



U.S. Department
of Transportation
**Federal Highway
Administration**

South Carolina

October 16, 2019

1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201
803-765-5411
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In Reply Refer To:
HDA-SC

ELECTRONIC CORRESPONDENCE ONLY

Mr. Chad Long
Director Environmental Services Office
South Carolina Department of Transportation (SCDOT)
955 Park Street, P.O. Box 191
Columbia, South Carolina 29202

Subject: Environmental Assessment (EA) for the Proposed Interstate 26 Widening
between Mile Markers 187 and 194 in Berkeley, South Carolina (Federal Project
Number P029263)

Dear Mr. Long:

The Federal Highway Administration (FHWA) has reviewed the Environmental Assessment (EA) for the subject project and finds that it adequately addresses the potential impacts of the proposal. Based on the analysis provided in the EA and supporting documents we have determined that an Environmental Impact Statement (EIS) is not required. The EA is approved and acceptable for public availability and comment. The EA shall be made available for public review for a minimum of thirty (30) days before FHWA makes its final determination. The public availability shall be announced by a notice similar to a public hearing notice. Also, please provide Notice of Availability of the EA to the affected units of government, and to the State intergovernmental review contacts as specified in 23 CFR 771.119(d).

All project commitments documented in the EA are binding and the SCDOT will need to ensure that they are ultimately carried out. The public hearing may be scheduled fifteen (15) days after the document is made available for public review. Enclosed is a copy of the signed document. Please address any questions you may have concerning this project to Mr. J. Shane Belcher at 803-253-3187 or jeffrey.belcher@dot.gov.

Sincerely,

J. Shane Belcher

Digitally signed by J. Shane
Belcher
Date: 2019.10.16 08:41:32 -04'00'

(for) Emily O. Lawton
Division Administrator

Enclosure

ec: Mr. David Kelly, SCDOT RPG 1 NEPA Coordinator
Mr. Craig Winn, SCDOT Program Manager

ENVIRONMENTAL ASSESSMENT



I-26 Widening MM 187 – MM 194 Berkeley County



U.S. Department of Transportation
Federal Highway Administration

October 2019

Interstate 26 Widening between Mile Marker 187 and 194
Berkeley County, South Carolina

Project ID #P029263

ENVIRONMENTAL ASSESSMENT



Submitted Pursuant to 42 U.S.C 4332 (2) (c) by the
U.S. Department of Transportation, Federal Highway Administration
and
S.C. Department of Transportation, Environmental Management Office

10/10/2019
Date of Approval

10/10/2019
Date of Approval

[Signature]
S.C. Department of Transportation

[Signature]
Federal Highway Administration

The following individuals may be contacted for additional information concerning the project:

Mr. Shane Belcher
Environmental Coordinator
Federal Highway Administration
1835 Assembly Street
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(803) 253-3187

Mr. Craig Winn, P.E.
Program Manager
S.C. Department of Transportation
P.O. Box 955
Columbia, S.C. 29202-0191
(803) 737-6376

Date: 10/09/2019

SCDOT
NEPA ENVIRONMENTAL COMMITMENTS FORM



Project ID : P029263 County : Berkeley District : District 6 Doc Type: EA Total # of Commitments: 9

Project Name: Interstate 26 Widening between Mile Marker 187 and 194

The Environmental Commitment **Contractor Responsible** measures listed below **are to be included in the contract and must be implemented**. It is the responsibility of the Program Manager to make sure the Environmental Commitment **SCDOT Responsible** measures are adhered to. If there are questions regarding the commitments listed please contact:

CONTACT NAME: Craig Winn

PHONE #: (803) 737-6376

ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Water Quality

NEPA Doc Ref: Page: 35 Paragraph: 03

Responsibility: SCDOT

The contractor will be required to minimize possible water quality impacts through implementation of BMPs, reflecting policies contained in 23 CFR 650B and the Department's Supplemental Specification on Erosion Control Measures (latest edition) and Supplemental Technical Specifications on Seeding (latest edition). Other measures including seeding, silt fences, sediment basins, etc. as appropriate will be implemented during construction to minimize impacts to water quality.

Stormwater

NEPA Doc Ref: Page: 35 Paragraph: 03

Responsibility: SCDOT


Stormwater control measures, both during construction and post-construction, are required for SCDOT projects with land disturbance and/or constructed in the vicinity of 303(d), TMDL, ORW, tidal, and other sensitive waters in accordance with the SCDOT's MS4 Permit. The selected contractor would be required to minimize potential stormwater impacts through implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and SCDOT's Supplemental Specifications on Seed and Erosion Control Measures (latest edition).

Individual Permit

NEPA Doc Ref: Page: 36 Paragraph: 04

Responsibility: SCDOT


Impacts to jurisdictional waters will be permitted under a Department of the Army Section 404 permit from the U.S. Army Corps of Engineers. Based on preliminary design, it is anticipated that the proposed project would be permitted under an Individual Army Corps of Engineers Permit (IP). SCDOT will provide the Army Corps with information regarding any proposed demolition activities during the Section 404 permitting process. The required mitigation for this project will be determined through consultation with the USACE and other resource agencies.

Project ID : <input type="text" value="P029263"/>	SCDOT NEPA ENVIRONMENTAL COMMITMENTS FORM	
ENVIRONMENTAL COMMITMENTS FOR THE PROJECT		

Non-Standard Commitment	NEPA Doc Ref: <input type="text" value="Page: 37 Paragraph: 04"/>	Responsibility: <input type="text" value="SCDOT"/>
<input type="text" value="Floodplains"/>		
<p>A final detailed hydraulic analysis would be conducted by SCDOT during final design development and would be performed per SCDOT Requirements for Hydraulic Design Studies. These final analysis and findings would also be coordinated prior to construction with appropriate agencies, including SCDOT, FEMA, and the Berkeley County floodplain manager to ensure compliance. Therefore, the project would be developed in accordance with EO 11988 (Floodplain Management and 23 CFR 650 subpart A), and roadway/bridge design would comply with all appropriate floodplain regulations and guidelines.</p>		

Cultural Resources	NEPA Doc Ref: <input type="text" value="Page: 41 Paragraph: 02"/>	Responsibility: <input type="text" value="CONTRACTOR"/>
<p>The contractor and subcontractors must notify their workers to watch for the presence of any prehistoric or historic remains, including but not limited to arrowheads, pottery, ceramics, flakes, bones, graves, gravestones, or brick concentrations during the construction phase of the project, if any such remains are encountered, the Resident Construction Engineer (RCE) will be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until the SCDOT Archaeologist directs otherwise.</p>		

Noise	NEPA Doc Ref: <input type="text" value="Page: 47 Paragraph: 01"/>	Responsibility: <input type="text" value="SCDOT"/>
<p>SCDOT will inform local planning officials of future, generalized noise levels expected to occur in the project vicinity after FHWA has made a final decision on the Environmental document.</p>		

Project ID : <input type="text" value="P029263"/>	SCDOT NEPA ENVIRONMENTAL COMMITMENTS FORM	
ENVIRONMENTAL COMMITMENTS FOR THE PROJECT		

USTs/Hazardous Materials	NEPA Doc Ref: <input type="text" value="Page: 47 Paragraph: 02"/>	Responsibility: <input type="text" value="SCDOT"/>
<p>If avoidance of hazardous materials is not a viable alternative and soils that appear to be contaminated are encountered during construction, the South Carolina Department of Health and Environmental Control (SCDHEC) will be informed. Hazardous materials will be tested and removed and/or treated in accordance with the United States Environmental Protection Agency and the SCDHEC requirements, if necessary.</p>		

Displacements	NEPA Doc Ref: <input type="text" value="Page: 48 Paragraph: 01"/>	Responsibility: <input type="text" value="SCDOT"/>
<p>The SCDOT will acquire all new right-of-way and process any relocations in compliance with the Uniform Relocation Assistance and Real Property Acquisition policies Act of 1970, as amended (42 U.S. C. 4601 et seq.). The purpose of these regulations is to ensure that owners of real property to be acquired for Federal and federally-assisted projects are treated fairly and consistently, to encourage and expedite acquisition by agreements with such owner, to minimize litigation and relieve congestion in the courts, and to promote public confidence in Federal and federally-assisted land acquisition programs.</p>		

Migratory Bird Treaty Act	NEPA Doc Ref: <input type="text"/>	Responsibility: <input type="text" value="CONTRACTOR"/>
<p>The federal Migratory Bird Treaty Act, 16 USC § 703-711, states that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. The South Carolina Department of Transportation (SCDOT) will comply with the Migratory Bird Treaty Act of 1918 in regard to the avoidance of taking of individual migratory birds and the destruction of their active nests.</p> <p>The contractor shall notify the Resident Construction Engineer (RCE) at least four (4) weeks prior to construction/demolition/maintenance of bridges and box culverts. The RCE will coordinate with SCDOT Environmental Services Office (ESO), Compliance Division, to determine if there are any active birds using the structure. After this coordination, it will be determined when construction/demolition/maintenance can begin. If a nest is observed that was not discovered after construction/demolition/maintenance has begun, the contractor will cease work and immediately notify the RCE, who will notify the ESO Compliance Division. The ESO Compliance Division will determine the next course of action.</p> <p>The use of any deterrents by the contractor designed to prevent birds from nesting, shall be approved by the RCE with coordination from the ESO Compliance Division. The cost for any contractor provided deterrents will be provided at no additional cost to SCDOT.</p>		



Table of Contents

PART I: INTRODUCTION.....	1
PART II: PUBLIC INVOLVEMENT AND AGENCY COORDINATION	3
1. Public Involvement.....	3
2. Agency Coordination.....	4
PART III: PROJECT PURPOSE AND NEED AND ALTERNATIVES	6
1. Purpose and Need.....	6
2. Project Setting.....	13
3. Alternatives Considered.....	16
4. Preferred Alternative Description.....	20
5. Maintenance of Traffic During Construction	31
6. Estimated Project Cost and Schedule	32
7. Right-of-Way	32
PART IV: IDENTIFICATION AND EVALUATION OF IMPACTS OF THE PREFERRED ALTERNATIVE	34
1. Surface Water Resources	34
2. Wetlands and Other Waters of the U.S.	35
3. Floodplains	36
4. Terrestrial Habitat/Wildlife	38
5. Farmlands.....	38
6. Threatened and Endangered Species	39
7. Section 106 of the National Historic Preservation Act	41
8. Section 4(f) and Section 6(f).....	42
9. Air Quality	42
10. Noise	46
11. Hazardous Materials and Waste Sites.....	47
12. Community Impacts	47
13. Environmental Justice (E.O. 12898)	48
14. Indirect and Cumulative Impacts	50
15. Permits Checklist.....	57

List of Figures

Figure 1. Project Study Area	2
Figure 2. Exit 187 LOS.....	9
Figure 3. Roadway Cross-Section Components	11
Figure 4. Exit 187, Alternative 1	18
Figure 5. Exit 187, Alternative 2	19
Figure 6. Exit 187, Alternative 3	20
Figure 7. Preferred Alternative – Sheet 1	22
Figure 8. Preferred Alternative – Sheet 2	23



Figure 9. Preferred Alternative – Sheet 3	24
Figure 10. Preferred Alternative – Sheet 4	25
Figure 11. Preferred Alternative – Sheet 5	26
Figure 12. Preferred Alternative – Sheet 6	27
Figure 13. Preferred Alternative – Sheet 7	28
Figure 14. Mainline Typical #1	30
Figure 15. Mainline Typical #2	30
Figure 16. ICI Analysis	52

List of Tables

Table 1. Existing and Projected Traffic Volumes	7
Table 2. LOS descriptions	8
Table 3: Mainline LOS	9
Table 4: I-26 Exit 187 (SC 27) LOS	10
Table 5. Crash Data	12
Table 6. Exit 187 Interchange Alternatives Impact Matrix	16
Table 7. 2043 LOS for the Interchange Alternatives	17
Table 8. Preferred Alternative Impact Matrix.....	21
Table 9. Mainline LOS Build Conditions	29
Table 10. 2017-2022 STIP Project Funding	32
Table 11. Preferred Alternative ROW Impacts	32
Table 12. Protected Species Listed for Berkeley and Dorchester Counties.....	40
Table 13. Demographic Data.....	49

List of Appendices

Appendix A: Public Outreach Summary	A
Appendix B: LOI and Distribution List.....	B
Appendix C: Traffic Study	C
Appendix D: Natural Resource Technical Memorandum	D
Appendix E: Floodplain Risk Assessment	E
Appendix F: Farmland Conversion Form	F
Appendix G: Phase I Cultural Resource Survey	G
Appendix H: Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA	H
Appendix I: Noise Impact Assessment	I
Appendix J: Phase I Environmental Site Assessment	J



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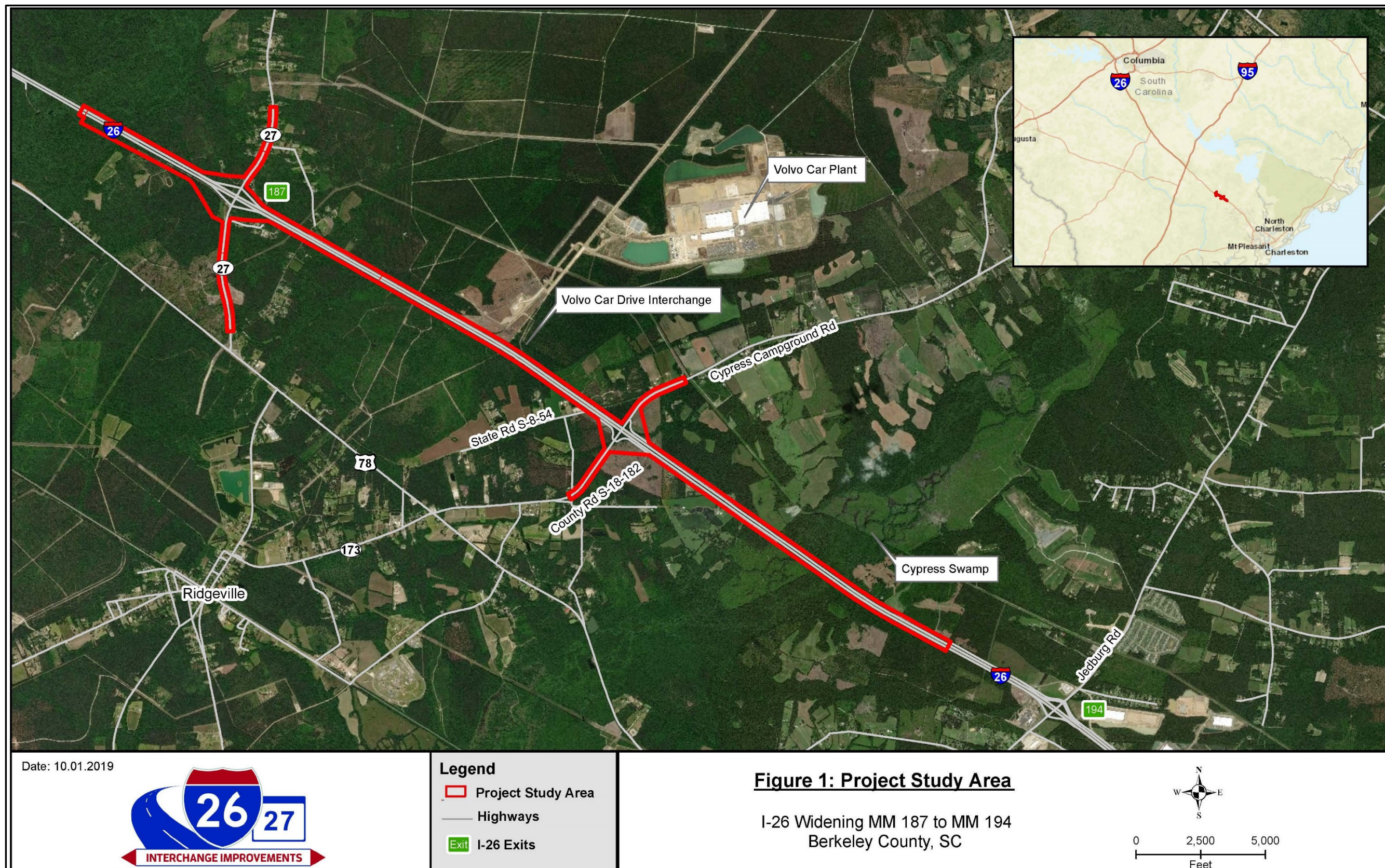
PART I: INTRODUCTION

The South Carolina Department of Transportation (SCDOT) proposes to improve Interstate 26 (I-26) in Berkeley County from approximately 1 mile west of SC Highway 27 (SC 27) at exit 187 near Ridgeville to approximately 1 mile west of Jedburg Road/S16 (exit 194) near Summerville for a total distance of approximately 7.4 miles. The project study area (PSA) also extends approximately 1 mile along SC 27 (Ridgeville Road/Old Gilliard Road) in each direction from I-26 to provide for potential interchange improvements and widening at exit 187. The PSA also extends approximately 0.7 mile along the Cypress Campground Road overpass in each direction from I-26 to provide for a potential bridge replacement, which would accommodate future configurations associated with the widening of I-26 and address current structural deficiencies (Figure 1). It is anticipated that the project would include the following elements: additional travel lane in each direction of I-26, median clearing and cable guardrail installation, improvements to the exit 187 interchange and ramps, replacement of the I-26 mainline dual bridges over Cypress Swamp, replacement of the Cypress Campground Road bridge over I-26, and drainage improvements throughout the PSA.

The project, as proposed, would result in certain modifications to the human and natural environment. However, SCDOT has not identified any significant impacts that would occur based on the data collected, and therefore the project meets the criteria under 23 Code of Federal Regulations (CFR) Part 771.115(c) (23 CFR §771.115(c)) for processing as an environmental assessment (EA). Specific environmental studies were conducted in the early stages of project development, and understandings of the scope of work to be performed were utilized in making this decision. These environmental studies are appended and/or incorporated by reference to this document.



Figure 1. Project Study Area



PART II: PUBLIC INVOLVEMENT AND AGENCY COORDINATION

1. PUBLIC INVOLVEMENT

Will there be a notice of an opportunity of a public hearing and/or will a public hearing be conducted when the EA is published?

Yes ☒ No ☐

What public involvement activities (legal notices, letters to affected property owners/residents, meetings, newspaper articles, etc.) have occurred for this project?

On, January 24, 2019, SCDOT held a public information meeting (PIM) to provide information about the proposed project and to solicit feedback from area residents, businesses and commuters. The meeting also gathered information from the public or any interested organization on historic or cultural resources in the area.

