U.S. Department of Transportation
Federal Highway Administration

South Carolina

1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201
803-765-5411
803-253-3989

May 3, 2022

In Reply Refer To:
HDA-SC

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

Dear Mr. Long:

The South Carolina Department of Transportation (SCDOT) submitted a Non-Programmatic Categorical Exclusion (NPCE) for the Proposed S-216-17/Blossom Street (US 21 Connector) Bridge Replacement over Southern and SCL Railroad in Richland County (Federal Project Number P030115) for FHWA's approval. The FHWA finds that the project will not induce significant impacts and will not affect threatened or endangered species or cause adverse impacts to historic resources. Therefore, a CE determination is appropriate for this project. Enclosed is the approved NPCE for the project.

Please ensure that the project commitments made during the NEPA process are included in the project construction proposal and ultimately carried out. 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

(for) Emily O. Lawton
Division Administrator

Enclosure

ec: Mr. Ed Frierson, SCDOT RPG 1 NEPA Coordinator
Mr. David Kelly, SCDOT NEPA Manager

NON-PROGRAMMATIC CATEGORICAL EXCLUSION

Proposed S-216-17 Blossom Street (US 21 Connector) Bridge Replacement Over Southern and SCL Railroad, Richland County, South Carolina

Date: 04/26/2022

NEPA ENVIRONMENTAL COMMITMENTS FORM

Project ID : P030115 | County : Richland | District : District 1 | Doc Type: Non-PCE | Total # of Commitments: 8

Project Name: Proposed S-216-17 Blossom Street (US 21 Connector) Bridge Replacement Over Southern and SCL Railroad

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: Ed Frierson **PHONE #:** 803-737-1861

ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Non-Standard Commitment | NEPA Doc Ref: Page: 8/14 Paragraph: 4 | Responsibility: CONTRACTOR

Building damage and Vibration Monitoring Plan

Because the Palmetto Compress and Warehouse Company (Resource 0076) is NRHP-listed and lies within the area of direct effect, it could be adversely affected by the bridge replacement project. Per the conditions of the Memorandum of Agreement in Appendix C, the contractor will employ minimization measures in bridge demolition and construction to reduce auditory and vibration effects to the historic resource. The contractor will conduct vibration monitoring during bridge demolition and construction to avoid physical damage to or advanced deterioration of the historic resource. A vibration monitoring plan with pre- and post-construction surveys of the historic resource will be applied to monitor sites during construction. The vibration monitoring plan and a protection plan will be shared with all MOA signatories and concurring parties for review and comment prior to implementation.

☒ Special Provision

USTs/Hazardous Materials | NEPA Doc Ref: Page: 13/14 Paragraph: 2 | Responsibility: CONTRACTOR

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.

☐ Special Provision

Non-Standard Commitment | NEPA Doc Ref: Page: 13/14 Paragraph: 2 | Responsibility: CONTRACTOR

Phase II ESAs

Nineteen (19) recognized environmental conditions/historical recognized environmental conditions (REC/HREC) were identified within and adjacent to the Project Areas, including automotive or petroleum operations, industrial sites (i.e., Kline Iron & Steel), utility providers, (i.e., gas plant), UST sites, VCP sites, etc. Prior to construction, the project contractor will perform Phase II ESAs on the properties identified in the Phase I ESA report in Appendix F. Ultimately, the Phase II ESAs will 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.

☒ Special Provision

Project ID : P030115	SCDOT NEPA ENVIRONMENTAL COMMITMENTS FORM	SCDOT ENVIRONMENTAL SERVICES

ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Non-Standard Commitment | NEPA Doc Ref: Page: 6/14 Paragraph: 3 | Responsibility: SCDOT

Nationwide Permit

Impacts to jurisdictional waters will be permitted under a Department of the Army Section 404 permit from the U.S. Army Corps of Engineers (USACE). Based on preliminary design, it is anticipated that the proposed project would be permitted under the USACE's Nationwide 14 permit. The required mitigation for this project will be determined through consultation with the USACE and other resource agencies.

☐ Special Provision

Cultural Resources | NEPA Doc Ref: Page: 8/14 Paragraph: 5 | Responsibility: CONTRACTOR

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.

☐ Special Provision

Water Quality | NEPA Doc Ref: Page: 7/14 Paragraph: 1 | Responsibility: CONTRACTOR

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.

☐ Special Provision

Project ID : P030115	SCDOT NEPA ENVIRONMENTAL COMMITMENTS FORM	SCDOT ENVIRONMENTAL SERVICES

ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Migratory Bird Treaty Act | NEPA Doc Ref: Page: 10/14 Paragraph: 2 | Responsibility: CONTRACTOR

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.

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.

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.

☐ Special Provision

Non-Standard Commitment | NEPA Doc Ref: Page: 9/14 Paragraph: 2 | Responsibility: SCDOT

Innovista Trail

It is anticipated the section of trail within SCDOT right-of-way will be closed during certain stages of construction but detours for pedestrians and bikes are planned via Pulaski, Huger, and Blossom Streets. These detour routes will be posted to the project website, shared on social media and communicated directly to University of South Carolina and adjacent multi-family housing developments (Apartments at Palmetto Compress, Greene Crossing Annex, Park Place and Greene Crossing).

☒ Special Provision

NEPA Doc Ref: Page: XX Paragraph: XX | Responsibility:

☐ Special Provision

NON-PROGRAMMATIC CATEGORICAL EXCLUSION

Project No. P030115

County: Richland
Date: April 2022

To: Federal Highway Administration

From: Ed Frierson, RPG 3 NEPA Coordinator, SCDOT

Project: Proposed S-216-17 Blossom Street (US 21 Connector) Bridge Replacement Over Southern and SCL Railroad

Project Description: The South Carolina Department of Transportation (SCDOT) proposes to replace the Blossom Street (US 21 Connector) Bridge over Norfolk Southern and CSX Transportation Railroads in Richland County, SC (Figure 1). Blossom Street is a four-lane east/west route that provides direct access from Columbia to Cayce and West Columbia. The existing facility includes a 687-foot long bridge with a four-lane roadway, 12-foot travel lanes, a 3-foot flush median, and 1-foot outside shoulders. Existing right-of-way along the facility is 50 feet. The tight confines of the project area and heavy traffic crossing the bridge will necessitate a balance between pedestrian accommodations on and under the bridge, and maintenance of traffic during construction. The bridge is adjacent to or in close proximity to three apartment complexes: Palmetto Compress to the north, Park Place and Greene Crossing Annex to the south. Additionally, the bridge is located adjacent to the University of South Carolina Greek Village.

There is an existing at-grade roadway adjacent to and under the bridge and its approach on the west side of the railroads referred to at the Loop Road. There are also alleys adjacent to the bridge and its approach on the east side of the railroads. Loop Road and alleys include curb and gutter and sidewalks and are within the existing 50-foot right-of-way. The Loop Road provides connections to Pulaski Street on the north and south side of the bridge approach and also provides ingress/egress to the Palmetto Compress apartments on the parcel to the north of the bridge as well as Greene Crossing Annex on the parcel to the south. The Loop Road is one way and includes metered City of Columbia managed parking under the bridge.

