTERBERRY HOLLY

**PLANT PALETTE**

DECIDUOUS TREES

**QUERCUS PALUSTRIS (PIN OAK)**

HEIGHT: 50-70 FT  
SPREAD: 40-60 FT  
GROWTH RATE: ±1-2 FT/YEAR

**ACER RUBRUM 'RED SUNSET'**

HEIGHT: 40-50 FT  
SPREAD: 30-40 FT  
GROWTH RATE: ± 2 FT/YEAR

DECIDUOUS SHRUBS

**CORNUS STOLONIFERA 'ARTIC FIRE'**

HEIGHT: 3-5 FT  
SPREAD: 3-5 FT

**ILEX VERTICILLATA 'NANA'**

HEIGHT: 3-12 FT  
SPREAD: 3-12 FT

EVERGREEN TREES

**JUNIPERUS VIRGINIANA (EASTERN RED CEDAR)**

HEIGHT: 30-65 FT  
SPREAD: 8-25 FT  
GROWTH RATE: ± 1-2 FT/YEAR

**THUJA PLICATA 'GREEN GIANT'**

HEIGHT: 40-60 FT  
SPREAD: 12-15 FT  
GROWTH RATE: ± 2-3 FT/YEAR

ORNAMENTAL TREES

**CORNUS FLORIDA (FLOWERING DOGWOOD)**

HEIGHT: 15-30 FT  
SPREAD: 15-30 FT  
GROWTH RATE: ± 1-2 FT/YEAR

**CRATAEGUS VIRIDIS 'WINTER KING'**

HEIGHT: 25-35 FT  
SPREAD: 25-35 FT  
GROWTH RATE: ± 1-2 FT/YEAR

EVERGREEN SHRUBS

**MYRICA CERIFERA 'DONS DWARF'**

HEIGHT: 3-4 FT  
SPREAD: 4-6 FT

**ILEX GLABRA 'SHAMROCK'**

HEIGHT: 3-4 FT  
SPREAD: 3-4 FT

**Note:** The proposed vegetation depicted in this exhibit are for concept purposes only. Final plant species will be determined with final design.

**RACEFIELD SOLAR**

JAMES CITY COUNTY, VIRGINIA

SUBJECT TO FINAL ENGINEERING

VIEWSHED ANALYSIS  
PLANT PALETTE  
01.21.2022



**Analysis of Racefield Solar’s Conformity with the James City County 2045 Comprehensive Plan and Request for “Substantially in Accord” determination pursuant to Va. Code § 15.2-2232**

January 14, 2022

SUP-21-0022, 360 Racefield Drive. Solar Farm  
AFD-21-0003, Partial Withdrawal of the Barnes Swamp AFD

Pursuant to the requests for approval of SUP-21-0022 and AFD-21-0003, Racefield Solar, LLC (the “Project”) submits the following analysis of the James City County 2045 Comprehensive Plan (the “Comprehensive Plan”) as it relates to the Project. In addition, pursuant to Va. Code § 15.2-2232, for any “public utility facility” that is proposed after the adoption of the Comprehensive Plan (and that is, therefore, not a “feature shown on the plan”), the county’s Planning Commission is tasked with determining whether the “*general location or approximate location, character, and extent thereof* [of the public utility facility] . . . is *substantially in accord* with the adopted comprehensive plan or part thereof.” The Project is deemed a “public utility facility” pursuant to Va. Code § 56-265.1. In this context, “substantially in accord” is interpreted to mean “largely, but not wholly.”<sup>1</sup> This analysis addresses the general review for conformity with the Comprehensive Plan required by SUP-21-0022 and AFD-21-0003 as well as the specific legal determination that the project is “substantially in accord” with the Comprehensive Plan required by Va. Code § 15.2-2232.

**I. The Project as a Land Use**

**Project Characteristics, Function and Design:**

As a highly passive use, the Project conforms to, compliments and will help maintain the rural character of the northern end of the County. Once constructed, the Project will produce virtually no noise, light, traffic, dust, or odor and will require no public utilities or public services other than in the very unlikely event of an on-site emergency. The Project will be monitored remotely with workers visiting different areas of the Project only as needed to perform inspections, maintenance, and repairs, maintain the grounds, and occasionally clean the solar panels of accumulated dust and dirt. Installation of the project will not support or trigger expansion of either residential or commercial development, both of which are inconsistent with the rural character of the Project’s general area. Unlike nearly every other major land use, at the end of the useful life of the Project, all the equipment is easily removable and the land can return to agriculture, forestry or other uses. In the meantime, the Project area is essentially “held in trust” for the life of the project.

The landscaping planned for the Project has been substantially enhanced since the initial application pursuant to discussions with County Staff and the community. As shown on the Project’s updated Master Plan and Vegetative Screening Plan, a robust buffer will be established

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<sup>1</sup> The Albemarle County Land Use Law Handbook Kamptner/June 2016, p. H-2.

around the Projects within the Staff proposed setback distances from parcel lines and public roads and will contain landscaping consisting of existing or planted vegetation. Minimal, if any, removal of trees is anticipated during the installation of the Project. The solar panels will have a low and consistent visual profile which will be largely, if not completely, screened once the vegetation is established. Within the fence, the Project will primarily consist of open space between and around the solar panels themselves. Moreover, the ground surface will be planted with native turf grass that will preserve the soil, minimize erosion and improve water quality. Regarding changes to the land, the Project needs only a few underground foundations and requires limited to no removal of existing trees or topsoil.

## **II. Comprehensive Plan Analysis**

### **A. Project Location:**

The Project is located in an area outside the Primary Service Area (“PSA”) and in an area designated by the Comprehensive Plan as “Rural Lands.” Below we review the guiding principles, methods of protection and strategies for continued improvement of areas designated as Rural Lands as well as the County’s environmental goals found in the Comprehensive Plan. Associated with each of these topics is an analysis of the Project in the context of the respective provision of the Comprehensive Plan. Throughout that analysis, we address the location, character and extent of the Project and their respective conformity with the Comprehensive Plan. Please note that text from the Comprehensive Plan is in italics throughout this document.

### **Comprehensive Plan - Recommended Uses for Rural Lands as described in Chapter 10 “Land Use” (emphasis added):**

*Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agri-tourism, rural-based public or commercial recreation, rural-support businesses and certain public or semi- public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings.*

*Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately-scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low intensity settings relative to the site in which it will be located may be considered on the basis of a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.*<sup>2</sup>

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<sup>2</sup> Chapter 10, Land Use, Page 36

**Analysis - (Location within area designated as “Rural Lands”):**

The Project fits within the category “certain *public or semi-public* and institutional uses *that require a spacious site and are compatible with the natural and rural surroundings*” which are appropriate primary uses for Rural Lands. This category is supported by the language of the County’s Zoning Ordinance applicable to the Project, which is a “Utility Use” more specifically described as “electrical generation facilities (*public or private*)...” which is permitted with a Special Use Permit.<sup>3</sup> Additionally, this consideration is consistent with the definition of the Project as a “Public Utility” pursuant to Va. Code § 56-265.1, and Va. Code § 15.2-2232, which relies on that definition and requires the review of any “public utility facility” by Planning Commission.

This categorization is also supported by language in the Comprehensive Plan. In Chapter 12, “Implementation” on “Guidance for Development Approvals,” one of the actions relating to land use is “LU 1.4 - Require that any development of new public streets, public parks or other public areas, public buildings or public structures, *public utility facilities*, or public service corporation facilities, *inside or outside the Primary Service Area (PSA)*, be subject to individualized review as provided under Section 15.2-2232, Legal Status of Plan, of the Code of Virginia, as amended.”<sup>4</sup> Applying this Land Use Implementation Action to the “Recommended Uses for Rural Lands” described above, it is clear that the County anticipates these public or semi-public uses, including public utility facilities both inside and *outside the PSA*. As a result, the project should be considered one of the recommended uses for Rural Lands.

In addition to the Project being a “public or semi-public use” as outlined above, the Project is of a nature and quality that it should be considered a use that (Recommended Uses for Rural Lands as described in Chapter 10 “Land Use” the Comprehensive Plan from above):

*(R)equire(s) very low intensity settings relative to the site in which it will be located may be considered on the basis of a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.*

As noted in this application and as evidenced by other projects in and nearby the County, it is clear that the Project is a low intensity use that is compatible with the natural and rural nature of its immediate and nearby surroundings and as a result, is a use which complies with the vision for areas designated as Rural Lands. Furthermore, when considering its effect on agricultural and forestal activities, other than displacing agriculture in the Project’s immediate footprint, it will be an excellent neighbor to agricultural and forestal uses; unlike many other uses it can be installed, operated and decommissioned without regard to any impacts those adjacent uses may have.

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<sup>3</sup> James City County Zoning Ordinance, Chapter 24, Zoning, Article V., Districts, Division 2, “General Agriculture.”

<sup>4</sup> Chapter 12, Implementation, Page 50.

### **Analysis - (Specific location within “Rural Lands”):**

The Project is located in a sparsely populated area off Racefield Drive. Once the vegetative buffers are established within the required setbacks, the Project will be fully screened from nearby residences and Racefield Drive. The County has identified a number of important historic, cultural, and aesthetic features within this area of the County in need of consideration and protection. The Project will not impact Community Character Corridors, scenic roadways like Forge Road, or unique communities like Toano.<sup>5</sup>

### **General Analysis - Application of the PSA to the Project:**

The PSA is the demarcation between the areas planned for continued development and areas for preservation, conservation and limited growth. As noted in the Introduction to the Comprehensive Plan, during the plan update process and through regular community engagement, “(m)any are concerned that the pace, pattern and character of new growth and development may harm this treasured character of the County and many expressed a strong desire both to limit the pace and amount of new development and to direct it away from the rural areas that they value so highly.”<sup>6</sup> It is important to contextualize the Project, which is located outside the PSA with those traditional forms of development that the County has determined should be primarily focused within the PSA.

As noted in the “Key Planning Influences” section of the Land Use Chapter of the Comprehensive Plan, “Growth Management” is the “lynchpin” for the County’s land use planning. The question is, for the purposes of the PSA and the County’s broad vision for areas outside it, does the Project constitute the type of “growth” and “development” the County is primarily concerned with and does it have the same or similar attributes of those more traditional notions of growth? Looking simply at the PSA as a demarcation, it is the area that is “presently provided with public water and sewer and high levels of public services, as well as the appropriate levels of growth as well as areas expected to receive such services over the next 20 years.”<sup>7</sup> This *human and commerce* centered concept of “growth” is a theme that runs throughout the Comprehensive Plan and controlling that growth is the primary policy goals of the PSA. Given the Project’s attributes and the realities of its construction and operation, it is clear that it is *not* the type of land use the PSA is intended to control and instead, is a use that is very well suited to exist outside the PSA. For example, the Project does not require public or private water or sewer; it generates minimal traffic once constructed; it does not generate additional demand for schools, libraries or human services and is unlikely to require emergency response services. This stands in stark contrast to those types of development for which the PSA is a tool for control. As stated below, the Project instead supports a number of the goals of the Rural Lands and keeps with a number of themes of the area with that designation.

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<sup>5</sup> Chapter 10, Land Use, Page LU-6.

<sup>6</sup> Chapter 1, Introduction, Page Intro-4.

<sup>7</sup> Chapter 10, Land Use, Page 3.

## B. Project Character and Extent:

The “Rural Development Standards” provide a helpful analysis of the Project’s Character and Extent as it relates to the vision for the Rural Lands.

### **Comprehensive Plan - Rural Lands Development Standards as described in Chapter 10 “Land Use,”<sup>8</sup> (emphasis added):**

a) *Uses in Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:*

*i. Locating structures and uses outside of sensitive areas;*

**Analysis - (“Character and Extent”):** No aspect of the Project will be located within the Resource Protection Area (“RPA”) and no environmentally sensitive areas have been identified within the Project site.

*ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;*

**Analysis - (“Character”):** Little to no grading is anticipated within the project site. Additionally, the Project will maintain existing vegetation and add significant vegetation to screen the facility.

*iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestral soils and resources;*

**Analysis - (“Character and Extent”):** The Project is a temporary use of the land. Once decommissioned, those uses may continue. The Project does not inhibit the unused areas of the Project parcel from continuing their current use nor does the Project negatively impact surrounding uses.

*iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;*

**Analysis - (“Character”):** As noted above and in the application, significant enhanced buffering will be added to screen the facility.

*v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;*

**Analysis - (“Character”):** Per Staff requirement, the existing driveway is proposed to be combined with access roads that will be used for installation and operation of this project.

*vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;*

**Analysis - (“Extent”):** The Project will not exceed 15 feet, well below the mature height of surrounding trees and nearby structures.

*vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways; and*

**Analysis - (“Extent”):** As noted above, the Project is compliant with the requirements set forth by James City County Zoning Ordinance and Staff

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<sup>8</sup> Chapter 10, Land Use, Page 36.

requirement. The existing driveway is proposed to be combined with project access, with only perpendicular breaks through the vegetative buffer yard.

*viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.*

**Analysis - (“Character”):** The Project does not require lighting.

*b) Encourage the preservation and reuse of existing agricultural structures such as barns, silos, and houses.*

**Analysis - (“Character”):** No agricultural structures will be impacted.

*c) Site more intensive uses in areas where the existing road network can accommodate the additional vehicle trips without the need for significant upgrades or modifications that would impact the character of the rural road network.*

**Analysis - (“Character and Extent”):** Access to the Project Site has been designed and planned so as ensure safe and efficient access during construction and to provide for road repair, should any be required.

### **Comprehensive Plan - Goals, Strategies and Actions for Implementing the County’s Land Use Goals within Rural Lands as described in Chapter 10 “Land Use”<sup>9</sup>:**

*Goal: Achieve a pattern of land use and development that reinforces and improves the quality of life for citizens by encouraging infill, redevelopment, and adaptive re-use within the PSA; limiting development on rural and natural lands outside the PSA; and achieving the other eight goals of this Comprehensive Plan.<sup>10</sup>*

Strategies and Actions for implementing this goal relative to Rural Lands and the Project:

*LU 1 - Promote the use of land in a manner harmonious with other land uses and the environment.*

*LU 1.4 - Require that any development of new public streets, public parks or other public areas, public buildings or public structures, public utility facilities, or public service corporation facilities, inside or outside the Primary Service Area (PSA), be subject to individualized review as provided under Section 15.2-2232, Legal Status of Plan, of the Code of Virginia, as amended.*

**General Analysis:** As noted above, this is being completed for the Project.

*LU 1.7 - Explore the creation of a solar and wind energy ordinance that establishes performance standards for solar farms, carbon sequestration facilities, and other emerging technologies in the renewable energy industry, with the intention of protecting the County’s unique rural character, preserving natural resources, and mitigating impacts to neighboring properties.*

**Analysis - (“Character and Extent”):** The inclusion of this goal indicates that continued development of solar projects is anticipated within the County, but the County’s

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<sup>9</sup> Chapter 10, Land Use, Page, LU-1

<sup>10</sup> Chapter 10, Land Use, Page, LU-1.

character, natural resources and the impact of such projects to their neighbors must be considered and protected. As demonstrated throughout this application and through the Project's design, the Project is in keeping with the rural character of the surrounding area, has minimal direct impact to natural resources and provides a number of primary (clean energy) and secondary (aquifer recharge areas, non-application of pesticides and herbicides, etc.) benefits to natural resources. Based on the updated project landscaping, the impact to neighboring properties has been mitigated and once mature, the vegetation will fully screen the Project.