The PIM, held at the Ridgeville Community Center, was advertised in the local newspaper, with signage along the roadway, and through postcards sent out to residents within the project zip codes. A public website has been developed and is being maintained throughout project development to provide additional information, project resources, and schedules (<https://www.i26-sc27.com>).

A public hearing to provide an opportunity to review and comment on the project will be held on Thursday, November 7, 2019 at the Ridgeville Community Center at 105 School Street from 5 p.m. to 7 p.m. SCDOT will advertise the public hearing with post cards and a newspaper advertisement and the EA will be made available to the public for review prior to the public hearing at the appropriate SCDOT District Office, at SCDOT Headquarters, at Ridgeville Town Hall, and online at <https://www.i26-sc27.com> 15 days prior to the public hearing date. A public hearing certification package and a decision document that includes responses to all comments received as part of the public hearing process will also be prepared.

Will this project involve substantial controversy concerning community and/or natural resource impacts? (Add remarks below if answer is Yes.)

Yes ☐ No ☒

Remarks: A total of 148 people attended the January 24, 2019 PIM; a total of 73 comments were received during the designated 15-day comment period. Comments were received in comment boxes at the PIM, via mail, from the website, and via email. SCDOT prepared and distributed responses to each comment (in Appendix A).

Comments regarding the proposed project alternatives, and a summary of the issues of concern, are provided below.

- Oppose replacement of the Cypress Campground bridge on existing alignment, which would require closure and a detour during construction
- Develop a monorail system
- Widen I-26 all the way to Columbia
- Request for addition of sidewalks to SC 27
- Increase number of lanes to accommodate growth in several areas including from Nexton Parkway to I-95, I-26, HWY 176, SC 78, and the exit 187 bridge
- Addition of streetlights at exit 187 interchange to increase visibility and address safety concerns
- Addition of traffic lights at exit 187 interchange to accommodate projected increase in traffic volumes
- Additional traffic lights at Myers Mayo Road exit to reduce safety concerns
- Use of “sound” wall and noise-reducing pavement
- Concern about hurricane evacuation routes
- Paving/not paving along Sabb Road
- Concern about local business impacts
- General safety concerns due to current and future high traffic volumes and lack of traffic lights.

Based on comments received from the PIM, changes were made to the Cypress Campground Bridge design. One build alternative was presented at the PIM: replacement along existing alignment. Replacing the bridge along existing alignment would require a road closure and detour which would impact existing travel patterns and commuting time. Due to public comments received at the PIM, SCDOT re-evaluated another alternative—replacement along an offset alignment to the north/west—which was chosen, and the other alternative was eliminated from further consideration.

Public outreach efforts, including stakeholder meetings, website development and management, and mailings to area residents, have been implemented throughout project development. A detailed summary of these efforts is included in Appendix A.

2. AGENCY COORDINATION

SCDOT has coordinated with various local, state, and federal agencies, local stakeholders, and the public to identify concerns during development of the project. SCDOT sent a letter of intent (LOI) on May 22, 2018 to approximately 75 representatives including South Carolina Department of Health and Environmental Control (SCDHEC), South Carolina Department of Natural Resources (SCDNR), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), and South Carolina State Historic Preservation Office (SHPO). The LOI included a brief description of the proposed project, a location map, contact information, and a request for comments. SCDOT also distributed the LOI to political representatives of local agencies including Berkeley, Dorchester, Charleston, and the Berkeley-

Charleston-Dorchester Council of Governments (BCDCOG). A copy of the LOI and distribution list is included in Appendix B.

PART III: PROJECT PURPOSE AND NEED AND ALTERNATIVES

Name of the Project: Interstate 26 Widening Project, MM 187–MM 194

Project Location: The PSA extends approximately 7.4 miles along I-26 in Berkeley County, South Carolina. Specifically, the project extends along I-26 from approximately 1 mile west of mile marker (MM) 187 at SC 27 (exit 187), near Ridgeville to approximately 1 mile west of Jedburg Road/S-16 (exit 194) near Summerville at MM 193 (Figure 1).

Logical Termini/Independent Utility: The western terminus (exit 187 interchange) was determined to be a rational endpoint based on a projected 16.6 percent decrease in 2043 average daily traffic (ADT) west of the interchange, which results in a level of service (LOS) D or better between MM 187 and MM 177 for the 2043 traffic volumes. Therefore, traffic data indicates that I-26 has acceptable LOS west of exit 187 and there is no need for improvement west of exit 187 beyond the western terminus. The exit 194 eastbound (EB) offramp and westbound (WB) onramp were identified as the eastern terminus. This terminus also serves as the endpoint, as mentioned below, associated with the current exit 194 interchange improvements and I-26 widening project being administered by SCDOT. Consequently, the proposed project would provide continuity with the current project, and results in a rational endpoint.

The proposed project is determined to have independent utility because it provides additional capacity and operational improvements within the congested project corridor, even if no other existing or future projects are completed. In addition, the project would not create a need for improvements on other roadways or require additional improvements to be effective for addressing the stated purpose and need. The project would improve the LOS of the proposed project segment and would not worsen the adjacent facilities or require additional improvements to adjacent facilities to achieve the improved LOS. It should also be noted that several additional transportation improvement projects are adjacent to, and in proximity to, the proposed improvement project.

1. PURPOSE AND NEED

The primary purpose of the proposed project is to improve traffic operations to accommodate projected traffic volumes and correct geometric deficiencies associated with the existing roadway and bridges along I-26 between MM 187 and MM 194. The secondary purpose is to improve the safety of the existing facility.

The project need is based primarily on the existing and projected traffic volumes and operating conditions along this section of I-26. Specifically, the existing and projected traffic volumes indicate that I-26 would be operating beyond capacity and would experience an increase in traffic congestion and operational deficiencies. In addition, the I-26 facility is dated and includes various design elements that do not meet current design standards. The increased traffic volumes and design deficiencies result in increased safety concerns as demonstrated by the recent crash data for the corridor.

a. Traffic Operating Conditions

Current ADT volumes on I-26 within the PSA (MM 187 to MM 194) is 52,700 vehicles per day (vpd), with estimated Opening Year (2023) ADT volumes ranging from 57,400 to 59,300 vpd, and Design Year (2043) ADT volumes ranging from 75,800 to 85,700 vpd. This represents a linear annual growth rate of 2.5 percent south of Volvo Car Drive, 1.75 percent between Volvo Car Drive and SC 27, and 1.5 percent north of SC 27. Table 1 documents the current (existing) and projected traffic volumes within, and adjacent to, the PSA for the no-build scenario. In summary, the 2043 ADT is projected at 103,100 vpd east of MM 194, and 85,700 vpd between MM 194 and MM 190. This represents a 16.9 percent decrease in projected traffic volume west of exit 194. Berkeley County, in conjunction with SCDOT, is currently improving the I-26 and Jedburg Road interchange (exit 194) and widening I-26 from MM 193 to MM 197 to address the capacity needs east of MM 194. The 2043 ADT is projected at 75,800 vpd between MM 190 and MM 187. The 2043 ADT between MM 187 and MM 177 (outside the PSA) is projected at 63,200, which represents a decrease of 16.6 percent compared to the 2043 ADT for MM 190 to MM 187 as a result of traffic exiting I-26 at exit 187.

The increased traffic volumes and movements at exit 187 will continue to impact the operational movements and function of the existing interchange. The ADT analysis also indicates a high volume of traffic traveling along SC 27 south towards Ridgeville, which will be partially addressed by the current SC 27 widening project. Additional documentation regarding the traffic analysis and findings can be found in the *I-26 Widening (MM 187-194 and I-26/SC 27 Interchange Improvements Traffic Analysis Report* found in Appendix C.

Table 1. Existing and Projected Traffic Volumes

Road Segment	Existing	Opening Year No-Build	Design Year No-Build
	2018 ADT	2023 ADT	2043 ADT
I-26, MM 194 (east)	63,400	71,400	103,100
I-26 MM 194-190	52,700	59,300	85,700
I-26 MM 190-187	52,700	57,400	75,800
SC 27 South	10,300	11,300	14,900
SC 27 North	2,700	3,000	3,900
I-26 MM 187-177	45,900	49,400	63,200

LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is represented by six letter designations ranging between LOS A and LOS F. LOS A describes completely free-flowing conditions and LOS F describes very unstable flow conditions. Table 2 defines LOS values and describes their respective conditions.

Table 2. LOS descriptions







LEVELS OF SERVICE For Freeways			
Level of Service	Flow Conditions	Operating Speed (mph)	Technical Description
A		70	This LOS describes completely free-flow conditions. Desired speed and movements are virtually unaffected by the presence of other vehicles and constrained only by the geometric features of the roadway and driver preferences.
B		70	Traffic flow is stable. The presence of other vehicles only slightly restricts freedom to maneuver.
C		67	Traffic flow is stable, but the number of bumper-to-bumper groups of vehicles increases due to slow moving vehicles and turning.
D		62	Unstable traffic flow conditions are approached under LOS D. The desire to pass becomes very high, but safe passing opportunities decrease significantly.
E		53	Passing is virtually impossible. The slowest moving vehicle controls the travel speed.
F		<53	Passing is impossible. The slowest moving vehicle controls the travel speed. Very unstable traffic flow conditions exist.

Table 3 includes a summary of the 2018, 2023, and 2043 LOS along the I-26 mainline within, and adjacent to, the PSA for the no-build condition. The table includes the LOS from MM 187 to MM 177 to further illustrate the rationale for the eastern terminus at MM 187. As demonstrated, existing traffic volumes from MM 194 to MM 177, both WB and EB, are operating at LOS B for all freeway segments during morning peak hours. Existing traffic volumes during afternoon peak hours, for both WB and EB, are operating at LOS C across all segments except EB MM 187 to 177, which operates at LOS B. During opening year 2023, most segments are projected to operate at LOS C during afternoon peak hour and at LOS B during morning peak hours. By 2043, the increased traffic volumes would further burden the existing facilities with increased traffic density and reductions of LOS. Without improvements to the existing facility, the majority of both EB and WB segments would be operating at LOS D and E during afternoon peak hour. The most affected segment, when compared to existing traffic volumes, is the segment from MM 194 to MM 190 which would operate at LOS F and E during the afternoon peak hour, and MM 190 to MM 187 which would operate at LOS E and D during the afternoon peak hour. It should also be noted that I-26 west of MM 187 (to MM 177) would operate at LOS D or better for all movements in 2043 under the no-build condition.

Table 3: Mainline LOS

Road Segment	Existing		Opening Year No-Build		Design Year No-Build	
	2018 LOS		2023 LOS		2043 LOS	
	AM	PM	AM	PM	AM	PM
I-26 WB, MM 194-190	B	C	C	C	D	F
I-26 EB, MM 194-190	B	C	B	C	D	E
I-26 WB, MM 190-187	B	C	C	C	C	E
I-26 EB, MM 190-187	B	C	B	C	C	D
I-26 WB, MM 187-177	B	C	B	C	C	D
I-26 EB, MM 187-177	B	B	B	B	B	C

The traffic analysis also identified the need to improve the exit 187 (SC 27) interchange. Figure 2 and Table 4 reflect exit 187 LOS conditions for both WB and EB offramp intersections, offramp movements, and onramp movements. The projected traffic volumes for WB offramp intersections with SC 27 results in LOS E, during both morning and afternoon peak hour by the 2023 opening year. EB offramp intersections would operate at LOS E during the afternoon peak by 2023 but would deteriorate to LOS F during the morning and afternoon peak by 2043. The onramp and offramp movements would operate at adequate LOS through the 2023 opening year. However, the WB offramp is projected to degrade to LOS E by the 2043 design year.

Figure 2. Exit 187 LOS

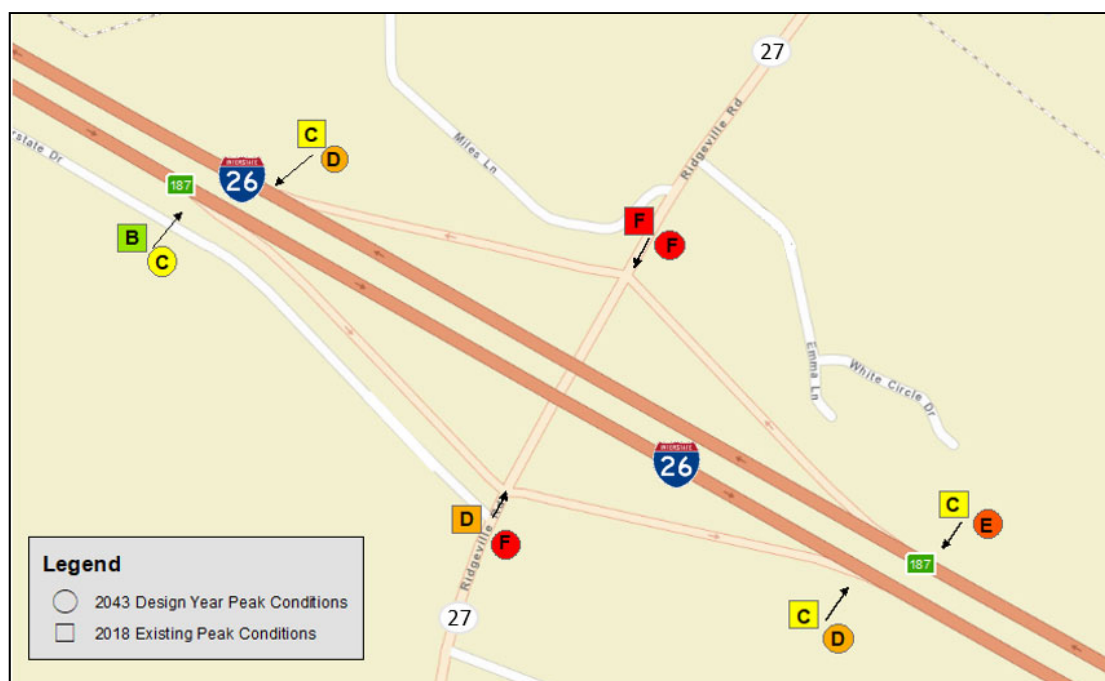


Table 4: I-26 Exit 187 (SC 27) LOS

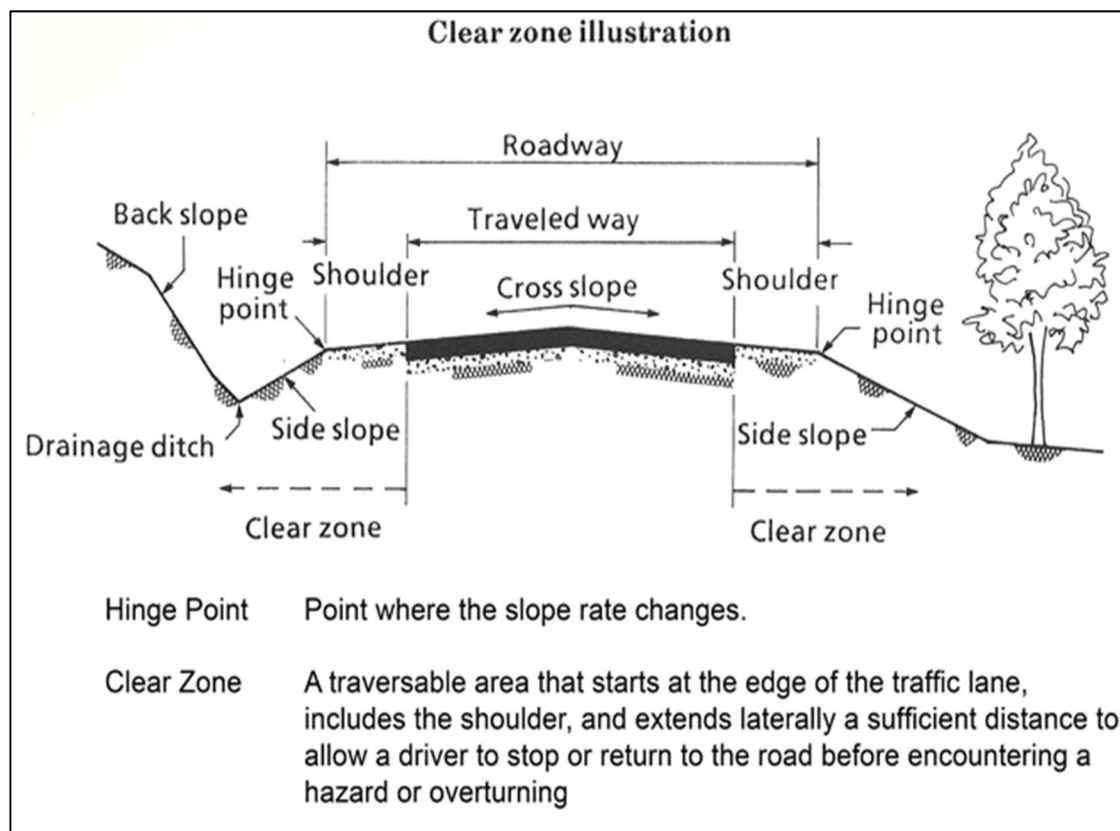
Road Segment	Existing		Opening Year No-Build		Design Year No-Build	
	2018 LOS		2023 LOS		2043 LOS	
	AM	PM	AM	PM	AM	PM
I-26 WB Offramp Intersection	E	F	F	F	F	F
I-26 WB Offramp Movement	C	C	C	D	D	E
I-26 WB Onramp Movement	B	C	B	C	C	D
I-26 EB Offramp Intersection	C	D	D	E	F	F
I-26 EB Offramp Movement	B	B	B	C	C	C
I-26 EB Onramp Movement	B	C	B	C	C	D

b. Roadway and Bridge Deficiencies

The existing I-26 facility has several roadway and bridge deficiencies based both on age and deterioration and a failure to meet updated highway design criteria and guidelines. These deficiencies are primarily associated with the roadway grade and profile (embankment slopes, clear zones, structure sufficiency ratings, structure widths, and drainage).