The scope of the project includes replacing the existing 687’ x 58’ bridge over the Norfolk Southern and CSX Transportation Railroads with a new prestressed concrete bridge. The proposed project would include a new four-lane bridge that would include four 12-foot travel lanes, a 4-foot raised center median, curb and gutter and sidewalks. It is anticipated that the new bridge will be located essentially on the existing alignment due to existing constraints. The Loop Road and alleys would be closed and access to the Greene Crossing Annex would be via a new Pulaski Street Extension that connects to Wheat Street. Shared-use paths would also be constructed on the western bridge approach in the vicinity of the Loop Road to accommodate pedestrians and bicyclists. Providing bicycle and

pedestrian access is critical for local and regional bicycle connectivity due to the existing terminus of the Innovista Trail under the bridge.

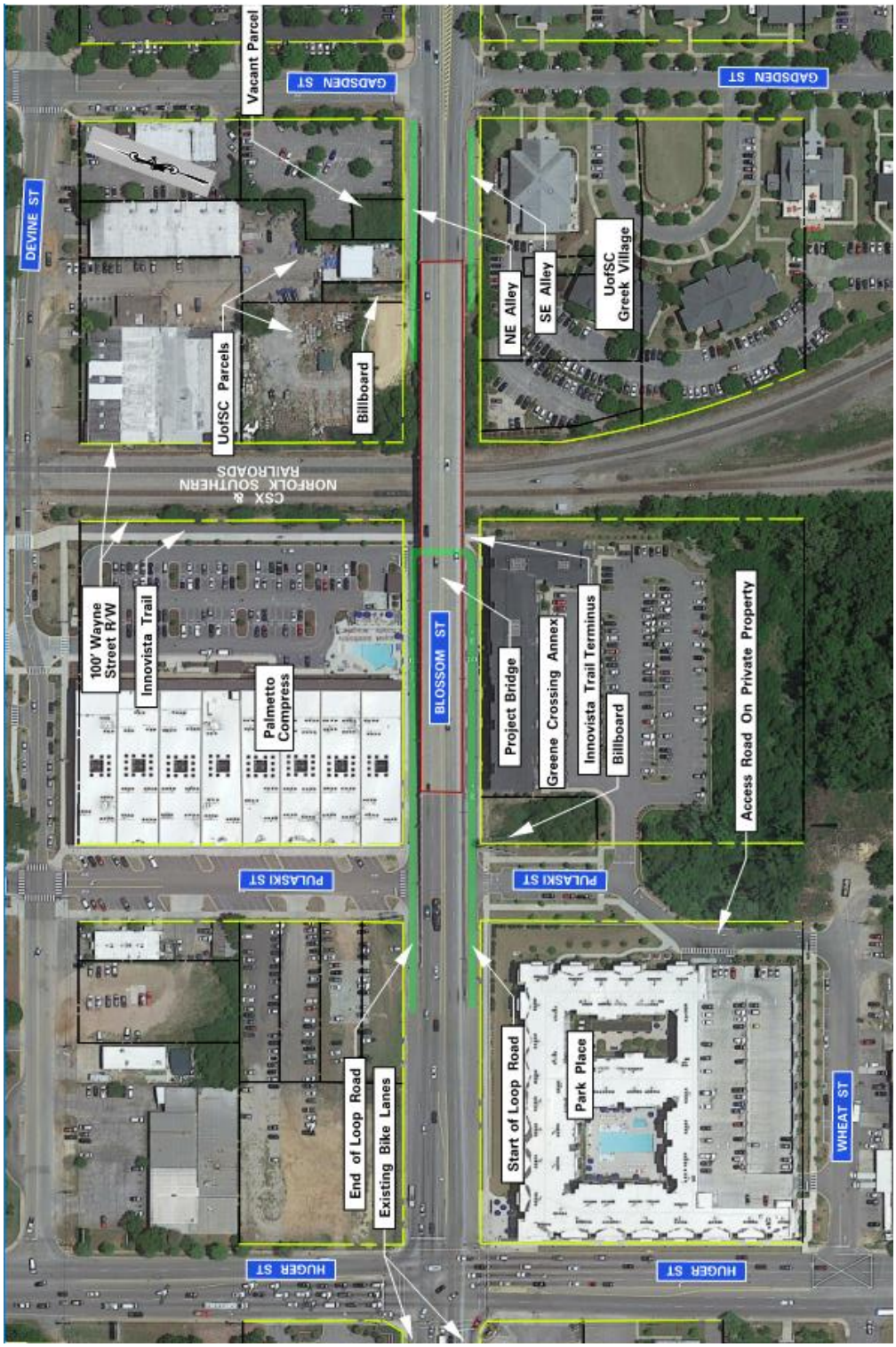


Figure 1. Bridge Location Map

Additionally, several changes to intersections are necessary both for traffic needs during the closure of the Blossom Street Bridge, as well as after the construction of the bridge (Figure 2). These include:

- The Gervais Street at Huger Street intersection improvements will add a southbound right turn lane and restripe the southbound lane to the north and south of the intersection to allow for dual left turn lanes onto Gervais Street. Additional right-of-way will be required along the west side of the southbound Huger Street approach. Work will include new pavement, utility impacts, new right-of-way and drainage relocations/impacts. This improvement is proposed to aid traffic flow during the full closure and detour of Blossom Street from Huger Street to Gadsden Street for the bridge replacement. The improvement is also called for in the existing conditions so will be permanent.
- The Assembly Street at Whaley Street southbound approach will have a right turn lane added as a temporary improvement. Some additional right-of-way may be required in the northwest corner of the intersection and there will be some utility impacts. Drainage might be impacted depending on the existing conditions. This improvement is proposed to aid traffic flow during the full closure and detour of Blossom Street from Huger Street to Gadsden Street for the bridge replacement. The improvement is NOT warranted with the existing conditions so will only be temporary and implemented during the approximately six month-long bridge closure.
- Pulaski Street Extension and potential Wheat Street at Huger Street signal. This work will consist of extending Pulaski Street south to intersect with Wheat Street in the current City of Columbia right-of-way as mitigation for access that will be removed from the Blossom Street Loop Road. A permanent new signal may be warranted with the diversion of traffic to the Huger Street at Wheat Street intersection. The Huger Street and Wheat Street intersection is approximately 0.1 miles south of the Huger Street and Blossom Street intersection.
- A new drainage line will be installed from the Blossom Street at Huger Street intersection west to the Congaree River along the south side of Blossom Street. This improvement is added due to upstream impacts from the bridge project and existing downstream conditions that need improvement. This work will require some new right-of-way around the outfall and will have utility impacts.

Purpose and Need: The purpose of the project is to address the structural deficiencies of the existing bridge over Norfolk Southern and CSX Transportation Railroads to meet current standards. The project limits along Blossom Street extend from Huger Street to approximately 100 feet east of Gadsden Street for a distance of 0.32 miles. In addition to the roadway work on the bridge approaches along Blossom Street, there will be approximately 1,200’ of roadway work on Huger Street at the intersection with Gervais Street and approximately 220’ of roadway work on Assembly Street at the Whaley Street intersection. Additional drainage work on Blossom Street will extend from Huger Street to the Congaree River to provide a new trunk line and outfall for the project system. Pulaski Street south of Blossom Street will also be extended to tie-in with the existing Wheat Street intersection. The existing four-lane bridge was constructed in 1953, rehabilitated in 1987, and has structural deficiencies.[1] Traffic count data indicates that the 2019 average daily traffic (ADT) in the project area was 28,600 vehicles per day (vpd) and is expected to increase to 40,500 vpd by 2045.

[1] SCDOT, The Office of Bridge Maintenance, *National Bridge Inventory: Structure Inventory and Appraisal Report*, February 16, 2022.

