

3. Existing Conditions and Environmental Consequences

3.13 Construction

Temporary impacts to the human and natural environments would occur during the construction of the proposed Carolina Crossroads I-20/26/126 Corridor Improvement Project (Carolina Crossroads). These impacts would be temporary and intermittent and would come from disturbing the ground and operating construction equipment. Construction could affect both the human environment (e.g., businesses, noise environments, and traffic flow) and the natural environment (e.g., wetlands and streams). Most construction-related impacts would be associated with travel delays on the interstate and local streets.

This chapter summarizes the anticipated construction impacts of the proposed Carolina Crossroads project and the mitigation measures that would be applied for those impacts. Since the No-build alternative would not include construction activities, it would not create construction-related impacts. Therefore, the No-build alternative is not included in this chapter. Additionally, since the proposed build alternatives would not be appreciably different in terms of construction impacts, the following discussion of impacts is common to all of the build alternatives.

3.13.1 WHAT TYPES OF CONSTRUCTION ACTIVITIES WOULD OCCUR ON THIS PROPOSED PROJECT?

Major highway projects such as the proposed Carolina Crossroads project typically involves four major phases: final design, pre-construction, construction, and post-construction. The following describes the activities normally associated with each one.

3.13.1.1 Final Design

Final design would follow the approval of the recommended preferred alternative and record of decision (ROD). Traditionally, roadway construction projects are completed by two separate entities – a designer and a contractor – under two separate contracts. For the proposed Carolina Crossroads project, SCDOT would use a project delivery system known as design-build (D/B). Under this system, a project is designed and constructed by a single entity, often referred to the D/B contractor, under a single contract with a single point of responsibility. There are a few benefits to this type of project delivery method, one of which is a shortened schedule afforded by an overlap in the design phase and the construction phase.

The final design submission, which would be developed within a construction contract, would include but not be limited to the following items: final construction plans (i.e., plans developed and approved for construction by licensed professional engineers); erosion and sediment control plans; traffic control plans; traffic signal plans.

3.13.1.2 Pre-Construction Activities

As the name suggests, pre-construction activities occur before construction begins. In addition to planning and environmental studies like this NEPA document, activities that happen in this phase often include developing and executing construction contracts with the contractor(s); community outreach to let the community know what to expect, when to expect it, and how to raise questions or concerns; the acquiring of environmental

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permits or agency approvals; property acquisition, and utility relocation. If the build alternative is selected for the proposed Carolina Crossroads project, these pre-construction activities would begin shortly following the Final Environmental Impact Statement (EIS) and the signing of the ROD.

3.13.1.3 Construction Activities

Once the pre-construction activities have been progressed, construction activities begin. This includes construction of additional lanes on I-20/26/126, as warranted, interchange reconstruction, arterial roadway improvements (e.g., the addition of turn lanes onto entrance ramps), and ancillary things like installing new traffic signals, lighting, drainage basins, or bicycle/pedestrian facilities.

3.13.1.4 Post-Construction Activities

Once the project is constructed, a period of post-construction activities follows. These activities include, but are not limited to, removal of barriers and construction signage, removal of construction equipment, removal of silt fencing, and debris clean-up.

3.13.2 WHAT CONSTRUCTION METHODS WOULD BE USED?

3.13.2.1 Construction Easements

Construction easements may be needed for some properties to construct the selected alternative. These properties are not included in the right-of-way analysis. Easements would be required for properties that are outside the proposed right-of-way (ROW) limits of the selected alternative but either would be affected by the embankment required during roadway construction or would need to have access modified to fit within the proposed design. South Carolina Department of Transportation (SCDOT) would temporarily use these properties during construction and would provide compensation to the landowner for the temporary use. The property would be fully returned to the owner when the use of the property is no longer required, typically when construction is complete. These properties might be temporarily affected, but no long-term impacts are expected.

3.13.2.2 Construction Phasing

Once the Federal Highway Administration (FHWA) issues its ROD for the project, an alternative is selected for implementation. Assuming that the decision is to select one of the build alternatives, it is typical for a project the size of Carolina Crossroads to be implemented through a series of separate contracts for individual sections of the project. However, given that it has been demonstrated that this project can be implemented using committed and available resources, it is anticipated that the proposed project would be released to a single contractor as a single project. Although the selected contractor may choose to phase work, the proposed project would likely be built within a single construction contract (i.e., the entire project is constructed all at once). This would reduce impacts to the traveling public and nearby residences and businesses for a shorter period of time than separating construction into multiple contracts.