I-26 Mainline, including bridges over Cypress Swamp: When originally designed, I-26 had several design deficiencies, including insufficient roadway grades and drainage sloping. Sections of the existing mainline longitudinal/finished grade and some of the ditch slopes are less than the recommended minimum 0.30 percent; and, in some cases, the profile grade is 0.00. I-26 includes two, 12-foot-wide travel lanes in each direction which meet standards; however, several deficiencies exist within the roadway cross section. The shoulders do not meet the total recommended width criteria, which varies from 12 to 14 feet, and there is an insufficient cross slope in both travel and auxiliary lanes. Furthermore, the side slopes vary from 2:1 to 4:1 and are less than the recommended 6:1 for this type of facility. Figure 3 provides an illustration of the typical roadway cross section components. The deficiencies identified within these various roadway design elements have the potential to result in safety and operational concerns, mainly associated with stormwater drainage and clear zones. Specifically, these deficiencies can result in slick pavement, water ponding on travel lanes, water spreading into travel lanes, loss of control when crossing over a high cross-slope break, and lack of area for correction.

Figure 3. Roadway Cross-Section Components



Source: USDOT-FHWA. *Vegetation Control for Safety*, May 2007
https://safety.fhwa.dot.gov/local_rural/training/fhwasa07018/

The *SC Highway Bridge Inventory – Structure Inventory and Appraisal Report* for the EB and WB bridges over Cypress Swamp documents that each bridge has a sufficiency rating of 64, are functionally obsolete, and are marginally adequate structurally. The current I-26 bridges over Cypress Swamp are approximately 32 feet wide, which is inadequate and does not meet the recommended 46-foot width for this type of facility. In addition, these bridges do not provide the required hydraulic clearances based on current standards. The existing bridges' railings are also substandard, and the bridges are inadequate for current seismic performance requirements. Constructed in 1961, the two bridges are approaching the end of their design life.

Exit 187 (SC 27): The *SC Highway Bridge Inventory – Structure Inventory and Appraisal Report* documents that the existing SC 27 bridge over I-26 has a bridge sufficiency rating of 68.5, is functionally obsolete, and is marginally adequate structurally. The reviewed data confirmed that the existing bridge width is inadequate for existing conditions or for any future interchange configurations. Additionally, the existing railings, as well as the vertical and horizontal clearances are insufficient based on the current *American*

Association of State Highway and Transportation Officials (AASHTO) standards.¹ Constructed in 1961, the bridge is approaching the end of its design life.

Cypress Campground Road over I-26: It has been determined that the current bridge width is inadequate and would not accommodate future configurations associated with the widening of I-26. The existing horizontal and vertical clearances are inadequate by current AASHTO standards, which has resulted in the bridge being hit several times from vehicles traveling along I-26. The existing bridge railing is substandard, and the bridge is inadequate for current seismic performance requirements. Constructed in 1961, the bridge is approaching the end of its design life.

c. Safety

A detailed crash analysis was prepared to document the crash data for the PSA, to include the number, type, severity, and general location.² Crash data from 2014 to 2016 was collected within the study limits and summarized in Table 5.

Table 5. Crash Data

Road Segment	Total Crashes	Injury	Fatality
I-26, MM 176.3-194.9	576	148	14
Jedburg Road (S-16), MM 0.56-1.44	46	7	1
Ridgeville Road (SC 27), MM 0.175-.091	18	7	0
Judge Street (SC 453), MM 0-1.86	3	1	0
Total	643	163	15

The analysis determined that the most common type of collisions single-vehicle incidents (287) and rear-end (216) collisions. The single-vehicle incidents included crashes with various fixed objects including trees, guardrails, animals, and fences. The rear-end collisions occurred mostly along the interchanges and side roads, indicating increased congestion and vehicular conflict. As expected, the crash data indicates that the collisions along I-26 were more severe and resulted in a greater rate of fatality. In summary, the 14 fatal crashes along I-26 includes 10 that involved drivers hitting trees, with four occurring on the outside of the right shoulder and six in the median.

The locations of the collisions were also examined, and data showed the area near MM 194.4 experienced the highest total collisions, which can be attributed to vehicles exiting and entering exit 194/Jedburg Road. The other notable areas with high collisions were MM 179.9 and MM 194.2.

¹ *A Policy on Design Standards Interstate System*. American Association of State Highway and Transportation Officials, *A Policy on Design Standards Interstate System*, Book Code: DS-5, ISBN: 1-56051-291-1, January 2005.

² Stantec Consulting Services, Inc. I-26 Widening Project MM 187-MM 194 – Berkeley & Dorchester Counties – Crash Analysis. July 2018.

Various factors can contribute to these types of crashes, including roadway, human, and vehicle factors. Roadway factors that have the potential to impact safety include access, speed, volumes, pavement conditions, and design/dimension.³ Specifically, along the I-26 mainline and interchanges, potential roadway factors include access, design deficiencies (i.e. insufficient clear zones), and congestion.

2. PROJECT SETTING

The PSA is located predominantly along the western edge of Berkeley County with portions extending into the eastern edge of Dorchester County. Specifically, the 545-acre PSA extends from the western terminus approximately 1 mile west of SC 27 (Ridgeville Road/Old Gilliard Road) to the eastern terminus approximately 1 mile west of Jedburg Road. The land uses within the immediate vicinity of the PSA include existing transportation facilities, undeveloped forested land, isolated industrial developments, and sparse residential development mainly located along the interchanges.

U.S. Census Bureau (Census) data indicates increasing population trends in both Berkeley and Dorchester counties. Based on projected economic development, employment, and housing growth rates, documented in Dorchester and Berkeley County comprehensive plans, both counties have passed transportation sales tax programs to improve and expand local infrastructure. The County comprehensive plans aim to manage growth from continued economic investments of new corporate arrivals, including Volvo, and the Camp Hall and Ridgeville Industrial Campuses. These growth trends within Berkeley and Dorchester Counties have and will continue to impact the PSA and areas immediately adjacent to the I-26 corridor. This specifically includes growth around Ridgeville and Summerville, along with the employment hubs near Jedburg Road (exit 194) and Volvo Car Drive (exit 189).

a. Berkeley County

Berkeley County has experienced rapid growth over the last 40 years, is considered one of the fastest growing counties in South Carolina, and the 26th fastest growing county in the U.S. The recent population, housing, and economic growth in Berkeley County are well documented in the 2010 Berkeley County Comprehensive Plan 5-year Review. Most notably, according to Census data, the population of Berkeley County has increased from 142,651 in 2000 to 193,613 in 2015.⁴ This trend is expected to continue as Berkeley County is projected to have the highest population growth in the area over the next 20 years with over 300,000 residents by 2035.

Rapid growth in the area is partially due to the continued economic investments of Volvo and the Camp Hall Industrial Campus, which ultimately led to a 1 percent sale and use tax for "financing the costs of highways, roads, bridges, and other transportation-related project facilities, and drainage facilities related thereto." This tax lasted for 7 years and all the revenue generated will be used to construct roadway

³ FHWA, <http://safety.fhwa.dot.gov/hsip/resources/fhwas09029/sec3.cfm>, last accessed 2018.

⁴ [https://www.berkeleycountysc.gov/drupal/sites/default/files/Final adopted CompPlan 5 year review in color.pdf](https://www.berkeleycountysc.gov/drupal/sites/default/files/Final%20adopted%20CompPlan%205%20year%20review%20in%20color.pdf), last accessed July 2019.

improvements listed in the approved referendum. On November 4, 2014, the voters of Berkeley County again passed a 1 percent sales and use tax to fund additional transportation improvements.

b. **Dorchester County**

Dorchester County has experienced similar growth trends that are documented in the 2018 Dorchester County Comprehensive Plan.⁵ In summary, according to 2017 Census data, Dorchester County includes a total population of 156,456, which is an increase from 96,413 in 2010. This trend is expected to continue with a forecasted population of over 190,000 in 2030. Dorchester County also has a transportation program, Dorchester County Sales Tax Transportation Authority (DCTA), that implements local infrastructure projects funded by local tax revenue.

c. **Existing Facilities**

I-26: Within the PSA, I-26 is a four-lane rural interstate highway with a vegetated median and a posted speed limit of 70 miles per hour (MPH). Existing right-of-way (ROW) is variable, but generally extends a total of 350 feet in width, 175 feet on either side of the centerline. Two 210-foot-long bridges span Cypress Swamp near MM 192. Various culvert structures are present along the corridor that provide hydrologic conveyance and connectivity for surface water systems.

Exit 187 (SC 27): Exit 187 is a diamond type interchange with SC 27 and includes a bridge over I-26 that is approximately 260 feet in length. SC 27 is a two-lane roadway that provides connection between US 176 and SC 61, access to I-26 and US 78, and a connection to Ridgeville south of I-26. The area along SC 27 is primarily rural with mixed residential, farmland and undeveloped forested lands.



Exit 187 - I-26 WB Off Ramp

Volvo Car Drive Interchange: The Volvo Car Drive interchange is a new three-leg directional interchange near MM 189 that was completed and opened to the public in late August 2019 to provide access to the new Volvo Car Drive, with ultimate access to Camp Hall Commerce Park and the Volvo Manufacturing Facility. The interchange includes both at-grade and flyover ramps.

Road S-182 (Cypress Campground Road): Cypress Campground Road is a rural two lane roadway that is generally oriented north-south. The road provides a connection from Ridgeville to US 176, and includes

⁵ <https://www.dorchestercountysc.gov/home/showdocument?id=18969>, last accessed July 2019.

an approximately 240-foot-long bridge over I-26. The bridge crossing is located approximately 0.75 mile east of the Volvo Car Drive Interchange.

Exit 194 (Road S-16): Exit 194 is a diamond type interchange with Road S-16 (Jedburg Road) that includes a bridge over I-26 that is approximately 225 feet long. Jedburg Road is a two-lane roadway predominately oriented north-south that provides access to the northern area of Summerville and unincorporated areas of Berkeley County. In addition, numerous existing and planned industrial areas are within the vicinity of the interchange.

d. Adjacent Facilities

The continued growth along the greater Berkeley, Dorchester, and Charleston Counties have resulted in the need for numerous transportation improvement projects that are being developed and implemented by various local, state, and federal programs. The following is a summary of the major transportation projects in the vicinity of the PSA:

- **Jedburg Road Interchange Improvements:** Berkeley County in conjunction with SCDOT is improving the I-26 and Jedburg Road interchange (exit 194) and widening I-26 from MM 193 to MM 197. Construction is underway.
- **Ridgeville Road (SC 27) Widening – Dorchester County:** Dorchester County is currently developing plans to widen 0.94 mile of Ridgeville Road from US 78 to the interchange with I-26. The project will widen the existing roadway from two to three lanes and improve safety and traffic operations. Final design plans and ROW acquisitions are currently in progress.
- **Ridgeville Road (SC 27) Resurfacing and Widening – Berkeley County:** Berkeley County is currently working on resurfacing and widening Ridgeville Road/Old Gilliard Road to three lanes in addition to installing a new traffic light at the intersection of Autonomous Drive and SC 27. Construction also includes sidewalks and lighting on the roadway for pedestrian traffic.
- **I-26 Corridor Management Plan:** SCDOT, in conjunction with the Federal Highway Administration (FHWA), has initiated the I-26 Corridor Management Plan to evaluate and develop potential improvements along I-26 from approximately MM 189 to the terminus in Charleston. The analysis is ongoing, but potential improvements may include managed travel lanes, ramp metering, and other operational improvements mainly east of exit 194.
- **I-526 Improvements – Lowcountry Corridor:** SCDOT and FHWA are currently developing various improvements along I-526, including a modified interchange at I-526 and I-26. The project is currently in the environmental planning stages (<https://www.526lowcountrycorridor.com/>).
- **I-26 Cable Guardrail Project (from near MM 168 to near MM 199) (Phase II):** SCDOT is planning safety improvements along portions of I-26 in Berkeley and Dorchester Counties to include clear zone improvements to areas not cleared in Phase I. Construction is anticipated to begin in spring 2020.

In addition to these projects, both Berkeley and Dorchester Counties have infrastructure sales tax programs for developing and implementing various transportation projects. A comprehensive project

listing and associated information for each can be found at <https://www.buildingberkeley.org/> and <https://www.dorchestercountysc.gov/our-county/road-projects>.

3. ALTERNATIVES CONSIDERED

Various location and design alternatives were evaluated during the development of the project. These alternatives were further analyzed to evaluate potential impacts on the human and natural environment. The environmental resources were identified through various methods, including available mapping, existing data review, and/or field investigations. Specifically, the wetlands and other waters of the U.S. (WOUS) were largely identified based on available mapping (National Wetland Inventory, LIDAR, topographic) and field reconnaissance. The findings associated with the alternative analysis for the interchanges is further documented and summarized in Table 6.

Table 6. Exit 187 Interchange Alternatives Impact Matrix

Impact Category	Exit 187 Interchange Alternatives		
	Alternative 1	Alternative 2	Alternative 3
Wetlands/WOUS (acres)	22	14	9
Permits	Individual Section 404	Individual Section 404	Individual Section 404
Threatened/Endangered Species	None	None	None
Prime Farmland (acres)	8.0	5.6	1.1
Architectural Resources	0	0	0
Archaeological Resources	0	0	0
Section 4(f) Resources (parks, wildlife refuges, etc.)	0	0	0
Traffic Noise (Impacted Receivers)	14	15	14
Potential Hazardous Material Sites	0	0	0
Right-of-Way			
Total ROW (acres)	25	20	2
Properties Impacted	19	16	7
Number of Relocations	0	0	0
Project Cost	\$127,000,000	\$129,000,000	\$125,000,000

a. Interchange Alternatives

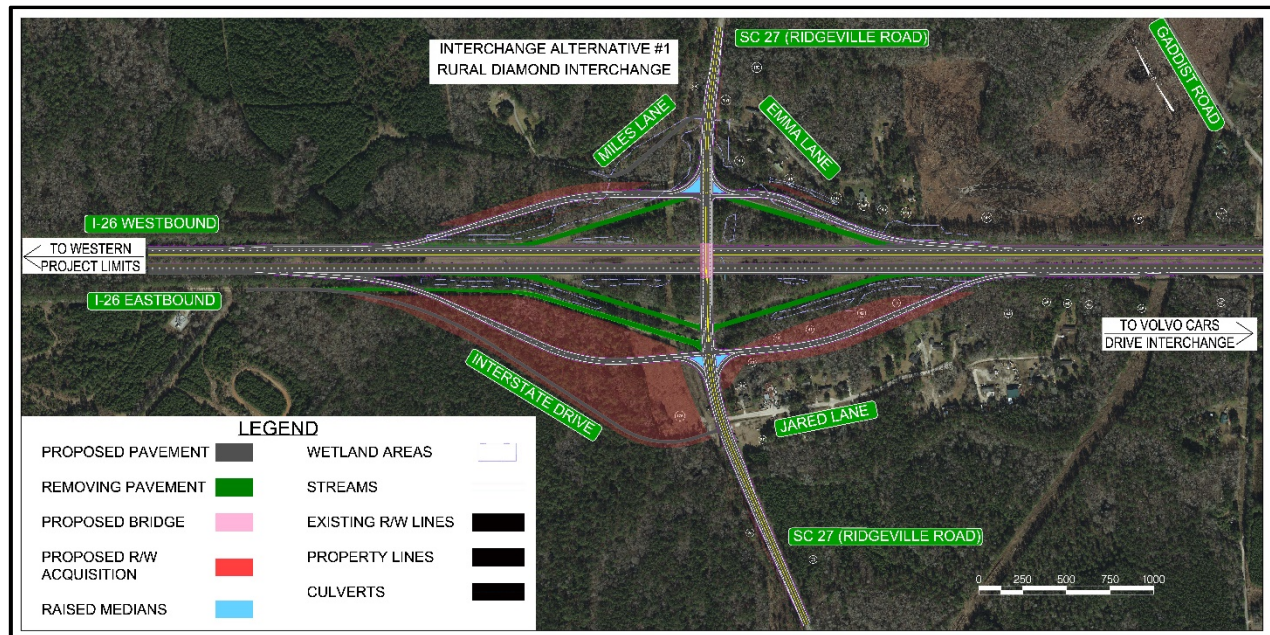
Alternative 1 (Rural Diamond Interchange): Interchange Alternative 1 would reconstruct the existing diamond interchange into a rural diamond interchange and would include the replacement of the SC 27 bridge over I-26. The proposed bridge would replace the 260-foot-long functionally obsolete bridge and update the facility to the appropriate horizontal and vertical clearances for traffic along I-26. The proposed bridge would be constructed in stages and traffic would be maintained during construction. New one-way, two-lane extended diagonal ramps would be established in each quadrant of the interchange. Both existing WB and EB onramps and offramps intersections would be relocated and realigned to accommodate spacing for the extended ramps. The longer ramps would require the relocation of both Miles Lane and Interstate Drive, in addition to multiple property acquisitions associated with the new longer ramp in the southeast quadrant. If this alternative would be implemented, average future traffic delays through the intersection would be 15.6 seconds (a.m.) and 18.8 seconds (p.m.). Alternative 1 would provide adequate LOS through the 2043 design year as summarized in Table 7.

Alternative 1 would require the acquisition of approximately 25 acres of new ROW from 19 parcels. In addition, the proposed improvements would impact approximately 22 acres of potential waters of the U.S. (WOUS) and other aquatic features. Traffic noise analysis was conducted for Alternative 1 and concluded that 14 residential receivers would experience noise levels greater than the Noise Abatement Criteria (NAC) thresholds. However, these findings are consistent with the No-Build analysis, which would result in 15 residential receivers being impacted. Exit 187, Alternative 1 is illustrated in Figure 4.