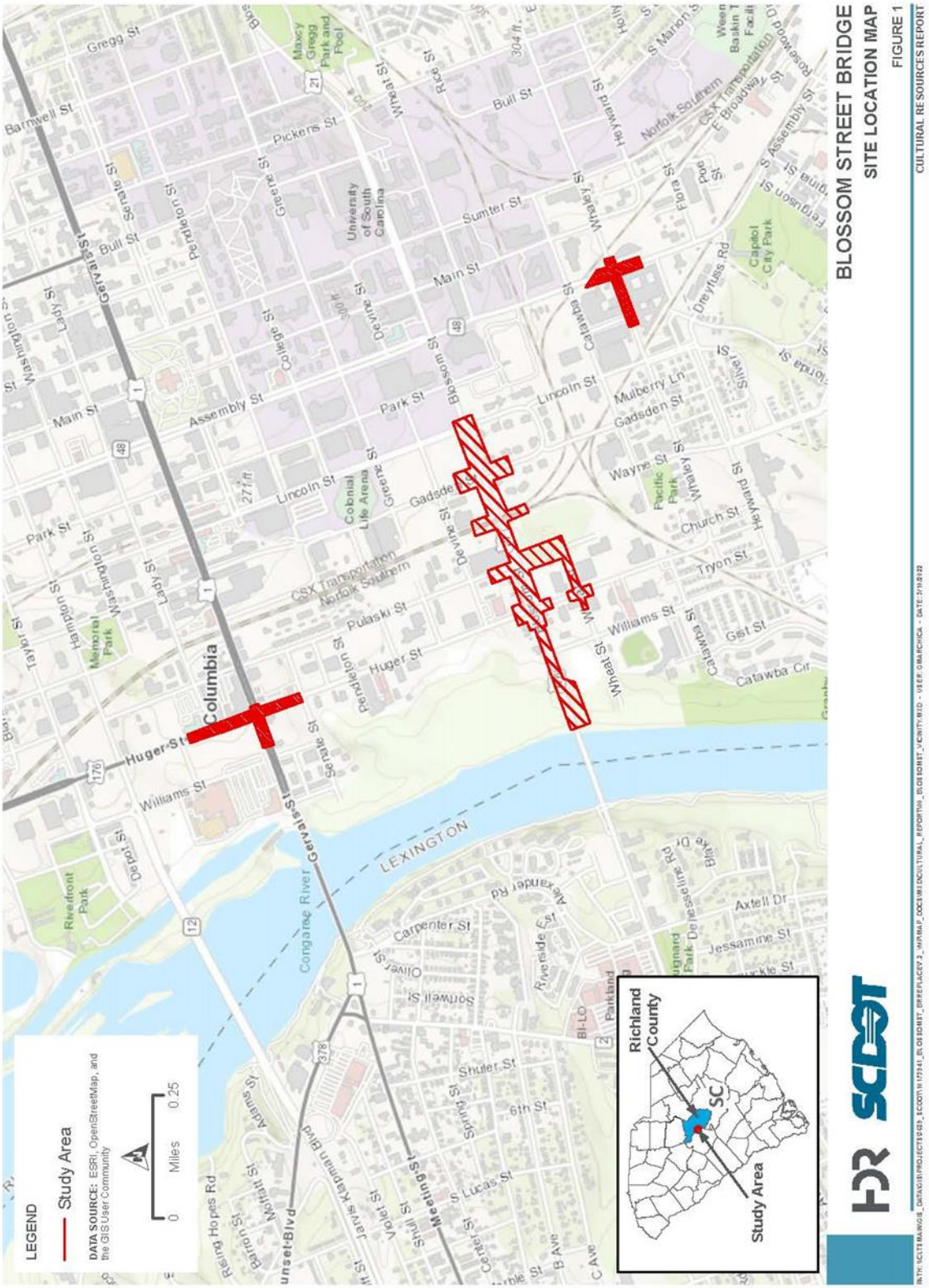


Figure 2. Site Location Map.

Project Funding: Funding for the proposed project is included in the SCDOT's 2017-2022 State Transportation Improvement Program (STIP) which identifies $5,360,000 for preliminary engineering, $7,500,000 for right-of-way, and $34,717,000 for construction.[1]

Findings: SCDOT's environmental evaluation has determined the effects of this proposed project are as described in the "Programmatic Agreement Between the Federal Highway Administration, South Carolina Division and the South Carolina Department of Transportation Regarding Approval of Actions Classified as Categorical Exclusions for Federal-Aid Highway Projects" dated April 26, 2021 and is in compliance based upon the required findings reflected below. The proposed project has been assessed for possible effects on the human and natural environment with a determination that no significant environmental impact would occur. The class of action and impact determination documented by this statement would qualify this proposed project as a categorical exclusion under 23 CFR 771, Section 115(b) and 23 CFR 771.117(c)(28).

A determination along with the field observations conclude that there is low potential for the presence of any federally protected species due to the lack of suitable habitat, the disturbed nature of the project area, and scope of improvements. The proposed study has been evaluated with regard to the Farmland Protection Policy Act (FPPA) of 1981. However, a review of the 2020 U.S. Census Bureau map concludes that the majority of the project area is within the limits of an "urban area" (i.e. City of Columbia), and therefore, includes land that is already in or committed to future development as defined in CFR 658.2(a). As such, the FPPA does not apply to the proposed project. In consultation with the State Historic Preservation Officer (SHPO), as appropriate, the proposed project will not adversely affect, with conditions, any properties identified as being on or eligible for inclusion in the National Register of Historic Places (NRHP) under 36 CFR 800. One Section 4(f) property was identified within the project boundaries. The Palmetto Compress and Warehouse Company (Resource 0076) is listed in the NRHP. This historic resource would be protected under Section 4(f), however the project would not require a use of the resource as defined by 23 CFR 774. No Section 6(f) properties were identified within the project boundaries. Based on preliminary design, the project would impact jurisdictional waters of the U.S., and a Section 404 permit will be required.

It is not anticipated that the project would result in any displacements. If displacements are found to be necessary based on final design, all acquisitions and relocations would be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and all relocation resources will be made available without discrimination.

April 29, 2022
Date

Edward W. Frierson
RPG 3 NEPA Coordinator

May 3, 2022
Date

J. Steve Belcher
Federal Highway Administration

[1] SCDOT, STIP – Bridge, http://206.74.144.42/ESTIP/downloads/Richland.html?_=1569954558118, last accessed October 1, 2019.

SUPPORTING DOCUMENTATION

Alternatives Analysis

Various alternatives were evaluated for the project that included typical section variations, construction staging scenarios, and bridge structure options. Alternatives were assessed for constructability, impacts to the public, construction costs, construction duration, environmental impacts, and impacts to existing utilities. Based on the evaluations, a preferred alternative was identified.

No-Build Alternative

The no-build alternative would maintain existing conditions and would not address the structural deficiencies of the bridge structure. Therefore, the no-build alternative would not meet the purpose and need of the project.

