

US 58 ARTERIAL PRESERVATION PLAN





US 58 Arterial Preservation Plan

VDOT – Hampton Roads District

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Prepared for:

Virginia Department of Transportation



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List of Acronyms

ADT	Average Daily Traffic
CGT	Continuous Green-T Intersection
CMAQ	Congestion Mitigation and Air Quality
DDI	Diverging Diamond Interchange
HCM	Highway Capacity Manual
HSIP	Highway Safety Improvement Program
LOS	Level of Service
MUT	Median U-Turn Intersection
NHS	National Highway System
PDC	Planning District Commission
QR	Quadrant Roadway Intersection
RCUT	Restricted Crossing U-Turn Intersection
SPUI	Single Point Urban Interchange
STP	Surface Transportation Program
TAC	Transportation Accountability Commission
TAZ	Traffic Analysis Zone
TEU	Truck Equivalent Unit
TOSAM	Traffic Operations and Safety Manual
TPO	Transportation Planning Organization
TTI	Travel Time Index
VDOT	Virginia Department of Transportation
VMT	Vehicle Miles Travelled

1. Introduction

1.1 Background

The purpose of the US 58 Arterial Preservation Plan is to develop a holistic approach that identifies ways to ensure the safety and preserve the capacity of the Commonwealth’s arterial highway network without wide-scale roadway widenings or increased signal proliferation. The US 58 corridor plays an important role in the region as a significant tourism corridor, a key freight corridor serving the Port of Virginia, a vital link within the Commonwealth, and a primary facility for coastal evacuation and connections to North Carolina and points south. This arterial preservation plan has been requested to identify investment recommendations that will help preserve and enhance this key transportation corridor.

1.1.1 What is the Arterial Preservation Program?

VDOT’s Arterial Preservation Program is designed to preserve and enhance the capacity and safety of the critical transportation highways in Virginia. These major highways accommodate long-distance mobility of people and goods throughout the Commonwealth. Preserving mobility on these corridors is critical to the current and future economy.

Within the framework of the Arterial Preservation Program, VDOT is developing methodologies to consistently and programmatically evaluate the corridors, creating a toolbox of preservation and enhancement strategies and identifying opportunities to implement these strategies. As an alternative to widening major highways to add capacity, preservation and enhancement strategies promote the use of innovative transportation solutions. The innovative transportation solutions minimize delay and improve safety, while incorporating local economic development goals. Developed in partnership with localities, the strategies will be used as tools to plan for infrastructure that supports future land use and development.

1.2 Study Corridor

The study area extends from the Hampton Roads District construction boundary at the Greenville / Brunswick corporate limits to the eastern termini at the Suffolk Bypass. US 58 is functionally classified as a Principal Arterial within the limits of the study area. The study area is 70.5 miles in length and includes several limited-access bypass segments at Courtland, Franklin, Emporia, and Suffolk. VDOT considers these segments improved and therefore they received limited analysis as part of this study. Figure 1 depicts the study area for the US 58 Arterial Preservation Plan.

Figure 1: Study Area



1.3 Public Involvement Process

The public involvement process began with the June 14th, 2017 project kick-off/scoping meeting and subsequent discussion within the core study team, project stakeholders were identified that included:

- City of Emporia
- City of Franklin
- Greenville County
- Isle of Wight County
- Southampton County
- City of Suffolk
- Hampton Roads TPO
- Hampton Roads TAC
- Crater PDC
- Port of Virginia
- VDOT at the Residency, District, and Central Office level

This stakeholder group consisted of staff-level representatives from each of the organizations. This group met at key milestones throughout the study to review progress and results. These meetings were held at various locations along the study corridor. Table 1 lists the dates and topics of these meetings.

Table 1: Core Study Team Meetings

Meeting Date	Location	Meeting Topic
June 14, 2017	VDOT Hampton Roads District Office	Study Kick-Off/Orientation
Oct. 13, 2017	City of Suffolk Public Works Operations Center	Existing Conditions
Feb. 21, 2018	Franklin Business Center	Needs Assessment
May 30, 2018	Greenville County Government Center	Draft Recommendations
Feb. 22, 2019	VDOT Hampton Roads District Office	Final Recommendations

1.3.1 Stakeholder Interviews

As part of the outreach process, a web-based survey was conducted with study stakeholders in the fall of 2017 to understand current issues along the corridor and possible changes to the land use and local plans in the study area. Respondents also listed the highly ranked needed improvements in the corridor. Table 2 presents a summary of responses received.

Table 2: Stakeholder Survey Responses

Current Issues Along the Study Corridor (Not Ranked)
Congestion in Suffolk, Courtland, and Emporia
Balancing through truck traffic with local traffic
Congestion, safety, speeding
Abundance of signals
Too many access points
Highly Needed Improvements (Ranked)
1. Capacity improvements
2. Access improvements
3. Geometric improvements / Safety improvements
4. Operation Improvements

1.3.2 Public Outreach

Three corridor-wide citizen information meetings were held in the Spring of 2018 to review the existing conditions assessment and opportunities for improvements along the US 58 corridor. Forty-seven citizens attended these meetings. The dates and locations of the meetings are identified in Table 3.

Table 3: Initial Round of Public Meetings

Meeting Date	Meeting Location
March 12, 2018	Pioneer Elementary School, Suffolk, VA
March 13, 2018	Southampton County Office Center, Courtland, VA
March 15, 2018	Greensville County Government Center, Emporia, VA

Members of the public were invited to provide comments on the preliminary findings and to suggest additional improvement locations. Feedback received from the public was further reviewed during the recommendations' development process.

General comments received at the public meetings included:

- Concerns with truck traffic
- Heavy volume of traffic with high speeds.
- Safety issues.
- Too many driveways.
- Need to improve median crossover markings and add turn lanes.

- Update the corridor to current design standards.

Specific areas of concern from the public meetings included:

- Grassy Pond Road - Limited visibility
- Drewry Road intersection - Limited visibility
- Main Street intersection (Town of Capron) - Safety, visibility
- Courtland corridor - Speed, access to businesses
- Camp Parkway (58 Bus) intersection - Difficult turning movements
- S-curve between Lummis Road and Pioneer Elementary School - Crossovers
- Lummis Road intersection - Difficult turning movements

A second and final citizen outreach effort took place during March 2019 to present the final corridor recommendations. The meetings included a formal presentation from the study team as well as various displays describing the study results, and a citizen comment area. Fifty-one citizens attended the second round of public meetings. The dates and locations of the meetings are identified in Table 4.

Table 4: Second Round of Public Meetings

Meeting Date	Meeting Location
March 18, 2019	Southampton County Office Center, Courtland, VA
March 20, 2019	City of Emporia City Hall, Emporia, VA
March 21, 2019	Pioneer Elementary School, Suffolk, VA

2. Existing Conditions

2.1 Existing Land Use

Existing land use in the study area varies by location. Development is greatest in the eastern end of the corridor in the City of Suffolk. The City of Suffolk generates growth by designating urban growth areas with utility service. The development is limited to the Central Suburban/Urban Growth Area and is characterized by commercial and suburban residential use. There are multiple distribution centers on the western edge of the Central Suburban/Urban Growth Area on Manning Bridge Road.

Outside of this growth area, most of the developed land areas along the corridor are in the cities of Suffolk and Franklin and Southampton and Greensville Counties. Much of the corridor is undeveloped with commercial, residential, and institutional land uses punctuating the rural landscape. Land use along the corridor becomes heavily developed again at the western end of the corridor within the City of Emporia. Land uses along US 58 in Emporia include industrial, commercial, and institutional uses along with an airport.

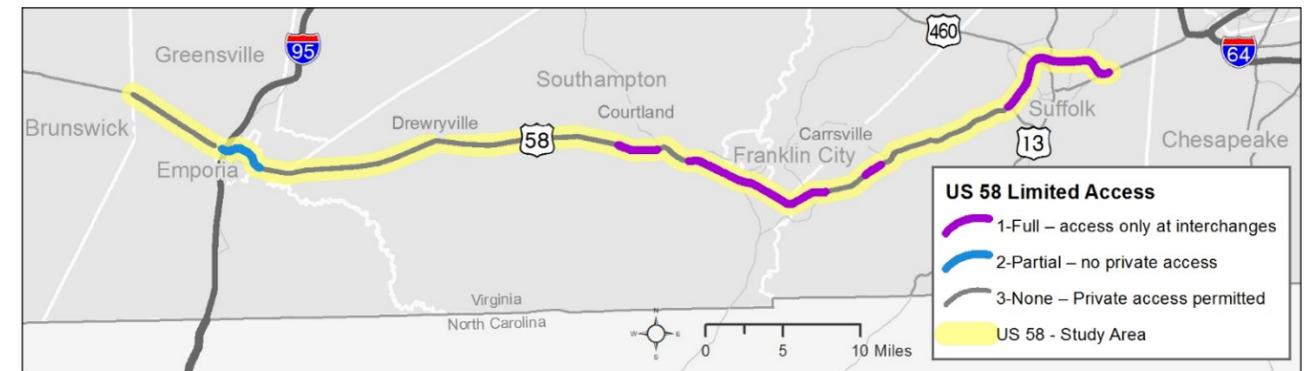
Existing Land Use Key Findings

- Clusters of single-family homes with direct access to US 58 between:
 - Manning Bridge Road and Lummis Road in City of Suffolk;
 - Brentwood Road and Leafwood Road in City of Suffolk;
 - Old Quay Road and Holy Neck Road in City of Suffolk, and
 - Buckhorn Quarter Road and Popes Station Road in Southampton County.
- Retail development with direct access to US 58 between:
 - Agri Park Drive and Jerusalem Road in Southampton County;
 - US 301 and Wiggins Road in City of Emporia, and
 - US 13 and Manning Road in City of Suffolk.
- Industrial development with direct access to US 58:
 - Suffolk Cotton Gin, City of Suffolk
 - Mid-Atlantic Gin, Southampton County
 - Steel Fab, Inc., City of Emporia
 - Ace Hardware Distribution Center, City of Suffolk
 - Target Distribution Center, City of Suffolk
- Institutional uses with direct access to US 58:
 - Pioneer Elementary, City of Suffolk
 - Southampton High School, Southampton County
 - Capron Elementary School, Southampton County
 - Paul D Camp Community College, City of Suffolk
- Other relevant development with direct access to US 58:
 - Emporia- Greensville International Airport
 - Southside Virginia Community College, City of Emporia

2.2 Existing Infrastructure

A field review was conducted on October 3, 2017 at the outset of the study to review roadway and intersection configurations; identify deficiencies and areas of concern, including sight distances or grade issues; identify unique roadway features; and observe traffic operations. US 58 is primarily a four-lane roadway running east-west and includes an interchange with Interstate 95 (I-95). US 58 intersects with US 460 and US 13 in the City of Suffolk and US 258 in the City of Franklin. Access along US 58 is primarily uncontrolled within the study area. The only sections along the corridor where access is fully or partially controlled are in the City of Emporia, City of Franklin, City of Suffolk, and Southampton County at the Town of Courtland (Figure 2). A full description of the field review for the corridor is available in Appendix B.

Figure 2: Access Controlled Portion of Study Corridor



The corridor has several roadway segments that may reduce capacity, delay, or safety due to their current design. There are variable shoulder widths on US 58 west of the City of Emporia. The I-95 interchange in Emporia has multiple design elements that reduce the level of service. These include stop controlled exits onto US 58 and curves through the I-95 interchange. The Davis Street intersection in Emporia has pronounced vertical and horizontal curvature – the latter of which reduces sight distance significantly, especially in the eastbound direction. Sightlines are limited at both Hicks Ford Road (eastbound) and Drewry Road (both directions) due to intersection geometry and the horizontal and vertical alignment of US 58. Near the intersection of US 58 and VA 35 there are numerous clustered crossovers, as well as varying turn lane and shoulder widths.

Continuing eastbound along the corridor, US 58 becomes a limited access highway between VA 35 and the US 258 Bypass/VA 189 interchange east of Franklin, with the exception of a 2.5-mile segment between Jerusalem Road and Camp Parkway. The Jerusalem Road intersection has recently been rebuilt with a grade-separated roundabout, with a bridge being constructed over US 58 for Old Bridge Road (VA 742). Merge lanes at interchanges appear to be adequate in this area, but crossovers are often clustered and sometimes lead to nowhere. Further east, past South Quay Road, crossovers are also clustered and often lack or have short turn lanes. At Manning Bridge Road, eastbound and westbound directions have at least 12-15 vehicles queueing at PM peak. At Forest Glen Drive, which services a middle school, there was minimal queueing observed in the PM peak. A widening project is planned for US 58 from Manning Bridge Road to the Suffolk bypass, therefore recommendations were not developed for this segment as part of this study.

2.3 Existing Access Points

The commercial access points along the US 58 corridor were inventoried and the distance between each point measured and reviewed for compliance with VDOT’s Access Management Spacing Standards which takes into account functional classification, roadway speed, and access type. Only the commercial access points were reviewed, as VDOT access management standards do not apply to residential access points. Table 5 outlines commercial access points along the corridor.

Table 5: Study Corridor Access Segments

	Commercial Access Points		
	Compliant	Non-Compliant	Total
Eastbound	167	62	229
Westbound	172	62	234
Total	339	124	463

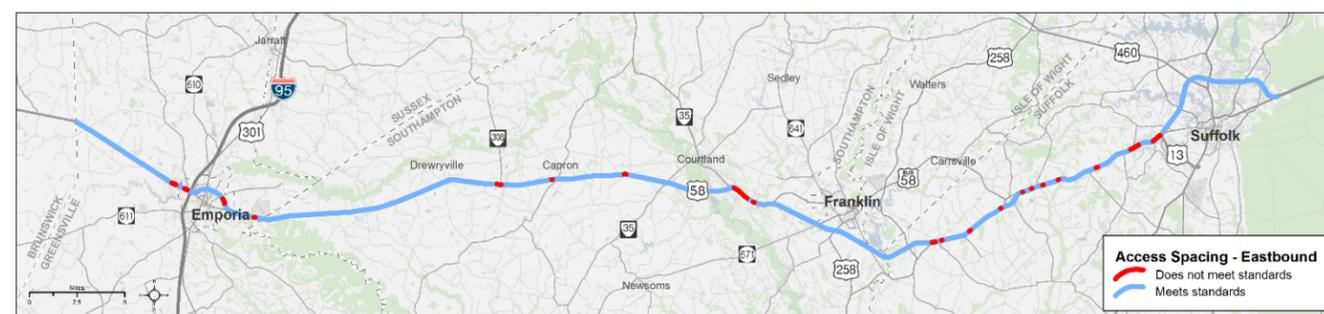
*Compliance was calculated based on VDOT design standards, Table 2-2 of the Virginia Road Design Manual Appendix F, for access management of entrances and intersections.

Only 26.5% percent (2.8 mi) of westbound segments and 27% percent (2.4 mi) of eastbound segments in the study corridor are non-compliant. For both directions many of the noncompliant segments are in urban areas of the corridor, specifically near the eastern and western termini of the study area. The rural areas of the corridor have fewer noncompliant segments.

In the eastbound direction of US 58 (Figure 3), the City of Suffolk has the highest number of noncompliant segments. The most significant areas of non-compliance along US 58 in the eastbound direction are between:

- Ruritan Drive and Sadler Drive in Greenville County;
- West End Road and the I-95 on-ramp in the City of Emporia;
- Jerusalem Road and Camp Parkway in Southampton County;
- Raleigh Drive and Cove Point Drive in the City of Suffolk, and
- Grove Avenue to US 13 in the City of Suffolk.

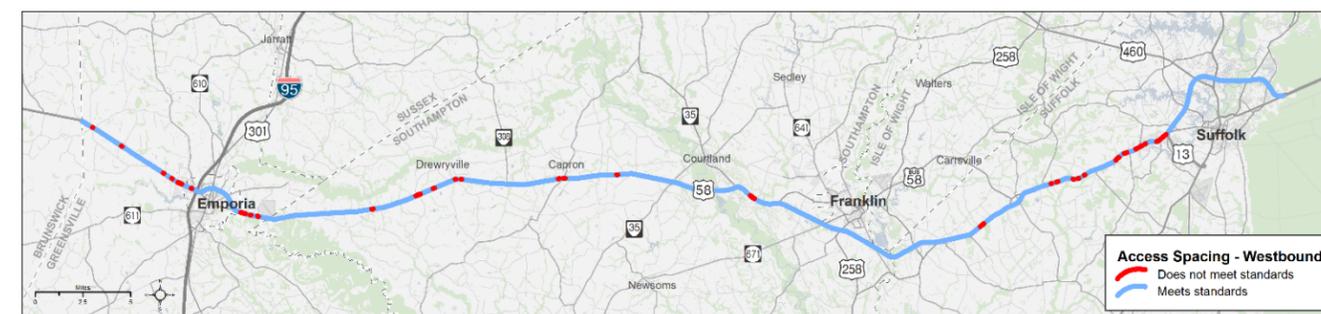
Figure 3: Eastbound Access Spacing



There are also segments in the westbound direction with noncompliant access spacing (Figure 4). As with the eastbound direction, the highest number of segments with noncompliant access spacing is in the City of Suffolk. The areas with high concentrations of segments with noncompliant access spacing are between:

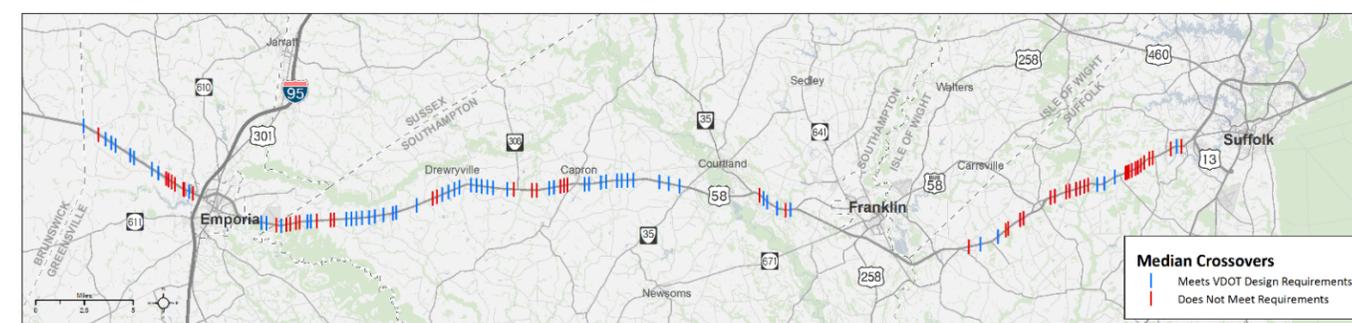
- Manning Road and Lakewood Drive in the City of Suffolk;
- James River Junction to Emporia City Line in Greenville County, and
- Sadler Road to Ruritan Road in Greenville County.

Figure 4: Westbound Access Spacing



Due to the length and access control of the corridor, crossovers play a significant role in the function of the corridor and the preservation of corridor mobility. Many of these crossovers are non-compliant with VDOT design standards and out of 108 total crossover locations, only 57 meet VDOT spacing requirements (Figure 5).

Figure 5: Median Crossover Spacing

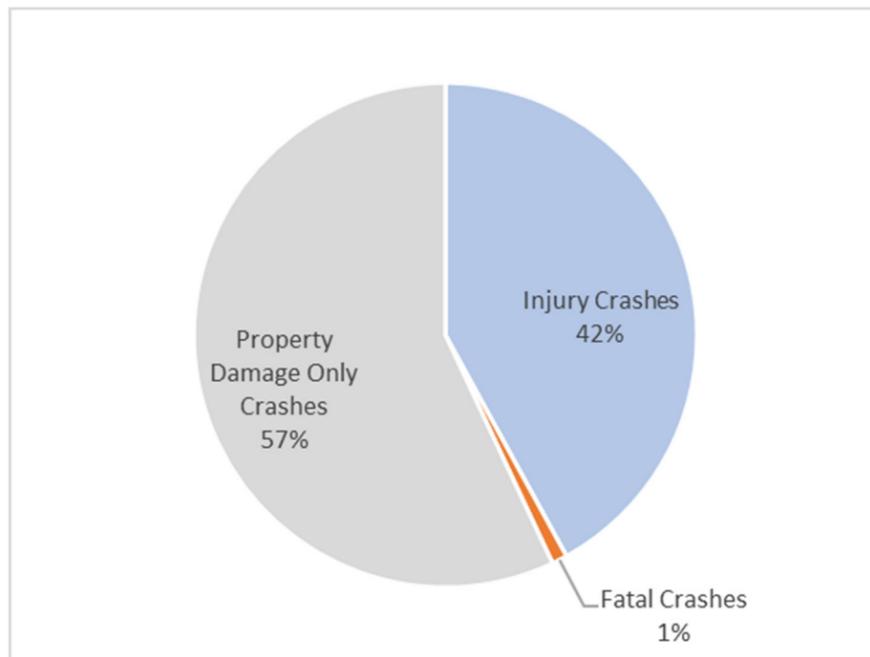


2.4 Crash Analysis

An evaluation of corridor safety was conducted based on an analysis of crash summary information. A crash analysis for the US 58 study corridor over the latest three years of available crash data (April 1, 2014 to March 31, 2017) was obtained from VDOT's Roadway Network System. Figure 6 illustrates the crash severity that occurred in the study corridor during this timeframe. Figure 7 illustrates the collision type within the study corridor during the same period. Figure 8 on page 6 presents the crash densities, location, and severity along the corridor. On the crash density map, locations with more frequent crashes are indicated in the red areas, while lower frequency locations are green.

As illustrated in Figure 9 on page 7, the analysis of existing conditions found that the crash rate is below the statewide average when compared to all roadways in the Commonwealth along most of the US 58 study area. Portions of the corridor with crash rates that are greater than 100% above the statewide average are within the City of Emporia and the western terminus of the Suffolk Bypass.

Figure 6: Crash Severity



Key Findings

- In 57% of crashes only property damage occurred with no injuries or fatalities. 1% of crashes resulted in fatal injury.
- The greatest number of crashes were rear end collisions, which accounted for 26.6% of crashes. This is followed closely by fixed object – off road collisions, which accounted for 25.3% of crashes.
- Most off-road collisions, 91 crashes, occurred between the Holland Road Bypass and the intersection at Staley Drive
- Rear end crashes are higher at signalized intersections compared to an unsignalized intersection along the corridor.
 - The signalized intersection at Purdy Road had 12 rear-end crashes whereas the unsignalized intersection at Atlantic St had one rear-end crash
 - The signalized intersection at Story Station Road had 10 rear-end crashes whereas the unsignalized intersection at Camp Pkwy had zero rear-end crashes
- The crash rate is highest within Town of Emporia and along US 58 between Manning Bridge Road and the Suffolk bypass.

Figure 7: Collision Type

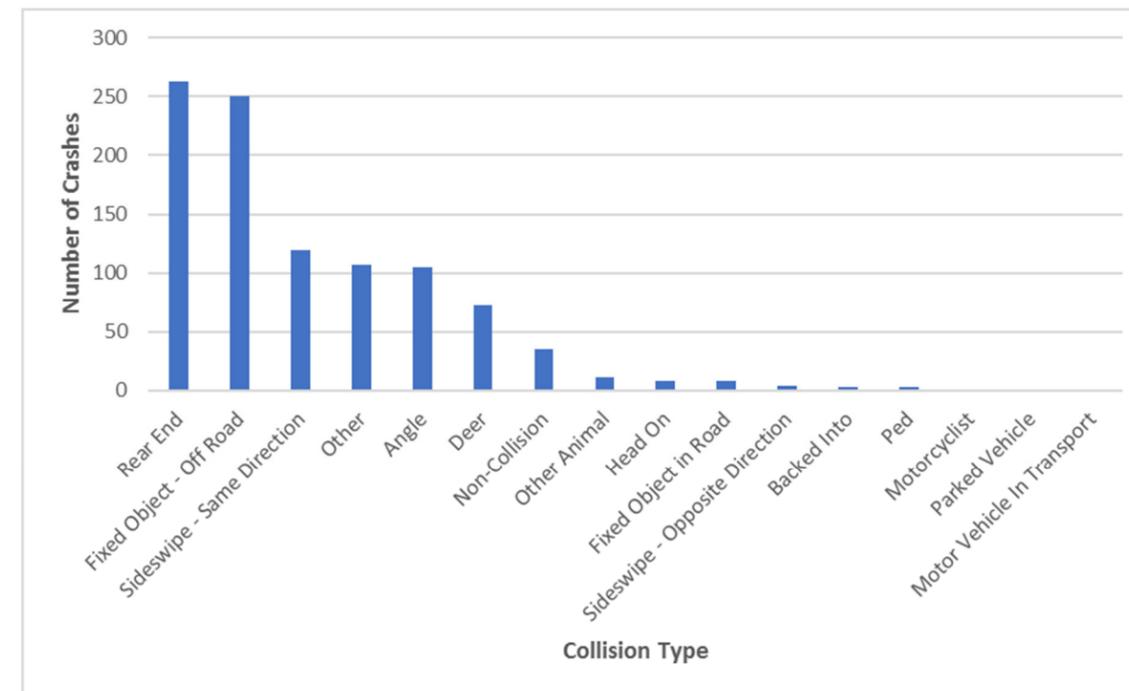


Figure 8: Crash Density, Location, and Severity

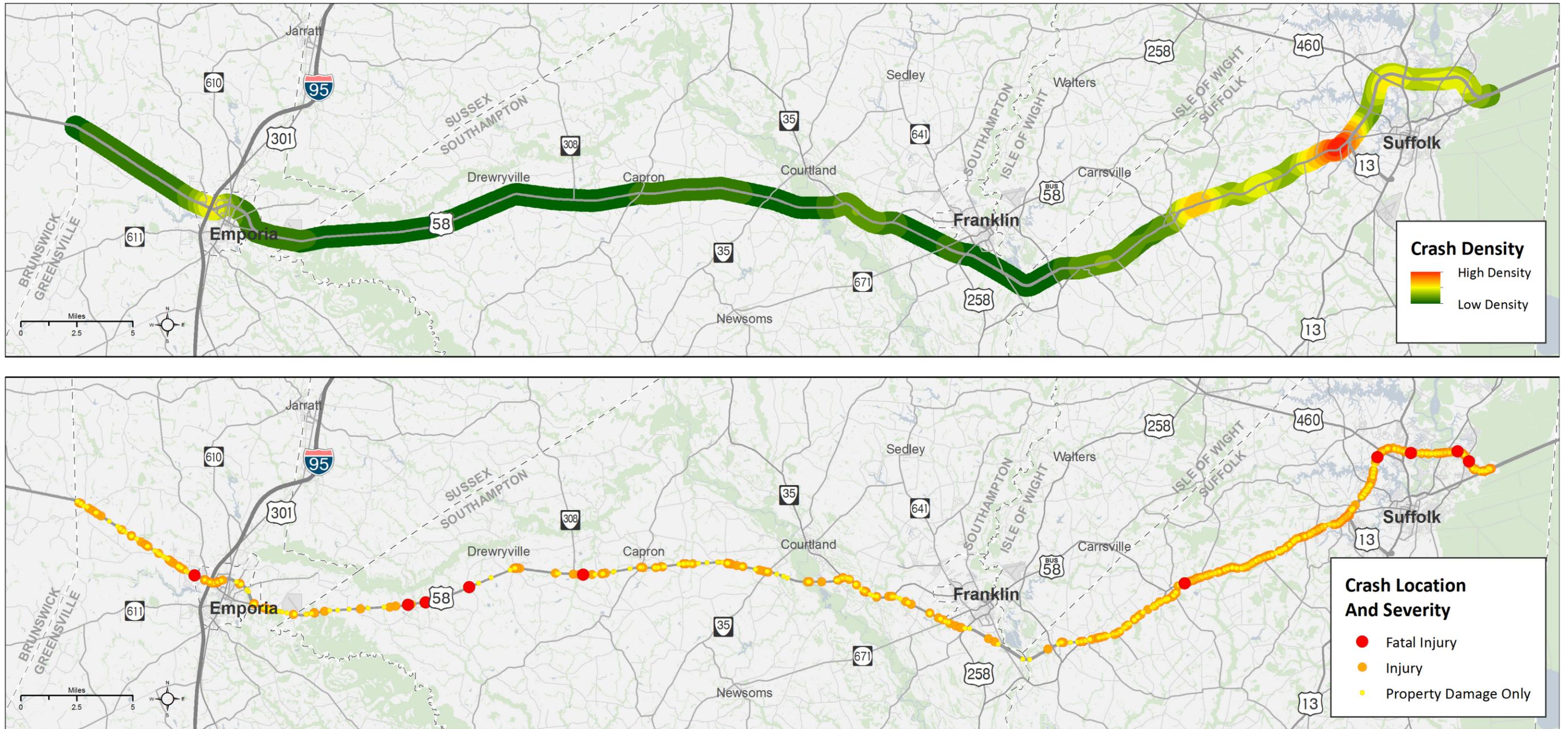
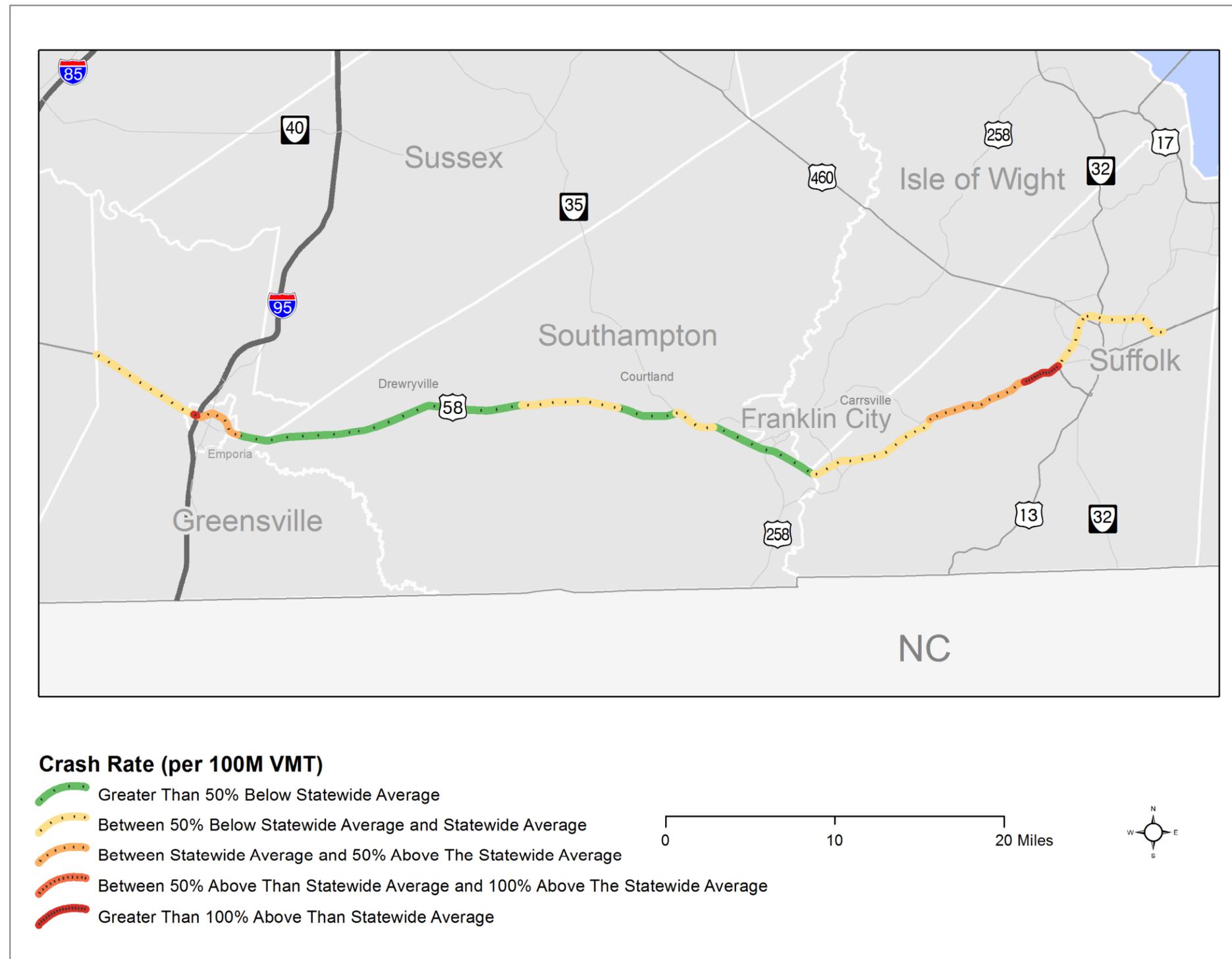


Figure 9: Crash Rate vs Statewide Average



2.5 Existing Traffic Volumes

Existing peak hour traffic volumes were developed using turn movement counts collected between September 27th and 28th 2017 at the intersections listed below.