Table 7. 2043 LOS for the Interchange Alternatives

Road Segment	Build Alt 1 (Diamond)		Build Alt 2 (Parclo-B)		Build Alt 3(Diamond Roundabout)	
	2043 LOS		2043 LOS		2043 LOS	
	AM	PM	AM	AM	AM	PM
I-26 WB Offramp Intersection	B	B	A	B	A	B
I-26 WB Offramp Movement	D	D	D	D	D	D
I-26 WB Onramp Movement	B	B	B	B	B	B
I-26 EB Offramp Intersection	A	A	A	A	A	A
I-26 EB Offramp Movement	B	C	B	C	B	C
I-26 EB Onramp Movement	B	B	B	B	B	B

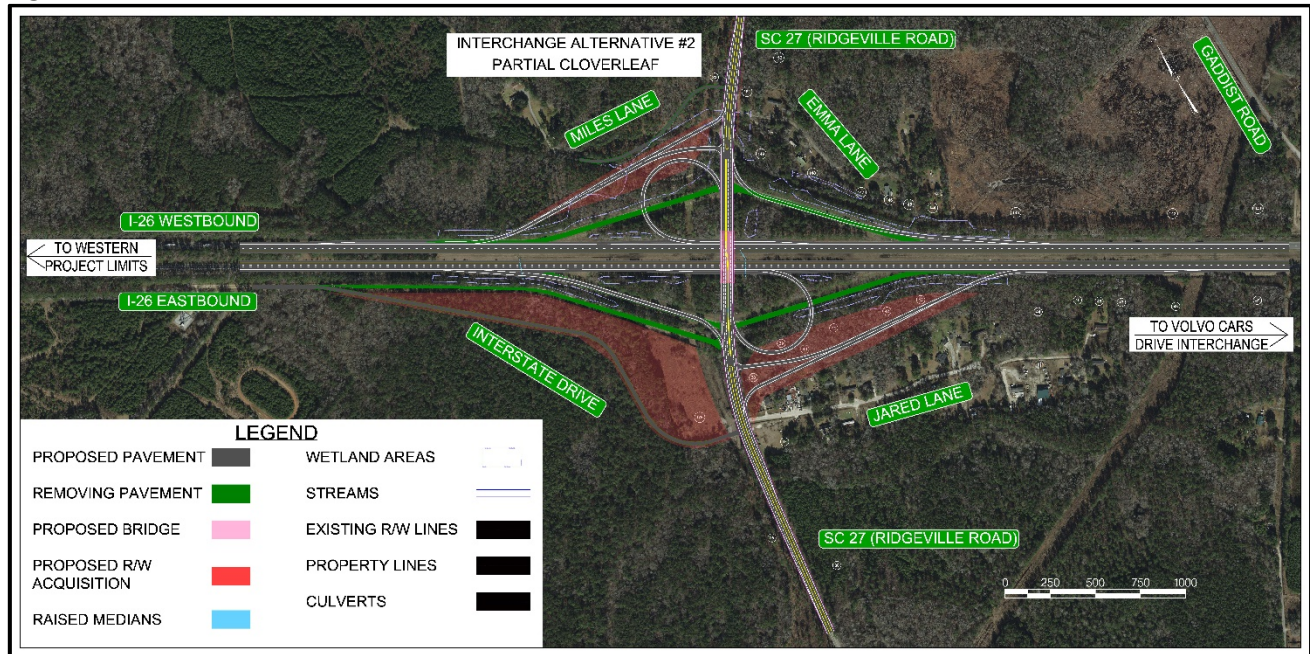
Figure 4. Exit 187, Alternative 1



Alternative 2 (Partial Cloverleaf): Interchange Alternative 2 would reconstruct the existing diamond interchange with a partial cloverleaf interchange. This alternative would also include the replacement of the SC 27 overpass bridge. The partial cloverleaf interchange would be an expansion of a typical diamond design with the addition of two loop ramps along I-26, both of which would be offramps. The loop ramps would accommodate traffic exiting WB and EB onto SC 27. Onramp movements would include free-flow right turns from SC 27 and dedicated left-turn lanes. The offramp from I-26 WB to SC 27 EB would be a standard right-flow ramp. The six ramps and cloverleaf configuration would minimize stop conditions at intersections, which would improve overall operation. The construction of new ramps and loops would result in the relocation of both Interstate Drive and Miles Lane, and the acquisition of additional ROW. If this alternative was implemented, average future traffic delays of movement through the intersection would be 13.5 seconds (a.m.) and 17.7 seconds (p.m.). Alternative 2 would provide adequate LOS through the 2043 design year as summarized in Table 7.

Alternative 2 would require the acquisition of approximately 20 acres of new ROW from 16 parcels. In addition, the proposed improvements would impact approximately 14 acres of potential WOUS and other aquatic features. Traffic noise analysis was conducted for Alternative 2 and concluded that 15 residential receivers would experience noise levels greater than the NAC thresholds. However, these findings are consistent with the No-Build analysis, which would result in 15 residential receivers being impacted. Exit 187, Alternative 2 is illustrated in Figure 5.

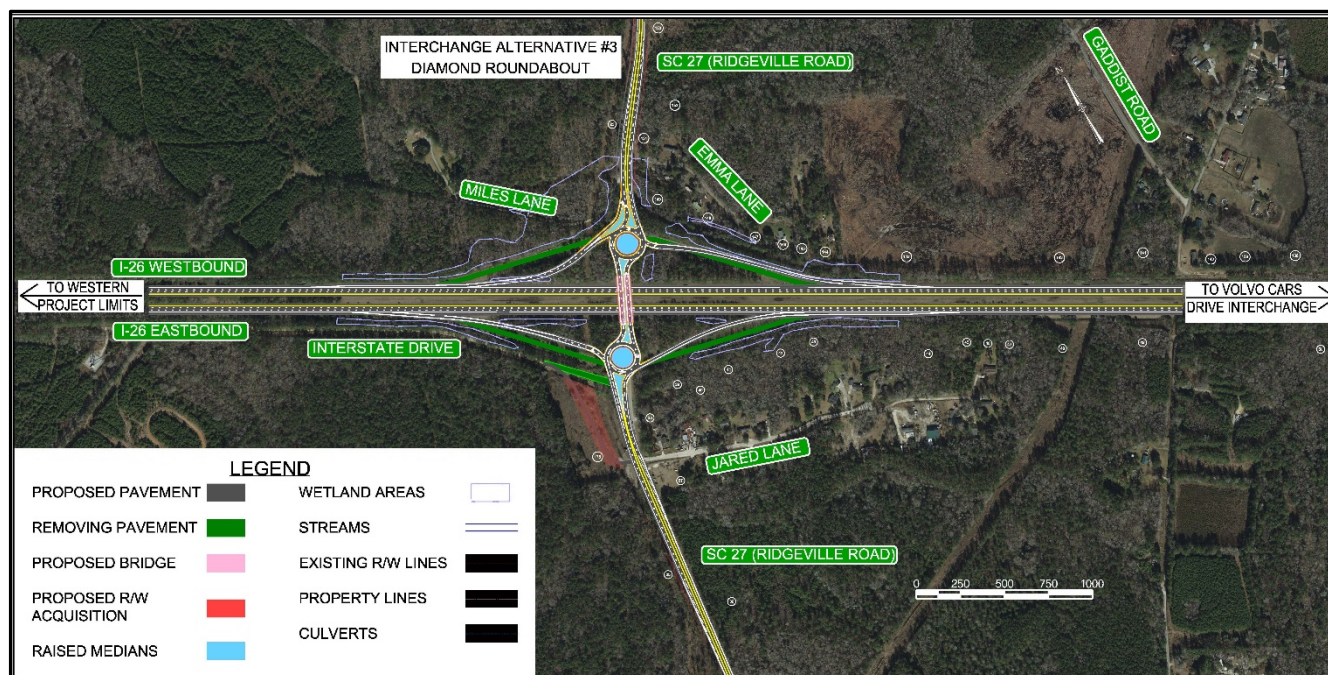
Figure 5. Exit 187, Alternative 2



Alternative 3 (Diamond Roundabout): Interchange Alternative 3 would reconstruct the existing diamond interchange with a diamond roundabout design. This alternative would also include the replacement of the SC 27 overpass bridge. Alternative 3 would reconfigure the EB and WB ramp intersections into a pair of roundabouts, allowing traffic to flow onto SC 27 rather than stopping where the ramp meets the road. The roundabout design would eliminate traffic signals and stop conditions. All ramp movements are incorporated into the four-lane roundabout, except for the SC 27 WB onramp, which is an isolated free-flow movement. The proposed alternative would require the relocation of Interstate Drive. Implementation of this alternative could result in future average traffic delays of 15.9 seconds (a.m.) and 18.5 seconds (p.m.). Alternative 3 would provide adequate LOS through the 2043 design year as summarized in Table 7.

Alternative 3 would require the acquisition of approximately 2 acres of new ROW from 7 parcels. In addition, the proposed improvements would impact approximately 9 acres of potential WOUS and other aquatic features. Traffic noise analysis was conducted for Alternative 3 and concluded that 14 residential receivers would experience noise levels greater than the NAC thresholds. However, these findings are consistent with the No-Build analysis, which would result in 15 residential receivers being impacted. Exit 187, Alternative 3 is illustrated in Figure 6.

Figure 6. Exit 187, Alternative 3



b. Cypress Campground Road Bridge Replacement:

Two potential build alternatives were considered for the replacement of the Cypress Campground Road bridge over I-26: replacement along existing alignment and replacement along an offset alignment to the north/west. Replacement along the existing alignment would require a road closure and detour which would impact existing travel patterns and commuting time. This alternative was ultimately eliminated based on the need for a road closure and detour and public comments received at the PIM (see Appendix A for Public Outreach Summary and PIM comments).

The No-Build Alternative is not feasible, prudent, or practicable because:

- ☒ It would not correct existing capacity deficiencies
- ☒ It would not correct existing safety hazards
- ☒ It would not correct the existing roadway geometric deficiencies
- ☒ It would not correct existing deteriorated conditions and maintenance problems
- ☐ It would result in serious impacts to the motoring public and general welfare of the economy
- ☐ Other (describe):

4. PREFERRED ALTERNATIVE DESCRIPTION

The Preferred Alternative (Alternative 3) includes widening I-26 to the median, replacing the Cypress Campground Road bridge with a new structure to the east, and reconfiguring exit 187 into a diamond

roundabout interchange. Fieldwork, including wetland delineations, has been conducted to determine potential environmental impacts. Based on finalizing design and traffic configurations, the Preferred Alternative would require the acquisition of approximately 10 acres of new ROW from 14 parcels. The additional ROW area and parcel impacts as compared to approximately 2 acres of new ROW from 7 parcels as previously noted for Alternative 3 (refer to Table 6) is needed to build and maintain traffic during construction, and for sideroad/frontage road relocations to meet design standards. Specifically, the additional ROW and increase in parcel impacts is due to the need to realign Emma Lane/Miles Lane, and Interstate Drive/Jared Lane at the SC 27 interchange (exit 187) which was not accounted for in the conceptual design level since proposed elevations for bridges and roads had not been set. These changes would be required for the other alternatives as well. The final design impacts are summarized in Table 8 and the Preferred Alternative is illustrated in Figures 7-13.

Table 8. Preferred Alternative Impact Matrix

Impact Category	Preferred Alternative			
	Mainline	Cypress Campground Road Bridge	Interchange Alternative 3	TOTAL
Potential WOUS				
Wetlands (acres)	1.7	0.6	4.2	6.5
Stream (linear feet)	212	936	52	1,200
Ditches (linear feet)	742	0	1,397	2,139
Permits				Individual Section 404
Threatened/Endangered Species	None	None	None	None
Prime Farmland (acres)	0	1.1	1.6	1.7
Cultural Resources				
Architectural	0	0	0	0
Archaeological	0	0	0	0
Section 4(f) Resources (parks, wildlife refuges, etc.)	0	0	0	0
Traffic Noise (Impacted Receivers)*				15
Potential Hazardous Material Sites	0	0	0	
Right-of-Way				
Total ROW (acres)	0	5.5	4.3	9.8
Properties Impacted	0	6	8	14
Number of Relocations	0	0	0	0

*Not applicable, mainline noise impacts were included with analysis of alternative