Build Alternatives

Typical section variations were evaluated and presented in a Typical Section Memo dated May 5, 2020 (Appendix A). All typical sections included four 12-foot travel lanes and varied by bicycle and pedestrian accommodations. Shared-use paths, bike lanes, standard width sidewalks and wider than typical sidewalks were considered. Wider than typical sidewalks (8-ft) without bike lanes was recommended for the bridge typical section due to the following:

- Accommodate potential for high volumes of pedestrians
- Tie to wider sidewalks on each side of the bridge
- Allow room for bicyclists who choose to cross on the bridge
- Improve constructability of proposed retaining walls due to a larger offset from existing walls
- Allow room for multi-modal accommodations adjacent to the bridge/roadway within the existing right-of-way
- Allow flexibility for bicycle and pedestrian accommodations on the bridge as the project is progressed

Following selection of the recommended typical section, an in-depth screening of potential bridge alternates was conducted and detailed in the Bridge Alternatives Report dated August 31, 2020 (Appendix B). The five alternatives studied are summarized in Table 1. Each alternate was evaluated for two maintenance of traffic (MOT) scenarios: maintaining two travel lanes (allowing for two-stage bridge construction) and full closure. For each scenario, the alternatives were then evaluated for the construction opportunities prior to lane closures (pre-closure construction) such as construction of bridge support footings for the new bridge prior to closure and demolition of the existing bridge.

Table 1. Summary of Bridge Alternates

Alternate	Bridge Length	Number of Spans	Span Arrangement	Girder Type/Size	Distinctive Features
1	245’	3	79’-87’-79’	AASHTO Type III	West interior bent between CSX railroad and existing bent.
2	270’	3	79’-112’-79’	54” MTB	All bents outside Wayne Street Right-of-Way.
3	664’	6	104’-112’-112’-112’-112’-112’	54” MTB	Longest bridge-similar to existing; least approach fill and wall length
4	270’	3	79’-112’-79’	42” continuous steel	Steel girder option of Alternate 2
5	205’	1	205’	80” steel	Shortest bridge; most approach fill and wall length

Each alternate was evaluated for two MOT scenarios: 1) Maintaining two travel lanes (two-stage bridge construction) and 2) Full closure.

An in-depth screening of the five alternates examined several factors such as construction techniques to minimize lane closure duration, constructability, construction costs and construction duration. The initial screening of all alternates eliminated Alternate 1 (Maintain Two Lanes and Full Closure), Alternate 3 (Full Closure), Alternate 4 (Maintain Two Lanes and Full Closure) and Alternate 5 (Maintain Two Lanes and Full Closure) from further consideration for the following reasons:

- Alternate 1 - Constructability concerns of the interior bent closest to CSX railroad and potential conflict with CSX right-of-way.
- Alternate 3 under a full closure – Prolonged duration of the full closure due to additional spans and substructures.
- Alternate 4 - Additional cost and limited benefit in terms of the lower roadway profile and lighter bridge elements.
- Alternate 5 - High bridge and roadway cost and constructability issues related to the large girders.

Alternate 2 (Maintain Two Lanes and Full Closure) and Alternate 3 (Maintain Two Lanes) were advanced for further consideration. In order to arrive at a recommendation, conceptual estimated direct and indirect costs for construction, user travel delay, static (cost for inspectors and Contractor’s equipment and overhead costs), railroad flagging and MOT mitigation were combined to determine an equivalent cost for alternate comparison.

Preferred Alternative

Based on the evaluations, Alternate 2 under a full closure was identified as the preferred alternative. The Preferred Alternative would replace the Blossom Street bridge by closing the roadway between Huger Street and Gadsden Street for a portion of the construction duration. Some construction activities such as construction of new bridge support footings are proposed prior to closure to minimize the closure duration. The bridge would be replaced in essentially the same location and would consist of four 12-foot travel lanes, a 4-foot center median, 8-foot sidewalks on both sides of the bridge and approaching roadway. Refer to Figure 3 for the bridge typical section.

Figure 3. Bridge Typical Section.

Along the west approach to the bridge, at-grade shared-use paths will be constructed on the north and south side of the retaining walls. Figure 4 shows the proposed typical section for the bridge approach on the west side of the railroads. The shared-use paths will connect to bicycle lanes and sidewalks west of Huger Street and to the Innovista Trail running under the bridge adjacent to the railroads providing connectivity with bicycle and pedestrian accommodations in the project area. Refer to Figure 1 for a map of the project area denoting the bicycle lanes and Innovista Trail. Refer to Figure 5 for a rendering looking east from Huger Street presenting sidewalks continuing over the bridge and shared-use paths extending at-grade adjacent to the approach roadway. During the road closure, a signed detour to route traffic around the project site will be provided. Bicycle and pedestrian detours will also be provided.

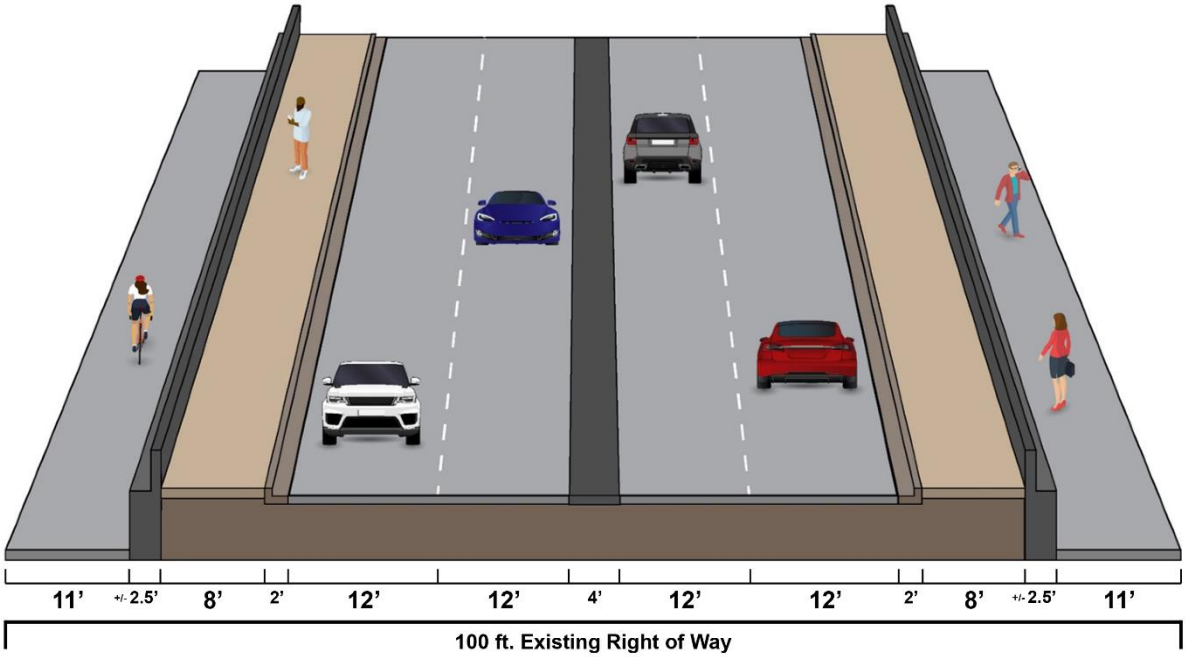


Figure 4. West Bridge Approach Typical Section.

Figure 5. West Bridge Approach Rendering.