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3.13.3 HOW WOULD THE PUBLIC BE NOTIFIED DURING CONSTRUCTION?

A comprehensive public information program would be implemented to inform the public about construction activities and to minimize impacts. Information would include the periods when construction is scheduled to take place, potential impacts to traffic operations, work hours, and alternate routes. Construction signs would be used to notify motorists about work activities and changes in traffic patterns, such as detours. In addition, night and weekend work could be scheduled to shorten traffic impacts during peak hours.

3.13.4 HOW WOULD CONSTRUCTION AFFECT THE ENVIRONMENT AND HOW WOULD IT BE MITIGATED?

3.13.4.1 Transportation and Traffic

Motorist, pedestrians, and bicyclists would be temporarily impacted during construction as traffic detours and some temporary road closures would be required and would change frequently throughout construction. Changes in roadway conditions on the I-20/26/126 corridor, along with the arterial roadways and minor roads, could include rerouting of traffic onto other roads, temporary closure of lanes or sections of roads, and temporary lane shifts. Detours and road closures could temporarily increase vehicle commute times, fuel use, and air pollutant emissions. Construction could also temporarily increase response times for emergency service vehicles. In addition, access to residential and commercial areas could also be temporarily disrupted, resulting in longer commute times and a potential loss of revenue for some businesses.

To mitigate these impacts, the construction contractor would develop a maintenance-of-traffic plan that outlines measures to minimize construction impacts on transportation and traffic. A requirement of this plan would be that access to businesses and residences be maintained, to the extent practicable, and that existing roads be kept open to traffic unless alternate routes are provided.

During construction, SCDOT and/or the construction contractor would coordinate with the local municipalities to post information on temporary sidewalk or bicycle facility closures or detours. Crossings for pedestrians and bicyclists would be restored after construction.

The contractor, through a community outreach program, would let the community know what types of closures to expect (i.e., temporary, long-term), when to expect them, and who to contact, if needed. SCDOT and the contractor would coordinate with emergency service providers such as police, fire protection, and ambulance services before construction to ensure that access for emergency vehicles would be maintained.

3.13.4.2 Land Use, Communities, Businesses, and Utilities

Land Use and Easements: New right-of-way, permanent easements and temporary construction easements would be necessary for the construction of the proposed project. Temporary construction easements would typically be needed to provide the necessary room for construction.

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Communities: Temporary visual impacts along the corridor during construction would include the presence and movement of construction machinery, building materials, construction cranes, and temporary construction fences/screens/traffic control devices. Nighttime construction may occur (subject to contract specifications and regulations), and lights used for nighttime construction could affect residents within close proximity of the construction. Impacts from lights used at night would be minimized by aiming construction lights directly at the work area and/or shielding the lights to avoid disturbing nearby residences.

Businesses: Construction activities could temporarily affect access to businesses in the area of construction. Although SCDOT would require the construction contractor to maintain access to properties to the extent practicable, temporary detours and temporary driveways could limit some access. This could discourage customers from patronizing businesses in construction areas.

Utilities: Utility service, including electrical (overhead and underground), water, sewer, telecommunication, natural gas, and traffic signals and communications could be temporarily disrupted during construction, particularly along frontage roads and at interchange locations. This interruption could affect nearby residents and businesses. Utility service interruptions would be temporary and the public would be notified by the utility company before disruptions occur. The construction contractor would be required to coordinate with all utility providers to minimize utility service interruptions. To minimize schedule conflicts and coordination issues during construction, it is anticipated that many utility relocations would occur prior to the start of major construction activities. Advanced utility relocation would streamline subsequent construction and minimize delays associated with resolving utility conflicts.

3.13.4.3 Air Quality

Construction activities could result in increases in localized air quality emissions. Potential air quality impacts would include increases in fugitive dust, particulates, and gaseous pollutant emissions from mobile and stationary construction equipment. Emissions would be generated from excavation, trucks delivering and hauling construction supplies and debris, on-site construction equipment, and mobile emissions from diverted vehicles due to road closures and vehicles whose speeds are slowed because of increased congestion caused by construction activity. Increases in construction related pollutant emissions from either reasonable alternative would be temporary in nature with exposure to construction dust lasting only the duration of construction. Air quality impacts would be minimized through the following reconstruction control measures:

- Shutting off construction equipment when not in use
- watering areas of exposed soil;
- Covering trucks transporting materials to and from construction sites;
- Routing truck traffic away from residential communities when possible;
- Repaving or replanting exposed areas as soon as possible following construction;
- Prohibiting construction and delivery trucks or other equipment from idling for extended periods of time, such as during unloading or inactivity.

