



S-564 (GARLINGTON ROAD) CORRIDOR IMPROVEMENTS FEASIBILITY STUDY

From Woodruff Road to Pelham Road
Greenville, South Carolina

Prepared by Mead & Hunt
Project ID PO39274



Jim Walden, Regional Planning Manager
South Carolina Department of Transportation

Date of Approval

Keith Brockington, AICP, Transportation Planning Manager
Greenville-Pickens Area Transportation Study

Date of Approval

Jessica Johns, PE, Project Manager
Mead & Hunt, Inc.

Date of Approval

The following individual(s) may be contacted for additional information concerning the project:

Casey Lucas, PE
Program Manager
South Carolina Department of Transportation

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EXECUTIVE SUMMARY

Garlington Road (S-564), from Woodruff Road (SC-146) to Pelham Road (S-492) in Greenville, is in need of improvements to reduce congestion and collisions through the corridor. This Feasibility Report will identify:

- Project purpose and need,
- Existing traffic conditions,
- Proposed alternatives,
- Estimate of probable cost for Preliminary Engineering, Right-of-Way, Construction, Engineering and Inspection, and Utility Relocations for the Recommended Alternatives.

The purpose and need of this project is to improve operational efficiency, safety at intersections, and access management along Garlington Road (S-564).

The roadway is being assessed due to its crash history and known issues with congestion. Crash reports from 2019 through 2022 show there were 165 crashes along the 3.3-mile corridor, 50 of which were intersection-related, consisting mainly of rear-end and angled crashes at the key intersections of Woodruff Road (23 crashes), Roper Mountain Road (17 crashes), and Pelham Road (10 crashes) (**Appendix B**). Scenarios assessed included the 2023 Existing Conditions, 2050 No-Build, and 2050 Build with various improvement alternatives. The No-Build Alternative with signal optimization served as a baseline for comparison.

The Greenville Pedestrian Safety Action Plan estimated the existing Average Annual Daily Traffic (AADT) along the entire Garlington Road corridor to be an average of 9,100 in 2022 (Greenville, 2022). SCDOT Count Station 490, from Woodruff Road to Roper Mountain Road, estimates the 2023 AADT to be 11,800, and Count Station 763, from Roper Mountain Road to Pelham Road, estimates the 2023 AADT to be 6,900 (SCDOT, Average Daily Traffic Counts for Greenville County, 2024). Beginning April 11, 2023, 7-day ADT volume-speed-classification counts and turning movement traffic counts were collected. Traffic counts revealed Wednesday to be the peak day of the week. South of Roper Mountain Road, a daily volume of 12,821 vehicles was recorded, and north of Roper Mountain Road, the daily volume was 7,721 vehicles. Overall corridor peak hours were determined to be 7:00–8:00 am and 4:30–5:30 pm. Counts at the following intersections with Garlington Road were collected:

- | | | |
|------------------------|---|------------------------|
| 1. Woodruff Road | 4. Shamrock Lane | 7. Dublin Road (North) |
| 2. Gateway Access Road | 5. Gelsemium Place/Hoke Smith Boulevard | 8. Wyndham Court |
| 3. GE West Entrance | 6. Dublin Road (South) | 9. Pelham Road |

To improve operational efficiency and intersection safety, a 15-foot two-way-left-turn-lane (TWLTL) was added from Woodruff Road to Roper Mountain Road. A 15-foot landscaped median was added from Roper Mountain Road to Pelham Road to address access management concerns. Along the entire corridor, up to three (3) alternatives were evaluated for each intersection, including exclusive turn lanes,

roundabouts, and additional through lanes. **Figures 5 through 10** in Section 7.2 show the preferred alternative as well as the additional alternatives that were analyzed throughout the corridor. **Table 1** below shows the projected year LOS (2050) for both AM and PM traffic for both the No-Build condition and Alternatives 1–3 for each intersection. The No-Build incorporates signal optimization.

Table 1: Garlington Road LOS AM/PM for Design Year (2050)

Intersection	No Build LOS (sec/veh)		Alternative 1 LOS (sec/veh)		Alternative 2 LOS (sec/veh)		Alternative 3 LOS (sec/veh)	
	AM	PM	AM	PM	AM	PM	AM	PM
Woodruff Rd.	D(54.5)	F(104.4)	D(42.5)	F(102.6)	D(43.3)	E(58.6)		
Lowe’s Entrance	D(31.8)	F(236.8)	D(27.4)	C(25.0)				
Chrome Dr.	F(73.7)	F(326.4)	C(18.5)	C(22.1)				
Gateway Access Rd.	C(23.4)	D(30.0)	C(23.2)	C(29.5)				
Roper Mountain Rd.	F(118.1)	F(196.6)	B(13.9)	C(23.2)	D(43.0)	D(44.6)	D(38.0)	D(37.8)
Dublin Rd. (S.) *	E(46.2)	F(81.7)	A(6.9)	A(6.9)	B(14.2)	B(11.0)	B(19.9)	B(13.0)
Shamrock Ln. / Snipes Blvd.	C(21.6)	D(27.2)	A(6.6)	A(6.6)	C(19.1)	C(24.9)		
Gelsemium Pl. / Hoke Smith Blvd.	C(19.1)	E(35.2)	A(5.3)	A(5.9)	C(18.4)	D(31.9)		
Dublin Rd. (N.)**	C(17.2)	E(47.1)	A(5.1)	A(6.1)	C(16.4)	E(51.3)		
Hartness Dr.	C(24.4)	F(330.0)	A(6.2)	A(9.4)	A(6.5)	A(9.2)		
Pelham Rd.	F(90.6)	F(87.6)	D(53.0)	E(77.7)	C(32.9)	D(39.4)	C(27.1)	C(33.4)

A planning level cost estimate was developed for the preferred alternative. An anticipated project schedule was developed for the purpose of the Feasibility Report; this schedule will be updated in the Preliminary Engineering (PE) phase of work. **Table 2** shows the estimated costs and schedule for the project.

Table 2: Estimated Cost and Schedule

PE Cost Estimate (\$)	RW Cost Estimate (\$)	Construction Cost Estimate (2024) (\$)	Construction Cost Estimate (2028) (\$)	Months to ROW from NTP	Months to Letting from ROW
\$2,500,000	\$2,800,000	\$40,000,000	\$49,000,000 ¹	18	18

¹2028 Cost based on 5% inflation for 4 years.

*All estimates are rounded to the nearest \$100,000.

Introduction

The South Carolina Department of Transportation (SCDOT) is evaluating the feasibility of improving traffic flow and operational movements along Garlington Road from Woodruff Road to Pelham Road in the City of Greenville. Currently, traffic congestion has resulted in an increase in collisions through the corridor.

1.0 Strategic Goal Alignment

The SCDOT has developed an agency-wide Strategic Plan, *Rebuilding Our Roads 2018-2020* (SCDOT, Strategic Plan 2018-2020.pdf, 2018) that reflects the current priorities and critical goals. The Strategic Plan identifies five (5) core goals that support SCDOT's vision to rebuild South Carolina's transportation system over the next decade to provide adequate, safe, and efficient transportation services for the movement of people and goods. The plan guides SCDOT's initiatives through the Transportation Asset Management Plan (TAMP), which implements priorities by establishing investment levels and designated targets. Utilizing risk management strategies through initiatives, such as the Feasibility Report process, helps identify and mitigate potential obstacles to achieving success and alignment with the Strategic Plan.

The corridor improvements along Garlington Road align with Goal 3 outlined in the SCDOT Strategic Plan:

- **Goal 3: Improve SCDOT program delivery to increase the efficiency and reliability of our road and bridge network.**

Strategy: Target known congested areas.

Objective: Improve the reliability of the movement of people and goods across the major portions of our road network.

Project Alignment: Reduce congestion by addressing existing and future operational issues.

The Greenville-Pickens Area Transportation Study (GPATS) *2040 Long Range Transportation Plan* (LRTP) (LRTP, 2023) currently has the Garlington Road Corridor divided into two (2) parts: Corridor Improvements 37 & 67. Corridor Improvement 37 encompasses the southern section, extending 1.3 miles from Woodruff Road to Roper Mountain Road. Meanwhile, Corridor Improvement 67 encompasses the northern section, extending 2 miles from Roper Mountain Road to Pelham Road. The southern section is more of an industrial corridor while the northern section is more residential.

The Corridor Improvement 37 project is also noted as a priority widening project in the Greenville-Pickens Area Transportation Study (GPATS) *2040 Long Range Transportation Plan* (LRTP) and is listed as a fiscally constrained project for horizon years 2024–2030. The project corridor is considered a public safety risk based on crash rates and locations and is ranked first among near-term corridor improvement projects in the GPATS LRTP as vulnerable to future operational issues (LRTP, 2023, p. VIII). Meanwhile, Corridor Improvement 67 is a mid-term general improvements project ranked number 48 (LRTP, 2023, p. 95).

The *2020 SCDOT Freight Plan Update* (SCDOT, SCDOT.org, 2020) established a statewide freight network, consisting of highways and roads projected to carry at least one million tons of freight by 2040.

Garlington Road is a designated freight corridor in Greenville County, and the Woodruff Road/I-385 interchange is the primary bottleneck for both directions of I-85 during both the AM and PM peak hours.

2.0 Project Purpose and Need

The transportation planning process for the Greenville-Pickens Area Transportation Study (GPATS) recommended the project be included in its *2040 Long Range Transportation Plan (LRTP)* (LRTP, 2023). As part of the recommendation development process, the GPATS project team consulted with local officials, planning staff, and residents to identify intersections within the GPATS region that need safety improvements. The prioritization process considered public safety based on crash rates and locations.

The Garlington Road Corridor Improvement 37, from Woodruff Road to Roper Mountain Road, was listed as a high-priority directly responsive to state and federal goals in accordance with Act 114 of the Section 57-1-370 of the SC Code of Laws, 1976, as amended (SC, South Carolina Department of Transportation ED-71.pdf, 2019), and Planning Directive 15 (PD-15) SC Code of Laws Section 57-1-370, 1976, as amended (SC, MPO-COG Score Ranking Directive, 2020).

The purpose and need was discussed with the Project Development Team (PDT). After discussing the purpose and goals for the project, the PDT concluded that the ***purpose and need of this project is to improve operational efficiency, safety at intersections, and access management along Garlington Road (S-564).***

Additional goals include ensuring the compatibility of potential transportation solutions with previously conducted planning studies, long-term visions for the corridor, and the functional nature of the corridor serving diverse land uses and travel modes while minimizing impacts to the environment and adjacent communities.

3.0 Project Study Area

The Project Study Area (PSA), shown in **Figure 1**, encompasses approximately 28 acres and is 3.3 miles in total length along Garlington Road from Woodruff Road to Pelham Road, centered generally along the existing median. Shown in **Figures 2 and 3**, 14 intersections were analyzed as part of this study.