Additionally, several changes to intersections are necessary both for traffic needs during the closure of the Blossom Street Bridge, as well as after the construction of the bridge. These include:

- The Gervais Street at Huger Street intersection improvements will add a southbound right turn lane and restripe the southbound lane to the north and south of the intersection to allow for dual left turn lanes onto Gervais Street. Additional right-of-way will be required along the west side of the southbound Huger Street approach. Work will include new pavement, utility impacts, new right-of-way and drainage relocations/impacts. This improvement is proposed to aid traffic flow during the full closure and detour of Blossom Street from Huger Street to Gadsden Street for the bridge replacement. The improvement is also called for in the existing conditions so will be permanent.
- The Assembly Street at Whaley Street southbound approach will have a right turn lane added as a temporary improvement. Some additional right-of-way may be required in the northwest corner of the intersection and there will be some utility impacts. Drainage might be impacted depending on the existing conditions. This improvement is proposed to aid traffic flow during the full closure and detour of Blossom Street from Huger Street to Gadsden Street for the bridge replacement. The improvement is NOT warranted with the existing conditions so will only be temporary and implemented during the approximately six month-long bridge closure.
- Pulaski Street Extension and potential Wheat Street at Huger Street signal. This work will consist of extending Pulaski Street south to intersect with Wheat Street in the current City of Columbia right-of-way as mitigation for access that will be removed from the Blossom Street Loop Road. A permanent new signal may be warranted with the diversion of traffic to the Huger Street at Wheat Street intersection.
- A new drainage line will be installed from the Blossom Street at Huger Street intersection west to the Congaree River along the south side of Blossom Street. This improvement is added due to upstream impacts from the bridge project and existing downstream conditions that need improvement. This work will require some new right-of-way around the outfall and will have utility impacts.

Noise Analysis

Title 23 of the Code of Federal Regulations, Part 772 (23 CFR Part 772), and the SCDOT Traffic Noise Abatement Policy dated October 10, 2019 (Noise Policy), contain the FHWA and SCDOT traffic noise standards for completing noise analysis on transportation projects. The bridge will be replaced essentially in the same location as the existing bridge. Per the Noise Policy, a noise study is not required if the project does not result in a substantial horizontal alteration as the project does not half the distance between the traffic noise source and the closest receptor between the existing condition and build condition. In addition, the project will not substantially change the vertical alignment or add additional travel lanes. Therefore, a noise analysis is not warranted as the project is essentially replacing existing conditions, and not expected to result in any potential traffic noise impacts.

Air Quality/Mobile Source Air Toxics (MSATs)

The Clean Air Act Amendments (CAAA) of 1990 require that transportation plans, programs, and projects in nonattainment or maintenance areas that are funded or approved by FHWA be in conformity with the State Implementation Plan (SIP). The proposed project is not located in a nonattainment area, so conformity does not apply.

The purpose of this project is to replace the structurally deficient Blossom Street Bridge over the Norfolk Southern and CSX Transportation railroads by constructing a new reinforced concrete structure to meet current design standards. This project has been determined to generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special MSAT concerns. As such, this project would not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause an increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES model forecasts a combined reduction of over 80 percent in the total annual emission rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 100 percent. This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.[2]

Wetlands/Permits

The project area was evaluated to determine the potential presence of wetlands and streams. This evaluation included a review of available data, specifically the National Wetland Inventory (NWI) maps, soil surveys, and USGS topographic quadrangles (*SW Columbia*). One stream (Stream 3) was identified at the western end of the project, to the south of Blossom Street and east of the Congaree River; this stream will not be impacted by the proposed project. Two wetlands (Wetlands 1 and 2) and two streams (Streams 1 and 2) were identified in the eastern portion of the assessment area between Park Place Apartments and Greene Crossing Annex. The proposed Pulaski Street Extension would impact approximately 0.13 acres of one wetland and 162 linear feet of the jurisdictional stream. The proposed project will be designed to avoid and minimize impacts to wetlands and streams to the extent possible. Permits will be obtained from the appropriate state and federal agencies for any proposed impacts to jurisdictional waters of the U.S. (WOUS). A Nationwide 14 Permit is anticipated.

Water Quality/Floodplains

Based on a study of the Flood Insurance Rate Maps (FIRM) #45079C0356L, effective 12/21/2017, the proposed project area does not include any floodplains; therefore, no impacts are anticipated to floodplains as a result of the project. Stormwater from the bridge would be conveyed to the Congaree River through a series of drainage structures that could potentially introduce additional contaminants to this system. However, the resulting runoff would not be anticipated to be significantly different than existing conditions.

The project study area (PSA) includes soils that are considered as urban land. Soils used for urban purposes are in areas of developed and developing land. Developed land are a combination of land cover/use categories including urban and built-up areas and rural transportation land. Developing land as defined for the NRCS Web Soil Survey is a broad category that includes transitional areas of cropland, forestland, or rangeland that may be developed in the near future.[3] The contractor will be

[2] FHWA, Interim Guidance Update on Mobile Source Air Toxic Analysis, http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/aqintguidmem.cfm, last accessed September 16, 2016.

[3] https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

required to minimize possible water quality impacts through implementation of best management practices (BMP), 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.

Cultural Resources

An intensive cultural resources survey of the proposed Blossom Street Bridge replacement between Lincoln Street and Huger Street was completed in December 2019. The project area is located in the City of Columbia and consists of an approximately 0.44-mile-long, 200-foot-wide (61 meters) corridor centered along Blossom Street, extending to 300 feet (91 meters) along Gadsden Street, Pulaski Street, and a railroad. Additionally, the limits of the project extend 200 feet along Huger Street. In May 2021, the project was expanded to include an additional turn lane and turn lane improvements at two outlying intersections. A supplementary cultural resources survey was completed of these areas. The fieldwork for both surveys was conducted in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (Appendix C).

Archaeological Resources

Background research was conducted on ArchSite in December 2019 and May 2021 to identify resources within the Area of Potential Effect (APE) that were previously recorded, listed on the NRHP, or eligible for listing on the NRHP. In addition, historic maps were reviewed to located potential historic resources and to develop an overview of the area's development over time. There has been a great deal of recent development in the project area, which has included new apartment complexes, as well as the refurbishing of the Palmetto Compress warehouse into apartments.

The APE for the archaeological survey of the original Blossom Street corridor consisted of only the area of direct effects, which is located within the existing right-of-way. The archaeological survey involved systematic shovel testing in the APE. However, the entire project corridor is heavily developed, with current land use in and adjacent to the APE containing commercial and high-density residential buildings. Much of the project area is graded, filled, paved, and/or contained buried utilities. Areas showing substantial disturbance were visually inspected and shovel tests were mostly used to confirm conditions. Because the project area was heavily disturbed, only one shovel test was excavated. No archaeological resources were identified during the original cultural resources survey. Archaeological survey was not required for the proposed intersection improvements.

Architectural Resources

The APE for the original architectural survey along Blossom Street consists of a 300-foot buffer from the existing ROW. There is one NRHP-listed property within the architectural APE, the Palmetto Compress and Warehouse Company Building (Resource 0076). As a result of the survey, one previously surveyed and four newly identified individual historic architectural resources in the APE were recorded and evaluated. The eastern boundary of the NRHP-listed Columbia Canal is approximately 325 feet from the western edge of the APE. The area between the APE and the district boundary is characterized by circa-1970 automobile-related resources and dense, non-historic development, including a multistory apartment complex constructed in 2016. This pocket of development provides a distinct visual barrier between the project area and the NRHP-listed Columbia

Canal; therefore, the canal was not formally re-evaluated.

The Palmetto Compress and Warehouse Company (Resource 0076) was listed in the NRHP in 1985 as part of the Historic Resources of Columbia Multiple Property Submission. Resource 0076 is located within the project's area of direct effects. The NRHP nomination identifies the NRHP boundary as the four-acre parcel encompassing the entire 600 block of Devine Street. The resource retains sufficient integrity to remain eligible for the NRHP and lies within the area of direct effect and could be adversely affected by the replacement of the bridge.

