SC 90 & HWY 57

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PREPARED FOR: **WACCAMAW REGIONAL COUNCIL OF GOVERNMENTS**

1230 HIGHMARKET STREET // GEORGETOWN, SC 29440

CORRIDOR STUDY

ALONG SC 90 & HWY 57
IN HORRY COUNTY, SOUTH CAROLINA

PREPARED BY: **STANTEC CONSULTING SERVICES INC.** // N. CHARLESTON, SC

SC 90 & HWY 57
CORRIDOR STUDY

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February 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **I**

1.0 INTRODUCTION **1.1**

1.1 PROJECT OVERVIEW 1.1

1.2 STUDY AREA 1.1

1.2.1 Corridor "Link" Segments 1.1

1.2.2 Corridor "Node" Intersections 1.1

1.3 TRAFFIC ANALYSIS PARAMETERS 1.5

1.4 STEERING COMMITTEE 1.6

1.5 BEST PRACTICES & PERFORMANCE MEASURES 1.6

2.0 EXISTING CONDITIONS **2.1**

2.1 CORRIDOR CHARACTERISTICS 2.1

2.1.1 Schools and Recreational Facilities 2.1

2.1.2 Activity and Economic Development Centers 2.1

2.1.3 Neighborhoods 2.1

2.2 RIVERINE FLOODING 2.2

2.3 PEDESTRIAN WALKWAYS & BIKEWAYS 2.5

2.4 TRANSIT 2.7

2.5 CRASH HISTORY 2.7

2.6 TRAFFIC VOLUMES 2.12

2.6.1 2023 Daily Traffic Volumes 2.12

2.6.2 2023 Peak Hour Traffic Volumes 2.12

2.7 CAPACITY 2.18

2.7.1 Link Capacity 2.18

2.7.2 Node Capacity 2.20

2.8 EXISTING CONDITIONS PUBLIC INVOLVEMENT (PIM #1) 2.22

3.0 TRAFFIC VOLUME DEVELOPMENT **3.1**

3.1 GRAND STRAND AREA TRANSPORTATION STUDY (GSATS) TRAVEL DEMAND MODEL 3.1

3.2 GROWTH RATES 3.1

3.3 FUTURE 2035 AND 2045 PEAK HOUR TRAFFIC VOLUMES 3.1

4.0 DEFICIENCY IDENTIFICATION **4.1**

4.1 INTERMEDIATE (2035) NO BUILD CONDITIONS 4.1

4.1.1 Node Capacity-Based Deficiencies 4.1

4.1.2 Safety-Based Deficiencies 4.3

4.2 LONG-TERM (2045) NO BUILD CONDITIONS 4.4

4.2.1 Link Capacity-Based Deficiencies 4.4

5.0 RECOMMENDED IMPROVEMENTS **5.1**

5.1 IMMINENT-TERM (PLANNED BY OTHERS) 5.1

5.2 SHORT- & MID-TERM (RECOMMENDED) 5.2

5.3 LONG-TERM (RECOMMENDED) 5.4

5.4 ADDITIONAL CONSIDERATIONS 5.7

5.5 RECOMMENDATIONS PUBLIC INVOLVEMENT (PIM #2) 5.8

6.0 FUNDING **6.1**

6.1 IMPROVEMENT COSTS 6.1

6.2 FUNDING SOURCES 6.2

6.2.1 Local Funding 6.2

6.2.2 State Funding 6.2

7.0 PROJECT PRIORITIZATION **7.1**

7.1 SHORT-TERM PROJECTS 7.1

7.2 MID-TERM PROJECT PRIORITIZATION 7.1

7.3 LONG-TERM (WIDENING) SEGMENT PRIORITIZATION 7.2

7.3.1 Segments Identified for Scoring 7.2

7.3.2 Performance/Scoring Criteria 7.2

7.3.3 Summary of Segments, Ranked 7.4

8.0 CONCLUSIONS & RECOMMENDATIONS **8.1**

TABLE OF CONTENTS

LIST OF TABLES

Table E.1 – Imminently-Planned Improvements i
Table E.2 – Recommended Short/Mid-Term Improvement ii
Table E.3 – Recommended Long-Term Improvement ii
Table E.4 – Short-Term Project Summary (2025-2030) iii
Table E.5 – Mid-Term Project Summary (2030-2035) iii
Table E.6 – Final Long-Term Improvement Segment Prioritization Costs and Concept References iii
Table 1.1 – "Link" Study Area Segments 1.1
Table 1.2 – "Node" Study Area Intersections 1.1
Table 1.3 – HCM 6th Class III 2-Lane LOS Criteria 1.5
Table 1.4 – HCM 6th Multilane Hwy LOS Criteria 1.5
Table 1.5 – HCM 6th Intersection LOS Criteria 1.5
Table 2.1 – Existing and Future Crossing Conditions 2.4
Table 2.2 – Intersection Total Turning Movements 2.12
Table 2.3 – HCM 6th Edition Class III 2-Lane LOS Criteria 2.18
Table 2.4 – Link Capacity: Existing Conditions 2.18
Table 2.5 – HCM 6th Edition Intersection LOS Criteria 2.20
Table 2.6 – Link Capacity: Existing Conditions 2.20
Table 3.1 – Trip Generation Estimates 3.2
Table 4.1 – Node Capacity: 2035 Intermediate Year No Build Conditions 4.2
Table 4.2 – HCM 6th Edition Class III 2-Lane LOS Criteria 4.4
Table 4.3 – Link Capacity: 2045 Horizon Year No Build Conditions 4.4
Table 5.1 – Imminently-Planned Improvements 5.1
Table 5.2 – Recommended Short/Mid-Term Improvement 5.2
Table 5.3 – Node Capacity: 2035 Intermediate Year Conditions w/ Improvements 5.3
Table 5.4 – Link Capacity: 2045 Horizon Year Conditions – as 3-Lane Sections 5.4
Table 5.5 – 2045 Horizon Year Recommended Build Link Capacity LOS Analysis Results 5.5
Table 5.6 – 2045 Horizon Year Recommended Build Node Capacity LOS Analysis Results 5.6
Table 5.7 – Link Capacity: 2045 Horizon Year Conditions – as 3-Lane Section w/ Anticipated Rerouting of Traffic 5.7
Table 6.1 – Recommended Improvement Costs 6.1
Table 7.1 – Short-Term Project Summary (2025-2030) 7.1
Table 7.2 – Mid-Term Project Summary (2030-2035) 7.1
Table 7.3 – GSATS Project Prioritization Criteria 7.2
Table 7.4 – SC 90 Long-Term Prioritization Criteria 7.2
Table 7.5 – Public Safety Scoring Rubric 7.3
Table 7.6 – Traffic Volume & Congestion Scoring Rubric 7.3
Table 7.7 – Financial Viability Scoring Rubric 7.3
Table 7.8 – Environmental Impacts Scoring Rubric 7.3
Table 7.10 – Final Long-Term Improvement Segment Prioritization 7.4
Table 7.11 – Final Long-Term Improvement Segment Prioritization Costs and Concept References 7.4
Table 8.1 – Imminently-Planned Improvements 8.1
Table 8.2 – Recommended Short/Mid-Term Improvement 8.2
Table 8.3 – Recommended Long-Term Improvement 8.2
Table 8.4 – Short-Term Project Summary (2025-2030) 8.3
Table 8.5 – Mid-Term Project Summary (2030-2035) 8.3
Table 8.6 – Final Long-Term Improvement Segment Prioritization Costs and Concept References 8.3

TABLE OF CONTENTS

LIST OF EXHIBIITS

Exhibit 1.1 – SC 90 & HWY 57 Location Map....1.2
Exhibit 1.2 – SC 90 & HWY 57 “Link” Study Segments....1.3
Exhibit 1.3 – SC 90 & HWY 57 “Node” Study Intersections....1.4
Exhibit 2.1 – SC 90 & HWY 57 Surface Water Crossing Locations....2.4
Exhibit 2.2 – East Coast Greenway Location Map....2.6
Exhibit 2.3 – SC 90 & HWY 57 Crash History (2017-2022)....2.8
Exhibit 2.4 – SC 90 & HWY 57 Rear End Crashes (2017-2022)....2.9
Exhibit 2.5 – SC 90 & HWY 57 Single Vehicle Crashes (2017-2022)....2.10
Exhibit 2.6 – SC 90 & HWY 57 Angle Crashes (2017-2022)....2.11
Exhibit 2.7 – Existing Daily Traffic Volumes....2.13
Exhibit 2.8 – Existing Peak Hour Traffic Volumes (Sheet 1 of 4)....2.14
Exhibit 2.9 – Existing Peak Hour Traffic Volumes (Sheet 2 of 4)....2.15
Exhibit 2.10 – Existing Peak Hour Traffic Volumes (Sheet 3 of 4)....2.16
Exhibit 2.11 – Existing Peak Hour Traffic Volumes (Sheet 4 of 4)....2.17
Exhibit 2.10 – SC 90 & HWY 57 Existing “Link” Average LOS Results....2.19
Exhibit 2.11 – SC 90 & HWY 57 Existing “Node” LOS Results....2.21
Exhibit 2.12 – SC 90 & HWY 57 Corridor Study Website....2.22
Exhibit 2.13 – PIM Survey: Transportation Modes....2.23
Exhibit 2.14 – PIM #1 Photos....2.24
Exhibit 3.1 – SC 90 & HWY 57 GSATS Model Base & Future Year Projections....3.1
Exhibit 3.2 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 1 of 4)....3.3
Exhibit 3.3 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 2 of 4)....3.4
Exhibit 3.4 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 3 of 4)....3.5
Exhibit 3.5 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 4 of 4)....3.6
Exhibit 3.6 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 1 of 4)....3.7
Exhibit 3.7 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 2 of 4)....3.8
Exhibit 3.8 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 3 of 4)....3.9
Exhibit 3.9 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 4 of 4)....3.10
Exhibit 4.1 – Intersections w/ Intermediate Year Deficiencies Identified for Improvement....4.2
Exhibit 4.2 – Intersections Identified w/ Existing and Intermediate Year Deficiencies....4.3
Exhibit 4.3 – SC 90 & HWY 57 2045 Horizon Year “Link” Average LOS Results....4.5
Exhibit 5.1 – PIM #2 Photos....5.8

EXECUTIVE SUMMARY

The corridor of SC 90 from US 501 Business to US 17 in Horry County is a 23-mile minor arterial and is a primary link between Conway and the Little River Area. Highway (Hwy) 57 from SC 90 to SC 9 is approximately three miles of state-maintained roadway with half of the section classified as a rural major collector and the other half classified as an urban major collector. For the purposes of the analysis, the corridor was studied in terms of its "links" and its "nodes", with the links being the highway segments along the corridor at various reasonable termini, and the nodes being the key intersections, both signalized and unsignalized, along the corridor. These links and nodes were evaluated for deficiencies based on existing, future interim (2035), and future horizon (2045) year conditions.

Through safety analysis, capacity analysis, stakeholder engagement, and a public involvement process, imminent-, short-, mid-, and long-term improvement recommendations were developed and prioritized, according to scoring criteria consistent with the Grand Strand Area Transportation Study (GSATS) scoring criteria.

The following intersections and sections along SC 90 and Hwy 57 were identified as projected to have deficiencies in the short- to mid-term intermediate conditions:

- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & E Cox Ferry Rd;
- SC 90 & Bear Bluff Rd;
- SC 90 & Old Reaves Ferry Rd;
- SC 90 & SC 22 Eastbound (EB) Ramp;
- SC 90 & SC 22 Westbound (WB) Ramp;
- SC 90 & Hwy 31 E/Monaca Dr;
- SC 90 & Long Bay Rd/Star Bluff Rd;
- SC 90 & Water Tower Rd;
- SC 90 & Highway (Hwy) 57;
- SC 90 & Mt. Zion Rd;
- SC 90 between E Cox Ferry Rd and International Dr;
- SC 90 between Monaca Dr and Star Bluff Rd; and
- Hwy 57 & Mt. Zion Road.

Additionally, almost the entirety of the corridor was identified to have deficient capacity as a two-lane highway in the projected horizon year conditions.

Therefore, to address these projected intermediate and long-term deficiencies, first, an evaluation was completed to determine whether imminently-planned projects along the corridor which may address these identified deficiencies (e.g.: mitigation improvements associated with planned developments along the corridor, SCDOT projects, County projects, etc.). For the short- and mid-term deficiencies which were found not to be addressed by these imminently-planned projects, improvement concepts at each intersection and/or segment were identified based upon iterative capacity and safety analysis for the interim (2035) conditions. Finally, for the long-term highway capacity deficiency, widening concepts for the corridor were developed based on capacity analysis for the horizon year (2045) conditions. The review of planned projects along the corridor indicated projects which would address five of the fifteen intermediate deficiencies, as listed in **Table E.1**.

Table E.1 – Imminently-Planned Improvements

Location	Potential Improvement
SC 90 & E Cox Ferry Rd	Traffic Signal
SC 90 & SWA Landfill Driveway	Traffic Signal
SC 90 & Bear Bluff Rd	EB left-turn lane along SC 90 and left-turn lane along Bear Bluff Road
SC 90 & SC 22 EB Ramp	Traffic Signal
SC 90 between Meadowood Lane and Live Oak Road	Install 3-Lane Section
SC 90 & Long Bay Rd/ Star Bluff Rd	Realign side-street approaches with left-turn lanes at all approaches and install traffic signal
SC 90 & Water Tower Rd	WB left-turn lane along SC 90 and left-turn lane along Water Tower Road.

Therefore, since the deficiencies at these locations are anticipated to be addressed due to imminently-planned improvements, no additional short/mid term improvements at these locations are recommended, and the remaining deficient locations were evaluated for improvements to improve capacity and/or safety in the short/mid-term.

This evaluation led to the short/mid-term improvements listed in **Table E.2**. In addition to these improvements, it is recommended to consider adopting zoning ordinances along SC 90 which require access management be considered with new developments. These improvements are anticipated to provide acceptable level of service along the corridor and are anticipated to provide safety improvements through the future interim 2035 conditions.

Table E.2 – Recommended Short/Mid-Term Improvement

Location	Improvement
SC 90 & US 501 Business	Install WB LT (left-turn) Lane along SC 90 & NB (northbound) RT (right-turn) Lane along US 501 Business & Remove Split Phase.
SC 90 & French Collins Rd	Install a 3-lane section with 6' paved shoulders between Clay Ridge Road and Wilderness Road.
SC 90 & Old Reaves Ferry Rd	Realign sidestreets to create two distinct intersections and Install LT lanes at all approaches OR Install a Roundabout.
SC 90 & SC 22 WB Ramp	Install a Signal.
SC 90 & Hwy 31 E/Monaca Dr	Install SB (southbound) and NB LT Lanes along E Monaca Dr OR Install a Roundabout.
SC 90 & Hwy 57	Install a Signal.
SC 90 & Mt. Zion Rd	Install a 3-lane section with 6' paved shoulders between Mt. Zion Rd and US 17.
SC 90 between E Cox Ferry Rd & International Dr	Install 3-lane section with 6' paved shoulders between E Cox Ferry Rd and International Dr and raise Sterrit Swamp Bridge Deck.
SC 90 between Monaca Dr and Star Bluff Rd	Install a 3-lane section with 6' paved shoulders between Monaca Dr and Star Bluff Rd
Hwy 57 & Mt. Zion Road	Install WB LT Lane along Hwy 57 onto Mt. Zion Road.

As mentioned previously, the horizon year link capacity analysis indicated that the majority of the SC 90 and Hwy 57 corridor is anticipated to experience undesirable level of service (LOS) in the 2045 horizon year.

As a preliminary step in determining the appropriate long-term recommendation to address this deficiency, an analysis was completed to evaluate whether a three-lane section (adding a two-way-left-turn-lane throughout) would mitigate these undesirable operations. The results of this analysis indicate that with provision of a TWLTL throughout, the corridor is still anticipated to experience undesirable LOS E in at least one peak hour, if not both, for all segments along SC 90. However, this analysis does indicate that provision of a three-lane section along Hwy 57 is anticipated to be sufficient to improve operations to acceptable LOS.

Therefore, the long-term recommendations for the SC 90 and Hwy 57 corridors are to provide a four-lane section along the entirety of SC 90 and a three-lane section along Hwy 57.

For the purposes of determining priority for these long-term recommendations, the corridor was evaluated in six (6) segments, determined based upon logical termini, with the improvements for each listed in **Table E.3**.

Table E.3 – Recommended Long-Term Improvement

Location	Improvement
SC 90 (US 501 to E. Cox Ferry)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (E. Cox Ferry to International)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (International to SC 22)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (SC 22 to Robert Edge)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (Robert Edge to US 17)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
Hwy 57 (SC 90 to SC 9)	Widen to a 3-lane section with turn lanes, bicycle and pedestrian facilities

The prioritization for each of these segments is indicated on the following page.

Short-, mid-, and long-term recommendations were then identified, with the mid-term projects prioritized according to engineering judgement and the long-term widening segments prioritized according to a GSATS-compatible scoring criteria.

The short-term projects, their planning level costs, and reference concept figure (in **Appendix G**), are listed in **Table E.4** (not prioritized). The prioritized mid-term projects are listed in **Table E.5**, and the prioritized long-term improvement segments are listed in **Table E.6**.

Table E.4 – Short-Term Project Summary (2025-2030)

Project #/Location (Not Ranked)		Improvement	Cost*	Figure
1	SC 90 & SC 22 WB	Install Traffic Signal	$410,000	D
2	SC 90 & Hwy 57	Remove acceleration lane along SC 90 and install traffic signal	$680,000	F

** Rounded up to nearest $10,000 (in future, inflated 2030 dollar values)*

Table E.5 – Mid-Term Project Summary (2030-2035)

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (E. Cox Ferry Rd to International Dr)	3.51 miles	Install 3-lane section with 6' paved shoulders. Raise Sterrit Swamp Bridge Deck	$22,450,000	H
2	SC 90 (Mt. Zion Rd to US 17)	2.81 miles	Install 3-lane section with 6' paved shoulders	$12,200,000	J
3	SC 90 (Monaca Dr to Star Bluff Rd)	1.77 miles	Install 3-lane section with 6' paved shoulders	$8,900,000	I
4	Hwy 57 & Mt. Zion Rd	Intersection	Install left turn lane along Hwy 57 turning left onto Mt. Zion Rd	$1,050,000	G
5A	SC 90 & Old Reaves Ferry Rd	Intersection	Realign side streets and install left turn lanes along SC 90 turning onto Old Reaves Ferry Rd	$2,750,000	E1
5B	SC 90 at Old Reaves Ferry Rd	Intersection	Install Roundabout	$3,950,000	E2
6A	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install left tun lanes on Monaca Dr. and S-31 turning onto SC 90	$1,600,000	C1
6B	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install Roundabout	$2,350,000	C2
7	SC 90 (Clay Ridge Rd to Wilderness Rd)	0.68 miles	Install 3-lane section with 6' paved shoulders	$3,450,000	B
8	US 501 Bus. & SC 90	Intersection	Install WB left turn lane on SC 90 turning onto US 501 Bus. and Install NB right turn lane on US 501 Bus. turning onto SC 90 and remove split phase	$1,900,000	A

** Rounded up to nearest $50,000 (in future, inflated 2035 dollar values)*

Table E.6 – Final Long-Term Improvement Segment Prioritization Costs and Concept References

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (SC 22 to Robert Edge)	6.46 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$204,900,000	D
2	SC 90 (Robert Edge to US 17)	3.65 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$155,400,000	E
3	Hwy 57 (SC 90 to SC 9)	2.74 miles	Widen to a 3-lane section with Turn lanes, bicycle and pedestrian facilities	$75,355,000	F
4	SC 90 (E. Cox Ferry to International)	4.02 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$136,500,000	B
5	SC 90 (US 501 to E. Cox Ferry Rd)	2.56 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$87,000,000	A
6	SC 90 (International to SC 22)	6.22 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$221,500,000	C

** Rounded up to nearest $100,000 (in future, inflated 2045 dollar values)*

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

SC 90 from US 501 Business to US 17 in Horry County is approximately 23 miles and is a major link between Conway and the Little River Area. SC 90 is currently a two-lane state-maintained roadway with approximately 17 miles classified as a minor arterial and approximately 5 miles classified as an urban minor arterial. There is one existing five-lane section near the intersections of Champions Boulevard and Robert Edge Parkway. Highway (Hwy) 57 from SC 90 to SC 9 is approximately three miles of state-maintained roadway with half of the section classified as a rural major collector and the other half classified as an urban major collector.

1.2 STUDY AREA

The study area includes the corridor of SC 90 between US 501 Business and US 17 and includes Hwy 57 between SC 90 and SC 9, as shown in **Exhibit 1.1**.

For the purposes of the analysis, the corridor was studied in terms of its "links" and it's "nodes", with the links being the highway segments along the corridor at various reasonable termini (where cross-section, volumes, speed limits, and/or major cross streets created a change in roadway characteristic), and the nodes being the key intersections, both signalized and unsignalized, along the corridor.

1.2.1 Corridor "Link" Segments

The study area consisted of ten (10) segments along SC 90 and Hwy 57, as shown in **Exhibit 1.2** and listed in **Table 1.2**.

Table 1.1 – "Link" Study Area Segments

#	Roadway	Limits
1	SC 90	US 501 – E Cox Ferry Rd
2	SC 90	E Cox Ferry Rd – International Drive
3	SC 90	International Dr – Bear Bluff Rd
4	SC 90	Bear Bluff Rd – Old SC 90
5	SC 90	Old SC 90 – Whispering Oaks Drive
6	SC 90	Whispering Oaks Dr – Hwy 57
7	SC 90	Hwy 57 – Champions Blvd
8	SC 90	Champions Blvd – Sea Mountain Hwy
9	SC 90	Sea Mountain Hwy – US 17
10	HWY 57	SC 90 – SC 9

1.2.2 Corridor "Node" Intersections

The study area consisted of 23 intersections along the corridor, as shown in **Exhibit 1.3**, and listed in **Table 1.2**.

Table 1.2 – "Node" Study Area Intersections

#	Control	Intersection
1	Signal	US 501 Bus & SC 90
2	TWSC	SC 90 & French Collins Rd
3	TWSC	SC 90 & E Cox Ferry Rd
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr
5	Signal	SC 90 & International Dr
6	TWSC	SC 90 & Tilly Pine Dr
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr
8	TWSC	SC 90 & Bear Bluff Rd
9	TWSC	SC 90 & Reaves/Old Reaves Ferry Rd
10	TWSC	SC 90 & SC 22 EB Off Ramp
11	TWSC	SC 90 & SC 22 WB Ramps
12	Signal	SC 90 & Hwy 31 E/Monaca Dr
13	TWSC	SC 90 & Long Bay Rd/Star Bluff Rd
14	TWSC	SC 90 & Water Tower Rd
15	TWSC	SC 90 & Hwy 57 S
16	Signal	SC 9 & Hwy 57 S
17	Signal	SC 90 & Champions Blvd
18	TWSC	SC 90 & Mt Zion Rd
19	Signal	SC 90 & St Joseph Rd
20	TWSC	SC 90 & Hwy 1008
21	Signal	SC 90 & Sea Mountain Hwy
22	Signal	SC 90 & SC 9 EB Ramps
23	Signal	SC 90 & Hwy 17