- Route 58 / Route 619 (Wiggins Road) – City of Emporia
- Route 58 / Market Drive – City of Emporia
- Route 58 / Route 611 (Storys Station Road / Agri Park Drive) – Southampton County
- Route 58 / Route 612 (O’Kelly Drive) – City of Suffolk
- Route 58 / Route 610 (Pioneer Road) – City of Suffolk
- Route 58 / Manning Bridge Road – City of Suffolk
- Route 58 / Kenyon Road – City of Suffolk
- Route 58 / Staley Drive – City of Suffolk
- Route 58 / Route 614 (Reese Street) – City of Emporia (unsignalized)
- Route 58 / Route 611 (Davis Street) – City of Emporia (unsignalized)
- Route 58 / Bus 58 (E Atlantic Street) – City of Emporia (unsignalized)
- Route 58 / Bus 58 (Camp Parkway) – Southampton County (unsignalized)

A full list of 2017 intersection volumes by AM and PM peak hour is found in Appendix D. The AM and PM peak hours are the times with the highest traffic volumes in the study area. The AM peak hour for analysis is 7:30 to 8:30. The PM peak hour is different on US 58 east and west of the City of Emporia. The PM peak hour east of Emporia City is 4:30 to 5:30 PM, while for the City of Emporia and segments of the study area west of the city it is 5:00 – 6:00 PM.

2.6 Existing Traffic Operations

The peak hour intersection turning movement counts developed in the previous section were analyzed in Synchro using the Highway Capacity Manual (HCM) module for both the AM and PM peak hours. Level of Service (LOS) is a qualitative measure used to relate the quality of traffic operations using letters A through F, A being the best and F being the worst. The operational analysis results for the study intersections are presented in Table 6. As shown in the table, all of the signalized intersection AM and PM peak hours operate at a LOS C or better, however congestion and delay increase as vehicles approach the Cities of Emporia and Suffolk. The analysis results for the unsignalized intersections do show that all the turning movements from the minor approaches on the side streets are currently operating at a LOS B or better for both peak hours with the exception of left turns from Camp Parkway southbound which operates at a LOS D for both AM and PM peak hours.

Table 6: Signalized Intersection LOS (2017 Existing Conditions)

Intersection	AM Peak Hour	PM Peak Hour
US 58 and Purdy Road	B	C
US 58 and Market Drive	C	C
US 58 and Agri Park Drive/Story Station Road	B	B
US 58 and O’Kelly Drive	A	A
US 58 and Pioneer Road	A	A
US 58 and Manning Bridge Road/Centerpoint Drive	B	B
US 58 and Forest Glen Drive/Kenyon Road	C	C
US 58 and Staley Drive	C	C

Figure 10 on page 9 represents the Travel Time Index (TTI) across the corridor, where TTI is defined as the ratio of commuting travel time to free-flow travel time. For example, a TTI of 1.10 indicates that the peak-period travel time is 10% greater than free-flow travel time. Appendix E contains more detailed results of intersection operations for each intersection analyzed along the corridor. However, congestion and delay increase as vehicles approach the Cities of Emporia and Suffolk.

Existing heavy vehicles percentages vary throughout the corridor. Heavy vehicle percentages are highest during the AM peak hour for both directions throughout the study area. Heavy vehicle percentages are highest westbound between Franklin and Emporia cities in both the AM and PM peak hours. Further information about heavy vehicle percentages and volumes is available in Figure 11 and Figure 12 on page 10.

Within Emporia there is significant truck traffic. At the Purdy Road intersection, the truck traffic is heavy during AM and PM peaks, with minimal queueing in the southbound direction during the AM and an eight to ten car queue length in the eastbound approach during PM. At US 58 and Market Drive there is significant queueing in the PM in all directions, with the westbound approach using up the full storage lane and not clearing each cycle.

Figure 10: US 58 Travel Time Index

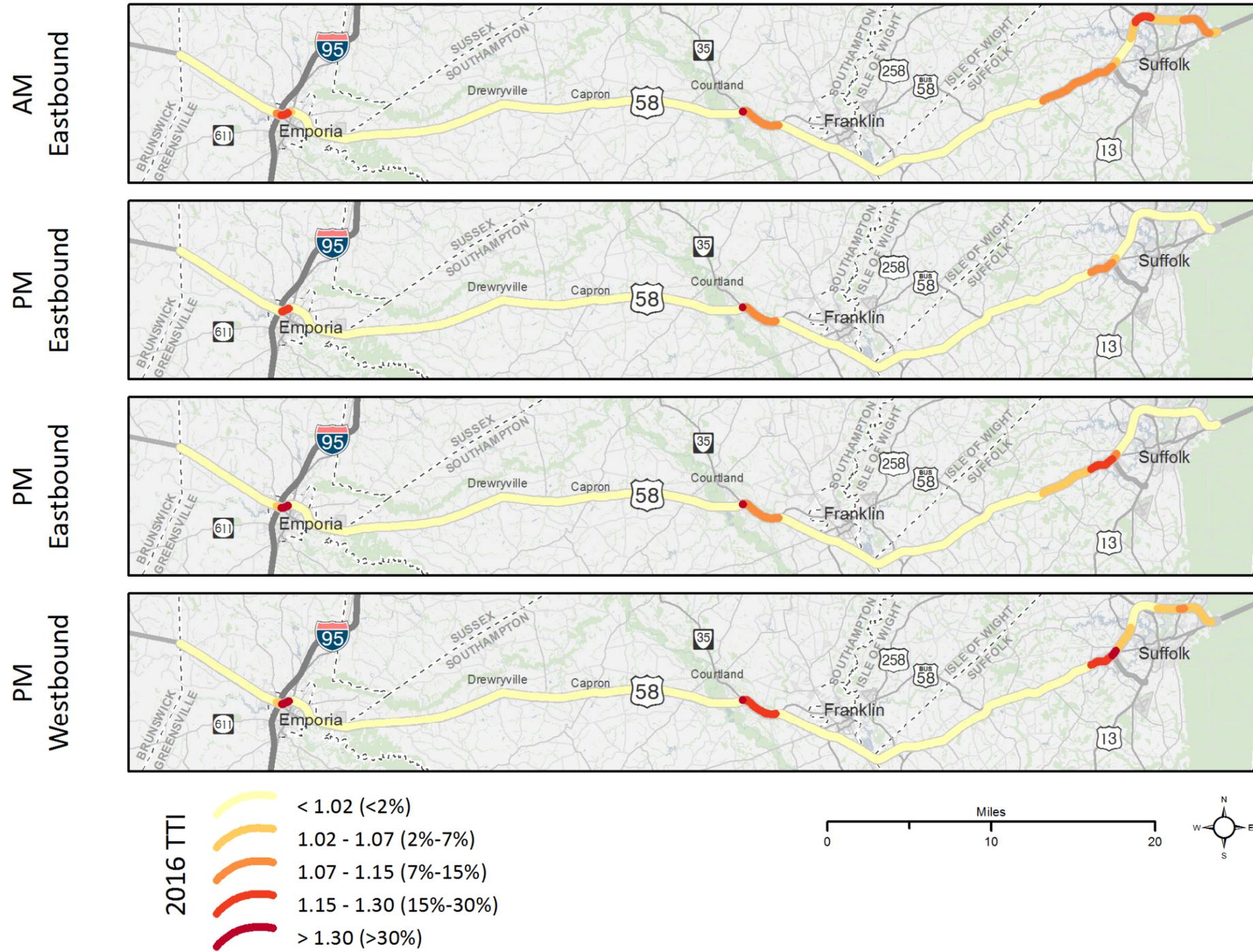


Figure 11: US 58 Heavy Vehicle Percentages on US 58

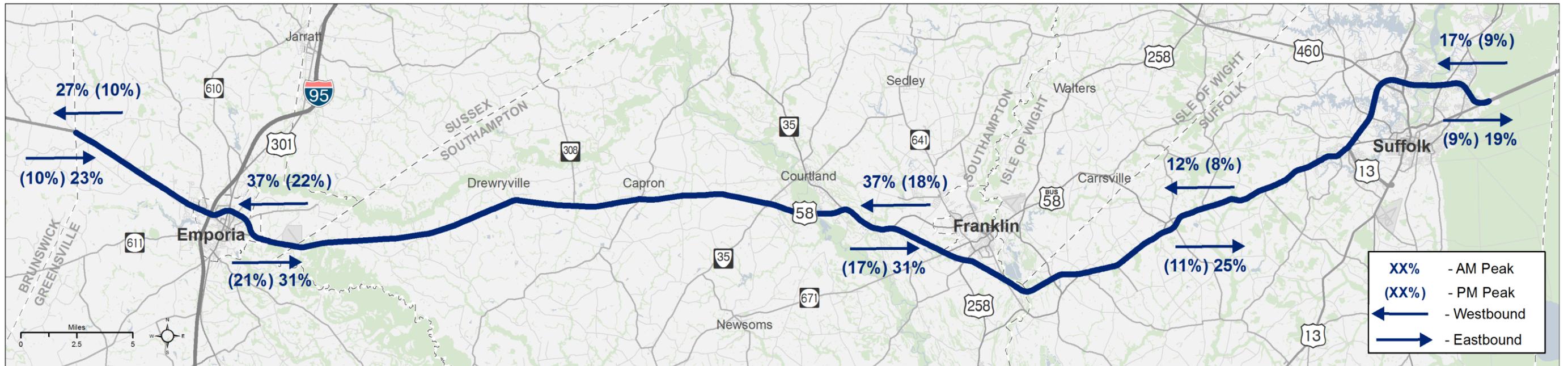
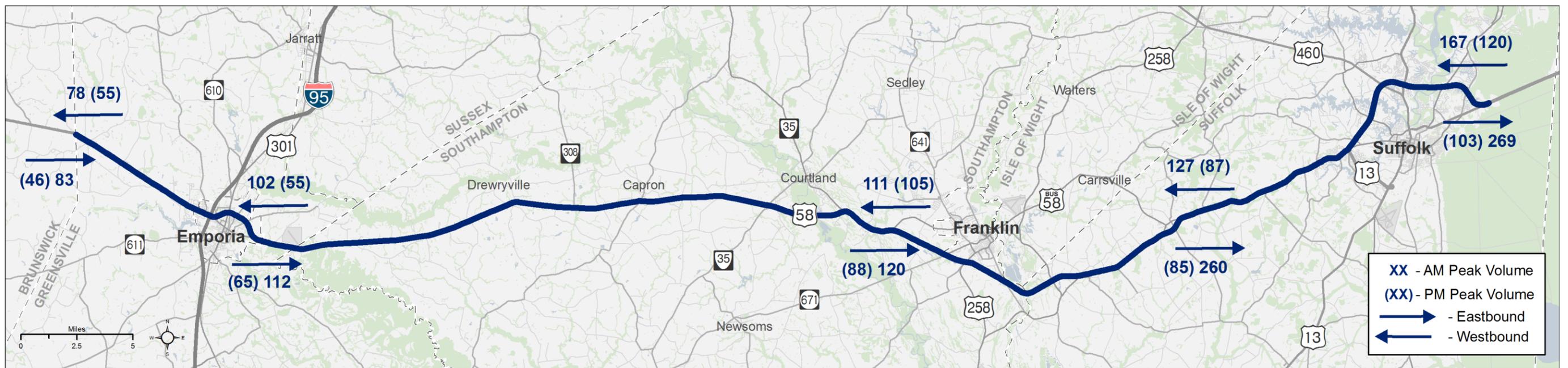


Figure 12: US 58 Heavy Vehicle Volumes on US 58



3. Future Conditions

3.1 Development of Growth Rates

Traffic volumes along the US 58 Corridor are anticipated to continue growing. Both the City of Franklin and Southampton County note the US 58 corridor as appropriate for industrial development and commercial development along the roadway in their comprehensive plans. Future development, including the Camp Parkway Commerce Center, a 427-acre light industrial park, and continued development of intermodal distribution facilities at CenterPoint Properties will contribute to traffic growth.

In addition to local growth, at the time of this study the Port of Virginia is investing \$750M inside the gates to handle an additional 1 million Truck Equivalent Units (TEUs) and plans to deepen the channel to 55 feet to accommodate the world’s largest container ships. US 58 is the second busiest east-west corridor that connects the Port to critical markets and that growth is anticipated to continue. Updated traffic growth rates for the US 58 corridor were collaboratively developed using previous studies, historic traffic counts, the statewide travel demand model, the Hampton Roads regional travel demand model, and stakeholder input. The following sections outline the steps taken to develop the future 2040 traffic volumes.

3.1.1 Historical Average Annual Traffic Volumes and Travel Patterns

Historical average annual traffic volumes help establish a trend along the corridor and highlight segments where traffic volume may increase. The study team used the VDOT historic traffic counts for fifteen segments in the corridor. VDOT collects traffic counts from sensors in or along streets and highways and compiles a blended two-way annual average daily traffic count. From this data, estimates of the number of vehicles that traveled each segment of road can be calculated. Table 7 outlines these historic traffic volumes from 2007 to 2017.

Table 7: Historic Daily Two-Way VDOT Traffic Counts

Segment #	Route 58 Segments		Year										
	From	To	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	Brunswick Cty Line	Purdy Rd	13,500	13,000	12,000	13,000	11,000	11,000	11,000	11,000	12,000	12,000	12,000
2	Purdy Rd	I-95	28,000	22,000	21,000	22,000	20,000	19,000	20,000	20,000	21,000	21,000	21,000
3	I-95	East City Line of Emporia	16,000	15,800	15,800	16,000	14,500	14,500	11,600	14,000	14,800	15,200	15,000
4	East City Line of Emporia	87-615 W, Adams Grove Rd; Hicksford Rd	16,000	16,000	13,000	13,000	13,000	14,000	14,000	14,000	13,000	13,000	13,000
5	87-615 W, Adams Grove Rd; Hicksford Rd	87-659 Drewry Rd; Pinopolis	15,000	15,000	12,000	13,000	12,000	14,000	14,000	14,000	12,000	12,000	13,000
6	87-659 Drewry Rd; Pinopolis	West City Line Capron	16,000	16,000	13,000	13,000	13,000	14,000	14,500	14,000	13,000	13,000	14,000
7	West City Line Capron	SR 35 & 58 Bus W of Courtland	17,000	16,500	14,500	15,000	14,000	15,000	14,000	14,500	13,600	14,000	14,700
8	SR 35 & 58 Bus W of Courtland	Bus US 58 East of Courtland	18,000	18,000	16,000	17,000	16,000	16,000	16,000	16,000	16,000	16,000	17,000
9	Bus US 58 East of Courtland	US 58 Bus West of Freanklin	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	21,000	22,000	22,000
10	US 58 Bus West of Freanklin	West City Line Suffolk	20,000	20,000	19,000	19,500	18,500	19,000	18,600	18,600	18,000	18,300	19,400
11	West City Line Suffolk	SR 189 S Quay Rd	21,000	20,000	19,500	20,000	18,000	18,000	19,500	18,500	19,500	20,000	20,000
12	SR 189 S Quay Rd	Bus US 58	21,000	20,000	20,000	20,000	19,000	20,000	21,000	18,600	19,500	20,000	21,000
13	Bus US 58	133-643 Manning Bridge Rd	26,000	24,500	24,500	25,000	24,500	25,000	25,600	23,600	25,000	25,300	26,400
14	133-643 Manning Bridge Rd	Kenyon Rd	29,000	27,000	27,000	26,000	26,000	27,000	27,000	27,000	28,000	29,000	31,000
15	Kenyon Rd	US 13 SW Suffolk Bypass	34,500	30,000	30,000	31,000	30,000	30,500	31,500	30,500	32,000	33,000	35,500

Source: VDOT

Between 2007 and 2014, traffic counts show very little to no growth along the study corridor. Some segments even saw the volume drop between 2008 and 2012. This phenomenon coincided with the economic recession. However, since 2015 the corridor has mostly seen growth above 2%. Most of the vehicle growth was focused near I-95 and the City of Suffolk. Traffic volumes on these segments have recovered or increased to levels beyond those found prior to the recession.

3.1.2 Socio-Economic Data

This corridor plan derived estimated changes in population, households, and employment for the study area from the Hampton Roads Area Travel Demand Model and Statewide Travel Demand Model. Employment and population estimates are for the traffic analysis zones (TAZs) along the study corridor as shown in Figure 13 on page 13 and Figure 14 on page 14. Table 8 summarizes the 2015 and 2040 estimates for population, household, and employment data from the Hampton Roads Area Travel Demand Model and Statewide Travel Demand Model.

Table 8: Socio-Economic Data for Study Corridor TAZs

Jurisdiction	2015			2040			% Change (2015 - 2040)		
	Popula-tion	House-holds	Employ-ment	Popula-tion	House-holds	Employ-ment	Popula-tion	House-holds	Employ-ment
Greensville County TAZs	3,426	1,417	1,022	3,694	1,438	1,059	8%	1%	4%
City of Emporia TAZs	6,082	2,355	3,998	6,222	2,391	4,190	2%	2%	5%
Southampton County TAZs	11,074	3,888	3,962	11,987	4,269	4,229	8%	10%	7%
City of Franklin TAZs	8,536	3,670	6,014	9,132	3,903	6,682	7%	6%	11%
City of Suffolk TAZs	54,619	20,376	24,261	87,570	32,785	37,509	60%	61%	55%
Total	83,737	31,706	39,257	118,605	44,786	53,669	42%	41%	37%

The socio-economic data from the Hampton Roads Area Travel Demand Model and Statewide Travel Demand Model shows an anticipated overall percent change for population, households, and employment in the study corridor TAZs. The western end of the corridor is anticipated to see modest growth with an 8% increase in population in Greensville County and a 5% increase in employment in the City of Emporia. Southampton County follows a similar trend with an expected 8% increase in population and a 7% increase in employment. The City of Franklin sees a modest employment growth at 11%. The highest rate of growth is anticipated in the eastern portion of the corridor where the City of Suffolk is anticipated to see 60% growth in population and a 55% increase in employment. The highest percentage of population growth is anticipated in TAZs 2006, 2014, 2003, 2012, and 2032, while the highest percentage of employment growth is predicted to occur in TAZs 2013, 2006, 2028, 2007, and 2027. The percentage of household growth in TAZs 2006, 2014, 2012, 2003, and 2013 is expected to outpace the rest of the City.

A map of the US 58 corridor in the Hampton Roads District, Virginia. The map shows a network of roads in a light olive green color, with a prominent white line tracing the path of US 58 from the top center towards the bottom right. The background is a darker olive green with a subtle grid pattern.

3.1.4 Annualized Background Growth Rate

A two percent non-compounded annual background growth rate was developed using the historic traffic counts, statewide traffic model, existing documentation, and coordination with VDOT and the local communities. This background growth rate represents the expected increase in traffic volumes that travel through the entire US 58 study area and do not have an origin or destination along the route within the study area. The trip generation for the study area (discussed in the following section) and this background growth rate will be added to the existing traffic volumes to develop the future 2040 traffic volumes.

3.2 Projected Future Growth (2040) and Traffic Volumes

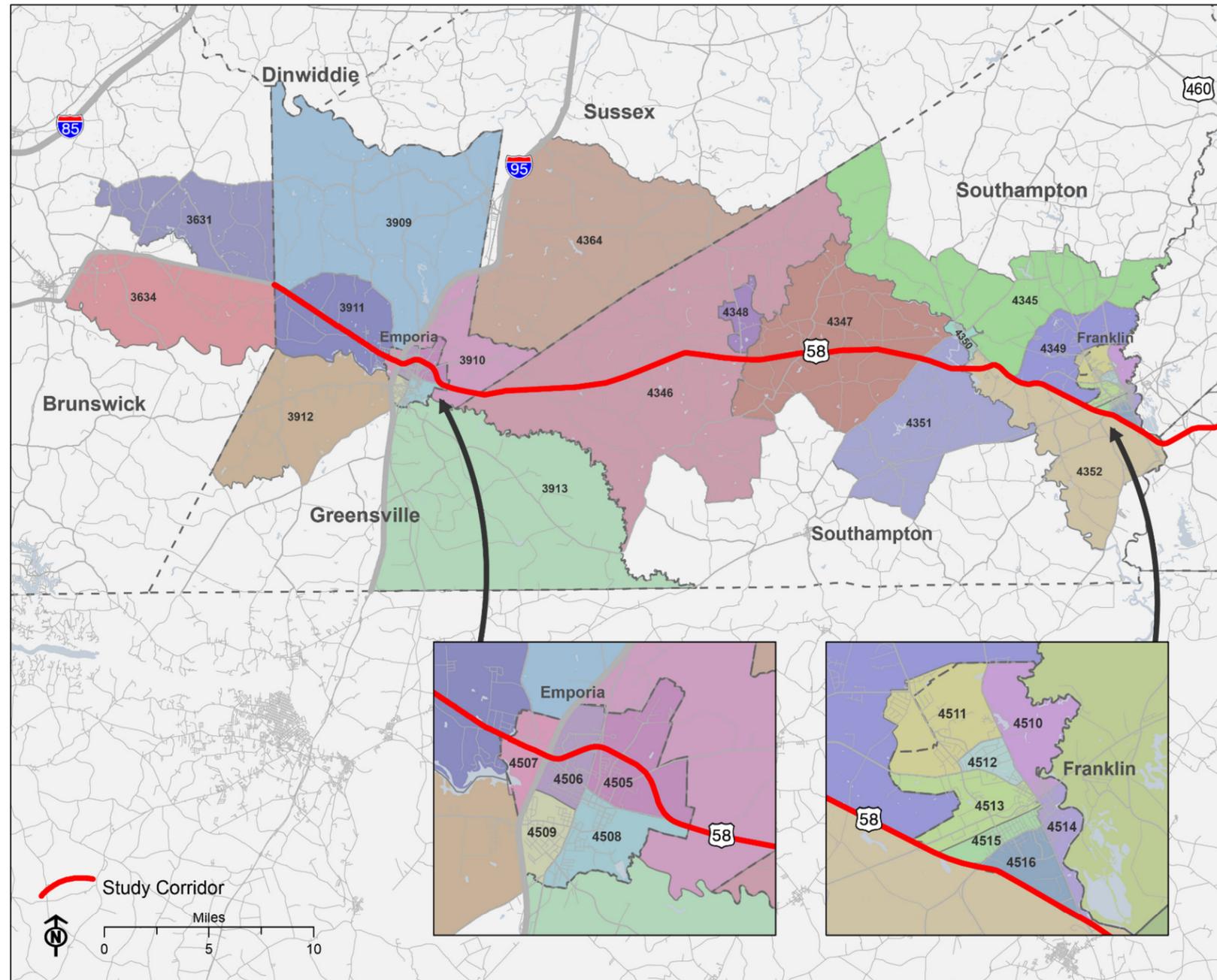
3.2.1 Future Land Use and Approved Development

Future land use was based on the socio-economic data in the travel demand models and stakeholder input. The study team looked at the projected population, household, and employment growth in the statewide and regional travel demand models between 2015 and 2040 in TAZs within the study corridor. Figure 13 and Figure 14 show the TAZ growth along the corridor. The study team used percentage growth in each of the socio-economic categories to identify areas of population and employment growth. Stakeholders reviewed these findings to assess the accuracy and provided feedback to the study team to adjust assumed growth in certain TAZs. These adjusted socio-economic datasets were used to estimate future traffic volumes in the study corridor and develop future traffic volumes at key intersections along the corridor.

3.2.2 Trip Generation and Distribution

The study team evaluated the TAZs along the study corridor that have a direct effect on the turning movement counts used for the existing and future analyses. These trips were added to the calculated background growth for the corridor and then used in the year 2040 analyses. Traffic was then distributed at the study intersections based on the existing turning movement counts. With consideration for location, potential growth areas, and infrastructure off Route 58, engineering judgement was used to make reasonable adjustments to the trip distribution. The future turning movement volumes are outlined in Appendix G. Appendix F contains the trip generation and background growth.

Figure 13: Future Socio-economic Indicators - Western Segment of Corridor



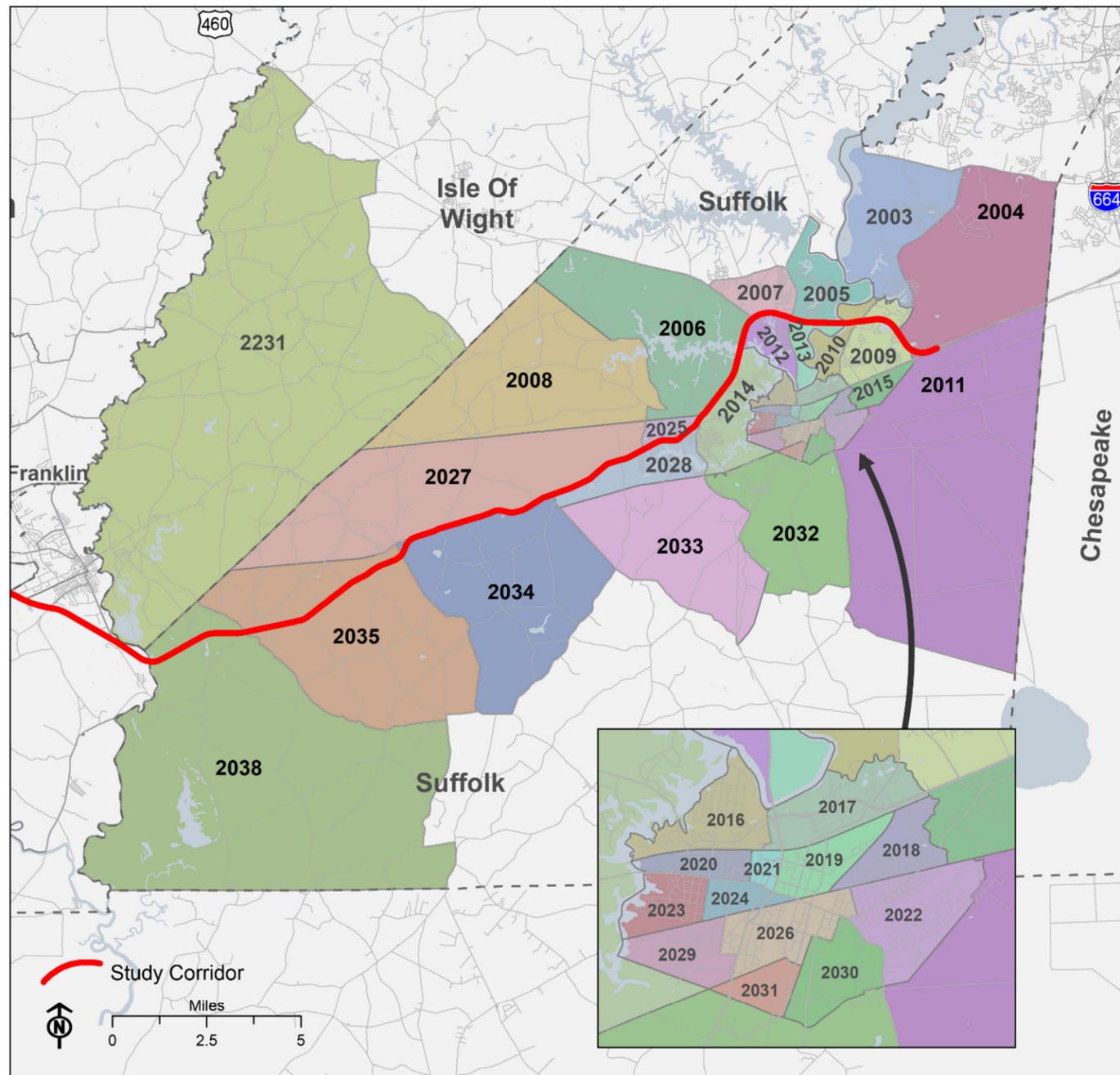
TAZs - Future Growth, Western Segment

TAZ ID	Population Increase (2015 to 2040)	Household Increase (2015 to 2040)	Employment Increase (2015 to 2040)
3631	51	20	47
3634	81	29	99
3909	395	12	112
3910	84	6	43
3911	95	8	3
3912	101	8	30
3913	167	13	7
4345	14	-2	154
4346	13	-2	22
4347	15	-2	35
4348	14	0	3
4349	16	-3	-1
4350	12	-2	14
4351	10	-2	28
4352	14	-2	77
4364	13	-1	2
4505	27	7	24
4506	28	7	95
4507	11	3	10
4508	43	11	36
4509	31	8	27
4510	9	0	129
4511	68	-2	28
4512	45	-2	2
4513	61	-2	283
4514	32	-1	78
4515	57	-2	79
4516	59	-2	4

Source: Statewide Travel Demand Model



Figure 14: Future Socio-economic Indicators - Eastern Segment of Study Corridor



TAZs - Future Growth, Eastern Segment

TAZ ID	Population Increase (2015 to 2040)	Household Increase (2040-2015)	Employment Increase (2040-2015)
2003	6012	2143	190
2005	2597	985	1296
2007	2375	926	1373
2009	2446	830	513
2010	195	74	166
2012	2351	1035	619
2013	1059	308	2531
2014	4884	1951	584
2015	421	178	88
2016	120	79	59
2017	25	2	275
2018	7	3	8
2019	48	12	571
2020	228	96	28
2021	5	2	434
2022	1225	405	76
2023	0	0	52
2024	115	43	386
2025	196	58	81
2026	225	67	356
2028	1140	418	804
2029	268	93	264
2030	246	45	29
2031	64	12	31
2231	607	521	-1753
2004	18	7	61
2006	610	241	180
2008	27	9	29
2011	19	6	1
2027	36	13	416
2032	1823	706	574
2033	60	23	76
2034	19	6	24
2035	41	14	16
2038	28	10	3

Source: Statewide Travel Demand Model, City of Suffolk 2026 and 2035 Comprehensive Plans



3.2.3 Future (2040) Traffic Volumes

Traffic volumes for the year 2040 were developed based on the trip generation discussed in the previous section and the background growth of two percent for the through traffic along the Route 58 corridor. The projected average daily traffic (ADT) for 2040 at various points within the study area is listed in Table 9. These estimations are based on a two percent non-compounded (linear) annual growth of ADTs published in 2017 VDOT's traffic counts. The future volumes do not include the vehicles associated with the future land use as it is not known if or when the development will occur.

Table 9: Future (2040) Traffic Volumes

Segment #	Route 58 Segments		Year	
	From	To	2017	2040
1	Brunswick Cty Line	Purdy Rd	12,000	17,550
2	Purdy Rd	I-95	21,000	30,700
3	I-95	East City Line of Emporia	15,000	21,900
4	East City Line of Emporia	87-615 W, Adams Grove Rd; Hicksford Rd	13,000	19,000
5	87-615 W, Adams Grove Rd; Hicksford Rd	87-659 Drewry Rd; Pinopolis	13,000	19,000
6	87-659 Drewry Rd; Pinopolis	West City Line Capron	14,000	20,450
7	West City Line Capron	SR 35 & 58 Bus W of Courtland	14,700	21,500
8	SR 35 & 58 Bus W of Courtland	Bus US 58 East of Courtland	17,000	24,850
9	Bus US 58 East of Courtland	US 58 Bus West of Freanklin	22,000	32,150
10	US 58 Bus West of Freanklin	West City Line Suffolk	19,400	28,350
11	West City Line Suffolk	SR 189 S Quay Rd	20,000	29,200
12	SR 189 S Quay Rd	Bus US 58	21,000	30,700
13	Bus US 58	133-643 Manning Bridge Rd	26,400	38,550
14	133-643 Manning Bridge Rd	Kenyon Rd	31,000	45,300
15	Kenyon Rd	US 13 SW Suffolk Bypass	35,500	51,850

4. Future (2040) Traffic Conditions

4.1 Future No-Build Traffic Operations and Deficiencies

The following section details the deficiencies of the US 58 corridor under the 2040 No-Build conditions. Although it is not known when the full build-out of the future land use will occur, the operational analysis for the 2040 scenarios includes the future traffic volumes for the full build-out of development to maximize the project life span for the recommended improvements.

The future land use across US 58 will increase the peak hour traffic volumes by approximately 1,180 vehicles in the AM peak hour and 1,600 vehicles in the PM peak hour. The future traffic volumes, along with the background growth for through-vehicles would have minimal impacts on most of the corridor based on the 2040 No-Build scenario. However, the City of Suffolk and the City of Emporia will experience significant delay in the PM peak hour. Conventional signalized intersections do not have enough capacity to operate efficiently with extremely large traffic volumes and, at unsignalized intersections, the through-movements along US 58 would not allow large enough gaps in traffic for turning movements to occur. Crashes would rise due to queue lengths extending into mainline traffic and the increases in stop-and-go traffic due to more congestion.

Operational analysis results for the intersections along Route 58 for the 2040 No-Build scenario are presented in Table 10. As shown in table 10, most of the intersections will experience minimal delay along the US 58 mainline. However detailed LOS results in Appendix G will show that the minor side-street turning movements will experience a delay of LOS C or worse.

Table 10: 2040 No-Build Intersection LOS

Intersection	AM Peak Hour	PM Peak Hour
US 58 and Purdy Rd	C	E
US 58 and Market St	C	F
US 58 and Agri Park Drive/Story Station Rd	B	C
US 58 and Camp Pkwy	B	A
US 58 and O'Kelly Dr	A	A
US 58 and Pioneer Rd	A	A
US 58 and Manning Bridge Rd	B	B
US 58 and Forest Glen Dr	D	E
US 58 and Staley Dr	C	E

4.2 Recommended Improvements Analyses

Analyses of the recommended improvements were conducted to evaluate the projected future traffic demand discussed in Chapter 3 of this document. Chapter 5 details the recommended improvements, operations, and safety benefits of the recommendations. Since most intersections operated within a satisfactory level in 2040, only intersections in the City of Emporia and Courtland were analyzed as these areas experienced significant delay in the 2040 No-build condition or had recommended improvements to address safety issues. Further analysis was conducted in the City of Emporia which included recommendations for the I-95 interchange. Although the No-Build

analysis identified a degradation of service in the City of Suffolk, the widening project from Manning Bridge Road to the Suffolk bypass is projected to address congestion concerns until 2047.