Figure 1: Project Study Area

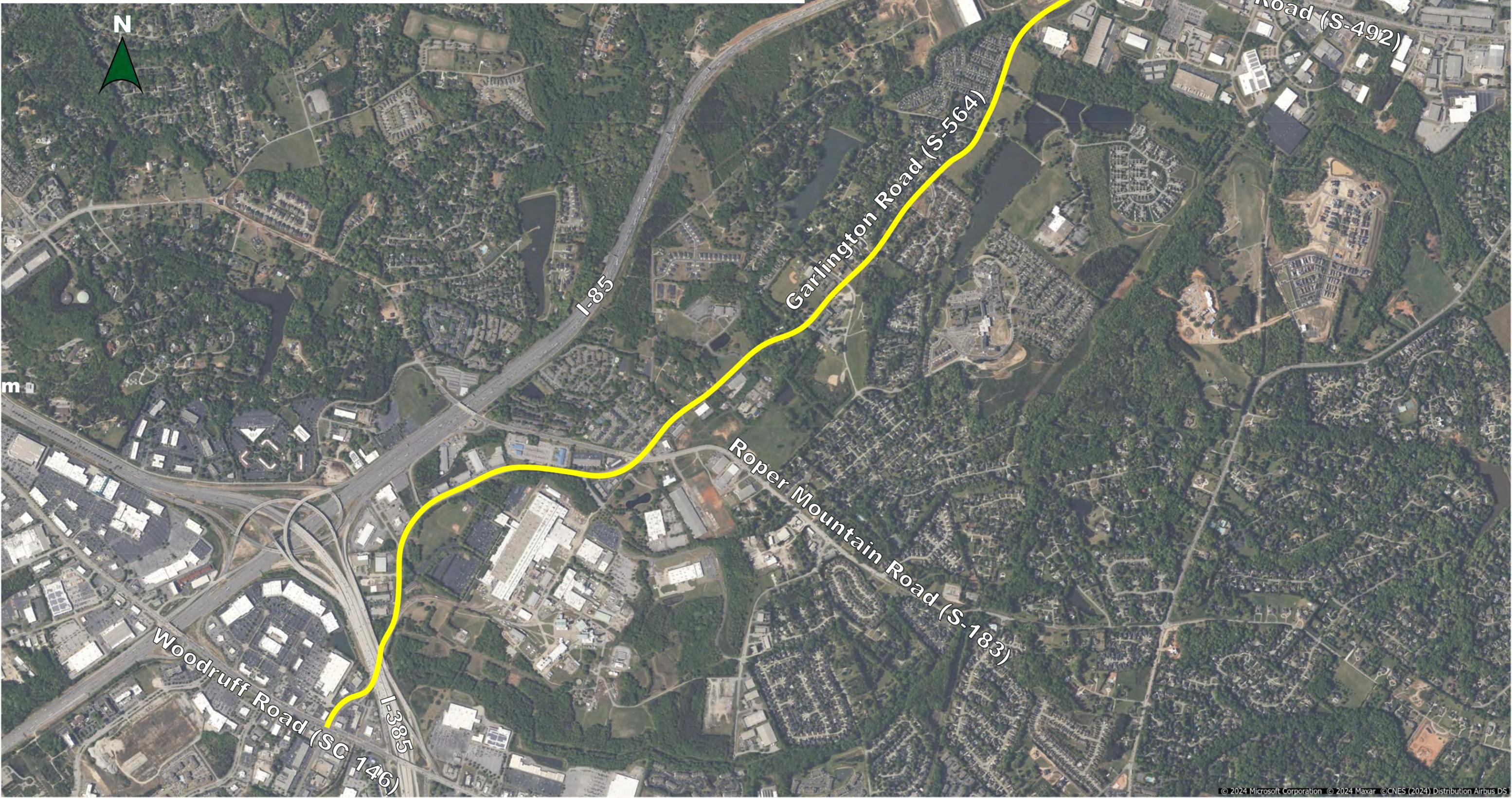


Figure 2: Project Study Area Woodruff Road to Dublin Road

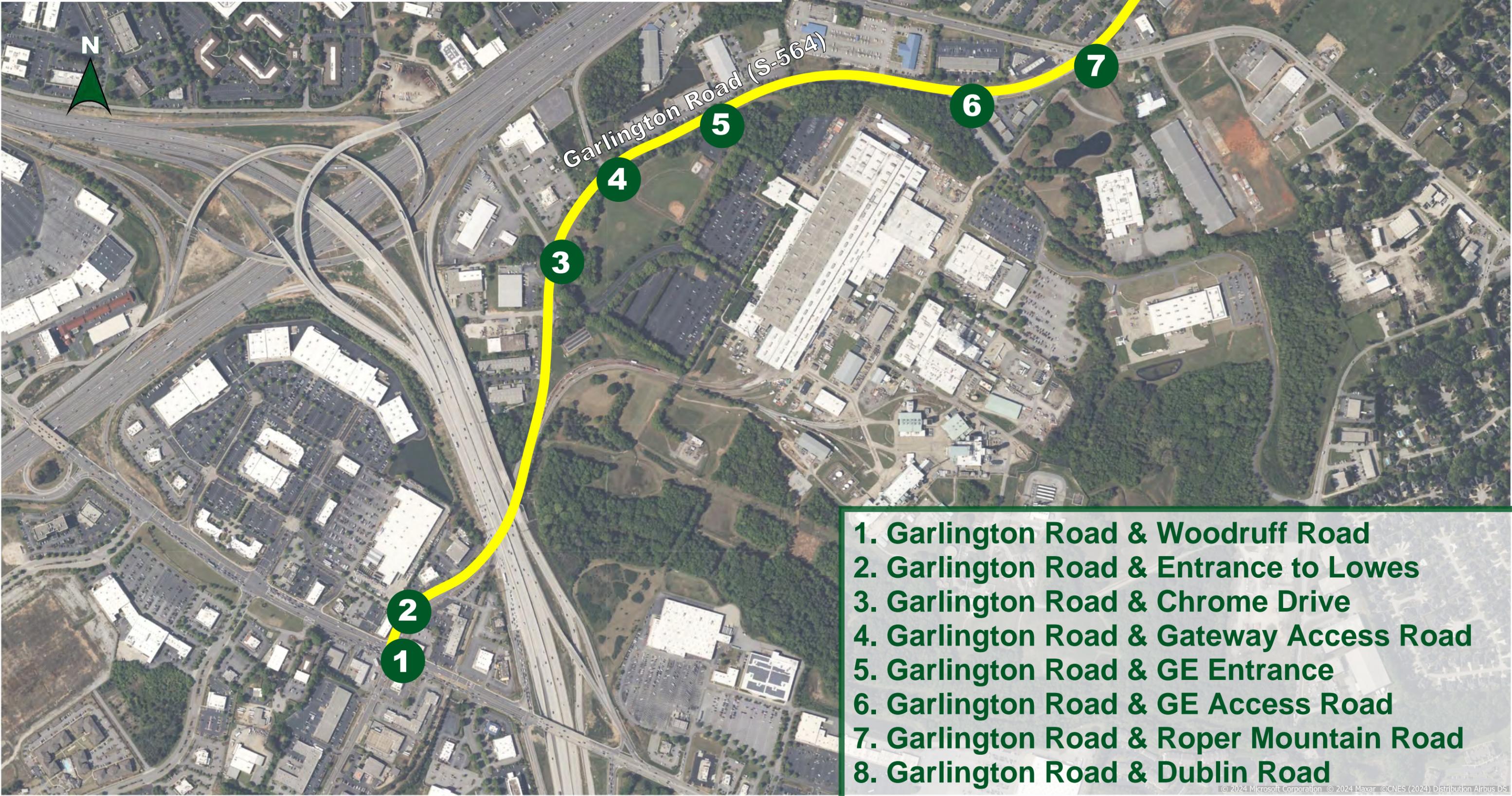
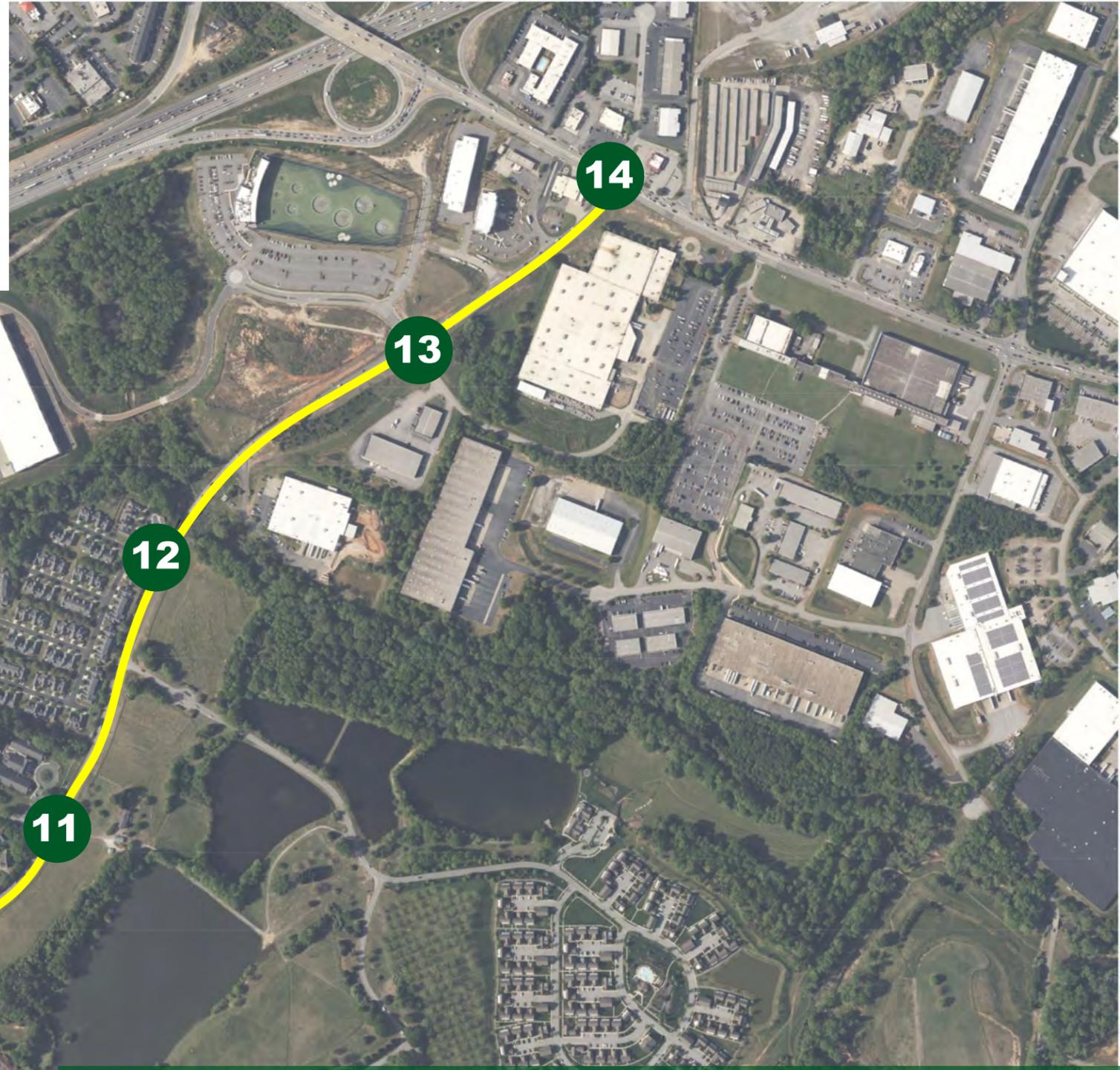