Exhibit 1.1 – SC 90 & HWY 57 Location Map

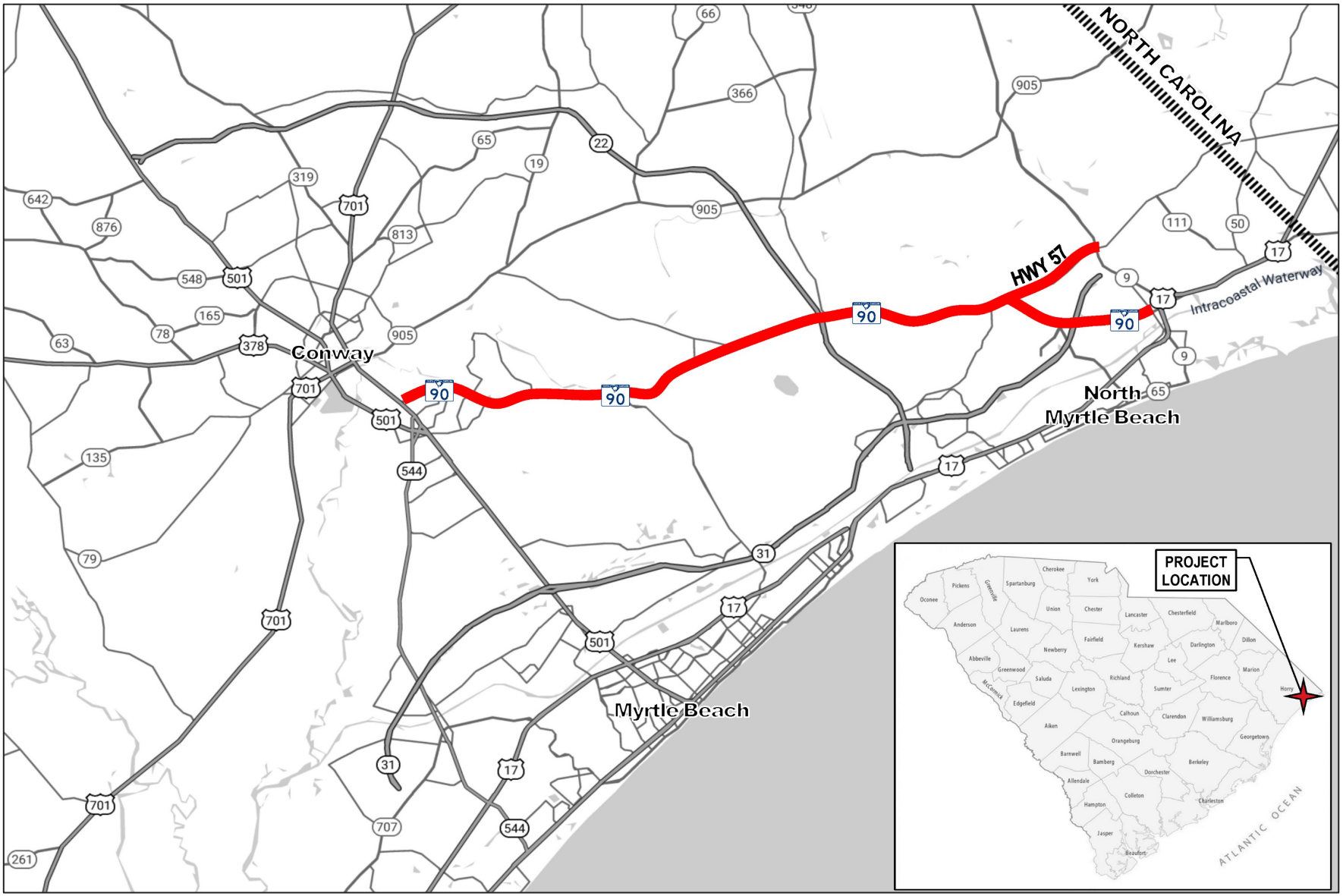
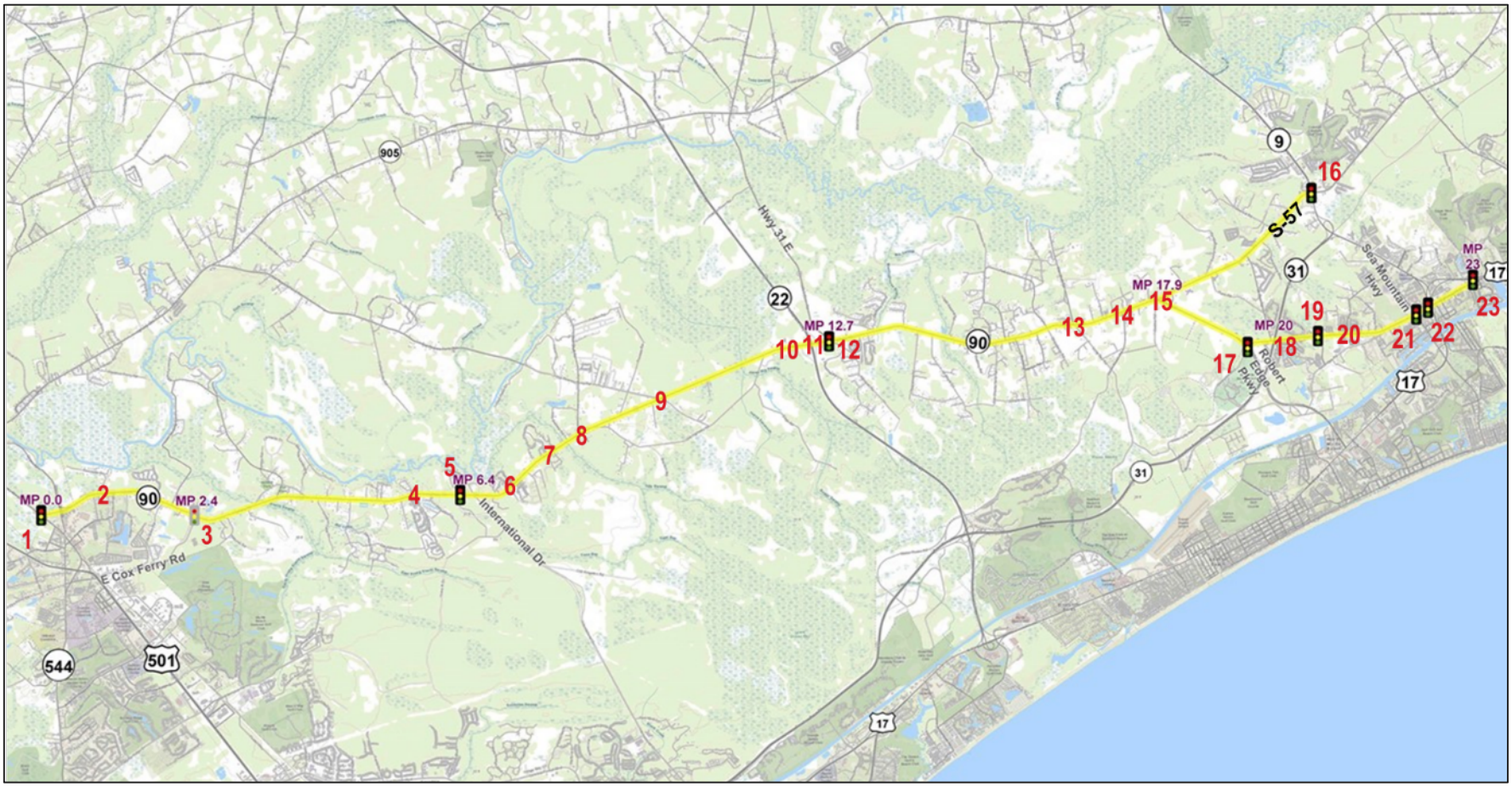


Exhibit 1.2 – SC 90 & HWY 57 "Link" Study Segments

Exhibit 1.3 – SC 90 & HWY 57 "Node" Study Intersections



1.3 TRAFFIC ANALYSIS PARAMETERS

A level of service (LOS) capacity analysis for the corridor's links and nodes were completed for 2023 Existing, 2035 Intermediate No Build, 2035 Intermediate Build, 2045 Horizon No Build, and 2045 Intermediate Build Conditions, for the AM (between 7-9am) and PM (between 4-6pm) peak hours.

Two-lane highway LOS ranges from LOS A to LOS E, which are related to three measures of effectiveness.

1. Average Travel Speed (ATS), which is "…the segment length divided by the average travel time taken by vehicles to traverse it during a designated time interval."
2. Percent Time Spent Following (PTSF), which "represents freedom to maneuver and the comfort and convenience of travel. It is the average percentage of time that vehicles must travel in platoons behind slower vehicles due to the inability to pass."
3. Percent Free-Flow Speed (PFFS), "which represents the ability to of vehicles to travel at or near the posted speed limit."

ATS and PTSF are relevant measures of effectiveness on Class I two-lane highways (those highways on which motorists expect to travel at high speeds), whereas PFFS is a relevant measure of effectiveness on Class III highways (those serving moderately developed areas, including portions of Class I highways which pass through small towns). Therefore, for the purposes of this analysis, the existing and No Build SC 90 and HWY 57 corridor segments were analyzed as Class III highways, with LOS criteria shown in **Table 1.3.**

Table 1.3 – HCM 6th Class III 2-Lane LOS Criteria

LOS	Class III Percent Free-Flow Speed (%)
A	> 91.7%
B	> 83.3% - 91.7%
C	> 75.0% - 83.3%
D	> 66.7% – 75.0%
E	< 66.7%
F	LOS E Represents Over Capacity

For future Build Conditions, which contemplated widening, the HCM's multilane capacity analysis methodology was utilized, with the multilane criteria of density in passenger cars per mile per lane, as shown in **Table 1.4**.

Table 1.4 – HCM 6th Multilane Hwy LOS Criteria

LOS	Free-Flow Speed (mph)	Density
A	All	> 0-11
B	All	> 11-18
C	All	> 18-26
D	All	> 26-35
E	60	> 35-40
	55	> 35-41
	50	> 35-43
	45	> 35-45
F	60	> 40
	55	> 41
	50	> 43
	45	> 45

Intersection level of service (LOS) grades range from LOS A to LOS F, which are directly related to the level of control delay at the intersection and characterize the operational conditions of the intersection traffic flow. LOS A operations typically represent ideal, free-flow conditions where vehicles experience little to no delays, and LOS F operations typically represent poor, forced-flow (bumper-to-bumper) conditions with high vehicular delays, and are generally considered undesirable. **Table 1.5** summarizes the HCM 6th Edition control delay thresholds associated with each LOS grade for unsignalized and signalized intersections. Level of service A through D is considered to be acceptable LOS, while LOS E and F is considered to be undesirable.

Table 1.5 – HCM 6th Intersection LOS Criteria

LOS	Control Delay per Vehicle (s)	
	Unsignalized	Signalized
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

1.4 STEERING COMMITTEE

The steering committee for the SC 90 & Hwy 57 Corridor Study consisted of members from the following groups and agencies:

City of Conway
City of North Myrtle Beach
Coast RTA
GSATS
Horry County
Horry County Citizens
SCDOT

Meeting minutes for Steering Committee meetings are included in **Appendix A.**

1.5 BEST PRACTICES & PERFORMANCE MEASURES

For possible application to the SC 90 and Hwy 57 Corridor Study, relevant transportation industry best practices for the following seven areas of transportation planning were researched, assessed, described, and analyzed for potential application to this Corridor Study. Best practices for the following seven areas of transportation planning include, which are detailed in **Appendix B**:

1. Travel Demand Modeling
2. Land Use Projections
3. Complete Streets
4. Pedestrian and Bicycle Planning
5. Transit Planning
6. Access Management
7. Travel Demand Management

The Fixing America's Surface Transportation (FAST) Act mandates that State and Regional Planning agencies incorporate performance-based planning measures and targets into their long and short-range planning framework. For application to the SC 90 and Hwy 57 Corridor Study with Grand Strand Area Transportation Study (GSATS), the performance measures for the requirements of the FAST Act and current Federal guidance updated in Infrastructure Investment and Jobs Act (IIJA) were reviewed. The performance measures are described as follows, which are detailed in **Appendix B:**

1. Targets that Address Surface Transportation and Public Transportation, with Attention to Transit Asset Management and Transit Safety
2. Reduction in Traffic Serious Injury and Fatal Crashes
3. Infrastructure Conditions
4. Congestion Reduction
5. System Efficiency
6. Freight Movement and Economic Vitality
7. Environmental Sustainability
8. Timely Delivery of Programmed Projects

2.0 EXISTING CONDITIONS

2.1 CORRIDOR CHARACTERISTICS

The study corridor(s) include SC 90 between US 501 Business and US 17 as well as Hwy 57 between SC 90 and SC 9. SC 90 is a two-lane minor arterial – with some sections having three-lanes due to spot-widenings for turn lanes, etc. The majority of the access points along the corridor are two-way stop controlled without left- and right-turn lanes along SC 90 for ingress movements. Primary cross-streets along the corridor – providing north-south connectivity – include French Collins Road, E Cox Ferry Road, International Drive, Bear Bluff Road, Old Reaves Ferry Road, SC 22, Hwy 31/E Monaca Road, Long Bay Road, Water Tower Road, Robert Edge Parkway, and Sea Mountain Highway. The speed limit ranges from 35 to 45 mph throughout the corridor with daily volume heavy vehicle percentages ranging from 11% - 16%. Hwy 57 is a two-lane major collector, with a speed limit ranging from 35 to 45 mph and daily volume heavy vehicle percentage of 11%. Existing conditions, including major roads, parcels, municipalities, land use designations, zoning, Waterlines, Wetlands, Flood Hazard Zones, and Horry County High Water Marks were compiled in a ArcGIS-based SC 90 Corridor Map, which can be accessed at**. https://bmi.maps.arcgis.com/apps/instant/basic/index.html?appid=3bd8666a7a844fb3a1b2c2ba7e28fd4c&locale=en-US.** An inventory of major trip generators was also compiled, including:

2.1.1 Schools and Recreational Facilities

- Waterway Elementary
- Riverside Elementary School
- Black Water Middle School
- North Myrtle Beach Middle School
- North Myrtle Beach High School
- North Myrtle Beach Christian School
- McNeil Park
- Sam Cox Park
- Poplar Park
- North Strand Recreational Center
- North Myrtle Beach Park and Sports Complex

2.1.2 Activity and Economic Development Centers

- Red Hill, SC (Western Terminus of the Corridor)
- Area around SC 90 & Highway 22
- Area around SC 90 & Hwy 57 S
- Area around SC 90 & Highway 31
- Area around SC 90 & Interstate 17

2.1.3 Neighborhoods

2.1.3.1 Located along SC 90 (East to West)

- Bellacroft at Dupree Drive
- Holly Sands at St. Joseph Road
- Neighborhood at Livingston Circle
- Grove Brook Estates at Springdale Drive
- Murray Park at Barnacle Lane
- Carriage Lake at Carriage Lake Drive
- Royal Estates at Mandi Avenue
- Villas at Sandridge at Waterend Drive
- Country Lakes at Erie Drive
- BayBerry at Bayberry Drive
- Bruin Lane at Bruin Lane
- Park Pointe at Champions Boulevard
- Avery Woods at W Shore Drive
- The Glade at Meadowood Lane
- Wakefield at Quail Ridge Boulevard
- Summerfields at Whispering Oaks Drive
- Sugarloaf at Averyville Drive
- Carolina Pines RV at Carolina Pines
- Fieldview at Fox Rae Drive
- Old Mill at Old Reaves Ferry Road
- Buckeye Forest at Chavis Road
- Heritage Preserve Three Oak Ln/Heritage Downs Dr
- Chestnut Ridge at Old Chimney Lane
- Astoria Park at Rowells Court
- Glenmoor at Glenmoor Drive
- River's Edge Plantation at River Pine Drive
- Wildhorse at Wildhorse Drive
- The Reserve at Wild Horse at Garrano Street
- Hillsborough at Chelsey Lake Drive
- Hickory Hill Circle at Hickory Hill Circle
- Costal Point at E Cox Ferry Road

2.1.3.2 Located along Hwy 57

- Tallwood Lakes at Tallwood Road
- Palm Lakes Plantation at Palm Lakes Boulevard
- 57th Place at Pickerel Boulevard
- Waterfall Villages at Ribbon Street
- Kettering Estates at Kettering Way

2.2 RIVERINE FLOODING

The study area includes five major surface water crossings which were evaluated for future improvements. In the existing condition, Sterritt Swamp, Tilly Swamp, and Jones Big Swamp are existing bridge crossings while Meetinghouse Branch and Mill Swamp are culvert crossings as shown in **Exhibit 2.1**. It should be noted that SCDOT does not have any funded bridge replacement projects in their TIP along SC 90 or S-57 in the project study area.

Horry County Lidar 2' interval contour data and USGS StreamStats channel geometry were used to estimate existing road crossing elevations and existing channel dimensions and invert elevations, assuming trapezoidal channel cross-sections. Channel side slopes were estimated assuming the StreamStats channel width value corresponded to width at top of bank.

Two design standards were analyzed for future improvements.

For the lower design standard, the final road elevation was designed such that the bottom of the bridge deck would have a one-foot clearance above the 100-year recurrence interval, 24-hour duration storm event. USGS StreamStats estimation of the 100-year peak flow rate was obtained for each crossing and the Urban Peak Flow Upper Confidence Interval was selected to be conservative.

The higher design standard was based on providing two feet of clearance above the Hurricane Florence High-Water Mark (HWM) elevation or one-foot above the 500-year storm elevation, whichever was greater. The nearest downstream High-Water Mark provided by Horry County was used to estimate this elevation at each crossing. The 500-year peak flow value was obtained from USGS StreamStats.

Channel capacity at future bridge crossings was estimated from StreamStats channel geometry, assuming trapezoidal cross-section up to the peak stage, which does not account for the overbank flooding that would occur during an extreme event in reality. Mannings n of 0.03 was assumed for all channels and tailwater impact was not included in this analysis. Longitudinal channel slope was assigned to determine what may be required to pass the 500-year event with approximately 1 foot of freeboard below the bottom of the bridge deck. Field survey is required to determine if the slope is achievable at each location. Bridge decks were assumed to be two feet thick (vertical) and future freeboard is estimated below the bottom of the bridge deck.

As shown in **Table 2.1**, all five existing crossings need to be raised to meet the lower and higher design standards. For the lower standard, the Hurricane Florence High-Water Marks are all lower than the 100-year elevation except at Tilly Swamp, indicating this location should be the highest priority crossing for improvement. For the higher standard, Sterritt Swamp 500-year storm and Florence HWM produced the same future road elevation. Tilly Swamp was the only crossing where Florence HWM was greater than the 500-year storm elevation, therefore dictating recommended future road elevation.

Based on magnitude of peak flow and roadway elevation required to meet the lower and higher design standards, it is recommended to prioritize the five existing crossing upgrades in the following order:

1. Tilly Swamp
2. Sterritt Swamp
3. Jones Big Swamp
4. Meetinghouse Branch
5. Mill Swamp

Based on these planning-level calculations, it is assumed that all future improved hydraulic crossings (5) would need to be bridges, as opposed to culvert crossings. It is recommended and more cost effective that any proposed/new bridges be designed to meet/accommodate the long-term corridor vision, therefore it was estimated for each new bridge to have 300-foot span and 90-foot width, which could accommodate 4 travel lanes with a turn lane and bicycle and pedestrian facilities. In fact, when new bridges are needed, they are often constructed to meet future year traffic prior to road widening matching the long-term corridor vision. Assuming a unit cost of $420 per square foot, the cost estimate for each new bridge is approximately $11.4M.

Due to the estimated cost of new bridges for the five existing surface water crossings (three bridge crossings and two culvert crossings), the project team considered some mid-term solutions to address flood capacity. For the three existing bridge crossings (Sterritt Swamp, Tilly Swamp, and Jones Big Swamp), it may be feasible to raise the existing bridge decks (new superstructure with re-decking) and improve the roadway approaches on each side of the bridges to vertically tie to the raised bridge decks. The estimated cost to raise the existing bridge decks (new superstructure) and improve the roadway approaches on each side of the bridges to vertically tie to the raised bridge decks is approximately 9 million or 3 million per bridge crossing. Also, if feasible on these three existing bridge crossings, jacking could result in cost savings such that the cost per bridge crossing could be less.

For the two existing culvert crossings (Meetinghouse Branch and Mill Swamp), although hydraulic/flood capacity can be increased by adding larger and more box culverts, preliminary calculations indicate that even the largest triple box culverts would not convey the 100-year or 500-year storms without significantly raising the existing road at the two crossings. Therefore, there would be no mid-term solutions to address the two existing culvert crossings and new bridges would be necessary with the cost estimate for each new bridge at approximately $11.4M per bridge.

Prior to any bridge replacement or other mid-term solutions to address flood capacity, detailed H&H studies of Tilly Swamp and Sterritt Swamp crossings should be prioritized since the High-Water Mark elevations downstream of these locations exceeded existing road elevations during Hurricane Florence. Based on recent imagery, it appears that Meetinghouse Branch just upstream of the SC-90 crossing has been piped due to a recent development, so any H&H studies conducted for permitting of that development should be reviewed. All crossings should be inspected for blockages or sediment accumulation which could be removed or dredged to reduce risk of flooding, particularly at existing culvert crossings.

Existing and proposed crossing conditions in **Table 2.1**, and details described in this narrative, are based on planning-level assumptions and should be used for high-level planning purposes only.

Few High-Water Marks were provided, and none were upstream of the stream crossings (preventing interpolation between points), so additional information is needed to determine the appropriate future road elevation. Detailed H&H studies must be conducted at all five crossings per SCDOT roadway design standards to determine actual existing conditions and appropriate improvements to manage natural surface water flows and stormwater runoff. Tidal influence, sea level rise, and climate change impacts on design storm events should also be included in detailed studies.

Additional factors should be considered to determine what level of improvement is appropriate at each crossing, depending on the surrounding context, site constraints, and design storm required.

Exhibit 2.1 – SC 90 & HWY 57 Surface Water Crossing Locations

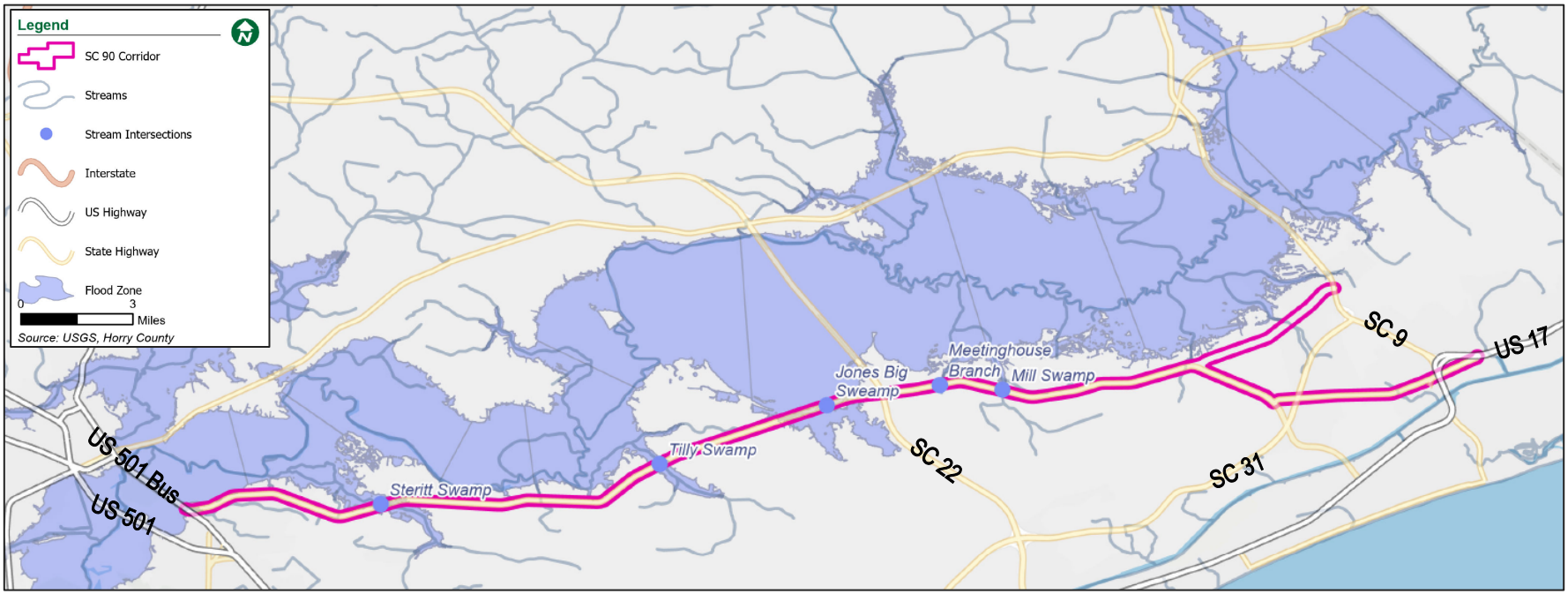


Table 2.1 – Existing and Future Crossing Conditions

	Sterritt Swamp	Tilly Swamp	Jones Big Swamp	Meetinghouse Branch	Mill Swamp
Existing Road El (ft)	16	16	22	24	26
100-yr Design Storm Future Road El (ft)	18.7	18.3	23.2	28.2	28.7
Florence HWM/500-year Design Storm Future Road El (ft)	21.0	23.4	25.1	29.3	30.3
Nearest Downstream Florence HWM (ft)	17.0	19.4	20.9	21.8	21.8

2.3 PEDESTRIAN WALKWAYS & BIKEWAYS

Pedestrian and bicycle planning focuses on human scale movement by means of feet and wheels. Providing infrastructure for these modes is especially important in areas where destinations are not suited for auto travel, for example in high density areas, or where the goal of travel is for recreation and health benefits. However, these modes can also be planned and designed for in areas that are not as dense. Examples include bicycle boulevards in mixed traffic, visually separated pedestrian lanes and physically separated shared use paths.

On corridors such as SC 90 and Hwy 57 a mix of facilities should be considered. On the corridor itself, where speeds and volumes are highest, physically separated facilities – such as multi-use or shared use pathways – may allow for the most comfort and safety for the broadest range of users. On connecting streets less intensive infrastructure such as sidewalks and bike lanes/shoulders, or bike routes may be preferred depending on street types, speeds, and expected volumes of traffic and network policy goals.

Implementing Pedestrian and Bicycle planning strategies include:

1. Understand the context, existing conditions, and future conditions of the corridor, including adopted plans.
2. Engage with pedestrians and bicyclists to understand how they want to use the corridor and what they see for the future.
3. Engage with those who avoid the corridor for walking and bicycling to understand gaps and concerns.
4. Work with the community to establish a set of recommendations that will guide future projects on and along the corridor.
5. Set criteria/modify existing criteria to uplift projects that support pedestrian and bicycle planning.
6. Enable the community to have a voice during future planning of the corridor (i.e., steering community/review board).
7. Create a set of performance measures to track progress and monitor success.

One section of the corridor includes the alignment of the East Coast Greenway along SC 90 as an on-road bike route. The current East Coast Greenway route uses SC 90 from US 17 to 6th Ave (approximately 3/4 mile) and is considered a “High-Stress Road, Use Extreme Caution”, as illustrated in **Exhibit 2.2**.

It is understood the desire is for the East Coast Greenway to utilize SC 90 from US 17 and connect to the existing shared use path at Robert Edge Parkway/Champions Blvd (approximately 3.65 miles).

A Pedestrian Walkways and Bikeways facility field review was completed, which indicated, in general:

- Signs in need of replacement along the corridor
- Rutting prevalent
- Primarily two-foot shoulders, though an SCDOT Rural Road Safety Project recently installed four-foot shoulders on both sides of SC 90 beginning near Averyville Dr and ending just before the intersection of Robert Edge Parkway/Champions Blvd (approx. 7 miles).
- No bicycle or pedestrian accommodations
- Multiple off-set/skewed intersections
- Large driveway openings

Additionally, intersections along the corridor were reviewed in depth for existing conditions and bicycle and pedestrian facilities, the results of which are shown in **Appendix C**.

Exhibit 2.2 – East Coast Greenway Location Map

Source: https://map.greenway.org/?loc=12,33.80169,-78.75103

2.4 TRANSIT

A transit services review was also conducted, which returned the following:

- No transit service along the corridor (attached map shows service along US 501 through Conway and US 17 in Horry County to get to North Myrtle Beach which is at least 45 minutes in one direction).
- Growth in seniors likely a large part/demand of response needs by RTA. Long-term needs are regional end points (Conway to/from North Myrtle Beach) and mid corridor accessibility. There has been 62% increase in senior population in the area. The 75-84 year age range increased 125% in Horry County.
- Buses need to be able to pick up people along the corridor and want to take advantage of intersections and right turn lanes. Ideally, buses would like 80' for turn lanes to stop and not have to enter neighborhoods.
- The senior population from 2012 to 2021, has increased approximately 44% to approximately 24.5% of the Horry County population.
- Horry County Council on Aging (non-profit): manages 11 senior centers in Horry County and provides transportation to these centers. Of the 11 senior centers, there is one in Conway (Conway Senior Center) and one in North Myrtle Beach (Grand Strand Senior Center).
- The Assisted Rides program of the WRCOG: works to fill the transportation gap currently faced by disabled individuals 21 years and older and individuals 60 years and older. The program helps enhance quality of life by enabling them to obtain needed services. Assisted Rides is a volunteer-driven transportation program.
- 'Neighbor to Neighbor' Non-Profit Program offers minimal to no-cost rides for seniors and vulnerable adults in Horry and Georgetown counties and is expanding to also cover Brunswick County, North Carolina.