A summary for the additional analysis is included in Appendix J. However, other alternatives, such as a new interstate facility or bypass, should be explored and are outside the scope of this study. A brief interstate feasibility analysis is discussed further in section 7.

4.3 Results of Operational Analyses for Recommended Improvements

Capacity analyses for the recommended improvements at signalized and un-signalized intersections were performed using Synchro in accordance with VDOT's Traffic Operations and Safety Manual (TOSAM). Recommendations consisted mainly of alternative intersections developed. Some of the alternative intersections include two or three intersections that function together as one system. Synchro does not currently have a method to analyze alternative intersections; however, Chapter 23 of the Highway Capacity Manual outlines a methodology for calculating delays and LOS by using travel time and the appropriate delay(s) through the alternative intersections. The HCM method provides a better way of comparing alternative intersections with the traditional intersection configurations that occupy the corridor today. Table 11 shows the LOS and delay values of typical signalized and un-signalized intersections and values used as part of the HCM method. Table 12 summarizes the 2040 recommendations LOS results. Appendix H contains detailed results for delay and LOS.

Table 11: LOS Delay Values for Signalized and Unsignalized Intersections, Based on HCM Method

LOS	Standard Signalized Intersection LOS Criteria per HCM	Standard Unsignalized Intersection LOS Criteria per HCM	LOS Criteria based on HCM Chapter 23 for Alternative Intersections
	Delay (s)	Delay (s)	Delay or Estimated Travel Time (s)
A	≤10	≤10	≤10
B	10-20	10-15	10-20
C	20-35	15-25	20-35
D	35-55	25-35	35-55
E	55-80	35-50	55-80
F	>80	>50	>80

Table 12: 2040 Recommended Improvement Analysis Intersection LOS

Intersection	AM Peak Hour	PM Peak Hour
US 58 and Purdy Rd	B	B
US 58 and I-95 DDI East Intersection	C	C
US 58 and I-95 DDI West Intersection	C	D
US 58 and I-95 DDI SPUI	C	C
US 58 and Market St	B	C
US 58 and Agri Park Drive/Story Station Rd	B	B
US 58 and Camp Pkwy	B	A
US 58 and O'Kelly Dr	A	A
US 58 and Pioneer Rd	A	A
US 58 and Manning Bridge Rd	B	B
US 58 and Forest Glen Dr	C	D
US 58 and Staley Dr	B	C

5. Alternatives and Recommendations

5.1 US 58 Corridor Recommendations

Future traffic volumes and operating conditions show that the US 58 corridor needs improvements to ensure capacity and safety within the corridor. While some of these improvements may be driven by development, many improvements will be driven by regional growth and the need to maintain capacity of the corridor. Additional improvements such as crossover closings may be implemented immediately to increase safety through access management. Based on capacity analyses of current and future conditions and a review of current corridor infrastructure, a “toolbox” of improvements was developed for the US 58 study area. These include:

- Remove existing crossover (based on inadequate spacing/grade/etc.).
- Upgrade existing crossover to meet VDOT standards.
- Convert existing crossover to directional median to allow only certain movements.
- Install alternative intersection concepts.
- Improve shoulder widths to meet VDOT requirements

A primary focus for this study was the existing traditional signalized intersections. As many of these traditional intersections will reach their operational limits, there is a need for new options. It is not intended for a conventional signalized intersection to be a traffic control device for this corridor. Instead, alternative intersections and access management techniques will be evaluated for any future project and development. Below is a list of alternative intersection designs that are included in the VDOT Arterial Preservation Plan toolbox that were evaluated as potential recommendations. Some of the alternative designs were not suitable for recommendation due to the location traffic volumes, concept’s principles, associated costs and/or Right-of-Way limitations. The concepts listed below were evaluated to screen individual concepts at every location to determine the most effective options for analysis and recommendation.

- Median U-turn Intersection (MUT)
- Restricted Crossing U-turn Intersection (RCUT)

- Continuous Green-T (CGT)
- Quadrant Roadway (QR)
- Single Point Urban Interchange (SPUI)
- Diverging Diamond Interchange (DDI)

Detailed information on each of these concepts is available at VDOT’s Innovative Intersections website located at <http://www.virginiadot.org/innovativeintersections/>.

It is well documented that as the number of access points increase along a corridor, the running speed decreases and the number of crashes increase. VDOT’s Access Management Standards are an effort to ensure that development does not create undue burdens on a corridor. Given that the study segments of US 58 are of vital importance to the state and region, it is important to ensure the safety and throughput capacity of the corridor.

Recommendations were developed using the crash evaluation and analyzing the future volumes from both planned and potential developments along the study corridor. Project stakeholders and the public were engaged through the project process to identify the most preferred recommendations. These recommendations are presented in Appendix A. Appendix C contains a suggested ranking of the recommendations based on crash history and VDOT Potential Safety Improvements (PSI) database. Recommendation locations are highlighted on corridor aerial photos, with the identification circle indicating the type of recommendation. A green circle indicates no recommendation, a red circle indicates a recommended crossover removal, a yellow circle indicates a minor improvement, and a blue circle indicates a major improvement. Recommendations are denoted with C# for crossovers and I# for intersections. The written recommendation description is available by finding the corresponding C# or I# in the right-hand information box. For complex recommendations, the description will refer to the location of a detailed project sketch. Cost estimates were developed using the VDOT TMPD Cost Estimate Spreadsheet tool and the figures include the range of costs in 2018 dollars for each recommendation.

It is intended that the recommendations presented in Appendix A will accommodate the full build-out of development identified in the future land use as well as the increased vehicular through-put on US 58. As part of this US 58 Arterial Preservation Plan, it is recommended that no additional traffic signals be installed other than those listed in the recommendations. As well, it is recommended that no additional crossovers be constructed within the US 58 median beyond the Preservation Plan recommendations.

Additional shoulder width is recommended to be constructed in areas that do not meet minimum design standards. All shoulders should be paved to the VDOT design standards of eight feet or better to accommodate broken down vehicles, vehicles entering and exiting residential and commercial driveways, and bicyclists. In areas where the existing grade does not support the minimum shoulder requirements, guardrail should be installed.



5.2 Possible Funding Sources

Implementation of the recommended improvements will require funding sources. The VDOT SMART SCALE Program is a process which invests in projects that meet the most critical transportation needs in the state. Projects are evaluated based on improvements in certain categories such as congestion and safety. At the corridor level, more specific strategies and operational improvements can be assessed in studies and implemented using a variety of funding sources, including Federal funding streams such as the Surface Transportation Program (STP), National Highway System (NHS) funds, and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Revenue Sharing, Highway Safety Improvement Program (HSIP), as well as through state or local funding or other discretionary funding sources. For larger projects, particularly capacity-adding projects, demand management and operational strategies should also be analyzed for incorporation into the project as part of the project development process. The complex recommendations presented in Appendix A, Figures 7a, 7b, 8, 9, 18, 26, 27, 29, 31, 32, 34, 38, 44, 45, 46 and 49 include improvement types which correspond with the categories required for specific funding sources.

6. Sensitivity Analysis

6.1 Sensitivity Analysis Process

Using the peak hour traffic volumes developed in section 3.2.3., a sensitivity analysis was conducted to determine at what year the corridor will operate at LOS D and LOS F which would indicate a need for roadway widening or other significant improvement. The sensitivity analysis was conducted at the following three locations:

- US 58 and Market Dr.
- US 58 and Story Station Dr.
- US 58 and Staley Dr.

For the sensitivity analysis, the 2040 traffic volumes for the US 58 through movements at each location were grown at a 2% non-compounded annual growth rate. Intersection recommendations were analyzed to determine the year at which the overall intersection Volume to Capacity Ratio (V/C) exceeded 1.0 or the LOS for a major through movement on Route 58 reached LOS D or F. Figure 15 on page 19 and Figure 16 on page 20 display the results of the sensitivity analysis. The earliest LOS D is projected to be achieved during the PM peak hour in the year 2040 at the intersection of US 58 and Market Drive (westbound). The earliest LOS F is projected to be achieved during the PM peak hour in the year 2052 at the intersection of US 58 and Market Drive (westbound).

Figure 15: LOS D US 58 Sensitivity Analysis

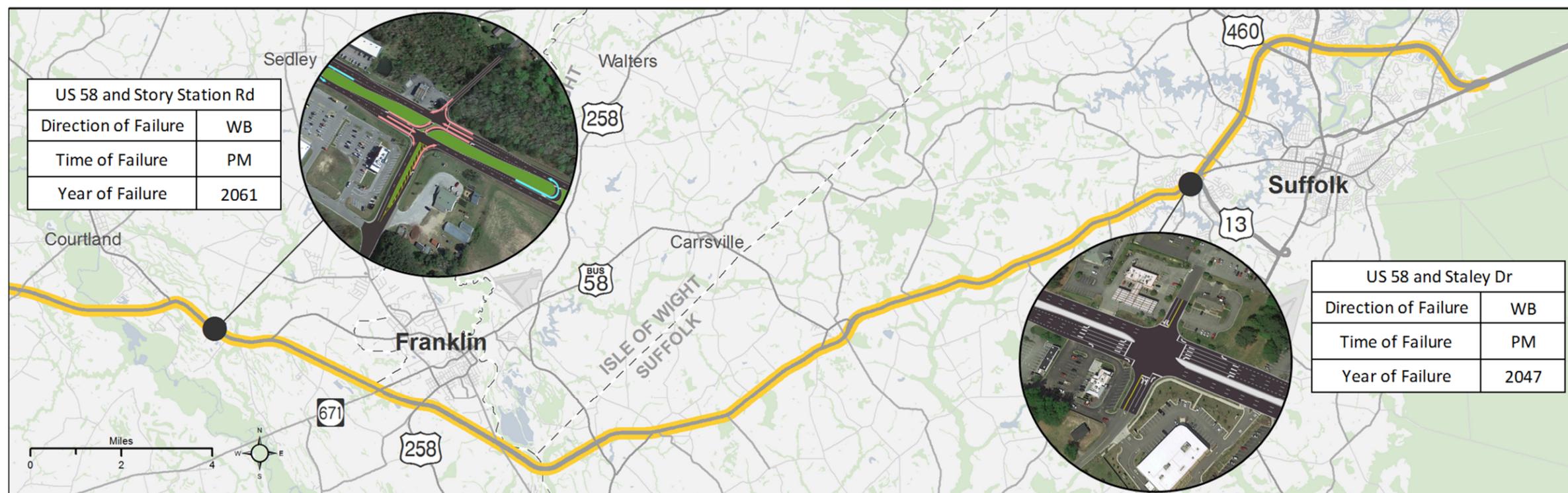
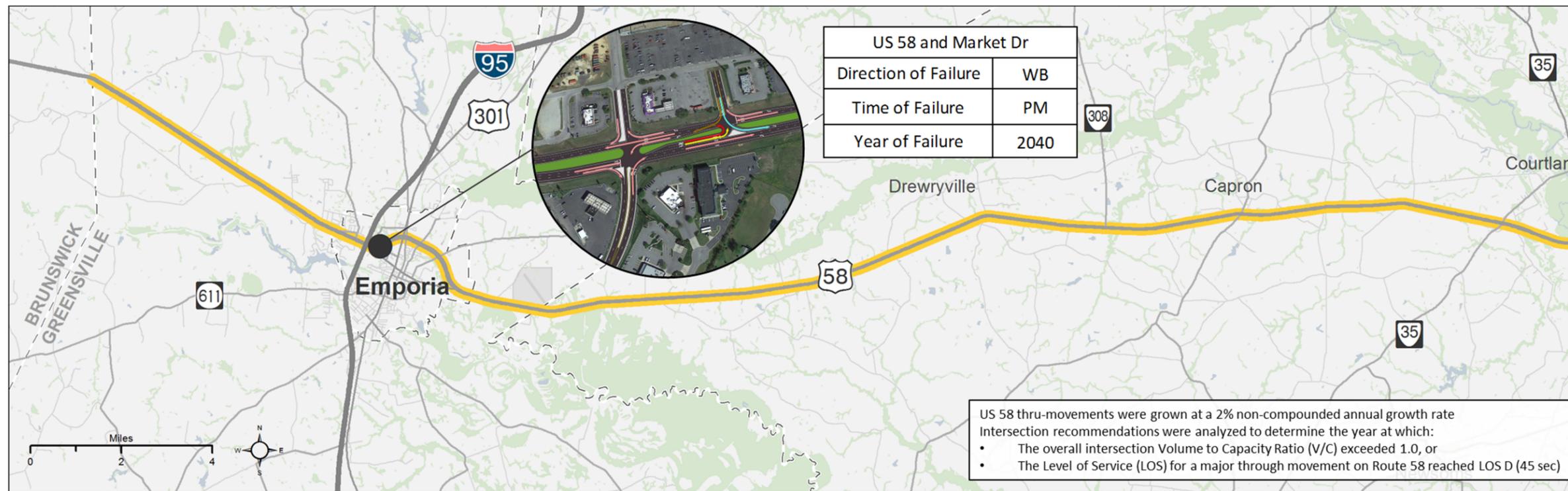
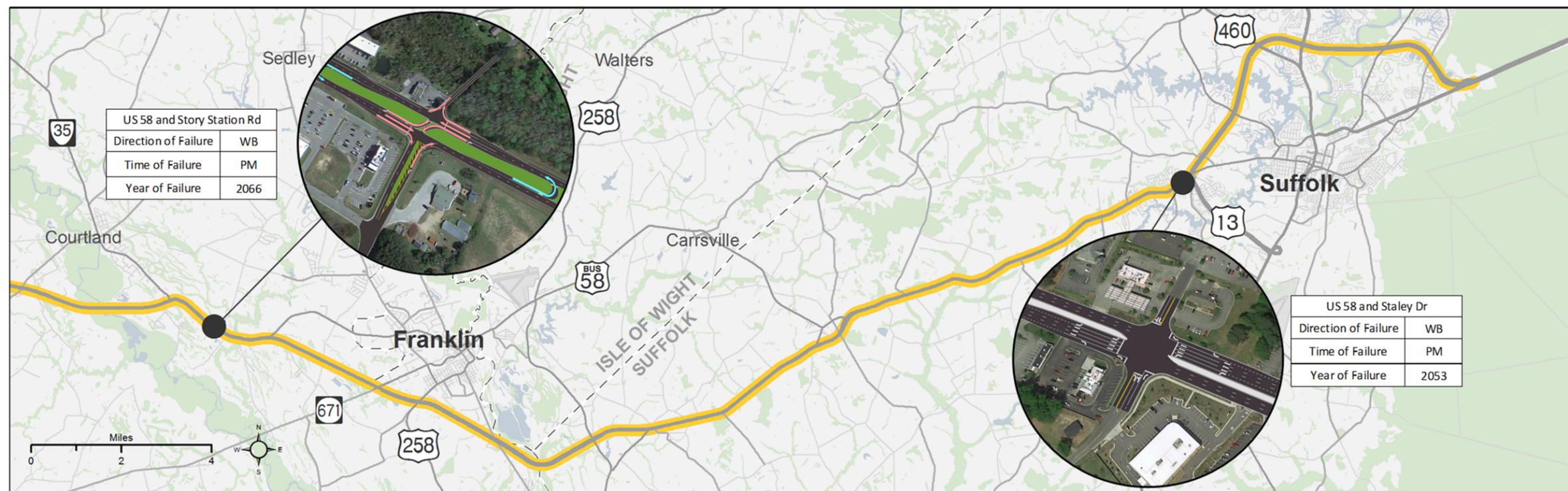
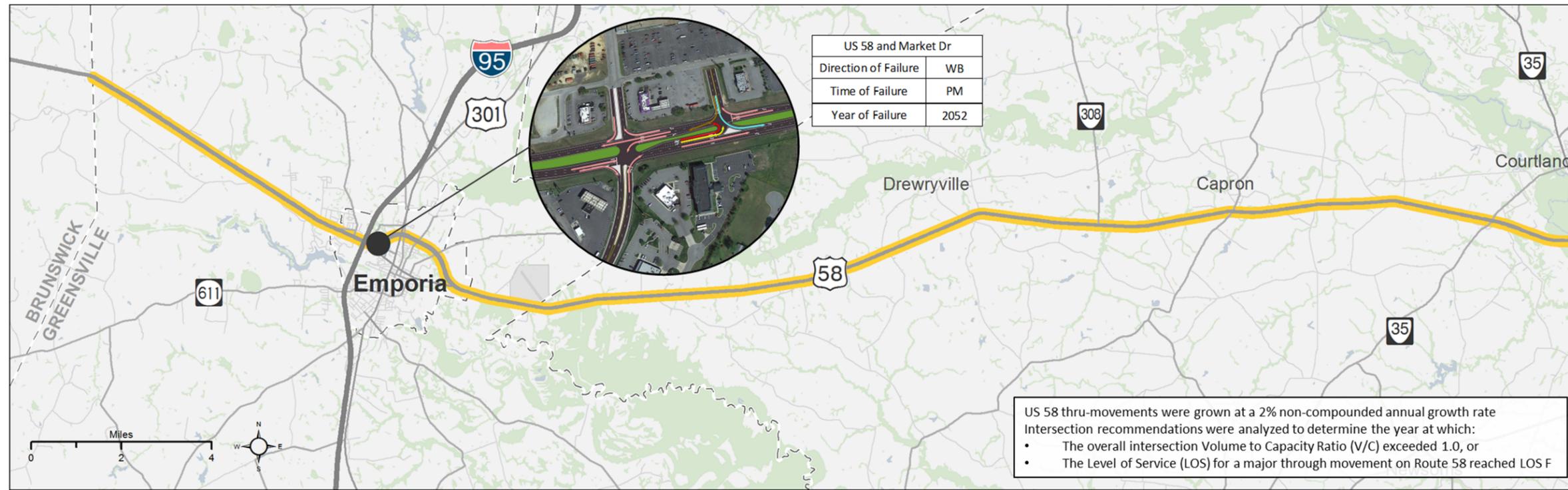


Figure 16: LOS F US 58 Sensitivity Analysis



7. Freeway Analysis

7.1 Freeway Analysis Process

A high-level fatal flaw analysis was conducted to help inform decision-makers if an additional study is justified for improving or relocating the US 58 corridor as a freeway or interstate facility. The intent of the analysis was to identify whether improving US 58 to freeway or interstate standards is practical from a travel time savings and cost basis prior to committing to further study.

Travel times were calculated for three scenarios based on an assumed speed for that facility type in a free-flow condition (improved limited access speed of up to 65 mph and interstate facility of 70 mph), existing corridor length, and adjusting the free-flow speed utilizing Streetlight data to incorporate delay. The three scenarios are as follows:

- Existing Facility
- Improved Limited Access
- Interstate Facility

Figure 17 on page 22 shows the results of the travel time analysis.

Finally, the estimated cost of the two alternatives were evaluated. Both the improved limited access and interstate facility's costs were developed using the VDOT TMPD Cost Estimate Spreadsheet tool.

The following assumption were made to develop the cost for the improved limited access facility:

- 18.9 miles of frontage roads
- 8 interchanges
- 70 miles of improved shoulder work
- 12.6 miles of geometric improvements
- Right of way costs

It should also be noted that, as per the project scope, the improved limited access facility analysis was performed on the existing alignment. Therefore, the segments from Ruritan Drive to US 301, which is already access controlled, and from Manning Bridge Road to the Suffolk bypass, where a widening project is moving forward, were retained as non-limited access. The results of the cost and travel time are shown in Table 13.

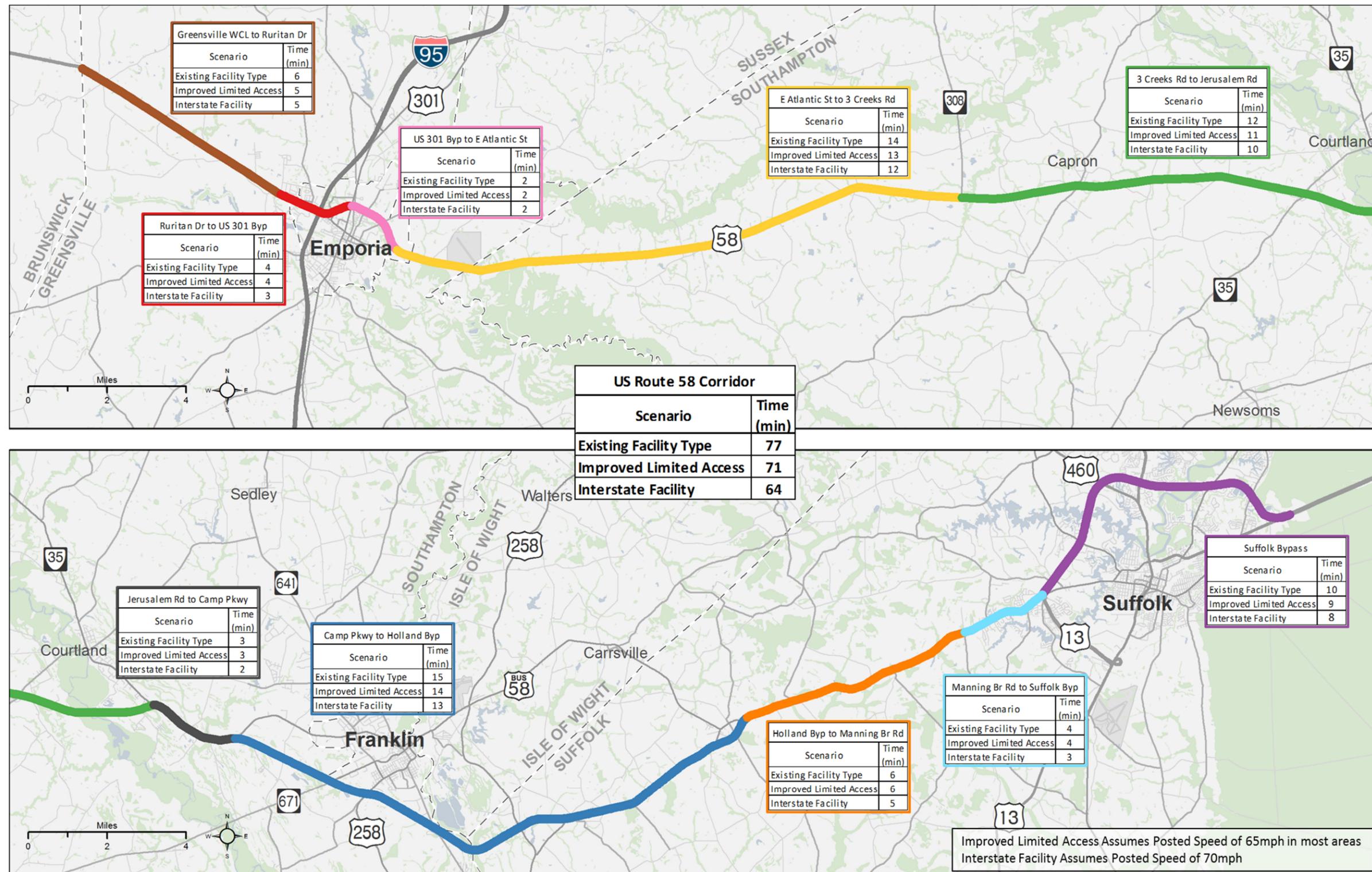
Table 13: US 58 Freeway Analysis - Travel Time versus Cost

Scenario	Travel Time (min)	Const. \$		Cost per Min of Time Savings	
		Low	High	Low	High
Existing Facility Type	77	-	-	-	-
Improved Limited Access	71	\$720 M	\$1.1 B	\$120 M	\$183 M
Interstate Facility	64	\$2.3 B	\$3.5 B	\$177 M	\$269 M

The results of this analysis indicate that a lower cost per minute of time savings can be achieved through an improved limited access facility versus an interstate facility. However, these are a range of estimated costs and benefits that do not consider different alignments, travel benefits for freight and employers/employees, and

reduced congestion on nearby facilities, such as I-64. Therefore, it is recommended that an additional study be conducted to evaluate specific benefits, alternative alignments, and impacts of the various alternatives.

Figure 17: US 58 Freeway Analysis Travel Time Result





US 58 Arterial Preservation Plan

VDOT – Hampton Roads District

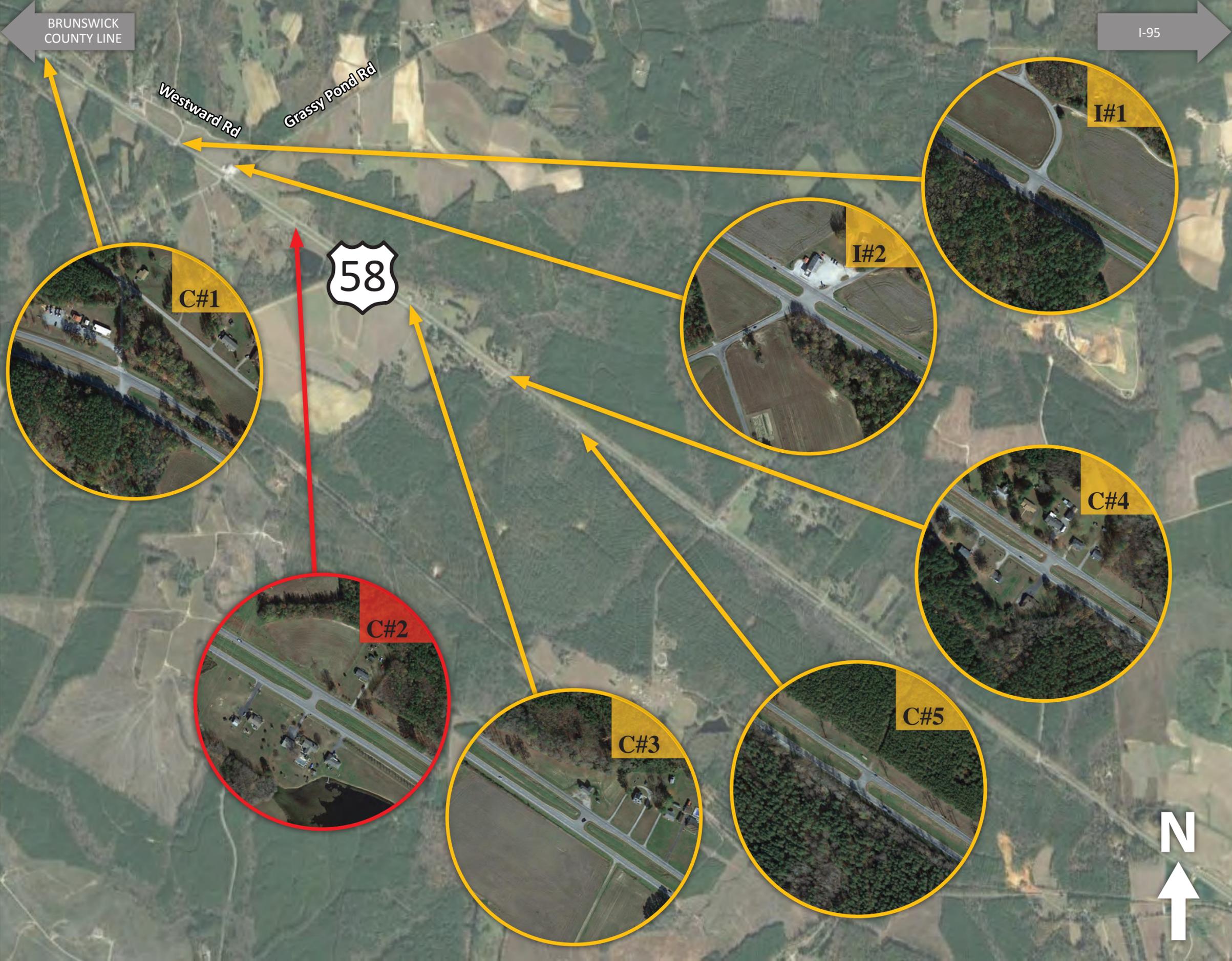
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Appendix A: US 58 Recommendations and Concepts

The recommendations of the US 58 Arterial Preservation Plan are presented on the following pages. Information on the development of the recommendations is available in section 5.1 of the US 58 Arterial Preservation Plan Report, “US 58 Corridor Recommendations”.



US 58 Arterial Preservation Plan

Figure 1

Intersections & Median Crossovers

Greenville County

- Intersection #
 C## - Crossover #

Crossover #1:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Intersection #1: Westward Rd with US 58
Recommendation: Reconfigure intersection to directional median to permit left-ins only from eastbound US 58. Right-in/right-outs are still permitted. Construct westbound right-turn lane on US 58
Cost: \$0.6M to \$0.8M

Intersection #2: Grassy Pond Rd with US 58
Recommendation: Lengthen all existing turn lanes on US 58. Construct westbound right-turn lane on US 58
Cost: \$1.1M to \$1.6M

Crossover #2:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #3:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #4:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5 to \$0.7

Crossover #5:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



BRUNSWICK COUNTY LINE

Grassy Pond Rd

I-95



Chapman's Ford Rd



I#3



C#6



C#7

US 58 Arterial Preservation Plan Figure 2 Intersections & Median Crossovers Greenville County

I## - Intersection #
C## - Crossover #

Intersection #3: Chapman's Ford with US 58
Recommendation: Lengthen all existing turn lanes on US 58. Construct eastbound right-turn lane on US 58
Cost: \$1.1M to \$1.6M

Crossover #6:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #7:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



BRUNSWICK COUNTY LINE

I-95

US 58 Arterial Preservation Plan Figure 3 Intersections & Median Crossovers Greenville County

- Intersection #
C## - Crossover #

- Intersection #4:** Maclins Creek Rd with US 58
Recommendation: Lengthen all existing turn lanes on US 58
Cost: \$1.1M to 1.6M
- Crossover #8:**
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M
- Crossover #9:**
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M
- Crossover #10:**
Recommendation: Reconfigure crossover to directional median to permit left-ins only from eastbound US 58. Right-in/right-outs are still permitted
Cost: \$0.3M to \$0.4M
- Crossover #11:**
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M
- Crossover #12:**
Recommendation: Remove crossover
Cost: \$0.3M \$0.4M
- Crossover #13:**
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

● No Recommendation ● Minor Improvement
● Recommended Removal ● Major Improvement



C#8

C#11

C#12

I#4

C#9

C#10

C#13



Maclins Creek Rd



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

US 58 Arterial Preservation Plan Figure 4 Intersections & Median Crossovers City of Emporia/Greenville County

- Intersection #
C## - Crossover #

Intersection #5-8:
Recommendation: Reconfigure area to consecutive RCUT intersections.

Intersection of Ruritan Dr (I#5) to be configured to main RCUT intersection. Construct u-turn area west and reconfigure existing intersection #6, to u-turn/left-in.

Intersection of Westover Dr (I#6) reconfigure existing intersection, to u-turn/left-in.

Intersection of Sadler Dr (I#7) to be configured to main RCUT intersection. Reconfigure existing intersection #6, to u-turn/left-in. Construct u-turn area east of main intersection.

Intersection of West End Dr (I#8) to be configured to main RCUT intersection. Construct u-turn area west of main intersection. Reconfigure existing crossover (C#15) to u-turn area.