Figure 3: Project Study Area Shamrock Lane to Pelham Road



- 9. Garlington Road & Shamrock Lane
- 10. Garlington Road & Hoke Smith Boulevard
- 11. Garlington Road & Dublin Road
- 12. Garlington Road & Wyndham Court
- 13. Garlington Road & Entrance to Top Golf
- 14. Garlington Road & Pelham Road

4.0 Scope

This study was undertaken to determine the most feasible and reasonable alternative to meet the purpose and need of the project. Specifically, this report estimates the project limits, impacts, and costs to improve traffic flow and operational movements along Garlington Road from Woodruff Road to Pelham Road. SCDOT's Complete Streets Policy was used to consider accommodations for bicycles and pedestrians. Cost of Preliminary Engineering, Right-of-Way, Engineering and Inspection, and utility relocations were estimated to the extent probable, and a timeline was developed, in months, between each obligation.

The PDT's scope and goals for the Garlington Road project are as follows:

- Perform traffic study to address deficiencies via alternatives analysis.
- Provide bicycle and pedestrian accommodations.
- Evaluate options for increased non-motorized usage and connectivity.
- Minimize right-of-way acquisition.

5.0 Goals and Metrics

Historically, when a project does not have a properly defined purpose and need, or defined goals, cost overruns and delays can impact the design and development process. Goals are achieved through the establishment of clear metrics based on project goals and must be measurable, reasonable, and achievable. Example: zero (0) crashes is not reasonable or achievable. Qualitative and quantitative metrics are critical for the goal to be measurable. The decisions in this report are based on data gathered during the feasibility study.

The purpose and need of this project is to improve operational efficiency, safety at intersections, and access management along Garlington Road (S-564).

Garlington Road is classified as an Urban Major Collector and consists primarily of one lane per direction, with auxiliary lanes at major intersections. A Preliminary PDT Meeting on June 1, 2023, established the following Project Goals (**Appendix A**):

Roadway to remain a collector.

- Include features to aid in this designation such as roundabouts or a landscaped median.

Provide bike and pedestrian facilities.

- GPATS is planning projects to connect bike/pedestrian facilities around the south end of Garlington Road.
- A Shared-Use Path (SUP) along Garlington Road is preferred versus shared-use lanes.

Improved corridor safety

- Review access and control as deemed appropriate.
- Review signal warrants.
- Roundabouts are acceptable as deemed appropriate.

Based on existing traffic data, and forecasts through 2050, modeling shows that adding a center two-way left turn lane striped as an exclusive left turn lane at street intersections south of Roper Mountain Road and adding a landscaped median north of Roper Mountain Road satisfies the project purpose and need. Various alternatives for each intersection involving the addition of through lanes, turn lanes, signalization, and the addition of roundabouts were also found to meet the project purpose and need. Metrics for improvement were based on existing movement through the intersections with and without the alternatives in place. **Table 3** shows the goals and metrics for the project.

Table 3: Project Goals and Metrics

Goal	Metric
Maintain roadway as a collector	Include roundabouts and landscape median.
Address all non-motorized functionality (transit/bike/ped)	Evaluate access/connectivity/facilities.
Address access management	Coordinate with GPATS/City on access changes. Coordinate with SCDOT to limit access points. Review signal warrants.
Scaled improvements	Alternatives that allow for a range of improvements based on complexity and cost to allow for future funding.
Address crashes	Reduce intersection congestion and access-related crashes.

6.0 Existing Facilities

Garlington Road is categorized as an Urban Major Collector by the SCDOT, with an annual average daily traffic (AADT) volume of approximately 9,100 for 2022 (Greenville, 2022, p. 30). The existing roadway runs parallel to Interstate 85 (I-85), which can be accessed through intersections with Urban Minor Arterials Woodruff Road, Roper Mountain Road, and Pelham Road. Additionally, the southern section from Woodruff Road to Roper Mountain Road appears to function more like an arterial than a collector.

The project corridor is primarily a two (2)-lane roadway that serves commercial and residential land uses. There are six (6) lanes between Woodruff Road and the Lowe’s entrance running approximately 268 feet; the roadway narrows to two (2) lanes at I-385 Overpass going northeast. Past the bridge, there are center left-turn lanes at key intersections.

Figure 4: Garlington Road Under I-385 Overpass



The percentage of heavy vehicle traffic along Garlington Road is around two percent (2%) (**Appendix B**). The ramps from I-85 and I-385 filter onto Woodruff Road west and east of the intersection with Garlington Road. Further east, ramps from I-385 filter traffic onto Roper Mountain Road, and ramps from I-85 filter traffic onto Pelham Road.

Garlington Road has six (6) existing signalized intersections in the PSA: Garlington Road at Woodruff Road, the west entrance of GE Gas Turbine Plant, GE Access Road, Roper Mountain Road, Entertainment Boulevard, and Pelham Road. In the residential portion of the corridor, there are four unsignalized four (4)-way intersections at Dublin Road (South), Shamrock Lane/Snipes Road, Gelsemium Place/Hoke Smith Boulevard, and Dublin Road (North). There are also important T-shaped intersections, such as at the entrance to Lowes, Chrome Drive, Gateway Access Road, and Hartness Drive in addition to other driveways.

There is significant commercial development in the southern project section near Woodruff Road, and Garlington Road transitions to industrial use between Woodruff Road and Roper Mountain Road. The GE

Gas Turbine Plant is the largest industry in this section of the corridor, and there are three entrances to the plant along Garlington Road. The railroad runs adjacent to and does not intersect with Garlington Road, functioning as a spur connecting to the GE Gas Turbine facility. The railroad Right-of-Way is on the east side of the bridge interior bent.

At the signalized Roper Mountain Road intersection, both roads are on a vertical crest at the intersection's apex. Some of the departing lane markings are not visible from the approaching lanes, and guardrails and retaining walls limit sight distance. Roper Mountain Road has pedestrian and cyclist accommodations while Garlington Road does not.

The northern project section is more residential around the Dublin Road area and is being developed as a major entertainment center with Topgolf and Main Event Greenville containing golf courses, movie theaters, arcades, and bowling alleys. Upcoming projects in the area include relocating the fire station from the intersection of Garlington Road and Pelham Road to the intersection with Hartness Drive.

Leading up to Entertainment Boulevard, there is a bridge over Rocky Creek replaced in 2006 that is 39.25-foot wide with 36 feet of clear roadway.

Continuing north, the intersection of Garlington Road with Pelham Road has left turn lanes marked on all four of its approaches, and Pelham Road is a five (5)-lane section. Recently, there have been significant improvements along Pelham Road for the I-85 over Rocky Creek Bridge project. There are currently no accommodations for pedestrians or cyclists on either road at this intersection. At the southeast corner of this intersection, there are guardrails that restrict sight distances for vehicles with below-standard driver eye height.

7.0 Alternatives Analysis

Based on the results of the 2050 No-Build and crash analysis, alternatives were developed for the corridor overall, and each of the key corridor intersections: six (6) signalized and eight (8) unsignalized. A Scoping Meeting took place with the PDT on July 20, 2023 (**Appendix A**) to discuss the results of the traffic and crash analysis and develop possible alternatives to identified needs.

The focus of the first Scoping Meeting was on capacity and safety and did not examine feasibility initially. Synchro software, using the HCM 6th edition methodology, was used to evaluate intersections controlled by signals and stop signs, while Sidra software was used to evaluate roundabout alternatives. A Synchro analysis was performed for each alternative, using 2050 projected volumes.

A second Scoping Meeting took place with the PDT on September 19, 2023, to discuss and evaluate the developed alternatives (**Appendix A**). The objective of this meeting was to screen out solutions that were clearly infeasible, did not meet project goals, or were not as cost-effective as other alternatives.

7.1 No-Build With Coordinated Signal Timing

The No-Build Alternative considered improvement in signal timing only and would not improve the existing roadways or the surrounding area. This Alternative would not require any right-of-way acquisition, utility relocation, and would not cause impacts to environmental resources or result in short-term traffic disruption. However, the No-Build Alternative would not significantly improve traffic congestion or reduce collisions through the corridor; therefore, it would not satisfy the project's intended purpose and need. Due to the inability to meet the purpose and need of the project, the No-Build Alternative was eliminated from further consideration. However, the No-Build was retained as a baseline for applicable comparison and evaluation.

7.2 Adding Median and Intersection Improvements—Preferred Alternative

Based on traffic analysis, additional lanes for capacity were considered for the intersections with Woodruff Road and Pelham Road; furthermore, the addition of a two-way-left-turn-lane (TWLTL) along the corridor from Woodruff Road to Roper Mountain Road supported the purpose and need by improving safety and congestion. The addition of a TWLTL allows for motorists turning left to use the median as storage without stopping through traffic until it is safe to turn. A landscaped median with turn lanes at major intersections from Roper Mountain Road to Pelham Road was used to meet the purpose and need by improving access management and safety while limiting turning movements to major intersections. In addition, each major intersection through the corridor was evaluated for up to three (3) intersection alternatives. These alternatives include widening and the addition of through lanes, turn lanes, and roundabouts. **Figures 5** through **10** show the conceptual design and alternatives that were analyzed. The preferred intersection alternatives are shown as part of this corridor, while the additional intersection alternatives studied are shown in inserts. **Table 4** shows the results of the traffic analysis.