Figure 7. Preferred Alternative – Sheet 1

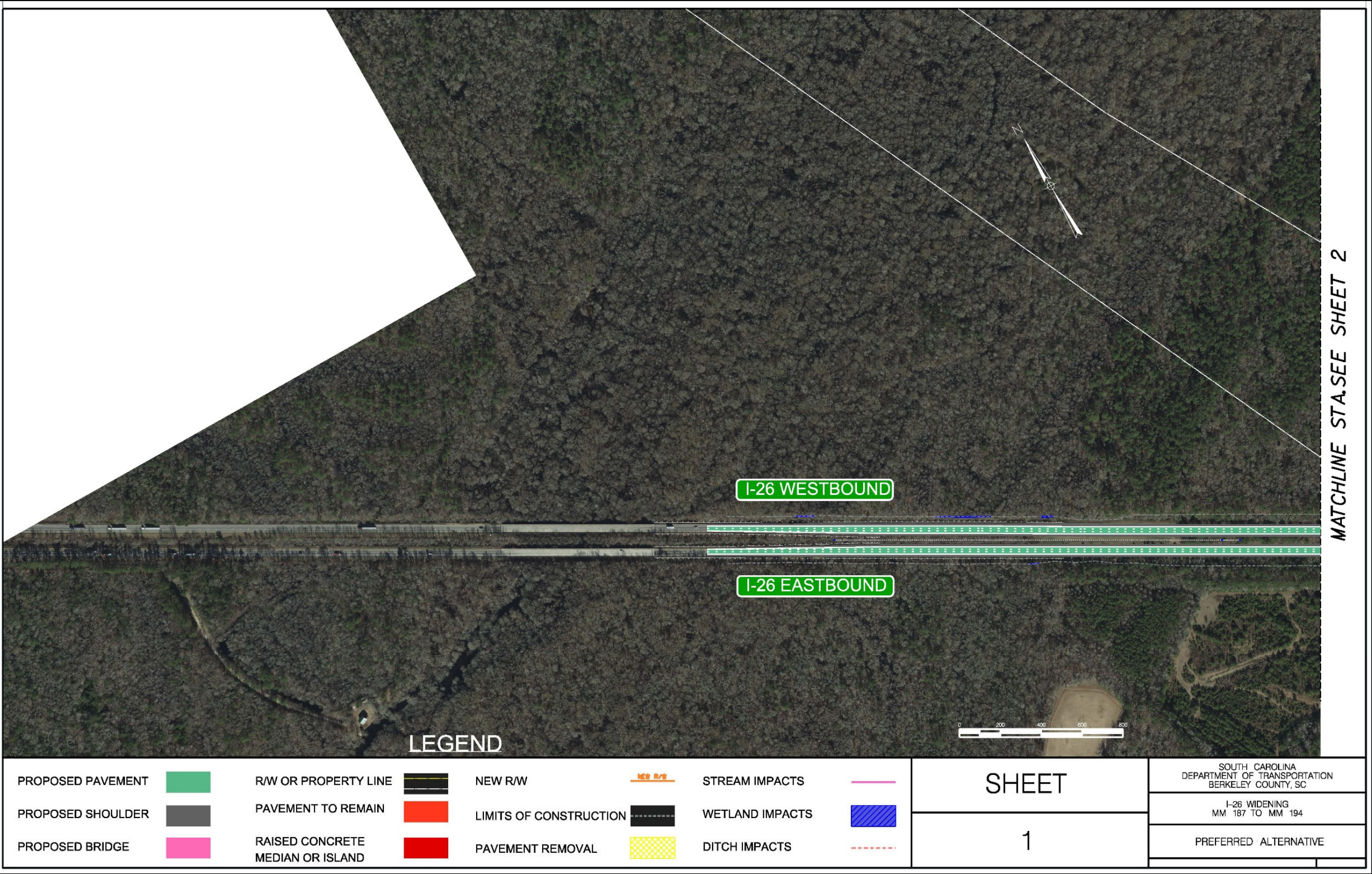


Figure 8. Preferred Alternative – Sheet 2

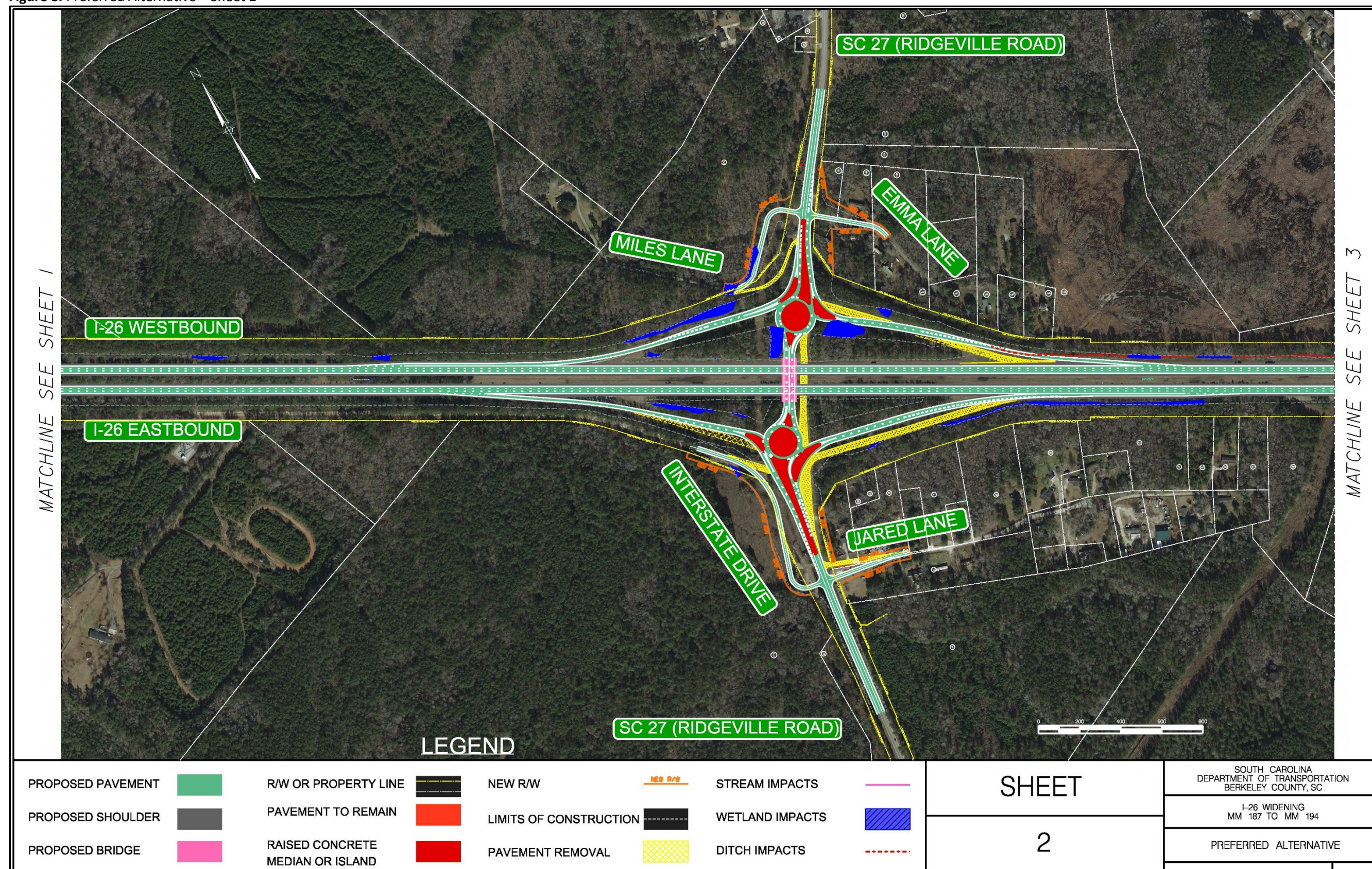


Figure 9. Preferred Alternative – Sheet 3

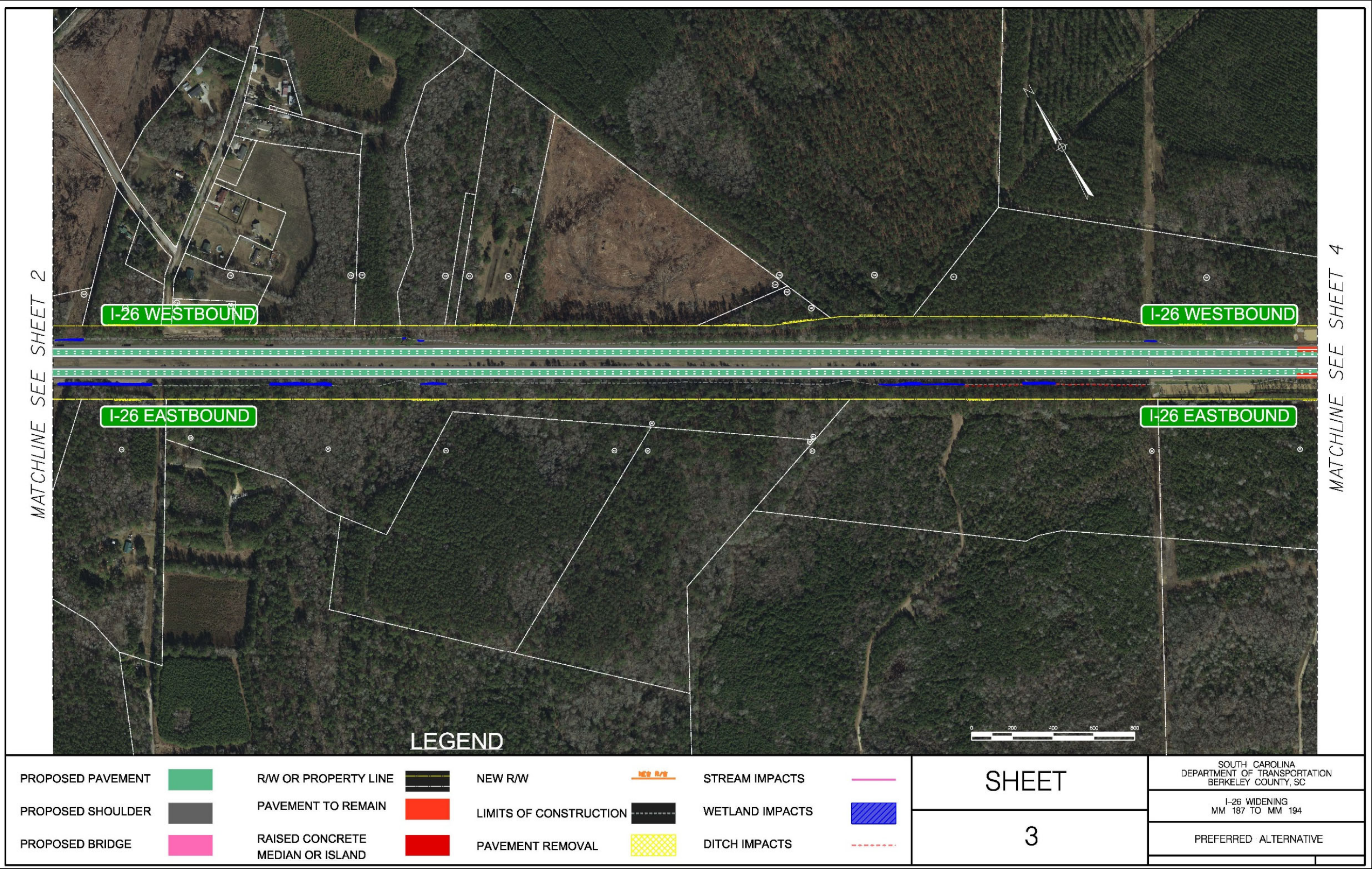


Figure 10. Preferred Alternative – Sheet 4

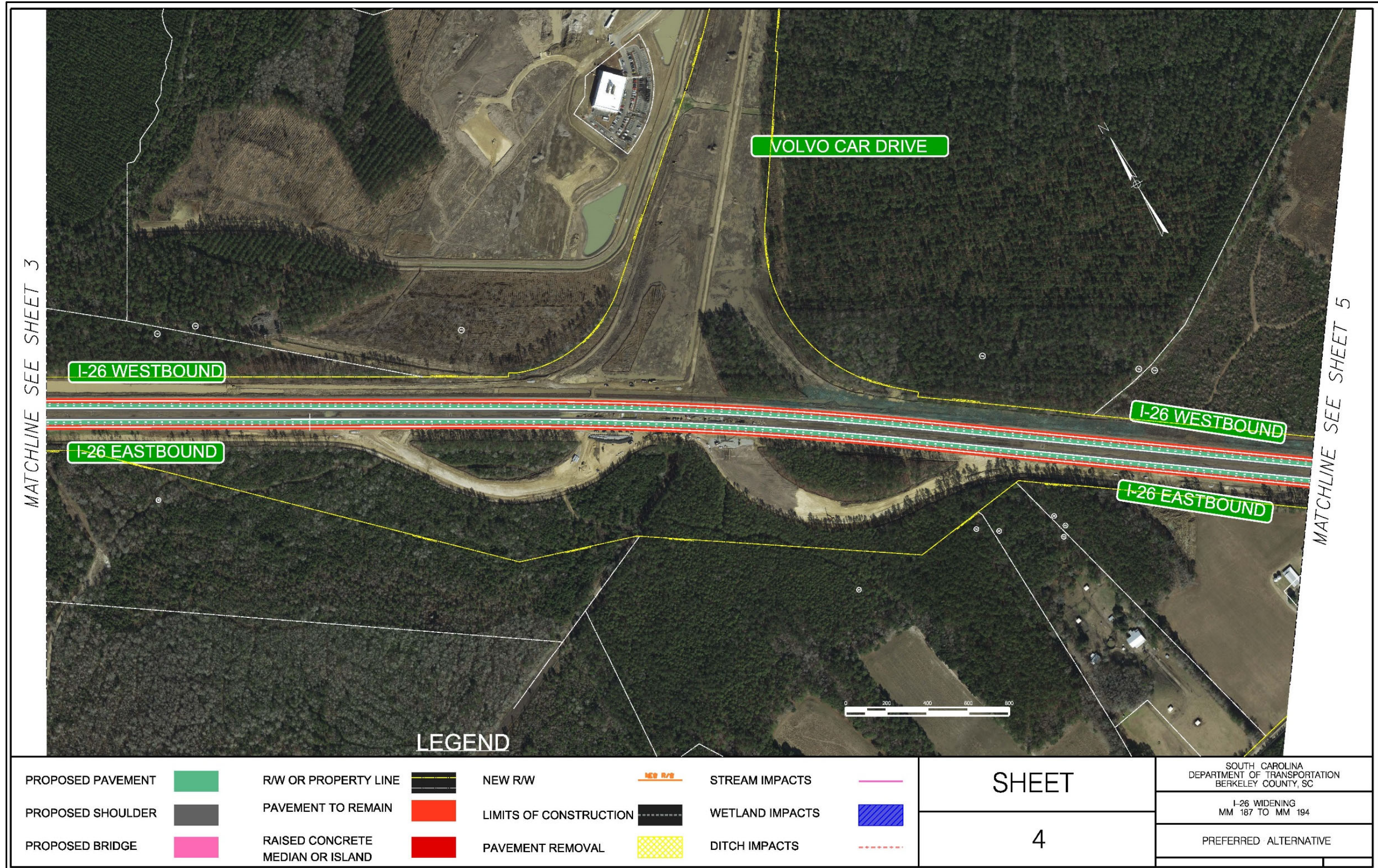


Figure 11. Preferred Alternative – Sheet 5

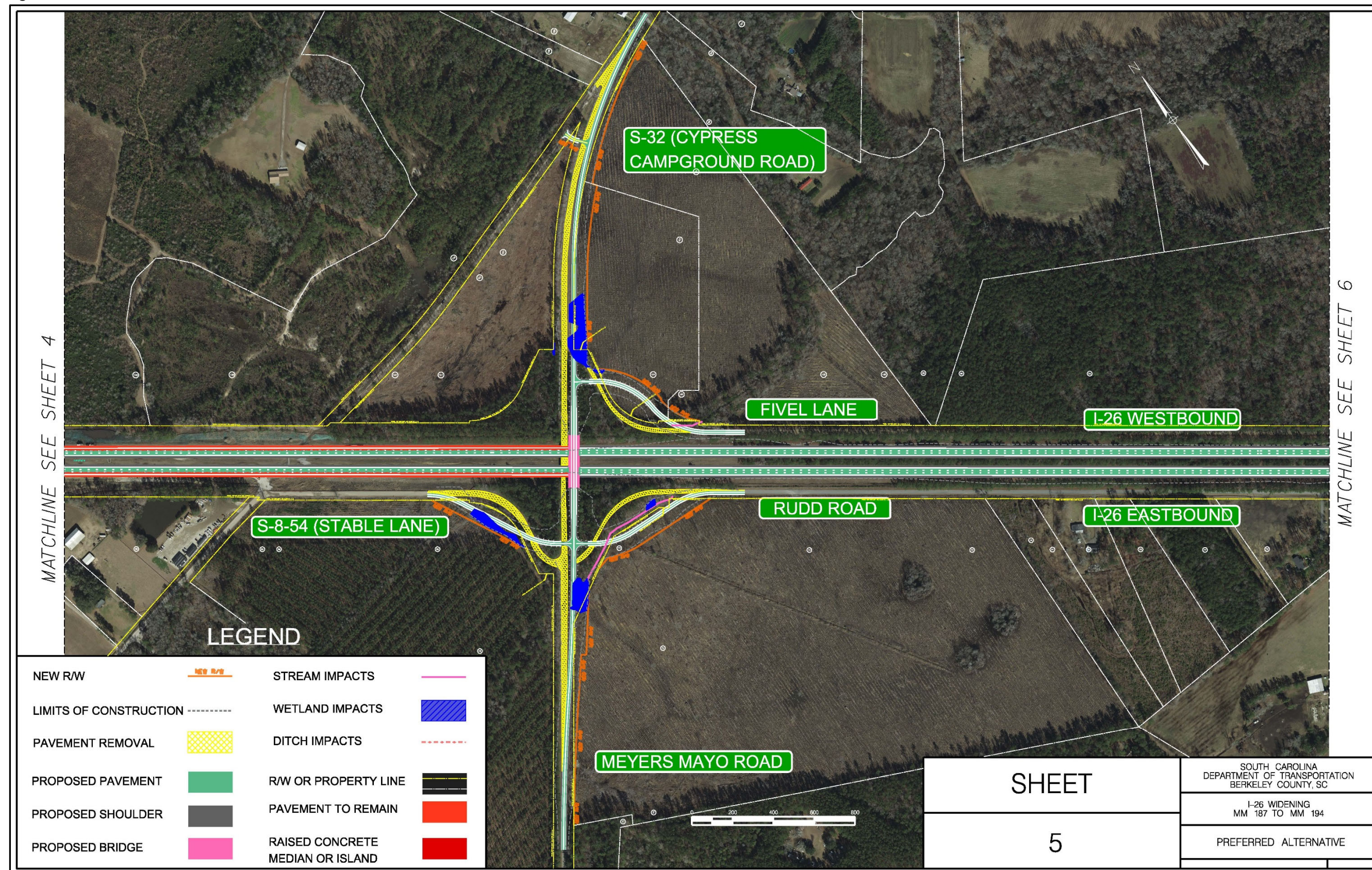


Figure 12. Preferred Alternative – Sheet 6

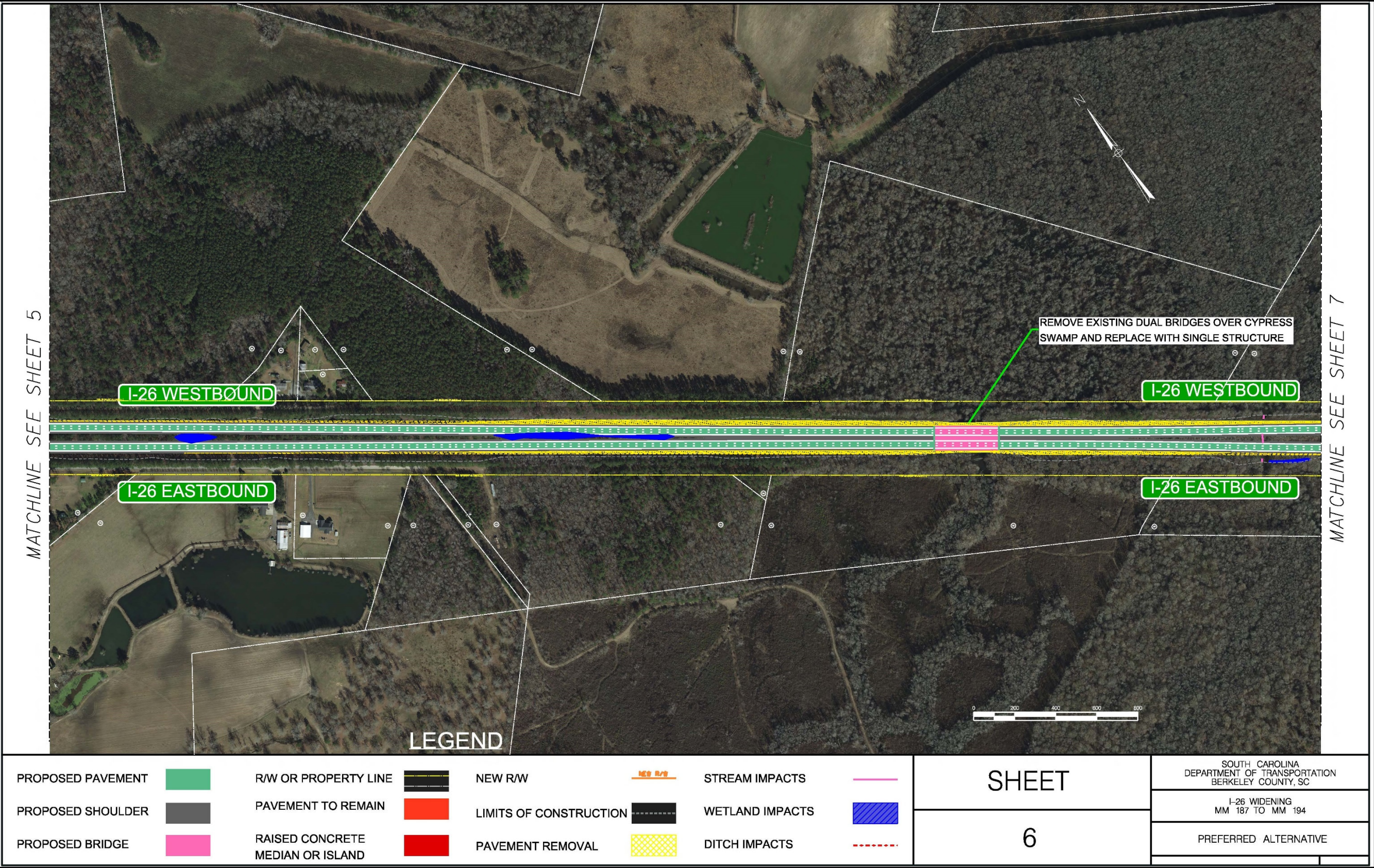
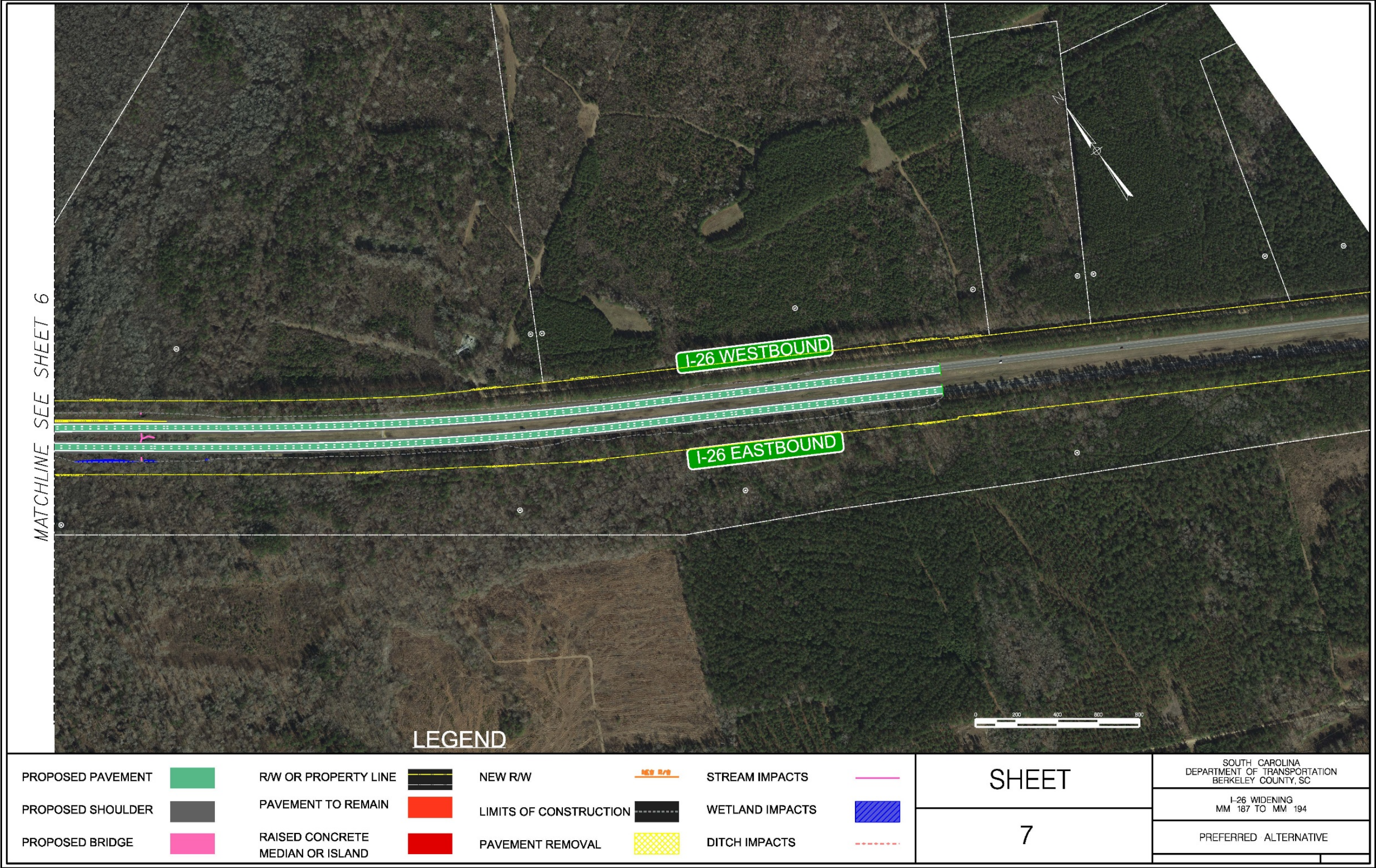


Figure 13. Preferred Alternative – Sheet 7



Mainline:

The proposed mainline widening would span across approximately 7 miles of I-26 from approximately 1 mile west of SC 27 at exit 187, to approximately 1 mile west of Jedburg Road (exit 194). The mainline widening would occur to the median of the existing facility, with only minor work beyond the existing shoulder to provide adequate clear zones. The widening of I-26 from four to six lanes would improve the capacity and operational conditions of the facility, resulting in an adequate LOS through the design year as summarized in Table 9. Table 9 includes a summary of the LOS along the I-26 mainline within, and adjacent to, the PSA for the build condition. MM 187 to MM 177 is included to further illustrate the rationale for the eastern terminus at MM 187.