Cost: \$2.1M to \$2.9M

Crossover #14:
Remove crossover

Crossover #15:
Recommendation: See Figure 7

Intersection #9: Purdy Rd with US 58
Recommendation: See Figure 7
Cost: \$2.0M to \$3.0M

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

US 58 Arterial Preservation Plan

Figure 5

Intersections & Median Crossovers

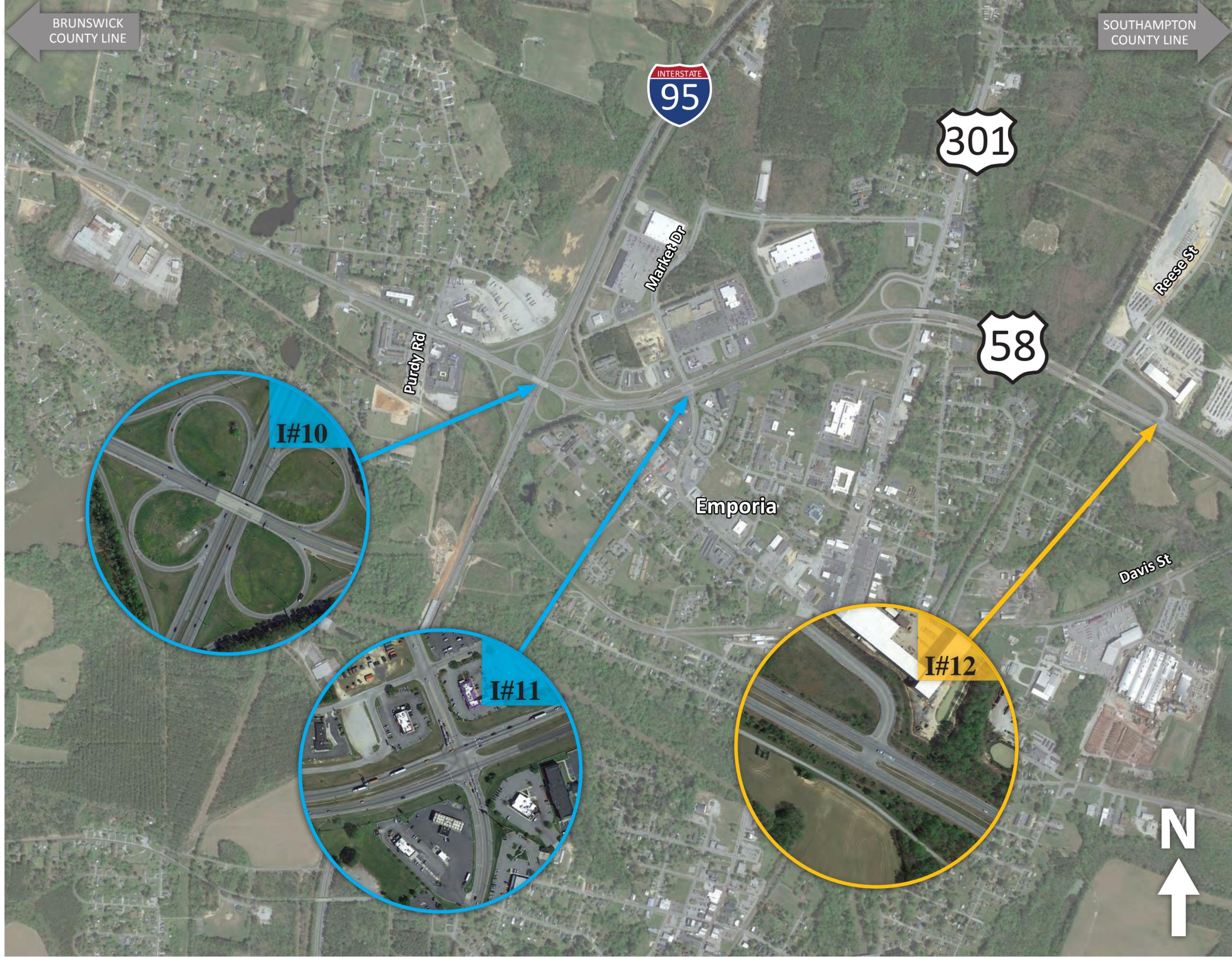
City of Emporia/Greenville County

I## - Intersection #
C## - Crossover #

Intersection #10: I-95 Interchange with US 58
Recommendation: See Figure 8. Configure interchange to Diverging Diamond Interchange (DDI) or Single-Point Urban Interchange (SPUI).
Cost: \$7.7M to \$9.6M(DDI)
Cost: \$9.0M to \$12.3M(SPUI)

Intersection #11: Market St with US 58
Recommendation: See Figure 9
Cost: \$3.1M to \$4.9M

Intersection #12: Reese St with US 58
Recommendation: Lengthen existing westbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

SEE FIGURE 7a/7b

SEE FIGURE 9

58

INTERSTATE 95

Purdy Rd

Market Dr

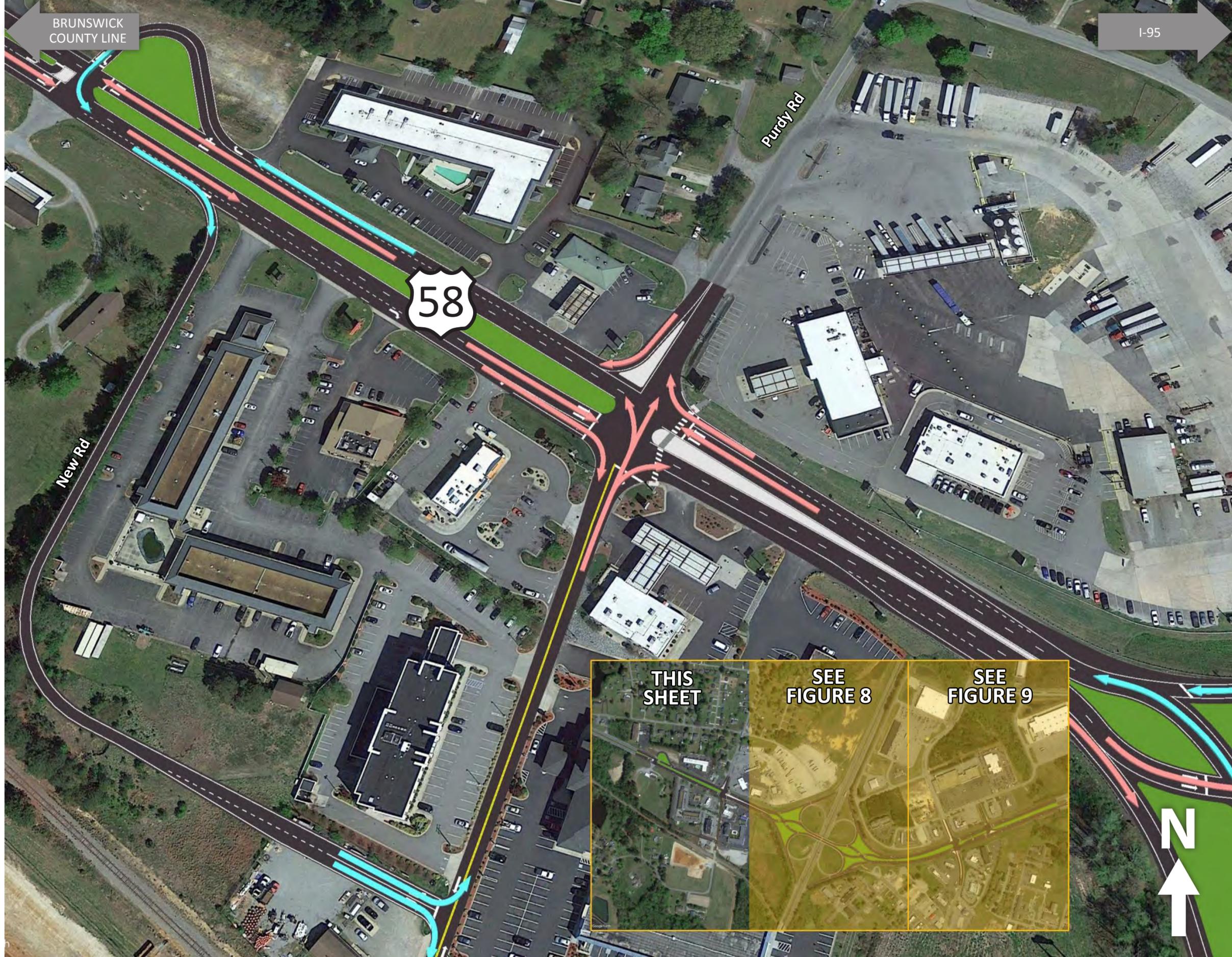
SEE FIGURE 8 FOR I-95 INTERCHANGE RECOMMENDATION

INTERSTATE 95



US 58 Arterial Preservation Plan
Figure 6
I-95 Area Summary





US 58 Arterial Preservation Plan

Figure 7a

Intersection #9: US 58 and Purdy Rd Option 1 of 2: City of Emporia

Recommendation: Reconfigure intersection to remove left-turns on US 58 and Purdy Rd southbound. Construct Jug-handle west of main intersection. Construct New Rd around development in southwest corner. Widen Wiggins Road to accommodate trucks (pictured left).

ROW Impacts: Jug-handle and New Rd will require land acquisition. ROW may be required to widen Wiggins Road to accommodate trucks. The main intersection will require little to no land acquisition, as most of this will be new lane markings.

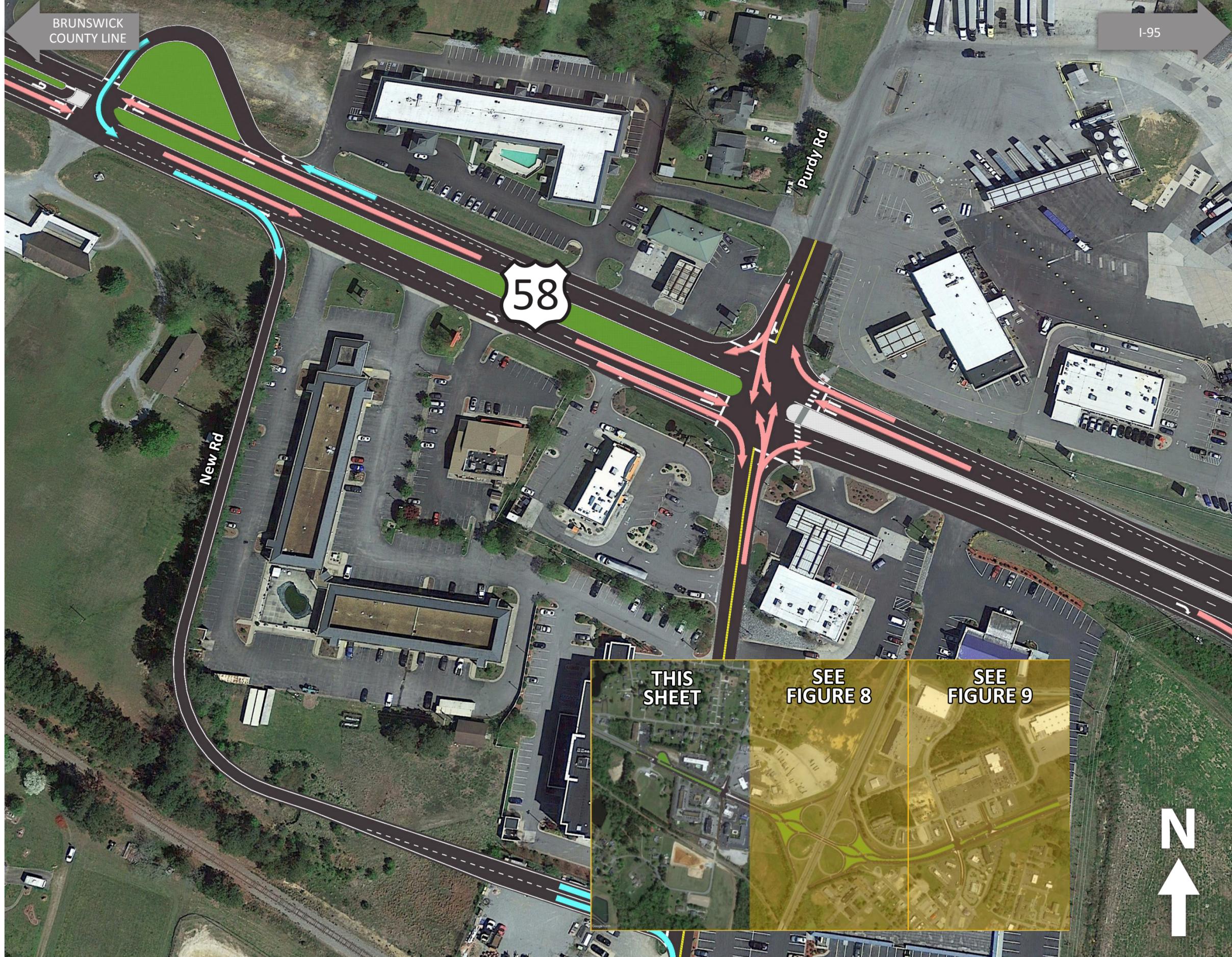
Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	25.7 - C	28.0 - C
2040 No Build Conditions (Conventional Intersection)	21.5 - C	67.4 - E
2040 Build Conditions	19.2 - B	17.4 - B

Cost: \$2.0M to \$3.0M





US 58 Arterial Preservation Plan
Figure 7b
Intersection #9: US 58 and Purdy Rd
Option 2 of 2: City of Emporia

Recommendation: Reconfigure intersection to remove left-turns on US 58 and Purdy Rd southbound. Construct Jug-handle west of main intersection. Construct New Rd around development in southwest corner. Widen Wiggins Road to accommodate trucks (pictured left).

ROW Impacts: Jug-handle and New Rd will require land acquisition. ROW may be required to widen Wiggins Road to accommodate trucks. The main intersection will require little to no land acquisition, as most of this will be new lane markings.

Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	25.7 - C	28.0 - C
2040 No Build Conditions (Conventional Intersection)	21.5 - C	67.4 - E
2040 Build Conditions	20.6 - C	32.9 - C

Cost: \$2.0M to \$3.0M

 Standard Movements
 Rerouted Movements



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE



Option 1: DDI

Option 2: SPUI

US 58 Arterial Preservation Plan Figure 8 Intersection #10: US 58 and I-95 City of Emporia

Recommendation: Option one will be to reconfigure interchange to Diverging Diamond Interchange (DDI) (pictured left). Option two will be to reconfigure interchange to Single Point Urban Interchange (SPUI) (inset)

Impacts: Requires minimal configuration to existing I-95 ramps and bridge. In addition, two signals at both ends of the US 58 bridge will require signalization to permit crossover.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations: Minimal Improvements

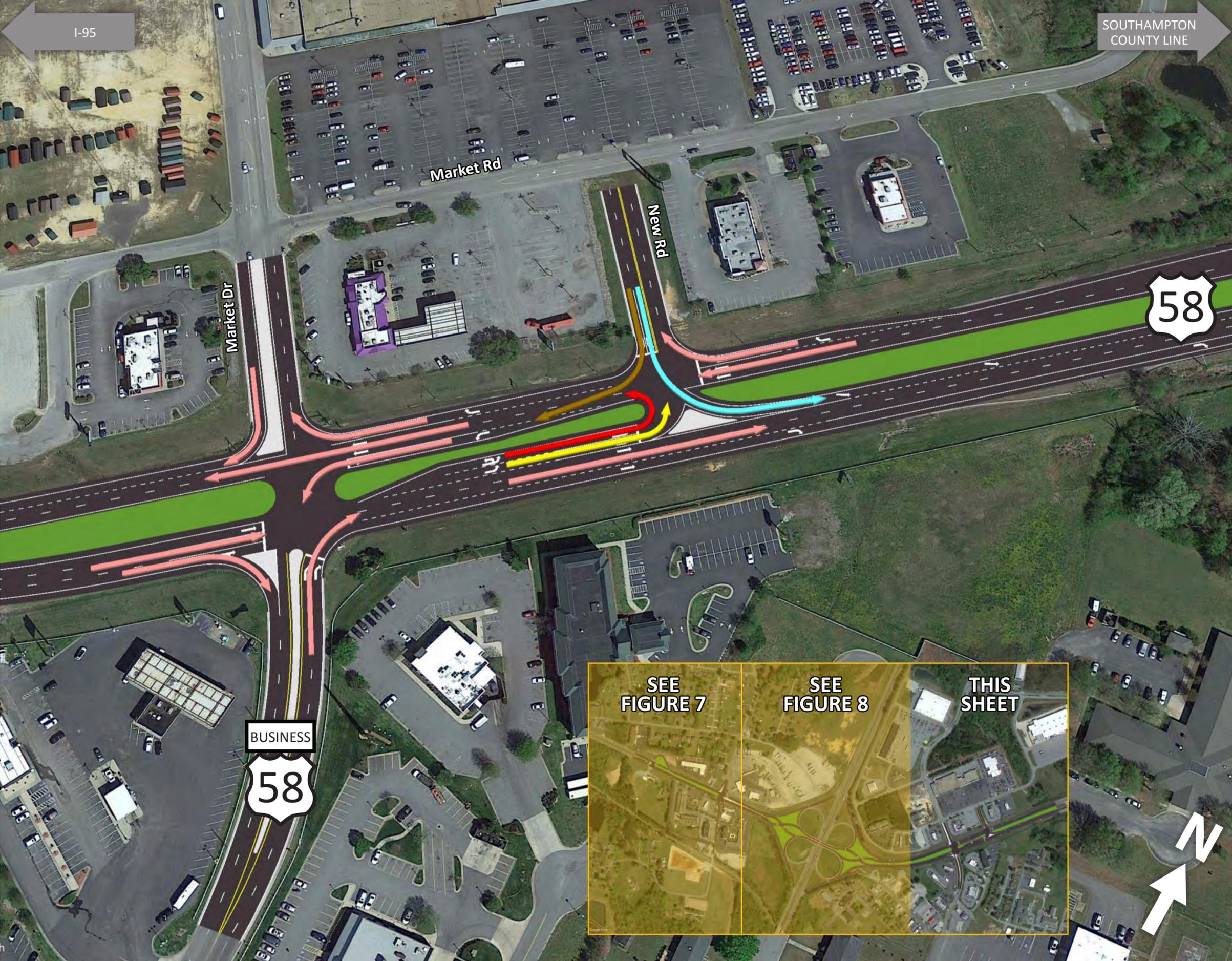
Safety: Traffic entering and exiting freeway does not cross opposing lanes of traffic. Reduced number of conflict points where vehicles cross.

Cost: \$7.7M to \$9.6M (DDI)
Cost: \$9.0M to \$12.3M (SPUI)



Eastbound US 58 Traffic (red arrow)
Westbound US 58 Traffic (cyan arrow)





US 58 Arterial Preservation Plan
Figure 9
Intersection #11: US 58 and Market Dr
City of Emporia

Recommendation: Reconfigure intersections to coordinated signalized intersections. The westbound direction at Market Dr and the eastbound direction at New Rd will be free-flow. Construct new intersection east of Market Dr and US 58 to include Continuous Green-T for southbound left-turns and u-turn area for US 58 Business left-turns onto US 58 (pictured left).

ROW Impacts: Land acquisition will be required for new intersection and connection to Market Rd. Market Rd between New Rd and Market Dr will require improvements.

Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	25.6 - C	32.3 - C
2040 No Build Conditions (Conventional Intersection)	27.4 - C	87.9 - F
2040 Build Conditions	19.9 - B	31.0 - C

Cost: \$3.1M to \$4.9M

-  Standard Movements
-  Southbound Market Dr to Eastbound US 58
-  Southbound Market Dr to US 58 Business
-  Northbound US 58 Business to Westbound US 58
-  Northbound US 58 Business & Eastbound US 58 To Market Dr



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

US 58 Arterial Preservation Plan Figure 10 Intersections & Median Crossovers City of Emporia/Greenville County

- Intersection #
C## - Crossover #

Intersection #13: SR 611 with US 58
Recommendation: Lengthen existing eastbound left and right-turn lanes on US 58. Sight-distance is inadequate looking westbound.
Cost: \$0.8M to \$1.2M

Crossover #16:
Recommendation: Sign for "Authorized Vehicles Only"

Intersection #14: E Atlantic St with US 58
Recommendation: Lengthen existing right-turn lanes on US 58
Cost: \$0.6M to \$0.9M

Crossover #17:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #18:
Recommendation: Construct right-turn lanes on US 58
Cost: \$0.6M to \$0.9M

Crossover #19:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Intersection #15: James River Jct with US 58
Recommendation: Lengthen existing westbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



Davis St

I#13

C#17

C#18

I#15

E Atlantic St

C#16

James River JCT

I#14

C#19



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

US 58 Arterial Preservation Plan

Figure 11

Intersections & Median Crossovers

City of Emporia/Greenville County

I## - Intersection #
C## - Crossover #

Crossover #20:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #21:
Recommendation: Lengthen existing westbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Intersection #16: Airport Dr with US 58
Recommendation: Lengthen existing westbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #22:
Recommendation: Reconfigure crossover to directional median to permit left-ins only from westbound US 58. Right-in/right-outs are still permitted
Cost: \$0.3M to \$0.4M

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



E Atlantic St

Airport Dr

C#20

C#21

C#22

I#16



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 12 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Crossover #23:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #24:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #25:
Recommendation: No Recommendation

Crossover #26:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

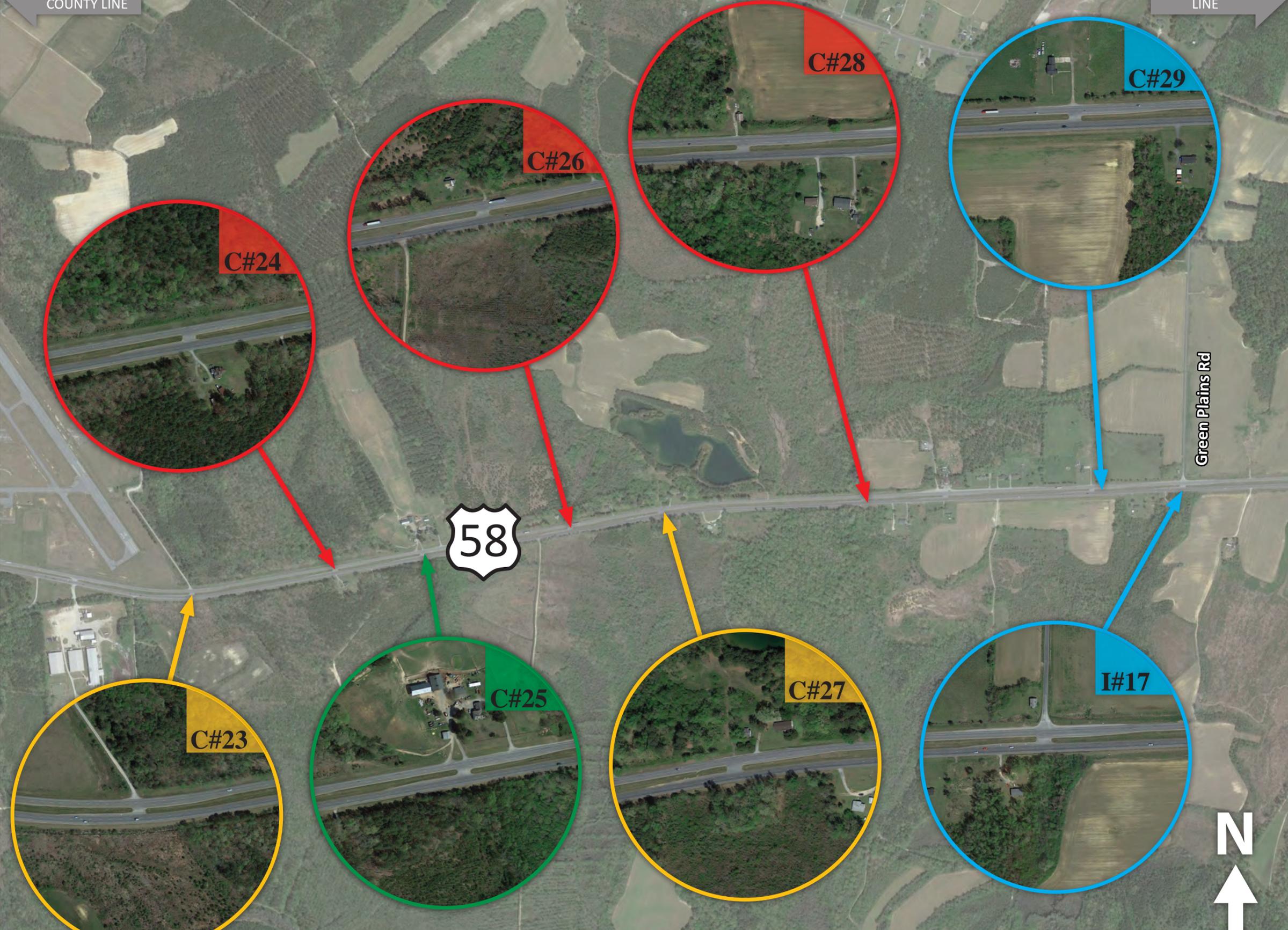
Crossover #27:
Recommendation: Lengthen existing eastbound left-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #28:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #29:
See Intersection #17

Intersection #17: Green Plains Rd with US 58
Recommendation: Reconfigure to RCUT. Reconfigure Crossover #29 to u-turn area. Reconfigure Green Plains Rd intersection (I#17) to main RCUT intersection. Construct u-turn area east of main intersection.
Cost: \$0.8M to \$1.1M

- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan

Figure 13

Intersections & Median Crossovers Southampton County

I## - Intersection #

C## - Crossover #

Intersection #18: Hicks Ford Rd with US 58
Recommendation: Reconfigure to RCUT. Reconfigure Crossover #30 to u-turn area. Reconfigure Hicks Ford Rd intersection (I#18) to main RCUT intersection. Construct u-turn area west of main intersection.
Cost: \$1.0M to \$1.5M

Crossover #30:
Recommendation: See Intersection #18

Crossover #31:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #32:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #33:
Recommendation: Lengthen existing eastbound left-turn lane on US 58
Cost: \$0.3M to \$0.4M

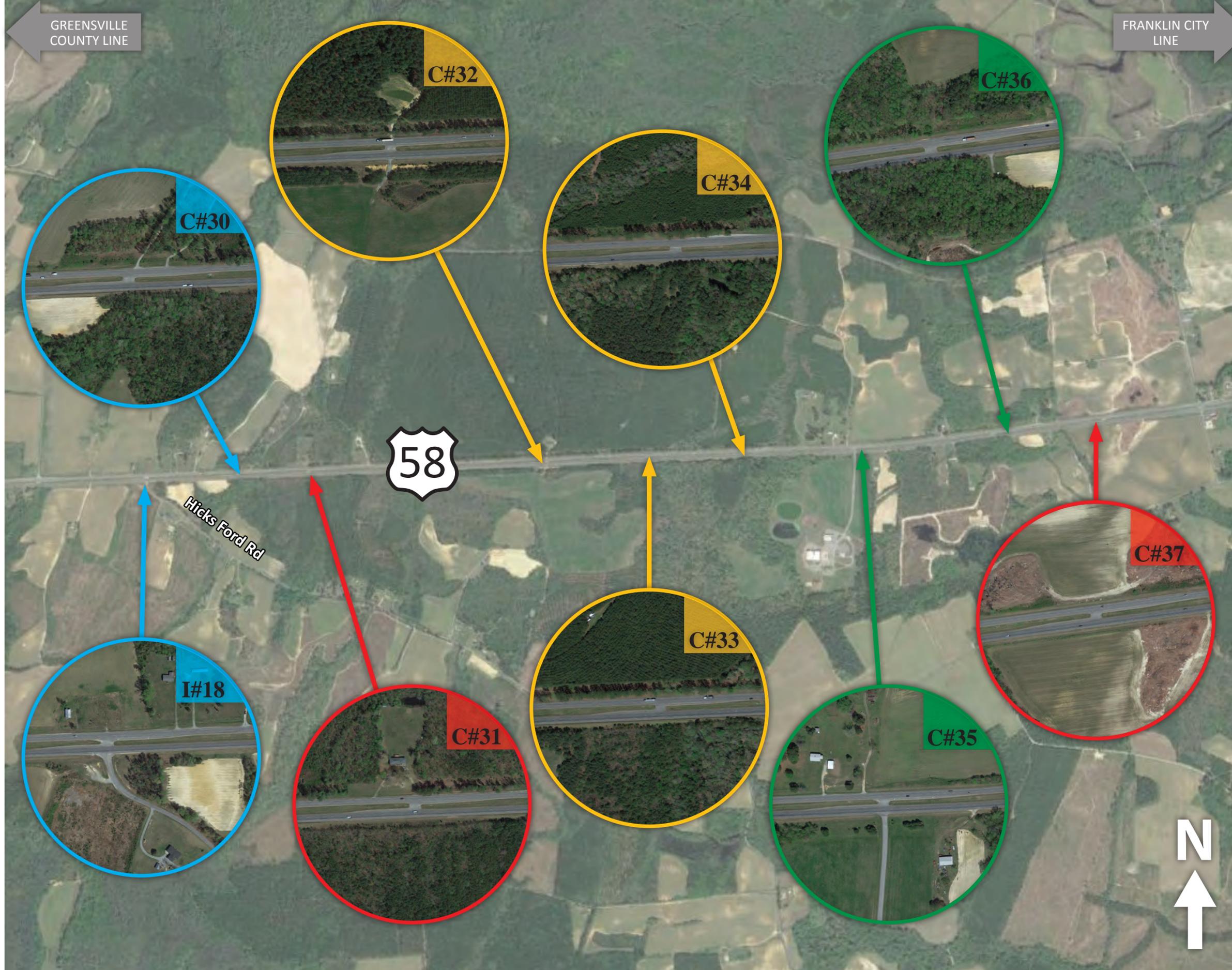
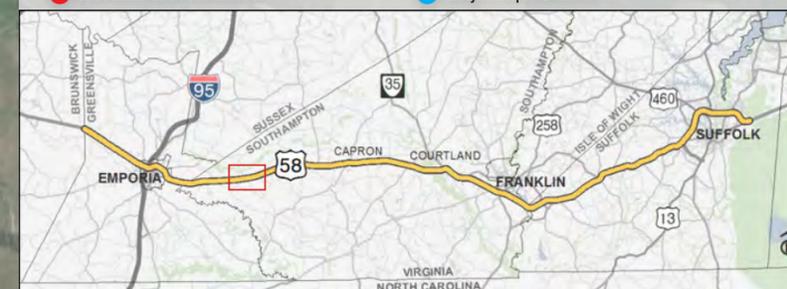
Crossover #34:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5 to \$0.7

Crossover #35:
Recommendation: No recommendation

Crossover #36:
Recommendation: No recommendation

Crossover #37:
Recommendation: Remove crossover

- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 14 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

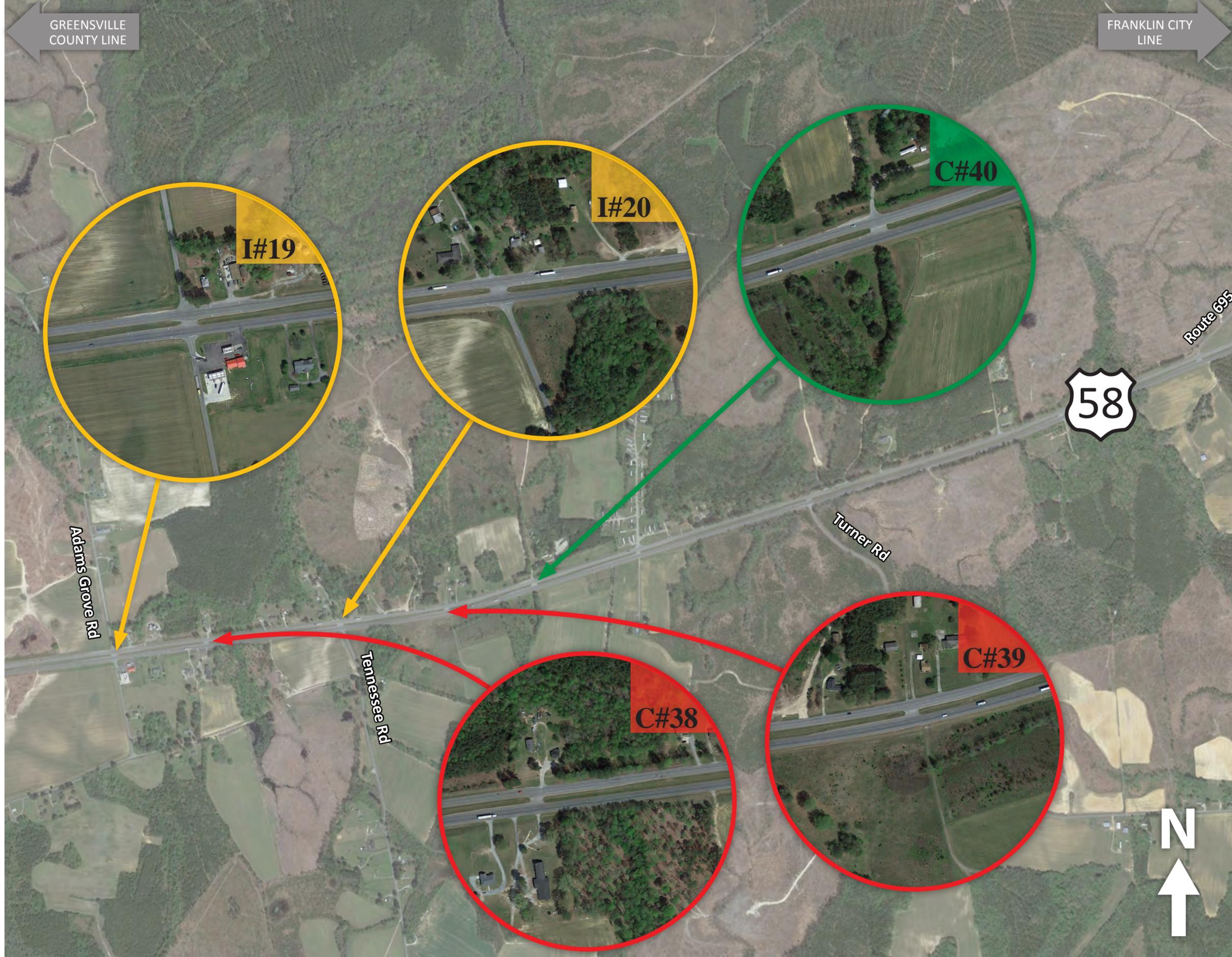
Intersection #19: Adams Grove Rd with US 58
Recommendation: Lengthen existing eastbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #38:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Intersection #20: Tennessee Rd with US 58
Recommendation: Lengthen existing eastbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #39:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #40:
Recommendation: No Recommendation