Figure 5: Conceptual Design Alternatives (Sheet 1 of 6)

ALTERNATIVE 2



INSTALL RIGHT-IN
RIGHT-OUT DRIVE AT
LOWE'S ENTRANCE

ALTERNATIVE 3



TRANSITION FROM SIDEWALK
TO MULTI-USE PATH AS
CLEARANCE FROM RR ALLOWS

LEGEND

-  NEW TRAVEL PATTERN
-  NEW TRAVEL LANE
-  LANE/PATTERN RETAIN
-  EXIST. RIGHT-OF-WAY
-  NEW RIGHT-OF-WAY
-  NEW SIDEWALK
-  CONCRETE MEDIAN
-  LANDSCAPED MEDIAN

Figure 6: Conceptual Design Alternatives (Sheet 2 of 6)



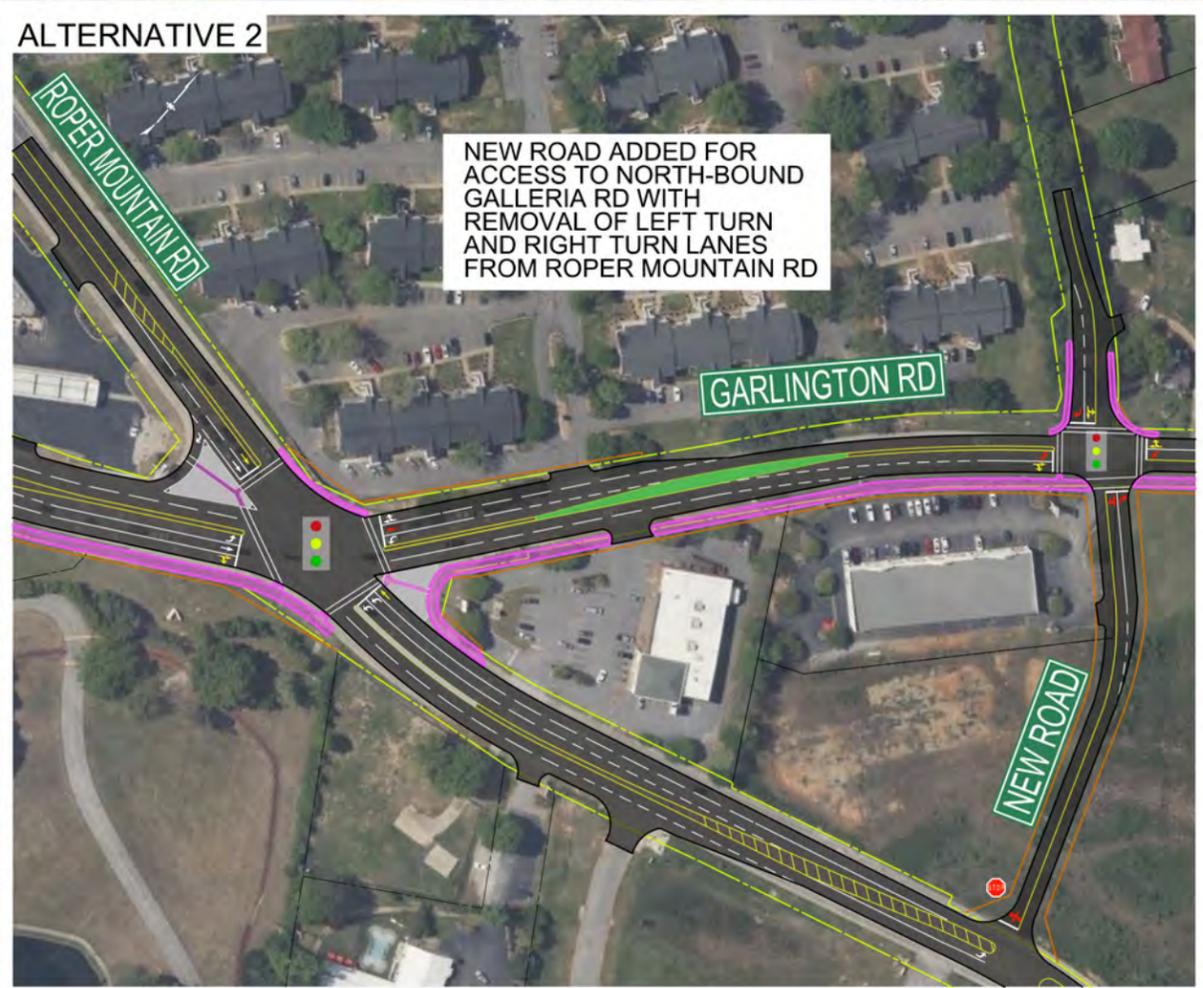
POTENTIAL ACCESS ROUTE FOR ROPER MOUNTAIN RD NORTH OF INTERSECTION WITH GARLINGTON RD. SEE NOTE ON OPTION 3

LEGEND

- NEW TRAVEL PATTERN
- NEW TRAVEL LANE
- LANE/PATTERN RETAIN
- EXIST. RIGHT-OF-WAY
- NEW RIGHT-OF-WAY
- NEW SIDEWALK
- CONCRETE MEDIAN
- LANDSCAPED MEDIAN

TRANSITION FROM SIDEWALK TO MULTI-USE PATH AS CLEARANCE FROM RR ALLOWS

Figure 7: Conceptual Design Alternatives (Sheet 3 of 6)

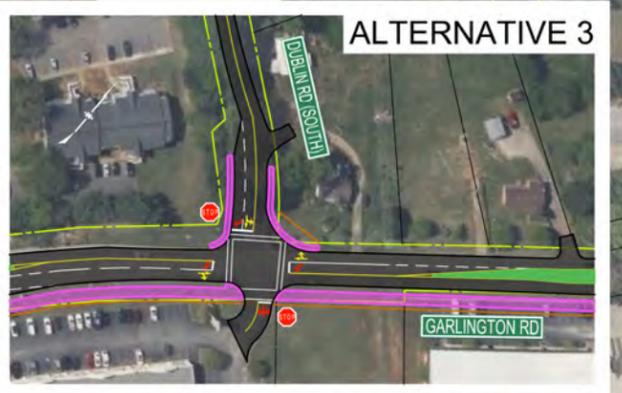


LEGEND

- NEW TRAVEL PATTERN
- NEW TRAVEL LANE
- LANE/PATTERN RETAIN
- EXIST. RIGHT-OF-WAY
- NEW RIGHT-OF-WAY
- NEW SIDEWALK
- CONCRETE MEDIAN
- LANDSCAPED MEDIAN



LEFT TURN MOVEMENT ON SOUTHWEST LEG OF INTERSECTION WILL BE REROUTED VIA GATEWAY ACCESS DRIVE



INSTALL FLASHING WARNING SIGNAGE FOR ALL PEDESTRIAN CROSSINGS WITHIN THE ROUNDABOUT

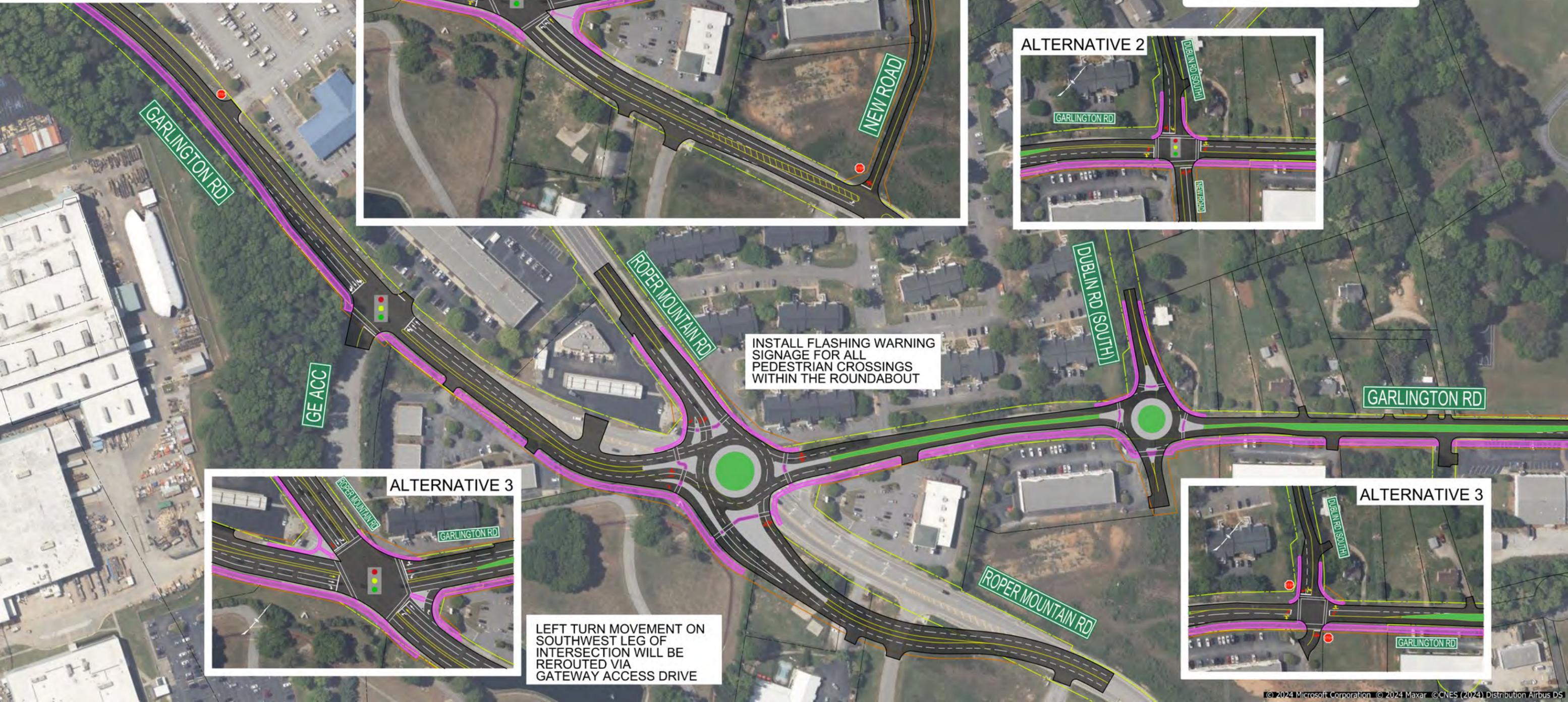
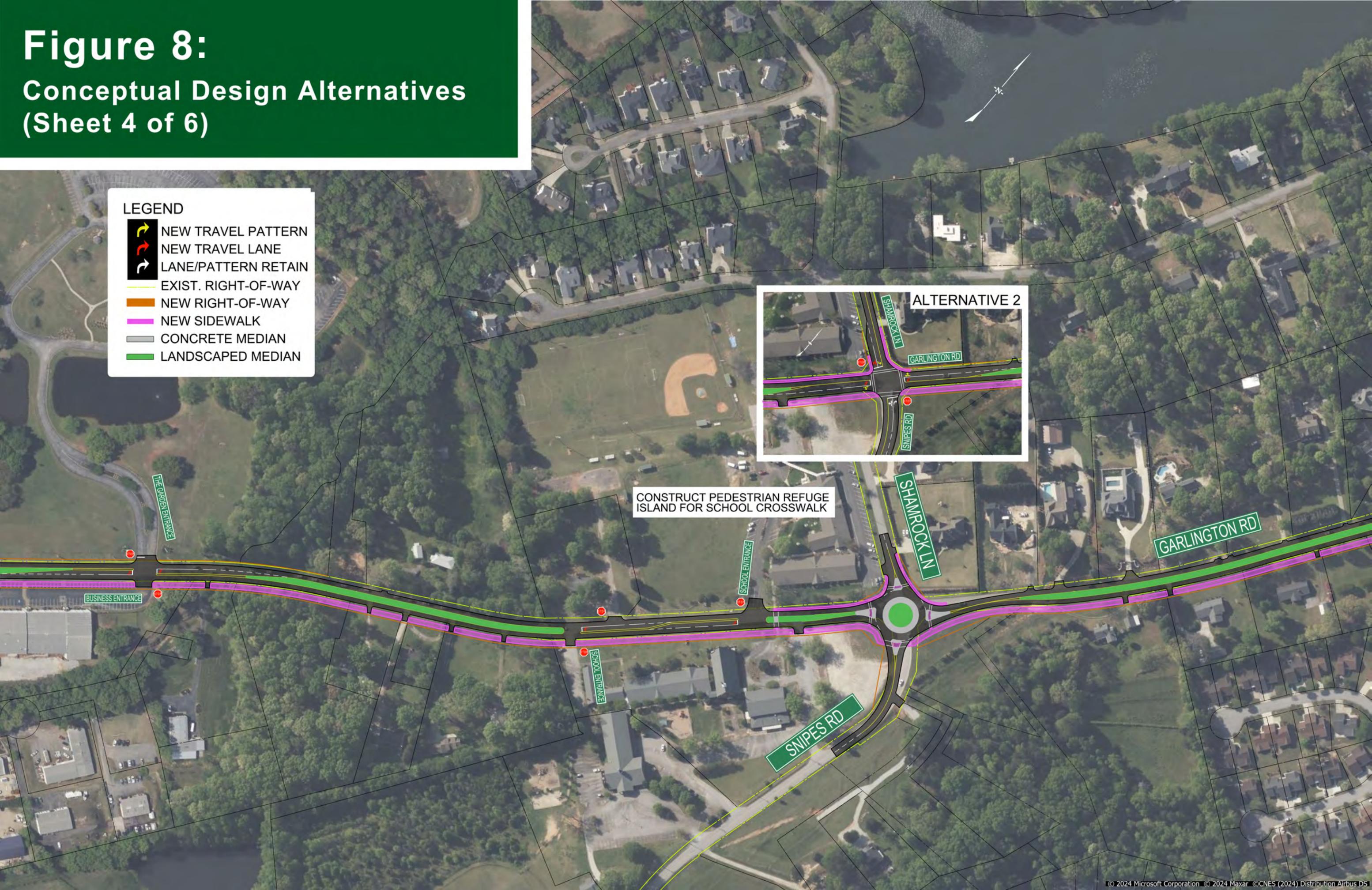