*LU 6.1 - Promote the economic viability of traditional and innovative farming as industries:*

*LU 6.1.3 - Continue to update the Zoning Ordinance list of permitted and specially permitted uses in the A-1 zoning district. Investigate adding a development standards policy for those uses that might benefit from a rural location. Continue to look at non-residential uses and development standards that may be appropriate, such as agribusiness, eco-tourism, **or green energy uses**, and uses related to projects that are identified by the Strategy for Rural Economic Development.*

*LU 6.1.4 - As resources allow, support implementation of the recommendations in the Strategy for Rural Economic Development to **maintain and create viable economic options for rural landowners**.*

**Analysis - (“Character and Extent”):** Similar to the above strategy for implementation, LU 1.7 and LU 6.1.3 indicate that non-residential uses including green energy should continue to be accommodated in the County, so long as they are well designed. The latter point, in italics, regarding maintenance and creation of viable economic options for rural landowners is particularly impactful when considering solar as a land use and the Project specifically. Solar leases provide a valuable revenue stream to rural landowners, one which may offset or eliminate the need to pursue other, less rural-friendly options for monetizing that property. In the case of the Project, only a portion of the property is being used and will generate considerable income to the owners Katherine Hockaday, Justin Martin, and Blair Martin, over the life of the Project, all the while, the remaining portion of the property may continue in its current agricultural and forested use.

*LU 6.1.6 - Protect farming and forestry uses from **conflicting activities by encouraging buffers and open space design** and by raising awareness among new rural land purchasers about existing farming and forestry uses in the County.*

**Analysis:** As noted above, solar is an ideal neighbor to agricultural and silvicultural operations. It is not offended by the noises or odors associated with those uses. Additionally, because the Project occupies the land, it prevents other conflicting uses that may be in conflict with the Comprehensive Plan.

*LU 6.2 - Residential development is not a recommended use in the Rural Lands. Creation of any residential lots should be in a pattern that protects the economic viability of farm and forestal assets, natural and cultural resources and rural character.*

**Analysis - (“Character”):** The Project provides an alternative to residential development, potentially via a family subdivision or similar division which have been an issue outside the PSA. Once constructed, the area where the Project is located will be “held in trust” and no residential development will occur within that time.

### **Comprehensive Plan - Rural Lands Protection:<sup>11</sup>**

*The areas outside of the PSA are in large part designated as Rural Lands on the Future Land Use Map. While areas with this designation are predominantly known for agricultural and forestal activities, they also contain lands that are vital to the broader environmental health of the County, such as natural areas, extensive Resource Protection Areas (RPAs), aquifer recharge areas, and the headwaters for important watersheds. Land preservation, especially of prime farmland soils, is of utmost importance in this area.*

**Analysis:** The Project area, once reseeded in native vegetation, will serve as an aquifer recharge area where no harmful pesticides or herbicides are applied for the life of the Project. Runoff rates will decrease relative to the current agricultural use and the additional vegetation planted as a buffer will be maintained for the life of the facility. The Applicant, Racefield Solar, LLC, is additionally willing to explore stream restoration activities for an area identified by County Staff as in need. This area is located outside of the project site. As a result, the Project will be a net benefit to the environmental health of the community.

### **Comprehensive Plan - Rural Lands Protection and Tools for Implementation:<sup>12</sup>**

*Rural Land Tools:<sup>13</sup>*

*Enhancing the Viability of the Rural Economy:*

*1. Taxing Incentives (ex: Land Use Value, Agricultural and Forestal Districts, Land Use-Based Incentives)*

*Retaining Rural Character:*

*1. Service Boundaries Ex: Primary Service Area policy*

**Analysis - (“Character and Extent”):**

As stated above, permitting solar in areas where projects can be well sited and in ways that are congruent with other rural uses can be a tool for enhancing the viability of the rural economy. Allowing a rural landowner to establish a solar use helps relieve the pressure to monetize rural properties through traditional residential or commercial development. Permitting solar, including the Project, takes the burden off the County or other public or private actors from purchasing development rights to secure that same level

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<sup>11</sup> Chapter 10, Land Use Page, LU-9

<sup>12</sup> Chapter 10, Land Use, Page, LU-10.

<sup>13</sup> Chapter 10, Land Use, Page, LU-10, Figure LU-1.

of protection. Furthermore, given this land use is long term (40 years) but not permanent, it provides flexibility that purchase of development rights and conservation easements do not; unanticipated uses for land that might otherwise benefit the community and the rural economy but which might be prevented by a permanent restriction on use are still a viable option once the Project is decommissioned.<sup>14</sup>

### **Comprehensive Plan - Goals, Strategies and Actions for Implementing the County's Environmental Quality And Preservation Goals as described in Chapter 5 "Environment":<sup>15</sup>**

*Goal: ENV - Continue to improve the high level of environmental quality in James City County and protect rural and sensitive lands and waterways that support the resiliency of our natural systems for the benefit of current and future generations.<sup>16</sup>*

*Strategy and Actions:*

*ENV 4: Work with the private sector and other governmental entities such as HRPDC and the State through both regulation and non-regulatory techniques to mitigate and adapt to the effects of climate change.<sup>17</sup>*

*ENV 4.6 - Investigate ways to amend the County Ordinances to support alternative energy production, and to amend ordinances or include special use permit conditions that protect and enhance natural resources on alternative energy production sites.*

**Analysis:** As noted above, the goal of continuing to support alternative energy production so long as it protects and enhances natural resources is met via the proposed location and design of the Project.

*ENV 4.6.1. In Ordinances or as development approval conditions, include provisions to minimize clearing of forested land.*

**Analysis:** Few to no trees will be removed during the installation of the Project and additional forested land will be created by screening the Project.

*ENV 4.6.2. In Ordinances or as development approval conditions, implement best practice documents on the inclusion of native pollinator plants.<sup>18</sup>*

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<sup>14</sup> N.C. Clean Energy Technology Center, N.C. State University, "Balancing Agricultural Productivity with Ground-Based Solar Photovoltaic (PV) Development" (May 2019), p. 6., available at <https://solar.coopercenter.org/sites/solar/files/reports/Balancing%20Agricultural%20Productivity%20and%20Solar%20Development.pdf>

<sup>15</sup> Chapter 5, Environment, Page ENV-1.

<sup>16</sup> Id.

<sup>17</sup> Chapter 5, Environment, Page ENV-6.

<sup>18</sup> Chapter 5, Environment, Page ENV-7

**Analysis:** The Project includes native pollinators, as indicated on the updated Master and Vegetative Screening Plans.

**RESOLUTION**

**VIRGINIA CODE SECTION 15.2-2232 ACTION ON CASE NO. SUP-21-0022**

**360 RACEFIELD DRIVE SOLAR FARM**

WHEREAS, in accordance with Section 15.2-2232 of the Code of Virginia, a public utility facility, whether publicly or privately owned, shall not be constructed, established, or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan or part thereof; and

WHEREAS, Katherine Hockaday, Justin Martin, and Ann Martin (the "Owners"), own property located at 360 Racefield Drive, further identified as James City County Real Estate Tax Map Parcel No. 0310100003 and zoned A-1, General Agricultural (the "Property"); and

WHEREAS, Mr. Brendan Grajewski of Hexagon Energy, LLC, on behalf of the Owners, has applied for a Special Use Permit (SUP) to allow for the construction of a solar electrical generation facility on the Property as shown on a plan titled "Racefield Solar, LLC" dated November 12, 2021; and

WHEREAS, in accordance with Section 15.2-2204 of the Code of Virginia and Section 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified, and a hearing scheduled for Case No. SUP-21-0022.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, for the reasons expressed in the written minutes which shall be transmitted to the Board of Supervisors, finds that the general or approximate location, character, and extent of the public utility facility shown in Case No. SUP-21-0022 is substantially in accord with the adopted Comprehensive Plan and applicable parts thereof.

  
\_\_\_\_\_  
Tim O'Connor  
Chairman, Planning Commission

ATTEST:  
  
\_\_\_\_\_  
Paul D. Holt, III  
Deputy Clerk to the Board

Adopted by the Board of Supervisors of James City County, Virginia, this 2nd day of February, 2022.

**Unapproved Minutes of the February 2, 2022  
Planning Commission Regular Meeting**

**AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal**

AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal and SUP-21-0022. 360 Racefield Drive Solar Farm were presented to the Commission as a combined Public Hearing. Minutes of the hearing are recorded under SUP-21-0022. 360 Racefield Drive Solar Farm; however, the vote for AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal is recorded here.

Mr. Polster made a motion to recommend approval of the AFD withdrawal.

On a roll call vote the Commission did not recommend approval of AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal. (2-3)

**SUP-21-0022. 360 Racefield Drive Solar Farm**

Mr. Tom Leininger, Principal Planner, stated that Mr. Brendan Grajewski has applied, on behalf of Hexagon Energy, for a Special Use Permit (SUP) to construct a solar farm and an Agricultural and Forestal District (AFD) Withdrawal request to remove a 26-acre portion of the 65.26-acre parcel within the Barnes Swamp AFD. Mr. Leininger stated that the parcel is located at 360 Racefield Drive, is currently zoned A-1, General Agricultural and designated Rural Lands on the 2045 Comprehensive Land Use map and is located outside the Primary Service Area (PSA). Mr. Leininger stated that the subject parcel is one of 33 currently in the Barnes Swamp AFD, which totals 2,207 acres.

Mr. Leininger stated that prior to the approval of the SUP for the solar farm, the area subject to this SUP is required to be withdrawn from the AFD.

Mr. Leininger stated that outside of the AFD renewal periods, withdrawals must be approved by the Board of Supervisors according to the Policy Governing the Withdrawals of Property from AFDs.

Mr. Leininger stated that the proposed solar farm facility will consist of ground-mounted arrays of solar panels mounted on single-axis tracker. Mr. Leininger further stated that a 50-foot vegetated buffer is shown along the perimeter of the development, and the buffer is increased to 75 feet along areas nearest to Racefield Drive.

Mr. Leininger stated that the 2045 Comprehensive Plan Land Use Map designates the property Rural Lands. Mr. Leininger stated that the Comprehensive Plan does not specifically identify solar power or utilities in general, in Rural Lands. Mr. Leininger stated that Rural Land uses are intended to help protect and enhance the viability of agricultural and forestal resources with primary uses being agricultural and forestal activities and related uses. Mr. Leininger further stated that in addition to the land use designation, Racefield Drive is part of the existing, local, rural road

network. Mr. Leininger noted that the 2045 Comprehensive Plan states that capacity improvements and non-rural land uses should be avoided on rural roads.

Mr. Leininger stated that according to Virginia Code Section 15.2-2232 unless a utility facility is shown on the adopted Comprehensive Plan or other master plans for the County, the local Planning Commission and a governing body shall review the facility to determine whether the location, character, and extent of the project is substantially in accord with the adopted Comprehensive Plan.

Mr. Leininger stated that the AFD withdrawal was reviewed by staff and found that it only met 1 of the 4 criteria listed in the Board adopted Policy Governing the Withdrawals of Property from AFDs.

Mr. Leininger stated that the four criteria for AFD withdrawal are:

- The request is the result of an unforeseeable change in circumstances (traditionally interpreted to include death of a property owner)
- The request serves a public interest (typically defined as schools or fire stations as examples).
- The withdrawal should not result in a disruption of the existing district (this withdrawal does not bring the overall acreage below the AFD requirement)
- The resulting land use should be in conformance with the Comprehensive Plan's designation for that parcel

Mr. Leininger stated that staff does not find a solar farm consistent with the Rural Lands designation in the 2045 Comprehensive Plan.

Mr. Leininger stated that at the AFD Advisory Committee meeting on January 27, 2022, the Committee voted 5-0-1 with one member abstaining to recommend denial of the withdrawal request to the Planning Commission and Board of Supervisors.

Mr. Leininger stated that based on an evaluation of criteria withdrawal policy, staff recommends that the Planning Commission recommend denial of the AFD withdrawal application to the Board of Supervisors.

Mr. Leininger stated that staff also recommends that the Planning Commission not find this application consistent with the 2045 Comprehensive Plan and to recommend denial of the proposal to the Board of Supervisors. Mr. Leininger stated that should the Planning Commission recommend approval, conditions have been included that are designed to mitigate the potential impacts of this development.

Mr. Haldeman inquired if there was any correspondence from adjacent property owners.

Mr. Leininger stated that there was no formal correspondence; however, after the AFD Advisory Committee meeting, he did speak with an adjacent property owner who had general questions about the project.

Mr. Polster noted that Hexagon Energy hosted a community meeting and that there were no concerns expressed by the citizens.

Ms. Null stated that she attended the meeting and that the only discussion of note related to runoff at the back corner of the property.

Dr. Rose inquired if the property could be withdrawn during the renewal period without meeting any criteria.

Mr. Leininger stated that the property could be withdrawn by-right during the renewal period; however, the renewal period would not begin until later in the spring.

Mr. O'Connor inquired whether the decision would only be the SUP and the consistency with the Comprehensive Plan if the property were withdrawn during the renewal period.

Mr. Leininger confirmed that the Commission would still need to make a recommendation on the SUP and consistency with the Comprehensive Plan.

Mr. O'Connor opened the Public Hearing.

Mr. Brendan Grajewski, Hexagon Energy, made a presentation to the Commission on the proposed solar farm.

Mr. Haldeman inquired if there was a contract in place with Dominion Energy.

Mr. Grajewski stated that the contract is being negotiated. Mr. Grajewski further stated that they have approximately 70 days to finalize the contract. Mr. Grajewski stated that this timing seemed to be the best to meet the specified deadlines and align the project schedule with the necessary permits.

Dr. Rose inquired if this is why they are pursuing the ADF Withdrawal at this time.

Mr. Grajewski confirmed.

Dr. Rose inquired how the County would benefit from the electricity from the project.

Mr. Grajewski stated that this project will provide grid resiliency and more localized options for clean energy.

Dr. Rose inquired if the buffer could be designed to look more natural.

Mr. Grajewski stated that the plan has to comply with the County's landscape ordinance; however, they are willing to look at options that would give a less planned appearance.

Mr. O'Connor inquired about the number of homes 3 megawatts would power.

Mr. Grajewski stated that it is approximately 200 homes.

Mr. O'Connor inquired about how the facility would connect to the grid.