Four new architectural resources (Resources 7692-7695) were identified within the project APE along the original Blossom Street project corridor. Resource 7692 is the Southern and SCL Railroad. Resource 7693 is the Blossom Street Bridge over the Southern and SCL Railroad. Resource 7694 is a c. 1915 house. Resource 7695 is a 1959 warehouse. None of these newly recorded resources are recommended eligible for inclusion in the NRHP. The State Historic Preservation Officer (SHPO) concurred with these recommendations (Appendix D).

In May 2021, the project was expanded to include an additional turn lane and turn lane improvements at two outlying intersections. As a result, SCDOT established a revised APE. The revised APE included the area of project work and the viewshed, which was defined as an irregular line of site at each quadrant surrounding the intersection of Assembly and Whaley streets, and Huger and Gervais streets. Two previously recorded architectural resources (Resources 026 and 0078) were revisited, and nine new architectural resources (Resources 8680-8688) were surveyed. Resource 8680 is a c. 1930 commercial building. Resource 8681 is a c. 1940 commercial building. Resource 8682 is a 1939 commercial building. Resource 8683 is a 1929 commercial building. Resource 8684 is a c. 1960 commercial building. Resource 8685 is a c. 1955 commercial building. Resource 8686 is a 1964 warehouse. Resource 8687 is the c. 1860 Southern and SCL Railroad. Resource 8688 is the 1965 Southern Railroad Trestle. None of the newly surveyed resources are eligible for the NRHP. Both previously surveyed resources, the Confederate Printing Press (Resource 026) and the Richland Cotton Mill (Resource 0078), are listed in the NRHP. The NRHP boundaries are not located within the area of project work and will not be adversely affected by the project.

Because the Palmetto Compress and Warehouse Company (Resource 0076) is NRHP-listed and lies within the area of direct effect, it could be adversely affected by the bridge replacement project. On January 29, 2021, the SHPO advised the SCDOT that it appears the project would likely have no adverse effect on the resource, with conditions. These conditions will need to address the concerns about potential damage during demolition of the existing bridge and construction of the new bridge, including vibration monitoring. The project team is required to address what will happen if damage occurs to the resource. The project team is required to provide a copy of the vibration monitoring plan to the SHPO prior to any demolition taking place, and also to produce a final report upon completion of the project. A Memorandum of Agreement (MOA) between the FHWA and the SHPO was developed to avoid or mitigate any adverse effects the project may have on this resource (Appendix C).

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.

Section 4(f) Properties

One Section 4(f) property, the Palmetto Compress and Warehouse Company (Resource 0076) was identified within the project boundaries. No permanent right of way from the resource will be acquired by the proposed project and therefore, no Section 4(f) use will occur. In addition, proximity impacts caused by a proposed project do not substantially impair the activities, features, or attributes that qualify a property for protection under Section 4(f); no change in accessibility that would diminish the utilization of the Section 4(f) property is anticipated. The SHPO determined that the proposed project will have no adverse effect on this historic resource, with conditions. Therefore, no constructive use of this Section 4(f) property is expected. The Section 4(f) Applicability Checklist and Constructive Use Applicability Checklist are presented in Appendix E.

North of Blossom Street, the Innovista Trail is located on private property along the railroads before it terminates in the SCDOT right-of-way under the Blossom Street Bridge. The City of Columbia has confirmed that the City does not have an easement along the property for the trail. The trail provides bicycle and pedestrian connection from Blossom Street north to Greene Street. The project will connect the trail to the shared-use paths along the west approach improving connectivity for bicyclists and pedestrians throughout the project area. It is anticipated the section of trail within SCDOT right-of-way will be closed during certain stages of construction but detours for pedestrians and bikes are planned via Pulaski, Huger, and Blossom Streets. These detour routes will be posted to the project website, shared on social media and communicated directly to University of South Carolina and adjacent multi-family housing developments (Apartments at Palmetto Compress, Greene Crossing Annex, Park Place and Greene Crossing).

Section 6(f) Properties

No Section 6(f) properties were identified within the project boundaries.

Threatened and Endangered Species

Pursuant to Section 7 of the Endangered Species Act of 1973, the project area was evaluated for the potential presence of any federally protected species currently listed for Richland County. A list of protected species for Richland County was obtained from the U.S. Fish and Wildlife Service, which was last updated on September 9, 2019 and included in Table 2. In addition, the S.C. Rare, Threatened, and Endangered Species Inventory was evaluated to determine any previous known occurrences of protected species within the project area. These records were last updated by SCDNR in 2019. Lastly, field observations were conducted within the project area during the various extensive field investigations between July 2019 and January 2021.

Table 2. Threatened (T) and Endangered (E) Species

Category	Common Name	Scientific Name	Status
Amphibians	Chamberlain's dwarf salamander	*Eurycea chamberlaini*	ARS**

Category	Common Name	Scientific Name	Status
Birds	Bald Eagle	*Haliaeetus leucocephalus*	BGEPA*
	Red-cockaded woodpecker	*Picoides borealis*	E
	Wood stork	*Mycteria americana*	T
Crustaceans	Broad River spiny crawfish	*Cambarus spicatus*	ARS
Fishes	Robust redhorse	*Moxostoma robustum*	ARS
	Shortnose sturgeon	*Acipenser brevirostrum*	E
Insects	Monarch butterfly	*Danaus plexippus*	ARS
Mammals	Little brown bat	*Myotis lucifugus*	ARS
	Tri-colored bat	*Perimyotis subflavus*	ARS
Plants	Bog spicebush	*Lindera subcoriacea*	ARS
	Carolina-birds-in-a-nest	*Macbridea caroliniana*	ARS
	Ciliate-leaf tickseed	*Coreopsis intefrifolia*	ARS
	Georgia aster	*Symphyotrichum georgianum*	ARS
	Purple balduina	*Balduina atropurpurea*	ARS
	Canby's dropwort	*Oxypolis canbyi*	E
	Rough-leaved loosestrife	*Lysimachia asperulaefolia*	E
	Smooth coneflower	*Echinacea laevigata*	E
Reptiles	Southern hognose snake	*Heterodon simus*	ARS

* Federally protected under the Bald and Golden Eagle Protection Act (BGEPA).
**At Risk Species (ARS)

The review of the habitat requirements and previous records for the federally listed species for Richland County, along with the field observations, conclude that there is very low potential for the presence of any federally protected species due to the lack of suitable habitat, the disturbed nature of the project area, and scope of improvements. As such, the project is anticipated to have **"no effect"** for the species listed for Richland County.

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 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 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.

The contractor shall notify the RCE at least four (4) weeks prior to the 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.

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.

Socio-Economic

The U.S. Census data was evaluated to determine the demographic composition of the proposed project area. The census data is summarized in Table 3.

Table 3. Summary of US Census Data

Demographic Characteristic	South Carolina	Richland County	City of Columbia
Total Population	5,084,127	414,576	133,451
White	3,482,627	190,290	69,795
Black/African American	1,377,798	199,826	54,581
Hispanic Origin	294,879	21,558	7740
Median Household Income	$48,781	$52,082	$43,650

Sources: US Census Bureau, 2017 American Community Survey 5-Year Estimates

Communities

It is not anticipated that the proposed action and associated relocations would result in any appreciable change in local population and employment patterns in the area. Right-of-way acquisitions from commercial properties will be minimal. Property owners would be compensated for any right-of-way acquired and any damages to remaining property, in accordance with SCDOT policy and the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended.