2.5 CRASH HISTORY

Historical crashes along the corridor were reviewed between 2017 and 2022. This crash history review indicated that 1,722 crashes have occurred along the corridor in the 6-year review period, an average of 287 crashes per year, or just over 5 ½ crashes per week.

Of the 1,722 crashes, the highest occurring type of crash were rear-end crashes, at 42% of all crashes which occurred, followed by angle crashes at 26%, non-collision w/ motor vehicle (run-off the road, single vehicle crashes) at 25%, and sideswipe crashes at 5%.

Of the 1,722 crashes, 14 resulted in fatalities and 28 resulted in incapacitating injuries (a total of 42 fatal and severe injury crashes – or approximately 2.4% of all crashes). Of the crashes, 29% resulted in non-incapacitating or possible injuries, and the remaining 68% resulted in property damage only. Of the 1,722 crashes, 14% occurred during wet pavement conditions, and 28% occurred during dark conditions. Of the 1,722 crashes, 13 involved pedestrians or bicycles.

This data is summarized in graphical form, along a heat map showing the highest frequency locations of crashes, and the locations of the fatal, incapacitating injury, as well as the pedestrian/bicycle crashes in **Exhibit 2.3**.

Concerning the heat map, particular hot spots are evident along SC 90 between SC 22 and Hwy 57, which also shows a high frequency of fatal, incapacitating injury, and ped/bike collisions. Other high crash locations along the corridor include the intersections of US 501 Business, French Collins Road, E Cox Ferry Road, Lees Landing Circle, International Drive, Bear Bluff Road, Old Reaves Ferry Road, the SC 22 Ramp Termini, Mount Zion Road, and stretches of SC 90 between Champions Boulevard and US 17, including a high frequency of fatal crashes between Champions Boulevard and Hwy 1008.

Rear-end, single-vehicle, and angle crash heat maps are shown in **Exhibit 2.4, Exhibit 2.5**, and **Exhibit 2.6**, respectively.

Exhibit 2.3 – SC 90 & HWY 57 Crash History (2017-2022)

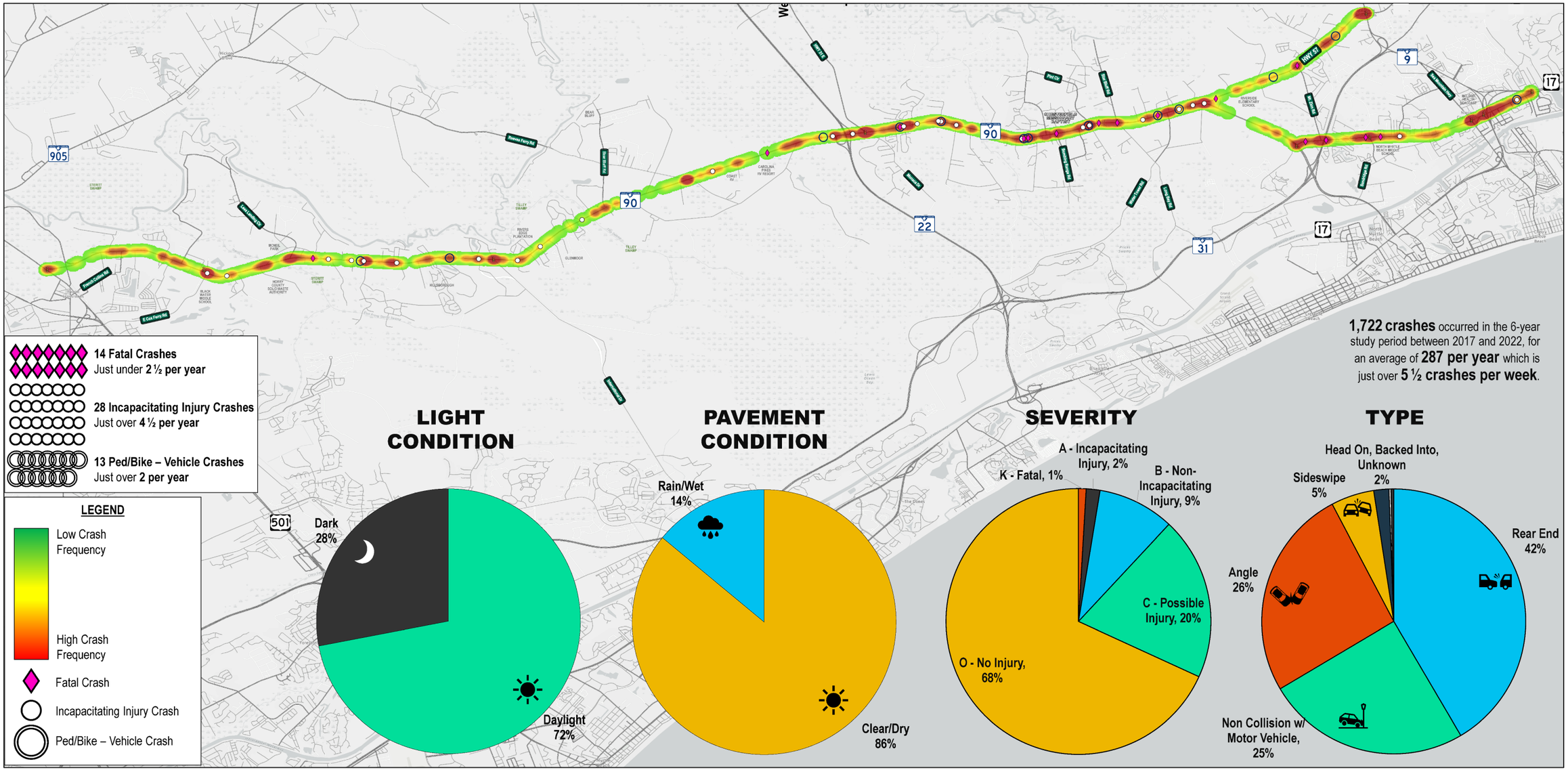


Exhibit 2.4 – SC 90 & HWY 57 Rear End Crashes (2017-2022)

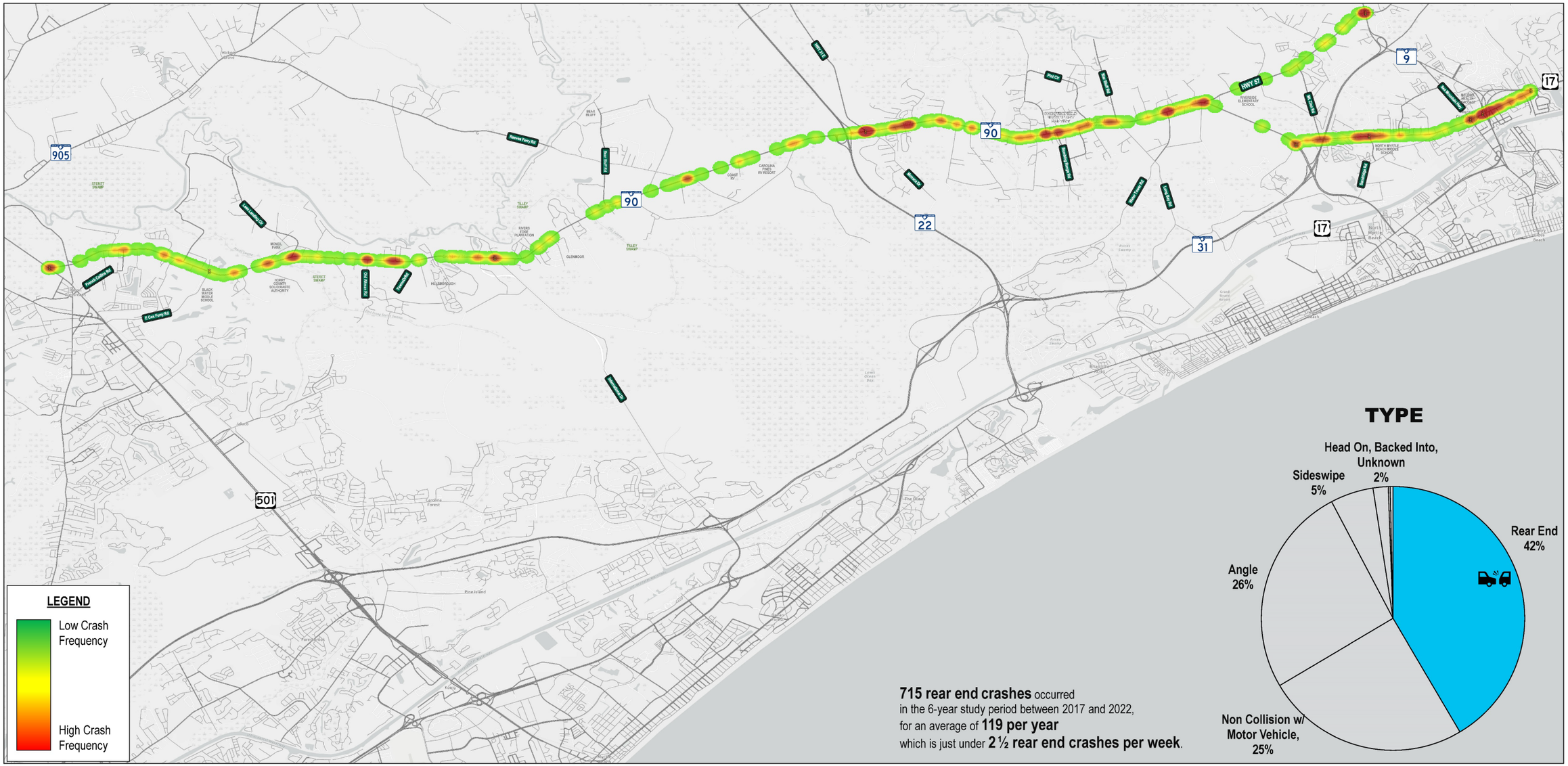


Exhibit 2.5 – SC 90 & HWY 57 Single Vehicle Crashes (2017-2022)

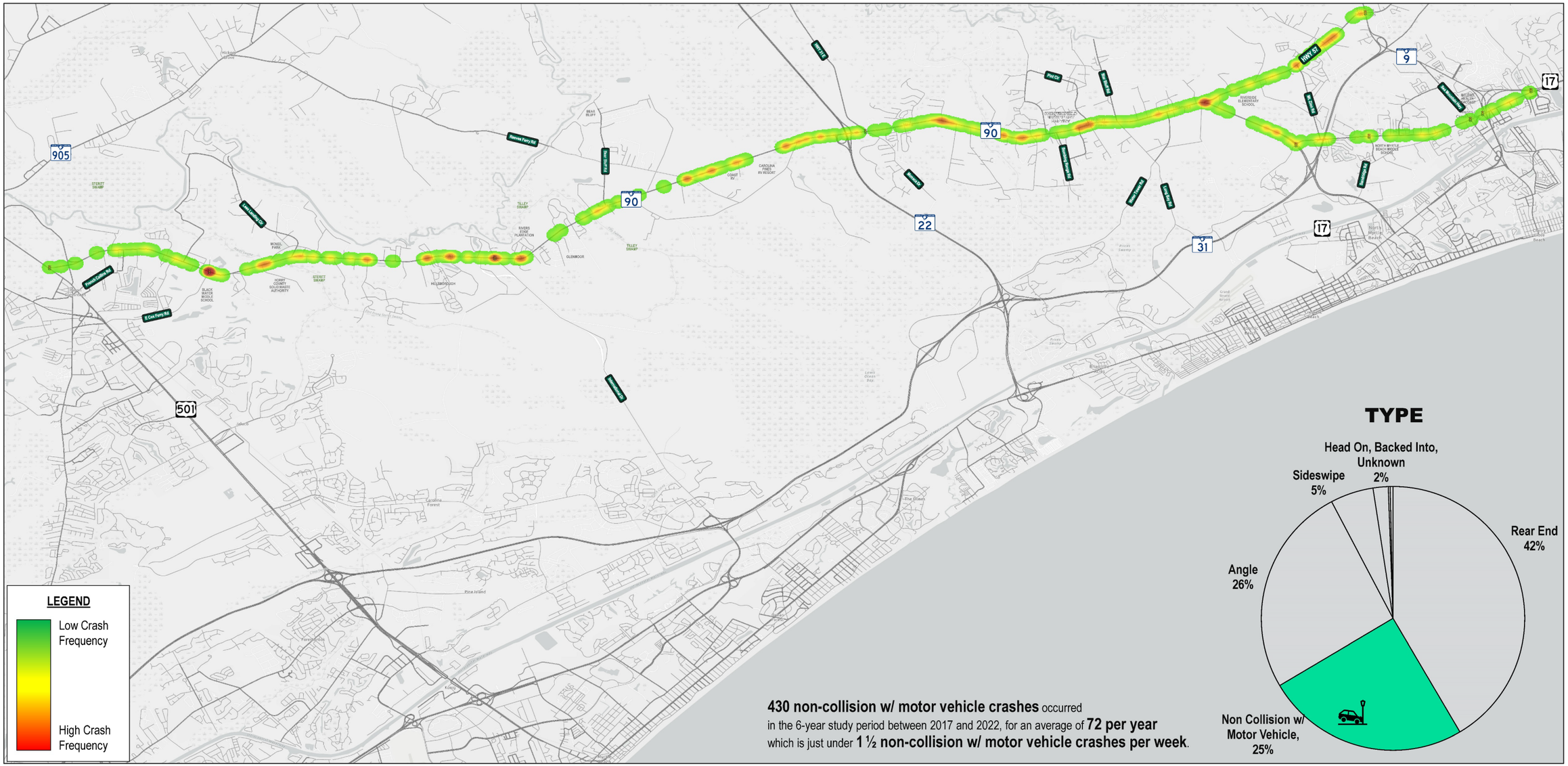


Exhibit 2.6 – SC 90 & HWY 57 Angle Crashes (2017-2022)

2.6 TRAFFIC VOLUMES

Daily and peak hour traffic volumes were collected along the corridor in January of 2023.

2.6.1 2023 Daily Traffic Volumes

The daily traffic volumes (in vehicles/day) at various locations along the corridor are illustrated in **Exhibit 2.7**. Note that the counts collected in the field were supplemented with SCDOT daily volume data.

Daily traffic volumes along SC 90 ranged from 9,600 veh/day to 16,100 veh/day averaging just over 12,000 veh/day.

Daily traffic volumes along Hwy 57 were approximately 7,100 veh/day.

Raw traffic count data is provided in **Appendix E.**

2.6.2 2023 Peak Hour Traffic Volumes

The peak hour traffic volumes for the AM (between 7-9am) and PM (between 4-6pm) peak periods are illustrated in **Exhibit 2.8**, **Exhibit 2.9**, **Exhibit 2.10**, and **Exhibit 2.11**.

As shown in **Table 2.2**, the intersection of Hwy 57 & SC 9 and the intersection of SC 90 & US 17 at the east termini of the study area experience the highest overall turning movement volumes, primarily due to volumes along SC 9 and US 17, respectively.

Table 2.2 – Intersection Total Turning Movements

	Intersection	Sum of Turning Movement Volumes		
		AM	PM	TOTAL
1	US 501 Bus & SC 90	1,953	2,058	4,011
2	SC 90 & French Collins Rd	955	993	1,948
3	SC 90 & E Cox Ferry Rd	1,538	1,676	3,214
4	SC 90 & Hillsborough Dr	1,551	1,560	3,111
5	SC 90 & International Dr	2,031	1,858	3,889
6	SC 90 & Tilly Pine Dr	1,255	1,287	2,542
7	SC 90 & 3 Oak Ln	1,181	1,142	2,323
8	SC 90 & Bear Bluff Rd	1,072	1,014	2,086
9	SC 90 & Old Reaves Ferry Rd	1,069	962	2,031
10	SC 90 & SC 22 EB Off Ramp	1,329	1,402	2,731
11	SC 90 & SC 22 WB Ramps	1,608	1,379	2,987
12	SC 90 & Hwy 31 E/Monaca Dr	1,651	1,493	3,144
13	SC 90 & Long Bay/Star Bluff Rd	1,315	1,203	2,518
14	SC 90 & Water Tower Rd	1,427	1,382	2,809
15	SC 90 & Hwy 57 S	1,446	1,429	2,875
16	SC 9 & Hwy 57 S	4,375	3,542	7,917
17	SC 90 & Champions Blvd	1,930	1,685	3,615
18	SC 90 & Mt Zion Rd	1,519	1,475	2,994
19	SC 90 & St Joseph Rd	1,356	1,494	2,850
20	SC 90 & Hwy 1008	1,268	1,377	2,645
21	SC 90 & Sea Mountain Hwy	2,114	2,197	4,311
22	SC 90 & SC 9 EB Ramps	1,589	1,443	3,032
23	SC 90 & Hwy 17	3,624	2,784	6,408

** darker red shading indicates higher sum of AM/PM peak hour turning movement volumes*

Exhibit 2.7 – Existing Daily Traffic Volumes

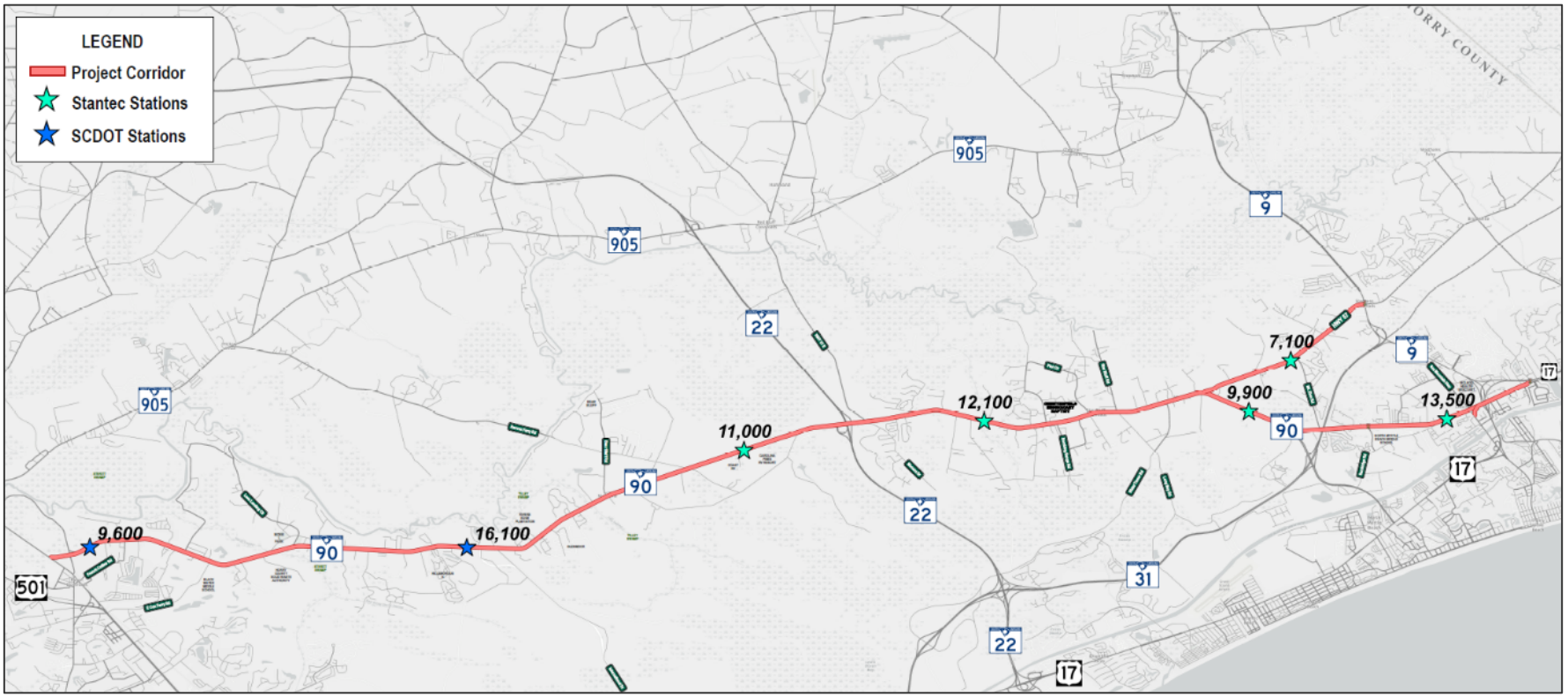


Exhibit 2.8 – Existing Peak Hour Traffic Volumes (Sheet 1 of 4)

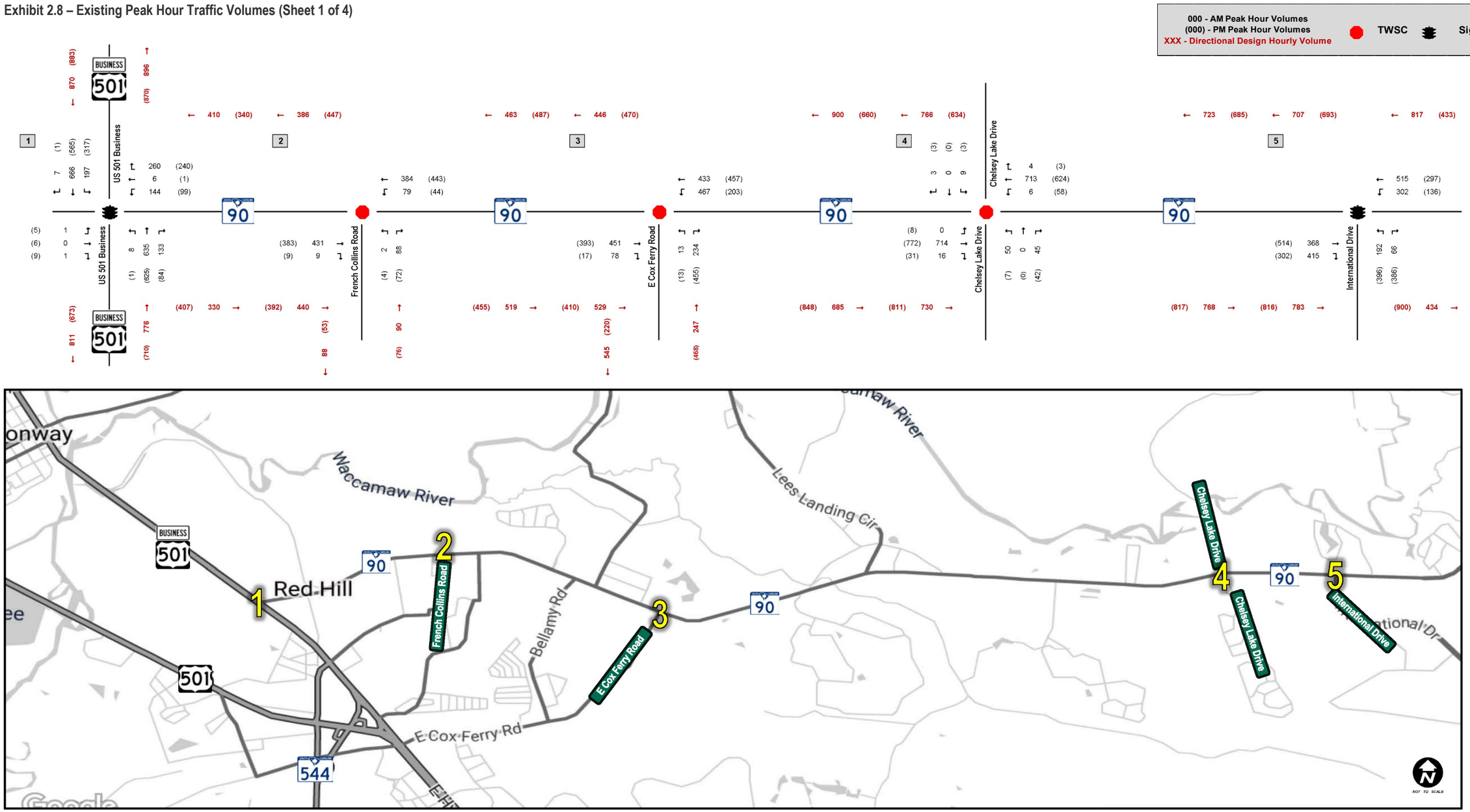


Exhibit 2.9 – Existing Peak Hour Traffic Volumes (Sheet 2 of 4)

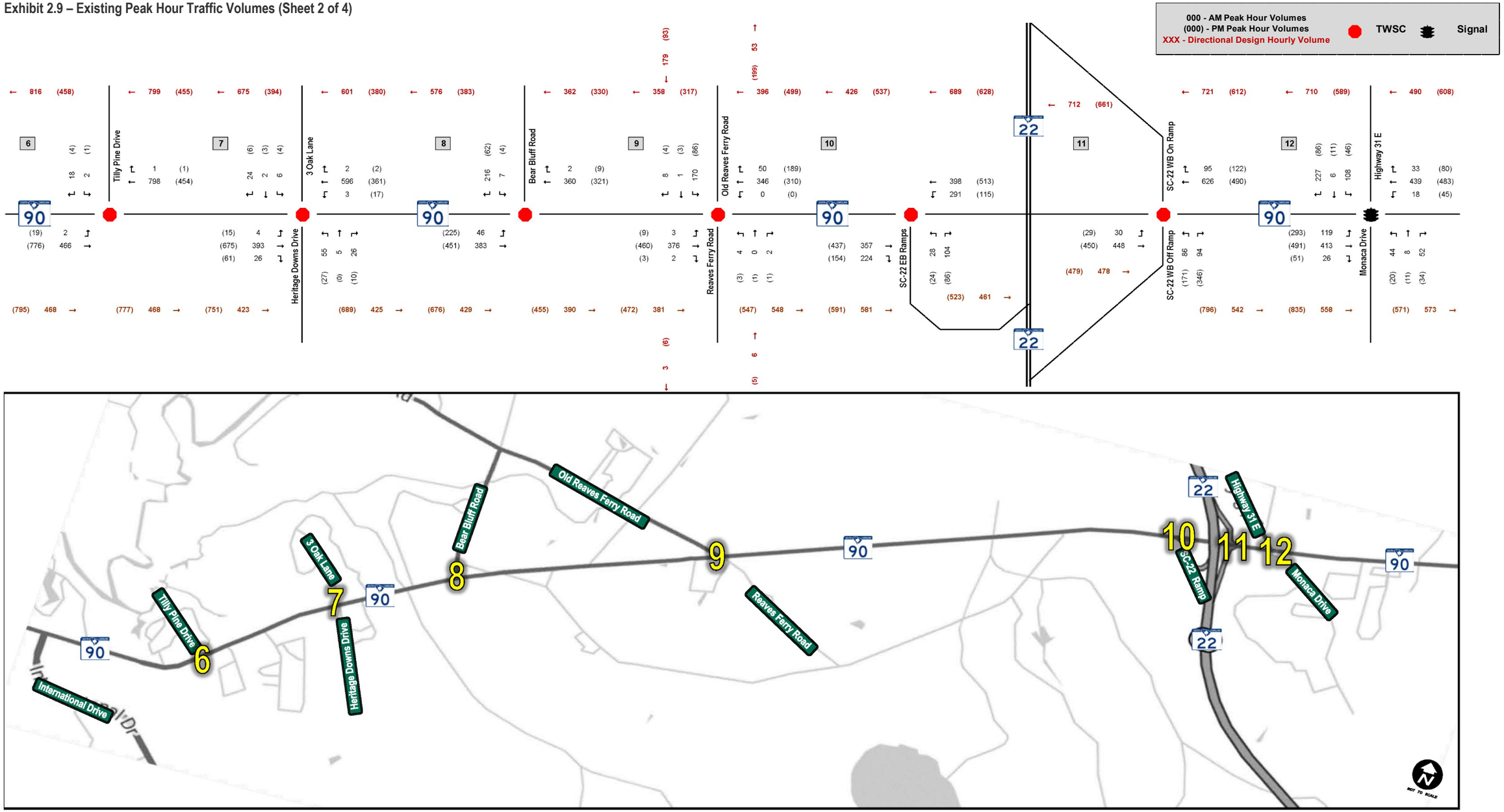


Exhibit 2.10 – Existing Peak Hour Traffic Volumes (Sheet 3 of 4)