Mr. Grajewski stated that the tie in was close to the property and would not require new transmission lines.

As no one else wished to speak, Mr. O'Connor closed the Public Hearing.

Mr. Holt noted that there are three votes required. Mr. Holt stated that the first vote would be on the AFD Withdrawal; the second vote on the Resolution of Substantial Accord with the Comprehensive Plan; and the third on the SUP.

Mr. O'Connor opened the floor for discussion.

Mr. Polster stated that 94% of citizen responses for the Comprehensive Plan Survey ranked preservation of the rural character and environment. Mr. Polster stated that, while the County was doing well, it was not doing enough. Mr. Polster further stated that during the Comprehensive Plan update, he recommended looking at new technology for potential updates to the Zoning Ordinance to include performance standards similar to what are found in this application.

Mr. Polster further stated that looking at the benefits of this application compared to the benefits of the AF, the solar farm would protect the land for the life of the project where the AFD protection lasts only four years. Mr. Polster noted that allowing the use of renewable energy is also in keeping with the goal of finding new ways for property owners to benefit economically from their property.

Mr. Polster noted that the Commission had previously recommended approval of the Rochambeau solar project, with the same Zoning and Comprehensive Plan Land Use designation, including withdrawal of the property from an AFD.

Mr. Polster stated that the project would also be much more fiscally beneficial to the County than keeping the property in the AFD.

Mr. Polster stated that he finds the project to be consistent with the intent of the Comprehensive Plan to control development in rural lands. Mr. Polster stated that he intends to support the AFD withdrawal and the SUP application.

Mr. Haldeman stated that the Commonwealth of Virginia has set a goal to have 30% renewable energy by 2030. Mr. Haldeman stated that he voted to recommend approval of the two previous solar farms as those properties were otherwise headed for very intensive use. Mr. Haldeman stated that there are a number of benefits to a solar farm including no use of pesticides or herbicides. Mr. Haldeman stated that he found the traffic management plan, stormwater plan, and buffering plan to be well thought out. Mr. Haldeman stated that his one concern is whether this will open the gate for more applications of this kind and the impact on the rural character.

Dr. Rose stated that the County can either look back at what rural lands have always been or look ahead to a new vision for what rural lands can be. Dr. Rose stated that this application is a progressive use that benefits the landowner, the County, and the Commonwealth moving towards the renewable energy goal.

Ms. Null stated that she does not find that the proposal enhances rural lands. Ms. Null stated that, going by the Comprehensive Plan survey, citizens do not want development, they want viewshed, the lands to stay rural, and no development. Ms. Null stated that setting a precedent for future applications would change the character of the County. Ms. Null noted that the two previously approved solar farms were located in the PSA, where this property is outside the PSA. Ms. Null stated that this application would have a detrimental effect on a beautiful area of the County.

Mr. Polster stated that if the Commission finds solar farms to be something of the future, it is necessary to develop the right ordinances to ensure that these renewable energy applications conform with performance standards. Mr. Polster further stated that he appreciates the applicants use of the items recommended by the Commonwealth and willingness to consider requests from the DRRC and the Commission. Mr. Polster further stated that he appreciates the applicant's robust public engagement. Mr. Polster stated that it is these things that need to be formalized similar to short-term rentals.

Mr. O'Connor stated that he does share the concerns of opening the opportunity for many other projects to come forward and the impacts of numerous solar farms on the rural character of the County. Mr. O'Connor stated that he does not believe the public benefits of the project rise to the level of triggering a withdrawal from the AFD. Mr. O'Connor stated that allowing the withdrawal of the property could also set a precedent for other early withdrawal requests.

Mr. Polster stated that the Rochambeau Solar Farm property was also in an AFD and also rural lands. Mr. Polster stated that the precedent had already been set. Mr. Polster reiterated that it is imperative to establish an ordinance, so the Commission has criteria to fall back on.

Mr. Haldeman inquired if the Commission could recommend that the property not be withdrawn from the AFD but still find that the project is consistent with the Comprehensive Plan and recommend approval of the SUP.

Mr. Max Hlavin stated that there is nothing procedurally incorrect in recommending no withdrawal from the AFD but finding the project consistent with the Comprehensive Plan and recommending approval of the SUP.

Mr. Holt noted that there is a condition for a 48-month commencement of construction and the property owner will be able to withdraw the property by-right in October.

Mr. Polster made a motion to recommend approval of the AFD withdrawal.

On a roll call vote the Commission did not recommend approval of AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal. (2-3)

Mr. Polster made a motion to find the application consistent with the Comprehensive Plan.

On a roll call vote the Commission voted to find the application consistent with the Comprehensive Plan (4-1)

Mr. Polster made a motion to recommend approval of the SUP application.

On a roll call vote the Commission voted to recommend approval of SUP-21-0022. 360 Racefield Drive Solar Farm. (4-1)

## RESOLUTION

### CASE NO. SUP-21-0022. 360 RACEFIELD DRIVE SOLAR FARM

WHEREAS, the Board of Supervisors of James City County, Virginia, has adopted by Ordinance specific land uses that shall be subjected to a Special Use Permit (SUP) process; and

WHEREAS, Mr. Brendan Grajewski of Hexagon Energy, LLC, on behalf of Katherine Hockaday, Justin Martin, and Ann Martin, the owners of property located at 360 Racefield Drive and further identified as James City County Tax Map Parcel No. 0310100003 (the "Property"), has applied for an SUP to allow for the construction of a solar electrical generation facility on the Property as shown on a plan titled "Racefield Solar, LLC" dated November 12, 2021, and revised January 24, 2022; and

WHEREAS, the Planning Commission, following its public hearing on February 2, 2022, recommended approval of Case No. SUP-21-0022 by a vote of 4-1; and

WHEREAS, a public hearing was advertised, adjoining property owners notified, and a hearing conducted on Case No. SUP-21-0022; and

WHEREAS, the Board of Supervisors of James City County, Virginia, finds this use to be consistent with good zoning practices and the 2045 Comprehensive Plan Land Use Map designation for the Property.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, after consideration of the factors in Section 24-9 of the James City County Code, does hereby approve the issuance of Case No. SUP-21-0022 as described herein with the following conditions:

1. Master Plan. This SUP shall be valid for the construction of a photovoltaic solar electrical generation facility (the "Facility"), electrical substations serving the Facility with a capacity of 5,000-kilovolt amperes or more, and electrical transmission lines serving the Facility capable of transmitting 69 kilovolts or more (all together, the "Project") on property located at 360 Racefield Drive and further identified as James City County Real Estate Tax Map Parcel No. 0310100003 (the "Property"). The Property shall be developed and the Project constructed substantially in accordance with the master plan titled "Racefield Solar, LLC" prepared by Hexagon Energy, LLC, and dated November 12, 2021 and revised January 24, 2022, (the "Master Plan"), with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance, as amended.
2. Nutrient Management Plan. The Facility operator shall provide a nutrient management plan (NMP) prepared by a certified nutrient management planner for all of the area within the defined limits of work (disturbance) for the Property. The purpose of the NMP is to provide for long-term establishment and maintenance of turf grass, pasture, rangeland, or other similar type vegetative cover which preserve the long-term soil health for potential future farming purposes. The NMP shall have a component which specifically identifies and maintain and protects designated Prime Farmland soil mapping units consistent with the Soil Survey of James City County and the City of Williamsburg Virginia (April 1985) and the County's Comprehensive Plan. The NMP shall be submitted for review and approval by the County's Director of Stormwater and Resource Protection prior to approval of any final site plan for the Facility. Upon approval of the NMP, the

Facility operator shall be responsible for ensuring that any nutrient applied in the area within the defined limits of work is in strict accordance with the NMP.

3. Vegetated Buffer. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a landscape plan for the Project. The landscape plan shall provide a 50-foot landscaped buffer (the "Perimeter Buffer") along the perimeter of the Project site. The Perimeter Buffer shall be increased to 75 feet in the following locations: (i) along the boundary of the Property that fronts on Racefield Drive, (ii) along approximately 200 feet of the eastern perimeter of the Project as shown on the Master Plan, and (iii) along approximately 200 feet of the western perimeter to screen the Project as shown on the Master Plan. The Perimeter Buffer shall be shown on the site plan. The Perimeter Buffer shall be provided by one of the three treatment options listed below:
  - a. In areas of the Perimeter Buffer that are currently comprised of mature forest, as determined by the Planning Director or designee, the buffer shall be left undisturbed in its natural state.
  - b. In areas of the Perimeter Buffer that are not completely comprised of mature forest, as determined by the Planning Director or designee, supplementation with evergreen shrubs and trees shall be required in accordance with Condition No. 3c.
  - c. In areas of the Perimeter Buffer where little or no vegetation exists, as determined by the Planning Director or designee, the buffer shall be landscaped to the provisions of Section 24-96 of the Zoning Ordinance for General Landscape Areas except that the required evergreen tree and shrub mixture shall be increased from 35% to at least 45%.
4. Lighting. If any lighting of the Project is proposed, the Planning Director or designee shall review and approve a lighting plan prior to final site plan approval. Any exterior site or building lighting on the Property shall be shielded and directed downward. No glare, defined as 0.1 foot-candle or higher, shall extend outside the boundaries of the Property. Lights shall be operated by a motion detector or be able to be turned on as needed by the Facility operator and shall not be routinely illuminated at night. No light poles shall exceed a height of 16 feet above finished grade unless otherwise approved in writing by the Planning Director prior to final site plan approval.
5. Signage. Unless otherwise exempt by Section 24-74 of the Zoning Ordinance, no outdoor signage related to the Project shall be permitted on the Property.
6. Fencing. Any fence on the Property shall be black or other neutral color and shall not exceed a height of 8 feet above finished grade and not consist of barbed wire. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a detail of any proposed fencing on the Property for consistency with this condition.

7. *Emergency Management Plan.* The Facility operator shall prepare and maintain an Emergency Management Plan (EMP) to address situations that may require response from James City County public safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
  - Be developed in conjunction with and approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan.
  - Provide a mutually agreed-upon schedule for the Facility operator to provide information sessions and training for James City County public safety personnel relative to possible emergency response situations at the Facility.
  - Provide pertinent contact numbers for the Facility operator emergency personnel.
  - Provide that all emergency contact information will be posted on access gates.
  
8. *Construction Management and Mitigation Plan.* Prior to final approval of any site plan, the Facility operator shall provide a Construction Management and Mitigation Plan (CMMP) for review and approval of the Planning Director or designee. The CMMP shall include those items listed below:
  - a. Construction Management:
    - Designated parking areas.
    - All piling driving activity on the Property shall be limited to the hours of 8 a.m. to 6 p.m., Monday through Friday.
    - Other construction activities, including clearing and grading of the Property shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday.
    - Construction delivery traffic to the Property shall not be allowed during pick-up/drop-off times for surrounding schools.
    - Appropriate methods for the storage, transportation, and disposal of any waste and/or hazardous materials.
  - b. Construction Mitigation:
    - Dust mitigation, such as water trucks, mulch, or similar methods.
    - Smoke and burn mitigation, such as containments or similar methods.
  
9. *Construction Traffic Mitigation Plan.* A Construction Traffic Mitigation Plan (CTMP) shall be submitted to the Virginia Department of Transportation (VDOT) and the Planning Director, or designee, for review and approval prior to the issuance of a land disturbing permit for the Facility. The CTMP shall identify all existing conditions along Racefield Drive, provide a plan to address all necessary repairs required as a result of damage from construction traffic, and provide a timeline for completion of repairs, and provide a surety in a form acceptable to the County Attorney guaranteeing such repairs. All road repairs as identified by the approved CTMP shall be completed within six months of the Facility becoming operational.

10. Off-Site Parking. Prior to issuance of a land disturbing permit, an Off-Site Parking Plan (OPP) shall be submitted to the Planning Director, or designee, for review and approval. The off-site parking area shall be used by construction workers who shall be transported to the Property via a shuttle van and/or bus. The OPP shall conform to all Zoning Ordinance requirements and shall identify elements such as, but not limited to, the number of off-site parking spaces provided and the location of the off-site parking area. In order to reduce the amount of construction-related traffic along Racefield Drive and to ensure that construction workers are parking their vehicles at the off-site parking area, no more than 20 vehicles may be parked on the Property for the Project at any time except for trucks, as defined by the Zoning Ordinance, and delivery vehicles. No on-street parking for the Project shall be allowed. The OPP shall identify the need for additional Erosion and Sediment Control measures and Stormwater measures generated by the off-site parking area and those needs be approved through an erosion and sediment control plan prior to issuance of land disturbance permit for the Facility.
11. Spill Prevention Control and Countermeasure Plan. Prior to approval of any site plan, the Facility operator shall submit a Spill Prevention Control and Countermeasure Plan (SPCCP) for the Project to the County Director of Stormwater and Resource Protection or designee for review and approval. The SPCCP shall outline spill prevention and pollutant containment measures and procedures necessary for the operation of the Facility until decommissioning.
12. Decommissioning and Restoration Plan and Agreement. Prior to final approval of any site plan, a Decommissioning and Restoration Plan (DRP) shall be submitted to the Planning Director or designee for review and approval. The DRP shall outline the required steps for removal of above and below-ground Facility components, disposal and/or recycling of wastes and materials, soil stabilization, and the revegetation and restoration of native habitat of the Property. At the time of decommission of the Facility, the stormwater facilities on the Property must be evaluated for continued need and the final DRP must include the close-out or remediation of stormwater facilities. The DRP shall be enforceable by a written Decommissioning Agreement in accordance with and subject to the terms of Virginia Code § 15.2-2241.2(B). To ensure sufficient funds are available to the County to conduct the DRP, a surety in an amount sufficient for decommissioning the Facility and remediating the Property shall be posted with James City County in a form acceptable to the County Attorney. The Decommissioning Agreement shall be executed prior to approval of a site plan for the Facility.
13. Height Limitation. The maximum height of all structures in the Facility, including the photovoltaic solar panel mounts, shall not exceed 16 feet above finished grade.
14. Glare. All photovoltaic solar panels on the Property shall be of made of or be coated with anti-reflective materials to prevent glare.
15. Virginia Runoff Reduction Method. The Forested Open Space land use category may be used to account for a maximum of 50% of the required water quality associated with the Project. The purchase of offsite nutrient credits toward needed water quality associated with the Project will not be allowed.
16. Special Stormwater Criteria. Special stormwater criteria measures as defined in the Special Stormwater Criteria Task Group shall be required for the Project.