The work along the mainline would also require the replacement of dual bridges over Cypress Swamp and the Cypress Campground Road bridge over I-26. The proposed improvements along the mainline would also include various roadway geometry and drainage improvements. Roadway geometric improvements would primarily include interchange reconstruction, ramp and side road realignment, cross-slope corrections, profile improvements, and shoulder widening. Various drainage improvements would be implemented to improve stormwater conveyance, including upgrades to existing crossline pipes and culvert extensions. This includes the installation of an additional culvert along Timothy Creek. Both EB and WB widening would be accommodated/implemented through two primary typical sections as illustrated in Figures 14 and 15. For the majority of the project, a grass median with a cable barrier would be installed while in the vicinity of the bridges, a concrete permanent barrier would be installed.

Table 9. Mainline LOS Build Conditions

Road Segment	Existing		Design Year No-Build		Design Year Build	
	2018 LOS		LOS		2043 LOS	
	AM	AM	AM	PM	AM	PM
I-26 WB, MM 194-190	B	C	D	F	C	C
I-26 EB, MM 194-190	B	C	D	E	B	C
I-26 WB, MM 190-187	B	C	C	E	B	C
I-26 EB, MM 190-187	B	C	C	D	B	B
I-26 WB, MM 187-177	B	C	C	D	C	D
I-26 EB, MM 187-177	B	B	B	C	B	C

Figure 14. Mainline Typical #1

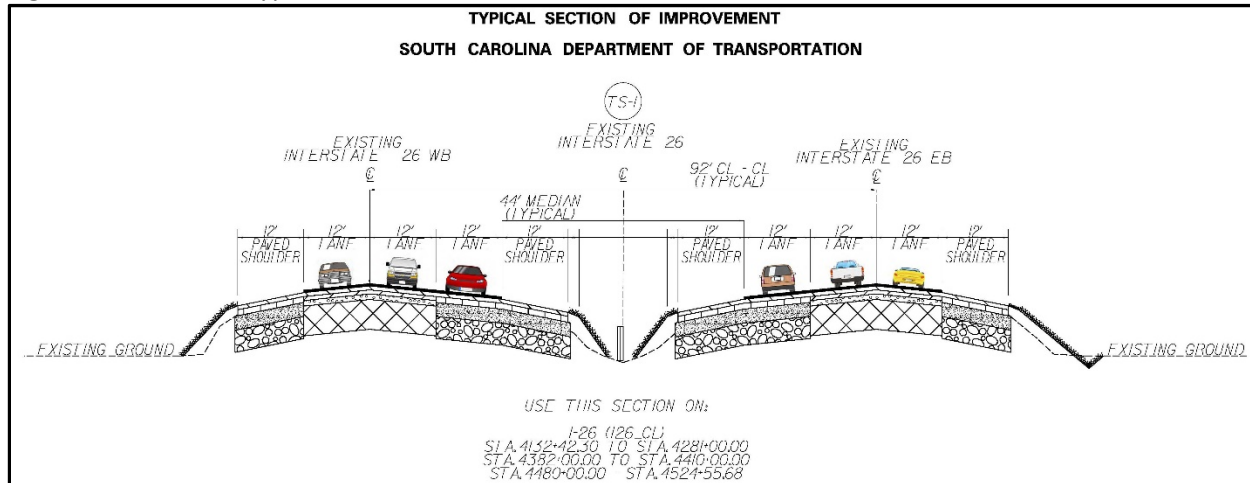
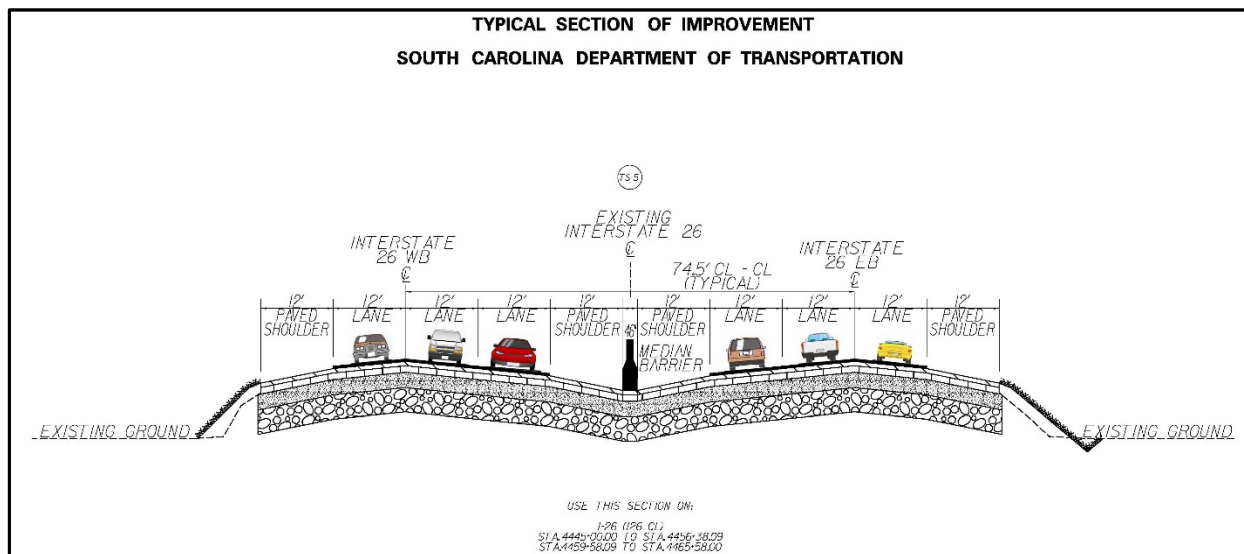


Figure 15. Mainline Typical #2



Cypress Campground Road Bridge Replacement:

The proposed improvements to the Cypress Campground Road Bridge would include replacing the existing bridge with a new structure to the south/east of the existing bridge. The proposed bridge would include two 12-foot-wide travel lanes with 10-foot-wide shoulders and have a total width of approximately 47 feet. The offset alignment allows traffic to be maintained throughout construction, minimizing negative impacts to residents and commuters. The roadway approaches would begin approximately 2,000 feet northeast, and 1,500 feet southwest of the proposed bridge. In addition, the side roads of Fivel Lane, Rudd Road, and Stable Lane would be relocated with improved intersections.

Exit 187 – SC 27 Interchange:

Interchange Alternative 3 (Diamond Roundabout) was determined to be the Preferred Alternative for the reconstruction of the existing interchange. Alternative 3 has the smallest environmental impact while providing adequate LOS and operating conditions through the 2043 design year. It resulted in the least amount of new ROW required, impacted the fewest parcels, and had the least impact to WOUS.

The proposed project would reconstruct the existing diamond interchange with a diamond roundabout design and would include the replacement of the SC 27 overpass bridge off alignment to maintain traffic throughout construction. Alternative 3 would result in EB and WB ramp intersections to be configured as a pair of roundabouts which would eliminate the need for traffic signals and stop conditions. The roundabouts would create free flowing right turn movements to and from the ramps, further improving the operational efficiency of the intersections.

Is an Interchange Modification Report required? Yes ☐ No ☒

If yes, when did the FHWA grant a conditional approval of the access modification? N/A

5. MAINTENANCE OF TRAFFIC DURING CONSTRUCTION

Maintenance of Traffic During Construction	Yes	No
Is a temporary bridge proposed?		X
Is a temporary roadway proposed?		X
Will the project involve the use of a detour or require ramp closure?		X
Provisions will be made for access by local traffic and so posted	X	
Provisions will be made for through-traffic dependent businesses	X	
Provisions will be made to accommodate any local special events	X	
Will the proposed maintenance of traffic plan change the environmental consequences of the action?		X
Is there substantial controversy associated with the proposed method for the maintenance of traffic plan?		X

Remarks:

The proposed project would construct additional travel lanes for EB and WB traffic on I-26 along the existing median. The widening of the mainline would also require the replacement of the bridges over Cypress Swamp, which would be staged to maintain traffic flow throughout construction. The Cypress Campground bridge over I-26 would be replaced immediately east of the existing bridge to allow traffic to be maintained throughout construction. The SC 27 bridge over I-26 at exit 187 would be replaced to the west of the existing bridge to accommodate the proposed interchange and maintenance of traffic.

6. ESTIMATED PROJECT COST AND SCHEDULE

Estimated Project Cost and Schedule	
Total Construction Costs:	\$125,000,000
Anticipated Start Date of Construction:	2021

Remarks:

The 2017-2022 Statewide Transportation Improvement Program (STIP) allocates a total funding of \$207,411,000 (Table 10) associated with the proposed project: \$6,355,000 (preliminary engineering), \$4,000,000 (ROW), and \$197,056,000 (construction).⁶ The National Highway Performance Program (NHPP) provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. Advance construction (AC) allows states to begin a project even in the absence of sufficient federal-aid obligation authority to cover the federal share of project costs.

Table 10. 2017-2022 STIP Project Funding

Funding Source	Phase	Cost (\$ millions)
NHPP (Federal)	Preliminary Engineering	6.3
NHPP (Federal)	Right-of-Way	4.0
NHPP (Federal)	Construction	56.8
AC (Federal)	Construction	140.3
TOTAL		207.4

7. RIGHT-OF-WAY

Table 11. Preferred Alternative ROW Impacts

Land Use Impacts	Number of Relocations	Total Area of New ROW (ac)	Partial Takings	Easements (Slope or Drainage)
Residential	0	9.8	13	To be determined
Commercial	0	0	1	To be determined
TOTAL	0	9.8	14	To be determined
		Yes	No	
Is a conceptual relocation study required?			X	
Has utility relocation coordination been initiated?		X		

⁶ STIP. http://206.74.144.42/ESTIP/downloads/Berkeley.html?_id=1546541220536. Last accessed January 3, 2019



Remarks:

The proposed project would require approximately 9.8 acres of new ROW from 13 residential/undeveloped properties and 1 commercial property. The ROW acquisition would not result in any residential or commercial relocations or displacements. ROW acquisitions will be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601 et seq.).

PART IV: IDENTIFICATION AND EVALUATION OF IMPACTS OF THE PREFERRED ALTERNATIVE

1. SURFACE WATER RESOURCES

Surface Water Resources	Present? (Yes/No)	Impacts? (Yes/No)
Federal Wild and Scenic Rivers	No	No
U.S. Navigable Waterways	No	No
SC Navigable Waterways	No	No
Reservoirs	No	No
Lakes	No	No
Detention Basins or Storm Water Management Facilities	Yes	Yes
Other: Cypress Swamp; Timothy Creek	Yes	Yes

The PSA extends into two major river basins: Edisto River and Santee River. Within the Edisto River basin, the PSA is located within the Four Hole Swamp–Lower Reach Watershed (Hydrologic Unit Code [HUC] 0305020503). Specifically, the Four Hole Swamp watershed encompasses the northwestern portion of the PSA and includes approximately 55 percent of the area. The PSA includes one tributary (Timothy Creek) and thirty-nine freshwater wetlands.

Within the Santee River basin, the PSA is in the Cypress Swamp Watershed (HUC 0305020105). Specifically, the Cypress Swamp watershed encompasses the southeastern portion of the PSA and includes approximately 45 percent of the area. The PSA includes 25 wetlands, 1 pond, and 4 tributaries, including Cypress Swamp, Thompson Creek, and two unnamed tributaries.

A review of SCDHEC water quality monitoring stations determined that there are no active stations within the PSA. However, the waters within the PSA drain to various monitoring stations. These sites were evaluated to determine current classification and any identified impairment. Based on this review, the waters within the westernmost portion of the Four Hole Swamp Watershed–Lower Reach, drain to a water quality monitoring station (E-100) that is included on the State Draft 2018 Section 303(d) List of Impaired Waters due to fecal coliform. Waters associated with Cypress Swamp drain to the nearest downstream station along the Ashley River, which is located within a Total Maximum Daily Load (TMDL) watershed for dissolved oxygen. Additional documentation regarding the surface waters along the PSA can be found in the *Natural Resource Technical Memorandum – Proposed I-26 Widening and Interchange Improvements from Mile Marker 187 to Mile Marker 193* (NRTM) included as Appendix D.

The proposed project would include construction of a new bridge over Cypress Swamp. The proposed structure would be similar in length and height to the current structures and will maintain adequate

conveyance. In addition, various culverts and crossline pipes would be replaced and/or extended to maintain adequate conveyance and accommodate the proposed improvements.

The Preferred Alternative has potential to impact water quality through both the quantity and quality of stormwater runoff by increasing the area of impervious (i.e. paved) surface, thereby increasing the amount of runoff into adjacent streams and wetlands. Current stormwater conveyance features, both open and closed, will be improved and designed to accommodate the increase in runoff associated with the increase in paved surfaces.

Potential impacts to stormwater quality resulting from vehicular traffic were also considered. Water quality pollutants commonly associated with vehicular traffic include suspended solids, heavy metals, nutrients, motor oil, and grease. The proposed project is not expected to affect the existing traffic volumes or vehicle mix, and therefore would result in similar pollutant-loading as the existing condition.

The proposed project is not expected to contribute to the impairment or have long-term impacts on water quality within the watershed. However, construction activities such as mechanized land clearing, vegetation removal, and alteration of land contours could increase the potential for sediment loading. The proposed project would incorporate applicable designs and techniques to minimize temporary and permanent construction impacts, including various strategies as outlined in the SCDOT Stormwater Quality Design Manual.⁷ These techniques include specific strategies to collect, treat, and convey stormwater prior to discharging to receiving waters. Stormwater control measures, both during construction and postconstruction, are required for SCDOT projects with land disturbance and/or projects constructed in the vicinity of 303(d), TMDL, and other sensitive waters in accordance with SCDOT's MS4 Permit. The contractor would also be required to minimize potential stormwater impacts through implementation of construction best management practices, reflecting policies contained in 23 CFR §650B and SCDOT's *Supplemental Specifications on Seed and Erosion Control Measures* (latest edition).

2. WETLANDS AND OTHER WATERS OF THE U.S.

Wetlands and Other WOUS	Present? (Yes/No)	Impacts? (Yes/No)
Wetlands	Yes	Yes
Other WOUS	Yes	Yes
Total Area in Project Limits: <i>Wetlands: 51.025 acres (ac); Stream: 2,481 linear feet (LF); Pond/Open Water: 0.024 ac</i>		
Total Area Affected: <i>Wetland: 6.5 ac; Stream: 1,200 LF; Ditches: 2,139 LF</i>		

⁷ SCDOT, *Stormwater Quality Design Manual*, December 2014.

Remarks:

The boundaries of all wetland and other WOUS were completed during early project development utilizing the *Routine On-Site Determination Method* as defined in the *Corps of Engineers Wetland Delineation Manual* and the *Atlantic and Gulf Coastal Plain Regional Supplement to the Manual*. In summary, 64 wetland features were identified in the PSA totaling 51.025 acres. In addition, five streams were identified in the PSA totaling 2,481 linear feet. These streams include Timothy Creek, Thompson Creek, Cypress Swamp, and two unnamed tributaries to Cypress Swamp. One pond totaling 0.024 acre was also identified within the PSA. Numerous ditches and other linear conveyances were identified and presumed nonaquatic features that are not within the jurisdiction of USACE. A request for a jurisdictional determination was submitted in fall 2018 and is currently being processed by USACE. A detailed review of the resources identified in the PSA can be found in the NRTM in Appendix D.

The Preferred Alternative would result in 6.5 acres of wetland impacts and 1,200 linear feet of stream impacts. The wetland impacts are primarily associated with the reconfiguration of exit 187 and the replacement of the Cypress Campground Road bridge. These impacts include the placement of fill material and clearing and grubbing to accommodate construction and maintenance of stormwater controls.

Most of the stream impacts would occur along Cypress Campground Road, specifically along the southeast quadrant associated with the relocation of Rudd Road. Other impacts would be associated with the extension and replacement of culverts, piping, channel relocation, and rip-rap armoring.

A Clean Water Act Section 404 permit from USACE would be required for all impacts to wetlands and other WOUS. Specifically, the anticipated 6.5 acres of wetland impacts, and 1,200 linear feet of stream impacts would require a Section 404 Standard (i.e. Individual) permit from USACE and with a Section 401 water quality certification from SCDHEC.

3. FLOODPLAINS

Floodplains	Present? (Yes/No)	Impacts? (Yes/No)
100-year Floodplain	Yes	Yes
Floodway	Yes	No
	Yes	No
Will the project have a “significant encroachment” on a floodplain (100-year flood) or floodway?		X
Will a flood management certification be required?		X

Remarks:

The Federal Emergency Management Agency (FEMA) regulates floodplains that are prone to inundation at some frequency. In general, a flood that has a 1 percent chance of occurring in a given year is referred to as the “100-year flood”. FEMA has developed a mapping system to designate areas that could be prone to inundation based on a 100-year flood. These maps, known as Flood Insurance Rate Maps or FIRMs, are the official source for flood hazard information. Floodplains that would be inundated by the 100-year flood are categorized as Zone AE and are determined based on computer modeling. Zone A floodplains are areas that are expected to be inundated, but with no established base flood elevation. Base flood elevation is the depth of anticipated flood water based on computer modeling.