● No Recommendation	● Minor Improvement
● Recommended Removal	● Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 15 Intersections & Median Crossovers Southampton County

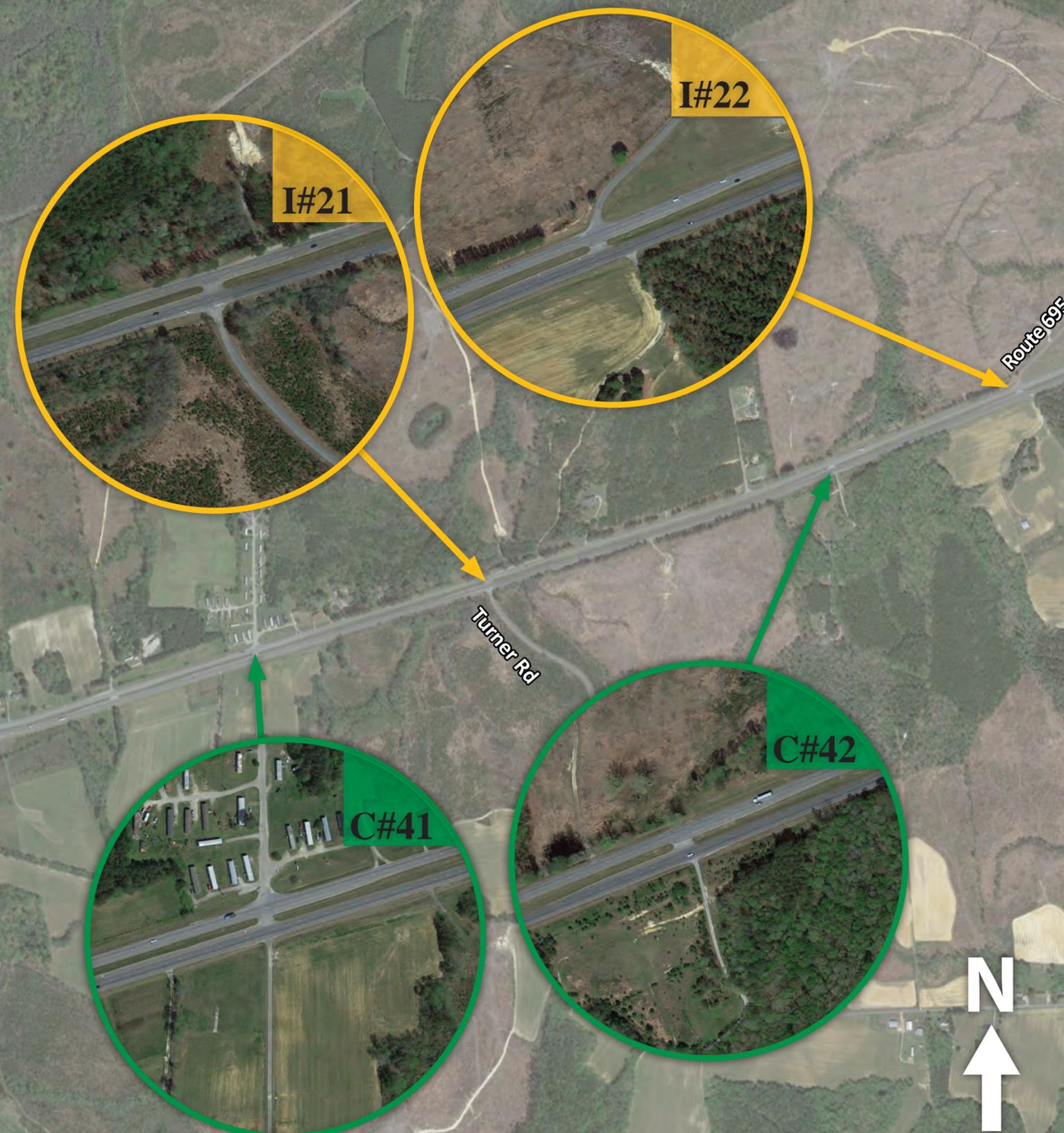
I## - Intersection #
C## - Crossover #

Crossover #41:
Recommendation: No Recommendation

Intersection #21: Turner Rd with US 58
Recommendation: Lengthen existing eastbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #42:
Recommendation: No Recommendation

Intersection #22: Route 695/Old Belfield Rd with US 58
Recommendation: Reconfigure intersection to directional median to permit left-ins only from eastbound US 58. Right-in/right-outs are still permitted. Construct westbound right-turn on US 58.
Cost: \$0.6M to \$0.8M



Green circle: No Recommendation
Red circle: Recommended Removal
Yellow circle: Minor Improvement
Blue circle: Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 16 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

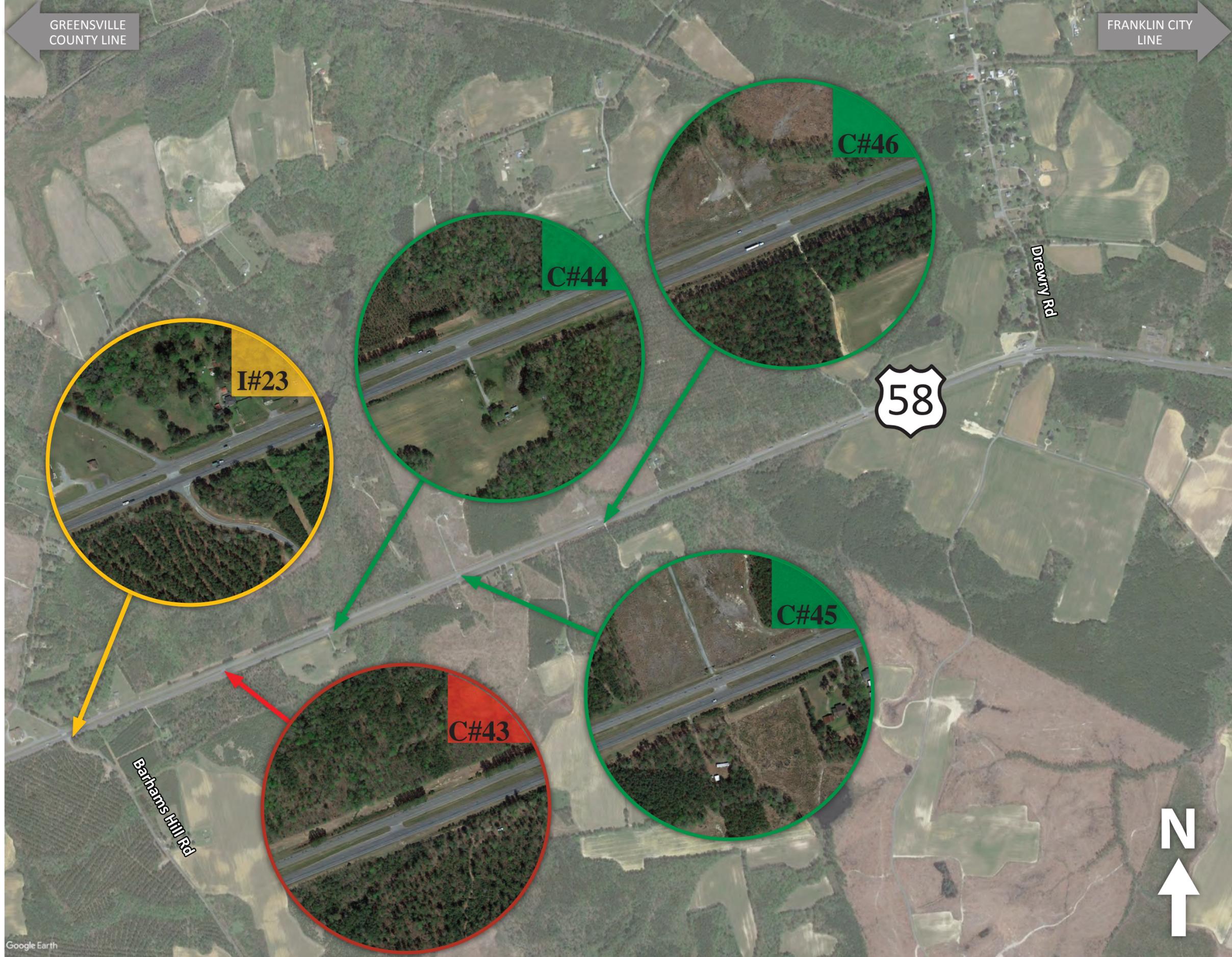
Intersection #23: Barhams Hill Rd with US 58
Recommendation: Construct right-turn lanes on US 58
Cost: \$0.6M to \$0.9M

Crossover #43:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

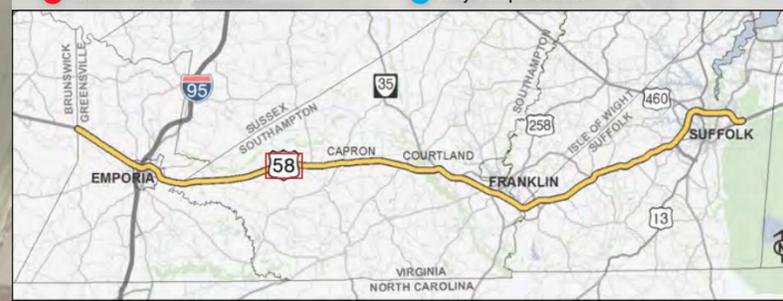
Crossover #44:
Recommendation: No Recommendation

Crossover #45:
Recommendation: No Recommendation

Crossover #46:
Recommendation: No Recommendation



Green circle: No Recommendation
Red circle: Recommended Removal
Yellow circle: Minor Improvement
Blue circle: Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 17 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

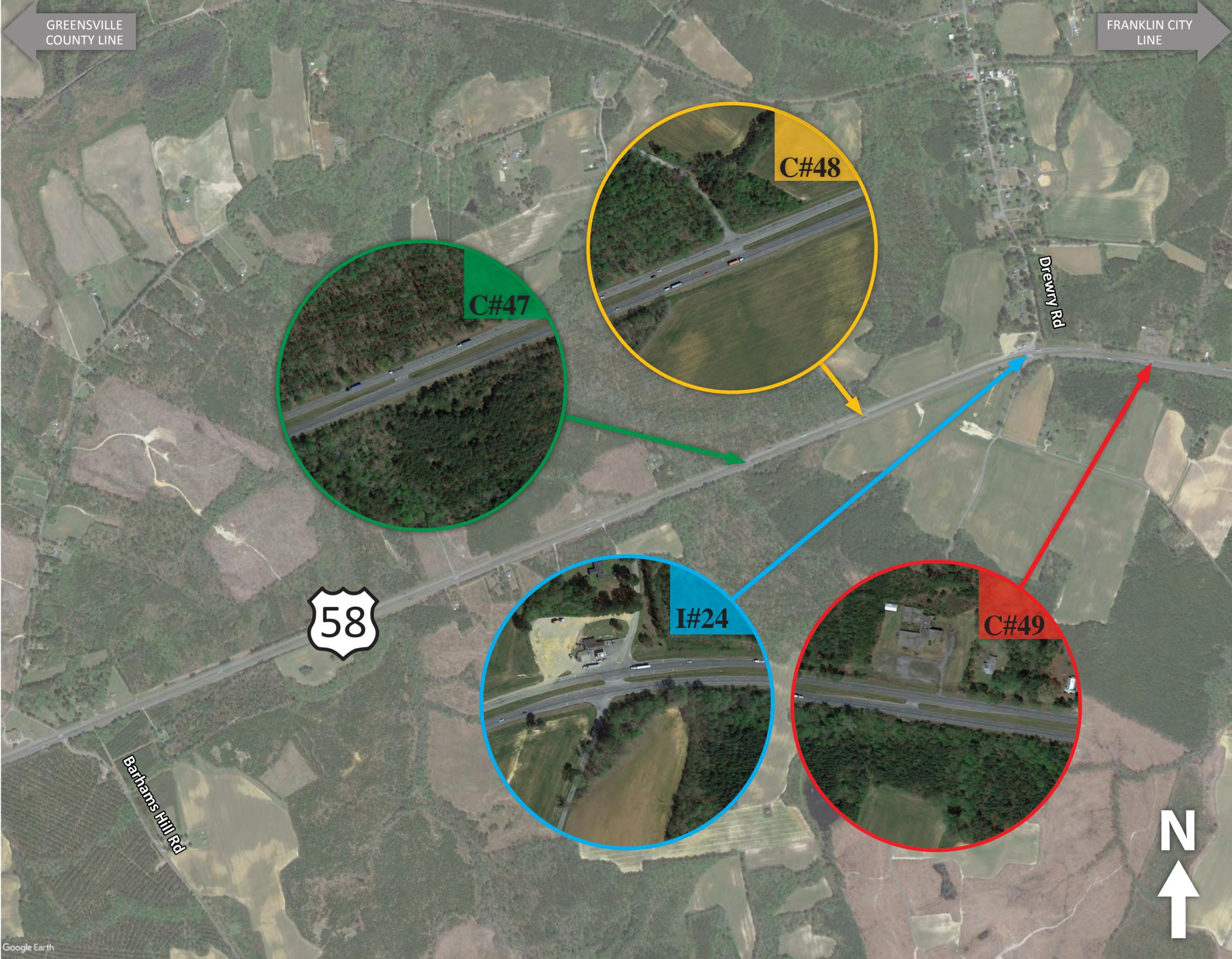
Crossover #47:
Recommendation: No Recommendation

Crossover #48:
Recommendation: Construct westbound right-turn lane on US 58
Cost: \$0.3M to \$0.4M

Intersection #24: Drewry Rd with US 58
Recommendation: See Figure 18
Cost: \$1.7M to \$2.3M

Crossover #49:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

● No Recommendation ● Minor Improvement
● Recommended Removal ● Major Improvement





US 58 Arterial Preservation Plan

Figure 18

Intersection #24: US 58 and Drewry Rd Southampton County

Recommendation: Reconfigure intersection of US 58 and Drewry Rd to Restricted Crossing U-Turn (RCUT). Construct u-turn areas with loons east and west of intersection at Drewry Rd and US 58. Extend existing right turn lanes on US 58 to u-turn areas. Construct acceleration lane for southbound Drewry Rd to westbound US 58. Reconstruct all existing turn lanes to VDOT design standards.

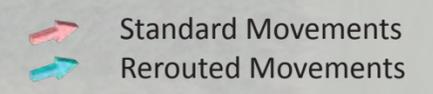
ROW Impacts: Minimal land acquisition and disturbance. Loons and turn lane work may require minimal land acquisition.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations	Minimal Improvements
Safety	Reduced conflict points where vehicles cross paths. Reduced risk of head-on collisions.

Cost: \$1.7M to \$2.3M



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 19 Intersections & Median Crossovers Southampton County

- Intersection #
C## - Crossover #

Crossover #50:
Recommendation: No Recommendation

Crossover #51:
Recommendation: No Recommendation

Crossover #52:
Recommendation: No Recommendation

Crossover #53:
Recommendation: No Recommendation

Crossover #54:
Recommendation: No Recommendation

Crossover #55:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Intersection #25: 3 Creeks Rd with US 58
Recommendation: No Recommendation



C#50



C#52



C#54



I#25

3 Creeks Rd



C#51



C#53



C#55



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 20 Intersections & Median Crossovers Southampton County

- Intersection #
C## - Crossover #

Crossover #56:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #57:
Recommendation: No Recommendation

Intersection #26: Angelico Rd with US 58
Recommendation: Lengthen existing right and left eastbound turn lanes on US 58. Construct westbound right-turn lane on US 58
Cost: \$0.8M to \$1.2M

Crossover #58:
Recommendation: No Recommendation

Crossover #59:
Recommendation: No Recommendation

Crossover #60:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



Capron

Old Lamb Rd

Main St



Angelico Rd



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 21 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Crossover #61:
Recommendation: No Recommendation

Crossover #62:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Intersection #27: Old Lamb Rd with US 58
Recommendation: Lengthen existing right and left eastbound turn lanes on US 58. Construct westbound right-turn lane on US 58
Cost: \$0.8M to \$1.2M



Capron

Old Lamb Rd

Main St

58

Angelic Rd



Green circle: No Recommendation
Red circle: Recommended Removal
Yellow circle: Minor Improvement
Blue circle: Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 22 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Intersection #28-29: Main St with US 58
Recommendation: Reconfigure to RCUT. Reconfigure Main St intersection (I#28) to main RCUT intersection. Reconfigure Meadow St intersection (I#29) to u-turn area. Construct u-turn area west of main intersection.
Cost: \$1.2M to \$1.8M

Crossover #63:
Recommendation: No Recommendation

Crossover #64:
Recommendation: No Recommendation

Intersection #30: Rawlings Rd with US 58
Recommendation: Construct right-turn lanes on US 58
Cost: \$0.6M to \$0.9M

Crossover #65:
Recommendation: No Recommendation



Green circle: No Recommendation
Red circle: Recommended Removal
Yellow circle: Minor Improvement
Blue circle: Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 23 Intersections & Median Crossovers Southampton County

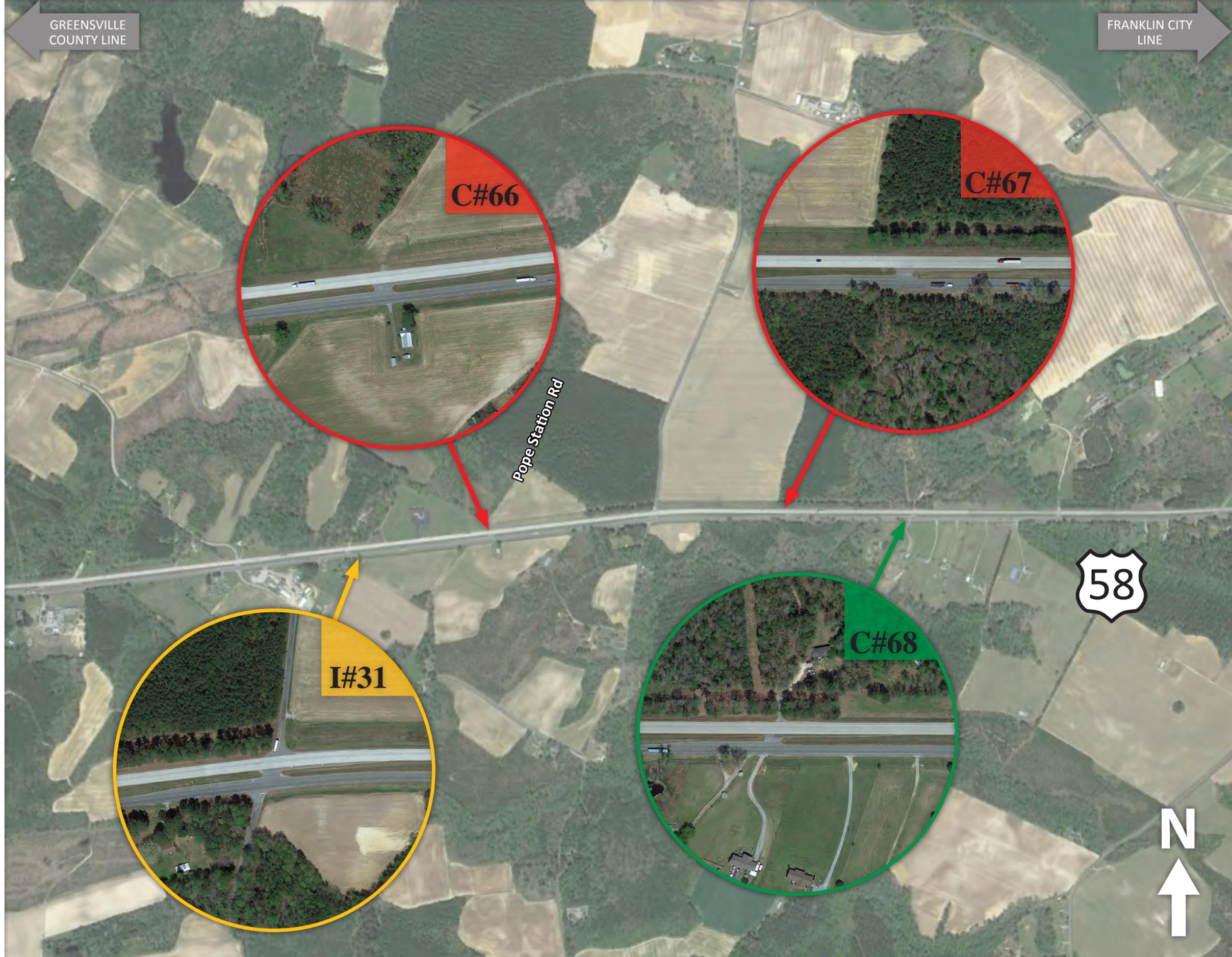
I## - Intersection #
C## - Crossover #

Crossover #66:
Recommendation: Remove crossover
Cost: \$0.3 to \$0.4

Intersection #31: Pope Station Rd with US 58
Recommendation: Construct right-turn lanes on US 58
Cost: 0.6M to \$0.9M

Crossover #67:
Recommendation: Remove crossover
Cost: \$0.3 to \$0.4M

Crossover #68:
Recommendation: No Recommendation



● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 24 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Crossover #69:
Recommendation: Remove crossover
Cost: \$0.3 to \$0.4M

Crossover #70:
Recommendation: No Recommendation

Intersection #32: Buckhorn Quarter Rd with US 58
Recommendation: No Recommendation

Intersection #33: Medicine Springs Rd with US 58
Recommendation: No Recommendation

Crossover #71:
Recommendation: No Recommendation

Crossover #72:
Recommendation: No Recommendation

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



C#70

I#32

C#71

Buckhorn Quarter Rd

Medicine Springs Rd

58

C#69

I#33

C#72



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 25 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Crossover #73:
Recommendation: See Figures 26 and 27
Cost:
CGT: \$0.9M to \$1.2M
New Access Road: \$3.1M to \$4.0M

Crossover #74:
Recommendation: Sign for "Authorized Vehicles Only"

Meherrin Rd



C#74

C#73



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

Install physical barrier to prevent vehicles exiting ramp from turning left at CGT



Southampton High School

Meherrin Rd

US 58 Arterial Preservation Plan Figure 26 Crossover #73 Option #1: Continuous Green-T Southampton County

Recommendation: Reconfigure crossover at Southampton High School and US 58 to Continuous Green-T (CGT). Extend all existing turn lanes on US 58 to VDOT design standards.

ROW Impacts: Little to no land acquisition as the majority of work will occur in the existing ROW.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

- Traffic Operations: CGT improves delay for westbound US 58 turning movements from Southampton High School
- Safety: CGT reduces conflict points for vehicles traveling westbound US 58

Cost: \$0.9M to \$1.2M

- Standard Movements (Red arrow)
- Rerouted Movements Entering High School (Cyan arrow)



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

58

Southampton High School

Meherrin Rd

US 58 Arterial Preservation Plan

Figure 27

Crossover #73

Option #2: New Access Road

Southampton County

Recommendation: Remove crossover and left-turn on US 58 westbound across from Southampton High School. Construct new road around school in the southwest corner.

ROW Impacts: Significant land acquisition and disturbance will be required to construct new road.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations Increased capacity for vehicles exiting the school going westbound US 58 and onto Meherrin Rd.

Safety Eliminates weave section between Meherrin Ramp onto US 58 westbound. Reduced risk of crashes since new road intersects with lower speed and volume Meherrin Road. Reduced cut-through traffic through bus loading area.

Cost: \$3.1M to \$4.0M

-  Standard Movements
-  Rerouted Movements Entering High School
-  Rerouted Movements Exiting High School



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 28 Intersections & Median Crossovers Southampton County

- Intersection #
C## - Crossover #

Crossover #75:
Recommendation: Courtland Interchange project underway – UPC 17728

Intersection #34: Jerusalem Rd with US 58
Recommendation: Courtland Interchange project underway – UPC 17728

Crossover #76-79:
Recommendation: See Figures 29, 30 and 31
Cost: \$8.7M to \$11.4M

Intersection #35: Story Station Rd with US 58
Recommendation: See Figures 30 and 32
Cost: \$1.2M to \$1.8M

Crossover #80:
Recommendation: Sign for "Authorized Vehicles Only"



Jerusalem Rd

Story Station Rd



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



C#75

C#76

C#78

I#35

C#80

I#34

C#77

C#79

GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan

Figure 29

Crossovers #76 to #79: Option 1

Southampton County

Recommendation: Widen eastbound US 58 lanes to construct continuous right-turn lane through to the intersection of Story Station Rd and US 58. Removal and realignment of traffic markings on eastbound US 58 will be necessary to accommodate right-turn lane. Reconfigure the three crossovers to directional medians.

ROW Impacts: Minimal land acquisition as most of the widening is within ROW

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations

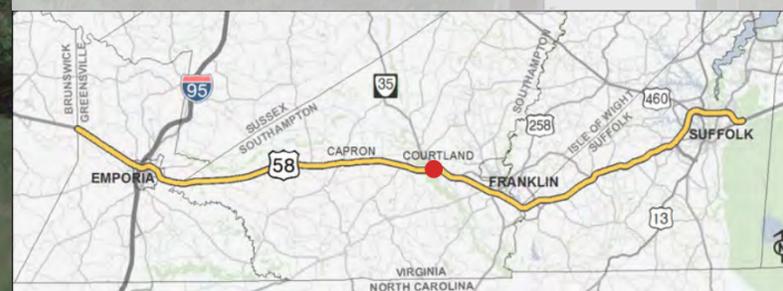
Less stops and slow-downs caused by vehicles turning right on eastbound US 58

Safety

Providing a right-turn lane decreases the risk and frequency of rear-end crashes. Directional medians reduce the number of permitted movements, thus decreasing number of conflicts that may occur.

Cost: \$3.7M to \$4.9M

Standard Movements



GREENSVILLE
COUNTY LINE

FRANKLIN CITY
LINE

SEE
FIGURE 31

SEE
FIGURE 32
(Independent
Project)

58

To Old Bridge Rd

Story Station Rd

US 58 Arterial Preservation Plan
Figure 30
Courtland Area Summary - Option 2



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan

Figure 31

Crossovers #76 to #79: Option 2

Southampton County

Recommendation: Realign US 58 to reduce commercial access points on US 58 eastbound. Construct westbound two-lane roadway north of existing US 58 alignment. Realign US 58 eastbound lanes onto existing US 58 westbound lanes. Utilize existing US 58 eastbound lanes for frontage road and construct extension to Old Bridge Rd. Construct Continuous Green-T (CGT) intersection with frontage road.

ROW Impacts: Significant land acquisition and disturbance will be required to realign US 58 and frontage road extension to Old Bridge Rd.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations

CGT improves delay for westbound US 58 turning movements from frontage road

Safety

Realignment eliminates multiple commercial access points reducing conflicts from turning vehicles. Realignment also permits for safer travel of higher speeds. CGT reduces conflict points for vehicles traveling westbound US 58

Cost: \$8.7M to \$11.4M



THIS SHEET

SEE FIGURE 32



Standard Movements



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan
Figure 32
Intersection #35: US 58 and Story Station Rd
Southampton County

Recommendation: Reconfigure main intersection of US 58 and Story Station Rd to signalized Restricted Crossing U-Turn (RCUT). Construct u-turn areas east and west of existing intersection.

ROW Impacts: Little to no land acquisition as the majority of work is within the existing ROW.

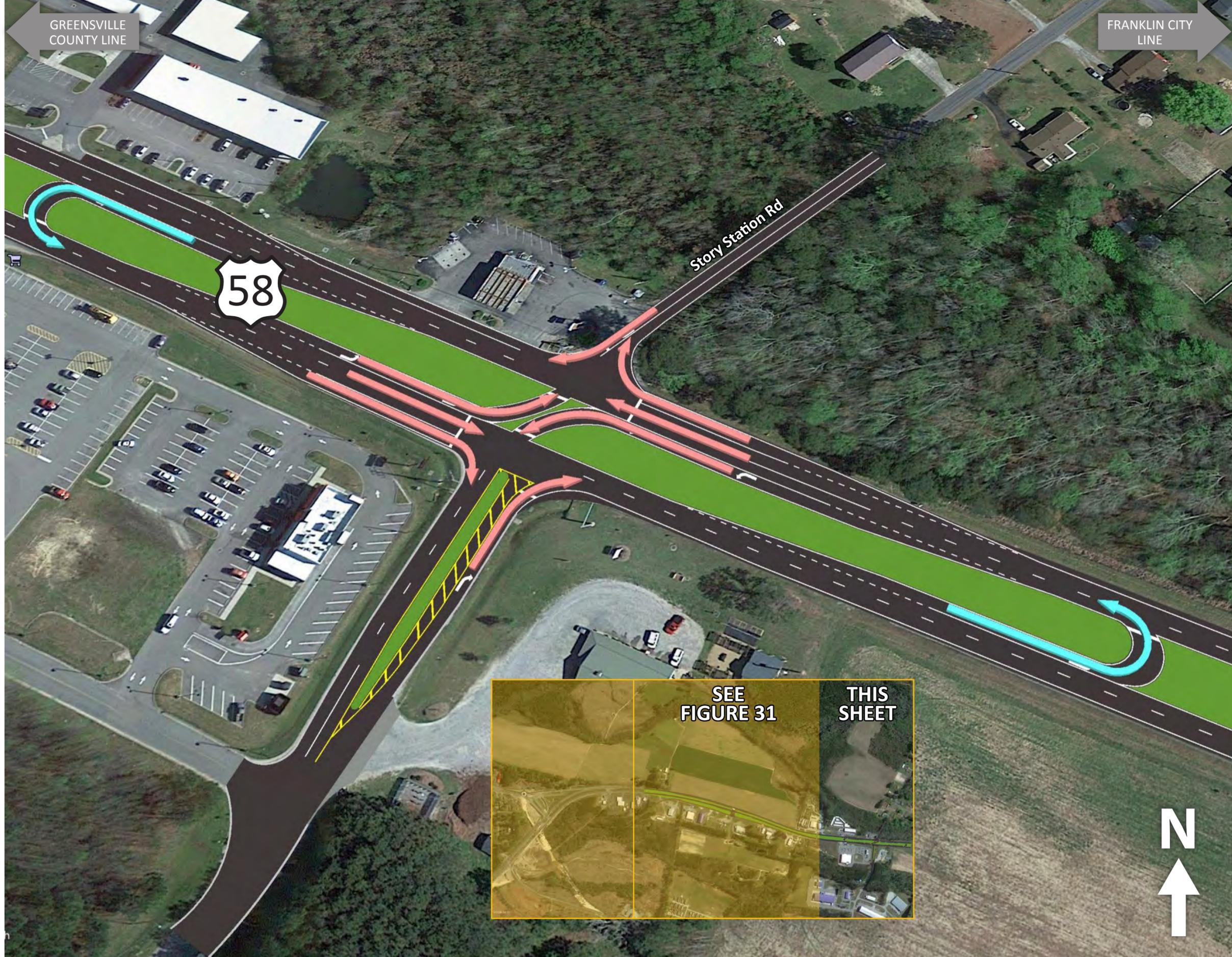
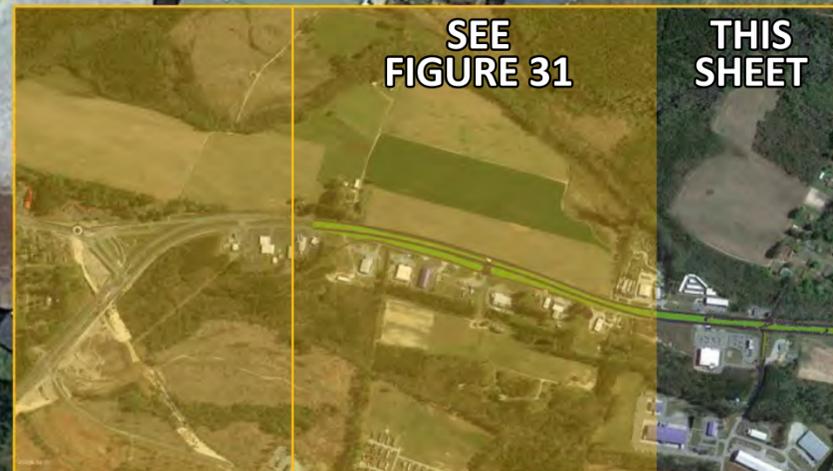
Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	18.2 - B	19.6 - B
2040 No Build Conditions (Conventional Intersection)	19.4 - B	23.5 - C
2040 Build Conditions	14.0 - B	12.0 - B

Cost: \$1.2M to \$1.8M

Standard Movements
 Rerouted Movements



GREENSVILLE COUNTY LINE

FRANKLIN CITY LINE

US 58 Arterial Preservation Plan Figure 33 Intersections & Median Crossovers Southampton County

I## - Intersection #
C## - Crossover #

Intersection #36: Shady Brook Tr with US 58
Recommendation: Reconfigure intersection to directional median permitting left-turns in only from westbound US 58. Lengthen westbound left-turn lane on US 58.
Cost: \$0.3M to \$0.4M

Intersection #37: New Market Rd with US 58
Recommendation: Lengthen westbound left- turn lane on US 58. Construct eastbound right-turn lane on US 58
Cost: \$0.5 to \$0.8M

Crossover #81:
Recommendation: Remove crossover
Cost: \$0.3M to \$1.2M

Intersection #38: Camp Pkwy with US 58
Recommendation: See Figure 34
Cost: \$0.8M to \$1.2M



● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement





US 58 Arterial Preservation Plan
Figure 34
Intersection #38: US 58 and Camp Pkwy
Southampton County

Recommendation: Reconfigure intersection of US 58 and Camp Pkwy to signaled Continuous Green-T (CGT)

ROW Impacts: Little to no land acquisition as the majority of work within the existing ROW.

Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	18.2 - B	19.6 - B
2040 No Build Conditions (Conventional Intersection)	12.9 - B	22.3 - C
2040 Build Conditions	12.0 - B	9.4 - A

Cost: \$0.8M to \$1.2M

 Standard Movements



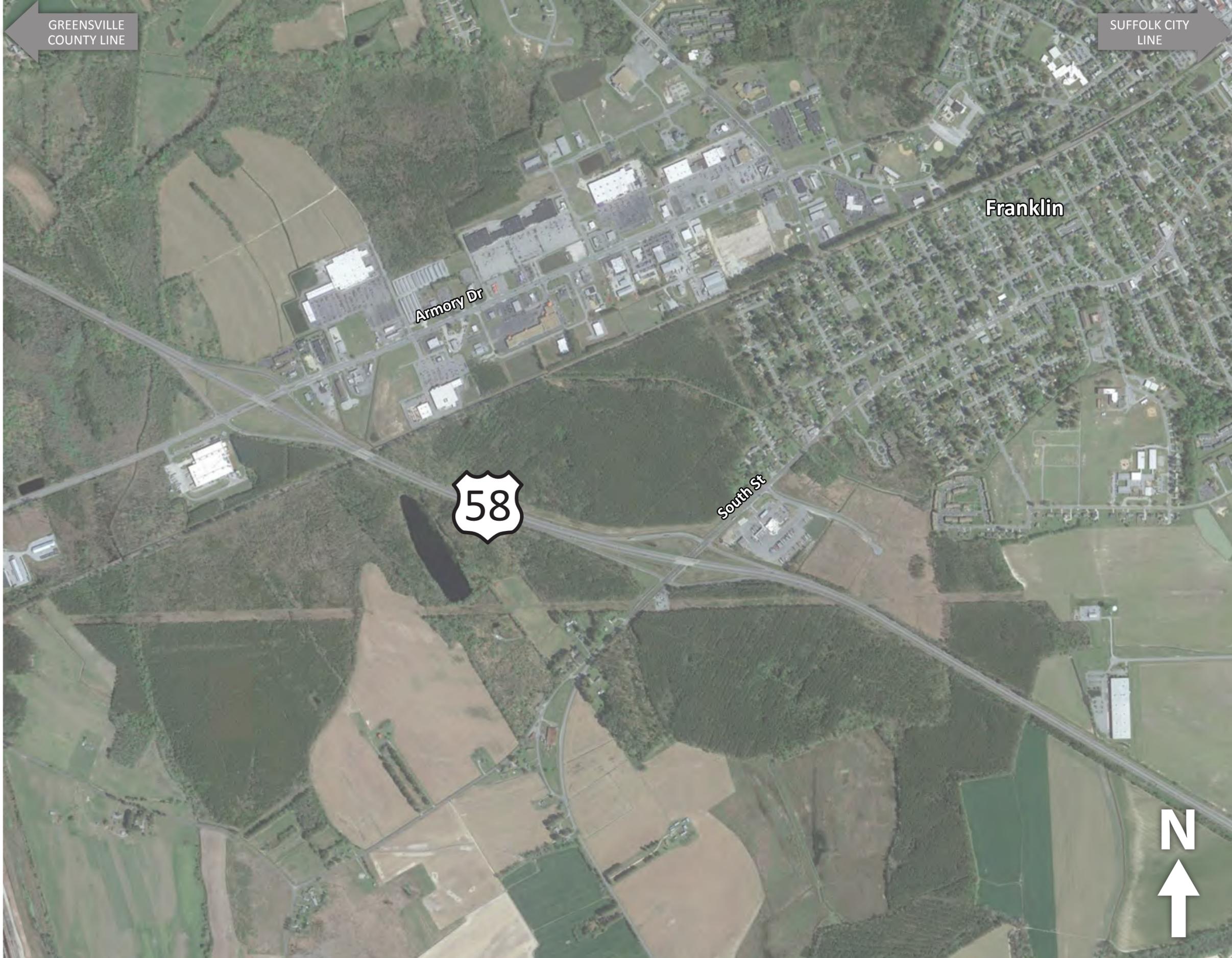
GREENSVILLE COUNTY LINE

SUFFOLK CITY LINE

US 58 Arterial Preservation Plan Figure 35 Intersections & Median Crossovers Southampton County/City of Franklin

- Intersection #
C## - Crossover #

No recommendations for the Franklin Bypass



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 36 Intersections & Median Crossovers City of Suffolk

I## - Intersection #
C## - Crossover #

No recommendations for the Franklin Bypass

Pretlow Rd



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 37

Intersections & Median Crossovers

City of Suffolk

I## - Intersection #

C## - Crossover #

Intersection #39-40:

Recommendation: See Figure 38
Cost: \$1.1M to \$1.3M

Crossover #82:

Recommendation: See Figure 38

Crossover #83:

Recommendation: No Recommendation

Intersection #41: S Quay Rd with US 58

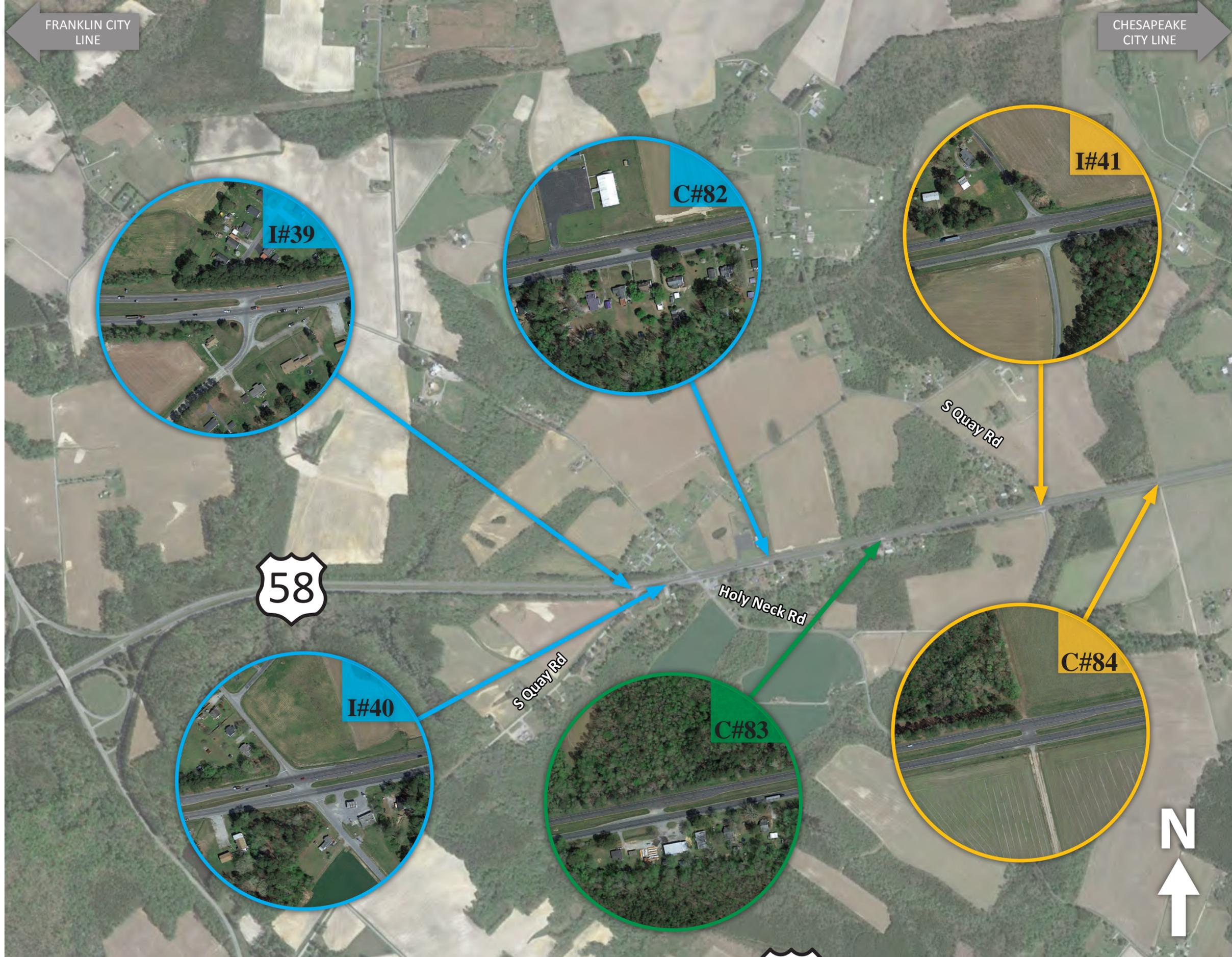
Recommendation: Lengthen all existing turn lanes on US 58
Cost: \$1.1M to \$1.6M

Crossover #84:

Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

● No Recommendation
● Recommended Removal

● Minor Improvement
● Major Improvement



I#39

C#82

I#41

I#40

C#83

C#84

S Quay Rd

Holy Neck Rd

S Quay Rd

FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 38

Intersection #39: US 58 and S Quay Rd

Intersection #40: US 58 and Holy Neck Rd

City of Suffolk

Recommendation: Reconfigure area to Restricted Crossing U-turn (RCUT). Reconfigure intersection of S Quay Rd with US 58 to permit left and u-turns only from westbound US 58 and right ins/outs of S Quay Rd. Reconfigure intersection of US 58 and Holy Neck Rd to main RCUT intersection. Reconfigure crossover east of main intersection to u-turn area.

ROW Impacts: Little to no land acquisition as the majority of work within the existing ROW.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations Minimal Improvements

Safety Reduced conflict points where vehicles cross paths. Reduced risk of head-on collisions.

Cost: \$1.0M to \$1.3M



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 39 Intersections & Median Crossovers City of Suffolk

I## - Intersection #

C## - Crossover #

Intersection #42: Leafwood Rd with US 58
Recommendation: Lengthen existing left-turn lanes on US 58. Construct eastbound right-turn lane on US 58
Cost: \$0.8M to \$1.1M

Crossover #85:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Intersection #43: Elwood Rd with US 58
Recommendation: Lengthen existing left-turn lanes on US 58. Construct westbound right-turn lane on US 58
Cost: \$0.8M to \$1.1M

Crossover #86:
Recommendation: Lengthen existing left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #87:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M



Brentwood Rd

Elwood Rd

Leafwood Rd



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 40 Intersections & Median Crossovers City of Suffolk

I## - Intersection #
C## - Crossover #

Intersection #44: Brentwood Rd with US 58
Recommendation: Lengthen all existing turn lanes on US 58
Cost: \$1.1M to \$1.6M

Crossover #88:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #89:
Recommendation: No Recommendation

I#44

C#88

C#89

Brentwood Rd

Elwood Rd

Leafwood Rd



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 41

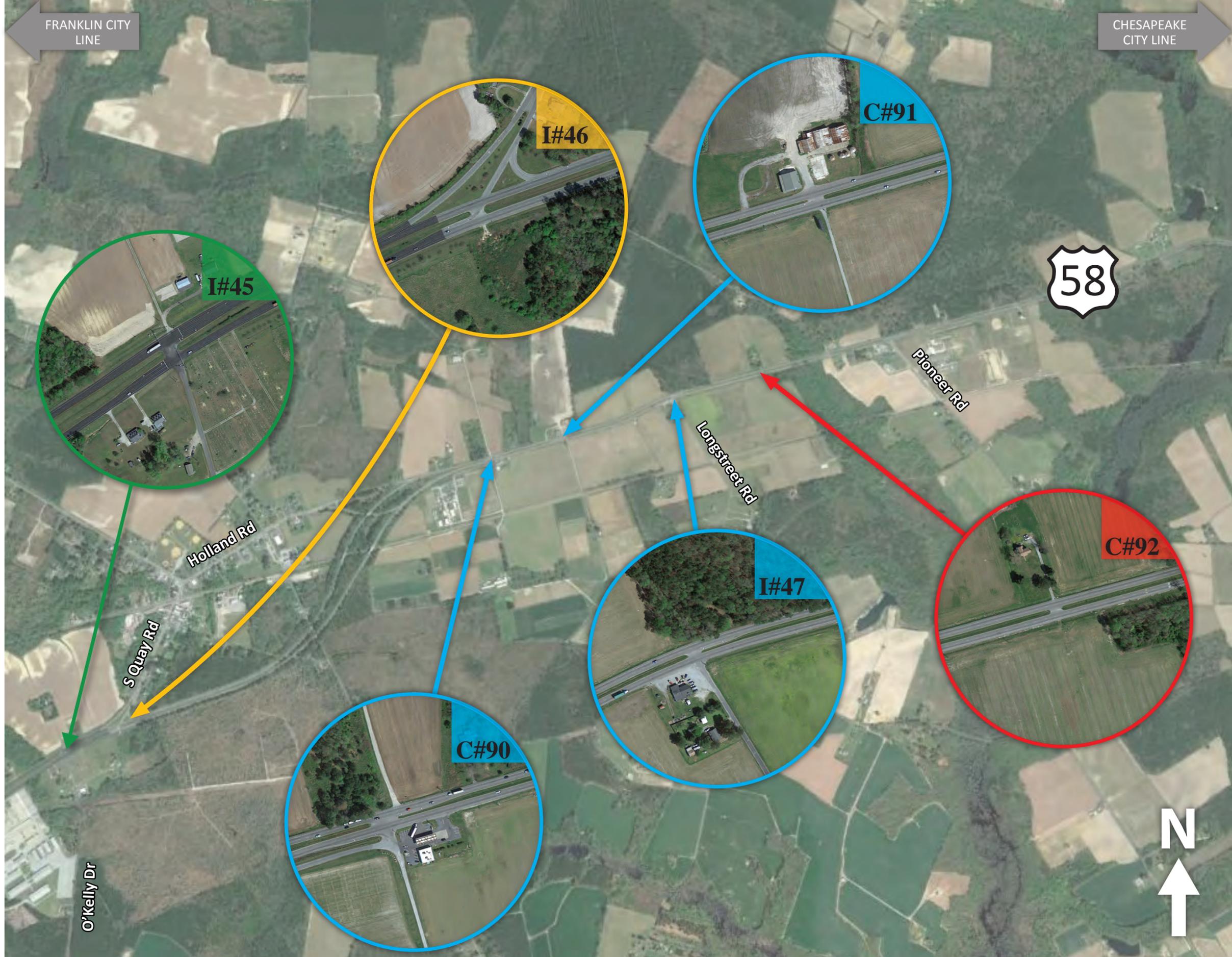
Intersections & Median Crossovers City of Suffolk

I## - Intersection #
C## - Crossover #

Intersection #45-46:
Recommendation: Intersections recommended for additional study (See Appendix J for study concept)

Crossover #90-92:
Recommendation: See Figures 44 and 45

Intersection #47: Longstreet Ln with US 58
Recommendation: See Figure 46
Cost: \$1.2M to \$1.9M



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 42 Intersections & Median Crossovers City of Suffolk

- Intersection #
C## - Crossover #

Crossover #93:
Recommendation: Reconfigure crossover to directional median to permit left-ins only from eastbound US 58. Right-in/right-outs are still permitted.
Cost: \$0.3M to \$0.4M

Intersection #48: Pioneer Rd with US 58
Recommendation: No recommendation

Crossover #94:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #95:
Recommendation: Sign for "Authorized Vehicles Only"



Pioneer Rd

Longstreet Rd

Holland Rd

S Quay Rd

O'Kelly Dr



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

SEE FIGURE 44

SEE FIGURE 46



SEE FIGURE 45 FOR REALIGNMENT RECOMMENDATION

US 58 Arterial Preservation Plan
Figure 43
Holland Bypass Area Summary



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 44

Crossover #90

City of Suffolk

Recommendation: Reconfigure crossover #90 to Restricted Crossing U-Turn (RCUT). Reconfigure existing crossover #91 to u-turn area west of intersection. Utilize eastbound US 58 on-ramp as u-turn area (see inset). Extend all existing turn lanes on US 58 to VDOT design standards

ROW Impacts: Minimal land acquisition may be required for loons and right-turn lanes.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations: Minimal Improvements

Safety: Reduced conflict points where vehicles cross paths. Reduced risk of head-on collisions.

Cost:
Total Project: \$4.7M to \$6.5M
Crossover #90 RCUT: \$0.8M to \$1.1M

Standard Movements
Rerouted Movements



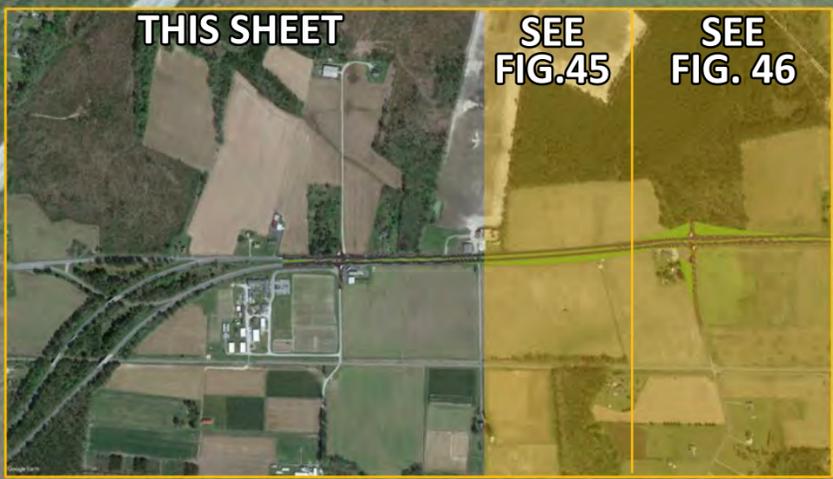
C #90

US 58 Eastbound Ramp

THIS SHEET

SEE FIG. 45

SEE FIG. 46



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE



US 58 Arterial Preservation Plan

Figure 45

Holland Rd Realignment

City of Suffolk

Recommendation: Reconfigure existing alignment and remove reverse curve.

ROW Impacts: Significant land acquisition and disturbance is required north of US 58.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations	Safer travel at higher speeds reduces travel time
--------------------	---

Safety	Realignment improves sight distance along US 58.
--------	--

Cost:
Total Project: \$4.7M to \$6.5M
Realignment: \$2.7M to \$3.6M



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 46

Intersection #47: US 58 and Longstreet Ln City of Suffolk

Recommendation: Reconfigure intersection of US 58 and Longstreet Ln to Restricted Crossing U-Turn (RCUT). Construct u-turn areas east and west of main intersection. Extend all existing turn lanes on US 58 to VDOT design standards. Realign Longstreet Ln with new realignment of US 58/Holland Rd.

ROW Impacts: Minimal land acquisition and disturbance. Turn lane work may require minimal land acquisition.

Improvement Type: Safety, Travel Time Preservation

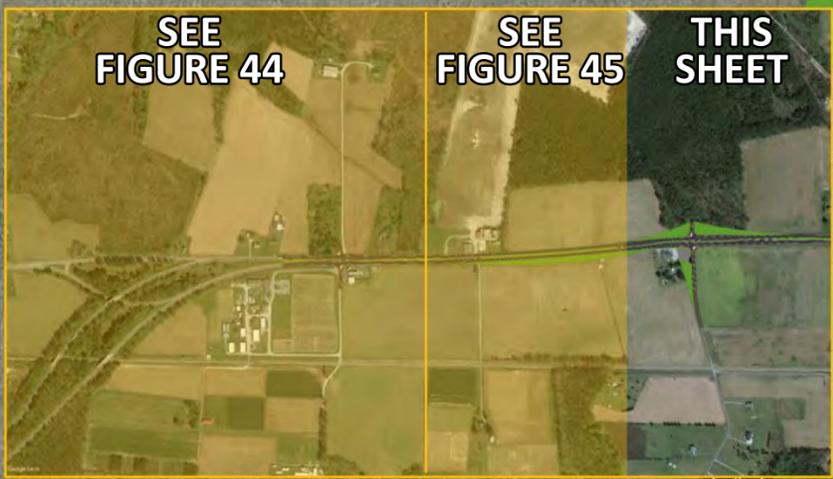
Traffic Operations & Safety:

Traffic Operations Minimal Improvements

Safety Reduced conflict points where vehicles cross paths. Reduced risk of head-on collisions.

Total Project: \$4.7M to \$6.5M
Longstreet Ln RCUT: \$1.2M to \$1.9M

Standard Movements
Rerouted Movements



Longstreet Ln



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 47 Intersections & Median Crossovers City of Suffolk

I## - Intersection #
C## - Crossover #

Crossover #96:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #97:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #98:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #99:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Intersection #49: Chappell Dr with US 58
Recommendation: Lengthen existing left-turn lanes on US 58. Construct westbound right-turn lane on US 58
Cost: \$0.8M to \$1.1M



Chappell Dr



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan

Figure 48

Intersections & Median Crossovers

City of Suffolk

I## - Intersection #

C## - Crossover #

Crossover #100:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

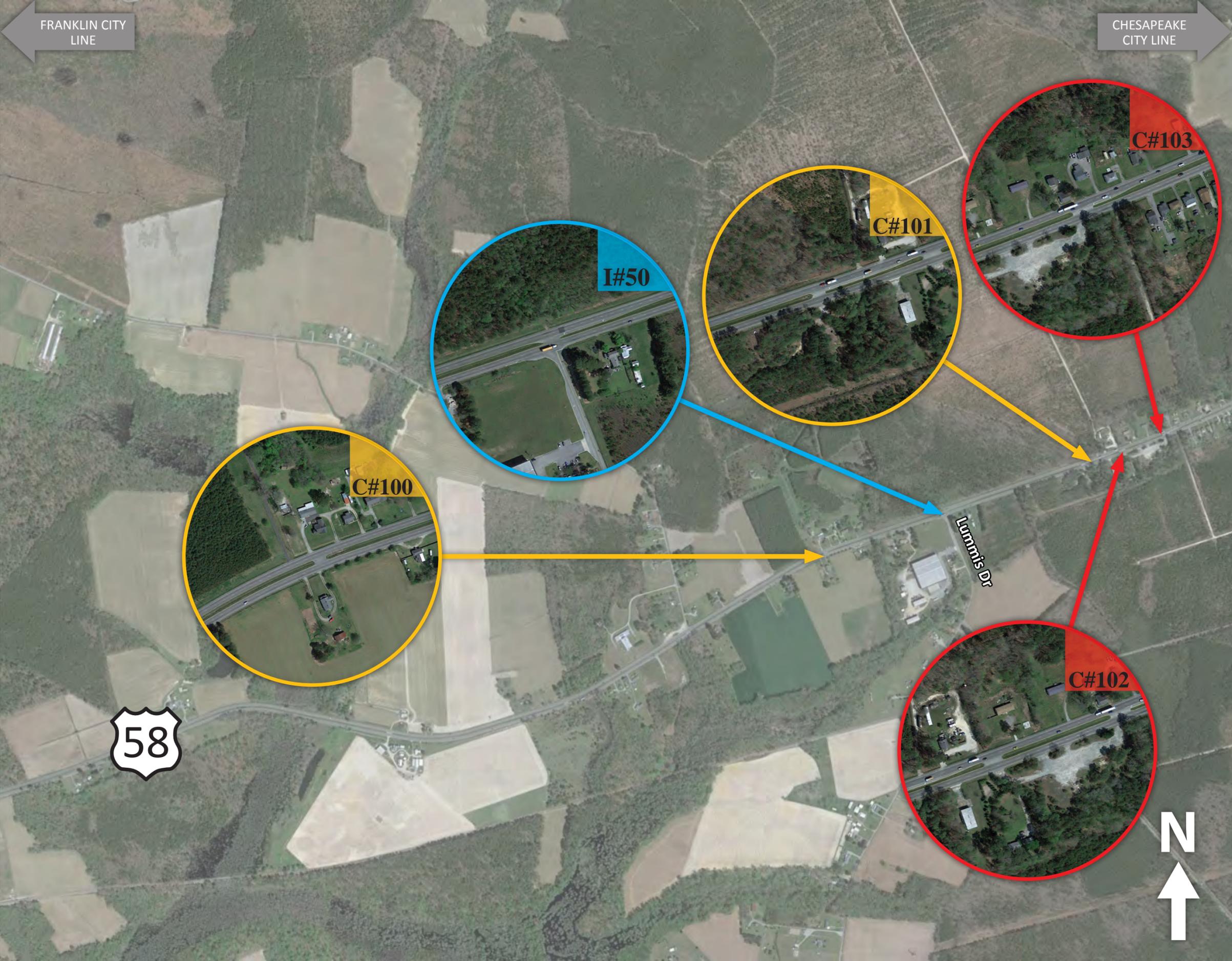
Intersection #50: Lummis Dr with US 58
Recommendation: See Figure 49
Cost: \$1.9M to \$2.7M

Crossover #101:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #102:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #103:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE



Lummis Rd

US 58 Arterial Preservation Plan

Figure 49

Intersection #50: US 58 and Lummis Rd

City of Suffolk

Recommendation: Reconfigure main intersection of US 58 and Lummis Rd to Continuous Green-T (CGT). Extend existing right-turn lane on US 58 eastbound to VDOT design standards.

ROW Impacts: Significant land acquisition will be required to accommodate acceleration lane due to grade of median and realigning US 58 westbound lanes.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations: Minimal Improvements

Safety: CGT reduces conflict points for vehicles traveling westbound US 58.

Cost: \$1.9M to \$2.7M

Standard Movements



FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 50 Intersections & Median Crossovers City of Suffolk

- Intersection #
C## - Crossover #

Crossover #104:
Recommendation: Construct left-turn lanes on US 58
Cost: \$0.5M to \$0.7M

Crossover #105:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #106:
Recommendation: Construct eastbound left-turn lane on US 58
Cost: \$0.3M to \$0.4M

Crossover #107:
Recommendation: Remove crossover
Cost: \$0.3M to \$0.4M

Crossover #108:
Recommendation: Sign for "Authorized Vehicles Only"

Crossover #109:
Recommendation: No recommendation

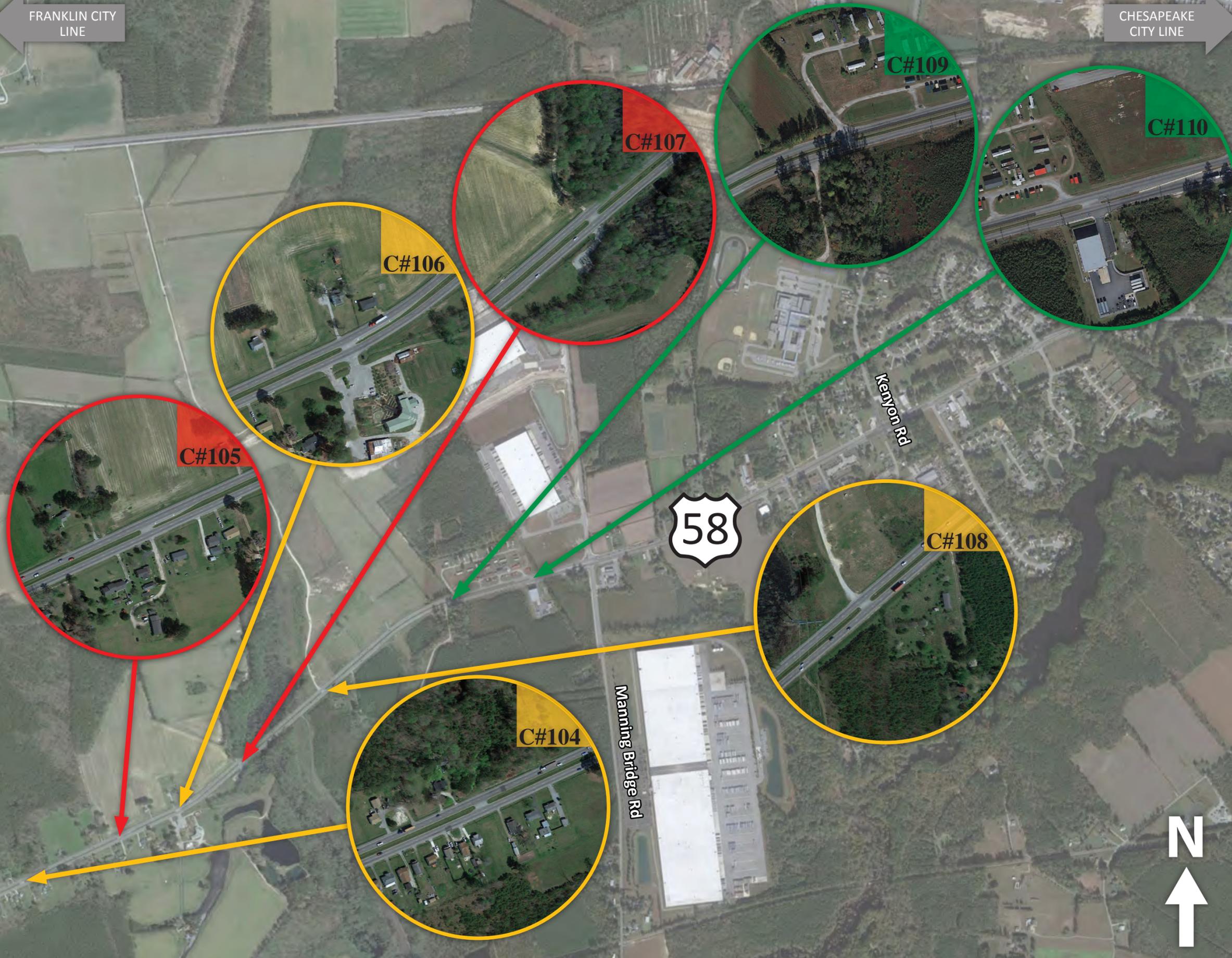
Crossover #110:
Recommendation: No recommendation

● No Recommendation
● Recommended Removal
● Minor Improvement
● Major Improvement



Kenyon Rd

Manning Bridge Rd



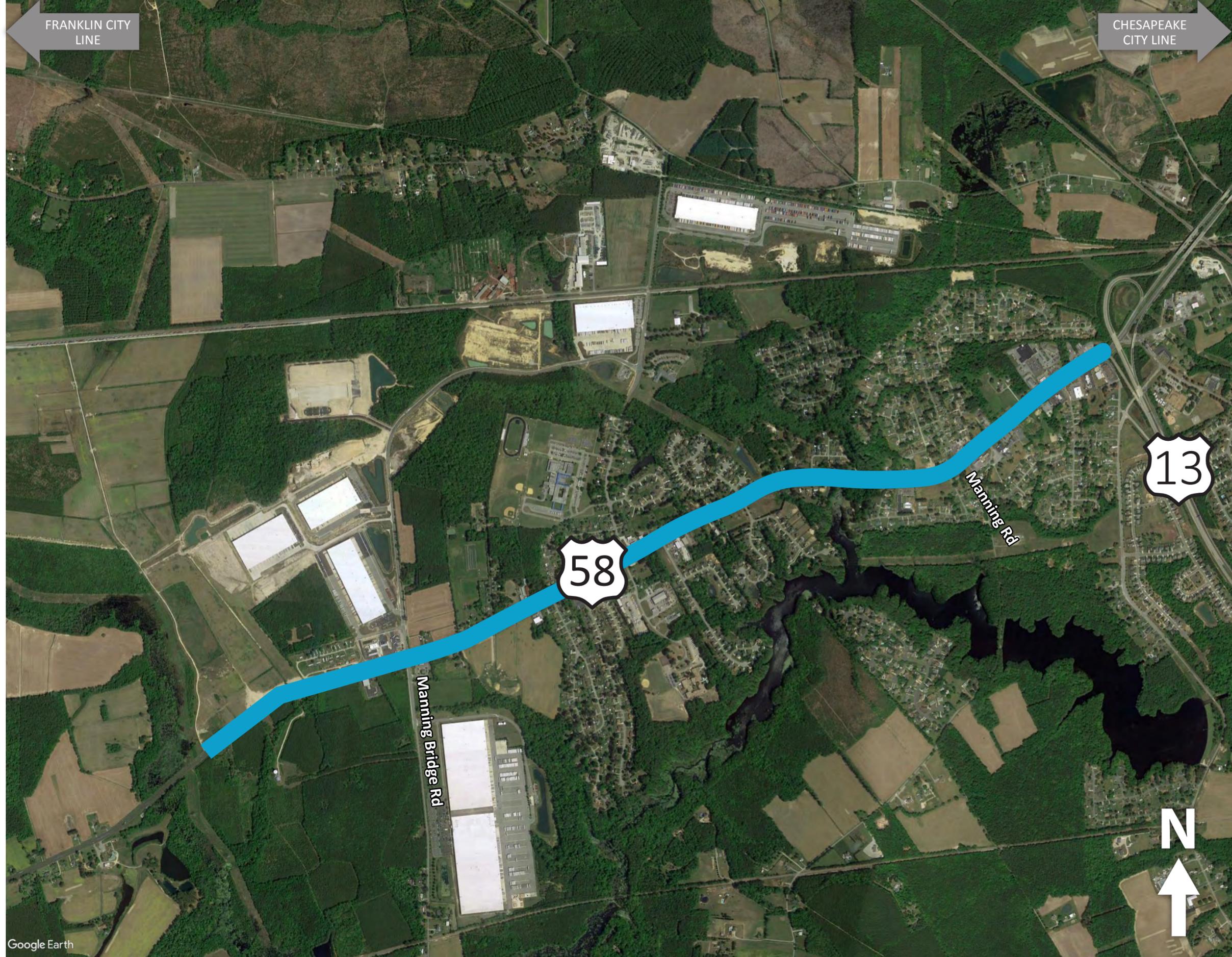
FRANKLIN CITY LINE

CHESAPEAKE CITY LINE

US 58 Arterial Preservation Plan Figure 51 Intersections & Median Crossovers City of Suffolk

I## - Intersection #
C## - Crossover #

Manning Bridge Rd to Suffolk Bypass:
US 58 widening from west of Manning Bridge Rd to Suffolk BYP underway.