17. Channel Protection. The stormwater management design shall provide channel protection for the 1-year, 24-hour storm event per energy balance, as defined in 9 VAC 25-870-66(B)(3)(a), for all outfall and discharge locations for the Project.
18. Flood Protection. The stormwater management design shall provide flood protection through attenuation of the 10-year, 24-hour storm event, per 9 VAC 25-870-66(C)(2)(b).
19. Stream Channel Restoration. The development plan for the Project must include a restoration plan for approximately 200 linear feet of the upper reaches of the perennial stream channel on the Property that is experiencing severe degradation. The restoration plan must be shown as part of the overall plan of development for the Project and be approved by the Director of Stormwater and Resource Protection prior to site plan approval. Restoration of the stream channel must be guaranteed in a manner acceptable to the County Attorney prior to site plan approval and completed prior to the Facility being operational.
20. Erosion and Sediment Control Inspection.
  - a. The person responsible for carrying out the erosion and sediment control plan on the Property shall be responsible for monitoring and inspecting the land disturbing activity in accordance with Section 8-6(a) of the County Code. All inspection documentation shall be submitted to the Stormwater and Resource Protection Division for review and approval in accordance with Chapter 8 of the County Code. Prior to the issuance of land disturbance permit, the Facility operator and any third-party inspector shall conduct a pre-construction meeting with the Stormwater and Resource Protection Division to discuss schedule, submittal requirements, and other necessary items to complete the monitoring and inspections.
  - b. At the County's sole discretion, the County may engage the services of County-contracted inspectors for inspections required by County Code Section 8-6(b), or as deemed appropriate by the County to ensure compliance with applicable codes and Ordinances. The Facility operator shall be financially responsible for the costs of any inspections contracted for by the County for the Facility or the Property.
21. Public Improvements. Pursuant to Code of Virginia § 15.2-2288.8(B), after commercial operation of the Facility, a payment of \$1,400 per megawatt of alternating current (AC) generation capacity shall be made to the County on July 1 of each year to support construction of public improvements (including but not limited to transportation infrastructure, facilities for provision of public safety, etc.), the need for which is not generated solely by the Facility, but are reasonably related to it.
22. Solar Panel Details. As part of the Site Plan review, the Applicant shall provide documentation that the selected panels are non-regulated waste under Resource Conservation Recovery Act (RCRA) classification. Furthermore, the applicant shall provide documentation that the selected panels are "Tier 1" modules as established by the most recent "PV Module Tier 1 List" issued by BloombergNEF or a similar third-party analysis widely accepted in the solar industry.

- 23. Commencement. The Facility shall be operational within 48 months from the date of adoption of this resolution authorizing the SUP, or this SUP shall automatically be void. The Facility operator shall submit a signed letter to the Planning Director prior to 48 months from the issuance of this SUP to confirm the operational status of the Facility.
- 24. Severance Clause. This SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

BE IT FURTHER RESOLVED by the Board of Supervisors of James City County, Virginia, that SUP-21-0022 authorized herein shall not be effective and no site plan may be approved until the area shown on the Master Plan for the Project is withdrawn from the Barnes Swamp Agricultural and Forestal District enacted by Ordinance No. 167A-14 adopted on September 11, 2018.

\_\_\_\_\_  
 John J. McGlennon  
 Chairman, Board of Supervisors

ATTEST:

\_\_\_\_\_  
 Teresa J. Saeed  
 Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	_____	_____	_____	_____
HIPPLE	_____	_____	_____	_____
LARSON	_____	_____	_____	_____
SADLER	_____	_____	_____	_____
MCGLENNON	_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

SUP21-22\_360RacefldDrSF-res

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Josh Crump, Principal Planner

SUBJECT: S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision

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**ATTACHMENTS:**

	Description	Type
☐	Staff Report	Staff Report
☐	Resolution	Resolution
☐	Location Map and AFD Map	Backup Material
☐	Preliminary Plat	Backup Material
☐	Gospel Spreading Church AFD 2018 Renewal Ordinance and Staff Report	Backup Material
☐	State Code § 15.2-4309	Backup Material
☐	VDH Approval Letter	Backup Material
☐	Unapproved minutes from the January 27, 2022, AFD Advisory Committee meeting	Backup Material

**REVIEWERS:**

Department	Reviewer	Action	Date
Planning	Holt, Paul	Approved	2/22/2022 - 9:05 AM
Development Management	Holt, Paul	Approved	2/22/2022 - 9:05 AM
Publication Management	Pobiak, Amanda	Approved	2/22/2022 - 9:33 AM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:38 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:00 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

**S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision  
Staff Report for the March 8, 2022, Board of Supervisors Meeting**

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**SUMMARY FACTS**

Applicant: Mr. Alister Perkinson  
Land Owner: Mr. Roderick Perkinson  
Proposal: Family subdivision to create one single-family residential parcel of ± 3.8 acres within the Gospel Spreading Church Agricultural and Forestal District (AFD)  
Location: 2188 Lake Powell Road  
Tax Map/Parcel No.: 4740100037  
Parent Parcel Area: ± 27.93 acres  
Proposed Parcel Area: ± 3.8 acres  
Zoning: R-8, Rural Residential  
Comprehensive Plan: Low Density Residential  
Primary Service Area: Inside, but requires private well/septic systems (PSA)  
Staff Contact: Josh Crump, Principal Planner

**PUBLIC MEETING DATES**

AFD Committee: January 20, 2022, 4:00 p.m.  
Board of Supervisors: March 8, 2022, 5:00 p.m.

**FACTORS FAVORABLE**

1. Staff finds that the proposal is not incompatible with farming and forestry activities in the AFD, in accordance with State Code § 15.2-4309(B).
2. Staff finds that the proposal is consistent with the 2045 Comprehensive Plan.
3. Impacts: This proposal is not anticipated to generate any impacts that require mitigation.

**FACTORS UNFAVORABLE**

As this proposal is not anticipated to generate any impacts that require mitigation, staff finds no unfavorable factors.

**SUMMARY STAFF RECOMMENDATION**

In accordance with Ordinance No. 173A-20, staff recommends the Board of Supervisors authorize one single-family residential parcel approximately 3.8 acres in size for a family subdivision within the Gospel Spreading Church Agricultural and Forestal District.

**AFD ADVISORY COMMITTEE RECOMMENDATION**

At its January 27, 2022, Organizational Meeting, the AFD Advisory Committee recommended approval of the Family Subdivision application by a vote of 6-0.

**PROJECT DESCRIPTION**

Mr. Alister Perkinson has applied on behalf of his father, Mr. Roderick Perkinson, for a family subdivision creating one new single-family parcel consisting of approximately 3.8 acres. Mr. A. Perkinson is the intended owner of the new parcel. The parent parcel is currently

**S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision  
Staff Report for the March 8, 2022, Board of Supervisors Meeting**

± 27.595 acres and is located within the Gospel Spreading Church AFD. The proposed family subdivision does not require any land to be withdrawn from the AFD.

A Special Use Permit is not required for this proposal because the R-8 Zoning District allows family subdivisions of three or more acres by-right; however, per the Gospel Spreading Church AFD Ordinance, subdivisions within the AFD are “limited to 25 acres or more, except where the Board of Supervisors authorizes smaller lots to be created for residential use by members of the owner’s immediate family, as defined in the James City County Subdivision Ordinance.” For the purposes of family subdivisions, “immediate family” is defined as the parents or offspring of the current landowner, who must have owned the parcel for at least five years.

State Code § 15.2-4309(B) states that “local governing bodies shall not prohibit as a more intensive use, construction and placement of dwellings for persons who earn a substantial part of their livelihood from a farm or forestry operation on the same property, or for members of the immediate family of the owner, or divisions of parcels for such family members, unless the governing body finds that such use in the particular case would be incompatible with farming or forestry in the district.”

The property is located inside the PSA, but the James City Service Authority has confirmed that this location cannot be served by public water/sewer utilities at this time. For a new dwelling unit, the owner would need to install private well and septic systems. Staff has reviewed a preliminary plat and has received approval from the Virginia Department of Health (VDH) for the well and septic systems (see Attachment No. 5). All other Ordinance requirements can be met, including eligibility requirements for family subdivisions. Additionally, staff finds that the proposal would result in a maximum of one single-family dwelling, which would not be incompatible with farming or forestry in the district.

**DISTRICT HISTORY**

- The Gospel Spreading Church AFD was created in 1986 for a term of four years and originally consisted of nine parcels totaling ± 1,173 acres.
- A separate adjacent AFD, titled “Gospel Spreading Church (Gilley Addition),” was created in 1987, consisting of five parcels totaling ± 208 acres.
- Gospel Spreading Church AFD and Gospel Spreading Church (Gilley Addition) AFD were renewed for four-year terms in 1990, 1994, and 1998.
- In 2002, Gospel Spreading Church (Gilley Addition) AFD was discontinued due to falling below the minimum required acreage for a District. The remaining eligible parcels were merged with the Gospel Spreading Church AFD.
- The merged District was renewed in 2006 and 2010.
- The District was renewed at the September 9, 2014, Board of Supervisors meeting, but was brought back before the Board for consideration the following month due to an incorrect parcel list on the adopted Ordinance. The Board of Supervisors adopted the revised renewal Ordinance on October 28, 2014. Most recently, the District was renewed at the September 11, 2018, Board of Supervisors meeting.
- Various additions and withdrawals have occurred since 1990. Since 2014, there have been no requested additions or withdrawals.

**S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision**  
**Staff Report for the March 8, 2022, Board of Supervisors Meeting**

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**SURROUNDING ZONING AND DEVELOPMENT**

The subject parcel is bounded by Mill Creek to the south and west. Adjacent properties south of Lake Powell Road are zoned R-8, Rural Residential, A-1, General Agricultural, and R-1, Limited Residential. North of Lake Powell Road, nearby properties are zoned R-1, Limited Residential and R-2, General Residential. All surrounding properties are designated Low Density Residential in the 2045 Comprehensive Plan.

**COMPREHENSIVE PLAN**

The subject parcel is designated Low Density Residential in the 2045 Comprehensive Plan. Appropriate uses in Low Density Residential include single-family and multifamily units, accessory units, cluster housing, and recreation areas. Staff finds that creating one single-family parcel through the family subdivision process is consistent with the intent of the Comprehensive Plan.

**STAFF RECOMMENDATION**

In accordance with Ordinance No. 173A-20, staff recommends the Board of Supervisors authorize one single-family residential parcel approximately 3.8 acres in size for a family subdivision within the Gospel Spreading Church Agricultural and Forestal District.

JC/md  
S21-69\_2188LkPwllPerkFam

**Attachments:**

1. Resolution
2. Location and AFD Map
3. Preliminary Plat
4. Gospel Spreading Church AFD 2018 Renewal Ordinance and Staff Report

5. State Code § 15.2-4309
6. VDH Approval Letter - 2188 Lake Powel Rd
7. Unapproved minutes from the January 27, 2022, AFD Advisory Committee meeting

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*This staff report is prepared by the James City County Planning Division to provide information to the Planning Commission and Board of Supervisors to assist them in making a recommendation on this application. It may be useful to members of the general public interested in this application.*

**RESOLUTION**

**CASE NO. S-21-0069. 2188 LAKE POWELL ROAD, PERKINSON FAMILY SUBDIVISION**

WHEREAS, on September 11, 2018, the Board of Supervisors of James City County adopted Ordinance No. 173A-20, Gospel Spreading Church Farm 2018 Renewal, which states that the subdivision of land is limited to 25 acres or more, except where the Board of Supervisors authorizes smaller lots to be created for residential use by members of the owner’s immediate family, as defined in the James City County Subdivision Ordinance; and

WHEREAS, Mr. Alister Perkinson, on behalf of Mr. Roderick Perkinson, has applied for a Family subdivision to create one single-family residential parcel of ± 3.8 acres located in R-8, Rural Residential District, located at 2188 Lake Powell Road, further identified as James City County Real Estate Tax Map No. 4740100037 and which is located within the Gospel Spreading Church Agricultural and Forestal District; and

WHEREAS, State Code § 15.2-4309(B) states that “local governing bodies shall not prohibit as a more intensive use, construction and placement of dwellings for persons who earn a substantial part of their livelihood from a farm or forestry operation on the same property, or for members of the immediate family of the owner, or divisions of parcels for such family members, unless the governing body finds that such use in the particular case would be incompatible with farming or forestry in the district.”

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby authorize a family subdivision on property located at 2188 Lake Powell Road, further identified as James City County Real Estate Tax Map No. 4740100037, to create a parcel approximately 3.8 acres in size within the Gospel Spreading Church Agricultural and Forestal District as part of Case No. S-21-0069, as described herein,

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

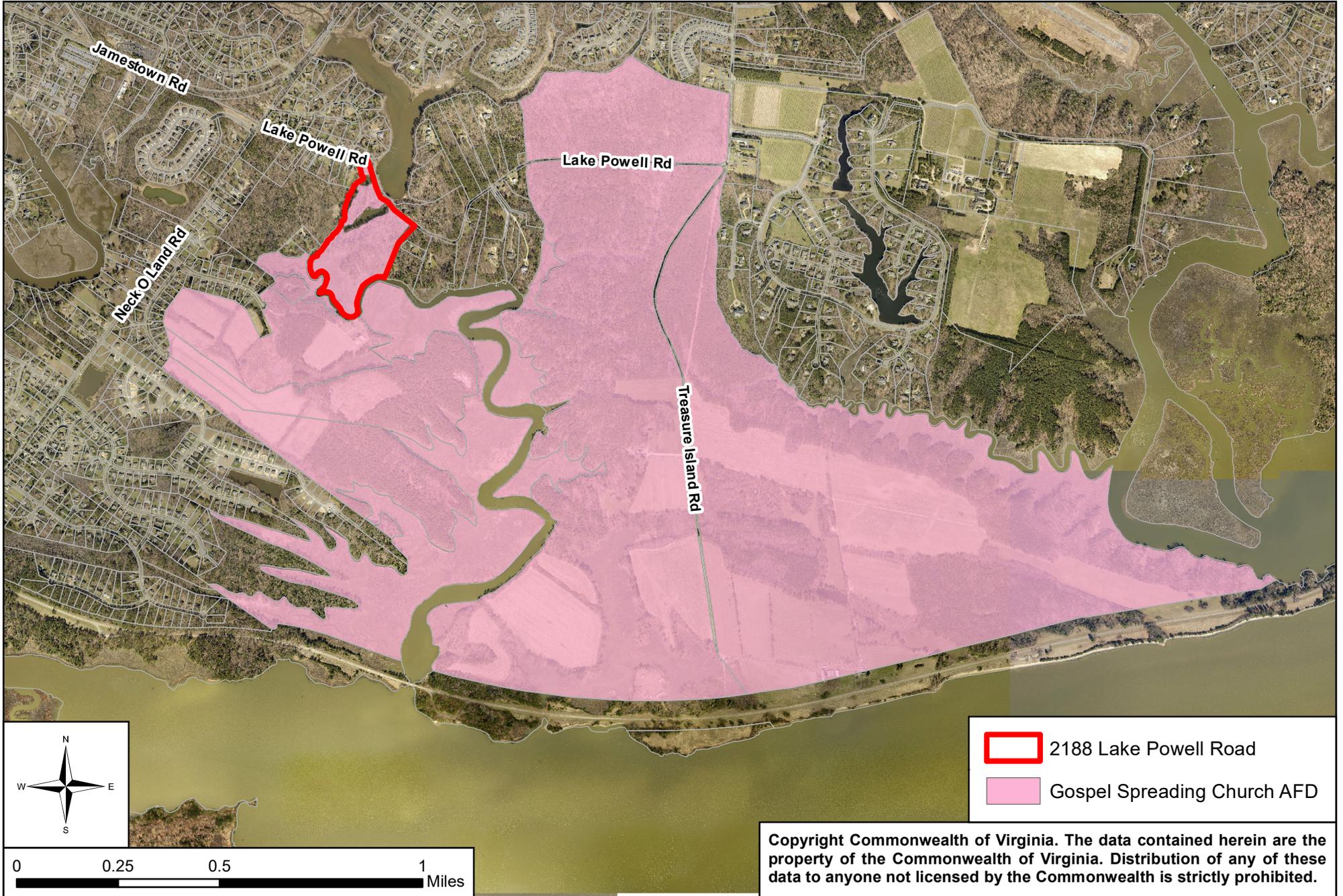
\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