The PSA is in the following FIRM panels: 45015C0350E (effective date 12/06/2018), 45035C0220E (effective date 07/17/2017), 45015C0535E (effective date 12/06/2018), 45015C0555E (effective date 12/06/2018), and 45035C0310E (effective date 07/18/2017). The proposed project includes portions of a FEMA-regulated Zone AE floodplain and floodway associated with Cypress Swamp and a regulated Zone AE floodplain associated with Four Hole Swamp. A detailed review of the resources identified within the PSA can be found in the NRTM in Appendix D.

The project would include bridge and culvert replacements along two regulated floodplains including the bridge replacement over Cypress Swamp and the installation of an additional culvert along Timothy Creek. As proposed, the existing 210-foot-long bridge over Cypress Swamp would be replaced with a 320-foot-long structure. The existing dual 6x10-foot culverts along Timothy Creek would be retained and paired with an additional 6x6-foot culvert to improve conveyance. These improvements have the potential to change the 100-year based flood profile along the regulated floodplain areas. As such, preliminary hydraulic analysis was conducted at each site. The analysis indicates that a Conditional Letter of Map Revision/Letter of Map Revision (CLOMR/LOMR) may be required. The preliminary findings are further documented in the *SCDOT Bridge Replacement Scoping Trip Risk Assessment Form* included in Appendix E.



A final detailed hydraulic analysis would be conducted during final design development and would be performed in accordance with *SCDOT Requirements for Hydraulic Design Studies*.⁸ These final analysis and findings would also be coordinated with appropriate agencies, including SCDOT, FEMA, and the Berkeley County Floodplain Manager to

⁸ SCDOT, <https://www.scdot.org/business/technicalPDFs/hydraulic/requirements2009.pdf>, last accessed July 2019.

ensure compliance. Therefore, the project would be developed in accordance with Executive Order (E.O.) 11988 (Floodplain Management and 23 CFR §650 subpart A), and roadway/bridge design would comply with all appropriate floodplain regulations and guidelines.

4. TERRESTRIAL HABITAT/WILDLIFE

Terrestrial Habitat	Yes	No
Unique or high-quality habitat present?		X

Remarks:

The PSA is primarily comprised of existing transportation facilities, utilities, sparse residential and commercial developments, and undeveloped land uses. The undeveloped portions of the PSA include the following terrestrial community types: Blackwater River Floodplain forest, Cypress Gum Swamp, Mesic Mixed Pine/Hardwood Forest, Pine Plantation (including clearcut), and maintained/disturbed habitat. These are considered relatively abundant and common habitats along the coastal plain region of South Carolina. The conversion of these habitats would be isolated and located immediately adjacent to transportation facilities.

5. FARMLANDS

Prime Farmlands	Yes	No
Are Prime Farmlands present?	X	
Has Form NRCS-CPA-106 been completed?	X	

Remarks:

The Farmland Protection Policy Act of 1981 (FPPA) was enacted by Congress to minimize the unnecessary and irreversible conversion of farmland soils to nonagricultural uses, and to assure, to the extent practicable, that federal, state, and local policies are used to protect farmland soils. Farmland soils can be prime farmland soils, unique farmland soils, or farmland soils of statewide or local importance. Prime farmland soils are defined as soils that consistently produce the greatest yields with minimal inputs of energy and economic resources, and farming these soils involves the least environmental impact.

The Natural Resources Conservation Service (NRCS) Web Soil Survey and with GIS data layers were evaluated to identify prime farmland soils within the PSA.⁹ A total of approximately 164 acres of prime farmland was identified in the PSA, which included areas within the existing roadway footprint. The project is largely rural and located beyond the immediate limits of a municipality and is not considered an urban place or committed for urban land uses. Therefore, a NRCS *Farmland Conversion Impact Rating for Corridor Type Projects* (NRCS-CPA-106) was completed for the project and is included in Appendix F. The

⁹ <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>, last accessed July 19, 2019.

PSA includes approximately 545 acres of total area and 9.8 acres would be directly converted to transportation uses. The *Corridor Assessment Criteria* analysis resulted in a score of 56, and the relative value of farmland is 100 for a total score of 156 for the project. This score is less than the threshold score of 160; and therefore, not considered a priority for protection nor are alternative sites or additional studies required under the FPPA.

6. THREATENED AND ENDANGERED SPECIES

Threatened and Endangered Species	Present? (Yes/No)	Impacts? (Yes/No)
Within the known range of any federally protected species?	Yes	No
Critical habitat within the PSA?	No	No
Federally protected species found in the PSA?	No	No

Remarks:

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, the proposed project was evaluated for the potential presence of federally threatened or endangered species in the PSA. The USFWS database was evaluated and field surveys were conducted for federally protected species in the PSA. Initial field studies were conducted in September 2018, and protected species listed in Berkeley and Dorchester Counties were evaluated. Since the NRTM was completed, USFWS published new county species lists. Those lists were reviewed, and no changes were made to the Berkeley or Dorchester County species lists. A current review of the USFWS database (List of At-Risk, Candidate, Endangered and Threatened Species, updated August 15, 2019) identifies ten federally threatened or endangered species known to occur or to have formerly occurred in Berkeley and Dorchester Counties. Table 12 lists these species and their associated protection status, which is consistent with the listings utilized for the field investigations. The August 2019 USFWS database also includes 14 at-risk species (ARS), a candidate species, and the bald eagle (*Haliaeetus leucocephalus*). ARS are species that USFWS has petitioned to list and may become listed in the future, but no federal protections currently exist. Candidate species are taxons under consideration for which sufficient information is available regarding biological vulnerability and threat(s) to support listing, but higher priority listing activities preclude development of proposals to list the species. ARS and candidate species do not receive legal protection from the ESA and require no Section 7 consultation; therefore, surveys for these species were not conducted. ARS and candidate species for Berkeley and Dorchester Counties are included in Table 12 for informational purposes only. The bald eagle is no longer protected under the ESA but is afforded protection through the Bald and Golden Eagle Protection Act (BGEPA) of 1940.

Table 12. Protected Species Listed for Berkeley and Dorchester Counties

Protected Species		Protection Status
Common Name	Scientific Name	
American chaffseed	<i>Schwalbea americana</i>	E
American wood stork	<i>Mycteria americana</i>	T
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	E
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
Bog asphodel	<i>Narthecium americanum</i>	ARS
Boykin's lobelia	<i>Lobelia boykinii</i>	ARS
Canby's dropwort	<i>Oxypolis canbyi</i>	E
Carolina-birds-in-a-nest	<i>Macbridea caroliniana</i>	ARS
Ciliate-leaf tickseed	<i>Coreopsis integrifolia</i>	ARS
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	ARS
Frosted elfin	<i>Callophrys irus</i>	ARS
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T, CH*
Gopher frog	<i>Lithobates capito</i>	ARS
Gopher tortoise	<i>Gopherus polyphemus</i>	C
Monarch butterfly	<i>Danaus plexippus</i>	ARS
Northern long eared bat	<i>Myotis septentrionalis</i>	T
Pondberry	<i>Lindera melissifolia</i>	E
Raven's seedbox	<i>Ludwigia ravenii</i>	ARS
Red cockaded woodpecker	<i>Picoides borealis</i>	E
Saltmarsh sparrow	<i>Ammodramus caudacuta</i>	ARS
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E
Southern hognose snake	<i>Heterodon simus</i>	ARS
Spotted turtle	<i>Clemmys guttata</i>	ARS
Sun-facing coneflower	<i>Rudbeckia heliopsisidis</i>	ARS
Tri colored bat	<i>Perimyotis subflavus</i>	ARS
West Indian manatee	<i>Trichechus manatus</i>	T

Notes: E=endangered; T=threatened; C=Candidate; CH=critical habitat

*There is no potential habitat for the frosted flatwood salamander within the PSA due to the lack of wetlands associated with longleaf pine savannahs (see NRTM)

Based on literature and field reviews, the proposed project would have a biological conclusion of 'no effect' on federally protected species. These findings are further detailed and documented in the NRTM in Appendix D.

7. SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Section 106 Consultation and Tribal Consultation	Yes	No
Are any NRHP-eligible or NRHP-listed resources present?	X	
Are any National Historic Landmarks present?		X
Has SCDOT reviewed the project and determined/recommended a finding?	X	
Has SHPO Consultation (if applicable) been completed?	X	
Has Tribal Consultation been completed?	X	
Recommended finding: No Effect	X	

Notes: NRHP: National Register of Historic Places; SHPO: State Historic Preservation Office

Remarks:

A Phase I Cultural Resources Survey of the project corridor was completed between June 12 and July 10, 2018, with additional investigations of the expanded PSA conducted in May 2019. This purpose of the study was to identify significant archaeological and historic architectural resources in its area of potential effect (APE) and to assist SCDOT in meeting its obligations under Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR §800).

Archaeological investigations for the project revisited two previously recorded archaeological sites (38DR495 and 38DR496) and one isolated find. Site 38DR495 is an archaeological site associated with a previously recorded historic resource, Cypress Methodist Campground, which is listed on the National Register of Historic Places (NRHP). The eligibility of 38DR495 under Criterion D is currently considered unassessed. Site 38DR496, a historic scatter, is recommended as not eligible for the NRHP.

The historic architectural survey identified 27 previously unrecorded historic resources and reassessed 15 previously identified historic resources. None of the newly surveyed resources are recommended eligible for the NRHP. One previously identified resource, the Cypress Methodist Campground, is listed on the NRHP. No other newly or previously surveyed resources are recommended eligible for the NRHP. As such, the proposed project would not adversely impact any known cultural resources.

A detailed review of the resources identified within the PSA can be found in the *Phase I Cultural Resource Survey* with State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO) concurrences in Appendix G. Associated correspondence with SHPO and THPOs is also included in Appendix G. Initial correspondence was submitted on October 25, 2018 to establish eligibility determinations. A concurrence email was received from the Muscogee (Creek) Nation on December 2, 2018 and from Cherokee Nation on May 3, 2019. Subsequent correspondence was submitted on May 13, 2019; however, due to a change in the PSA the May 2018 materials were redacted. The Cherokee Nation provided concurrence on June 12, 2019. Follow-up correspondence was submitted on July 22, 2019 for the revised PSA. Subsequent correspondence to address comments and changes to the cultural resources

report was resubmitted on September 5, 2019 for final concurrence and SHPO concurred on the same date (Appendix G).

8. SECTION 4(F) AND SECTION 6(F)

Section 4(f) and 6(f) Resources	Present? (Yes/No)	Impacts? (Yes/No)
Section 4(f): Publicly owned parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance	No	No
Section 4(f): Historic sites of national, state, or local significance present	Yes	No
Properties protected by Section 6(f) of the Land and Water Conservation Fund Act	No	No
	Yes	No
Would the project qualify for a Section 4(f) exception?		X
Would the project result in a use of a Section 4(f) property?		X
If yes, would project need:		
4(f) <i>de minimis</i> impact?		
4(f) programmatic evaluation?		
4(f) individual evaluation?		
Would the project result in the permanent conversion of a Section 6(f) property to a nonrecreational use?	N/A	N/A

Remarks:

As noted above, the proposed project would not impact/use any publicly owned parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance. Therefore, no Section 4(f) resources will be affected by the proposed project.

No properties protected by Section 6(f) of the Land and Water Conservation Fund Act are within the PSA. Therefore, no Section 6(f) resources will be affected by the proposed project.

9. AIR QUALITY

Air Quality	Nonattainment	Maintenance	Attainment
What is the designation for this project area?			
CO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PM _{2.5}	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Yes	No	
Is the project exempt from conformity analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If NO:			

	Is the project on the current TIP/STIP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Is the project categorically excluded from analysis of potential MSAT effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Does the project have potential for MSATs effects requiring a qualitative or quantitative analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Notes: MSAT: Mobile Source Air Toxics

Remarks:

National Ambient Air Quality Standards:

The National Ambient Air Quality Standards (NAAQS) were established by USEPA under the Clean Air Act (CAA), as amended, to protect public health, the environment, and the quality of life from the detrimental effects of air pollution. The NAAQS have been set for the following criteria pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂). Mobile sources from on-road vehicles contribute to four of the six criteria pollutants: CO, NO₂, O₃, and PM. Temporary air quality impacts could occur during construction and would be in the form of emissions from construction equipment, dust from construction embankment, and clearing of areas prior to paving or revegetation. During construction, slowed traffic through construction areas may produce additional emissions. Emissions from construction equipment are anticipated to have a minimal impact on air quality due to the amount of time it would take to construct the proposed roadway improvements.

In accordance with the CAA, all portions of South Carolina are designated as in attainment, nonattainment, or unclassifiable for meeting NAAQS standards. An area with air quality that is better than NAAQS standards is considered to be in attainment, while an area with air quality that is worse than NAAQS standards is considered to be in nonattainment. If there is a lack of information for determining an attainment status, the area is designated as unclassifiable. Each state determines which areas within its boundaries are designated to be in attainment or nonattainment and must develop a State Implementation Plan to ensure that areas achieve and/or maintain attainment status for NAAQS standards. A review of current air quality data determined that the U.S. Environmental Protection Agency (EPA) has designated Berkeley County 'in attainment' for the criteria pollutants, and in compliance with the NAAQS. Additionally, a review of current air quality data determined that EPA has designated Dorchester County 'in attainment' for the criteria pollutants, and in compliance with the NAAQS.¹⁰ In addition to the criteria air pollutants for which there NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, nonroad mobile sources (i.e., airplanes), area sources (i.e., dry cleaners) and stationary sources (i.e., factories or refineries).

¹⁰ https://www3.epa.gov/airquality/greenbook/anayo_sc.html

Mobile Source Air Toxics:

A qualitative analysis provides a basis for identifying and comparing the potential differences among mobile source air toxics (MSAT) emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/methodology/msatemissions.pdf

For each alternative in this EA, the amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The estimated VMT under the Build Alternative is the same as that of the No-Build Alternative because the project is an interstate and the vehicles using it would be the same even if the roadway is not widened; therefore, it is expected there would be no appreciable difference in overall MSAT emissions. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050.¹¹ Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain build alternatives than the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built along I-26 between MM 187 and MM 194. However, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause regionwide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced

¹¹ *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, Federal Highway Administration, October 18, 2016

into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects” (EPA, <https://www.epa.gov/iris>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix F of FHWA’s *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts—each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure->

[and-health-effects](#)). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (EPA IRIS database, Diesel Engine Exhaust, Section II.C. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal).” There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable ([https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)).

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decisionmakers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

The complete MSAT guidance and language is included in Appendix H.

10. NOISE

Noise	Yes	No
Does the project require a noise analysis in accordance with FHWA’s regulations and the SCDOT Traffic Noise Policy?	X	

Remarks:

A traffic noise impact assessment, in compliance with 23 CFR §772 and the SCDOT *Traffic Noise Abatement Policy* (2014, Policy), was completed to determine existing and future noise levels associated with the No-Build Alternative and each of the build alternatives. Analysis methodology was based on the FHWA Traffic Noise Model (TNM 2.5), proposed project traffic data and design files, receivers modeled in areas of frequent human use, ambient noise field measurements, and TNM 2.5 model validation in accordance with the requirements in 23 CFR §772.11(d)(2). Overall, the no-build and build conditions resulted in similar results with 14 to 15 receivers impacted, based on the specific alternative scenario. As a result, mitigation analysis (i.e. Noise Barrier Analysis) was warranted according to the Policy. The barrier analyses determined that no abatement measures are warranted based on the feasible and reasonable criteria in accordance with the Policy. The detailed findings associated with the noise analyses are documented in the *Noise Impact Assessment: I-26 Widening MM 187-194* included as Appendix I.

11. HAZARDOUS MATERIALS AND WASTE SITES

Hazardous Materials and Waste Sites	Yes	No
Are there any known hazardous materials or waste sites within the project corridor?	X	

Remarks:

A Phase 1 Environmental Site Assessment (ESA) was conducted using the *American Society for Testing and Materials (ASTM) E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The purpose of the Phase I ESA is to identify, pursuant to ASTM E 1527-13, recognized environmental conditions (RECs) in connection with the PSA. The PSA includes Shell Food Mart, a current operating gas station located at 1088 Old Gilliard Road. The Shell Food Mart is listed as an underground storage tank (UST) facility in the Environmental Risk Information Services (ERIS) database report and is considered a REC. However, the proposed project is not anticipated to impact or require new ROW from this facility, therefore, no additional sampling is needed. The detailed findings regarding hazardous materials are documented in the *Phase I Environmental Site Assessment: I-26 Widening Between MP187-MP193-Phase1* included as Appendix J.

12. COMMUNITY IMPACTS

Community Impacts	Yes	No
Does the project result in substantial impacts to community cohesion?		X
Does the project result in substantial impacts to local/regional development patterns in the area?		X

Community Impacts	Yes	No
Does the project result in substantial impacts to the local tax base or property values?		X
Would the project result in substantial impacts to health and educational facilities, emergency services, religious institutions, community facilities, public transportation services, or pedestrian and bicycle facilities within the project area?		X

Remarks:

The proposed project would require 9.8 acres of new ROW but would not result in any relocations or displacements. In addition, the acquisitions would not fragment, disrupt, or impact the future known planned land uses. The ROW acquisition process would be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 U.S.C. 4601 et seq.). Temporary, adverse impacts may occur during the construction period, including intermittent interruptions in the flow of traffic, noise and dust generated by construction equipment, and travel delays.

The proposed project would result in improved traffic operation, increased capacity, and an improved transportation facility.

13. ENVIRONMENTAL JUSTICE (E.O. 12898)

Environmental Justice (E.O. 12898)	Yes	No
Are any environmental justice (EJ) populations located within the project area?	X	
Would the project result in disproportionately high and adverse impacts to EJ populations?		X

Remarks:

FHWA defines environmental justice (EJ) as “identifying and addressing disproportionately high and adverse effects of [FHWA’s] programs, policies, and activities on minority and low-income populations to achieve an equitable distribution of benefits and burdens. This includes the full and fair participation by all potentially affected communities in the transportation decisionmaking process.”¹² *E.O. 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify community issues of concern during the NEPA planning process, particularly

¹² *Federal Highway Administration Environmental Justice Reference Guide*, April 1, 2015. https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/fhwahep15035..pdf, accessed September 2019.

those issues relating to decisions that may have a disproportionate impact to low-income or minority populations.