Figure 8: Conceptual Design Alternatives (Sheet 4 of 6)

LEGEND

-  NEW TRAVEL PATTERN
-  NEW TRAVEL LANE
-  LANE/PATTERN RETAIN
-  EXIST. RIGHT-OF-WAY
-  NEW RIGHT-OF-WAY
-  NEW SIDEWALK
-  CONCRETE MEDIAN
-  LANDSCAPED MEDIAN



CONSTRUCT PEDESTRIAN REFUGE ISLAND FOR SCHOOL CROSSWALK



Figure 9: Conceptual Design Alternatives (Sheet 5 of 6)



TRANSITION FROM 11-FOOT TO 8-FOOT MULTI-USE PATH AND 4-FOOT MEDIAN PRIOR TO BRIDGE WIDENING. SECONDARY OPTION IS TO INSTALL SEPARATE PEDESTRIAN BRIDGE

LEGEND

-  NEW TRAVEL PATTERN
-  NEW TRAVEL LANE
-  LANE/PATTERN RETAIN
-  EXIST. RIGHT-OF-WAY
-  NEW RIGHT-OF-WAY
-  NEW SIDEWALK
-  CONCRETE MEDIAN
-  LANDSCAPED MEDIAN

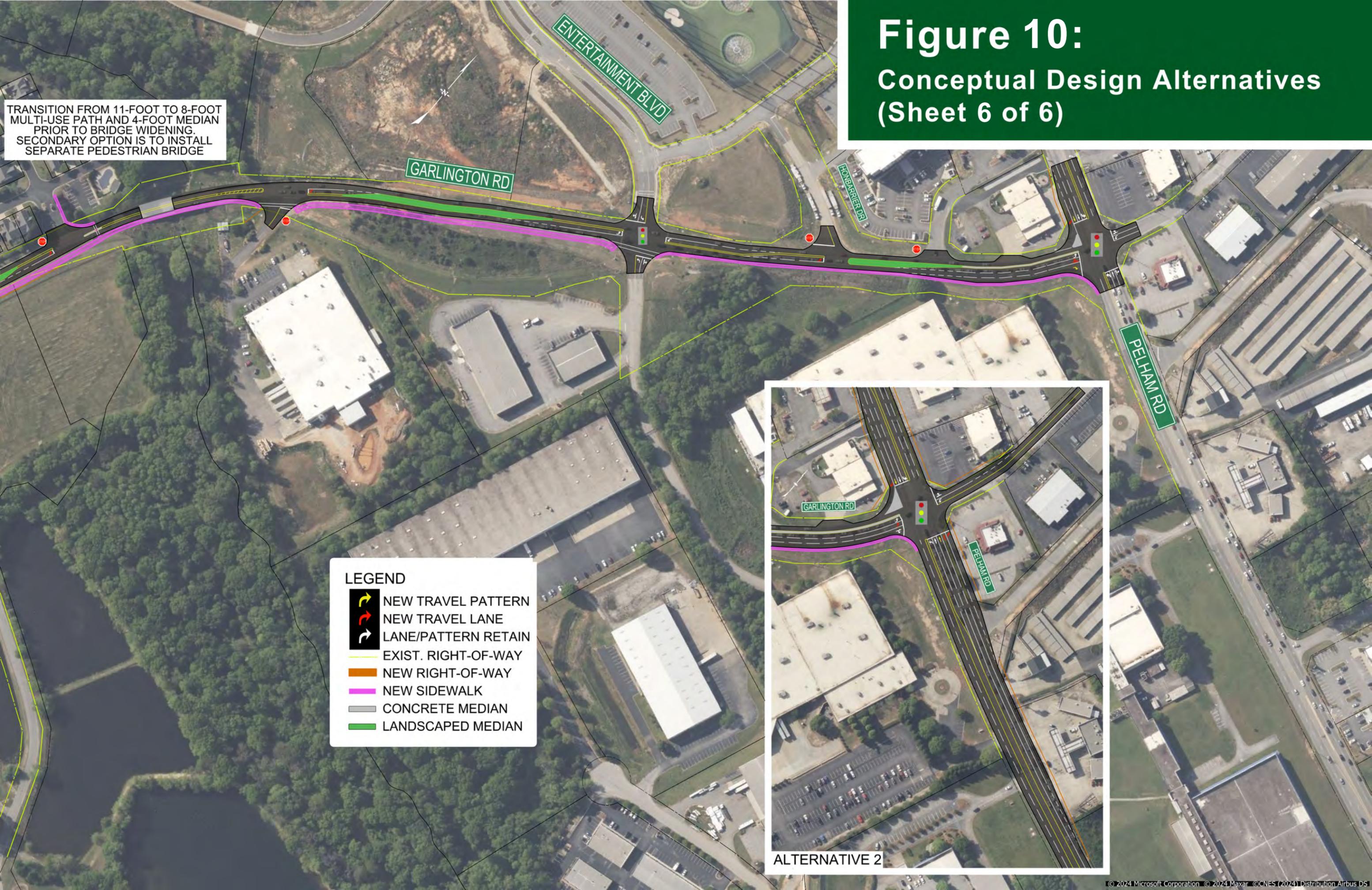
ALTERNATIVE 2

ALTERNATIVE 2

ALTERNATIVE 2

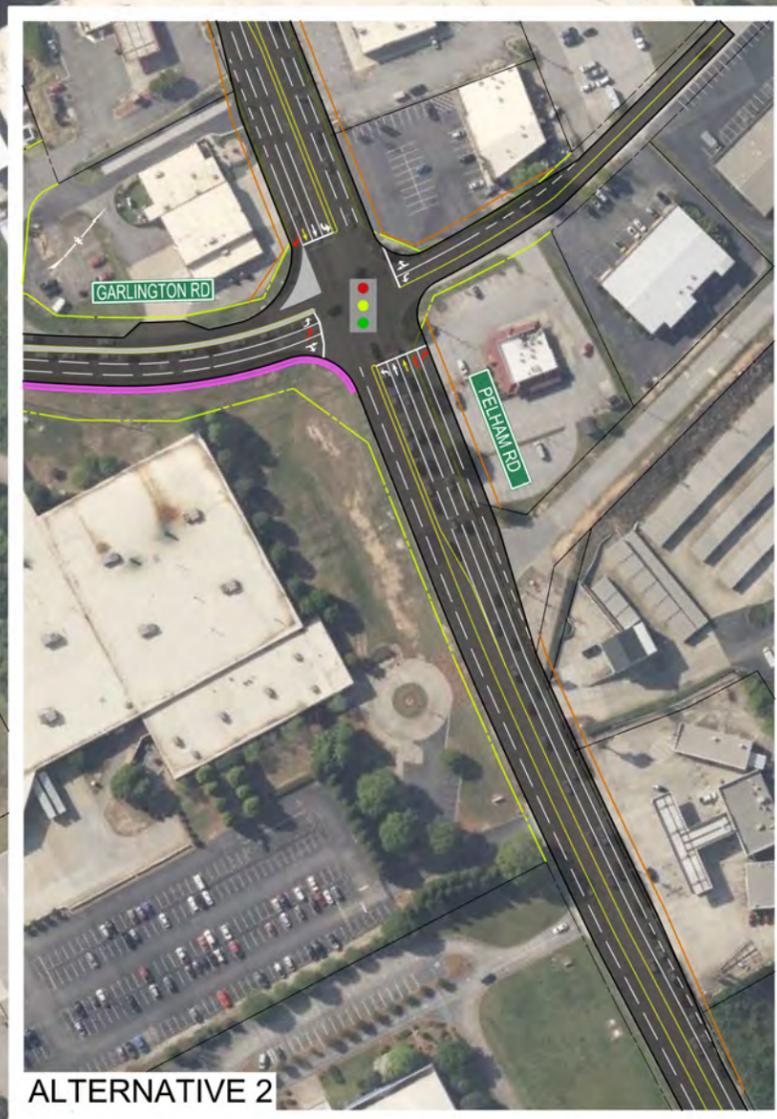
Figure 10: Conceptual Design Alternatives (Sheet 6 of 6)