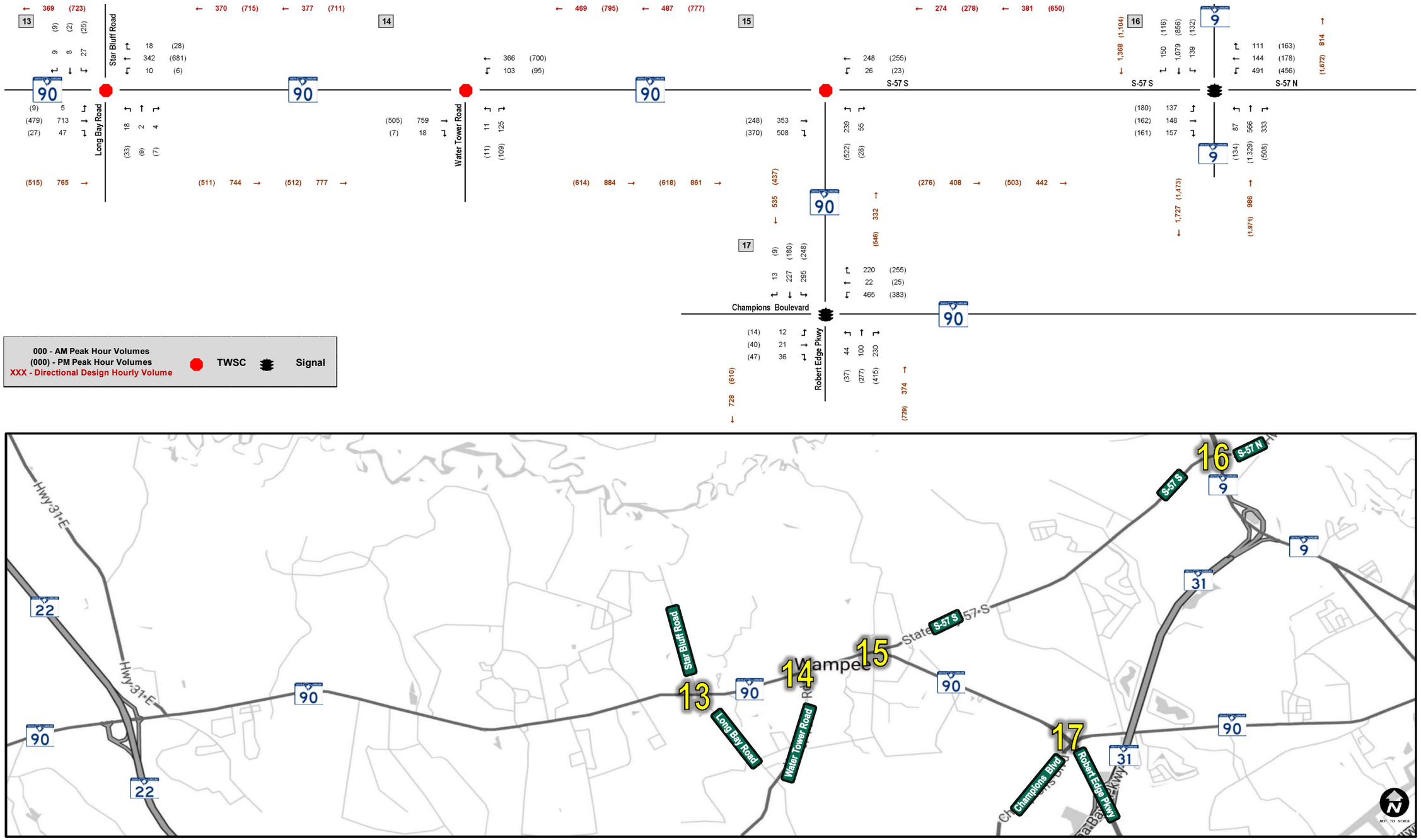
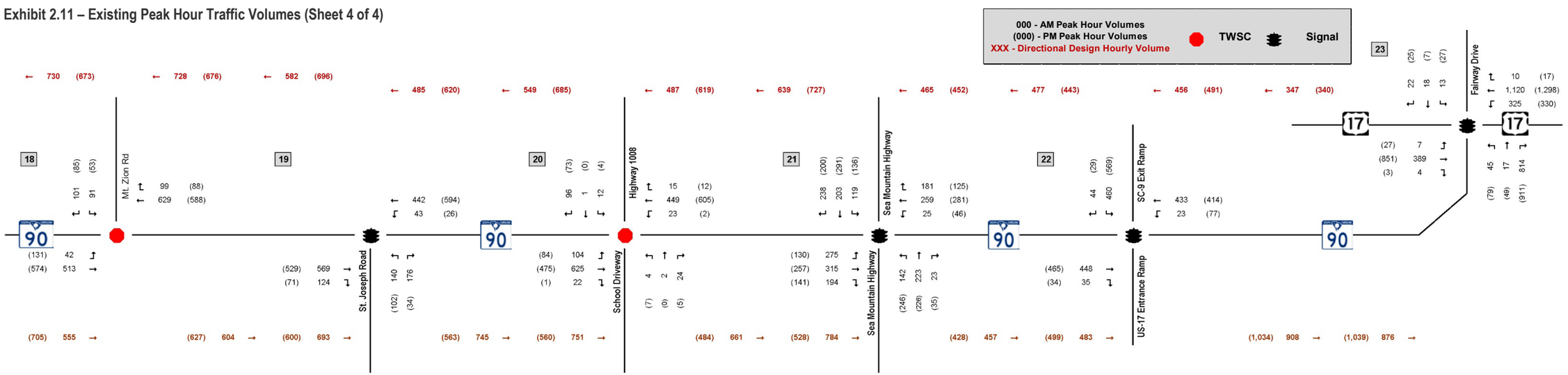
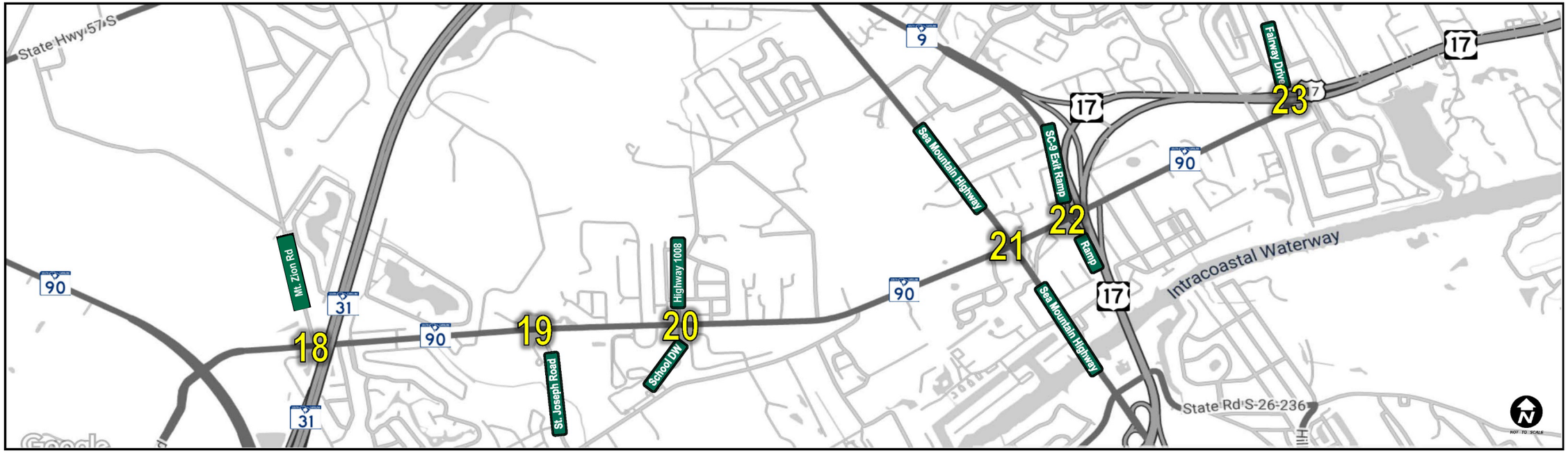


Exhibit 2.11 – Existing Peak Hour Traffic Volumes (Sheet 4 of 4)





2.7 CAPACITY

2.7.1 Link Capacity

As discussed in **Section 1.3**, Link Capacity was evaluated using the Highway Capacity Manual Methodologies for Class III two-lane highways, which bases level of service on percent free-flow speed (PFFS), with LOS criteria shown in **Table 2.3**.

Table 2.3 – HCM 6th Edition Class III 2-Lane LOS Criteria

LOS	Class III Percent Free-Flow Speed (%)
A	> 91.7%
B	> 83.3% - 91.7%
C	> 75.0% - 83.3%
D	> 66.7% – 75.0%
E	< 66.7%

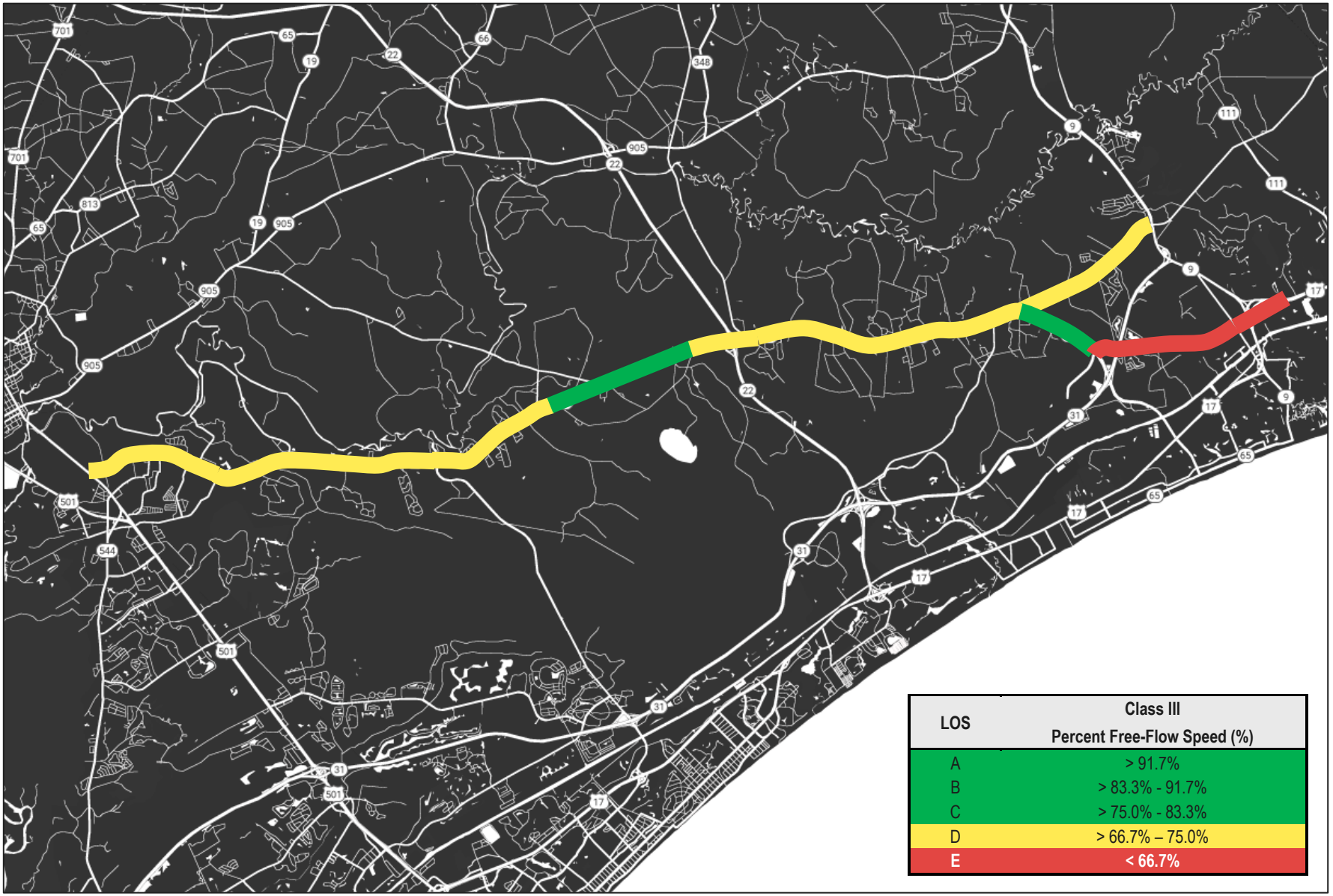
The results of this analysis for each of the 10 analysis segments along the corridor are shown in **Table 2.4**, which shows the AM and PM LOS and PFFS for eastbound and westbound directions, and the average overall for the corridor, in an effort to present a succinct capacity analysis result. The average LOS/PFFS for each segment are illustrated in **Exhibit 2.10.**

As **Table 2.4** and **Exhibit 2.10** indicate, the majority of the corridor currently experiences LOS D conditions, with SC 90 between Champions Boulevard and US 17 currently experiencing LOS E conditions.

Table 2.4 – Link Capacity: Existing Conditions

SEGMENT			AM				PM				AVERAGE	
			EB		WB		EB		WB			
			LOS/PFFS		LOS/PFFS		LOS/PFFS		LOS/PFFS		LOS/PFFS	
1	US 501	E Cox Ferry Rd	D	70.0%	D	70.5%	D	71.2%	D	70.9%	D	70.7%
2	E Cox Ferry Rd	International Drive	D	69.5%	D	69.2%	D	71.1%	D	71.5%	D	70.3%
3	International Drive	Bear Bluff Road	C	75.4%	D	74.4%	D	72.7%	D	74.7%	D	74.3%
4	Bear Bluff Road	Averyville Drive	C	79.9%	C	81.3%	C	81.3%	C	82.2%	C	81.2%
5	Averyville Drive	Whispering Oaks Dr	D	69.4%	D	68.6%	**E**	**65.2%**	**E**	**65.4%**	D	67.2%
6	Whispering Oaks Dr	Hwy 57	D	67.5%	D	69.0%	D	67.9%	D	67.0%	D	67.9%
7	Hwy 57	Champions Blvd	C	80.3%	C	81.1%	C	79.9%	C	78.9%	C	80.1%
8	Champions Blvd	Sea Mountain Hwy	**E**	**64.1%**	**E**	**64.2%**	**E**	**65.7%**	**E**	**65.7%**	**E**	**64.9%**
9	Sea Mountain Hwy	US 17	**E**	**61.2%**	**E**	**63.3%**	**E**	**57.6%**	**E**	**59.6%**	**E**	**60.4%**
10	Hwy 57 (SC 90)	SC 9	D	74.8%	D	74.3%	D	69.7%	D	68.5%	D	71.8%

Exhibit 2.12 – SC 90 & HWY 57 Existing "Link" Average LOS Results



2.7.2 Node Capacity

The "Node" analysis was conducted using the Transportation Research Board's *Highway Capacity Manual (HCM) 6th Edition* methodologies of the *Synchro*, Version 11 software for stop-controlled and signalized intersection analysis. **Table 2.5** summarizes the HCM 6th Edition control delay thresholds associated with each LOS grade for unsignalized and signalized intersections.

Table 2.5 – HCM 6th Edition Intersection LOS Criteria

LOS	Control Delay per Vehicle (s)	
	Unsignalized	Signalized
A	≤ 10	≤ 10
B	> 10 and ≤ 15	> 10 and ≤ 20
C	> 15 and ≤ 25	> 20 and ≤ 35
D	> 25 and ≤ 35	> 35 and ≤ 55
E	> 35 and ≤ 50	> 55 and ≤ 80
F	> 50	> 80

The results of this analysis for each of the 23 study area intersections along the corridor are shown in **Table 2.6**, which shows the AM and PM LOS and delay per vehicle. These results are also illustrated in **Exhibit 2.11.**

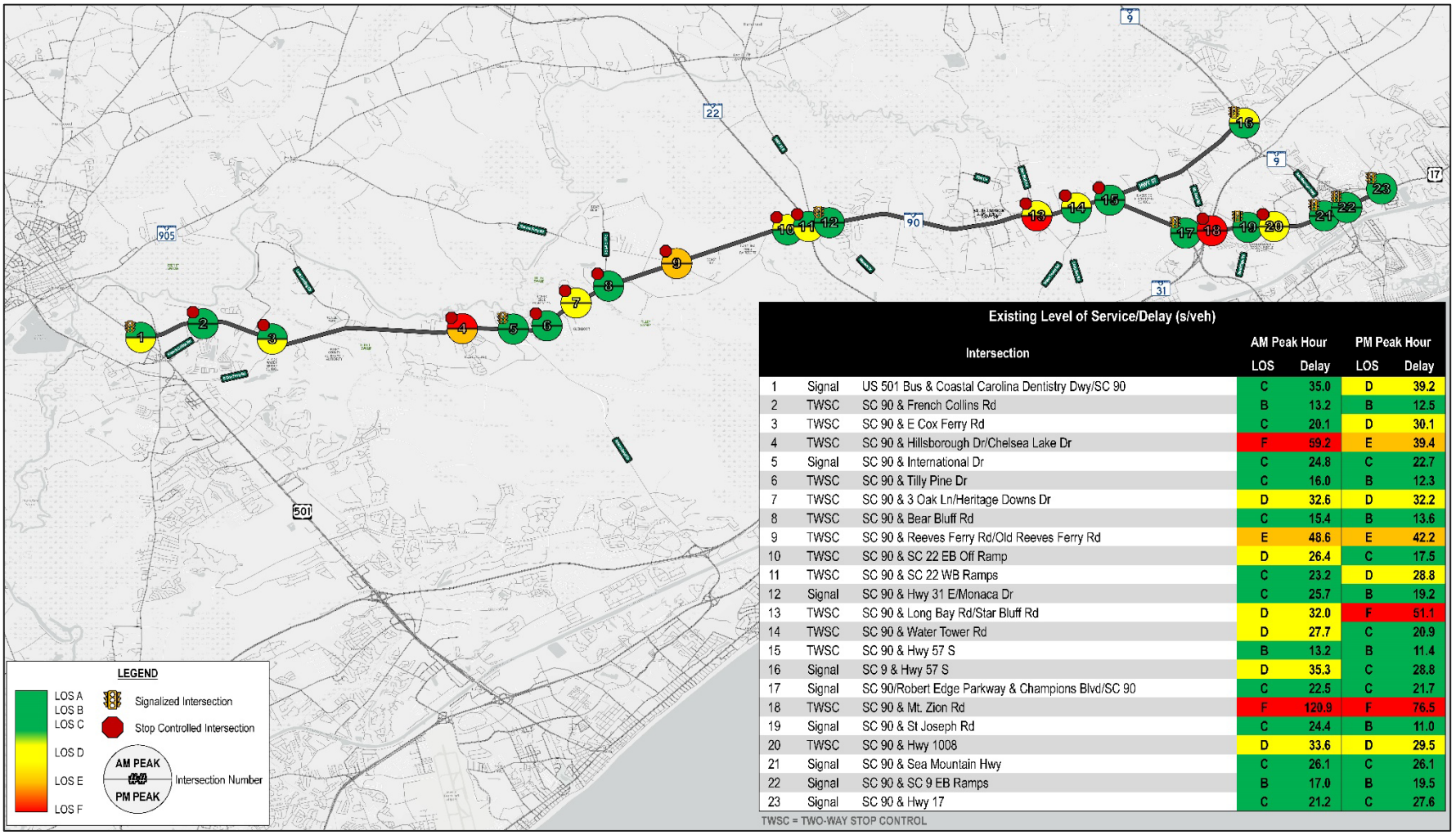
As **Table 2.6** and **Exhibit 2.11** indicate, the following intersections currently experience undesirable LOS E or F in the AM and/or PM peak hours:

- SC 90 & Hillsborough Dr/Chelsea Lake Dr;
- SC 90 & Reaves Ferry Rd/Old Reaves Ferry Rd;
- SC 90 & Long Bay Rd/Star Bluff Rd; and
- SC 90 & Mt. Zion Rd.

Table 2.6 – Link Capacity: Existing Conditions

	Intersection		AM Peak Hour		PM Peak Hour	
			LOS	Delay	LOS	Delay
1	Signal	US 501 Bus & Coastal Carolina Dentistry Dwy/SC 90	C	35.0	D	39.2
2	TWSC	SC 90 & French Collins Rd	B	13.2	B	12.5
3	TWSC	SC 90 & E Cox Ferry Rd	C	20.1	D	30.1
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr	F	59.2	E	39.4
5	Signal	SC 90 & International Dr	C	24.8	C	22.7
6	TWSC	SC 90 & Tilly Pine Dr	C	16.0	B	12.3
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr	D	32.6	D	32.2
8	TWSC	SC 90 & Bear Bluff Rd	C	15.4	B	13.6
9	TWSC	SC 90 & Reaves Ferry Rd/Old Reaves Ferry Rd	E	48.6	E	42.2
10	TWSC	SC 90 & SC 22 EB Off Ramp	D	26.4	C	17.5
11	TWSC	SC 90 & SC 22 WB Ramps	C	23.2	D	28.8
12	Signal	SC 90 & Hwy 31 E/Monaca Dr	C	25.7	B	19.2
13	TWSC	SC 90 & Long Bay Rd/Star Bluff Rd	D	32.0	F	51.1
14	TWSC	SC 90 & Water Tower Rd	D	27.7	C	20.9
15	TWSC	SC 90 & Hwy 57 S	B	13.2	B	11.4
16	Signal	SC 9 & Hwy 57 S	D	35.3	C	28.8
17	Signal	SC 90/Robert Edge Parkway & Champions Blvd/SC 90	C	22.5	C	21.7
18	TWSC	SC 90 & Mt. Zion Rd	F	120.9	F	76.5
19	Signal	SC 90 & St Joseph Rd	C	24.4	B	11.0
20	TWSC	SC 90 & Hwy 1008	D	33.6	D	29.5
21	Signal	SC 90 & Sea Mountain Hwy	C	26.1	C	26.1
22	Signal	SC 90 & SC 9 EB Ramps	B	17.0	B	19.5
23	Signal	SC 90 & Hwy 17	C	21.2	C	27.6

Exhibit 2.13 – SC 90 & HWY 57 Existing "Node" LOS Results



			Existing Level of Service/Delay (s/veh)			
		Intersection	AM Peak Hour		PM Peak Hour	
			LOS	Delay	LOS	Delay
1	Signal	US 501 Bus & Coastal Carolina Dentistry Dwy/SC 90	C	35.0	D	39.2
2	TWSC	SC 90 & French Collins Rd	B	13.2	B	12.5
3	TWSC	SC 90 & E Cox Ferry Rd	C	20.1	D	30.1
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr	F	59.2	E	39.4
5	Signal	SC 90 & International Dr	C	24.8	C	22.7
6	TWSC	SC 90 & Tilly Pine Dr	C	16.0	B	12.3
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr	D	32.6	D	32.2
8	TWSC	SC 90 & Bear Bluff Rd	C	15.4	B	13.6
9	TWSC	SC 90 & Reeves Ferry Rd/Old Reeves Ferry Rd	E	48.6	E	42.2
10	TWSC	SC 90 & SC 22 EB Off Ramp	D	26.4	C	17.5
11	TWSC	SC 90 & SC 22 WB Ramps	C	23.2	D	28.8
12	Signal	SC 90 & Hwy 31 E/Monaca Dr	C	25.7	B	19.2
13	TWSC	SC 90 & Long Bay Rd/Star Bluff Rd	D	32.0	F	51.1
14	TWSC	SC 90 & Water Tower Rd	D	27.7	C	20.9
15	TWSC	SC 90 & Hwy 57 S	B	13.2	B	11.4
16	Signal	SC 9 & Hwy 57 S	D	35.3	C	28.8
17	Signal	SC 90/Robert Edge Parkway & Champions Blvd/SC 90	C	22.5	C	21.7
18	TWSC	SC 90 & Mt. Zion Rd	F	120.9	F	76.5
19	Signal	SC 90 & St Joseph Rd	C	24.4	B	11.0
20	TWSC	SC 90 & Hwy 1008	D	33.6	D	29.5
21	Signal	SC 90 & Sea Mountain Hwy	C	26.1	C	26.1
22	Signal	SC 90 & SC 9 EB Ramps	B	17.0	B	19.5
23	Signal	SC 90 & Hwy 17	C	21.2	C	27.6

TWSC = TWO-WAY STOP CONTROL

2.8 EXISTING CONDITIONS PUBLIC INVOLVEMENT (PIM #1)

It is imperative that the public be included in transportation projects and decision making to ensure the consideration of everyone involved. We believe in the importance of fairness and participation and by establishing a line of communication from the local government to the community through public outreach, everyone's top priorities and concerns can be understood.

The project team held a kick-off meeting with the steering committee on the morning of February 10th, 2023, at 1301 2nd Avenue, Conway, SC. This discussion touched on important aspects of the study like the project overview, which included topics of mobility, safety, flooding, and a list of project contacts and how to reach them. After the project overview presenter Brett McCutchan led a group-based discussion on project scheduling, public involvement, and next steps.