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3.13.4.4 Noise

Noise during construction would be an inconvenience to nearby residents and businesses. Noise source in construction areas would mostly be from engine powered machinery, some of which would operate in a sporadic manner, while others would generate noise at constant levels. During construction noise reduction techniques may be utilized. Refer to Section 3.5 for additional details.

3.13.4.5 Water Quality

During construction, loose soil may wash into receiving waters. This temporary siltation may contain contaminants that could degrade the water quality of the stream and flow downstream to the Saluda and Broad Rivers. Sediments in the water would also increase erosion along stream banks as they are carried downstream, further degrading the biological quality of the stream.

The contractor would avoid and minimize impacts resulting from stormwater runoff through the implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and S.C. Code of Regulations 72-400. The SCDOT has also issued an Engineering Directive Memorandum (Number 23), dated April 10, 2015, regarding Department procedures to be followed in order to ensure compliance with S.C. Code of 72-400, Standards for Stormwater Management and Sediment Reduction. Exposed areas may be stabilized by following the Department's Supplemental Technical Specification for Seeding (SCDOT Designation SC-M-810 (11-08)).

The project does not propose to release sources of fecal coliform into adjacent streams. Additionally, the contractor would identify and avoid all point sources of fecal coliform during construction.

SCDOT best management practices guidelines¹ would be followed during design and construction to minimize the amount of runoff pollution from streams.

Due to the existing water quality impairments and approved total maximum daily loads (TMDLs) within the project watershed, the South Carolina Department of Health and Environmental Control (SCDHEC) may require additional water quality protection and stormwater treatment measures during and after construction. Specific mitigation requirements for impacts to water quality would be established during the Section 404/401 permitting process.

The project contractor is responsible for development of a project specific stormwater pollution prevention plan (SWPPP) and for obtaining a Section 402 National Pollutant Discharge Elimination System (NPDES) permit for the project prior to initiating land disturbing activities.

3.13.4.6 Water Resources

A U.S. Army Corps of Engineers (USACE) Section 404 Individual Permit (IP) and a SCDHEC Section 401 Water Quality Certification (WQC) is anticipated to be required to permit unavoidable impacts to Waters of the U.S.

¹ South Carolina Highway Department Standard Specifications for Highway Construction

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The project contractor is responsible for preparing the USACE IP Application package and Section 401 WQC package. Compensatory mitigation will be required for WOUS.

A State Navigable Waters permit will be required for construction over any navigable waterways. The project contractor will be responsible for obtaining this permit.

Under Section 402 of the Clean Water Act, a NPDES permit, stormwater pollution prevention plan, and permanent best management practices would be required. The project contractor will be responsible for obtaining this permit and developing these plans and practices.

A permit for Construction in State Navigable Waters would also be required from SCDHEC for bridge construction over the Saluda River. The construction contractor will be responsible for obtaining this permit.

Section 10 of the Rivers and Harbors Act requires a permit for any construction activities that may obstruct the navigability, or modify the channel of a navigable water of the U.S. Approval of these activities are administrated by USACE during the Section 404 permitting process. The contractor would be responsible for obtaining the Section 10 permit.

3.13.4.7 Natural Resources

During construction activities, erosion and sediment runoff would be minimized through the implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and S.C. Code of Regulations 72-400. In areas of disturbance where soils have been exposed, soils would also be stabilized per the SCDOT's Supplemental Technical Specification for Seeding.

Potential borrow areas to be used for fill dirt for the project will be field reviewed and assessed for the presence of any jurisdictional features, and best management practices (BMPs) will be applied prior to disturbance to avoid and/or minimize erosion and runoff of sediments.

Impacts to natural habitat communities would be minimized to the extent necessary to construct the project. Construction activities would be conducted within the disturbed footprint of the existing roadway and utility ROW to the maximum extent practicable. To mitigate for natural upland forested habitats lost as a result of the project, the SCDOT would consider planting trees (native species) within the rights-of-way adjacent to new or improved interchanges and roadways outside of required clear safety zones.