TRANSITION FROM 11-FOOT MULTI-USE PATH AND 4-FOOT MEDIAN PRIOR TO BRIDGE WIDENING. SECONDARY OPTION IS TO INSTALL SEPARATE PEDESTRIAN BRIDGE



LEGEND

-  NEW TRAVEL PATTERN
-  NEW TRAVEL LANE
-  LANE/PATTERN RETAIN
-  EXIST. RIGHT-OF-WAY
-  NEW RIGHT-OF-WAY
-  NEW SIDEWALK
-  CONCRETE MEDIAN
-  LANDSCAPED MEDIAN



ALTERNATIVE 2

Table 4: Design Year (2050) Level of Service by Alternative - AM (PM)
See Appendix B: P039274 - Garlington Rd Corridor Traffic Study Report_12-15-23

Intersection	No Build	Alternative 1		Alternative 2		Alternative 3	
Woodruff	D(F)	Add NB Thru	D(F)	Add NB Thru & WB Rt; Convert WB Thru & SB Thru/Lt	D(E)	Add WB Rt; Convert WB Thru & SB Thru/Lt	N/A ¹
Lowe's Entrance	D(F)	Convert to RIRO	D(C)				
Chrome Drive	F(F)	Add Exclusive NB Lt & EB Rt	C(C)				
Gateway Access Road	C(D)	Add Exclusive NB Lt & EB Rt	C(D)				
Roper Mountain Road	F(F)	Convert to Double-Lane Roundabout ²	B(C)	Add New Rd.; Add SB Thru; Convert NB Thru/Rt & WB Thru; Remove EB Lt & WB Rt	D(D)	Add SB Thru & EB Thru; Convert NB Thru & WB Thru; Retain Existing EB Lt & WB Rt	D(D)
Dublin Road (south)	E(F)	Convert to Single-Lane Roundabout ²	A(A)	Add New Rd.; Add NB & SB Lt, EB Thru/Rt, WB Rt and Thru/Lt; Convert EB Lt, NB & SB Thru/Rt (Signalized) ³	B(B)	Add NB & SB Lt, EB Rt, & WB Thru/Rt/Lt; Convert EB Thru/Lt, NB & SB Thru/Rt (Unsignalized, Side Street Stop Controlled)	B(B)
Shamrock / Snipes	C(D)	Convert to Single-Lane Roundabout	A(A)	Add NB & SB Lt, Add EB Thru/Rt; Convert NB & SB Thru/Rt & EB Lt (Unsignalized, Side Streets Stop Controlled)	C(C)		
Gelsemium / Hoke Smith	C(E)	Convert to Single-Lane Roundabout	A(A)	Add NB & SB Lt, Add EB & WB Thru/Rt; Convert NB & SB Thru/Rt & EB & WB Lt (Unsignalized, Side Streets Stop Controlled)	C(D)		
Dublin Road (north)	C(E)	Convert to Single-Lane Roundabout ⁴	A(A)	Add NB & SB Lt, Add EB & WB Thru/Rt; Convert EB & WB Lt, Convert NB & SB Thru/Rt (Unsignalized, Side Street Stop Controlled)	C(E)		
Hartness Drive	C(F)	Convert to Single-Lane Roundabout	A(A)	Add NB Rt, SB Lt, & WB Rt; Convert WB Lt (Unsignalized, Side Street Stop Controlled)	A(A)		
Pelham Road	F(F)	Add EB Rt & NB Thru/Lt; Convert EB Thru & NB Rt ⁵	D(E) ⁵	See Appendix B ⁶		See Appendix B ⁶	

¹Alternative 3 was requested during the final PDT meeting. It was not analyzed for level of service, but it is not expected to perform significantly different than other alternatives.

²For Roper Mountain Road and Dublin Road (south), Option 2 from Appendix B became preferred Alternative 1 for this summary based on LOS.

³Alternative 2 (Option 1 in Appendix B) was also assessed as an unsignalized intersection. The viability an unsignalized intersection is considered low and was not included in this table.

⁴Dublin Road (north) Alternative 1 is a right-in-right-out configuration in the display. While the roundabout results are in this table, a right-in-right-out was considered justifiable and preferred by stakeholders.

⁵A northbound lane was added to create an exclusive right and shared thru/left in the display but was not incorporated into LOS analyzation. This addition is expected to have comparable, if not slightly better results than the original configuration.

⁶For Pelham Road, the originally analyzed arrangements for Options 2 and 3 in Appendix B were considered undesirable in the 2nd PDT meeting. Alternative 2 was proposed for the display in the 2nd PDT meeting but was not assessed for LOS.

8.0 Design Considerations

8.1 Roadway Design

Roadway safety improvements are critical measures that aim to reduce the number of collisions by improving the operational efficiency of the area needing improvement. Roadway safety improvements encompass a wide range of initiatives, including road design enhancements, traffic management, and access management.

8.1.1 Southern Project Segments: Woodruff Road–Roper Mountain Road

Visualization of the alternatives are shown in **Figures 5** through **10**. It is recommended that Garlington Road and Woodruff Road remain as a signalized intersection. Additional lanes at the intersection were considered in alternative analyses. See **Figure 5** for Garlington Road and Woodruff Road alternatives.

Traveling northeast on Garlington Road, the additional lanes at the intersection with Woodruff Road would taper down to a single lane in each direction before crossing under the I-385 bridges and begin the recommended roadway typical, which also includes a 15-foot two-way left turn lane (TWLTL). The TWLTL was considered preferable for this section of the roadway as there are numerous commercial entrances where access would need to be maintained to avoid impacting businesses. The traffic volumes on this corridor did not warrant widening for additional travel lanes, but the TWLTL will reduce congestion and improve safety by moving left-turning motorists out of the single travel-lane in each direction. Project-wide improvements include the installation of curb and gutter and a shared-use path or sidewalk, depending on right-of-way constraints.

Dedicated left turn lanes would be developed in the TWLTL at Chrome Drive and Gateway Access Road. The signalized intersection at GE Access Road will also be retained in its existing configuration to the southwest of the Roper Mountain Road intersection. See **Figures 6** and **7**.

At the intersection of Garlington Road and Roper Mountain Road, it is recommended that a two-lane roundabout be constructed. A roundabout would improve traffic safety by reducing the conflict points of vehicles entering the intersection. Driver delay should also improve as the roundabout allows for a continuous flow of traffic rather than drivers having to wait through multiple signal phases as in a signalized intersection of this size. Alternative signalized intersection arrangements were also considered and evaluated. See **Figure 7**.

8.1.2 Northern Project Segment: Roper Mountain Road–Pelham Road

Once the appropriate distance is reached for a lane drop north of the dual-lane roundabout, the roadway typical section for Garlington Road would return to a single lane in each direction but with a 15-foot landscaped median instead of a painted TWLTL. As this segment of the roadway requires much less commercial access and is more residential in nature, the landscaped median was preferable. Landscaped medians provide traffic calming and fit more with the aesthetic of a residential area while providing improved access management. In general, the widening to allow for a landscaped median should be to the east of the existing road since this is where the most undeveloped land is located and residences on the western side of Garlington Road are relatively closer to the existing road. Left turn

lanes are recommended to be developed for entrances at The Garden, First Presbyterian Academy, Ivy Brooke, the Bostik Inc. industrial site, and Honbarrier Drive. For the signalized intersection with Entertainment Boulevard, it is recommended to retain its existing configuration. See **Figures 7 through 10**.

There are four main intersections that provide ingress and egress to neighborhoods along Garlington Road in this segment. These are the intersections with Dublin Road (South), Shamrock Lane/Snipes Road, Hoke Smith Boulevard/Gelsemium Place, and Hartness Drive. It is recommended that these intersections be converted to single-lane roundabouts because these would reduce speed along the residential corridor, support the volumes of traffic, and improve traffic safety. Alternative arrangements were also considered and evaluated for each of these intersections. Traffic volumes also justified a recommended right-in-right-out arrangement at Garlington Road and Dublin Road (North), restricting left turns onto Dublin Road (North), but an alternative with dedicated lefts was also evaluated. See **Figures 7 through 9**.

Signalization is still recommended at the intersection of Garlington Road and Pelham Road. Several different alternatives with additional lanes at the intersection were considered. **See Figure 10**. Dual left turn lanes at the Woodruff Road intersection and the Pelham Road intersection include 4-foot landscaped medians between the turn lanes and opposing traffic, per SCDOT's request. Concerns were raised about the constructability of the landscaped medians while maintaining existing traffic. This concern will need to be evaluated as the project progresses into design.

8.2 Structural Design

Figure 11: Garlington Road Bridge Over Rocky Creek

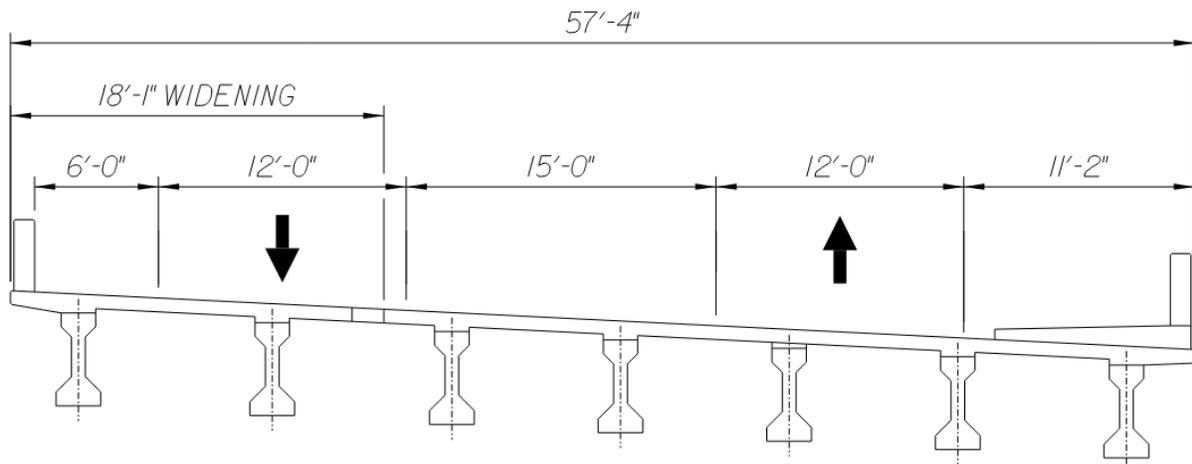


The Garlington Road bridge over Rocky Creek was constructed in 2006. The bridge is 160 feet long with 20-foot approach slabs and has a width of 39.25 feet with 36 feet of clear roadway. The cross slope of the bridge is 4.97%.