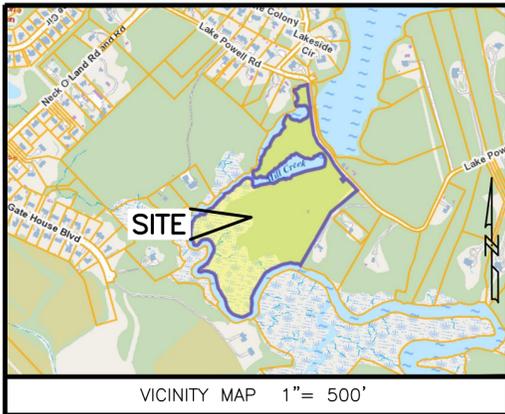
	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	_____	_____	_____	_____
HIPPLE	_____	_____	_____	_____
LARSON	_____	_____	_____	_____
SADLER	_____	_____	_____	_____
MCGLENNON	_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

JCC S-21-0069

# 2188 Lake Powell Road, Perkinson Family Subdivision





**GENERAL NOTES**

1. THIS PLAT WAS PRODUCED WITHOUT THE BENEFIT OF A TITLE REPORT AND MAY NOT REFLECT ALL ENCUMBRANCES, EASEMENTS AND SETBACKS THAT AFFECT THE SUBJECT PROPERTY.
2. WETLANDS SHOWN HEREON WERE FIELD DELINEATED BY ROTH ENVIRONMENTAL, LLC. ON 05/25/2021.
3. THIS FIRM MADE NO ATTEMPT TO LOCATED UNDERGROUND UTILITIES.
4. ALL LOTS ARE SERVED BY PRIVATE WATER AND SEWER SYSTEMS.
5. ALL NEW UTILITIES SHALL BE PLACED UNDERGROUND.
6. PROPERTY LIES IN FIRM ZONE "X" AND ZONE "AE". ACCORDING TO FLOOD INSURANCE RATE MAP #51095C0201D, DATED 12/16/2015.
7. THIS PROPERTY FALLS PARTIALLY WITHIN THE RPA.
8. UNLESS OTHERWISE NOTED, ALL DRAINAGE EASEMENTS DESIGNATED ON THIS PLAT SHALL REMAIN PRIVATE.
9. ANY EXISTING UNUSED WELLS SHALL BE ABANDONED IN ACCORDANCE WITH STATE PRIVATE WELL REGULATIONS AND JAMES CITY COUNTY CODE.
10. WETLANDS AND LAND WITHIN RESOURCE PROTECTION AREA SHALL REMAIN IN A NATURAL UNDISTURBED STATE EXCEPT FOR THOSE ACTIVITIES PERMITTED BY SEC. 23-7 OF THE JAMES CITY COUNTY CODE.
11. MONUMENTS SHALL BE SET IN ACCORDANCE WITH SECTIONS 19-34 THROUGH 19-36 OF THE COUNTY CODE.
12. EASEMENTS DENOTED AS JCSA UTILITY EASEMENTS ARE FOR THE EXCLUSIVE USE OF THE JAMES CITY SERVICE AUTHORITY AND THE PROPERTY OWNER. OTHER UTILITY SERVICE PROVIDERS DESIRING TO USE THESE EASEMENTS WITH THE EXCEPTION OF PERPENDICULAR UTILITY CROSSINGS MUST OBTAIN AUTHORIZATION FOR ACCESS AND USE FROM JCSA AND THE PROPERTY OWNER, ADDITIONALLY, JCSA SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGE TO IMPROVEMENTS WITHIN THIS EASEMENT, FROM ANY CAUSE.
13. ON-SITE SEWAGE DISPOSAL SYSTEM INFORMATION AND SOILS INFORMATION SHOULD BE VERIFIED AND REEVALUATED BY THE HEALTH DEPARTMENT PRIOR TO ANY NEW CONSTRUCTION.
14. ON-SITE SEWAGE TREATMENT SYSTEMS SHALL BE PUMPED OUT AT LEAST ONCE EVERY FIVE YEARS PER SECTION 23-9(B)(6) OF THE JAMES CITY COUNTY CODE.
15. THE VIRGINIA DEPARTMENT OF TRANSPORTATION, ITS AGENTS AND ASSIGNS ARE GRANTED THE EXCLUSIVE RIGHT TO MAINTAIN THE AREA DEDICATED FOR PUBLIC USE.
16. THE DRIVEWAY LOCATED WITHIN 25' INGRESS/EGRESS EASEMENT MUST CONSIST OF, AT A MINIMUM, AN ALL WEATHER SURFACE OF RICK, STONE OR GRAVEL, WITH A MINIMUM DEPTH OF THREE INCHES AND A MINIMUM WIDTH OF TEN FEET.

**FAMILY SUBDIVISION**  
OF  
**P-3 BESSIE CARMINES ESTATE**  
STANDING IN THE NAME OF  
**RODERICK B. PERKINSON**  
BEING  
PIN: 4740100037  
ROBERTS DISTRICT      JAMES CITY COUNTY      VIRGINIA  
DATE: 12/22/2021      JOB # 21-095

**LandTech**  
**Resources, Inc.**  
Engineering & Surveying Consultants  
201E Bulifants Blvd., Williamsburg, Virginia 23188  
Phone: (757) 565-1677 Fax: (757) 565-0782  
web: landtechresources.com

SHEET 1 OF 2

**JCC-S-21-0069**

**OWNERS CERTIFICATE: PIN: 4740100037**

THE SUBDIVISION OF THE PROPERTY AS SHOWN ON THIS PLAT IS WITH FREE CONSENT AND IN ACCORDANCE WITH THE DESIRES OF THE UNDERSIGNED OWNERS, PROPRIETORS AND OR TRUSTEES.

\_\_\_\_\_  
RODERICK B. PERKINSON      DATE

**CERTIFICATE OF NOTARIZATION**

STATE OF VIRGINIA  
CITY/COUNTY OF \_\_\_\_\_ I, \_\_\_\_\_, A NOTARY PUBLIC IN AND FOR THE CITY/COUNTY AND STATE AFORESAID, DO HEREBY CERTIFY THAT THE PERSONS WHOSE NAMES ARE SIGNED TO THE FOREGOING WRITING HAS ACKNOWLEDGED THE SAME BEFORE ME IN THE CITY/COUNTY AFORESAID. GIVEN UNDER MY HAND THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022. MY COMMISSION EXPIRES \_\_\_\_\_.

\_\_\_\_\_  
NOTARY PUBLIC

REGISTRATION NO. \_\_\_\_\_

**CERTIFICATE OF SOURCE OF TITLE**

THIS IS TO CERTIFY THAT THE LAND EMBRACED IN THIS SUBDIVISION STANDS IN THE NAME OF RODERICK B. PERKINSON AND WAS ACQUIRED FROM FLOYD P. CARMINES BY THAT CERTAIN WILL DATED JULY 31, 2012 AND RECORDED IN THE CLERK'S OFFICE OF THE CIRCUIT COURT OF JAMES CITY COUNTY, VIRGINIA AS INSTRUMENT #12007823W.

**CERTIFICATE OF APPROVAL**

THIS SUBDIVISION IS APPROVED BY THE UNDERSIGNED IN ACCORDANCE WITH WITH EXISTING SUBDIVISION REGULATIONS AND MAY BE ADMITTED TO RECORD.

\_\_\_\_\_  
DATE      VIRGINIA DEPARTMENT OF HEALTH

\_\_\_\_\_  
DATE      VIRGINIA DEPARTMENT OF TRANSPORTATION

\_\_\_\_\_  
DATE      SUBDIVISION AGENT OF JAMES CITY COUNTY

**AREA TABULATION**

EXISTING PARCEL (PIN: 4740100037)	=	1,202,021 S.F. / 27.595 AC.
PARCEL 1 =		165,357 S.F. / 3.796 AC.
AREA DEDICATED FOR PUBLIC USE =		27,046 S.F. / 0.621 AC.
REMAINDER OF EXISTING PARCEL =		1,009,618 S.F./ 23.178 AC.
(PIN: 4740100037)		

**PROPERTY INFORMATION**

PARCEL ID #4740100037  
ZONING DISTRICT: R8 (RURAL RESIDENTIAL)  
ADDRESS:  
#2188 LAKE POWELL ROAD  
WILLIAMSBURG, VIRGINIA 23188  
BUILDING SETBACK: (PER ZONING ORDINANCE)  
FRONT: 35'  
SIDE: 15'  
REAR: 35'

**AOSE SUBDIVISION APPROVAL STATEMENT**

THIS SUBDIVISION IS APPROVED FOR INDIVIDUAL ONSITE SEWAGE SYSTEMS IN ACCORDANCE WITH THE PROVISIONS OF THE CODE OF VIRGINIA, AND THE SEWAGE HANDLING REGULATIONS AUTHORIZING THE LOCAL HEALTH DEPARTMENT TO ACCEPT PRIVATE EVALUATIONS FOR COMPLIANCE WITH LOCAL ORDINANCES.

THIS SUBDIVISION WAS SUBMITTED TO THE HEALTH DEPARTMENT FOR REVIEW PURSUANT TO SEC. 32.1-163.5 OF THE CODE OF VIRGINIA WHICH REQUIRES THE HEALTH DEPARTMENT TO ACCEPT PRIVATE SOIL EVALUATIONS AND DESIGNS FROM AN AUTHORIZED ONSITE SOIL EVALUATOR (AOSE) OR A PROFESSIONAL ENGINEER WORKING IN CONSULTATION WITH AN AOSE FOR RESIDENTIAL DEVELOPMENT.

THIS SUBDIVISION WAS CERTIFIED AS BEING IN COMPLIANCE WITH THE BOARD OF HEALTH'S REGULATIONS BY: ANN L. RUFFE, LICENSE NO. 1940001376, PHONE NO. 757-810-5293  
ADDRESS: P.O. BOX 759, LIGHTFOOT, VA 23090.  
THIS SUBDIVISION APPROVAL IS ISSUED IN RELIANCE UPON THAT CERTIFICATION.

PURSUANT TO SEC. 360 OF THE REGULATIONS THIS APPROVAL IS NOT AN ASSURANCE THAT SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMITS WILL BE ISSUED FOR ANY LOT IN THE SUBDIVISION UNLESS THAT LOT IS SPECIFICALLY IDENTIFIED AS HAVING AN APPROVED SITE FOR AN ONSITE SEWAGE DISPOSAL SYSTEM, AND UNLESS ALL CONDITIONS AND CIRCUMSTANCES ARE PRESENT AT THE TIME OF THIS APPROVAL. THIS SUBDIVISION MAY CONTAIN LOTS THAT DO NOT HAVE APPROVED SITES FOR ONSITE SEWAGE SYSTEMS.

THIS SUBDIVISION APPROVAL IS ISSUED UPON THE CERTIFICATION THAT APPROVED LOTS ARE SUITABLE FOR "TRADITIONAL SYSTEMS", HOWEVER ACTUAL SYSTEM DESIGN MAY BE DIFFERENT AT THE TIME CONSTRUCTION PERMITS ARE ISSUED.

**ENGINEERS OR SURVEYORS CERTIFICATE**

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE OR BELIEF, THIS PLAT COMPLIES WITH ALL OF THE REQUIREMENTS OF THE BOARD OF SUPERVISORS AND ORDINANCES OF THE COUNTY OF JAMES CITY, VIRGINIA, REGARDING THE PLATTING OF SUBDIVISIONS WITHIN THE COUNTY.

12/22/2021      \_\_\_\_\_  
DATE      MATTHEW H. CONNOLLY Lic. No. 2053



**STATE OF VIRGINIA, JAMES CITY COUNTY**

IN THE CLERKS OFFICE OF THE CIRCUIT COURT FOR THE COUNTY OF JAMES CITY THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2022. THIS PLAT WAS PRESENTED AND ADMITTED TO RECORD AS THE LAW DIRECTS AT \_\_\_\_\_ INSTRUMENT # \_\_\_\_\_ TESTE \_\_\_\_\_

FAMILY SUBDIVISION  
OF  
P-3 BESSIE CARMINES ESTATE  
STANDING IN THE NAME OF  
**RODERICK B. PERKINSON**

**BOUNDARY NOTES**

1. RECORDED PLAT DOES NOT DOES NOT MATHEMATICALLY CLOSE.  
PROPERTY LINE IS BASED ON NATURAL AND ARTIFICIAL MONUMENTS  
SHOWN ON THIS PLAT.