- No Recommendation
- Recommended Removal
- Minor Improvement
- Major Improvement



Appendix B: Field Review

Conducted: October 3, 2017

Objectives:

1. Review roadway and intersection configurations
2. Identify deficiencies and areas of concerns
 - a. Sight distance or grade issues
 - b. Identify unique roadway features
3. Observe traffic operations

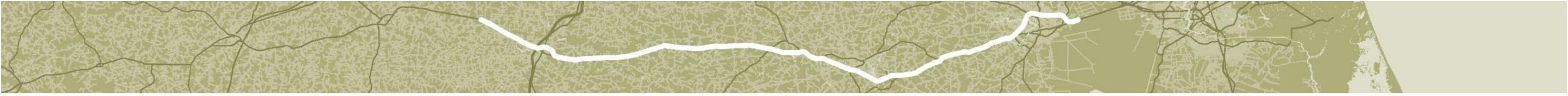


- **Segment Overview –Brunswick County Line to WCL City of Emporia**
 - High density of crossovers with opportunity for improved turn lanes
 - Variable shoulder widths
 - Residential & commercial direct access increase near city line
- **Grassy Pond Road Intersection**
 - Incline at crossing
 - Limited sight distance looking at eastbound and westbound US 58 approaches



- **Segment Overview – WCL City of Emporia to Greenville County Line**
 - Commercial direct access with significant truck traffic
- I-95 & US 58 Interchange
 - Sweeping Curve through interchange
 - I-95 Southbound onto US 58 Eastbound and I-95 Northbound onto US 58 Westbound are stop controlled
- Purdy Road Intersection
 - AM & PM Peaks have significant truck traffic
 - Minimal delay in the AM, with some queuing in the southbound direction
 - Eastbound approach in PM has 8-10 car queue length
- US 58 Business Intersection
 - Queuing in the PM on all approaches
 - PM westbound approach extends full length of storage lane and does not process each cycle
- Davis St Intersection
 - Horizontal and vertical curve
 - Opportunity for improved sight distance looking eastbound US 58





- **Segment Overview – Greenville County Line to VA 35 Interchange**
 - Numerous direct access points
 - High density of crossovers with many not associated with access points
 - Turn lane widths and length are varying or minimal
 - Variable shoulder widths (between 3' and 6')
 - Increased agriculture vehicles observed
- Hicksford Road Intersection
 - Opportunity for improved sight distance looking eastbound due to vertical curve
- Drewry Road Intersection
 - Opportunity for improved sight distance on both approaches
 - Horizontal and vertical curves on US 58





- **Segment Overview – VA 35 Interchange to S Quay Road Interchange**
 - Full access routes
 - High density of crossovers with many not associated with access points
 - Merge lanes at interchanges appear to be adequate
- Jerusalem Road
 - Grade separated intersection with roundabout being constructed
- Story Station Road & Agri Park Drive Intersection
 - Signalized intersection servicing commercial services
 - Adequate sight distance on approaches
 - PM queuing on the eastbound and westbound approaches



- **Segment Overview –S Quay Road Interchange to Manning Bridge Road Intersection**
 - Limited access facility near Town of Holland
 - Residential and commercial direct access
 - Crossovers close together and some without turn lanes
 - Short tapers on turn lanes
 - Advisory vertical and horizontal curve after Pioneer Road
- **Longstreet Lane Intersection**
 - Reverse curve looking westbound
 - Sight distance was observed to be obscured on westbound approach – US 58 – due to building and signage
- **Pioneer Road Intersection**
 - Three-legged signalized intersection servicing school
 - Northbound approach is skewed
 - Minimal queueing observed in the PM



- **Segment Overview – Manning Bridge Road Intersection to Rte 13 Interchange**
 - Residential and commercial direct access; density increases closer to Suffolk
 - Driveways entering intersections
 - Increased amount of signalized intersections
- Manning Bridge Road Intersection
 - Four-legged signalized intersection
 - Eastbound and westbound have queues extending at least 12 to 15 cars during PM peak
- Forest Glen Drive Intersection
 - Four-legged signalized intersection servicing school
 - Northbound approach is skewed
 - Minimal queueing observed in the PM peak



- **Segment Overview – Manning Bridge Road Intersection to Rte 13 Interchange Continued**
- Grove Road Intersection
 - Three-legged signalized intersection
 - Commercial access into intersection
 - Other intersections located ~250 ft eastbound and westbound of signal
- Staley Drive Intersection
 - Four-legged signalized intersection servicing commercial and residential areas
 - Significant queuing in the westbound direction in the PM peak back to interchange
 - Northbound and southbound vehicles do not process through cycle in the PM peak

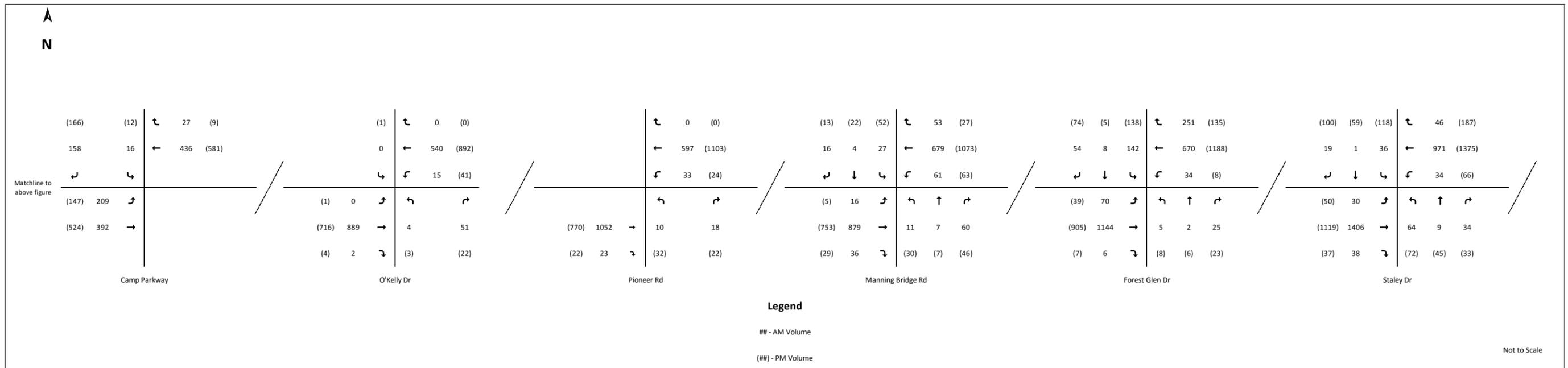
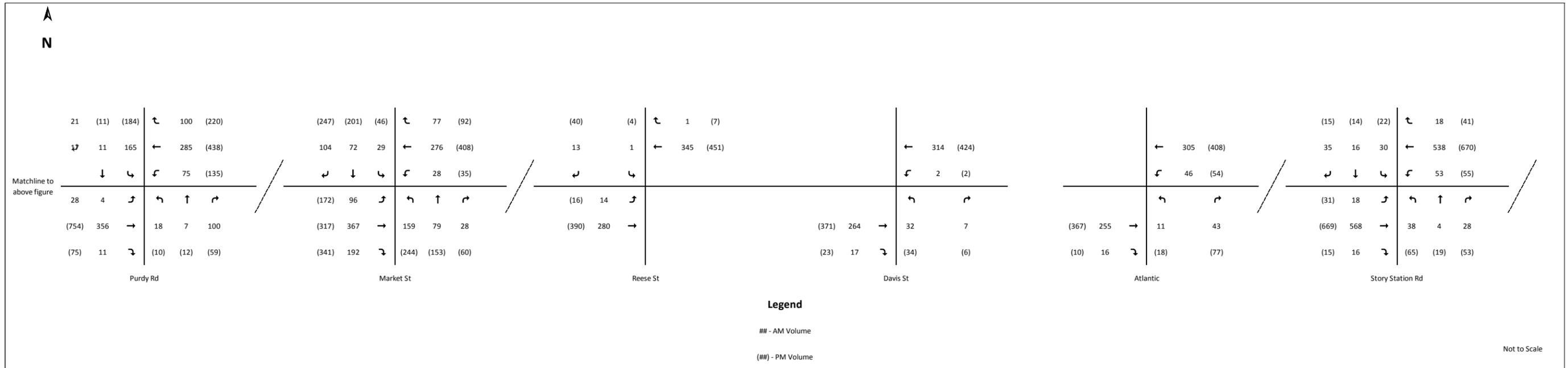


Appendix C: Suggested Priority for US 58 Corridor Recommendations

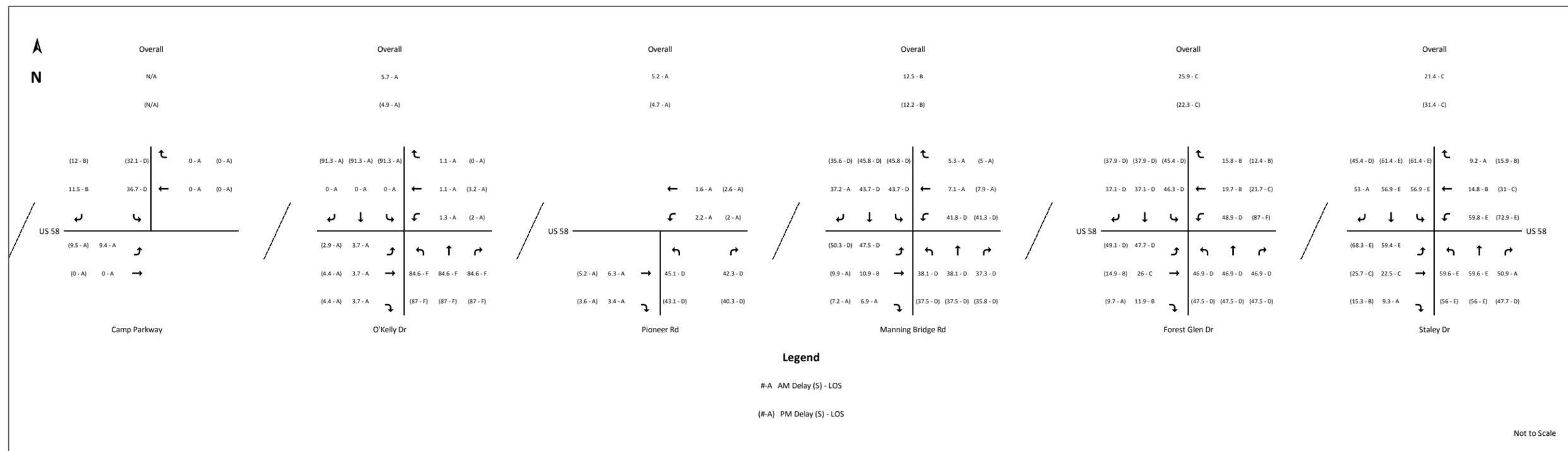
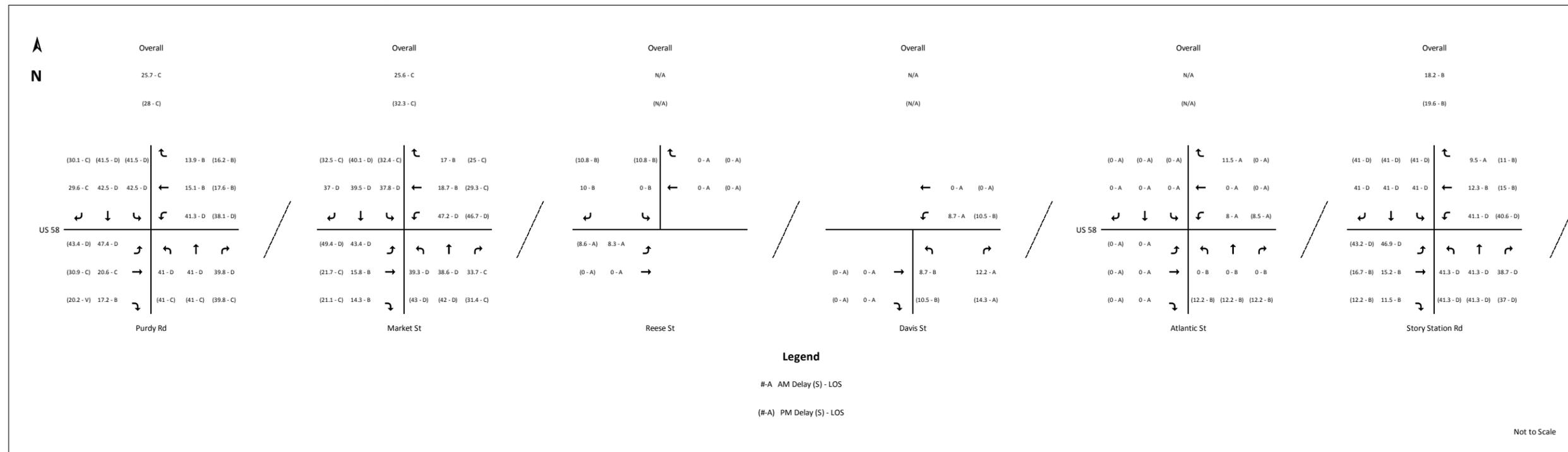
Suggested ranking	Segment/Intersection	Suggested ranking	Segment/Intersection
1	Intersection of US 58 and Market Drive	16	Segment from Greenville/Southampton County Line to Drewry Rd
2	Intersection of US 58 and Purdy Rd	17	Segment from Intersection of US 58 and Pioneer Rd to Intersection of US 58 and Lummis Rd
3	Segment from Intersection of US 58 & Market Dr to Emporia City Limits (East)	18	Segment from Intersection of US 58 and Manning Bridge Rd to Intersection of US 58 and Forest Glen Dr
4	Interchange US 58 and I-95	19	Intersection of US 58 and Camp Parkway
5	Segment from Jerusalem Rd to intersection of US 58 and Story Station Rd	20	Segment from Emporia City Limits (East) to Greenville/Southampton County Line
6	Segment from Popes Station Rd to Southampton High School	21	Segment from Greenville/Brunswick County Line to Intersection of 58 & Purdy Rd
7	Intersection of US 58 and Story Station Rd	22	Segment from Intersection of US 58 and Camp Parkway to Intersection of US 58 and Holy Neck Rd
8	Segment from Intersection of US 58 and O'Kelly Dr to Intersection of US 58 and Pioneer Rd	23	Segment from Intersection of US 58 and Holy Neck Rd to Intersection of US 58 and O'Kelly Dr
9	Intersection of US 58 and Lummis Rd	24	Segment From Southampton High School to Interchange of US 58 with US 35
10	Intersection of US 58 and Pioneer Rd	25	Intersection of US 58 and Staley Dr
11	Segment from Intersection of US 58 and Forest Glen Dr to Intersection of US 58 and Staley Dr	26	Segment from Intersection of US 58 and Drewry Rd to Popes Station Rd
12	Intersection of US 58 and Holy Neck Rd	27	Intersection of US 58 and Forest Glen Dr
13	Segment from Intersection of US 58 and Lummis Rd to Intersection of US 58 and Manning Bridge Rd	28	Segment from Interchange of US 58 with US 35 to Jerusalem Rd
14	Intersection of US 58 and Drewry Rd	29	Intersection of US 58 and Manning Bridge Rd
15	Intersection of US 58 and O'Kelly Dr	30	Segment from intersection of US 58 and Story Station Rd to intersection of US 58 and Camp Parkway

This suggested priority list was developed using crash history and VDOT Potential Safety Improvements Database

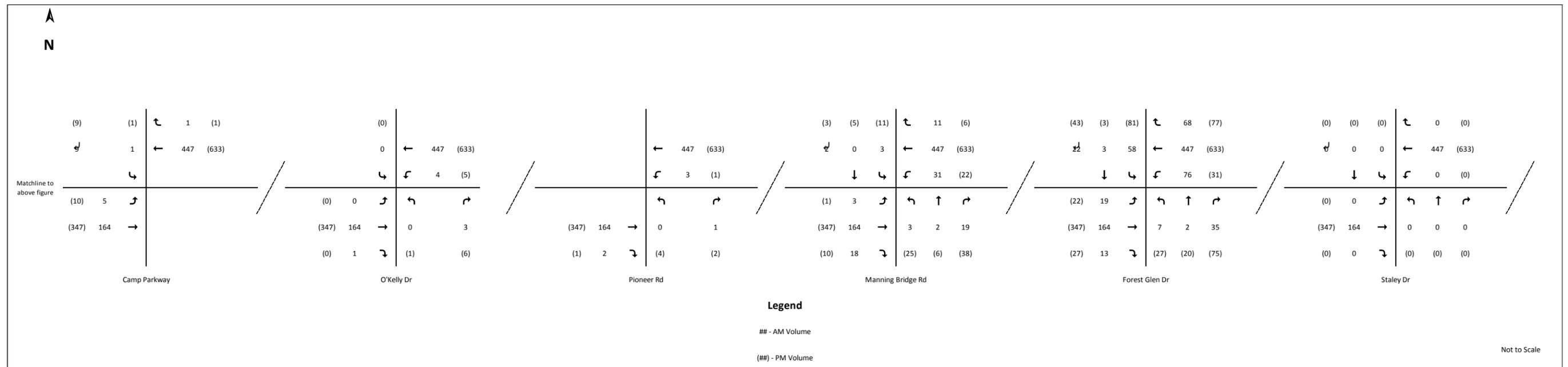
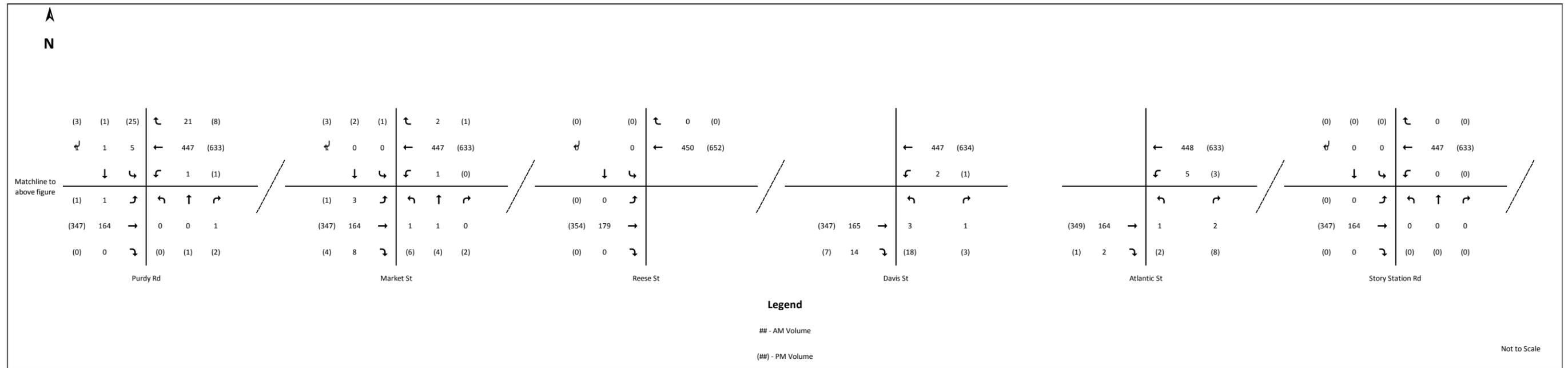
Appendix D: 2017 Intersection Volumes



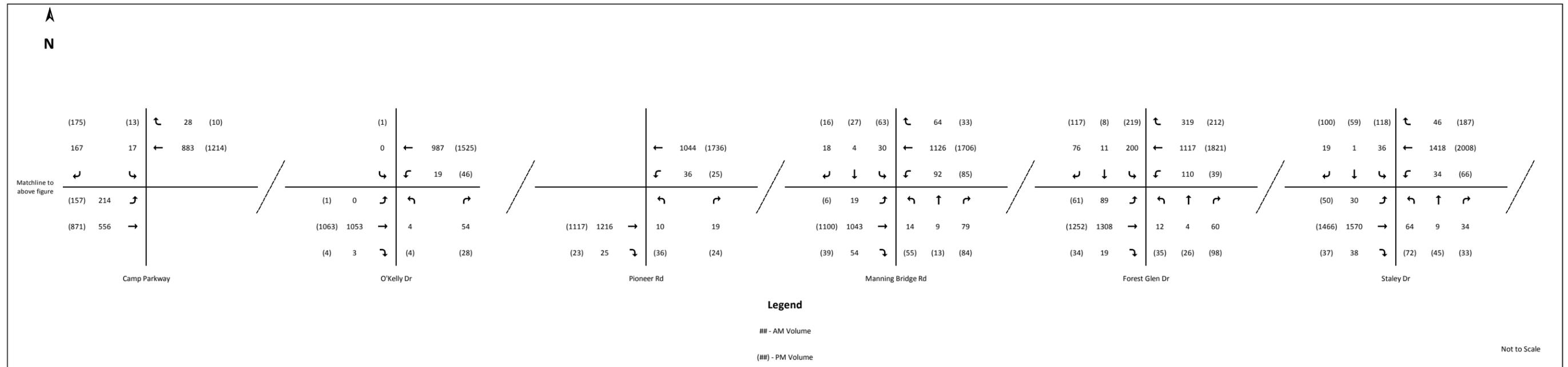
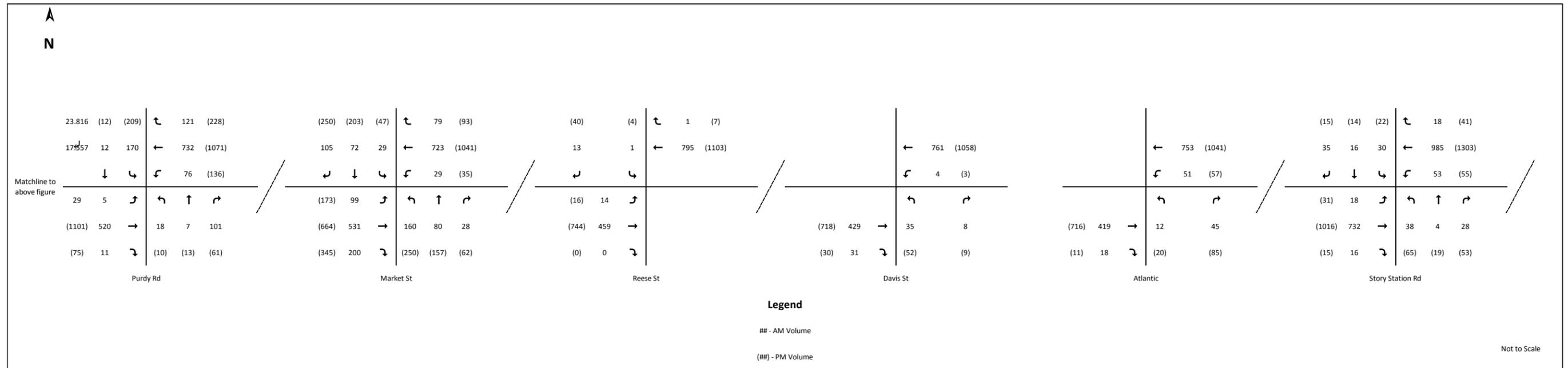
Appendix E: 2017 Intersection Operations



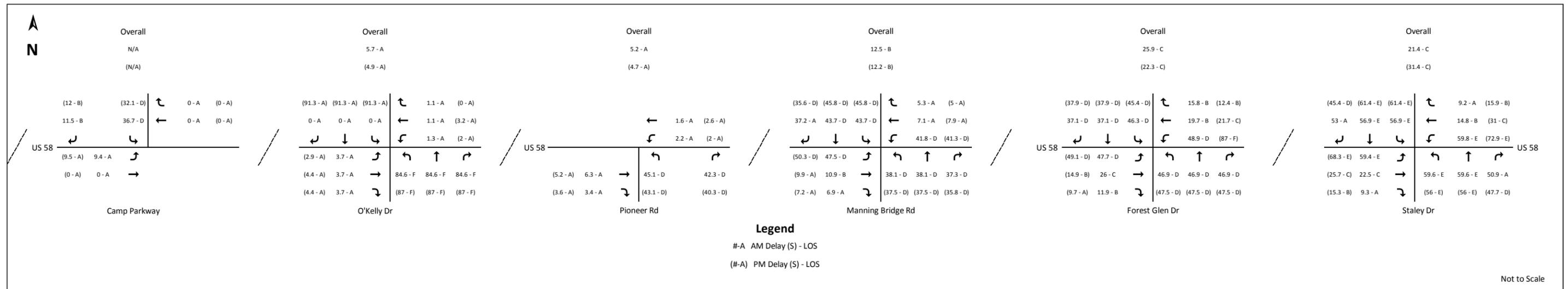
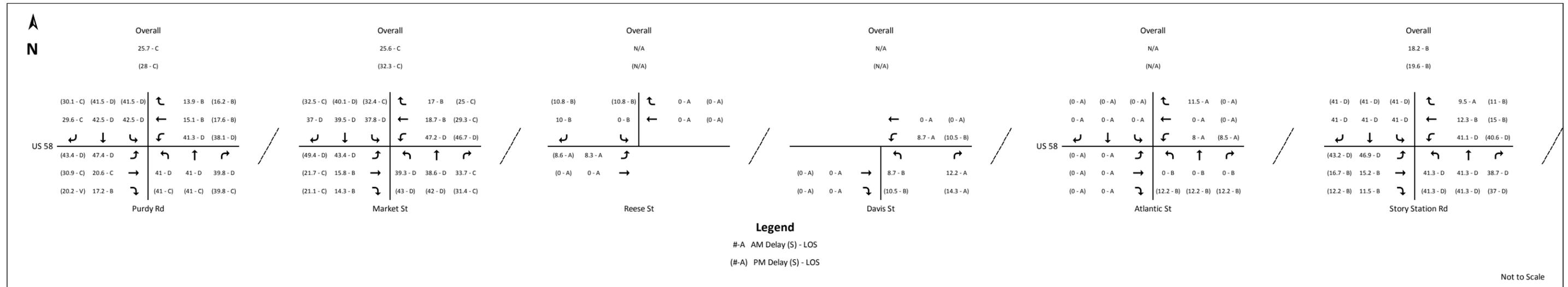
Appendix F: Future Land Use Trip Generation and Background Growth



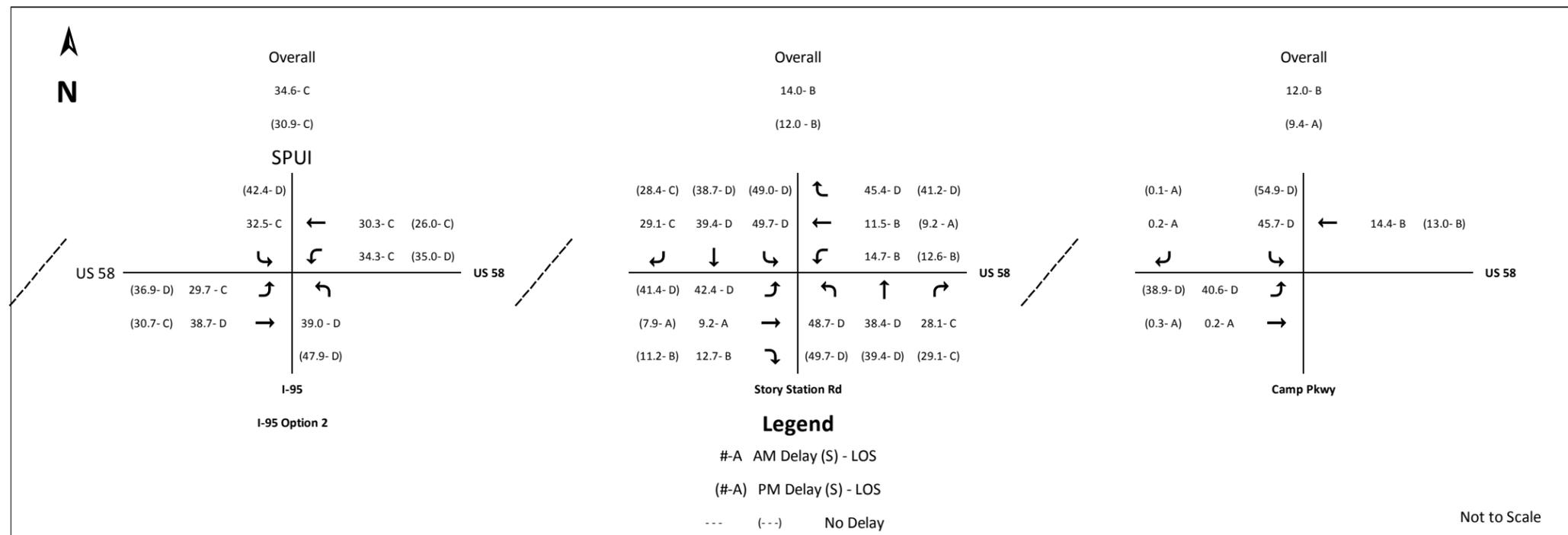
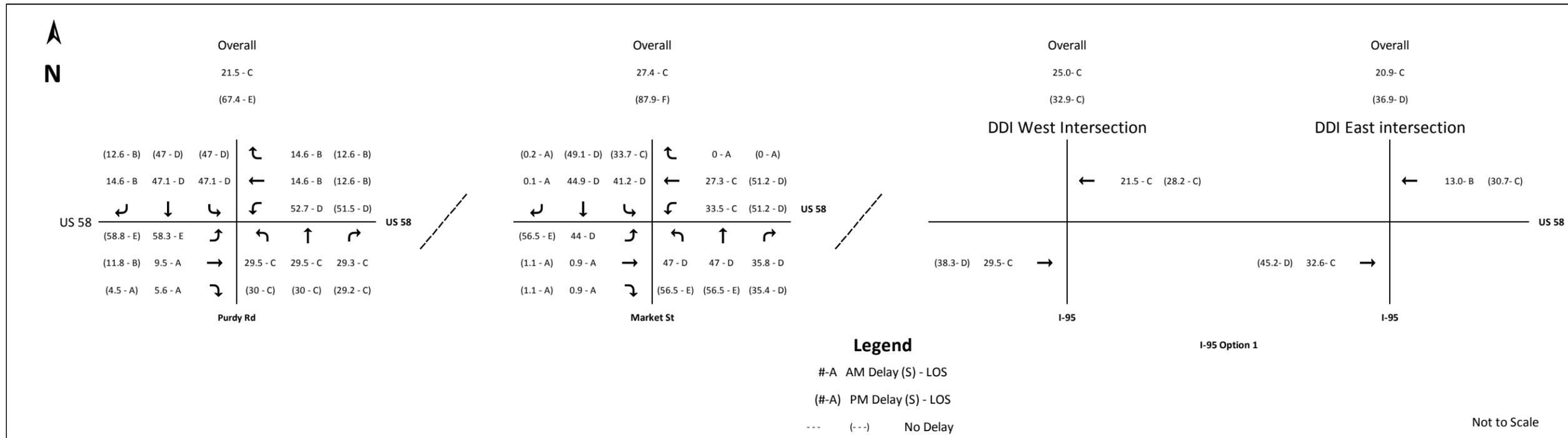
Appendix G: 2040 Intersection Volumes



Appendix H: 2040 No-Build Intersection Operations

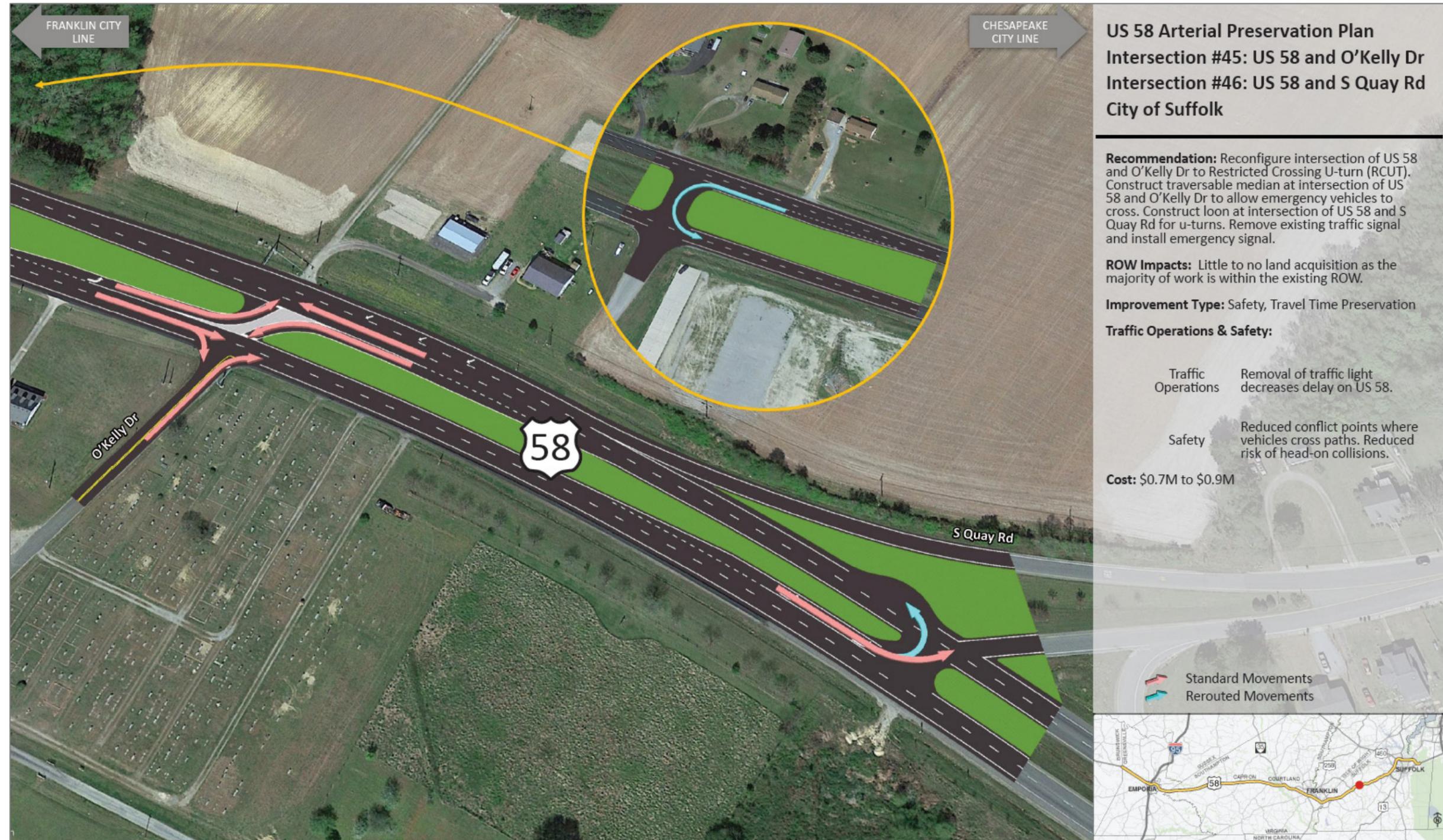


Appendix I: 2040 Build Intersection Operations



Appendix J: O’Kelly Dr Concept

The following concept for the intersection of US 58 and O’Kelly Drive was developed as part of the US 58 Arterial Preservation Plan, however this intersection is recommended for further study. This concept is presented for informational purposes only.