Should any endangered or threatened species be observed during construction of the project, construction activities within the area of observance would be ceased immediately and the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) notified as applicable. Should any additional species be listed as federally endangered or threatened prior to the start of project construction, consultations would be conducted with the USFWS, as appropriate.

The 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. Specifically, the construction contractor will notify the Resident Construction Engineer (RCE) at least four (4) weeks prior to the construction, demolition, or

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maintenance of any artificial habitat structures including bridges and box culverts. Subsequently, the RCE will notify the SCDOT Environmental Services Office (ESO) Compliance Division who will coordinate with the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) to conduct inspections for migratory birds. Any migratory birds' nests will be removed by USDA APHIS personnel. If a suspect migratory bird nest is observed after construction, demolition, or maintenance activities have begun, the contractor will cease work and immediately notify the RCE who will notify the ESO Compliance Division. In an effort to prevent birds from nesting after project activities have commenced, the contractor may implement the use of deterrents as approved by the RCE with coordination from the ESO Compliance Division.

3.13.4.8 Cultural Resources

During the construction phase of the project, 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. If any such remains are encountered, the RCE would be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until the SCDOT Archaeologist directs otherwise.

The Saluda Canal would be clearly plotted on all construction plans along with an appropriate buffer. This zone would be clearly marked in the field using orange fencing during construction, and all ground disturbance and construction staging activities would be conducted outside of this buffer in order to avoid all possible impacts to the resource.

3.13.4.9 Section 4(f)

To mitigate the impacts to the Saluda Riverwalk Extension, SCDOT would notify the City of Columbia Parks and Recreation Department at least 48 hours in advance as to when the trail would be temporarily closed. SCDOT would also work closely with the Parks and Recreation Department to communicate the closing to trail users during construction. When construction is complete, the condition of the trail would be equal to existing conditions.

3.13.4.10 Hazardous and Contaminated Materials

Properties containing hazardous materials were identified within the project limits. The site-specific Phase I Environmental Site Assessments (ESA) recommends a Phase II ESA be performed prior to ground disturbance for 27 of the 30 properties due to the presence of recognized environmental conditions. Of those 27 properties, 18 are within the 200-foot buffer of the reasonable alternatives footprints and would be potentially affected by the reasonable alternatives. Based on lack of proximity to the reasonable alternative footprints or lack of RECs, the other nine properties would not require additional investigation.

Construction activities associated with the proposed Carolina Crossroads project would likely encounter lead based paint and asbestos containing materials during demolition of existing bridge structures. Release of these materials would affect both the health and safety of the workers but might pose risks to human health and the environment. Therefore, hazardous materials should be managed and disposed of property to an appropriate

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permitted facility to minimize impacts during the cleanup process. Activities may be monitored by professional that is certified in the removal, handling and disposed of LBP and/or ACM.

Prior to construction, the project contractor will perform Phase II ESAs on the properties identified within the footprint, including the subject properties, and/or on the adjoining properties or the ROW. Ultimately, the Phase II ESAs would include environmental sample collection (e.g. soil, soil gas, and groundwater), specifically, in areas where a potential for disturbance of soil and/or groundwater exists. Asbestos Containing Material and/or Lead Based Paint testing would be assessed separately as it outside of ASTM guidelines and only if deemed necessary on a site-specific account.

A hazardous waste management plan will be prepared for the handling of hazardous materials during construction, and an on-site health and safety plan will be developed for construction activities to protect human health (i.e. workers, residents, recreation and trespassers) and the environment within proximate to the site. The hazardous waste management plan will also state that disposal of waste materials will be disposed of in approved landfills. Should previously unknown contamination be discovered as the project moves forward, the contamination (contaminated soil and/or groundwater within the right-of-way) will be evaluated and addressed in accordance with regulatory requirements prior to the initiation of construction activities at the site. If soils that appear to be contaminated are encountered during construction, SCDHEC will be informed and measures will be employed to avoid, reduce, or otherwise mitigate environmental impacts associated with the proposed project. Tanks and other hazardous materials will be tested and removed and/or treated in accordance with USEPA and SCDHEC requirements. Cost of necessary remedial actions will be considered during the right-of-way appraisal and acquisition process.

A spill prevention, control, and countermeasures (SPCC) plan will be prepared in accordance with 40 CFR 112, for the handling of oils or oil-based products during construction to prevent a discharge of oil into navigable waters.