BEING  
PIN: 4740100037

ROBERTS DISTRICT JAMES CITY COUNTY VIRGINIA

DATE: 12/22/2021 JOB # 21-095

**LandTech**  
**Resources, Inc.**

Engineering & Surveying Consultants

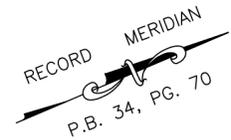
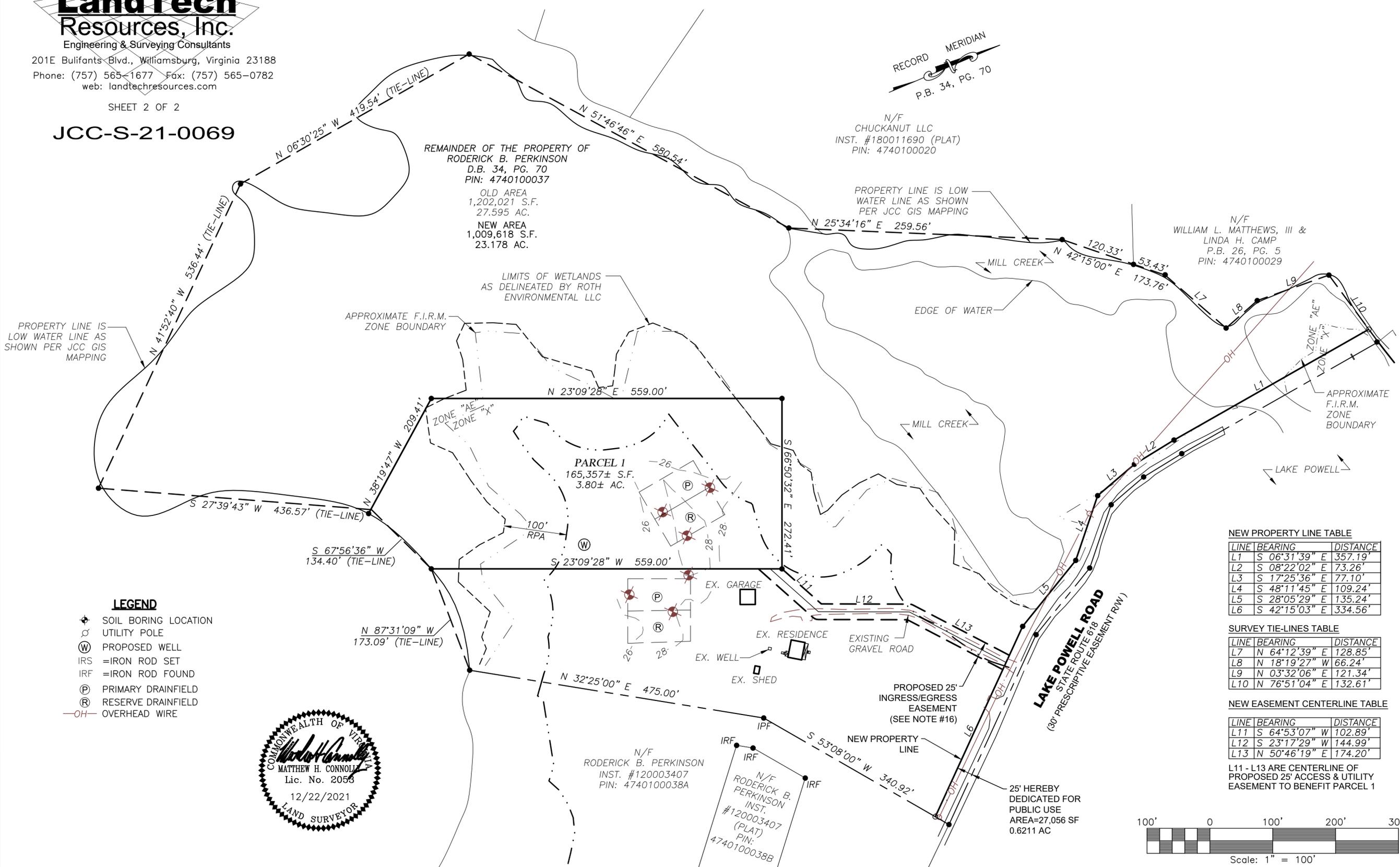
201E Bulifants Blvd., Williamsburg, Virginia 23188

Phone: (757) 565-1677 Fax: (757) 565-0782

web: landtechresources.com

SHEET 2 OF 2

**JCC-S-21-0069**



PROPERTY LINE IS  
LOW WATER LINE AS  
SHOWN PER JCC GIS  
MAPPING

REMAINDER OF THE PROPERTY OF  
RODERICK B. PERKINSON  
D.B. 34, PG. 70  
PIN: 4740100037  
OLD AREA  
1,202,021 S.F.  
27.595 AC.  
NEW AREA  
1,009,618 S.F.  
23.178 AC.

N/F  
CHUCKANUT LLC  
INST. #180011690 (PLAT)  
PIN: 4740100020

N/F  
WILLIAM L. MATTHEWS, III &  
LINDA H. CAMP  
P.B. 26, PG. 5  
PIN: 4740100029

LIMITS OF WETLANDS  
AS DELINEATED BY ROTH  
ENVIRONMENTAL LLC

APPROXIMATE F.I.R.M.  
ZONE BOUNDARY

EDGE OF WATER

APPROXIMATE  
F.I.R.M.  
ZONE  
BOUNDARY

PARCEL 1  
165,357± S.F.  
3.80± AC.

**NEW PROPERTY LINE TABLE**

LINE	BEARING	DISTANCE
L1	S 06°31'39" E	357.19'
L2	S 08°22'02" E	73.26'
L3	S 17°25'36" E	77.10'
L4	S 48°11'45" E	109.24'
L5	S 28°05'29" E	135.24'
L6	S 42°15'03" E	334.56'

**SURVEY TIE-LINES TABLE**

LINE	BEARING	DISTANCE
L7	N 64°12'39" E	128.85'
L8	N 18°19'27" W	66.24'
L9	N 03°32'06" E	121.34'
L10	N 76°51'04" E	132.61'

**NEW EASEMENT CENTERLINE TABLE**

LINE	BEARING	DISTANCE
L11	S 64°53'07" W	102.89'
L12	S 23°17'29" W	144.99'
L13	N 50°46'19" E	174.20'

L11 - L13 ARE CENTERLINE OF  
PROPOSED 25' ACCESS & UTILITY  
EASEMENT TO BENEFIT PARCEL 1

**LEGEND**

- ◆ SOIL BORING LOCATION
- UTILITY POLE
- ⊙ PROPOSED WELL
- IRS — IRON ROD SET
- IRF — IRON ROD FOUND
- ⊙ PRIMARY DRAINFIELD
- ⊙ RESERVE DRAINFIELD
- OH — OVERHEAD WIRE



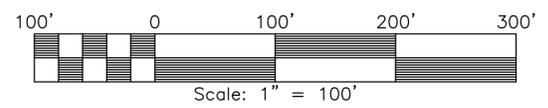
N/F  
RODERICK B. PERKINSON  
INST. #120003407  
PIN: 4740100038A

N/F  
RODERICK B. PERKINSON  
INST. #120003407  
(PLAT)  
PIN: 4740100038B

PROPOSED 25'  
INGRESS/EGRESS  
EASEMENT  
(SEE NOTE #16)

LAKE POWELL ROAD  
STATE ROUTE 618  
(30' PRESCRIPTIVE EASEMENT R/W)

25' HEREBY  
DEDICATED FOR  
PUBLIC USE  
AREA=27,056 SF  
0.6211 AC



# ADOPTED

ORDINANCE NO. 173A-20

SEP 11 2018

Board of Supervisors  
James City County, VA

## AGRICULTURAL AND FORESTAL DISTRICT-12-86-1-2018

### GOSPEL SPREADING CHURCH FARM 2018 RENEWAL

WHEREAS, James City County has completed a review of the Gospel Spreading Church Farm Agricultural and Forestal District (the "District"); and

WHEREAS, in accordance with Section 15.2-4311 of the Code of Virginia, 1950, as amended (the "Virginia Code"), property owners have been notified, public notices have been filed, public hearings have been advertised, and public hearings have been held on the continuation of the District; and

WHEREAS, the Agricultural and Forestal District (AFD) Advisory Committee at its meeting on June 21, 2018, voted 9-0 to recommend renewal of the District; and

WHEREAS, the Planning Commission following its public hearing on August 1, 2018, concurred with the recommendation of staff and the AFD Advisory Committee and voted 5-0 to recommend renewal of the District with the conditions listed below.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that:

1. The Gospel Spreading Church Farm Agricultural and Forestal District (the "District") is hereby continued to October 31, 2022 in accordance with the provisions of the Virginia Agricultural and Forestal District Act, Virginia Code Section 15.2-4300 et. seq. (the "Act").
2. That the District shall include the following parcels, provided, however, that all land within 25 feet of road right-of-ways is excluded from the District:

<u>Owner</u>	<u>Parcel ID No.</u>	<u>Acres</u>
JCC Bible & Agricultural Training School	4830100035	403.55
JCC Bible & Agricultural Training School	5620100001	457.79
Roderick B. Perkinson	4740100037	27.92
Robert E. II & Meredith H. Gilley	4740100042C	2.89
Merewin Farms, LLC	4740100042E	56.49
Leigh Ann Gilley	4740100040	56.58
Terri Lynn Gilley	4740100041	56.63
R. Edwin II, Leigh Ann & Terri Lynn Gilley	4830100042	71.33
Total:		<u>1,133.18</u>

3. That pursuant to Sections 15.2-4312 and 15.2-4313 of the Act, the Board of Supervisors requires that no parcel in the District be developed to a more intensive

use without prior approval of the Board of Supervisors. Specifically, the following restrictions shall apply:

- a. The subdivision of land is limited to 25 acres or more, except where the Board of Supervisors authorizes smaller lots to be created for residential use by members of the owner's immediate family, as defined in the James City County Subdivision Ordinance. Parcels of up to five acres, including necessary access roads, may be subdivided for the siting of Wireless Communications Facilities (WCFs), provided: a) The subdivision does not result in the total acreage of the District to drop below 200 acres; and b) the subdivision does not result in a remnant parcel of less than 25 acres.
- b. No land outside the Primary Service Area and within the District may be rezoned and no application for such rezoning shall be filed earlier than six months prior to the expiration of the District. Land within the District may be withdrawn from the District in accordance with the Board of Supervisors' Policy Governing the Withdrawal of Properties from Agricultural and Forestal Districts, adopted September 28, 2010.
- c. No Special Use Permit (SUP) shall be issued except for agricultural, forestal, or other activities and uses consistent with the Act, which are not in conflict with the policies of this District. The Board of Supervisors, at its discretion, may issue SPUs for WCFs on properties in the District that are in accordance with the County's policies and Ordinances regulating such facilities.

*Ruth M. Larson*

Ruth M. Larson  
Chairman, Board of Supervisors

ATTEST:

*Teresa J. Fellows*  
Teresa J. Fellows  
Deputy Clerk to the Board

	VOTES		
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>
MCGLENNON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICENHOUR	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SADLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIPPLE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LARSON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Adopted by the Board of Supervisors of James City County, Virginia, this 11th day of September, 2018.

AFDGospSCFrmRenw-res

**AGRICULTURAL AND FORESTAL DISTRICT-12-86-1-2018. Gospel Spreading Church Renewal**

**Staff Report for the September 11, 2018, Board of Supervisors**

**SUMMARY FACTS**

<u>LANDOWNERS</u>	<u>PARCEL ID</u>	<u>+ACRES</u>
JCC Bible & Agricultural Training School	4830100035	403.55
JCC Bible & Agricultural Training School	5620100001	457.79
Roderick B. Perkinson	4740100037	27.92
Robert & Meredith Gilley	4740100042C	2.89
Merewin Farms, LLC	4740100042E	*56.49
Leigh Ann Gilley	4740100040	*56.58
Terri Lynn Gilley	4740100041	*56.63
R. Edwin II, Leigh Ann, & Terri Lynn Gilley	4830100042	71.33
<b>TOTAL ACRES</b>		<b>1,133.18</b>

Zoning: A-1, General Agricultural  
R-1, Limited Residential  
R-2, General Residential  
R-8, Rural Residential

Comprehensive Plan: Rural Lands  
Low-Density Residential

Primary Service Area (PSA): Inside and Outside

Staff Contact: Tori Haynes, Planner

**PUBLIC HEARING DATES**

Planning Commission: August 1, 2018, 6:00 p.m.  
Board of Supervisors: September 11, 2018, 5:00 p.m.

**STAFF RECOMMENDATION**

Approval, subject to the proposed conditions.

**AGRICULTURAL AND FORESTAL DISTRICT (AFD) ADVISORY COMMITTEE RECOMMENDATION**

At its June 21, 2018 meeting, the AFD Advisory Committee voted 9-0 to recommend the continuation of the District to the Planning Commission and Board of Supervisors.

**PLANNING COMMISSION RECOMMENDATION**

At its August 1, 2018 meeting, the Planning Commission voted 5-0 to recommend the continuation of the District to the Board of Supervisors.

**DISTRICT HISTORY**

- The Gospel Spreading Church AFD was created in 1986 for a term of four years and originally consisted of nine parcels totaling ±1,173 acres.
- A separate adjacent AFD, titled “Gospel Spreading Church (Gilley Addition),” was created in 1987, consisting of five parcels totaling ±208 acres.
- Gospel Spreading Church AFD and Gospel Spreading Church (Gilley Addition) AFD were renewed for four-year terms in 1990, 1994 and 1998.
- In 2002, Gospel Spreading Church (Gilley Addition) AFD was discontinued due to falling below the minimum required acreage for a District. The remaining eligible parcels were merged with the Gospel Spreading Church AFD.

**AGRICULTURAL AND FORESTAL DISTRICT-12-86-1-2018. Gospel Spreading Church Renewal**

**Staff Report for the September 11, 2018, Board of Supervisors**

- The merged District was renewed in 2006 and 2010.
- The District was renewed at the September 9, 2014 Board of Supervisors meeting, but was brought back before the Board for consideration the following month due to an incorrect parcel list on the adopted Ordinance. The Board of Supervisors adopted the revised renewal Ordinance on October 28, 2014.
- Various additions and withdrawals have occurred since 1990. Since 2014, there have been no requested additions or withdrawals to the District.
- Acreages denoted with an asterisk (\*) in the summary facts table reflect a boundary line adjustment between several parcels in the District in 2016. There was no request to withdraw land from the District; however, staff notes that there is a 0.44 acre net decrease in the District’s total acreage compared to 2014, due to the updated area calculations from the most recent survey.

**DISTRICT DESCRIPTION**

The Gospel Spreading Church AFD consists of woodlands, wetlands and farmland. The majority of the District is zoned R-8, Rural Residential and A-1, General Agricultural. Portions of two parcels are zoned R-1, Limited Residential and R-2, General Residential, respectively. Approximately 861 acres are located outside the PSA, while the remaining ±271 acres are located inside the PSA. Comprehensive Plan designations include Rural Lands and Low-Density Residential.

**ADDITION/WITHDRAWAL REQUESTS**

None.

**CHANGES TO CONDITIONS**

None.

**SURROUNDING ZONING AND DEVELOPMENT**

The District is generally surrounded by residential housing zoned R-1, Limited Residential or R-2, General Residential. Adjacent subdivisions include Page Landing, Peleg’s Point, Lake Powell Forest, Rolling Woods and Vineyards at Jockey’s Neck. The Colonial Parkway serves as the District’s southern border.

**COMPREHENSIVE PLAN**

The Comprehensive Plan designates these parcels as Rural Lands and Low-Density Residential. Land Use Action 6.1.1 of the adopted Comprehensive Plan states the County shall “support both the use value assessment and Agricultural and Forestal (AFD) programs to the maximum degree allowed by the *Code of Virginia*.”

**STAFF RECOMMENDATION**

Staff finds the Gospel Spreading Church AFD compatible with surrounding development and consistent with the recommendations of the adopted Comprehensive Plan and Zoning Ordinance. Staff recommends that the Board of Supervisors approve the renewal of this AFD for a period of four years, subject to the conditions listed in the District Ordinance (Attachment No. 1).