Impacts to the surrounding communities, residents and commuters would occur during construction of the new bridge. Blossom Street would be closed between Huger Street and Gadsden Street for a portion of the construction duration. During the road closure, a signed detour to route traffic around the project site will be provided. Travel times during the road closure may increase along the signed detour by up to six minutes. Closure of the roadway for bridge construction will require approximately six months. Overall construction of the project will last approximately 18 months. Access for emergency services will not be restricted by road closure(s) for any facility within the project area. The contractor will be responsible for maintaining two-way traffic along a signed detour for diverted traffic from Blossom Street to Gervais Street, onto Greene Street, and onto Gadsden Street during construction the Blossom Street road closure. In addition to signed detour routes, the general public will be made aware of the project through media news releases, public outreach, and variable message signs in advance of the construction area.

A permanent intersection improvement will be made at the intersection of Gervais Street and Huger Street to provide additional southbound left turn capacity for anticipated traffic that deviates onto Gervais Street during construction. A temporary intersection improvement will be made at the

intersection of Assembly Street and Whaley Street to provide a southbound right turn lane for anticipated traffic that deviates onto Whaley Street during construction.

During construction, pedestrian and bicycle access to sidewalks will be maintained at signalized intersections. Pedestrian and bicycle access beneath the bridge will be restricted during construction, and a signed detour will be provided that makes use of the signalized crosswalks at Blossom Street at Huger, and at Huger Street at Greene Street.

Providing bicycle and pedestrian access is critical for local and regional bicycle connectivity due to the existing terminus of the Innovista Trail under the bridge. Once completed, the new bridge will provide improved bicycle and pedestrian facilities through the project area. The project will also provide improved connections to existing bicycle and pedestrian facilities. At the Huger Street/Blossom Street intersection, crosswalks and pedestrian signals will be installed. The north side Blossom Street will have a shared use path crossing Huger and transitioning to a bike lane. These features should improve bicycle and pedestrian safety at the intersection.

Environmental Justice

The proposed project was evaluated in accordance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations). As summarized in Table 4, the demographics of the City of Columbia include an approximate 41% minority population as compared with 27% in South Carolina. The census data also reveals that the median household income in 2018 within the City of Columbia was $43,650 as compared to $48,781 for South Carolina. This median income level is substantially greater than the $15,800.00 (household size of 2.5) poverty guideline established for 2000 by the U.S. Department of Health and Human Services. These findings are consistent with the field observations of the immediate project area. Therefore, the project is not expected to specifically benefit, harm, or disproportionately impact, any social group, including low-income, elderly, handicapped, non-drivers, minority, or ethnic groups.

The project is not expected to change neighborhood or community cohesion, school districts, police and fire protection, emergency medical services, highway traffic and safety, minority or other social groups, or permanently affect existing travel patterns and accessibility. No minority or low-income populations have been identified that would be adversely impacted by the proposed project as determined above. Therefore, in accordance with the provisions of E.O. 12898 and FHWA Order 6640.23A, no further environmental justice analysis is required.

Displacements

There are no residential or commercial displacements anticipated. However, the project would require the relocation of existing utilities. If the final design results in additional impacts, then all acquisition and relocation, if any, will be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and all relocation resources will be made available to displacees without discrimination.

Farmlands

The proposed study has been evaluated with regard to the Farmland Protection Policy Act (FPPA) of 1981. However, a review of the 2010 U.S. Census Bureau map concludes that the majority of the

Project area is within the limits of an "urban area" (i.e. City of Columbia), and therefore, includes land that is already in or committed to future development as defined in CFR 658.2(a). As such, the FPPA does not apply to the proposed Project.

Land Use

The project is located in an urban area with dense residential and commercial development. Land uses include university student housing, apartment complexes, and roadway and transportation rights-of-way, both vehicular and train. The project is anticipated to be constructed primarily within existing right-of-way, with only minor right of way acquisition for intersection improvements and sight triangles; therefore, is not expected to modify existing land uses or change the timing or density of development in the area.

Phase I Environmental Site Assessment (ESA)

A limited Phase I ESA was conducted in July 2021 (Appendix F). Nineteen (19) recognized environmental conditions/historical recognized environmental conditions (REC/HREC) were identified within and adjacent to the Project Areas, including automotive or petroleum operations, industrial sites (i.e., Kline Iron & Steel), utility providers, (i.e., gas plant), UST sites, VCP sites, etc. Due to the type of operations and since many of the sites operated prior to modern environmental regulations, these sites could adversely impact the Project Areas. Phase II ESAs are recommended on portions of the Project Areas. Based on the results of the Phase II ESA, additional recommendations may be warranted to ensure the safe and proper handling of soils, which may include road or building construction, earth moving, grading, or utility installations.

Public Involvement

An Eminent Domain notice was published on June 24, 2019 in *The State* newspaper notifying the general public about engineering and environmental surveys taking place in the local area (Appendix G). The first full stakeholder committee meeting was held on December 10, 2019. The purpose of the meeting was to introduce key stakeholders to the project and to get their feedback and knowledge regarding the project and project area. Prior to the full stakeholder committee meeting, preliminary stakeholder meetings with the staff from the University of South Carolina and the City of Columbia were held prior to get their feedback on the project and project area. Since the first meeting, stakeholder committee meetings have been held quarterly for the project. These meetings occurred in June 2020, August 2020, and November 2020. The November 2020 meeting introduced the stakeholder committee to the recommended preferred alternative prior to our launch of the virtual public information meeting for the project. Stakeholders engaged via the stakeholder committee and direct outreach included Historic Columbia, Palmetto Compress, University of South Carolina, City of Columbia, Greene Crossing apartments, Park Place apartments, property owners adjacent to the bridge, Palmetto Cycling coalition, elected officials in Columbia, Cayce and West Columbia, and the Columbia Chamber of Commerce.

Due to the global COVID-19 pandemic, the Virtual Public Information Meeting served as the public meeting and comment period for the Blossom Street Bridge Project. The meeting was held virtually in an online, on-demand platform accessed via the project website. The Virtual Public Information Meeting was accessible online, 24-7 during the comment period. The legal advertisement for the Virtual Public Information Meeting is included in Appendix G.

The meeting was comprised of eight videos that explained the online meeting platform and comment process, project overview, project history, the recommended preferred alternative, the project design renderings and animation, traffic management, right of way, and next steps for the project.

The Virtual Public Information Meeting was open to the public for formal comments from November 16, 2020 to December 16, 2020. The online meeting website provided a comment form that allowed individuals to submit their comments directly within the Virtual Public Information Meeting. The website also noted other ways in which comments could be submitted, including the comment form on the general project website, project phone number, project email and the physical mailing address.

Additionally, in project outreach and on the welcome slide of the online meeting, it was noted that individuals were able to request a physical copy of the meeting in English or Spanish if they preferred to view the content in that way.

While only 22 comments on the project were received, 875 people visited the Virtual Public Information Meeting website. This shows that a high number of individuals visited the online meeting to learn more about the recommended preferred alternative and proposed traffic management strategy.

Of the 22 comments that were submitted, all fell within four key themes. These themes included bike and pedestrian accommodations, bridge aesthetics, specific right-of-way concerns, and general recommended preferred alternative support. Bike and pedestrian accommodations were the most prevalent theme in the comments, making up nine of the total comments submitted. No comments were received showing concern regarding the full traffic closure scenario or general project design, outside of bike/ped accommodations and aesthetics. The complete meeting summary and comment responses are presented in Appendix G.