Both spans use AASHTO Type IV prestressed concrete beams with a spacing of 8.17 feet. The first span is 65 feet, and the second span is 95 feet. The interior bent is supported by 2, 4-foot diameter drilled shafts with 3.5-foot rock sockets, and the end bents are supported by HP14X73 steel piles.

Proposed improvements to the bridge include widening by 18.8 feet to accommodate a new 8-foot shared-use path being carried across the bridge and incorporate a 15-foot median. The existing barrier parapets are not Mash compliant and will need to be replaced once the bridge is widened. As shown in **Figure 12**, widening would be completed to the high side of the current superelevation to retain the existing low chord elevation.

Figure 12: Proposed Widened Bridge Typical Section



There are no utilities attached to the bridge, but there are water, sewer, and gas lines in the area. When constructing the current bridge, a fiber optic cable marker had to be relocated, and there is still fiber optic cable in the area.

8.3 Hydrology Design

In all the recommended construction alternatives, Garlington Road improvements would include the installation of curb and gutter along the whole corridor. Consequently, the drainage design would be that of a closed system that would collect and route stormwater runoff from the impervious roadway, sidewalk, and shared-use path surfaces to key outfall points along the corridor. While curb and gutter with a closed drainage system is more costly to construct, it is preferable to reduce right-of-way impacts. Where required, stormwater storage facilities may need to be constructed to avoid unacceptable increases in discharge at a particular outfall point.

There are several potential outfall points along the corridor (See **Figure 13** for corresponding locations). The first potential outfall point is the small stream to the north of the I-385 bridge (Point 1). Another outfall point in this area would be to McCalls Lake, or the effluent stream from McCalls Lake, both situated between Garlington Road and Gateway Access Road (Point 2).

North of Roper Mountain Road, there is a small stream that feeds to Shannon Lake just to the north of The Garden that is another potential outfall point (Point 3). Another outfall channel could be constructed north of the Snipes Road and Garlington Road intersection, although additional right-of-way would need to be purchased to construct a new channel to the adjacent stream that feeds into Smiths Pond (Point 4). A direct outfall into Smiths Pond is also a potential option moving further north but would, again, require additional right-of-way (Point 5). There is potential for direct outfall into Rocky Creek in the areas of the bridge over Rocky Creek (Point 6). Finally, there is a small stream to the north of the bridge near the Bostik industrial site that feeds into Rocky Creek (Point 7).

Other potential outfall points may be found with further analysis. The outfall points presented here are preliminary and need to be evaluated for current capacity and suitability for additional discharge. This evaluation would drive the discussion on the need for temporary storage of stormwater runoff from the closed system. Rocky Creek is the receiving stream for all these potential outfall points, and, ultimately, the nearby Enoree River is the receiving waters.

Bridge hydrology analysis may also need to be conducted if a critical amount of discharge is being routed to outfall into Rocky Creek prior to it flowing under the bridge over Rocky Creek. Rocky Creek is part of a FEMA floodplain, the only floodplain that this project could potentially encroach upon.

Figure 13:
Potential Outfall Locations



8.4 Bicycle and Pedestrian Accommodations

Garlington Road is one of 46 corridors identified in the City of Greenville Pedestrian Safety Action Plan for further study based on AADT. Urban Minor Arterials Woodruff Road, Roper Mountain Road, and Pelham Road are also listed (Greenville, 2022).

Figure 14: Existing Crosswalks at the Intersection of Garlington Road and Woodruff Road



Pedestrian and bike traffic is heaviest at Woodruff Road. There are existing crosswalks at the intersection of Garlington Road and Woodruff Road and pedestrian signals on all corners. In all alternatives, it is recommended that concrete medians with pedestrian refuge islands be constructed at the Garlington Road/Wodruff Road intersection.

GPATS is planning projects to connect bicycle and pedestrian facilities around the south end of Garlington Road. As part of the preferred alternative, an 11-foot shared-use path with 5-foot grass buffer behind the curb has been included. An exception to this is at the beginning of the project between Woodruff Road and the I-385 bridges. It was important not to expand the current cross-section

under the bridges, so a 5-foot sidewalk was recommended in this segment. East of the bridge, a shared-use-path was developed once enough space was present to accommodate one without encroaching on the existing railroad right-of-way.

At the dual roundabout proposed for the intersection of Roper Mountain Road and Garlington Road, crosswalks were included on all legs, with shared-use path connectivity maintained across Garlington Road and connectivity to sidewalks maintained to the west of Garlington Road. If the recommended roundabout is adopted, it is also recommended that flashing warning signage be installed on all pedestrian crossings within the roundabout and pedestrian refuges be constructed within all medians. All alternatives recommend that crosswalks be installed at all intersections and pedestrian refuge islands be constructed where applicable within roundabout medians. Pedestrian crossings are also recommended at First Presbyterian Academy.

Three alternatives were analyzed for the shared-use path connectivity at the bridge over Rocky Creek. Option 1 included performing no work on the existing bridge by removing the landscaped median and constructing a separate pedestrian bridge to be maintained by Greenville County. Option 2 included installing a sidewalk on the existing bridge. Option 3 included widening the existing bridge to add a barrier-separated shared-use path. Option 3 is presented as the preferred alternative for its improved pedestrian safety and future maintenance. A shared-use path was continued to Entertainment Boulevard, and a sidewalk was utilized between Entertainment Boulevard and Pelham Road.

Following the final PDT meeting, a suggestion was made to include a 10-foot by 10-foot box culvert under the Roper Mountain Road intersection for pedestrians to use to avoid crossing the Roper Mountain Road intersection at grade. This suggestion was not included in the conceptual designs at this time, but it is noted that a future design team should evaluate the feasibility of this alternative.

8.5 Right-of-Way

Measures were taken to reduce right-of-way impacts on all alternatives; however, some right-of-way impacts are anticipated with the preferred alternative. **Table 5** displays the estimated cost for properties where additional right-of-way may need to be obtained. Areas and property values were based on Greenville County GIS. The market values listed on GIS can be out-of-date, so based on recommendations from Right-of-Way agents, an inflation contingency of 60% was placed on each property.

Table 5: Right-of-Way Obtains and Cost

Tract	Total GIS Area (sf)	Total GIS Value	60% Contingency	Obtained Area (sf)	R/W Cost
547030103704	42362	\$1,445,000.00	\$2,312,000.00	1951	\$106,480.15
547020102011	32090	\$160,000.00	\$256,000.00	640	\$5,105.64
547030100116	130219	\$1,305,000.00	\$2,088,000.00	115	\$1,843.97
547030100100	985978	\$9,480,500.00	\$15,168,800.00	2750	\$42,307.43
547030100106	105606	\$116,360.00	\$186,176.00	13628	\$24,025.21
547030100200	953948	\$635,200.00	\$1,016,320.00	28977	\$30,871.60
547030100301	40633	\$150,000.00	\$240,000.00	24216	\$143,032.51
547030100303	68859	\$540,500.00	\$864,800.00	6499	\$81,620.92
547030100300	1228857	\$5,571,470.00	\$8,914,352.00	20345	\$147,586.33
547030100123	50226	\$1,090,920.00	\$1,745,472.00	590	\$20,503.89
547020103201	973299	\$15,079,340.00	\$24,126,944.00	4136	\$102,526.60
533030101314	66319	\$2,190,260.00	\$3,504,416.00	1111	\$58,707.25
533030101315	67781	\$867,000.00	\$1,387,200.00	6211	\$127,113.78
533030101316	417003	\$895,080.00	\$1,432,128.00	8509	\$29,222.76
533030101300	71106	\$1,242,570.00	\$1,988,112.00	5608	\$156,798.75
533030101311	61053	\$218,870.00	\$350,192.00	1099	\$6,303.72
533030101401	35212	\$94,080.00	\$150,528.00	4591	\$19,626.09
533030101405	16364	\$168,400.00	\$269,440.00	288	\$4,742.04
533030101400	1532235	\$1,589,740.00	\$2,543,584.00	3382	\$5,614.28
533030101102	26326	\$37,500.00	\$60,000.00	345	\$786.29
533030101301	156980	\$1,407,000.00	\$2,251,200.00	11032	\$158,206.39
533030101302	83677	\$254,840.00	\$407,744.00	2208	\$10,759.21
533030101200	114676	\$181,060.00	\$289,696.00	5932	\$14,985.50
533030101203	29619	\$39,340.00	\$62,944.00	3061	\$6,505.00
533030101202	31827	\$52,500.00	\$84,000.00	422	\$1,113.77
533030101204	16493	\$93,600.00	\$149,760.00	2198	\$19,958.31
533030101201	119178	\$384,280.00	\$614,848.00	6267	\$32,331.91
533030100821	232738	\$441,960.00	\$707,136.00	23160	\$70,367.84
533030100805	583333	\$632,800.00	\$1,012,480.00	807	\$1,400.69
533030100815	55517	\$820,950.00	\$1,313,520.00	1452	\$34,354.00
533030100509	45834	\$66,700.00	\$106,720.00	8079	\$18,811.16
533030100508	180318	\$229,780.00	\$367,648.00	1189	\$2,424.24
533030100700	246992	\$384,650.00	\$615,440.00	8146	\$20,297.72
533020100801	40828	\$273,940.00	\$438,304.00	4458	\$47,858.31
533020100906	42779	\$268,240.00	\$429,184.00	4359	\$43,732.04
533020100917	29203	\$150,000.00	\$240,000.00	2651	\$21,786.80
533020100909	63926	\$250,460.00	\$400,736.00	6227	\$39,035.50
533020100923	82511	\$150,000.00	\$240,000.00	13552	\$39,418.74
533070104400	19213	\$106,980.00	\$171,168.00	8471	\$75,467.87
533020100926	892831	\$5,074,220.00	\$8,118,752.00	1834	\$16,677.05
533040100600	119926	\$1,765,420.00	\$2,824,672.00	484	\$11,399.87
533020100614	135221	\$350,250.00	\$560,400.00	9487	\$39,317.23
533260117200	1129069	\$27,740.00	\$44,384.00	1609	\$63.25
533020100920	390220	\$2,295,520.00	\$3,672,832.00	1094	\$10,296.96
533020100913	49860	\$155,000.00	\$248,000.00	1259	\$6,262.17
547030100109	30830	\$1,441,980.00	\$2,307,168.00	93	\$6,959.67
533020100600	481989	\$6,564,340.00	\$10,502,944.00	41197	\$897,717.13
Total Right-of-Way Cost					\$2,762,327.59