TH/md  
AFD-GospelChRenew

Attachments:

1. Ordinance
2. Location Map
3. Adopted conditions for the Gospel Spreading Church AFD
4. Staff report from the September 9, 2014, Board of Supervisors meeting
5. Staff memorandum from the October 28, 2014, Board of Supervisors meeting

## § 15.2-4309. Hearing; creation of district; conditions; notice

A. The local governing body, after receiving the report of the local planning commission and the advisory committee, shall hold a public hearing as provided by law, and after such public hearing, may by ordinance create the district or add land to an existing district as applied for, or with any modifications it deems appropriate.

B. The governing body may require, as a condition to creation of the district, that any parcel in the district shall not, without the prior approval of the governing body, be developed to any more intensive use or to certain more intensive uses, other than uses resulting in more intensive agricultural or forestal production, during the period which the parcel remains within the district. **Local governing bodies shall not prohibit as a more intensive use, construction and placement of dwellings for persons who earn a substantial part of their livelihood from a farm or forestry operation on the same property, or for members of the immediate family of the owner, or divisions of parcels for such family members, unless the governing body finds that such use in the particular case would be incompatible with farming or forestry in the district.** To further the purposes of this chapter and to promote agriculture and forestry and the creation of districts, the local governing body may adopt programs offering incentives to landowners to impose land use and conservation restrictions on their land within the district. Programs offering such incentives shall not be permitted unless authorized by law. Any conditions to creation of the district and the period before the review of the district shall be described, either in the application or in a notice sent by first-class mail to all landowners in the district and published in a newspaper having a general circulation within the district at least two weeks prior to adoption of the ordinance creating the district. The ordinance shall state any conditions to creation of the district and shall prescribe the period before the first review of the district, which shall be no less than four years but not more than ten years from the date of its creation. In prescribing the period before the first review, the local governing body shall consider the period proposed in the application. The ordinance shall remain in effect at least until such time as the district is to be reviewed. In the event of annexation by a city or town of any land within a district, the district shall continue until the time prescribed for review.

C. The local governing body shall act to adopt or reject the application, or any modification of it, no later than 180 days from (i) November 1 or (ii) the other date selected by the locality as provided in § 15.2-4305. Upon the adoption of an ordinance creating a district or adding land to an existing district, the local governing body shall submit a copy of the ordinance with maps to the local commissioner of the revenue, and the State Forester, and the Commissioner of Agriculture and Consumer Services for information purposes. The commissioner of the revenue shall identify the parcels of land in the district in the land book and on the tax map, and the local governing body shall identify such parcels on the zoning map, where applicable and shall designate the districts on the official comprehensive plan map each time the comprehensive plan map is updated.

1977, c. 681, § 15.1-1511; 1979, c. 377; 1981, c. 546; 1984, c. 20; 1985, c. 13; 1987, c. 552; 1993, cc. 745, 761; 1997, c. 587; 1998, c. 833; 2011, cc. 344, 355.

Hampton Health District  
(Headquarters Location)  
Clinics & Vital Records  
3130 Victoria Boulevard  
Hampton, VA 23661  
Phone: (757) 727-1172

LaSalle WIC Center &  
Environmental Health  
1320 LaSalle Avenue  
Hampton, VA 23669  
Phone: (757) 727-1140

Wilsondale WIC Center  
1206 North King Street  
Hampton, VA 23669  
Phone: (757) 224-5007



## Hampton and Peninsula HEALTH DISTRICTS

Virginia Department of Health  
Hampton & Peninsula Health Districts

Serving Hampton, James City County, Newport News, Poquoson, Williamsburg, York County

Peninsula Health District  
(Headquarters Location)  
• 416 J. Clyde Morris Blvd.  
Newport News, VA 23601  
Phone: (757) 594-7300

WIC Department  
• 1033 28<sup>th</sup> St.  
Newport News, VA 23607  
Phone: (757) 247-2184

WIC Department  
• 606 Denbigh Blvd. Ste. 304  
Newport News, VA 23608  
Phone: (757) 886-2810

Environmental Health & WIC  
• 4095 Ironbound Rd.  
EH Suite 200 & W-Suite 201  
Williamsburg, VA 23188  
EH Phone: (757) 253-4813  
WIC Phone: (757) 253-4741

Date: January 14, 2022  
Tori Haynes  
James City County Planning

Re: Health Department review of S-21-0069, 2188 Lake Powell Road Family Subdivision

Dear Tori Haynes:

On January 5, 2022 James City County requested that the Williamsburg Area Office of the Peninsula Health District review the proposed subdivision plat identified above for onsite wastewater system approvals. This letter is to inform you that the above referenced subdivision plat is **approved** for individual onsite sewage systems in accordance with the provisions of the *Code of Virginia*, and the *Sewage Handling and Disposal Regulations* (12 VAC 5-620-20 et seq., the "*Regulations*").

This request for subdivision review was submitted pursuant to the provisions of Sec. 32.1- 163.5 of the *Code of Virginia* which requires the Health Department to accept private soil evaluations and designs from an Authorized Onsite Soil Evaluator (AOSE) or a Professional Engineer working in consultation with an AOSE for residential development. This subdivision was certified as being in compliance with the Board of Health's regulations by: Ann Ruff AOSE #1940001376. This subdivision approval is issued in reliance upon that certification.

Pursuant to Sec. 360 of the *Regulations* this approval is not an assurance that Sewage Disposal System Construction Permits will be issued for any lot in the subdivision identified above *unless* that lot is specifically identified on the above referenced plat as having an approved site for an onsite sewage disposal system, and unless all conditions and circumstances are present at the time of application for a permit as are present at the time of this approval.

This subdivision approval does not pertain to the requirements of local ordinances.

Sincerely,

A handwritten signature in black ink that reads "Donna Briede".

Donna Briede, EHS Senior  
Peninsula Health District

c.c. Ann Ruff – AOSE

## Attachment 1

### Subdivision Approval Statement:

Since local subdivision ordinances require VDH personnel to sign a record plat, the following statement must be printed on the plat:

This subdivision is approved for individual onsite sewage systems in accordance with the provisions of *The Code of Virginia and the Sewage Handling and Disposal Regulations* (12 VAC 5-610-10 et seq., the "*Regulations*").

This subdivision was submitted to the Health Department for review pursuant to Sec. 32.1-163.5 of the *Code of Virginia* which requires the Health Department to accept private soil evaluations and designs from an Onsite Soil Evaluator (OSE) or a Professional Engineer working in consultation with an AOSE for residential development. The Department is not required to perform a field check of such evaluations. This subdivision was certified as being in compliance with the Board of Health's regulations by: Ann Ruff AOSE #1940001376 This subdivision approval is issued in reliance upon that certification.

Pursuant to Sec. 360 of the *Regulations* this approval is not an assurance that Sewage Disposal System Construction Permits will be issued for any lot in the subdivision unless that lot is specifically identified as having an approved site for an onsite sewage disposal system, and unless all conditions and circumstances are present at the time of application for a permit as are present at the time of this approval. This subdivision may contain lots that do not have approved sites for onsite sewage systems.

This subdivision approval is issued in reliance upon the certification that approved lots are suitable for "traditional systems", however actual system designs may be different at the time construction permits are issued.

**MINUTES  
JAMES CITY COUNTY  
AGRICULTURAL AND FORESTAL DISTRICT ADVISORY COMMITTEE  
ORGANIZATIONAL MEETING  
101-D Mounts Bay Road, Williamsburg, VA 23185  
Building D Glass Conference Room  
January 27, 2022  
4:00 PM**

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**A. CALL TO ORDER**

Mr. Chris Taylor called the Agricultural and Forestal District (AFD) Advisory Committee meeting to order at 4 p.m.

**B. ROLL CALL**

**Present:**

Chris Taylor, Chair  
Bruce Abbott, Vice Chair  
Richard Bradshaw  
Loretta Garrett  
Sue Sadler (by phone)  
Sandy Wanner

**Absent:**

Payten Harcum  
William Harcum  
Thomas Hitchens

**Staff:**

Tammy Rosario, Community Development Assistant Director  
Josh Crump, Principal Planner  
Tom Leininger, Principal Planner  
Thomas Wysong, Senior Planner II  
Beth Klapper, Community Development Assistant  
Katie Pelletier, Community Development Assistant

**C. MINUTES**

1. Minutes of the October 21, 2021, Regular Meeting

Ms. Garrett motioned to Approve the minutes of the October 21, 2021, regular meeting.

Mr. Wanner seconded the motion.

On a voice vote, the motion was approved 6-0.

**D. OLD BUSINESS**

There was no old business for discussion.

## **E. NEW BUSINESS**

### 1. Election of Officers

Mr. Abbott motioned to Re-elect Mr. Taylor as the Committee Chairman.

Ms. Garrett seconded the motion.

The motion was approved 6-0 after a unanimous voice vote.

Mr. Taylor motioned to Re-elect Mr. Abbott as the Committee Vice Chairman.

Ms. Garrett seconded the motion.

The motion was approved 6-0 after a unanimous voice vote.

### 2. AFD Advisory Committee Proposed 2022-2023 Calendar

Mr. Taylor reviewed the proposed 2022-2023 and tentative 2023-2024 Committee Meeting dates. He noted that AFD renewal cases are scheduled for meetings on July 21, 2022, and July 28, 2022.

Mr. Bradshaw and Mr. Crump discussed the timeline for property owner notices.

### 3. Case No. AFD-21-0003. 360 Racefield Drive Barnes Swamp Withdrawal

Mr. Leininger stated that Mr. Brendan Grajewski from Hexagon Energy, on behalf of the property owner, has applied to withdraw a 26-acre portion of the 65.26-acre parcel within the Barnes Swamp AFD. Mr. Leininger said the parcel is located at 360 Racefield Drive, is zoned A-1 General Agriculture, and is designated Rural Lands on the 2045 Comprehensive Plan Land Use Map. He told the Committee the subject parcel is one of 33 parcels currently in the Barnes Swamp AFD, which total 2,207 acres.

Mr. Leininger explained the reason for requesting withdrawal for this portion of the parcel from the AFD is for a proposed solar farm. He explained that, outside of renewal periods, withdrawals must be approved by the Board of Supervisors according to a specific set of criteria. Mr. Leininger said the criteria had been included in the Agenda packet and state that: (1) requests should be a result of an unforeseeable change in circumstances, traditionally interpreted to include death of a property owner; (2) the request needs to serve a demonstrable public interest, i.e. schools or fire stations; (3) withdrawals should not result in a disruption of the existing district (Mr. Leininger noted this withdrawal does not bring the overall acreage below the AFD requirement); and (4) the resulting land use should be in conformance with the Comprehensive Plan's designation for that parcel (Mr. Leininger stated that a solar farm is not consistent with the recommended uses of the 2045 Comprehensive Plan in Rural Lands).

Mr. Leininger said that, based on an evaluation of the criteria listed in the Board of Supervisor's Policy governing the withdrawal of properties from AFDs, staff recommends that the AFD Advisory Committee recommend denial of this application to the Planning Commission and the Board of Supervisors. He said he would be happy to answer any questions from the Committee, and the applicant was also available to answer questions as well.

Mr. Brendan Grajewski, Development Manager with Hexagon Energy, addressed the Committee and gave a presentation outlining the applicant's withdrawal request. He said the renewable energy development company is based in Charlottesville, Virginia, and works with localities to create access to clean energy. He said they have been working on the new opportunity of smaller solar projects in Virginia for about 3.5 years.

Mr. Grajewski then described how the Racefield Solar Project and AFD withdrawal request met the criteria outlined by Mr. Leininger. Regarding change of circumstance, Mr. Grajewski noted the Barnes Swamp AFD is a large District, and the last renewal period in 2018 was before the 2020 enabling legislation for small-scale solar projects. He said this is a change of circumstance and a unique and time-sensitive opportunity for the landowner. Mr. Grajewski said there is a small margin of error for the approval and construction timeline for the solar project, with the County and Dominion Energy. Regarding the criteria of serving a public purpose, he noted the solar project would export power to the local grid, and most County residents are Dominion Energy customers. Regarding disruption to the District, Mr. Grajewski said the 26-acre withdrawal would represent just one percent of the land in the Barnes Swamp AFD, and the remaining parcel acreage would remain in the AFD and meet minimum AFD requirements. He noted the Barnes Swamp AFD would still encompass over 2,000 acres in the County.

Mr. Grajewski introduced Mr. Scott Foster, applicant attorney from Gentry Locke, to address the criteria of land use designation conformance with the County's Comprehensive Plan. Mr. Grajewski said they will also address this issue during the Planning Commission public hearing next week.

Mr. Foster addressed the Committee and noted that staff found the solar farm use inconsistent with the County's 2045 Comprehensive Plan Rural Lands designation. Mr. Foster said he comes to a different conclusion regarding the project's conformity with the Comprehensive Plan. He said the area is designated Rural Lands, with primary uses listed in Chapter 10 of the Comprehensive Plan that include certain public or semi-public uses compatible with the natural and rural surroundings. Mr. Foster argued that solar meets that definition, by letter and intent, being a passive use by nature that is not public utility intensive. He said this kind of development is very different than the commercial and residential development normally seen inside the Primary Service Area. He said it is a public utility use in keeping with State Code and is considered and meets the definition of a public utility facility, just like a water and sewer extension but does not lead to additional development. Mr. Foster said solar is a good fit and great neighbor to rural uses. He said it is not highly visible and does not make noise or light at night or complain about agricultural uses next door. Mr. Foster said he will also address the definition at the Planning Commission meeting, but he believes solar is a great way for rural landowners to monetize in the short-term in contrast to more traditional, less compatible, long-term development of rural lands. He noted after a solar project is decommissioned in 35-40 years, the land could return to an agricultural use.

Ms. Garrett asked about other localities with similar projects.

Mr. Grajewski replied a small-scale solar project was approved in Warsaw, and they are currently going through the approval process for summer projects in other areas.

Mr. Taylor asked about the economic feasibility of the project size.

Mr. Grajewski referenced the change of circumstance and new market created by the requirements and legislation regarding small-scale solar projects.

Mr. Foster added the power from this smaller project will be distributed and consumed locally.

Mr. Taylor asked if the project could be expanded.

Mr. Foster replied the legislation prevents connections and expansion.

Mr. Grajewski said they would be happy to provide additional assurances or conditions.

Mr. Abbott asked who would manufacture the solar panels.

Mr. Grajewski said that has not been identified yet, but in previous projects they have committed to stateside-manufactured panels.

Mr. Wanner said conditions would be considered in the special use permit process.

Mr. Abbott said the adjacent property owners will likely not like the view of the solar farm.

Mr. Wanner said they would likely be well-shielded. He asked staff if the County Attorney's Office had been consulted on the recommendation.