The public outreach goal for the SC 90 and Hwy 57 corridors was to gather information and feedback on transportation issues from the people who drive, walk, or bike these corridors daily. This information will serve as a guide for improvement recommendations as the project moves forward. To accomplish the public outreach goal, a traditional in-person public information meeting was scheduled for April 27, 2023. However, with the study area spanning over 26 miles and along two corridors, it was vital to supplement the traditional in-person public information meeting with the use of digital media. Therefore, Stantec worked with GSATS to create the SC Highway 90 Corridor Study project website with an online survey questionnaire and interactive map. One of the benefits to providing the project website was it allowed members of the community to be heard even if they were unable to attend the in-person meeting. The public involvement survey was available from April 27, 2023, through May 29, 2023, and produced a significant response with a total of 661 visitors to the site and 218 comments received. Those comments are provided in **Appendix D.**

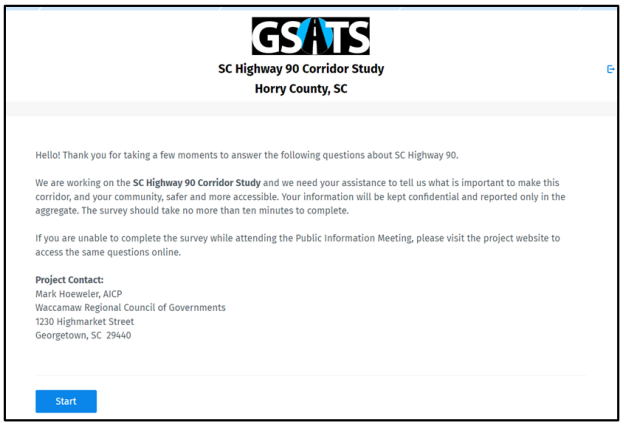
Top Concerns of the Public

- Motorists driving at dangerous speeds;
- High volumes of traffic;
- Poor road lighting;
- Lack of turn lanes;
- A desire for roadway widening;
- Difficulties crossing the road or pulling out at intersections; and
- Concern over new housing developments.

Project Input Summary

- Visitors to Site: 661
- Comments received: 218
- Site Live Dates: April 27th through May 29th, 2023

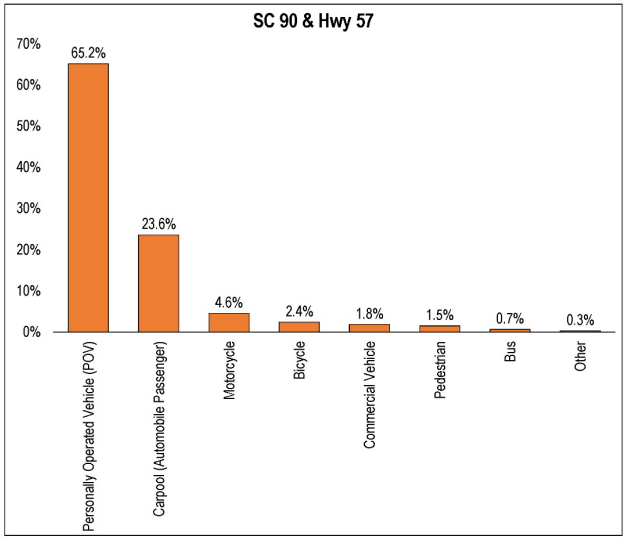
Exhibit 2.14 – SC 90 & HWY 57 Corridor Study Website



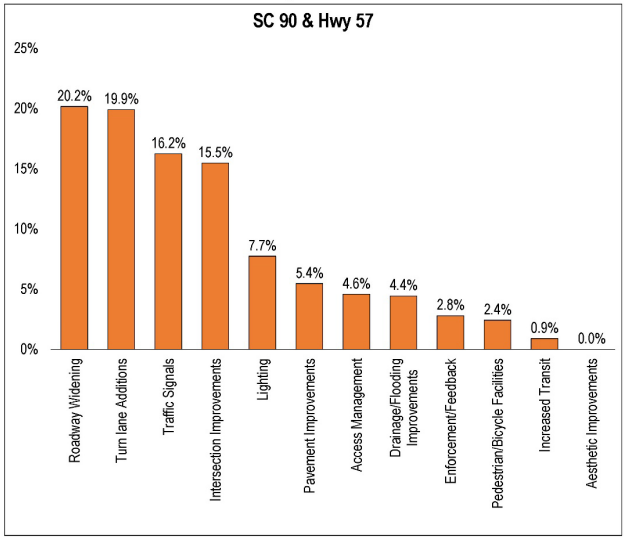
The information from the survey is shown in **Exhibit 2.13.**

Exhibit 2.15 – PIM Survey: Transportation Modes

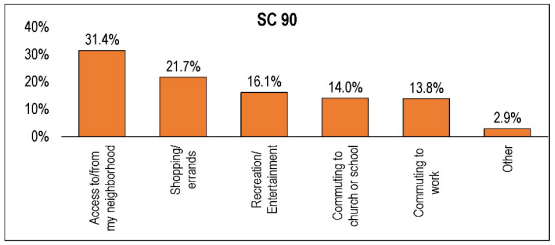
Which mode(s) of transportation do you typically use?

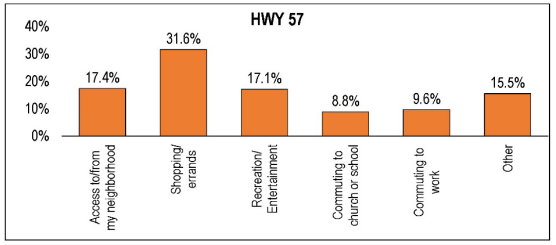


What improvement strategies are most important to you?

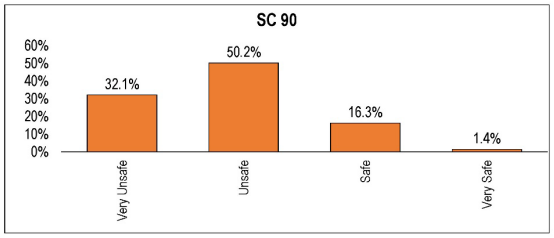


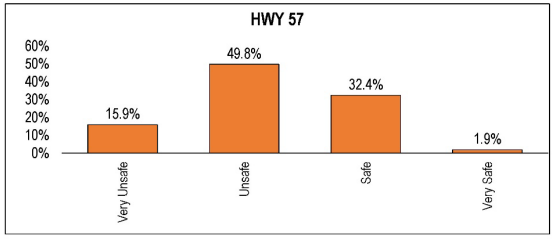
What are your primary reasons for traveling along the roadway?



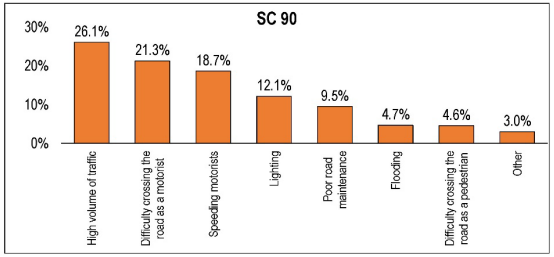


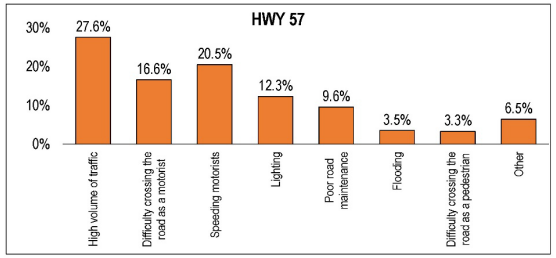
Which option below best describes the level of safety you feel while driving along the roadway?



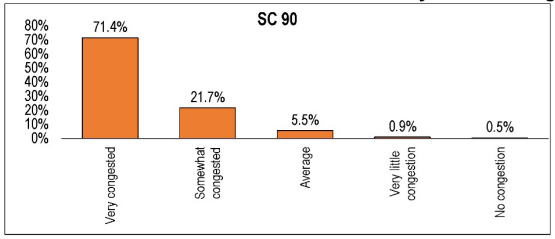


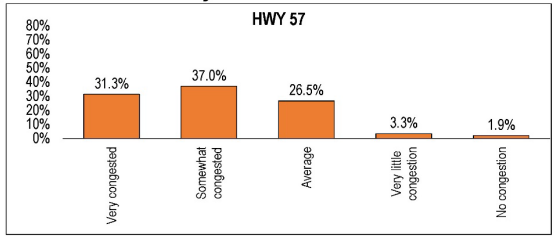
What safety concerns, if any, do you encounter while traveling along the roadway?





How do you rank congestion on the roadway?





Stantec worked with GSATS and Horry County to hold a Public Information Meeting on April 27, 2023, from 5:00 pm to 7:00 pm at Chesterfield Missionary Baptist Church located at 8591 SC highway 90, Longs, SC 29568.

An informational handout, comment form, and survey questionnaire were passed out to the 213 visitors who attended. In addition, informational boards were setup around the room displaying a map of the corridors with Average Daily Traffic Volumes, Intersection Level of Service, Crash Data, and Potential Improvement Strategies. Staff members were stationed at the boards and were able to engage in meaningful conversation with residents, property owners, and business owners regarding relevant transportation challenges.

The visitors had the opportunity to provide written comments that could be used to develop improvement recommendations.

The Public Information Meeting comments received during the public comment period can be found in **Appendix D.**

Exhibit 2.16 – PIM #1 Photos

3.0 TRAFFIC VOLUME DEVELOPMENT

3.1 GRAND STRAND AREA TRANSPORTATION STUDY (GSATS) TRAVEL DEMAND MODEL

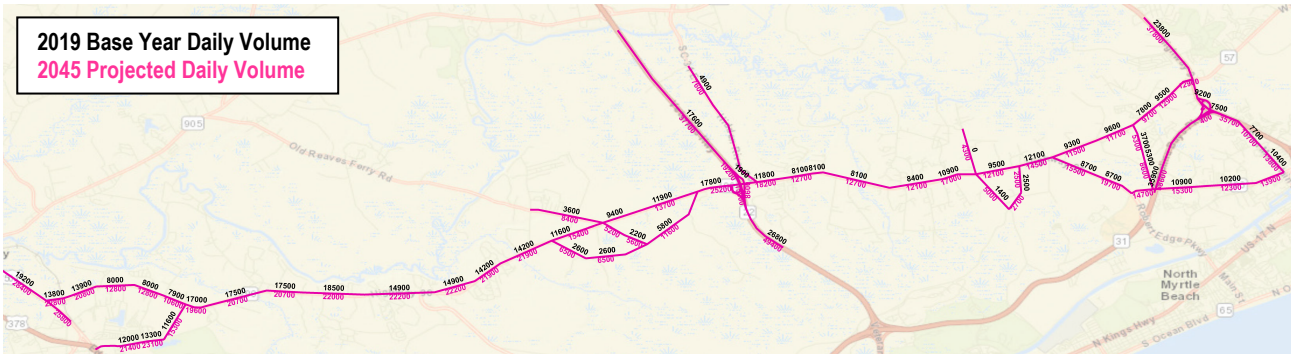
In order to develop future traffic volumes along the corridor, the GSATS model was reviewed to determine projected growth rates. These projected growth rates were applied to the existing 2023 traffic volumes, which were discussed previously in **Section 2.6**. The limits of the model reviewed, along with the 2019 Base and 2045 Projected daily volumes for each link along the network are illustrated in **Exhibit 3.1** and **Table 3.1**. The segment-by-segment base to projection daily volume changes were used to develop growth rates for sections of the corridor.

3.2 GROWTH RATES

As shown in **Table 3.1**, the annual projected growth rates for each link in the network were determined. Then, reasonable termini were determined to isolate various segments along the corridor, specifically along SC 90. The average growth rates of these roadways, and roadway segments were then determined. Then, based on an effort to be conservative, recommended growth rates were selected for various segments (or combination of segments) in the study area. As **Table 3.1** indicates, this led to the selection of six (6) distinct growth rates in the study area:

- US 501 Business → **2.5%/year**
- SC 90 | US 501 Business to Hwy 57 → **2.5%/year**
- SC 90 | Hwy 57 to Champions Blvd → **4.0%/year**
- SC 90 | Champions Blvd to US 17 → **2.0%/year**
- Hwy 57 → **1.5%/year**
- SC 9 → **2.5%/year.**

Exhibit 3.1 – SC 90 & HWY 57 GSATS Model Base & Future Year Projections



3.3 FUTURE 2035 AND 2045 PEAK HOUR TRAFFIC VOLUMES

The aforementioned growth rates were then applied to the 2023 Existing AM and PM peak hour traffic volumes to determine future Intermediate Year 2035 and future Horizon Year 2045 traffic volumes for use in the analysis. Once the growth rates were applied, a reasonableness check was performed to verify that the projected growth and future volumes aligned with the projections from the GSATS model.

The resulting 2035 Intermediate Year AM and PM peak hour design volumes are illustrated in **Exhibit 3.2**, **Exhibit 3.3**, **Exhibit 3.4**, and **Exhibit 3.5**.

The resulting 2045 Horizon Year AM and PM peak hour design volumes are illustrated in **Exhibit 3.6**, **Exhibit 3.7**, **Exhibit 3.8**, and **Exhibit 3.9**.

Table 3.1 – Trip Generation Estimates

Roadway Segment		Link ID	2019 Volume	2045 Volume	Segment Annual Growth Rate	Section Average Annual Growth Rate	Recommended Annual Growth Rate
US 501 BUS		569	19200	28400	1.8%	2.3%	**2.5%**
		568	14500	24100	2.5%		
		575	15600	25800	2.5%		
SC 90	**US 501 BUS to E Cox Ferry**	566	13800	22800	2.5%	2.3%	**2.5%**
		565	13800	22800	2.5%		
		567	13900	20800	1.9%		
		1134	8000	12800	2.3%		
		1135	8000	12800	2.3%		
	E Cox Ferry to International	753	17000	19600	0.6%	0.9%	
		751	17500	20700	0.7%		
		752	17500	20700	0.7%		
		1113	18500	22000	0.7%		
		1080	14900	22200	1.9%		
	International to Old Reaves Ferry	1082	14900	22200	1.9%	1.8%	
		759	14200	21900	2.1%		
		758	14200	21900	2.1%		
		770	11600	15400	1.3%		
	Old Reaves Ferry to SC 22	1149	9400	10400	0.4%	0.9%	
		2857	11900	13700	0.6%		
		1507	17800	25200	1.6%		
	SC 22 to Hwy 57	4210	14900	19800	1.3%	1.8%	
		769	14400	18800	1.2%		
		768	11800	18200	2.1%		
		2851	11400	18000	2.2%		
		765	8100	12700	2.2%		
		760	8100	12700	2.2%		
		761	8100	12700	2.2%		
		764	8400	12100	1.7%		
		762	10900	17000	2.2%		
		763	10900	17000	2.2%		
		804	9500	12100	1.1%		
		803	12100	14500	0.8%		
	Hwy 57 to Champions	807	8700	15500	3.0%	3.9%	**4.0%**
		4032	8700	19700	4.9%		
	Champions to US 17	2890	9700	14700	2.0%	1.4%	**2.0%**
		4661	11700	17200	1.8%		
		4026	10900	15300	1.6%		
		4660	11500	15400	1.3%		
		4029	10200	12300	0.8%		
		810	10600	13900	1.2%		
HWY 57		806	9300	11500	0.9%	1.1%	**1.5%**
		801	9600	11700	0.8%		
		4658	7800	9700	0.9%		
		745	9500	12900	1.4%		
		736	9500	12900	1.4%		
SC 9		737	23800	37800	2.3%	2.5%	**2.5%**
		735	31800	44800	1.6%		
		5741	22600	41700	3.3%		
		5737	12600	36100	7.2%		
		4274	21900	36100	2.5%		
		739	21900	35300	2.4%		
		4276	29400	35700	0.8%		
		1137	7700	10700	1.5%		
		816	10400	13800	1.3%		

Exhibit 3.2 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 1 of 4)

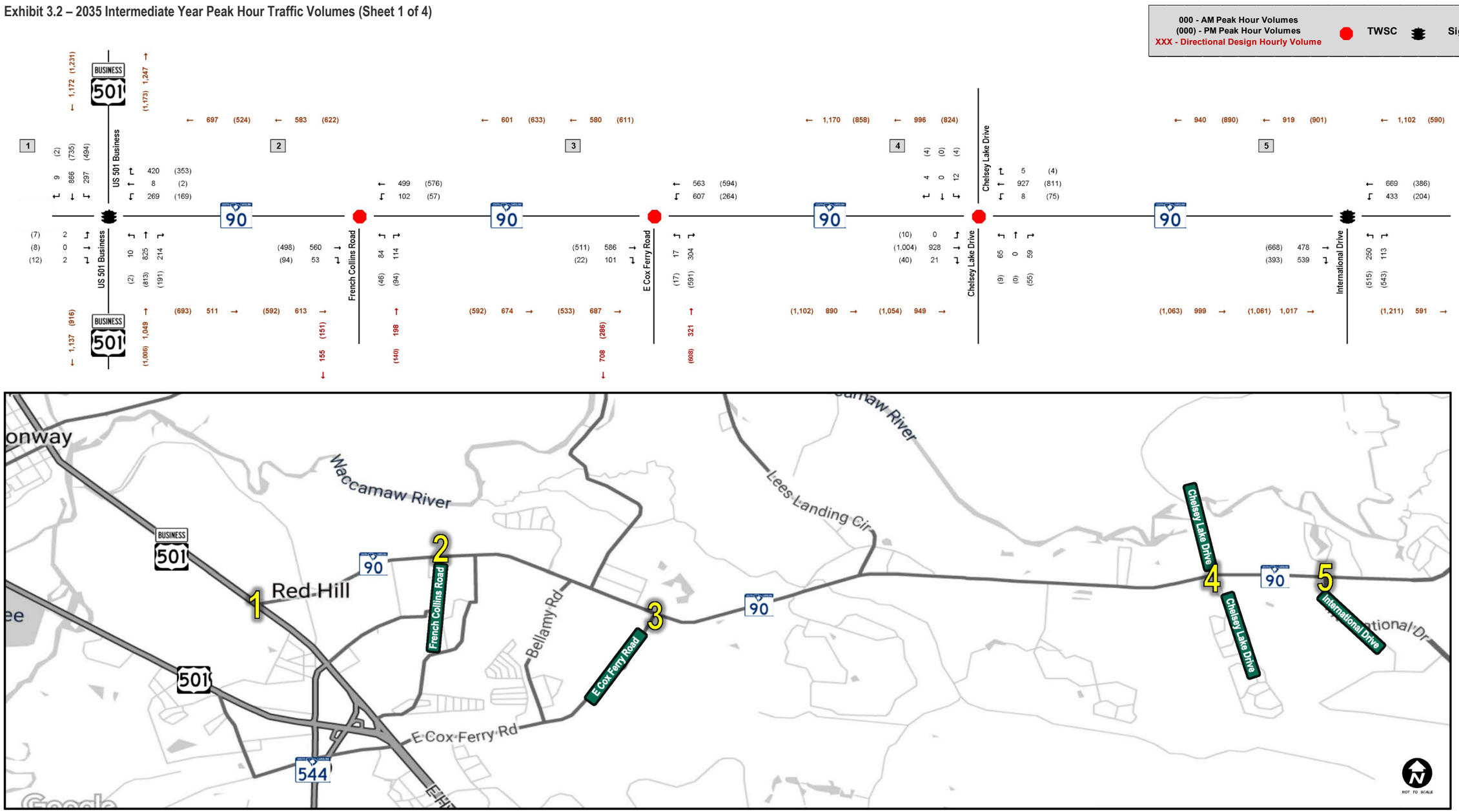


Exhibit 3.3 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 2 of 4)

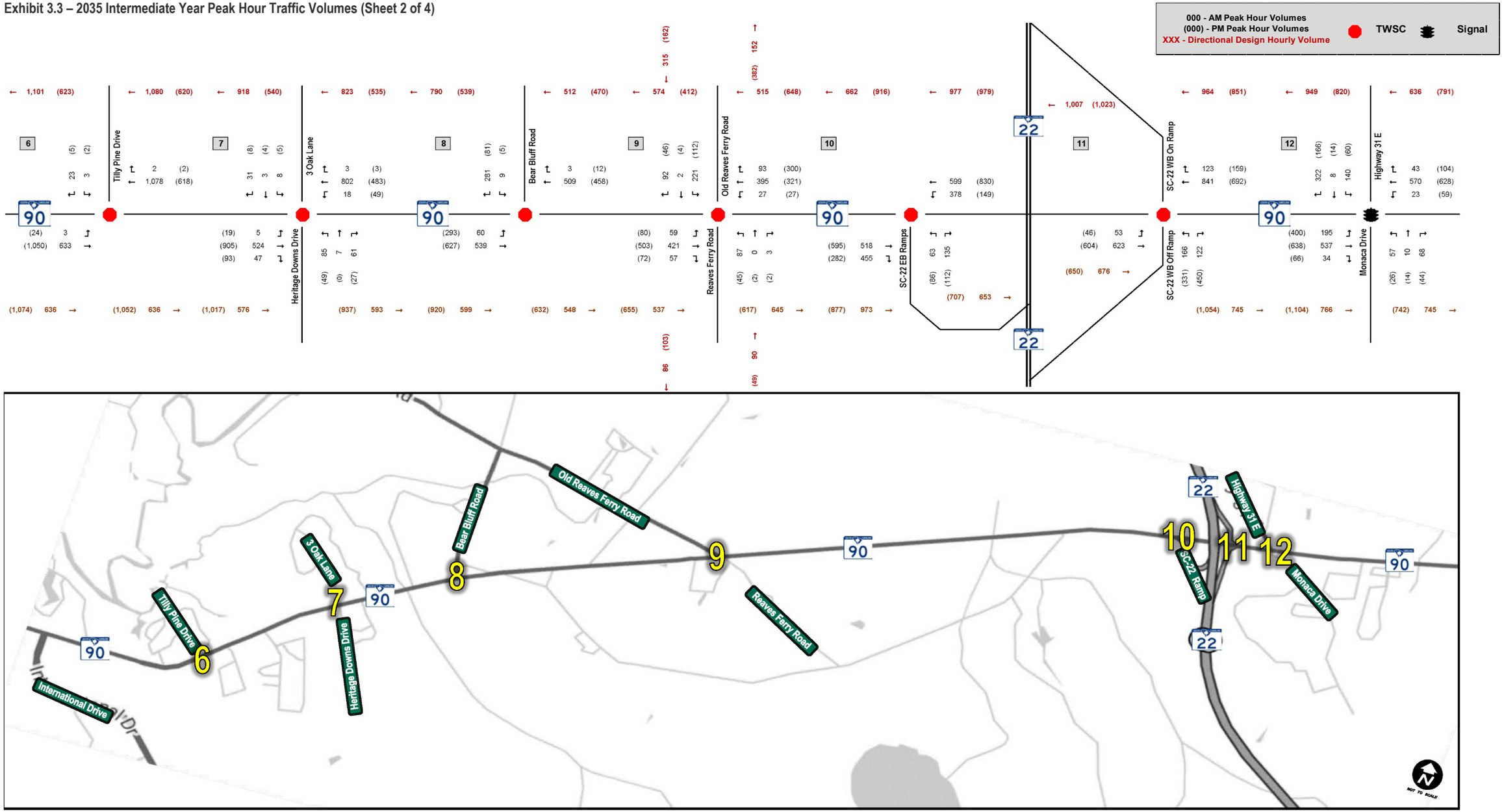


Exhibit 3.4 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 3 of 4)

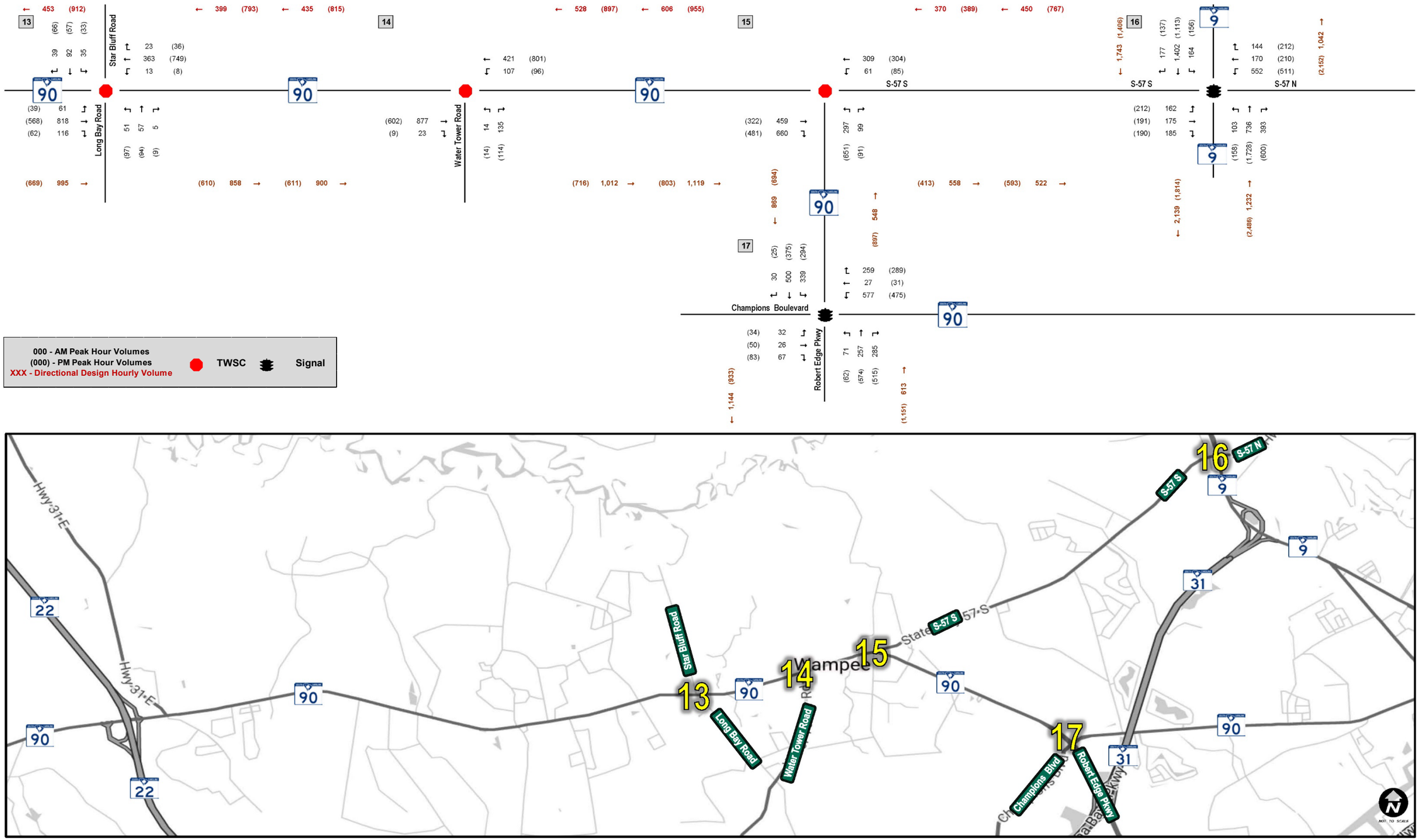


Exhibit 3.5 – 2035 Intermediate Year Peak Hour Traffic Volumes (Sheet 4 of 4)