US 58 Arterial Preservation Plan Intersection #45: US 58 and O’Kelly Dr Intersection #46: US 58 and S Quay Rd City of Suffolk

Recommendation: Reconfigure intersection of US 58 and O’Kelly Dr to Restricted Crossing U-turn (RCUT). Construct traversable median at intersection of US 58 and O’Kelly Dr to allow emergency vehicles to cross. Construct loop at intersection of US 58 and S Quay Rd for u-turns. Remove existing traffic signal and install emergency signal.

ROW Impacts: Little to no land acquisition as the majority of work is within the existing ROW.

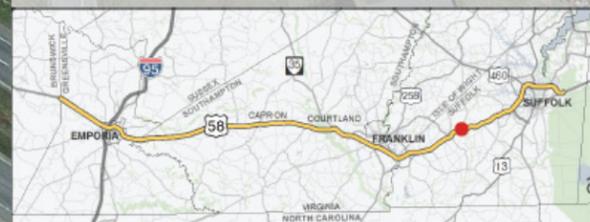
Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

- Traffic Operations: Removal of traffic light decreases delay on US 58.
- Safety: Reduced conflict points where vehicles cross paths. Reduced risk of head-on collisions.

Cost: \$0.7M to \$0.9M

Standard Movements
Rerouted Movements





Appendix K: City of Emporia Task Order Technical Memorandum

Table 2: City of Emporia Travel Time

Corridor Travel Time	AM Travel Time (min)		PM Travel Time (min)	
	EB	WB	EB	WB
Existing Conditions	2.2	1.7	2	2.9
2040 No Build Conditions	2.3	1.8	3.5	7.1
2040 Build Conditions	2.4	2.1	2.1	3.9

Operationally, the recommendations decrease delay slightly in the AM and significantly in the PM. Compared to the 2040 No-Build travel times, the eastbound and westbound travel times for the build scenario increase slightly in the AM however, in the PM peak hour, the build recommendations will significantly improve the corridor's travel time by more than 40%.

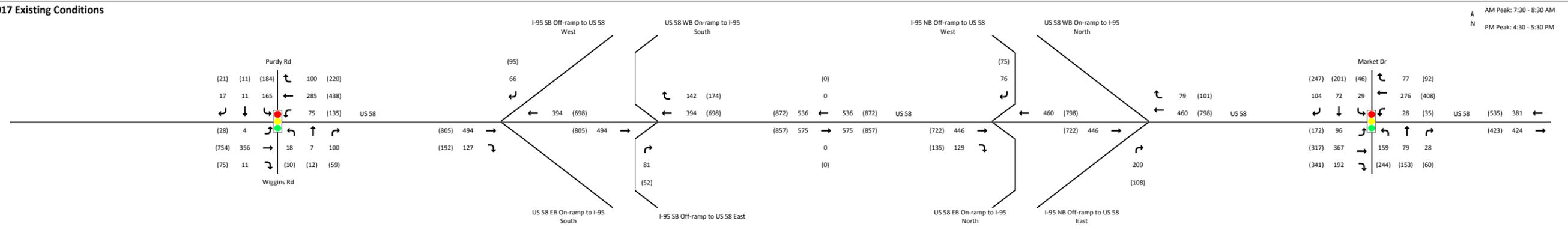
The recommendations are also expected to significantly reduce the crash rates along the study corridor. The intersection recommendations will decrease the number of conflict points and weave areas that would normally occur with a conventional signalized intersection. The DDI will reduce weaving and conflict points on I-95 and US 58. The proposed recommendations will reduce crashes up to 30% based on Crash Modification Factors Clearinghouse. These benefits would not only be seen on US 58 but on I-95 as well. Finally, the recommendations can be constructed independently; this flexibility allows for separate project submission by the City of Emporia, increasing the likelihood that funding is approved. The preferred recommendations are provided following this page containing detailed information, opinion of costs, and concepts.

Attachments:

- Existing and Future Turn Movement Counts
- US 58 Existing Geometry
- Crash Data
- US 58 Area Summary
- Intersection US 58 and Purdy Road Option 1
- Intersection US 58 and Purdy Road Option 2
- I-95 Interchange
- Intersection US 58 and Market Drive
- US 58 Travel Times and Crash Reduction

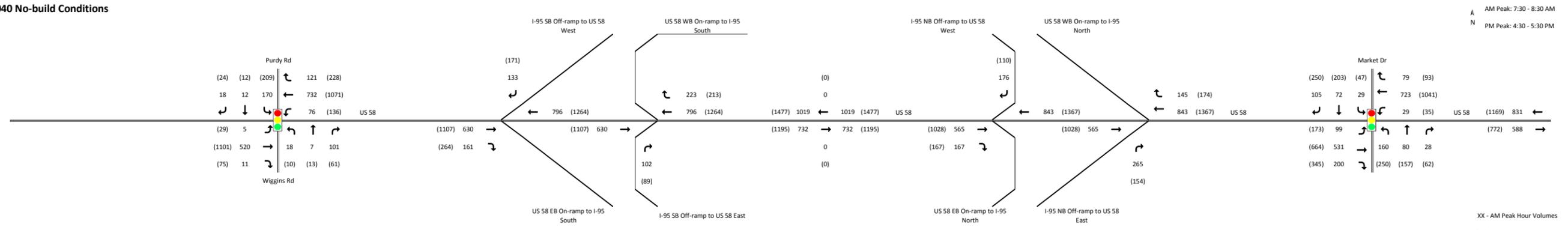
2017 EXISTING TURN MOVEMENT COUNTS

2017 Existing Conditions



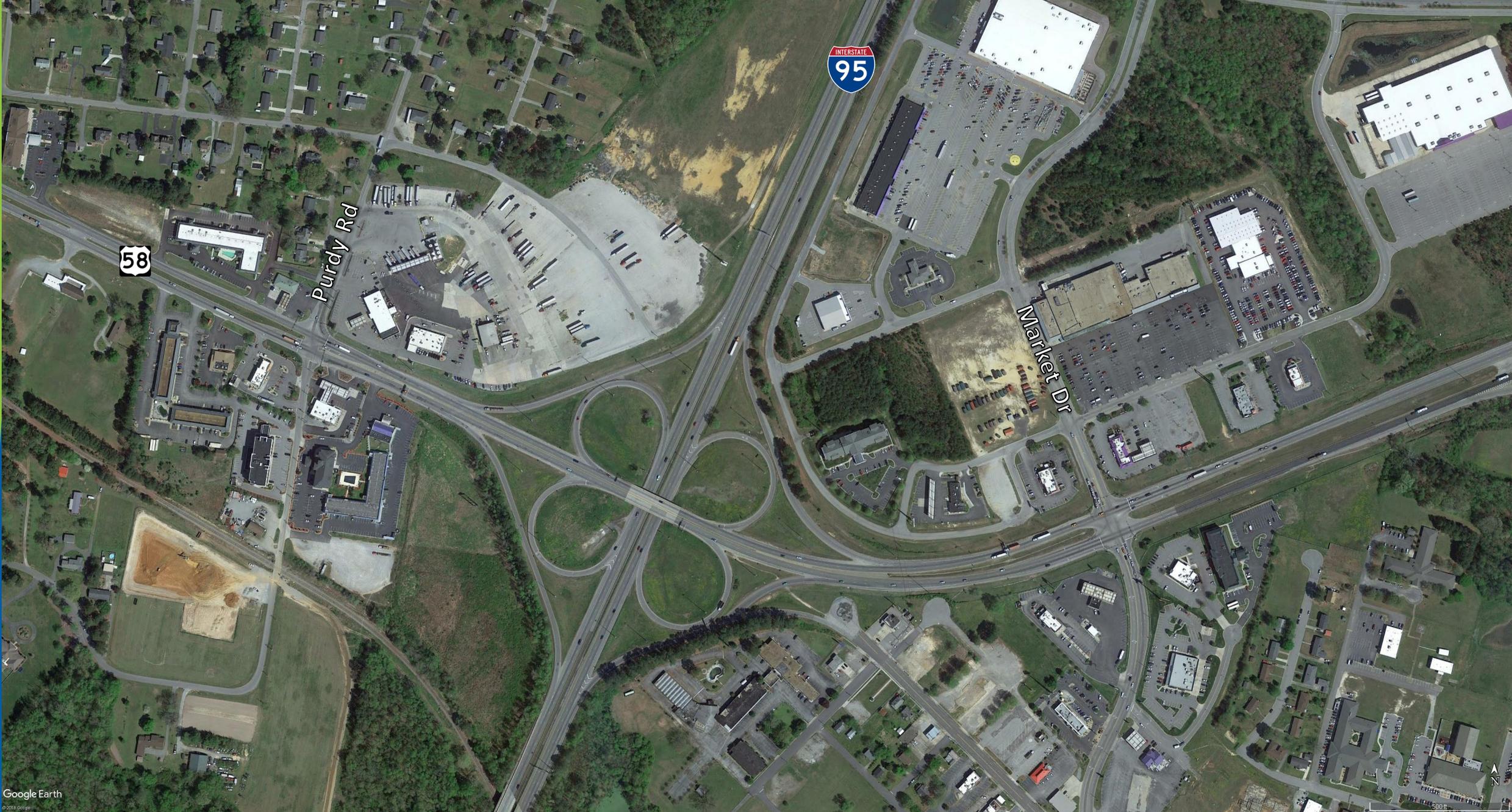
2040 TURN MOVEMENT COUNTS

2040 No-build Conditions



XX - AM Peak Hour Volumes
 (XX) - PM Peak Hour Volumes

US 58 Existing Geometry



Crash Data (2013-2018)

US 58 & Purdy Rd	
Rear End	16
Sideswipe	7
Angle	5
Other	4
Total Crashes	32

US 58 & Market Dr	
Rear End	33
Sideswipe	22
Angle	8
Other	8
Total Crashes	71

US 58 & I-95	
Rear End	25
Sideswipe	10
Angle	3
Other	11
Total Crashes	49

Crashes (per 100 Million Vehicle Miles of Travel)	
US 58 from Purdy Rd to US 301	324
Statewide Average for Similar Roadway Type	181

Rear End: Stop-and-Go Traffic
 Sideswipe: Merging/Weaving Traffic
 Angle: Left-Turning Vehicles

BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE

SEE FIGURE 2a/2b

SEE FIGURE 4

58

INTERSTATE 95

Purdy Rd

Market Dr

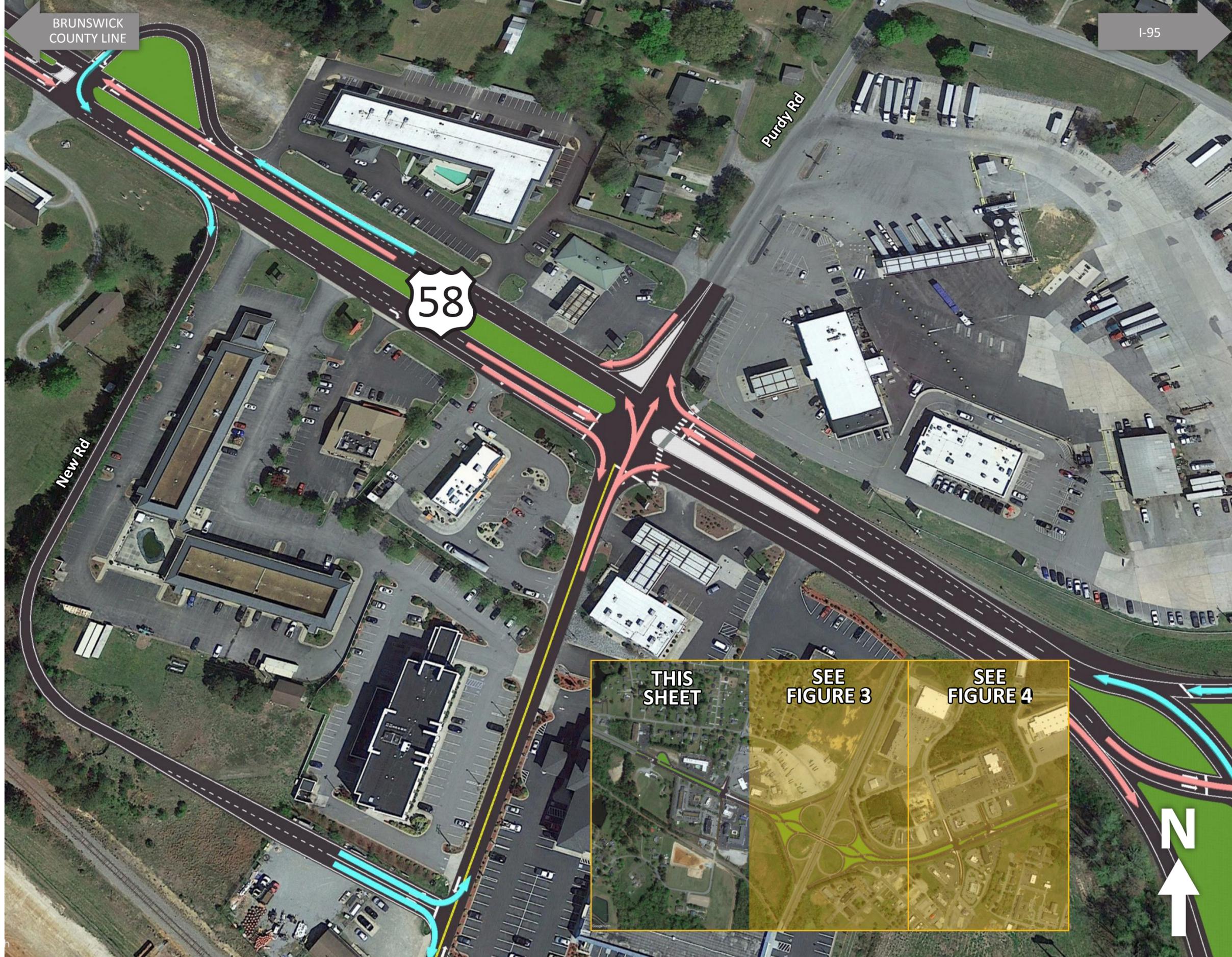
SEE FIGURE 3 FOR I-95 INTERCHANGE RECOMMENDATION

INTERSTATE 95



US 58 Arterial Preservation Plan
Figure 1
I-95 Area Summary





US 58 Arterial Preservation Plan

Figure 2a

Intersection #9: US 58 and Purdy Rd Option 1 of 2: City of Emporia

Recommendation: Reconfigure intersection to remove left-turns on US 58 and Purdy Rd southbound. Construct Jug-handle west of main intersection. Construct New Rd around development in southwest corner. Widen Wiggins Road to accommodate trucks (pictured left).

ROW Impacts: Jug-handle and New Rd will require land acquisition. ROW may be required to widen Wiggins Road to accommodate trucks. The main intersection will require little to no land acquisition, as most of this will be new lane markings.

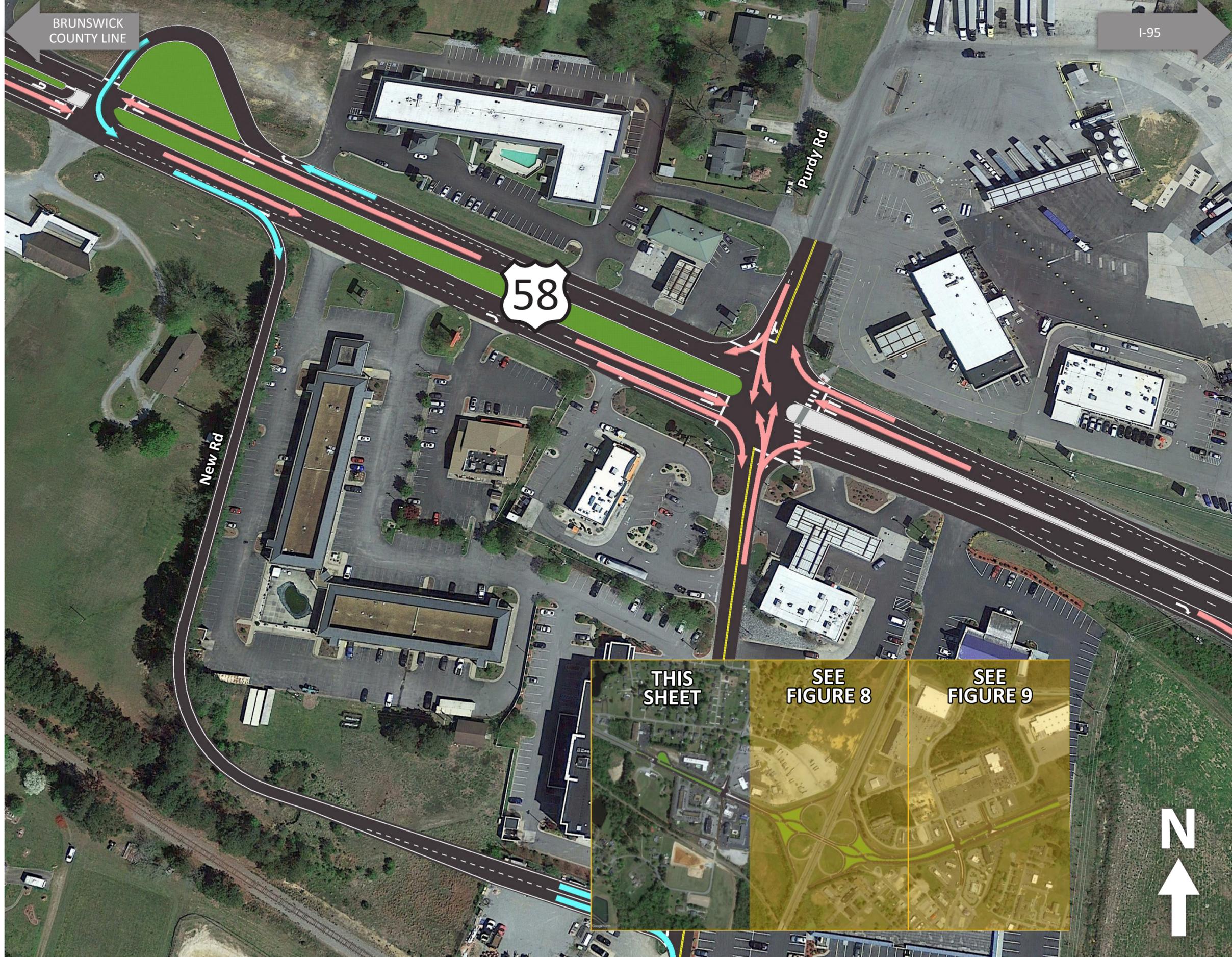
Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	25.7 - C	28.0 - C
2040 No Build Conditions (Conventional Intersection)	21.5 - C	67.4 - E
2040 Build Conditions	19.2 - B	17.4 - B

Cost: \$2.0M to \$3.0M





US 58 Arterial Preservation Plan
Figure 2b
Intersection #9: US 58 and Purdy Rd
Option 2 of 2: City of Emporia

Recommendation: Reconfigure intersection to remove left-turns on US 58 and Purdy Rd southbound. Construct Jug-handle west of main intersection. Construct New Rd around development in southwest corner. Widen Wiggins Road to accommodate trucks (pictured left).

ROW Impacts: Jug-handle and New Rd will require land acquisition. ROW may be required to widen Wiggins Road to accommodate trucks. The main intersection will require little to no land acquisition, as most of this will be new lane markings.

Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

Total Intersection Delay (s)	AM	PM
Existing Conditions	25.7 - C	28.0 - C
2040 No Build Conditions (Conventional Intersection)	21.5 - C	67.4 - E
2040 Build Conditions	20.6 - C	32.9 - C

Cost: \$2.0M to \$3.0M

Standard Movements
 Rerouted Movements



BRUNSWICK COUNTY LINE

SOUTHAMPTON COUNTY LINE



Option 1: DDI

Option 2: SPUI

US 58 Arterial Preservation Plan Figure 3 Intersection #10: US 58 and I-95 City of Emporia

Recommendation: Option one will be to reconfigure interchange to Diverging Diamond Interchange (DDI) (pictured left). Option two will be to reconfigure interchange to Single Point Urban Interchange (SPUI) (inset)

Impacts: Requires minimal configuration to existing I-95 ramps and bridge. In addition, two signals at both ends of the US 58 bridge will require signalization to permit crossover.

Improvement Type: Safety, Travel Time Preservation

Traffic Operations & Safety:

Traffic Operations: Minimal Improvements

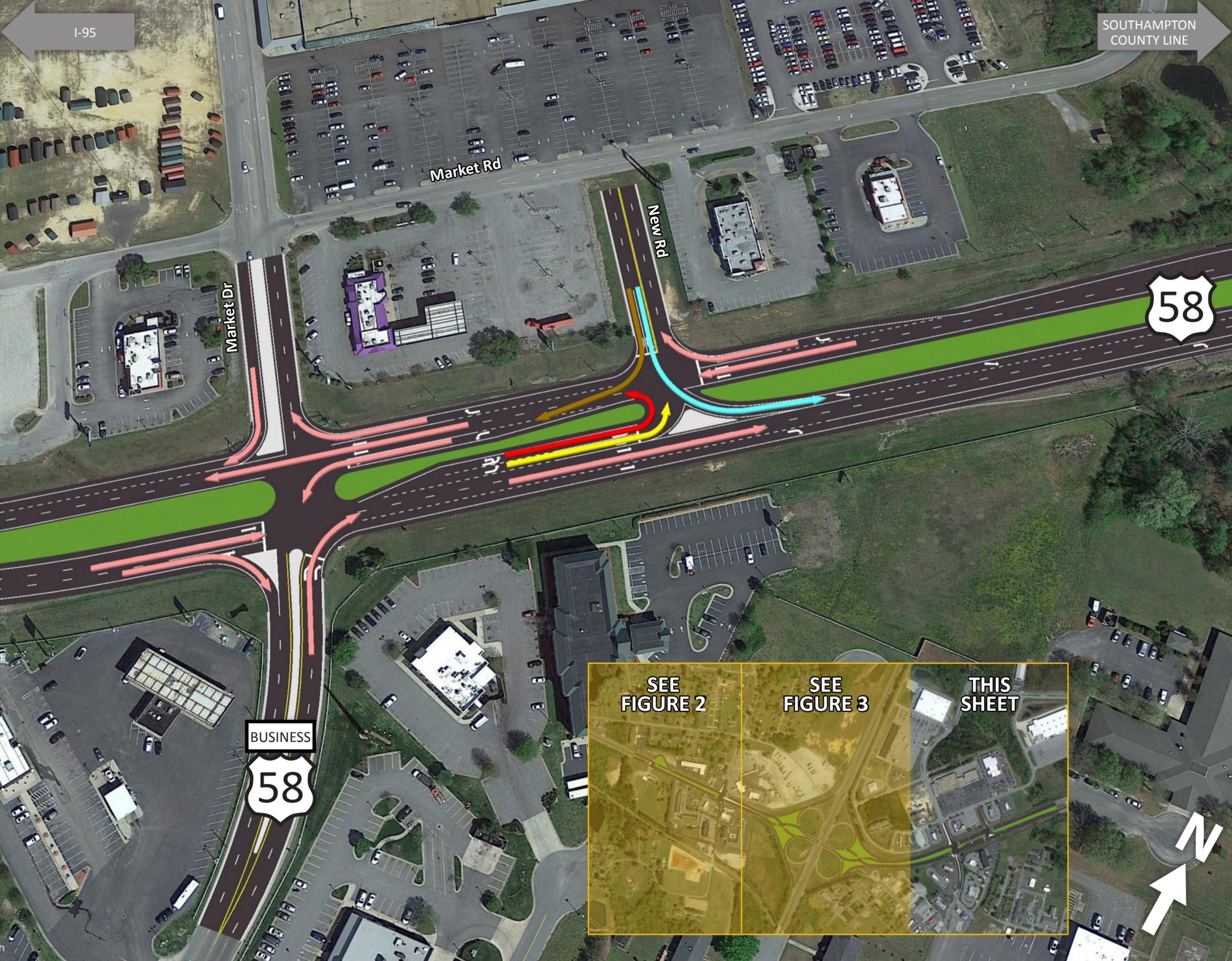
Safety: Traffic entering and exiting freeway does not cross opposing lanes of traffic. Reduced number of conflict points where vehicles cross.

Cost: \$7.7M to \$9.6M (DDI)
Cost: \$9.0M to \$12.3M (SPUI)



Eastbound US 58 Traffic (red arrow)
Westbound US 58 Traffic (cyan arrow)





US 58 Arterial Preservation Plan

Figure 4 Intersection #11: US 58 and Market Dr City of Emporia

Recommendation: Reconfigure intersections to coordinated signalized intersections. The westbound direction at Market Dr and the eastbound direction at New Rd will be free-flow. Construct new intersection east of Market Dr and US 58 to include Continuous Green-T for southbound left-turns and u-turn area for US 58 Business left-turns onto US 58 (pictured left).

ROW Impacts: Land acquisition will be required for new intersection and connection to Market Rd. Market Rd between New Rd and Market Dr will require improvements.

Improvement Type: Congestion, Safety, Travel Time Preservation

Traffic Operations:

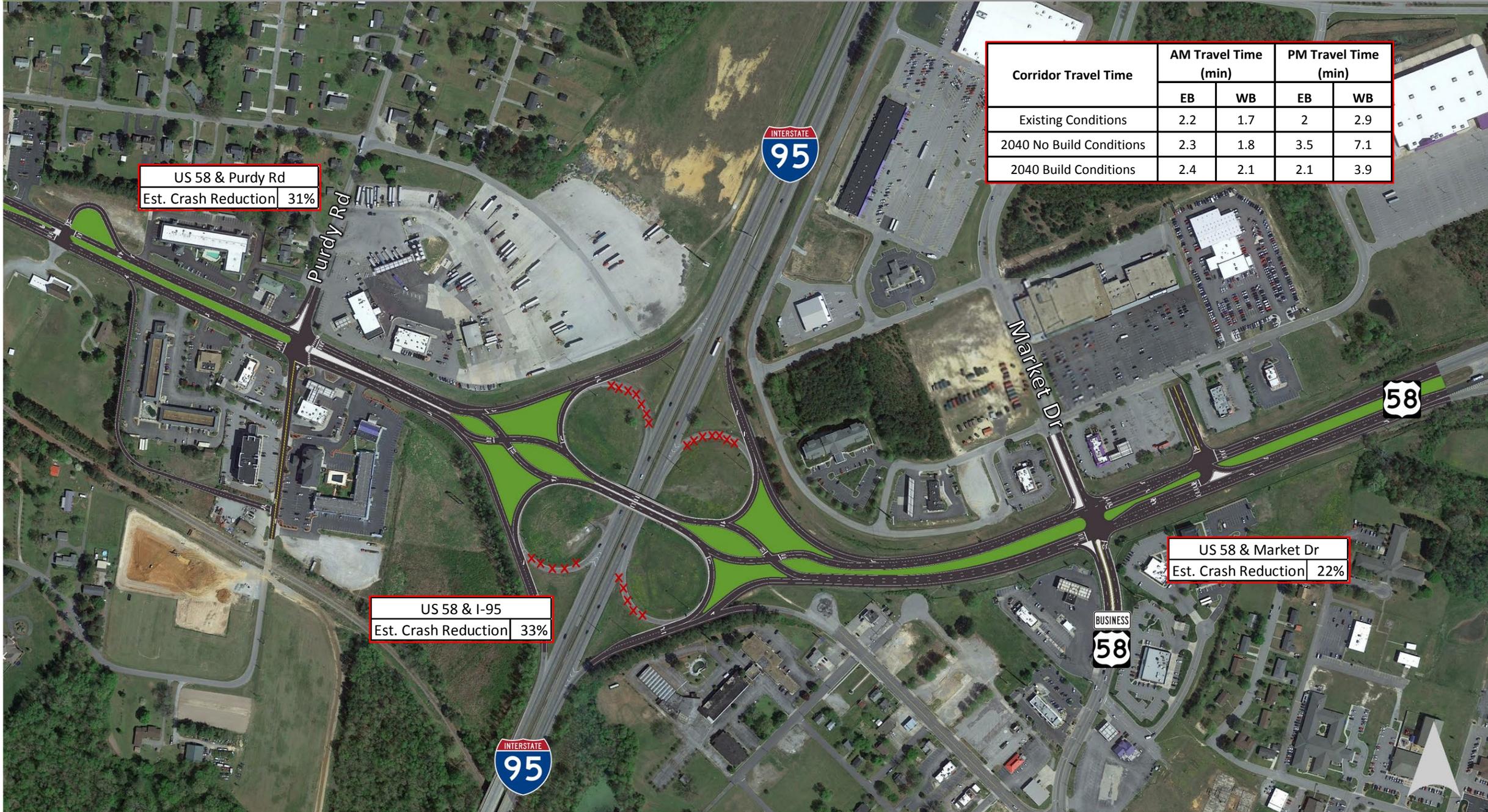
Total Intersection Delay (s)	AM	PM
Existing Conditions	25.6 - C	32.3 - C
2040 No Build Conditions (Conventional Intersection)	27.4 - C	87.9 - F
2040 Build Conditions	19.9 - B	31.0 - C

Cost: \$3.1M to \$4.9M

- Standard Movements
- Southbound Market Dr to Eastbound US 58
- Southbound Market Dr to US 58 Business
- Northbound US 58 Business to Westbound US 58
- Northbound US 58 Business & Eastbound US 58 To Market Dr



US 58 Arterial Management Plan Recommendations – City of Emporia



US 58 & Purdy Rd
Est. Crash Reduction 31%

US 58 & I-95
Est. Crash Reduction 33%

US 58 & Market Dr
Est. Crash Reduction 22%

Corridor Travel Time	AM Travel Time (min)		PM Travel Time (min)	
	EB	WB	EB	WB
Existing Conditions	2.2	1.7	2	2.9
2040 No Build Conditions	2.3	1.8	3.5	7.1
2040 Build Conditions	2.4	2.1	2.1	3.9