Mr. Leininger replied yes, and he explained that the solar use is not identified or addressed in the County Comprehensive Plan, except on rooftops. He noted that solar is usually viewed as a temporary use, and previously approved solar projects in the County were on land designated Economic Opportunity and Low Density Residential, not Rural Lands. Mr. Leininger said that staff did not feel the project met the definition of institutional uses for public purposes and does not preserve the character of Rural Lands.

Mr. Wanner stated he is opposed to anything not consistent with the Comprehensive Plan and cannot support the proposed timeline. He said in his experience there is flexibility in all projects.

Mr. Taylor clarified what the Committee needed to review for their recommendation.

Mr. Wanner said they could wait and request withdrawal through the normal renewal process later this year.

Mr. Bradshaw said there would not be additional local revenue from the solar project due to tax credits, or significant increased property values. He said the change in legislation does not meet the change of circumstance criteria for early withdrawal from the AFD, normally reserved for death of a taxpayer. He said it is a financial operation, with no local benefit or institution. He agreed it would not disrupt the AFD, but he would vote against the withdrawal. He said they could wait until October to remove the property from the AFD during the renewal process.

Mr. Wanner motioned to recommend denial of Case. No. AFD-21-0003, 360 Racefield Dr. Barnes Swamp Withdrawal, to the Planning Commission and Board of Supervisors.

Ms. Garrett seconded the motion.

On a voice vote of 5-0-1, with Ms. Sadler abstaining, the motion was approved to recommend denial.

#### 4. Case No. S-21-0072. Newman Road family Subdivision

Mr. Wysong addressed the Committee and stated that Mrs. Sheila Chandler submitted a family

subdivision application on behalf of Mr. Kenneth Chandler to create a 6.07-acre lot within the parcel addressed 7751 Newman Road. He said this property is approximately 50 acres, zoned A-1, General Agricultural, and is part of the Christenson's Corner AFD. Mr. Wysong stated, per the AFD Ordinance, a subdivision of land shall result in parcels greater than 25 acres except in cases where the Board of Supervisors approve of smaller lots as part of family subdivisions. He said therefore the case is before the Committee today.

Mr. Wysong said the new 6.07-acre parcel would remain within the AFD. He said there are no proposed changes to the AFD or negative impacts on surrounding property. Mr. Wysong said Staff recommends the AFD Advisory Committee recommend approval of this application to the Board of Supervisors, and he would be happy to answer any questions.

(Add discussion)

Mr. Wanner motioned to recommend approval of Case No. S-21-0072, Newman Road family Subdivision, to the Planning Commission and Board of Supervisors.

Mr. Abbott seconded the motion.

On a voice vote of 6-0, the motion was approved.

5. Case No. S-21-0069. 2188 Lake Powell Road, Perkinson Family Subdivision

Mr. Wysong stated that Mr. Alister Perkinson submitted a family subdivision application on behalf of his father, Mr. Roderick Perkinson, to create a 3.8-acre lot within the parcel addressed 2188 Lake Powell Road. Mr. Wysong said this property is approximately 28 acres, zoned R-8, Rural Residential, and is part of the Gospel Spreading Church AFD. Mr. Wysong said that, per the Gospel Spreading Church AFD Ordinance, a subdivision of land shall result in parcels greater than 25 acres except in cases where the Board of Supervisors approves of smaller lots as part of family subdivisions. Mr. Wysong said this means the AFD and BOS need to approve this subdivision. He noted the new 3.8-acre parcel would remain within the AFD, and there are no proposed changes to the AFD or negative impacts on surrounding property. Mr. Wysong stated that Staff recommends the AFD Advisory Committee recommend approval of this application to the Board of Supervisors. He said he would be happy to answer any questions, and the applicant is also available to answer questions as well.

(Add discussion)

Mr. Abbott motioned to recommend approval of Case No. S-21-0072, Newman Road family Subdivision, to the Planning Commission and Board of Supervisors.

Mr. Taylor seconded the motion.

On a voice vote of 6-0, the motion was approved.

## **F. DISCUSSION ITEMS**

### **1. 2022 AFD Renewal Survey Responses**

Mr. Crump stated the Board of Supervisors has requested that the Committee survey property owners regarding their preferred length of term renewal. He reviewed the survey card responses...

## **G. ADJOURNMENT**

Mr. Wanner motioned to Adjourn the meeting.

Mr. Abbott seconded the motion.

The meeting was adjourned at 5 p.m. after a unanimous 6-0 voice vote.

DRAFT

**ITEM SUMMARY**

**DATE:** 3/8/2022

**TO:** The Board of Supervisors

**FROM:** Paul D. Holt, III, Director of Community Development and Planning

**SUBJECT:** Initiation of Consideration of Amendments to the Zoning Ordinance and Subdivision Ordinance to Establish Lot Sizes in the R-8 and A-1 Zoning Districts that are Consistent with the Stated Rural Lands Designation Description and Development Standards of the 2045 Comprehensive Plan

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**ATTACHMENTS:**

	Description	Type
☐	Memorandum	Cover Memo
☐	Resolution	Resolution

**REVIEWERS:**

Department	Reviewer	Action	Date
Development Management	Holt, Paul	Approved	2/25/2022 - 9:09 AM
Publication Management	Daniel, Martha	Approved	2/25/2022 - 9:15 AM
Legal Review	Kinsman, Adam	Approved	2/28/2022 - 9:29 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 10:59 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:10 PM

## MEMORANDUM

DATE: March 8, 2022

TO: The Board of Supervisors

FROM: Paul D. Holt, III, Director of Community Development and Planning

SUBJECT: Initiation of Consideration of Amendments to the Zoning Ordinance and Subdivision Ordinance to Establish Lot Sizes in the R-8 and A-1 Zoning Districts that are Consistent with the Stated Rural Lands Designation Description and Development Standards of the 2045 Comprehensive Plan

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On October 26, 2021, the Board of Supervisors adopted the James City County 2045 Comprehensive Plan “*Our County, Our Shared Future.*”

At the request of a supervisor, staff has prepared the attached Initiating Resolution to consider possible amendments to the Zoning Ordinance and Subdivision Ordinance to revise the R-8 and A-1 Zoning Districts to set lot sizes to be consistent with the stated Rural Lands designation description and development standards.

The purpose of such amendments would be to implement Goal, Strategy, and Action (GSA) No. Land Use (LU) 6.2 which states, in part that “Residential development is not a recommended use in the Rural Lands.” In addition, LU 6.2.1 states:

“Revise the R-8 and A-1 Zoning Districts to set lot sizes to be consistent with the stated Rural Lands designation description and development standards. As part of this amendment, consider easing the subdivision requirements, such as eliminating the central well requirement or permitting the waiver of the central well requirement and/or allowing private streets in limited circumstances, as part of an overall balanced strategy.”

Staff recommends approval of the attached resolution.

PDH/md  
InitConsRevR8-A1Zns-mem

Attachment:  
1. Resolution

## RESOLUTION

### INITIATION OF CONSIDERATION OF AMENDMENTS TO THE ZONING ORDINANCE AND

### SUBDIVISION ORDINANCE TO ESTABLISH LOT SIZES IN THE R-8 AND A-1 ZONING

### DISTRICTS THAT ARE CONSISTENT WITH THE STATED RURAL LANDS DESIGNATION

### DESCRIPTION AND DEVELOPMENT STANDARDS OF THE 2045 COMPREHENSIVE PLAN

WHEREAS, section 15.2-2286(A)(7) of the Code of Virginia, 1950, as amended (the “Virginia Code”), and County Code Section 24-13 authorize the Board of Supervisors of James City County, Virginia (the “Board”), to, by resolution, initiate amendments to the regulations of the Zoning Ordinance that the Board finds to be prudent and required by public necessity, convenience, general welfare, or good zoning practice; and

WHEREAS, section 15.2-2253 of the Virginia Code and County Code Section 19-10 authorize the Board to request the Planning Commission to prepare and recommend amendments to the Subdivision Ordinance; and

WHEREAS, the Board is of the opinion that the public necessity, general welfare, and good zoning practice warrant the consideration of amendments to the Zoning Ordinance and Subdivision Ordinance.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby initiate amendment of the James City County Code, Chapter 24, Zoning in order to establish lot sizes in the Rural Residential District, R-8, and the General Agricultural District, A-1, that are consistent with the stated Rural Lands designation description and development standards as contained within the adopted James City County 2045 Comprehensive Plan. The Planning Commission shall hold at least one public hearing on the consideration of amendments to said Zoning Ordinances and shall forward its recommendation to the Board of Supervisors in accordance with the law.

BE IT FURTHER RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby request the Planning Commission to prepare and recommend amendments to Chapter 19, Subdivisions, in order to establish lot sizes in the Rural Residential District, R-8, and the General Agricultural District, A-1, that are consistent with the stated Rural Lands designation description and development standards as contained within the adopted James City County 2045 Comprehensive Plan. The Planning Commission shall hold at least one public hearing on the consideration of amendments to said Subdivision Ordinances and shall forward its recommendation to the Board of Supervisors in accordance with the law.

BE IT FURTHER RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby direct staff to include language that grandfathers all parcels in existence as of January 1, 2022 that are 25 or fewer acres in size.

BE IT FURTHER RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby direct staff to include language that eliminates the central well requirement for subdivisions that are consistent with the stated Rural Lands designation description and development standards as contained within the adopted James City County 2045 Comprehensive Plan.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

\_\_\_\_\_  
Teresa J. Saeed  
Deputy Clerk to the Board

	VOTES			
	<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
ICENHOUR	_____	_____	_____	_____
HIPPLE	_____	_____	_____	_____
LARSON	_____	_____	_____	_____
SADLER	_____	_____	_____	_____
MCGLENNON	_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

InitConsRevR8-A1Zns-res

**ITEM SUMMARY**

DATE: 3/8/2022  
TO: The Board of Supervisors  
FROM: Richard Bradshaw, Commissioner of the Revenue  
SUBJECT: 2022 Motor Vehicle Assessment

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**ATTACHMENTS:**

	Description	Type
☐	Memorandum	Cover Memo
☐	Resolution	Resolution

**REVIEWERS:**

Department	Reviewer	Action	Date
Board Secretary	Saeed, Teresa	Approved	3/9/2022 - 9:04 AM

## MEMORANDUM

DATE: March 8, 2022  
TO: The Board of Supervisors  
FROM: Richard W. Bradshaw, Commissioner of the Revenue  
SUBJECT: 2022 Motor Vehicle Assessment

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Since 1995, James City County has used 100% Average Loan Value according to the National Automobile Dealers Association (NADA) (not J.D. Power) Appraisal Guide as the assessment method for valuing motor vehicles. As a rule, individual vehicle values have declined by 7-10% each year as the vehicle gets older. The Guide for 2022 indicates an increase in values on vehicles of 10-55% over 2021 values. This is unprecedented and affects virtually all vehicles of model year 2003 and newer.

I am attaching a resolution which will allow the use of an assessment ratio of 75% to be applied to 2022 NADA assessments thus making the 2022 vehicle assessments more in line with the expected historical values. This resolution will only affect tax year 2022. Should future conditions not change, a similar resolution may be needed for future years.

RWB/md  
2022MtrVehAssess-mem

Attachment

**RESOLUTION**

**2022 MOTOR VEHICLE ASSESSMENT**

WHEREAS, the Board of Supervisors desires to adopt a budget that decreases the assessment ratio on motor vehicles for Calendar Year 2022; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, does hereby request that the Commissioner of the Revenue establish an assessment ratio of seventy-five percent (75%) for personal property classified as motor vehicles now being assessed using loan value as determined by the J.D. Power Appraisal Guide for the preparation of the personal property book as of January 1, 2022, for taxes to be collected in the fiscal years ending June 30, 2022 and June 30, 2023.

\_\_\_\_\_  
John J. McGlennon  
Chairman, Board of Supervisors

ATTEST:

		VOTES			
		<u>AYE</u>	<u>NAY</u>	<u>ABSTAIN</u>	<u>ABSENT</u>
_____ Teresa J. Saeed Deputy Clerk to the Board	ICENHOUR	_____	_____	_____	_____
	HIPPLE	_____	_____	_____	_____
	LARSON	_____	_____	_____	_____
	SADLER	_____	_____	_____	_____
	MCGLENNON	_____	_____	_____	_____

Adopted by the Board of Supervisors of James City County, Virginia, this 8th day of March, 2022.

2022MtrVehAssess-res

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Teresa J. Saeed, Deputy Clerk

SUBJECT: Consideration of a personnel matter, the appointment of individuals to County Boards and/or Commissions pursuant to Section 2.2-3711 (A)(1) of the Code of Virginia

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**REVIEWERS:**

Department	Reviewer	Action	Date
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:47 PM

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Christy H. Parrish, Zoning Administrator

SUBJECT: Board of Zoning Appeals Appointment

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**ATTACHMENTS:**

Description Type

**REVIEWERS:**

Department	Reviewer	Action	Date
Zoning Enforcement	Parrish, Christy	Approved	2/16/2022 - 4:55 PM
Development Management	Holt, Paul	Approved	2/17/2022 - 7:24 AM
Publication Management	Daniel, Martha	Approved	2/17/2022 - 8:27 AM
Legal Review	Kinsman, Adam	Approved	2/17/2022 - 8:32 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 10:56 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:10 PM

**ITEM SUMMARY**

**DATE:** 3/8/2022

**TO:** Board of Supervisors

**FROM:** Rebecca Vinroot, Director of Social Services

**SUBJECT:** Williamsburg/James City County Community Action Agency Board Replacement

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**ATTACHMENTS:**

Description Type

**REVIEWERS:**

Department	Reviewer	Action	Date
Social Services	Vinroot, Rebecca	Approved	2/18/2022 - 4:48 PM
Publication Management	Pobiak, Amanda	Approved	2/18/2022 - 4:50 PM
Legal Review	Kinsman, Adam	Approved	2/22/2022 - 9:38 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:52 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:00 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

**ITEM SUMMARY**

DATE: 3/8/2022  
TO: Board of Supervisors  
FROM: Rebecca Vinroot, Director of Social Services  
SUBJECT: Social Services Advisory Board Appointments

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**ATTACHMENTS:**

Description Type

**REVIEWERS:**

Department	Reviewer	Action	Date
Social Services	Vinroot, Rebecca	Approved	2/25/2022 - 3:47 PM
Publication Management	Pobiak, Amanda	Approved	2/25/2022 - 3:55 PM
Legal Review	Kinsman, Adam	Approved	2/28/2022 - 9:29 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 10:51 AM
Board Secretary	Purse, Jason	Approved	3/1/2022 - 11:00 AM
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:11 PM

**ITEM SUMMARY**

DATE: 3/8/2022

TO: The Board of Supervisors

FROM: Teresa J. Saeed, Deputy Clerk

SUBJECT: Adjourn until 9 am on March 11, 2022 for the Joint Meeting at the James City County Recreation Center

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**REVIEWERS:**

Department	Reviewer	Action	Date
Board Secretary	Saeed, Teresa	Approved	3/1/2022 - 2:50 PM