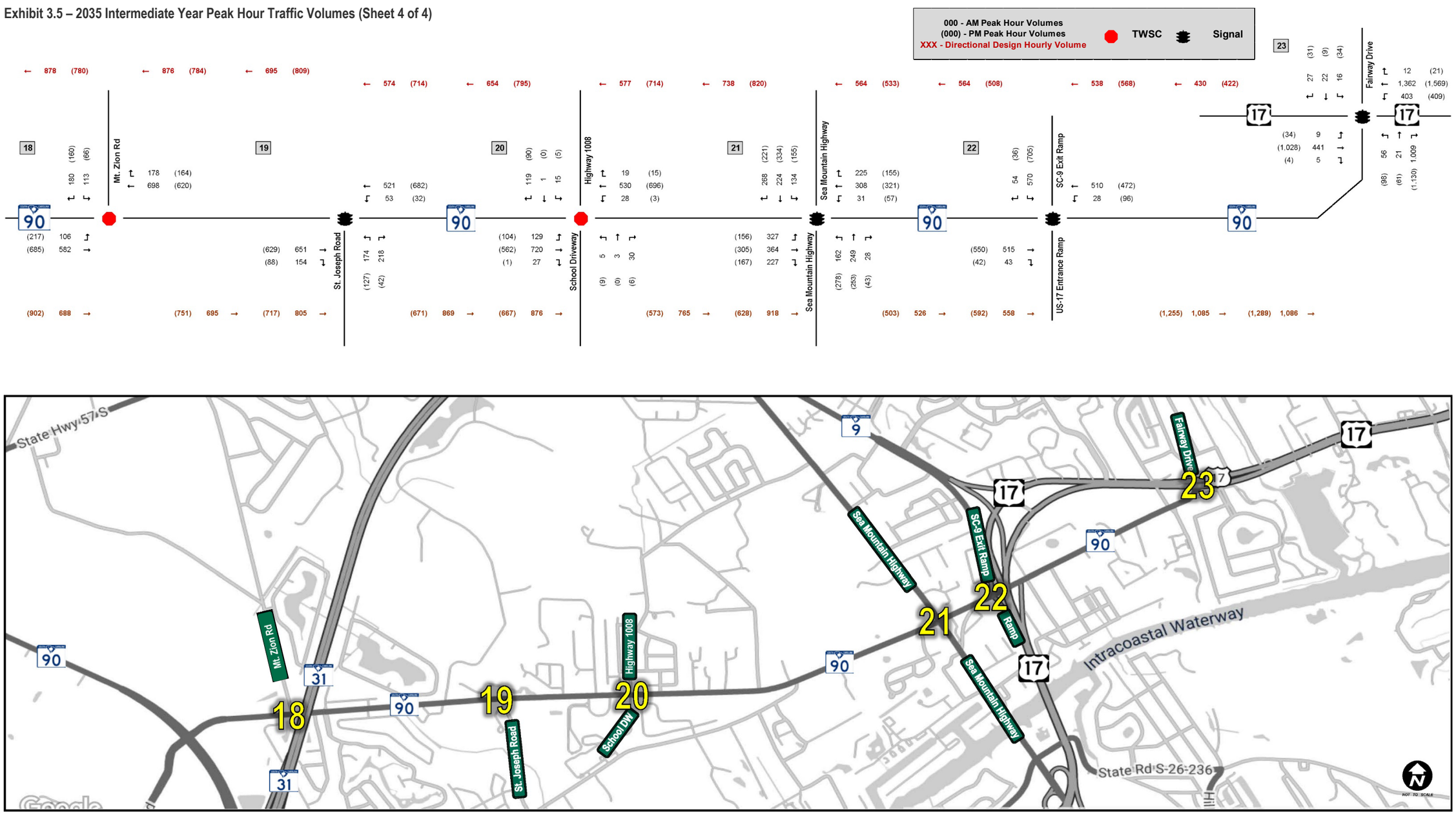


Exhibit 3.6 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 1 of 4)

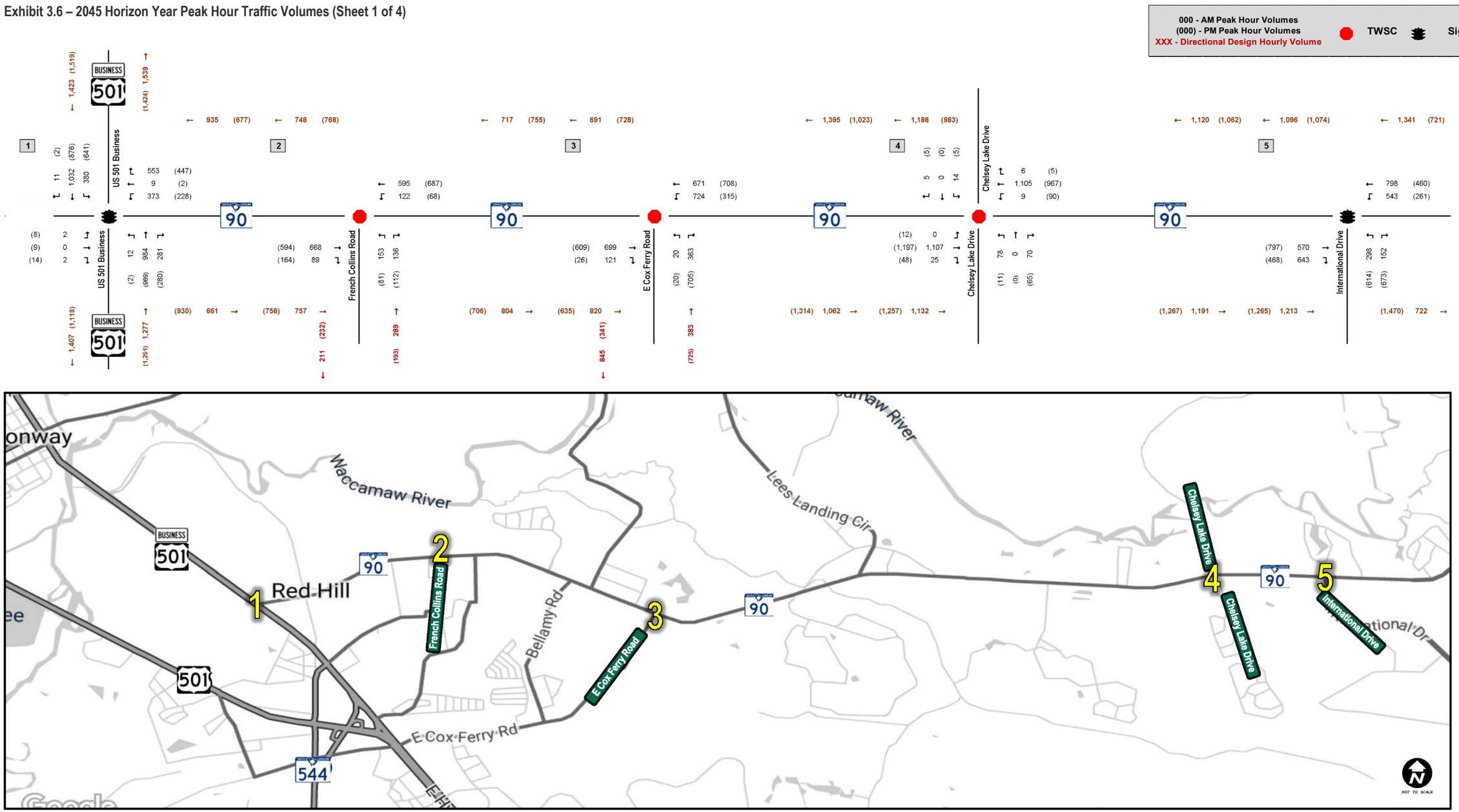


Exhibit 3.7 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 2 of 4)

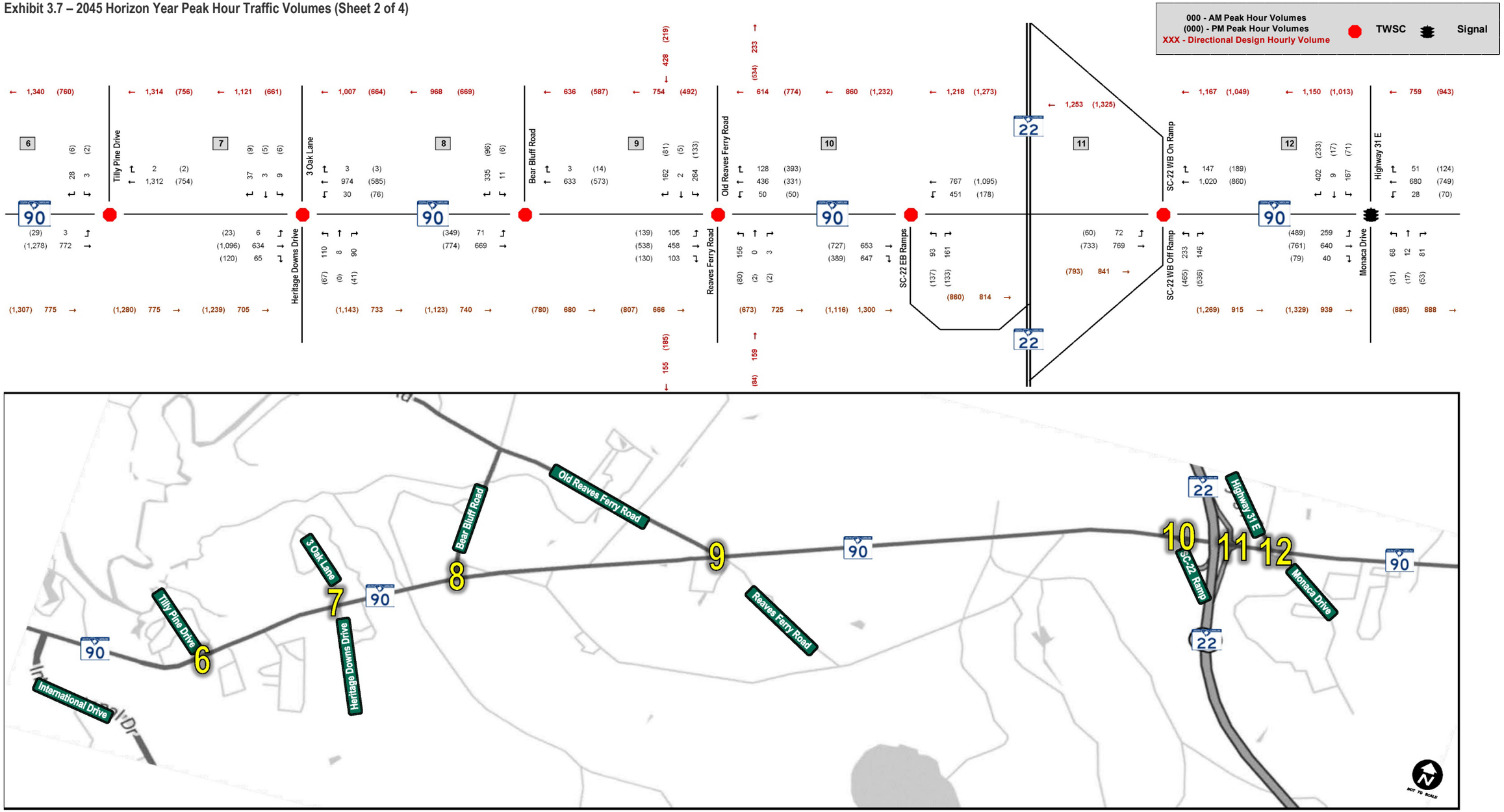


Exhibit 3.8 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 3 of 4)

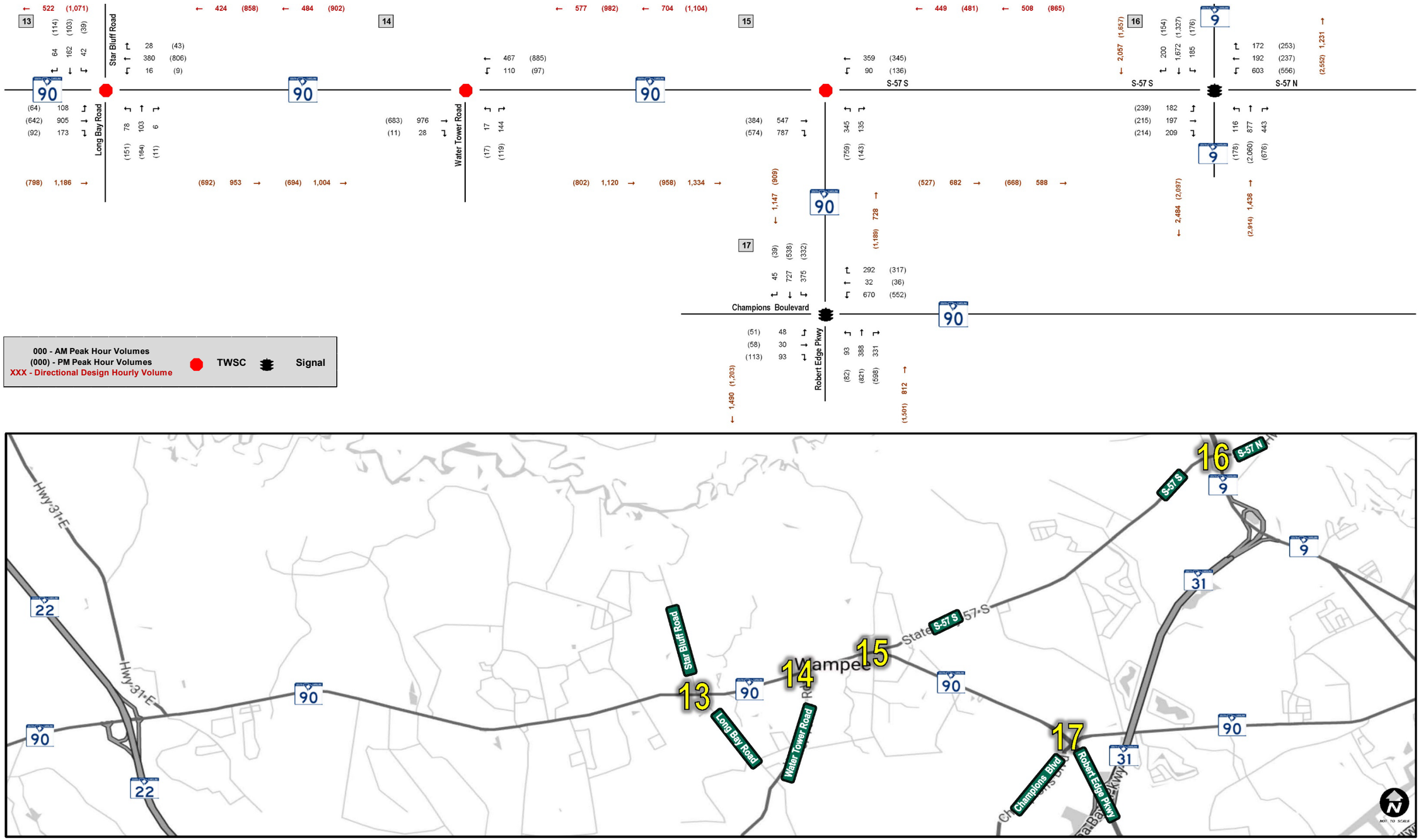
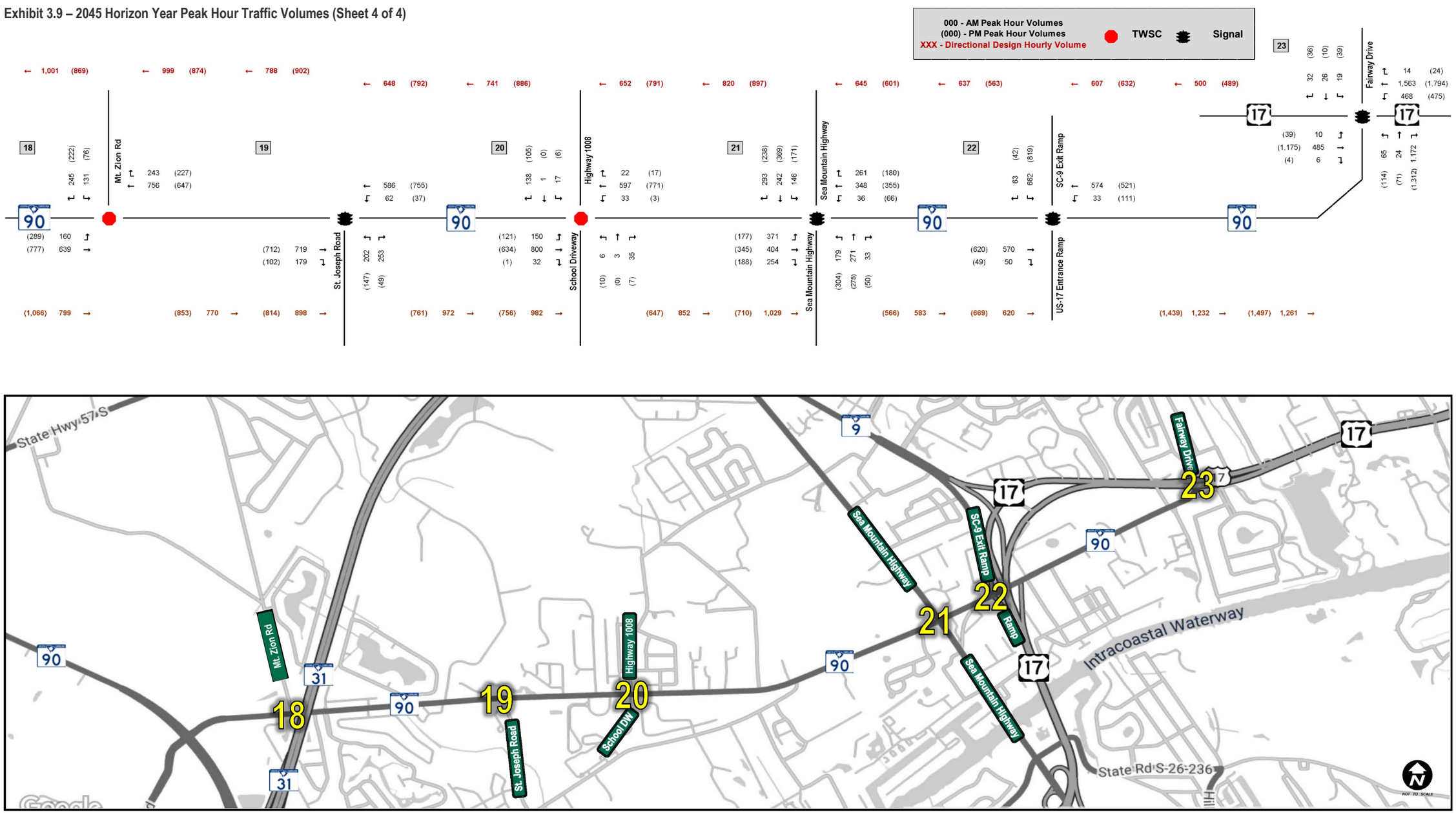


Exhibit 3.9 – 2045 Horizon Year Peak Hour Traffic Volumes (Sheet 4 of 4)



4.0 DEFICIENCY IDENTIFICATION

4.1 INTERMEDIATE (2035) NO BUILD CONDITIONS

Intermediate (2035) conditions were evaluated for both capacity and safety deficiencies. Capacity deficiencies were identified based upon a node-based intersection level of service analysis, and the safety deficiencies were identified based on crash history and frequency of crashes at locations along the corridor.

4.1.1 Node Capacity-Based Deficiencies

As discussed in the subsequent **Section 4.2**, both node and link capacity were evaluated for the Horizon Year 2045 No Build Conditions. However, in order to identify short- and mid-term opportunities for intermediate improvements, projected 2035 conditions were evaluated at the node/intersection-level, using the aforementioned 2035 peak hour design volumes. The results of this analysis for each of the 23 study area intersections along the corridor are shown in **Table 4.1**.

The following intersections are projected to experience undesirable LOS E or F in the AM and/or PM peak hours:

- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & E Cox Ferry Rd;
- SC 90 & Old Reaves Ferry Rd;
- SC 90 & Hillsborough Dr/Chelsea Lake Dr;
- SC 90 & Oak Lane/Heritage Downs Dr;
- SC 90 & SC 22 EB Ramp;
- SC 90 & SC 22 WB Ramp;
- SC 90 & Long Bay Rd/Star Bluff Rd;
- SC 90 & Water Tower Rd;
- SC 90 & Hwy 57;
- SC 90 & Mt. Zion Rd; and
- SC 90 & Hwy 1008.

Additionally, while the following intersections are projected to have acceptable LOS D or better, a review of turning movement volumes indicated they were deficient in that they did not have adequate turn lanes:

- SC 90 & Bear Bluff Rd;
- SC 90 & Hwy 31 E/Monaca Dr; and
- SC 90 & Hwy 1008.

Of these fifteen (15) intersections which were identified as having deficiencies either from a LOS or lack of turn lane perspective, the following three (3) intersections were excluded from evaluation of potential improvements based on the fact that these intersections already have adequate turn lanes along SC 90:

- SC 90 & Hillsborough Dr/Chelsea Lake Dr;
- SC 90 & Oak Lane/Heritage Downs Dr;

Therefore, the following twelve (12) intersections were identified as having deficiencies based upon projected 2035 intermediate conditions, which are also **bolded** in **Table 4.1** and highlighted in **Exhibit 4.1** for reference:

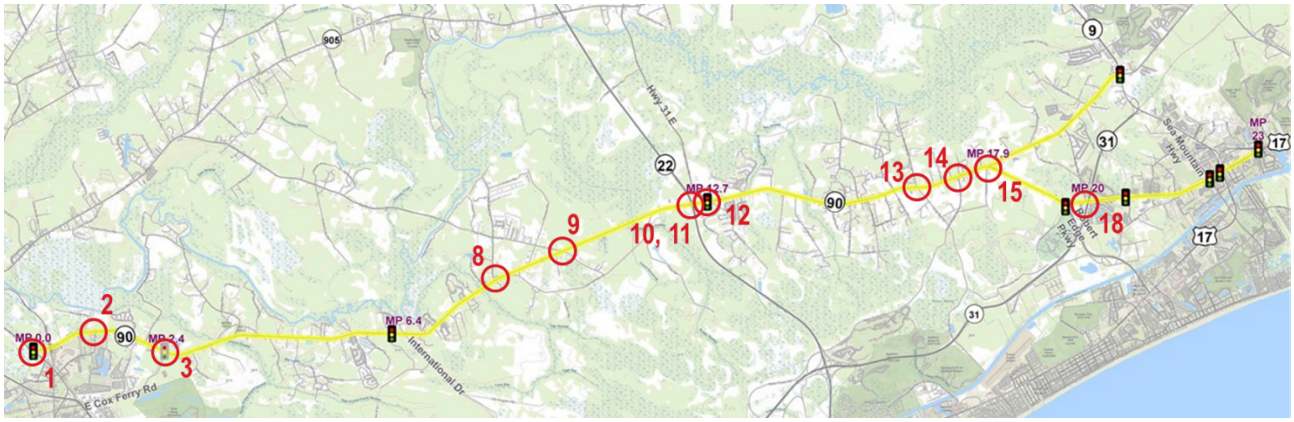
- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & E Cox Ferry Rd;
- SC 90 & Bear Bluff Rd;
- SC 90 & Old Reaves Ferry Rd;
- SC 90 & SC 22 EB Ramp;
- SC 90 & SC 22 WB Ramp;
- SC 90 & Hwy 31 E/Monaca Dr;
- SC 90 & Long Bay Rd/Star Bluff Rd;
- SC 90 & Water Tower Rd;
- SC 90 & Hwy 57; and
- SC 90 & Mt. Zion Rd.

As detailed in **Section 5.0**, various short- and mid-term improvement concepts were developed for each deficient intersection, in addition to an evaluation of ongoing or planned projects which address these intersections.

Table 4.1 – Node Capacity: 2035 Intermediate Year No Build Conditions

	Control	Intersection	AM Peak Hour		PM Peak Hour	
			LOS	Delay	LOS	Delay
1	**Signal**	**US 501 Bus & Coastal Carolina Dentistry Dwy/SC 90**	**F**	**136.4**	**F**	**158.6**
2	**TWSC**	**SC 90 & French Collins Rd**	**F**	**134.7**	**D**	**34.1**
3	**TWSC**	**SC 90 & E Cox Ferry Rd**	**F**	**56.2**	**F**	**143.5**
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr	F	186.3	F	102.8
5	Signal	SC 90 & International Dr	C	25.8	D	48.1
6	TWSC	SC 90 & Tilly Pine Dr	C	22.7	C	15.3
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr	F	181.2	F	151.0
8	**TWSC**	**SC 90 & Bear Bluff Rd**	**D**	**26.7**	**C**	**22.3**
9	**TWSC**	**SC 90 & Reaves Ferry Rd/Old Reaves Ferry Rd**	**F**	**>300**	**F**	**267.2**
10	**TWSC**	**SC 90 & SC 22 EB Off Ramp**	**F**	**103.7**	**E**	**41.4**
11	**TWSC**	**SC 90 & SC 22 WB Ramps**	**F**	**110.2**	**F**	**299.8**
12	**Signal**	**SC 90 & Hwy 31 E/Monaca Dr**	**D**	**54.3**	**D**	**51.0**
13	**TWSC**	**SC 90 & Long Bay Rd/Star Bluff Rd**	**F**	**>300**	**F**	**>300**
14	**TWSC**	**SC 90 & Water Tower Rd**	**E**	**47.2**	**D**	**32.1**
15	**TWSC**	**SC 90 & Hwy 57 S**	**C**	**22.1**	**E**	**44.6**
16	Signal	SC 9 & Hwy 57 S	D	51.8	D	42.8
17	Signal	SC 90/Robert Edge Parkway & Champions Blvd/SC 90	C	26.8	C	28.9
18	**TWSC**	**SC 90 & Mt. Zion Rd**	**F**	**>300**	**F**	**>300**
19	Signal	SC 90 & St Joseph Rd	D	41.5	B	12.8
20	TWSC	SC 90 & Hwy 1008	F	62.3	F	52.7
21	Signal	SC 90 & Sea Mountain Hwy	C	31.1	C	31.5
22	Signal	SC 90 & SC 9 EB Ramps	C	27.0	C	33.1
23	Signal	SC 90 & Hwy 17	C	24.7	D	40.4

Exhibit 4.1 – Intersections w/ Intermediate Year Deficiencies Identified for Improvement



4.1.2 Safety-Based Deficiencies

The intersections which were identified as having capacity-based deficiencies in the intermediate conditions were overlaid on the historical crash heatmap to determine if additional deficiencies – not addressed based upon capacity needs – were identified.