8.6 Utilities

8.6.1 Existing Utilities

We have identified the following utilities which have service within the project area as determined by SC811:

Table 6: Utility Operators Within the Project Study Area

Company	Utility Type
AT&T/D	Phone
CHARTER	Cable
CITY OF GREENVILLE	Sewer
DUKE ENERGY	Electric
EXTENET SYSTEMS	Telecommunications
GE GAS TURBINES, LLC	Electric, Groundwater Recovery Lines, Telecommunications
GREENVILLE WATER	Water
LAURENS ELECTRIC COOPERATIVE	Electric
LUMEN	Fiber
MCI	Fiber
METROCONNECT	Sewer
PIEDMONT NATURAL GAS-GREENVILLE	Gas
RENEWABLE WATER RESOURCES	Sewer
SOUTH CAROLINA DOT	Traffic
SEGRA COMMUNICATIONS	Fiber
VERIZON WIRELESS	Telecommunications

Table 7: Information Received From the Utilities Within the Project Limits

Utility	Description
City of Greenville (Water)	8-inch, 12-inch, and 16-inch water mains run along the full length of Garlington Road. CoG Water has prior rights along one section of Garlington Road, between Shamrock Land and Entertainment Boulevard, shown on the map as 25-foot GW ROW.
City of Greenville (Sewer)	No facilities within the project limits.
MetroConnects (Sewer)	Gravity sewer lines and force mains along Garlington Road, except directly under I-385.
Duke Energy (Piedmont Natural Gas)	2-inch and 4-inch gas lines run along Garlington Road, except directly under I-385.
Verizon Wireless	Small cellular site fed by Segra fiber between Garlington Road and I-85 along Roper Mountain Road. Verizon cable runs along Garlington Road and part of Woodruff Road.
Segra	Fiber feeds Verizon Wireless small cellular site.

Maps for these utility providers indicating the extent of existing facilities with the project are provided in **Appendix E**.

8.6.2 Preliminary Assessment of Prior Rights

The following SCDOT plans have been reviewed to establish the acquisition of existing SCDOT right-of-way:

- File No. 23.581 and 23.582 (December 1967):
 - 50-foot new ROW along Garlington Road from Intersection with Woodruff Road to Roper Mountain Road.
 - 37.5-foot existing ROW and 50-foot new ROW along Woodruff Road at intersection with Garlington Road.
 - 18-foot existing ROW along Miller Road at intersection with Woodruff Road.
 - 33-foot new ROW along GE Access Road at intersection with Garlington Road.

- File No. 23.775 (June 1977):
 - Existing 33-foot and existing 40-foot ROW along Pelham Road at intersection with Garlington Road (File 23.412 (1958)).
 - 24-foot, 25-foot, and 333-foot new ROW along Garlington Road from Pelham Road for 1885 feet east.

- File No. 23.986 (July 1988):
 - New transitional ROW along Relocated Garlington Road from Pelham Road for approximately 1800 feet east.
 - New 40-foot ROW and transitional ROW along Pelham Road at intersection with Relocated Garlington Road.

- File No. 23.211B (November 2005):
 - New transitional ROW along Relocated Garlington Road from Honbarrier Drive to Bridge at Rocky Creek.
 - New 75-foot, transitional, 33-foot, and 25-foot ROW along Garlington Road from Bridge at Rocky Creek for approximately 1360 feet southwest.

- Project ID 0038111-R03 (December 2015):
 - New 37.5-foot, transitional, 35-foot, and 33-foot ROW along Miller Road from Intersection with Garlington Road to existing railroad ROW south of intersection.
 - New 70-foot ROW along Woodruff Road at intersection with Garlington Road.
 - New 50-foot ROW along Garlington Road at intersection with Woodruff Road.

It is anticipated that none of the utilities within the project limits—other than possibly Duke Energy, the City of Greenville water, and MetroConnects sewer—will have prior rights documentation that precedes the SCDOT right-of-way dates. If Duke and/or City of Greenville and MetroConnects can provide documentation of easements for facilities prior to the SCDOT right-of-way dates, the relocations costs for these facilities will be the responsibility of SCDOT. A Utility Agreement (UA) between SCDOT and Duke is required for reimbursement of applicable relocations costs.

City of Greenville water and MetroConnects sewer facilities, which require relocations, may be subject to ACT 36, and relocation costs will be funded by SCDOT. Based upon the classification of the City of Greenville and MetroConnects as a large, publicly owned utility, any relocations where prior rights have not been established would be funded by SCDOT for up to four percent (4%) of the total construction cost. Any relocations where prior rights have been established will be fully funded by SCDOT. These relocations may be performed in-contract with the roadway improvements. A Memorandum of Agreement (MOA) between SCDOT and the City of Greenville or MetroConnects is required to fund relocations under ACT 36. Relocation costs for all other utilities that do not have prior rights will be the responsibility of each individual utility company.

Figure 15: Existing Utilities Along Garlington Road



8.7 Environmental Concerns

Cultural Resources and Human Environment

There are several previously recorded cultural resources near Garlington Road, including the GE Plant Railroad Spur Line, which parallels the roadway under I-385. However, none of the recorded cultural resources are eligible for or listed in the National Register of Historic Places (NRHP). The closest cemetery is along Pelham Road north of I-85, so impacts to gravesites are not anticipated.

Land use along Garlington Road is primarily developed and includes commercial, residential, and industrial buildings. Forested areas are concentrated around streams crossing the corridor. Residential developments are concentrated between Roper Mountain Road and Pelham Road. Socio-economic indicators show the presence of minority populations. Census tract (45045002808) data includes twelve percent (12%) black/African American, twelve percent (12%) Asian and seven percent (7%) Hispanic/Latino. Active public engagement, particularly with these Environmental Justice (EJ) populations, is a critical component to project development.

Boiling Springs Fire Station Headquarters is located at the intersection of Garlington Road and Pelham Road with plans to relocate to Hartness Drive. The construction schedule and any proposed detours should be communicated with this stakeholder due to the potential for altering their transportation routes.

A Phase 1 Environmental Site Assessment (ESA) will be necessary to assess known locations of hazardous materials and spill locations, including the Spinx gas station at the intersection of Garlington Road and Roper Mountain Road.

The project corridor does not contain any parks or projects funded by the Land and Water Conservation Fund, so 4(f) or 6(f) coordination is not anticipated.

Natural Resources

Based on US Fish and Wildlife Service's (USFWS) Information for Planning and Consultation Tool (IPaC), there are eight (8) federally listed species (listed below) protected under the Endangered Species Act (ESA), plus the bald eagle (*Haliaeetus leucocephalus*) which is afforded protection under the Bald and Golden Eagle Protection Act. In addition, the tricolored bat (*Perimyotis sublavus*) is anticipated to be listed as endangered and will need to be considered once officially listed.

- Bog Turtle (*Glyptemys muhlenbergii*)
- Bunched Arrowhead (*Sagittaria fasciculata*)
- Dwarf-Flowered Heartleaf (*Hexastylis naniflora*)
- Mountain Sweet Pitcher-Plant (*Sarracenia rubra ssp. jonesii*)
- Small Whorled Pogonia (*Isotria medeoloides*)
- Swamp Pink (*Helonias bullata*)
- White Fringeless Orchid (*Platanthera integrilabia*)
- Rock Gnome Lichen (*Gymnoderma lineare*)

USFWS and South Carolina Department of Natural Resources (SCDNR) have no recorded occurrences of these species within 1-mile of the project, but surveys will need to be performed as the project develops.

Environmental Permitting

South Carolina Department of Health and Environmental Control (SCDHEC) Watershed Atlas and Water Quality Information maps as well as the USFWS National Wetland Inventory map depict Rocky Creek and two tributaries crossing Garlington Road but do not identify any wetlands in the area.

With the proposed improvements, a Clean Water Act (CWA) Section 401 Certification and Section 404 permit from SCDHEC and United States Army Corps of Engineers (USACE) is anticipated for impacts to the streams present. Since there is an existing bridge crossing Rocky Creek, the impacts are anticipated to be under the 300-linear-foot threshold of SCDOT's General Permit or Nationwide Permit 14. A SCDHEC Navigable Waters Permit or USACE Section 408 coordination is not anticipated. Potential navigability and delineation of all waters onsite will need to be confirmed through field visits.

SCDHEC lists Rocky Creek as a freshwater stream with 303(d) impairments for macroinvertebrates (BIO) and turbidity as well as a Total Maximum Daily Load (TMDL) for fecal coliform bacteria. Appropriate Best Management Practices (BMPs) should be incorporated into design to ensure construction stormwater does not contribute to these impairments.

Rocky Creek is a Federal Emergency Management Agency (FEMA) flood zone (AE) that drains to the Enoree River (Hydraulic Unit Code (HUC) 03050108) within the Broad River Basin. The project is located within the Southern Outer Piedmont (level four ecoregion 45b). If compensatory mitigation is necessary for impacts to the streams present, the project is within the secondary service area covered by the SCDOT solicitation for mitigation credits awarded to Weyerhaeuser NR Company for the Tyger River Watershed.

9.0 Design Variances/Exceptions

No design variances or exceptions were discussed during the PDT meetings.

10.0 Constructability Review

Mentioned in Section 8.1, the only constructability concern that was raised pertained to the addition of the 4-foot landscaped medians that are proposed to be installed between dual left turn lanes and opposing traffic. This constructability concern will be reviewed further as the project progresses.

11.0 Cost and Schedule

A planning level cost estimate and schedule was estimated using the available information obtained for the feasibility report. Exact quantities and costs were not calculated.

Table 8: Estimated Cost and Schedule

PE Cost Estimate (\$)	RW Cost Estimate (\$)	Construction Cost Estimate (2024) (\$)	Construction Cost Estimate (2028) (\$)	Months to ROW from NTP	Months to Letting from ROW
\$2,500,000	\$2,800,000	\$40,000,000	\$49,000,000 ¹	18	18

¹2030 Cost based on 5% inflation for 5 years.

*All estimates are rounded to the nearest \$100,000.

12.0 Conclusion

To meet the project purpose and need, a 15-foot TWLTL has been recommended for Garlington Road from Woodruff Road to Roper Mountain Road. Additionally, a 15-foot landscaped median is recommended for Garlington Road from Roper Mountain Road to Pelham Road. Turn lanes and roundabouts are recommended as appropriate at intersections throughout the corridor. To address pedestrian and bicycle safety, a shared-use path is provided along the corridor except for the southern and northern termini, where a sidewalk was utilized to minimize impacts. The bridge over Rocky Creek will require widening to accommodate the median and shared-use path. The preferred alternative will improve traffic flow and enhance safety and accessibility for pedestrians and bicyclists.

13.0 References

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