Demographic and economic conditions were examined using Census data and *EJSCREEN*—the EPA's Environmental Justice Screening and Mapping Tool. A digitized map generated by *EJSCREEN* was developed for the PSA that included an approximately 500-foot buffer. The data available for this area indicates that 52 percent of residents are minority, which is higher than the state average of 36 percent; 3 percent of residents are low-income, and 0 percent are considered linguistically isolated, which is considerably lower than the state average of 38 percent and 2 percent, respectively. Most of the PSA is contained within Census Tract 201.02, Block Group 2. This block group has a higher percentage of minorities, a lower median household income, and a higher percentage of the population in poverty compared to Dorchester and Berkeley Counties, State, and national averages. These findings are summarized in Table 13.

Table 13. Demographic Data

Category	Study Area*	CT 207.10 BG 1	CT 207.10 BG 2	CT 201.02 BG 2	CT 104 BG 1	Dorchester County	Berkeley County	South Carolina	U.S.
Population	141	1,892	4,341	1,564	2,217	136,555	177,843	4,625,364	308,745,538
Percent White	48.0	66.1	71.5	50.5	40.6	67.8	68.8	66.2	74.8
Percent Minority	52.0	33.9	28.5	49.5	59.4	32.2	31.2	33.8	25.2
Median Household Income	N/A	\$32,484	\$70,766	\$35,294	\$44,740	\$56,345	\$54,484	\$46,898	\$55,322
Percent in Poverty	N/A	6.0	7.5	22.8	13.3	12.1	13.2	17.2	15.1

*Approximate, based on EJ tool

Sources: U.S. Census, EPA's Environmental Justice Screening and Mapping Tool (EJScreen)

Additional mapping, literature review, and field reviews were conducted to identify specific EJ communities and areas that would potentially be negatively affected by the proposed project. The Pringletown community located along Old Gillard Road (SC 27), just northeast of the PSA was identified as a largely minority community. The remaining PSA and the immediate vicinity are largely undeveloped forested land with sparse residential development.

The proposed project is not expected to result in “disproportionately high and adverse effects” on low-income population or minority populations. The project would not directly impact the Pringletown community. The project would require 9.8 acres of ROW from 14 parcels; however, these acquisitions are not considered to be “disproportionately high and adverse effects” on the Pringletown community.

14. INDIRECT AND CUMULATIVE IMPACTS

It is FHWA's and other federal agencies' responsibility to consider direct, indirect, and cumulative impacts in the NEPA process as established in the *Council on Environmental Quality (CEQ) Regulations for implementing the Procedural Provisions of NEPA*. The CEQ regulations define the impacts and effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process. The CEQ regulations note three impact categories—direct, indirect, and cumulative. According to FHWA guidance, the determination or estimation of reasonably foreseeable actions is essential to both indirect and cumulative impact analysis.

Indirect impacts, or effects, are reasonably foreseeable impacts to the environment that are caused by an action, but occur later in time, or are farther removed in distance from the PSA. Indirect impacts are generally associated with induced growth, and impacts that result from changes in the existing land use patterns, population density, or growth rate of an area. Transportation projects often reduce travel time, making land in and around the project area more attractive to developers and ultimately influencing local development trends. Subsequently, these land use changes could lead to environmental impacts such as degradation of natural habitat and/or water quality issues.

Cumulative impacts, or effects, are the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. According to FHWA, cumulative impact analysis is resource-specific and generally performed for the environmental resources directly impacted by a federal action under study, such as a transportation project. Cumulative impacts would occur when impacts resulting from the project are added to historical changes in land use as well as reasonably foreseeable future actions.

A qualitative analysis was conducted to evaluate the potential indirect and cumulative impacts (ICI) associated with the proposed improvements along I-26 and exit 187. The ICI analysis was conducted using available guidance from federal and state regulatory agencies and focused on the actions of the project along with notable resources of concern. The ICI analyses included, but was not limited to the following:

- Field reviews
- Internet research
- Public Involvement information
- Aerial photographs and USGS maps
- Berkeley County Comprehensive Plan
- Dorchester County Comprehensive Plan

a. ICI Study Area Boundaries

Indirect and cumulative impacts are analyzed for resources of concern within particular geographic spatial and temporal boundaries. This allows for the appropriate context to be developed for each resource. The ICI study area boundaries were developed through consideration of the resource to be impacted relative to the project location. The study area associated with the ICI extends beyond the general PSA to include both Pringletown and Ridgeville. This ICI study area contains approximately 52 square miles and includes recent commercial development (the Volvo Manufacturing Facility and associated new interchange, Camp Hall Industrial Campus, and Ridgeville Industrial Campus), and areas projected for mixed use, low-density development and major employment hubs (Figure 16).¹³ The indirect and cumulative impacts were assessed for each notable resource within this defined area.

b. Defining Affected Notable Resources

The identification of affected notable resources took into consideration input received during the agency coordination and public involvement processes, the evaluation of the trends and projected growth along the corridor, and characteristics of the PSA. Information obtained from these sources were used to assess potential impacts to these notable resources based on location, proximity to the project, and relationship to the project.

Land Use

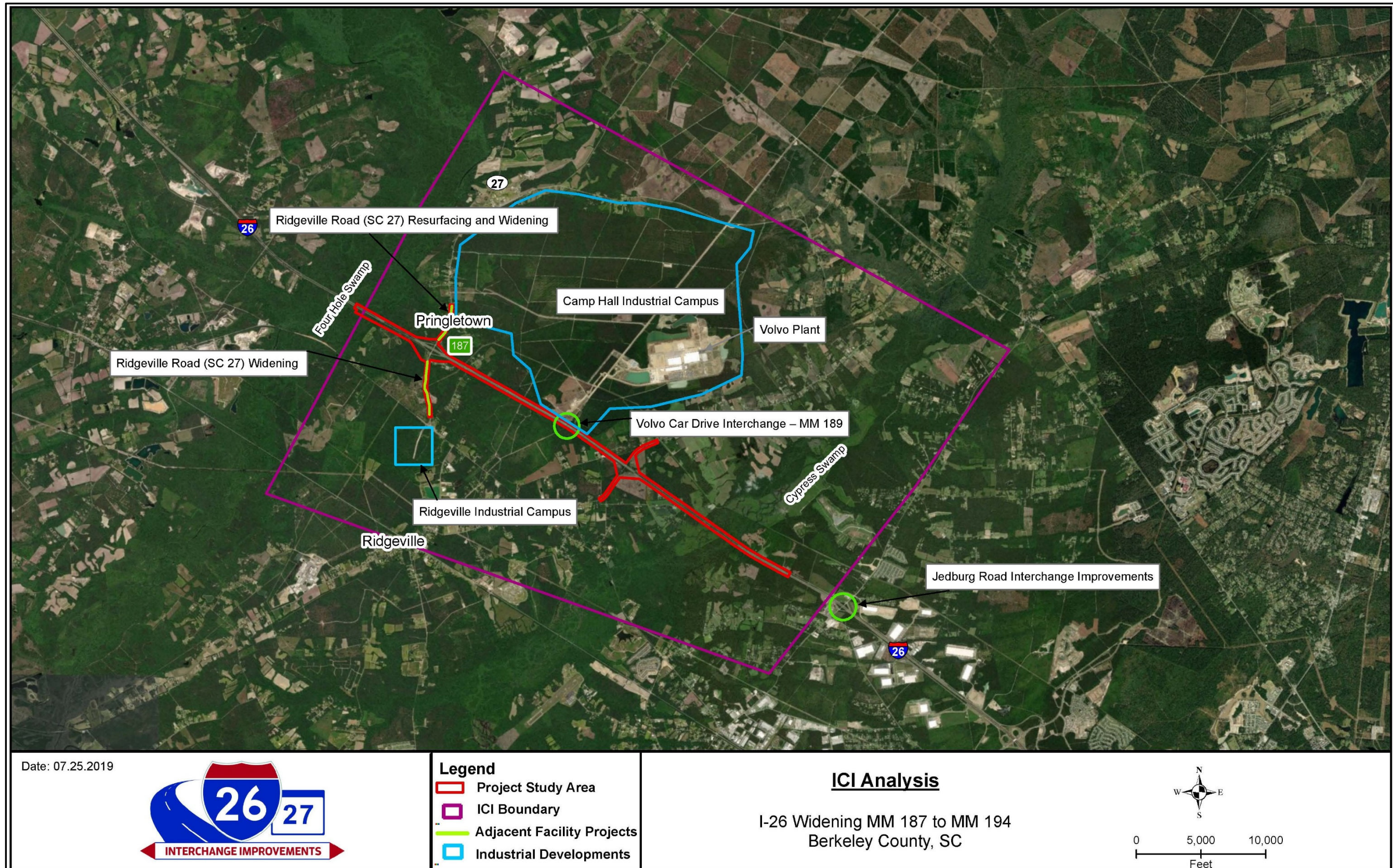
Land use was identified as a notable resource due to its changes over time and relationship to the project. The PSA is located within primarily undeveloped rural areas of Berkeley and Dorchester County. The historical land uses within the ICI study area have consisted of undeveloped forested land, managed timberland, agriculture, and rural residential, with the recent trend toward increased industrial and commercial developments and residential units. The future land use plan states that the area will continue to be zoned for rural development and forested land uses with major industrial and employment hubs centered along the Volvo, Camp Hall, and Ridgeville Industrial Campuses.



¹³

https://www.berkeleycountysc.gov/drupal/sites/default/files/Final_adopted_CompPlan_5_year_review_in_color.pdf, last accessed July 2019.

Figure 16. ICI Analysis



Communities

Two communities—Pringletown and Ridgeville—were identified as notable resources based on their proximity to the project and their dependence on/connection with the associated infrastructure. Pringletown is located just north of exit 187 along SC 27. This is a rural community within Berkeley County consisting of isolated residential developments and sparse commercial establishments including churches and service stations. Ridgeville is a rural municipality in Dorchester County approximately 3 miles south of I-26 exit 187 along SC 27 (Ridgeville Road). Based on the 2010 Census, Ridgeville had a population of 1,965 which has increased to 2,154 based on the 2017 American Community Survey.¹⁴ While the population within Ridgeville town limits has not increased dramatically, growth and development have increased in the surrounding areas due to the continued northward growth of the greater Summerville area.

Aquatic Resources

The project PSA and ICI study area include various aquatic resources including wetlands, streams, other surface water conveyances, and open waters. The ICI study area spans across sections of both the Edisto and Santee River basins, which include the Cypress Swamp and Lower Four Hole Swamp watersheds, as documented in Section III.A. Within the ICI study area, the major aquatic resources of the Santee River Basin include Cypress Swamp and its associated tributaries that include sections of Thomson Creek, Rudd Branch, and Partridge Creek. Cypress Swamp is considered the headwaters of the Ashley River, which eventually drains to Charleston Harbor. Four Hole Swamp includes Timothy Creek, which flows westward before meeting the Edisto River. Both Four Hole and Cypress Swamp have numerous forested wetland areas.

a. Indirect Impact Analysis

Indirect impacts are caused by actions connected to the project that would otherwise not have occurred. These induced actions are those that would not or could not occur except for the implementation of a project.

The proposed project would improve the I-26 mainline by adding travel lanes in each direction within the existing median. The project also includes interchange improvements at exit 187, replacement of dual bridges over Cypress Swamp, and the replacement of the overpass at Cypress Campground Road. The widening of the mainline would remain within the existing ROW, while the interchange and sideroad improvements would result in the acquisition of new ROW and conversion of land use to transportation. The interchange and associated roadway would be controlled access which would preclude any development directly adjacent to the freeway. However, it is still reasonable to expect the improvements to the mainline and exit 187 may induce development that would result in changes in land uses, nearby communities, and related effects on aquatic resources.

¹⁴ https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml, last accessed July 2019.

Land Use

The ICI study area is currently comprised of rural residential, focused industrial and commercial development areas, and underdeveloped land use areas. Indirect impacts from transportation projects are commonly related to changes in travel patterns and access that lead to changes in land use. The actions of the proposed project would improve capacity and operational efficiency for both I-26 and the exit 187 interchange, which could make the area more desirable for both residential and industrial developments. Any induced development along the project corridor could result in the conversion of forestland, altering the existing landscape. However, the proposed improvements would not modify travel patterns or include additional access to I-26. As such, the project is not expected to induce growth beyond the planned developments, nor would the project alter future planned land uses. Any development along the corridor would be controlled by the local planning entities, including Berkeley and Dorchester Counties.

Communities

The ICI study area includes two primary communities, Ridgeville and Pringletown. The proposed improvements would improve local mobility by improving the existing transportation network. The improvements would not modify existing access points, travel patterns, or other local roadways located within these areas. Any community induced growth would also be dependent on additional factors such as local zoning and planning, market analysis, workforce, and schools.

Aquatic Resources

Potential indirect impacts to aquatic resources would primarily result from the conversion of forested and undeveloped land to uses that would increase impervious surface, thereby increasing runoff and associated pollutant loading in adjacent water bodies. The proposed project would result in the direct conversion of undeveloped land and will increase impervious material associated with the additional travel lanes. However, the project is not anticipated to result in induced growth that would alter the planned future land uses. Construction of any residential and/or commercial developments would require compliance with appropriate state and federal permitting to maintain existing water quality standards and regulate impacts to waters of the U.S. Unavoidable impacts to these resources would require appropriate mitigation to replace the loss/impact and to achieve a “no net loss” of function. In addition, compliance with other federal laws (i.e., Endangered Species Act, National Historic Preservation Act), would be completed as part of the Section 404 permitting process. Planned and unplanned development would also be required to incorporate appropriate best management practices, which could include, but not be limited to stormwater ponds, treatment structures, containment of construction activities, and vegetation.

b. Cumulative Impacts Analysis

Cumulative impacts result from incremental consequences of an action (the project) when added to other past and reasonably foreseeable future actions (40 CFR §1508.7). The cumulative effects of an action may be undetectable when viewed in the individual context of direct and indirect impacts, but nevertheless

when added to other actions can eventually lead to a measurable environmental change. Cumulative impacts are the net result of both the proposed project and the other improvements planned in, near, and around the project.

The period of time refers to the years within which cumulative impact may occur. The temporal parameters were set by the past year of 1960 and a future year of 2043. The past year was determined by examining key events of influence on transportation and land use. Specifically, the year 1960 was chosen based on the construction year for I-26 and the future year was based on the traffic analysis using the forecasted year 2043.

Land Use

Historically, the project area was primarily by the agricultural and timber industries, which included vast areas of undeveloped and forested land. The paper industry in South Carolina dates to the late 1800's and includes the West Virginia Pulp and Paper Company (i.e. WESTVACO) which opened in Charleston in the 1930s. To supply the mills, pine pulpwood grew as a major industry and included vast land holdings of monocultured pine.¹⁵ Much of the area along the ICI study area was owned and/or managed for pine pulpwood to support paper mill manufacturing, and consisted of large, forested tracts that are evident in historical aerial photographs.

Past land uses also include sparse, rural residential developments, like the communities of Ridgeville and Pringletown. The construction of I-26 in the late 1950s facilitated the conversion of land uses to transportation. I-26 improved access and mobility in the area which resulted forested land being cleared for residential and commercial development. Land use in the project area remained relatively unchanged into the early 2000s. Even though most existing land use is similar to the historical land uses in the area, population growth in the Charleston-Berkeley-Dorchester TriCounty area has led to an increase in industrial development.

Construction of the Volvo Manufacturing Facility, the Camp Hall Industrial Campus, and the expansion of the South Carolina State Ports Authority at the Ridgeville Industrial Campus is driving residential and commercial expansion throughout the project corridor. Despite the increase in development within the ICI study area, the area is anticipated to remain in conformity with future land use plans.

Communities

Historically both Pringletown and Ridgeville communities have been rural and sparsely developed. Ridgeville has become more developed due to urban sprawl from the Charleston and Summerville metropolitan area. Population within the Ridgeville town limits has remained relatively consistent over the last 30 years with an estimated population of 2,154 people.

¹⁵ <https://www.state.sc.us/forest/scindust.htm>, last accessed July 2019.

Pringletown has also remained largely rural with minimal growth. The proposed project, coupled with other transportation improvements within the area, could facilitate additional growth in these areas. With the possibility of future development, potential cumulative impacts on both Ridgeville and Pringletown would include increased traffic and noise associated with induced development.

Aquatic Resources

Historically, aquatic resources have been affected as a result of the local timber practices and the original construction of the I-26 corridor. Past impacts of the timber industry included the clearing and conversion of hardwood forests to pine stands, and the channelization and relocation of streams to facilitate silviculture practices. These activities converted wetland areas into uplands to promote pine production. While the hydrological flow patterns of the streams have been altered and affected over time, the bottomland hardwood wetlands in both Cypress Swamp and Lower Four Hole Swamp have remained largely intact.

The construction of I-26 in the late 1950s included roadway fill and the construction of bridges along these waters which affected various aquatic resources by channelization, piping, and wetland conversion. Existing impacts are primarily associated with continued roadway improvements and increased residential and commercial land uses. Current activities associated with roadway maintenance and area development has resulted in the destruction of riparian habitats and led to an increase in impervious surface area. Increased runoff has a direct impact on area water quality and aquatic habitats. Reasonably foreseeable future impacts to aquatic resources includes increased development that has the potential to damage adjacent aquatic resources through habitat loss and an increase in pollution.

c. Summary of Indirect and Cumulative Impact Assessment

Overall, the proposed project is anticipated to have minimal indirect and cumulative impacts on land use, communities, and aquatic resources. The project would increase capacity and improve the operational efficiency along I-26 and exit 187. However, these improvements would be along existing facilities and would not alter existing travel patterns or result in new access. Therefore, induced development would be minimal, and would be undertaken in compliance with existing and future land use plans.

The cumulative impacts within the PSA include conversion of forested land, increased residential and commercial developments, and the manipulation and loss of aquatic resources. Potential cumulative impacts of the proposed project on these resources would be minimized through project scope, compliance with applicable local, state, and federal regulations, and implementation of general best management practices during construction.



15. PERMITS CHECKLIST

Permits Checklist	Yes	No
Stormwater Permit	X	
Section 401 Water Quality Certification	X	
Dam Safety Permits		X
Coastal Permits/Coastal Zone Consistency	X	
Section 404 Permit	X	
U.S. Coast Guard Permit		X