This exercise, illustrated in **Exhibit 4.2**, indicated that three main sections – two along SC 90 and one along Hwy 57 – exhibited high frequency of historical crashes, but were not identified as having deficiencies based upon the node-capacity-based evaluation. These include:

- SC 90 between E Cox Ferry Rd and International Dr;
- SC 90 between Monaca Dr and Star Bluff Rd; and
- Hwy 57 at Mt. Zion Road.

Therefore, these areas were included as part of the ranking criteria for intermediate deficiencies to be address – some of which will be addressed by short term, already planned improvements, , as discussed in **Section 5.1** and **Section 5.2**.

Exhibit 4.2 – Intersections Identified w/ Existing and Intermediate Year Deficiencies

4.2 LONG-TERM (2045) NO BUILD CONDITIONS

4.2.1 Link Capacity-Based Deficiencies

Long-Term, Horizon Year 2045 deficiencies were identified based upon link capacity, with the understanding that intermediate intersection improvements (based upon the node capacity-based deficiencies discussed in the previous section) would carry forward in the horizon year.

As discussed in **Section 1.3**, Link Capacity was evaluated using the Highway Capacity Manual Methodologies for Class III two-lane highways, which bases level of service on percent free-flow speed (PFFS), with LOS criteria shown in **Table 4.2**.

Table 4.2 – HCM 6th Edition Class III 2-Lane LOS Criteria

LOS	Class III Percent Free-Flow Speed (%)
A	> 91.7%
B	> 83.3% - 91.7%
C	> 75.0% - 83.3%
D	> 66.7% – 75.0%
E	< 66.7%

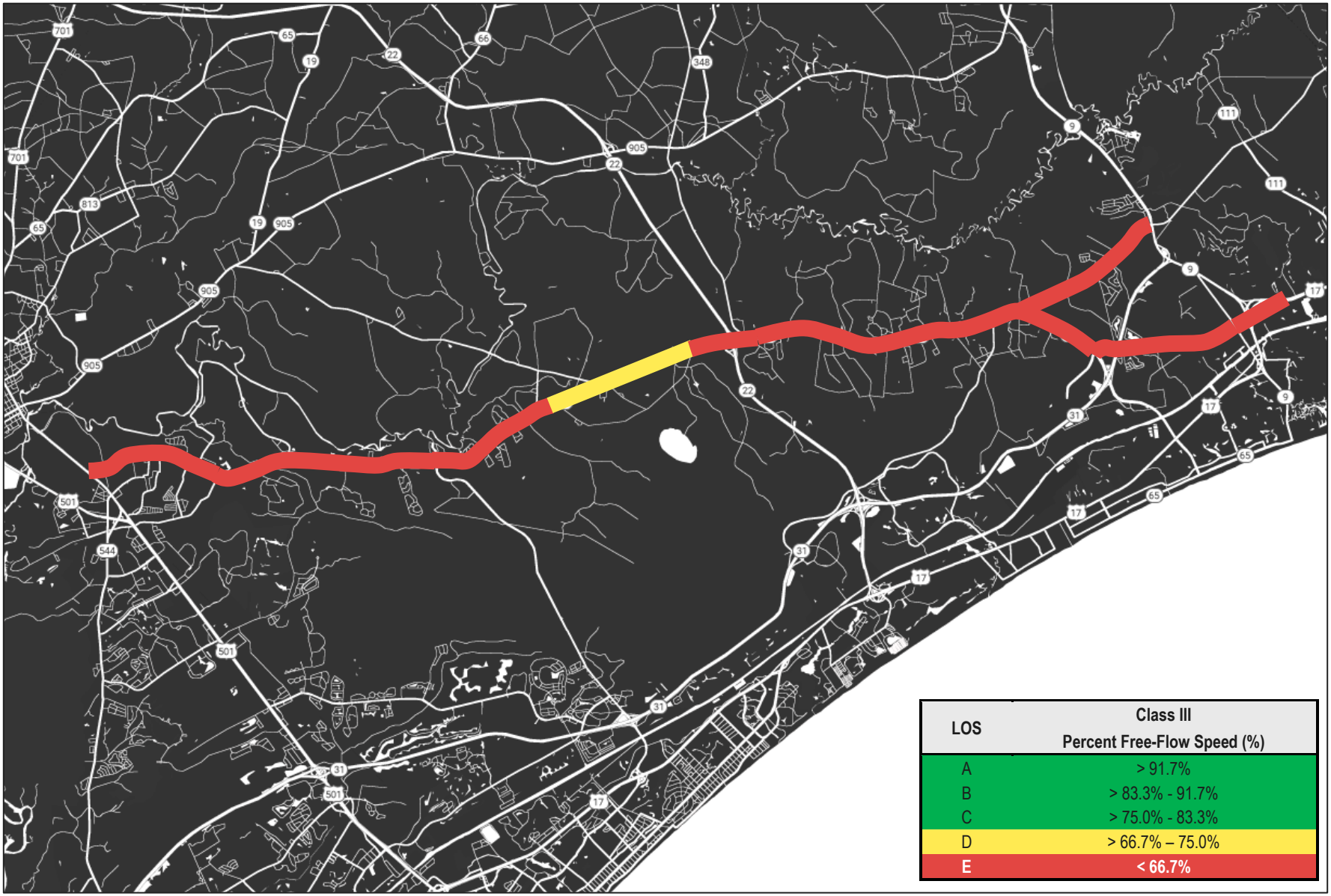
The results of this analysis for each of the 10 analysis segments along the corridor are shown in **Table 4.3**, which shows the AM and PM LOS and PFFS for eastbound and westbound directions, and the average overall for the corridor, in an effort to present a succinct capacity analysis result. The average LOS/PFFS for each segment are illustrated in **Exhibit 4.3.**

As **Table 4.3** and **Exhibit 4.3** indicate, all but one section along the corridor are anticipated to experience failing LOS E conditions in the horizon year, indicating deficient capacity as a two-lane highway, and indicating a need for widening.

Table 4.3 – Link Capacity: 2045 Horizon Year No Build Conditions

SEGMENT			AM				PM				AVERAGE	
			EB		WB		EB		WB			
			LOS	PFFS	LOS	PFFS	LOS	PFFS	LOS	PFFS	LOS	PFFS
1	US 501	E Cox Ferry Rd	E	56.6%	E	56.3%	E	57.6%	E	57.9%	E	57.1%
2	E Cox Ferry Rd	International Drive	E	54.3%	E	54.0%	E	57.8%	E	58.1%	E	56.1%
3	International Drive	Bear Bluff Road	E	63.1%	E	62.5%	E	62.7%	E	63.7%	E	63.0%
4	Bear Bluff Road	Averyville Drive	D	73.5%	D	73.3%	D	72.4%	D	72.3%	D	72.9%
5	Averyville Drive	Whispering Oaks Dr	E	52.5%	E	51.6%	E	42.9%	E	42.9%	E	47.5%
6	Whispering Oaks Dr	Hwy 57	E	54.7%	E	55.6%	E	55.5%	E	55.3%	E	55.3%
7	Hwy 57	Champions Blvd	E	66.6%	E	66.6%	E	63.3%	E	63.0%	E	64.9%
8	Champions Blvd	Sea Mountain Hwy	E	54.2%	E	54.2%	E	59.0%	E	58.9%	E	56.6%
9	Sea Mountain Hwy	US 17	E	51.5%	E	53.4%	E	46.2%	E	48.1%	E	49.8%
10	Hwy 57 (SC 90)	SC 9	D	68.0%	D	69.2%	E	62.7%	E	62.5%	E	65.6%

Exhibit 4.3 – SC 90 & HWY 57 2045 Horizon Year "Link" Average LOS Results



LOS	Class III Percent Free-Flow Speed (%)
A	> 91.7%
B	> 83.3% - 91.7%
C	> 75.0% - 83.3%
D	> 66.7% – 75.0%
E	< 66.7%

5.0 RECOMMENDED IMPROVEMENTS

As discussed in **Section 4.1**, the following intersections and sections along SC 90 were identified as projected to have deficiencies in the short- to mid-term intermediate conditions:

- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & E Cox Ferry Rd;
- SC 90 & Bear Bluff Rd;
- SC 90 & Old Reaves Ferry Rd;
- SC 90 & SC 22 EB Ramp;
- SC 90 & SC 22 WB Ramp;
- SC 90 & Hwy 31 E/Monaca Dr;
- SC 90 & Long Bay Rd/Star Bluff Rd;
- SC 90 & Water Tower Rd;
- SC 90 & Hwy 57;
- SC 90 & Mt. Zion Rd;
- SC 90 between E Cox Ferry Rd and International Dr;
- SC 90 between Monaca Dr and Star Bluff Rd; and
- Hwy 57 & Mt. Zion Road.

Additionally, almost the entirety of the corridor was identified to having deficient capacity as a two-lane highway in the projected horizon year conditions.

Therefore, to address these projected intermediate and long-term deficiencies, first, an evaluation was completed to determine whether imminently-planned projects along the corridor which may address these identified deficiencies (e.g.: mitigation improvements associated with planned developments along the corridor, SCDOT projects, County projects, etc.).

For the short- and mid-term deficiencies which were found not to be addressed by these imminently-planned projects, improvement concepts at each intersection and/or segment were identified based upon iterative capacity and safety analysis for the interim (2035) conditions.

Finally, for the long-term highway capacity deficiency, widening concepts for the corridor were developed based on capacity analysis for the horizon year (2045) conditions.

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5.1 IMMINENT-TERM (PLANNED BY OTHERS)

The review of planned projects along the corridor indicated seven projects which would address intermediate deficiencies at the locations (and improvements) highlighted in **Table 5.1**.

Table 5.1 – Imminently-Planned Improvements

Location	Potential Improvement
SC 90 & E Cox Ferry Rd	Traffic Signal
SC 90 & SWA Landfill Driveway	Traffic Signal
SC 90 & Bear Bluff Rd	EB left-turn lane along SC 90 and left-turn lane along Bear Bluff Road
SC 90 & SC 22 EB Ramp	Traffic Signal
SC 90 between Meadowood Lane and Live Oak Road	Install 3-Lane Section
SC 90 & Long Bay Rd/ Star Bluff Rd	Realign side-street approaches with left-turn lanes at all approaches and install traffic signal
SC 90 & Water Tower Rd	WB left-turn lane along SC 90 and left-turn lane along Water Tower Road.

Therefore, since the deficiencies at these locations are anticipated to be addressed due to these imminently-planned improvements, no additional improvements at these locations are recommended in the imminent and mid-term.

5.2 SHORT- & MID-TERM (RECOMMENDED)

With the aforementioned deficiencies addressed with imminently-planned improvements, the following locations were evaluated for improvements to improve capacity and/or safety in the short and mid-term:

- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & Old Reaves Ferry Rd;
- SC 90 & SC 22 WB Ramp;
- SC 90 & Hwy 31 E/Monaca Dr;
- SC 90 & Hwy 57;
- SC 90 & Mt. Zion Rd;
- SC 90 between E Cox Ferry Rd and International Dr;
- SC 90 between Monaca Dr and Star Bluff Rd; and
- Hwy 57 & Mt. Zion Road.

This evaluation led to the improvements listed in **Table 5.2**, which include various improvements, including turn lane additions, signalization, complete streets improvements, and/ or roundabouts.

As indicated in **Table 5.3**, with these improvements, all intersections identified for improvements are anticipated to operate with acceptable LOS D or better through the interim future (2035) year.

Concepts for each of these improvements are included in **Appendix G**.

In addition to these improvements, it is recommended to consider adopting zoning ordinances along SC 90 which require access management be considered with new developments.

Table 5.2 – Recommended Short/Mid-Term Improvement

Location	Improvement
SC 90 & US 501 Business	Install WB LT (left-turn) Lane along SC 90 & NB (northbound) RT (right-turn) Lane along US 501 Business & Remove Split Phase.
SC 90 & French Collins Rd	Install a 3-lane section with 6’ paved shoulders between Clay Ridge Road and Wilderness Road.
SC 90 & Reaves/Old Reaves Ferry Rd	Realign sidestreets to create two distinct intersections and Install LT lanes at all approaches OR Install a Roundabout.
SC 90 & SC 22 WB Ramp	Install a Signal.
SC 90 & Hwy 31 E/Monaca Dr	Install SB (southbound) and NB LT Lanes along E Monaca Dr OR Install a Roundabout.
SC 90 & Hwy 57	Install a Signal.
SC 90 & Mt. Zion Rd	Install a 3-lane section with 6’ paved shoulders between Mt. Zion Rd and US 17.
SC 90 between E Cox Ferry Rd and International Dr	Install 3-lane section with 6' paved shoulders between E Cox Ferry Rd and International Dr and raise Sterrit Swamp Bridge Deck.
SC 90 between Monaca Dr and Star Bluff Rd	Install a 3-lane section with 6’ paved shoulders between Monaca Dr and Star Bluff Rd
Hwy 57 & Mt. Zion Road	Install WB LT Lane along Hwy 57 onto Mt. Zion Road.

Table 5.3 – Node Capacity: 2035 Intermediate Year Conditions w/ Improvements

	Control	Intersection	AM Peak Hour LOS/Delay		PM Peak Hour LOS/Delay	
			No Build	Improved	No Build	Improved
1	Signal	US 501 Bus & Coastal Carolina Dentistry Dwy/SC 90	F 136.4	D 41.8	F 158.6	D 49.2
2	TWSC	SC 90 & French Collins Rd	F 134.7	D 27.0	D 34.1	C 17.9
3	TWSC	SC 90 & E Cox Ferry Rd	F 56.2	D 51.3	F 143.5	D 39.0
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr	F 186.3	--	F 102.8	--
5	Signal	SC 90 & International Dr	C 25.8	--	D 48.1	--
6	TWSC	SC 90 & Tilly Pine Dr	C 22.7	--	C 15.3	--
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr	F 181.2	--	F 151.0	--
8	TWSC	SC 90 & Bear Bluff Rd	D 26.7	C 24.1	C 22.3	C 18.9
9	TWSC	SC 90 & Old Reaves Ferry Rd	F >300	D[1] 25.6 C[1] 18.2 B[2] 13.9	F 267.2	C[1] 19.4 C[1] 17.5 B[2] 11.8
10	TWSC	SC 90 & SC 22 EB Off Ramp	F 103.7	A 7.2	E 41.4	B 11.9
11	TWSC	SC 90 & SC 22 WB Ramps	F 110.2	B 12.9	F 299.8	B 16.3
12	Signal	SC 90 & Hwy 31 E/Monaca Dr	D 54.3	D[3] 38.0 C[2] 24.4	D 51.0	D[3] 48.9 D[2] 32.2
13	TWSC	SC 90 & Long Bay Rd/Star Bluff Rd	F >300	B 15.4	F >300	C 18.8
14	TWSC	SC 90 & Water Tower Rd	E 47.2	D 32.2	D 32.1	C 19.8
15	TWSC	SC 90 & Hwy 57 S	C 22.1	B 14.3	E 44.6	C 26.1
16	Signal	SC 9 & Hwy 57 S	D 51.8	--	D 42.8	--
17	Signal	SC 90/Robert Edge Parkway & Champions Blvd/SC 90	C 26.8	--	C 28.9	--
18	TWSC	SC 90 & Mt. Zion Rd	F >300	C 25.7	F >300	B 17.3
19	Signal	SC 90 & St Joseph Rd	D 41.5	--	B 12.8	--
20	TWSC	SC 90 & Hwy 1008	F 62.3	--	F 52.7	--
21	Signal	SC 90 & Sea Mountain Hwy	C 31.1	--	C 31.5	--
22	Signal	SC 90 & SC 9 EB Ramps	C 27.0	--	C 33.1	--
23	Signal	SC 90 & Hwy 17	C 24.7	--	D 40.4	--

[1] – *As two distinct TWSC intersections*
[2] – *As roundabout*
[3] – *As signal*

5.3 LONG-TERM (RECOMMENDED)

As discussed in **Section 4.2**, the horizon year link capacity analysis indicated that the majority of the SC 90 and Hwy 57 corridor is anticipated to experience undesirable LOS E conditions in the 2045 horizon year.

As a preliminary step in determining the appropriate long-term recommendation to address this deficiency, an analysis was completed for the 2045 future year volumes to evaluate whether a three-lane section (adding a two-way-left-turn-lane throughout) would mitigate these undesirable operations. The HCM methodology does not have a direct tool for evaluating operations of three-lane sections. Therefore, as a means of evaluating the corridor as a three-lane section, the two-lane highway capacity analysis tool was used, but with reduction to access density inputs, to represent the benefit continuous left-turn lanes provide by removing left-turning vehicles from the general-purpose travel lane. The results of this analysis, shown in **Table 5.4**, indicate that with provision of a TWLTL throughout the corridor is still anticipated to experience undesirable LOS E in at least one peak hour, if not both, for all segments along SC 90.

However, this analysis does indicate that provision of a three-lane section along Hwy 57 is anticipated to be sufficient to improve operations to acceptable LOS D.

Therefore, the long-term recommendation for the SC 90 & Hwy 57 corridor is to provide a four-lane section along the entirety of SC 90 and a three-lane section along Hwy 57. Concepts for these improvements are shown in **Appendix G**.

As shown in **Table 5.5**, with these recommended improvements, the corridor is anticipated to operate at acceptable LOS. Additionally, the intersection LOS results, with the intermediate improvements discussed previously and the recommended long-term widening are shown in **Table 5.6**, which indicates that all study area intersections are projected to operate at acceptable LOS D or better, with six (6) exceptions, which have the following justification for not including further recommendations to mitigate delay:

SC 90 & US 501 Business
- Build LOS is significantly improved over the No Build and maximize capacity without widening US 501 Bus.

SC 90 & French Collins Rd
- Not an uncommon condition for a two-way-stop-controlled intersection in peak hours of the day

SC 90 & 3 Oak Ln/Heritage Downs Dr
- Not an uncommon condition for a two-way-stop-controlled intersection in peak hours of the day

SC 90 & Reaves Ferry Rd (Southbound)
- Not an uncommon condition for a two-way-stop-controlled intersection in peak hours of the day

SC 9 & Hwy 57
- No change between No Build and Build Conditions.

SC 90 & Hwy 1008
- Not an uncommon condition for a two-way-stop-controlled intersection in peak hours of the day

Table 5.4 – Link Capacity: 2045 Horizon Year Conditions – as 3-Lane Sections

	SEGMENT		AM LOS/PFFS				PM LOS/PFFS				AVERAGE	
			EB		WB		EB		WB			
1	US 501	E Cox Ferry Rd	E	64.8%	E	64.6%	E	65.6%	E	65.9%	E	65.2%
2	E Cox Ferry Rd	International Drive	E	58.3%	E	58.1%	E	61.5%	E	61.8%	E	59.9%
3	International Drive	Bear Bluff Road	E	65.9%	E	65.3%	E	65.5%	E	66.4%	E	65.8%
4	Bear Bluff Road	Averyville Drive	D	75.0%	D	74.8%	D	73.9%	D	73.9%	D	74.4%
5	Averyville Drive	Whispering Oaks Dr	E	57.2%	E	56.4%	E	48.7%	E	48.7%	E	52.8%
6	Whispering Oaks Dr	Hwy 57	E	60.9%	E	61.6%	E	62.6%	E	61.3%	E	61.6%
7	Hwy 57	Champions Blvd	D	69.2%	D	69.3%	E	66.3%	E	66.0%	D	67.7%
8	Champions Blvd	Sea Mountain Hwy	E	60.5%	E	60.5%	E	64.6%	E	65.5%	E	62.8%
9	Sea Mountain Hwy	US 17	E	61.7%	E	63.1%	E	57.5%	E	59.1%	E	60.4%
10	Hwy 57 (SC 90)	SC 9	D	72.6%	D	73.7%	D	68.2%	D	67.9%	D	70.6%

Table 5.5 – 2045 Horizon Year Recommended Build Link Capacity LOS Analysis Results

SEGMENT			2045 AM Peak				2045 PM Peak			
			EB		WB		EB		WB	
			LOS/Density/PFFS		LOS/Density/PFFS		LOS/Density/PFFS		LOS/Density/PFFS	
1	US 501	E Cox Ferry Rd	A	10.40	A	6.50	B	11.80	A	11.00
2	E Cox Ferry Rd	International Drive	B	12.30	A	8.20	B	13.40	A	8.00
3	International Drive	Bear Bluff Road	A	7.80	B	12.70	B	13.10	B	11.50
4	Bear Bluff Road	Averyville Drive	A	7.20	A	7.40	A	7.90	B	12.00
5	Averyville Drive	Whispering Oaks Drive	B	11.50	A	9.60	B	16.40	B	13.60
6	Whispering Oaks Drive	Hwy 57	B	15.10	B	15.40	B	11.20	B	16.30
7	Hwy 57	Champions Blvd	B	11.60	A	7.40	A	9.20	A	7.60
8	Champions Blvd	Sea Mountain Hwy	B	12.50	B	13.40	A	10.80	A	7.60
9	Sea Mountain Hwy	US 17	A	7.90	B	14.20	A	8.50	A	10.80
10	Hwy 57 (SC 90)	SC 9	D	**72.6%**	D	**73.7%**	D	**68.2%**	D	**67.9%**

Table 5.6 – 2045 Horizon Year Recommended Build Node Capacity LOS Analysis Results

		Intersection	AM Peak Hour										PM Peak Hour									
			2023 Existing		2035 No Build		2035 Build		2045 No Build		2045 Build		2023 Existing		2035 No Build		2035 Build		2045 No Build		2045 Build	
			LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
1	Signal	US 501 Bus & Coastal Carolina Dentistry Dwy/SC 90	C	35.0	F	136.4	D	41.8	F	247.5	F	109.3	D	39.2	F	158.6	D	49.2	F	261.5	F	105.8
2	TWSC	SC 90 & French Collins Rd	B	13.2	F	134.7	D	27.0	F	>300	F	57.4	B	12.5	D	34.1	C	17.9	F	236.2	C	20.7
3	TWSC	SC 90 & E Cox Ferry Rd	C	20.1	F	56.2	D	51.3	F	>300	D	35.5	D	30.1	F	143.5	D	39.0	F	>300	C	32.5
4	TWSC	SC 90 & Hillsborough Dr/Chelsea Lake Dr	F	59.2	F	186.3	F	186.3	F	>300	D	33.8	E	39.4	F	108.3	F	108.3	F	>300	C	22.2
5	Signal	SC 90 & International Dr	C	24.8	C	25.8	C	25.8	F	85.0	D	35.4	C	22.7	D	48.1	D	48.1	F	90.8	C	34.5
6	TWSC	SC 90 & Tilly Pine Dr	C	16.0	C	22.7	C	22.7	D	32.6	C	17.1	B	12.3	C	15.3	C	15.3	C	17.9	B	13.1
7	TWSC	SC 90 & 3 Oak Ln/Heritage Downs Dr	D	32.6	F	181.2	F	181.2	F	>300	C	23.4	D	32.2	F	151.0	F	151.0	F	*	E	42.9
8	TWSC	SC 90 & Bear Bluff Rd	C	15.4	D	26.7	C	24.1	F	78.8	C	20.8	B	13.6	C	22.3	C	18.9	F	183.3	C	22.4
9	TWSC	SC 90 & Old Reaves Ferry Rd	E	48.6	F	>300	D[1]	25.6	F	>300	F[1]	50.3	E	42.2	F	267.2	C[1]	19.4	F	>300	C[1]	23.6
							C[1]	18.2			D[1]	28.3					C[1]	17.5			C[1]	20.4
							B[2]	13.9			--	--					B[2]	11.8			--	--
10	TWSC	SC 90 & SC 22 EB Off Ramp	D	26.4	F	103.7	A	7.2	F	>300	B	10.3	C	17.5	E	41.4	B	11.9	F	244.2	A	9.9
11	TWSC	SC 90 & SC 22 WB Ramps	C	23.2	F	110.2	B	12.9	F	>300	A	9.5	D	28.8	F	299.8	B	16.3	F	>300	B	15.7
12	Signal	SC 90 & Hwy 31 E/Monaca Dr	C	25.7	D	54.3	D[3]	38.0	F	116.9	D[3]	38.7	B	19.2	D	51.0	D[3]	48.9	F	101.3	C[3]	32.7
							C[2]	24.4									D[2]	32.2				
13	TWSC	SC 90 & Long Bay Rd/Star Bluff Rd	D	32.0	F	>300	B	15.4	F	>300	B	12.3	F	51.1	F	>300	B	14.7	F	>300	B	12.7
14	TWSC	SC 90 & Water Tower Rd	D	27.7	E	47.2	D	32.2	F	98.0	C	20.7	C	20.9	D	32.1	C	19.8	F	60.7	C	15.8
15	TWSC	SC 90 & Hwy 57 S	B	13.9	C	22.1	B	14.3	F	52.4	B	13.4	C	20.4	E	44.6	C	26.1	F	147.1	B	17.1
16	Signal	SC 9 & Hwy 57 S	D	35.3	D	51.8	D	51.8	E	76.3	E	76.3	C	28.8	D	42.8	D	42.8	E	57.8	E	57.8
17	Signal	SC 90/Robert Edge Parkway & Champions Blvd/SC 90	C	22.5	C	26.8	C	26.8	C	31.3	C	31.3	C	21.7	C	28.9	C	28.9	C	33.6	C	33.6
18	TWSC	SC 90 & Mt. Zion Rd	F	120.9	F	>300	C	25.7	F	>300	B	17.4	F	76.5	F	>300	D	26.4	F	>300	B	12.3
19	Signal	SC 90 & St Joseph Rd	C	24.4	D	41.5	D	41.5	D	52.9	C	20.3	B	11.0	B	12.8	B	12.8	B	16.9	A	10.0
20	TWSC	SC 90 & Hwy 1008	D	33.6	F	62.3	F	62.3	F	148.1	F	97.5	D	29.5	F	52.7	F	52.7	F	86.9	E	38.9
21	Signal	SC 90 & Sea Mountain Hwy	C	26.1	C	31.1	C	31.1	D	38.9	C	28.5	C	26.1	C	31.5	C	31.5	D	38.3	C	28.2
22	Signal	SC 90 & SC 9 EB Ramps	B	17.0	C	27.0	C	27.0	D	42.0	B	20.0	B	19.5	C	33.1	C	33.1	E	60.7	C	26.6
23	Signal	SC 90 & Hwy 17	C	21.2	C	24.7	C	24.7	C	28.3	C	25.9	C	27.6	D	40.4	D	40.4	D	53.3	D	53.3

[1] – *As two distinct TWSC intersections*
[2] – *As roundabout*
[3] – *As signal*

5.4 ADDITIONAL CONSIDERATIONS

Detailed traffic analysis was not completed along East Cox Ferry Road (beyond its connection to SC 90); however, the future projects from the GSATS model (**Exhibit 3.1)**, and resulting future peak hour traffic volume projections (**Exhibit 3.6)** indicate that East Cox Ferry Road appears to present a desirable route between SC 90 and US 501.

Additionally, East Cox Ferry Road is included in the "RIDE-4" programming as a candidate for widening. If East Cox Ferry Road were to be widened (and served as a connection between SC 90 and US 501, this would further encourage use of the roadway over the use of SC 90. Furthermore, given right-of-way and geographical constraints to widening US 501 Business, it is unlikely that US 501 Business will be widened in the future, thus reducing the potential for increased demand along SC 90 between East Cox Ferry Road and US 501 Business, especially with the aforementioned potential widening and regional connectivity of East Cox Ferry Road.

Therefore, it is recommended that East Cox Ferry Road be considered as a potential bypass for SC 90 between SC 90 east of East Cox Ferry Road and US 501 – potentially realigning East Cox Ferry Road to align with SC 90 to the east – becoming the through movement, such that SC 90 west of this intersection becomes the approach which "tees" into the realigned roadway.

In the case that the previously-discussed improvements occur, it is anticipated that this would reduce the vehicular volume demand along SC 90 between US 501 Business and East Cox Ferry Road by at least 10%. With this anticipated reduction in traffic along this segment of SC 90, the segment is anticipated to experience acceptable LOS D or better through the horizon year as a three-lane section, as shown in **Table 5.7**.

Therefore, if the other regional projects occur as described to the left, and traffic demand between US 501/US 501 Business and SC 90 continues to grow along East Cox Ferry Road rather than along SC 90 west of East Cox Ferry Road, it is likely that the long term need along SC 90 between US 501 Business and East Cox Ferry Road would be reduced to a three lane section rather than a four-lane section.

Table 5.7 – Link Capacity: 2045 Horizon Year Conditions – as 3-Lane Section w/ Anticipated Rerouting of Traffic

SEGMENT			AM LOS/PFFS				PM LOS/PFFS				AVERAGE	
			EB		WB		EB		WB			
1	US 501	E Cox Ferry Rd	D	67.7%	D	67.5%	D	68.2%	D	68.4%	D	68.0%

5.5 RECOMMENDATIONS PUBLIC INVOLVEMENT (PIM #2)

With short, mid, and long-term project identified, concepts of each were developed and presented to the public at a second public involvement meeting.

The project team also met with project stakeholders on the morning of November 9th, 2023 at the Horry County Government Building Multipurpose Rooms at 1301 2nd Avenue in Conway, SC.

The public meeting later that evening at the same location saw 53 attendees from the public, with the comment period ending November 30th, 2023. Comments from this meeting are documented in **Appendix D**.

Exhibit 5.1 – PIM #2 Photos

6.0 FUNDING

6.1 IMPROVEMENT COSTS

Projects and associated costs were developed for Short-term, Mid-term, and Long-term recommended improvements. The planning level costs (approximate, rounded) were developed based on conceptual design quantities per the recommended improvements and have been summarized in **Table 6.1**.

Short-term costs are in inflated future year 2030 dollar values, mid-term in year 2035 inflated dollar values, and Long-term in year 2045 inflated dollar values.

This information is provided for planning purposes only. These recommended improvements could be implemented by using federal, state, local, and private funding.

Table 6.1 – Recommended Improvement Costs

Project Term	Project Location	Cost
Short (2025 - 2030)	❖ Intersection SC 90 at SC 22 WB ❖ Intersection SC 90 at Hwy 57	$1,090,000
Mid (2030 - 2035)	❖ SC 90 (Mt. Zion Rd to US 17) ❖ SC 90 (Monaca Dr. to Star Bluff Rd) ❖ SC 90 (E. Cox Ferry Rd to International Dr.) ❖ Hwy 57 at Mt. Zion Rd ❖ SC 90 at Old Reaves Ferry Rd ❖ SC 90 at Monaca Dr. / Hwy 31 ❖ SC 90 (Clay Ridge to Wilderness Rd) ❖ US 501 Bus. at SC 90	$60,600,000
Long (2035 - 2045)	❖ SC 90 (SC 22 to Robert Edge) ❖ SC 90 (Robert Edge to US 17) ❖ Hwy 57 (SC 90 to SC 9) ❖ SC 90 (E. Cox Ferry Rd to International) ❖ SC 90 (US 501 to E. Cox Ferry Rd) ❖ SC 90 (International to SC 22)	$880,655,000

6.2 FUNDING SOURCES

6.2.1 Local Funding

On November 8, 2016, Horry County voters supported a One-Cent Capital Projects Sales Tax for roads, also known as the RIDE III. This tax went into effect on May 1, 2017, and will expire on April 30, 2025. It increased the level of sales tax in Horry County an additional penny on all retail sales, accommodations, and prepared food/beverage. Groceries (unprepared food) will be exempt from the sales tax. Horry County is slated to receive $592 million over the eight-year life of the one-cent Capital Projects Sales Tax; approximately $408 million is funding projects within the GSATS portion of Horry County. In 2022, Horry County approved the framework for choosing the advisory committee for RIDE IV. The RIDE IV local option sales tax would be collected over a seven-year period from May 1, 2025, to April 30, 2032. The 18-member advisory committee finalized their list of recommended projects in April 2023, allocating a projected $826 million in revenue to bridge and roadway projects, paving and resurfacing projects, and environmental mitigation. Assuming the same proportion from RIDE III, the GSATS portion of Horry County could expect approximately $569 million worth of programmed projects over the seven-year period. Due to the success of the first three rounds of the RIDE program, it is anticipated that the RIDE program will continue through 2045 and potentially help fund several recommended improvements along the SC 90 and Hwy 57 corridors.

6.2.2 State Funding

The Regional Mobility Program (RMP) formally known as Guideshare are funds allocated to the MPO based on study area population. GSATS funding allocation from the RMP for FY 2023 is $12.7 million and will increase to an annual allocation of $15.7 million in FY 2024. The anticipated gross revenue between 2023 and 2045 is anticipated to be $358.1 million available for roadway projects, which could be another potential source of funds to help implement the recommended improvements along the SC 90 and Hwy 57 corridors.

Additional Funding:

- SCDOT
  - Transportation Alternatives Program
  - Safe Routes to School Program
  - Highway Safety Improvement Program
  - Traffic Signal Rebuild Program
  - Traffic Signal Retiming Program
- Horry County Transportation Committee (CTC)
- State Infrastructure Bank (SIB)

7.0 PROJECT PRIORITIZATION

Two short term projects were identified and isolated from the recommended short- and-mid term projects. These two projects were not prioritized but are rather listed to be implemented in the near term. The remaining mid-term projects were prioritized based upon engineering judgement using capacity and safety benefits anticipated for each. Finally, the long-term widening segments were prioritized based upon the Long-Term Prioritization Criteria, discussed subsequently.

7.1 SHORT-TERM PROJECTS

The two short-term projects identified include signalization of the SC 90 & SC 22 WB Ramp intersection as well as the signalization of the SC 90 & Hwy 57 intersection (including removal of the acceleration lane along SC 90. These projects, their anticipated planning-level costs, and referenced concept figures (in **Appendix G**) are detailed in **Table 7.1**.

7.2 MID-TERM PROJECT PRIORITIZATION

Mid-term projects were prioritized based upon engineering judgement based on anticipated traffic- and safety-benefits associated with each, along with anticipated environmental resiliency benefits, which resulted in the following prioritization, listed in order of top priority, shown in **Table 7.2.**

Table 7.1 – Short-Term Project Summary (2025-2030)

Project #/Location (Not Ranked)		Improvement	Cost*	Figure
1	SC 90 & SC 22 WB	Install Traffic Signal	$410,000	D
2	SC 90 & Hwy 57	Remove acceleration lane along SC 90 and install traffic signal	$680,000	F

** Rounded up to nearest $10,000 (in future, inflated 2030 dollar values)*

Table 7.2 – Mid-Term Project Summary (2030-2035)

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (E. Cox Ferry Rd to International Dr)	3.51 miles	Install 3-lane section with 6' paved shoulders, Raise Sterrit Swamp Bridge Deck	$22,450,000	H
2	SC 90 (Mt. Zion Rd to US 17)	2.81 miles	Install 3-lane section with 6' paved shoulders	$12,200,000	J
3	SC 90 (Monaca Dr to Star Bluff Rd)	1.77 miles	Install 3-lane section with 6' paved shoulders	$8,900,000	I
4	Hwy 57 & Mt. Zion Rd	Intersection	Install left turn lane along Hwy 57 turning left onto Mt. Zion Rd	$1,050,000	G
5A	SC 90 & Old Reaves Ferry Rd	Intersection	Realign side streets and install left turn lanes along SC 90 turning onto Old Reaves Ferry Rd	$2,750,000	E1
5B	SC 90 at Old Reaves Ferry Rd	Intersection	Install Roundabout	$3,950,000	E2
6A	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install left tun lanes on Monaca Dr. and S-31 turning onto SC 90	$1,600,000	C1
6B	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install Roundabout	$2,350,000	C2
7	SC 90 (Clay Ridge to Wilderness Rd)	0.68 miles	Install 3-lane section with 6' paved shoulders	$3,450,000	B
8	US 501 Bus. & SC 90	Intersection	Install WB left turn lane on SC 90 turning onto US 501 Bus. and Install NB right turn lane on US 501 Bus. turning onto SC 90 and remove split phase	$1,900,000	A

** Rounded up to nearest $50,000 (in future, inflated 2035 dollar values)*

7.3 LONG-TERM (WIDENING) SEGMENT PRIORITIZATION

7.3.1 Segments Identified for Scoring

Based upon logical termini, six segments along SC 90 and Hwy 57 were identified for distinct scoring for the purpose of prioritizing long-term improvements:

1. SC 90: US 501 – E. Cox Ferry Rd
2. SC 90: E. Cox Ferry Rd – International Dr
3. SC 90: International Dr – SC 22
4. SC 90: SC 22 – Robert Edge Pkwy
5. SC 90: Robert Edge Pkwy – US 17
6. Hwy 57: SC 90 – SC 9

7.3.2 Performance/Scoring Criteria

GSATS developed project evaluation criteria based on priorities tailored to the GSATS region, shown in **Table 7.3**.

Table 7.3 – GSATS Project Prioritization Criteria

Criteria	Max Points
Public Safety	30
Traffic Volume & Congestion	20
Livability	20
Financial Viability and Maintenance Costs	10
Environmental Impact and Resiliency	10
Functional Class (Truck Traffic)	5
Consistence with Local Land Use Plans	5

It was determined when comparing different segments along the same corridor that several of the GSATS criteria did not impact the ranking. Therefore, Livability, Functional Class, Resiliency, and Consistence with Local Land Use Plans were removed. As a result, the criterion in **Table 7.4** is used to rank the recommended long-term improvements for the SC 90 and Hwy 57 corridors.

Table 7.4 – SC 90 Long-Term Prioritization Criteria

Criteria	Max Points
Public Safety	40
Traffic Volume & Congestion	30
Financial Viability	15
Environmental Impacts	15

7.3.2.1 Public Safety

The Public Safety scoring criteria is based on the economic and societal impact of motor vehicle crashes for each segment. A weighted point assignment is based on annual crash cost per mile, with more points going to the higher cost segments, illustrated in **Table 7.5**.

7.3.2.2 Traffic Volumes and Congestion

The Traffic Volume and Congestion score is based on estimated future traffic volumes and the associated level-of-service of the segments. A weighted point assignment is based on projected 2045 volume to capacity ratio (V/C) from the GSATS 2045 travel demand model, with more points going to the segments with more congestion, illustrated in **Table 7.6.**

7.3.2.3 Financial Viability

The Financial Viability score is based on the estimated cost of each segment per the recommended improvement. A weighted point assignment is based on the estimated cost of each segment in the year 2045, with more points going to the segments with lower costs, illustrated in **Table 7.7**.

7.3.2.4 Environmental Impacts

The Environmental Impacts score is based on the wetland impacts events for each segment. A weighted point assignment is based on the percentage of estimated wetland impacts in each segment, with more points going to the segments with lower percentage of impacts, illustrated in **Table 7.8**.

Table 7.5 – Public Safety Scoring Rubric

Points	1 to 8	9 to 16	17 to 24	25 to 32	33 to 40
Annual Crash Cost Per Mile	$250k - 750k	$751k - 1.25m	$1.26m - 1.75m	$1.76m - 2.25m	$2.26m - 2.5m

Table 7.6 – Traffic Volume & Congestion Scoring Rubric

Points	1 to 6	7 to 12	13 to 18	19 to 24	25 to 30
V/C Ratio	0 - 0.30	0.31 - 0.60	0.61 - 0.83	0.84 - 0.99	1.00 - 1.07

Table 7.7 – Financial Viability Scoring Rubric

Points	1 to 3	4 to 6	7 to 9	10 to 12	12 to 15
Estimated Cost in 2045	$301m - 500m	$101m - 300m	$8.1m - 100m	$4.1m - 8m	$0-4m

Table 7.8 – Environmental Impacts Scoring Rubric

Points	1 to 3	4 to 6	7 to 9	10 to 12	12 to 15
Estimated Percentage of Wetland Impacts	37% - 45%	28% - 36%	19% - 27%	10% - 18%	0 - 9%

7.3.3 Summary of Segments, Ranked

The resulting scoring for each segment, in order of final score, resulting in priority, is shown in **Table 7.10,** and the projects listed in priority, with associated planning level cost estimates and reference concept figures are shown in **Table 7.11**.

Table 7.9 – Final Long-Term Improvement Segment Prioritization

Rank	Location	Project Length	Improvement	Safety Score	V/C Score	Financial Score	Environmental Score	Total Score
1	SC 90 (SC 22 to Robert Edge)	6.46 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	40	18	6	14	**78**
2	SC 90 (Robert Edge to US 17)	3.65 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	36	18	8	15	**77**
3	Hwy 57 (SC 90 to SC 9)	2.74miles	Widen to a 3-lane section with Turn lanes, bicycle and pedestrian facilities	24	12	8	15	**59**
4	SC 90 (E. Cox Ferry to International)	4.02 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	12	24	8	2	**46**
5	SC 90 (US 501 to E. Cox Ferry Rd)	2.56 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	4	15	8	14	**41**
6	SC 90 (International to SC 22)	6.22 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	8	15	6	2	**31**

Table 7.10 – Final Long-Term Improvement Segment Prioritization Costs and Concept References

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (SC 22 to Robert Edge)	6.46 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$204,900,000	D
2	SC 90 (Robert Edge to US 17)	3.65 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$155,400,000	E
3	Hwy 57 (SC 90 to SC 9)	2.74 miles	Widen to a 3-lane section with Turn lanes, bicycle and pedestrian facilities	$75,355,000	F
4	SC 90 (E. Cox Ferry to International)	4.02 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$136,500,000	B
5	SC 90 (US 501 to E. Cox Ferry Rd)	2.56 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$87,000,000	A
6	SC 90 (International to SC 22)	6.22 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$221,500,000	C

** Rounded up to nearest $100,000 (in future, inflated 2045 dollar values)*

8.0 CONCLUSIONS & RECOMMENDATIONS

The corridor of SC 90 from US 501 Business to US 17 in Horry County is a 23-mile minor arterial and is a primary link between Conway and the Little River Area. Highway (Hwy) 57 from SC 90 to SC 9 is approximately three miles of state-maintained roadway with half of the section classified as a rural major collector and the other half classified as an urban major collector. For the purposes of the analysis, the corridor was studied in terms of its "links" and its "nodes", with the links being the highway segments along the corridor at various reasonable termini, and the nodes being the key intersections, both signalized and unsignalized, along the corridor. These links and nodes were evaluated for deficiencies based on existing, future interim (2035), and future horizon (2045) year conditions.

Through safety analysis, capacity analysis, stakeholder engagement, and a public involvement process, imminent-, short-, mid-, and long-term improvement recommendations were developed and prioritized, according to scoring criteria consistent with the Grand Strand Area Transportation Study (GSATS) scoring criteria.

The following intersections and sections along SC 90 were identified as projected to have deficiencies in the short- to mid-term intermediate conditions:

- SC 90 & US 501 Business;
- SC 90 & French Collins Rd;
- SC 90 & E Cox Ferry Rd;
- SC 90 & Bear Bluff Rd;
- SC 90 & Reaves/Old Reaves Ferry Rd;
- SC 90 & SC 22 Eastbound (EB) Ramp;
- SC 90 & SC 22 Westbound (WB) Ramp;
- SC 90 & Hwy 31 E/Monaca Dr;
- SC 90 & Long Bay Rd/Star Bluff Rd;
- SC 90 & Water Tower Rd;
- SC 90 & Highway (Hwy) 57;
- SC 90 & Mt. Zion Rd;
- SC 90 between E Cox Ferry Rd and International Dr;
- SC 90 between Monaca Dr and Star Bluff Rd; and
- Hwy 57 & Mt. Zion Road.

Additionally, almost the entirety of the corridor was identified to having deficient capacity as a two-lane highway in the projected horizon year conditions.

Therefore, to address these projected intermediate and long-term deficiencies, first, an evaluation was completed to determine whether imminently-planned projects along the corridor which may address these identified deficiencies (e.g.: mitigation improvements associated with planned developments along the corridor, SCDOT projects, County projects, etc.). For the short- and mid-term deficiencies which were found not to be addressed by these imminently-planned projects, improvement concepts at each intersection and/or segment were identified based upon iterative capacity and safety analysis for the interim (2035) conditions. Finally, for the long-term highway capacity deficiency, widening concepts for the corridor were developed based on capacity analysis for the horizon year (2045) conditions. The review of planned projects along the corridor indicated projects which would address five of the fifteen intermediate deficiencies, as listed in **Table 8.1**.

Table 8.1 – Imminently-Planned Improvements

Location	Potential Improvement
SC 90 & E Cox Ferry Rd	Traffic Signal
SC 90 & SWA Landfill Driveway	Traffic Signal
SC 90 & Bear Bluff Rd	EB left-turn lane along SC 90 and left-turn lane along Bear Bluff Road
SC 90 & SC 22 EB Ramp	Traffic Signal
SC 90 between Meadowood Lane and Live Oak Road	Install 3-Lane Section
SC 90 & Long Bay Rd/ Star Bluff Rd	Realign side-street approaches with left-turn lanes at all approaches and install traffic signal
SC 90 & Water Tower Rd	WB left-turn lane along SC 90 and left-turn lane along Water Tower Road.

Therefore, since the deficiencies at these locations are anticipated to be addressed due to imminently-planned improvements, no additional short/mid-term improvements at these locations are recommended, and the remaining deficient locations were evaluated for improvements to improve capacity and/or safety in the short/mid-term.

This evaluation led to the short/mid-term improvements listed in **Table 8.2**. In addition to these improvements, it is recommended to consider adopting zoning ordinances along SC 90 which require access management be considered with new developments. These improvements are anticipated to provide acceptable level of service along the corridor and are anticipated to provide safety improvements through the future interim 2035 conditions.

Table 8.2 – Recommended Short/Mid-Term Improvement

Location	Improvement
SC 90 & US 501 Business	Install WB LT (left-turn) Lane along SC 90 & NB (northbound) RT (right-turn) Lane along US 501 Business & Remove Split Phase.
SC 90 & French Collins Rd	Install a 3-lane section with 6' paved shoulders between Clay Ridge Road and Wilderness Road.
SC 90 & Reaves/Old Reaves Ferry Rd	Realign sidestreets to create two distinct intersections and Install LT lanes at all approaches OR Install a Roundabout.
SC 90 & SC 22 WB Ramp	Install a Signal.
SC 90 & Hwy 31 E/Monaca Dr	Install SB (southbound) and NB LT Lanes along E Monaca Dr OR Install a Roundabout.
SC 90 & Hwy 57	Install a Signal.
SC 90 & Mt. Zion Rd	Install a 3-lane section with 6' paved shoulders between Mt. Zion Rd and US 17.
SC 90 between E Cox Ferry Rd and International Dr	Install 3-lane section with 6' paved shoulders between E Cox Ferry Rd and International Dr and raise Sterrit Swamp Bridge Deck.
SC 90 between Monaca Dr and Star Bluff Rd	Install a 3-lane section with 6' paved shoulders between Monaca Dr and Star Bluff Rd
Hwy 57 & Mt. Zion Road	Install WB LT Lane along Hwy 57 onto Mt. Zion Road.

As mentioned previously, the horizon year link capacity analysis indicated that the majority of the SC 90 and Hwy 57 corridor is anticipated to experience undesirable level of service (LOS) in the 2045 horizon year.

As a preliminary step in determining the appropriate long-term recommendation to address this deficiency, an analysis was completed to evaluate whether a three-lane section (adding a two-way-left-turn-lane throughout) would mitigate these undesirable operations. The results of this analysis indicate that with provision of a TWLTL throughout, the corridor is still anticipated to experience undesirable LOS E in at least one peak hour, if not both, for all segments along SC 90. However, this analysis does indicate that provision of a three-lane section along Hwy 57 is anticipated to be sufficient to improve operations to acceptable LOS.

Therefore, the long-term recommendations for the SC 90 and Hwy 57 corridors are to provide a four-lane section along the entirety of SC 90 and a three-lane section along Hwy 57.

For the purposes of determining priority for these long-term recommendations, the corridor was evaluated in six (6) segments, determined based upon logical termini, with the improvements for each listed in **Table 8.3.**

Table 8.3 – Recommended Long-Term Improvement

Location	Improvement
SC 90 (US 501 to E. Cox Ferry)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (E. Cox Ferry to International)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (International to SC 22)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (SC 22 to Robert Edge)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
SC 90 (Robert Edge to US 17)	Widen to a 4-lane section with turn lanes, bicycle and pedestrian facilities
Hwy 57 (SC 90 to SC 9)	Widen to a 3-lane section with turn lanes, bicycle and pedestrian facilities

The prioritization for each of these segments is indicated on the following page.

Short-, mid-, and long-term recommendations were then identified, with the mid-term projects prioritized according to engineering judgement and the long-term widening segments prioritized according to a GSATS-compatible scoring criteria.

The short-term projects, their costs, and reference concept figure (in **Appendix G**), are listed in **Table 8.4** (not prioritized). The prioritized mid-term projects are listed in **Table 8.5**, and the prioritized long-term improvement segments are listed in **Table 8.6**.

Table 8.4 – Short-Term Project Summary (2025-2030)

Project #/Location (Not Ranked)		Improvement	Cost*	Figure
1	SC 90 & SC 22 WB	Install Traffic Signal	$410,000	D
2	SC 90 & Hwy 57	Remove acceleration lane along SC 90 and install traffic signal	$680,000	F

** Rounded up to nearest $10,000 (in future, inflated 2030 dollar values)*

Table 8.5 – Mid-Term Project Summary (2030-2035)

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (E. Cox Ferry Rd to International Dr)	3.51 miles	Install 3-lane section with 6' paved shoulders. Raise Sterrit Swamp Bridge Deck	$22,450,000	H
2	SC 90 (Mt. Zion Rd to US 17)	2.81 miles	Install 3-lane section with 6' paved shoulders	$12,200,000	J
3	SC 90 (Monaca Dr to Star Bluff Rd)	1.77 miles	Install 3-lane section with 6' paved shoulders	$8,900,000	I
4	Hwy 57 & Mt. Zion Rd	Intersection	Install left turn lane along Hwy 57 turning left onto Mt. Zion Rd	$1,050,000	G
5A	SC 90 & Old Reaves Ferry Rd	Intersection	Realign side streets and install left turn lanes along SC 90 turning onto Old Reaves Ferry Rd	$2,750,000	E1
5B	SC 90 at Old Reaves Ferry Rd	Intersection	Install Roundabout	$3,950,000	E2
6A	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install left tun lanes on Monaca Dr. and S-31 turning onto SC 90	$1,600,000	C1
6B	SC 90 at Monaca Dr. / Hwy 31	Intersection	Install Roundabout	$2,350,000	C2
7	SC 90 (Clay Ridge Rd to Wilderness Rd)	0.68 miles	Install 3-lane section with 6' paved shoulders	$3,450,000	B
8	US 501 Bus. & SC 90	Intersection	Install WB left turn lane on SC 90 turning onto US 501 Bus. and Install NB right turn lane on US 501 Bus. turning onto SC 90 and remove split phase	$1,900,000	A

** Rounded up to nearest $50,000 (in future, inflated 2035 dollar values)*

Table 8.6 – Final Long-Term Improvement Segment Prioritization Costs and Concept References

Rank	Location	Length	Improvement	Cost*	Figure
1	SC 90 (SC 22 to Robert Edge)	6.46 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$204,900,000	D
2	SC 90 (Robert Edge to US 17)	3.65 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$155,400,000	E
3	Hwy 57 (SC 90 to SC 9)	2.74 miles	Widen to a 3-lane section with Turn lanes, bicycle and pedestrian facilities	$75,355,000	F
4	SC 90 (E. Cox Ferry to International)	4.02 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$136,500,000	B
5	SC 90 (US 501 to E. Cox Ferry Rd)	2.56 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$87,000,000	A
6	SC 90 (International to SC 22)	6.22 miles	Widen to a 4-lane section with Turn lanes, bicycle and pedestrian facilities	$221,500,000	C

** Rounded up to nearest $100,000 (in future, inflated 2045 dollar values)*