Date: April 2022 Prepared by: Josh Fletcher

Appendix A

Typical Section Memo

Memo

Date:	Tuesday, May 05, 2020
Project:	P030115 Blossom Street Bridge Replacement
To:	Joey McIntyre, SCDOT
From:	Raven Gambrell, HDR and Lee Tupper, HDR
Subject:	Blossom Street Typical Section

The purpose of this memo is to obtain concurrence from SCDOT to consider an atypical typical section for the Blossom Street Bridge Replacement project (SCDOT Project ID P030115). This concurrence will ensure continued design refinements and additional design discipline-specific studies are conducted under appropriate assumptions. This memo builds upon the previously submitted Loop Road Memo dated February 18, 2020 that details the recommendation to end consideration of the at-grade roads adjacent to the bridge and only include at-grade multi-modal facilities.

General Criteria for Typical Section Selection

The proposed Blossom Street design criteria was previously submitted and used to develop typical section alternatives. The proposed four 12’ lane configuration with a 4’ median is ideal for the urban arterial and will allow for proper transitions to the existing typical at the beginning and end of the project. The proposed typical section will have curb and gutter due to the urban setting and to match the existing corridor. Sidewalks will be included across the bridge in order to provide pedestrian accommodations and connect existing sidewalks on either side of the bridge.

The existing 50’ Right-of-Way (R/W) through the project is constrained along the western approach due to the Palmetto Compress apartment building which is located on the R/W. On the south side of the western approach, the Greene Crossing Annex apartment building is located approximately 14’ from the existing R/W with decorative landscaping and pedestrian facilities for the building entrance in between. Therefore, typical section alternatives under consideration do not require additional R/W through the corridor. Additionally, typical sections being considered allow for multi-modal accommodations adjacent to the bridge within the existing R/W as discussed in the February 18, 2020 Loop Road Memo.

Due to the urban setting of the project and the adjacent property uses, walls along the bridge approaches are also assumed for the proposed typical section. The type of wall proposed will be evaluated and recommended as part of the Geotechnical Technical Memo. The type and width of wall as well as accommodation of roadway lighting supports will affect the space allowed for facilities adjacent to the bridge approaches. Therefore, a wall thickness of 2.5’ was assumed for the typical section alternatives to account for the wall width and lighting accommodations.

Typical Section

The typical section recommended for consideration in further design studies is shown in Figure 1 with the Blossom Street lane characteristics described in the previous section and extra width sidewalks.

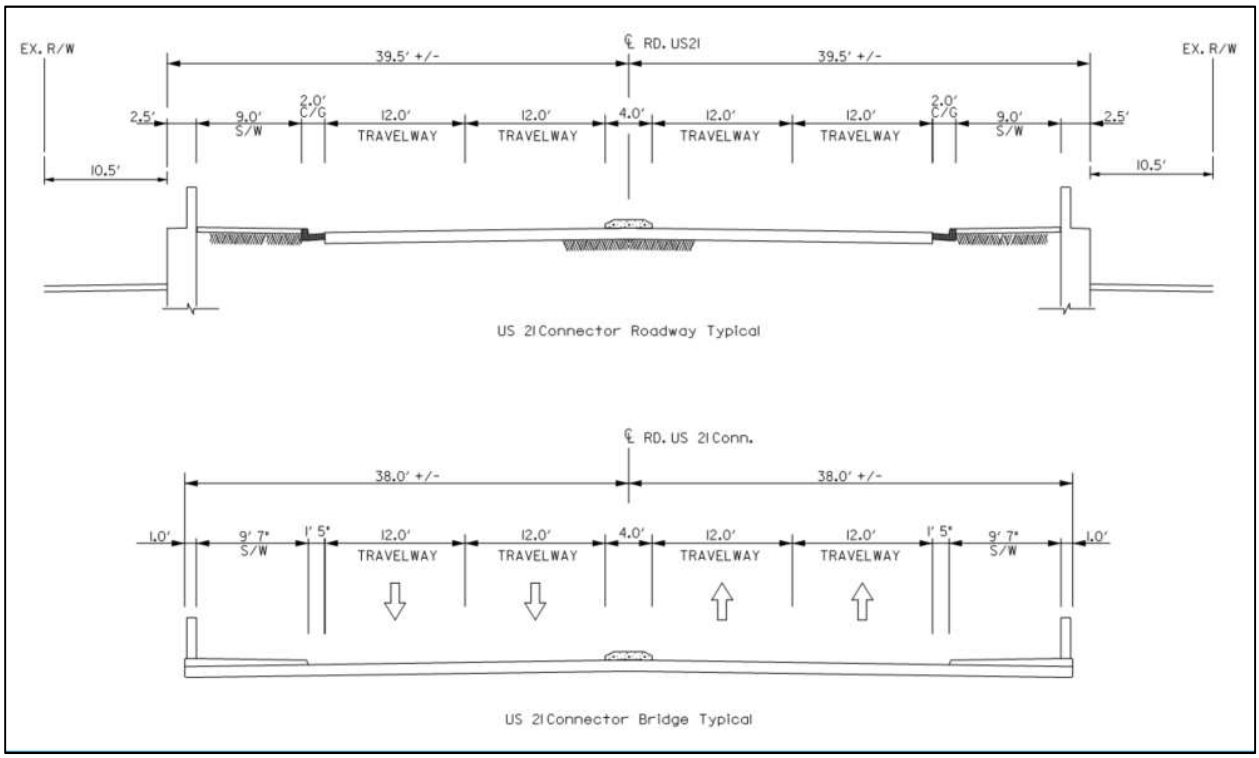


Figure 1: Proposed Blossom Street Typical

Extra-Width Sidewalks

Sidewalks wider than the minimum are recommended due to the potential for high volumes of pedestrians, bicyclists who cross on the bridge as opposed to alternate bike routes as well as to improve roadway and bridge constructability. There is potential for high volumes of pedestrians due to the university community and nearby event facilities which would make extra-width sidewalks ideal. In addition, extra-width sidewalks would better match existing sidewalks east of Gadsden Street that are 6' wide and sidewalks west of the bridge which are 8' wide.

Designated bike facilities are not proposed for the bridge and approach roadway typical section. The over 6% grades will make riding up the bridge difficult and would result in some riders having to walk their bike up the grade or standup pedaling at a slow speed, both of which utilize a wide path. Four-foot minimum width bike lanes would not be ideal for these conditions. In addition, there are currently no bike lanes on Blossom Street east of Gadsden Street to tie into bike lanes along the bridge. Providing wider than minimum width bike lanes will begin to reduce the options for multi-modal facilities adjacent to the bridge and restrict access for maintenance on the north side of the bridge due to the Palmetto Compress building.

With no signed bicycle facilities on the bridge, bicyclists will be expected to use the Innovista Trail or Pulaski Street to travel between the existing bike lanes on Blossom Street west of the project bridge and the Greene Street multi-modal focused corridor to the north. Despite this bike route, some bicyclists on short trips in the area will likely utilize the sidewalks provided on the bridge. Minimum 5' sidewalks on the bridge would make pedestrians and bicyclists passing difficult especially if the bicyclist is walking their bike up the steep grade or traveling at a high speed down grade. Extra-width sidewalks on the bridge would provide more space for pedestrians and bicyclists to pass.

Utilizing extra-width sidewalks, which increases the overall roadway and bridge width, allows for a larger offset between the existing retaining walls and proposed retaining walls. Providing a larger offset increases the potential that construction of the proposed retaining walls can occur while maintaining traffic on the existing roadway. This could simplify maintenance of traffic plans and reduce construction impacts on traffic. The specific advantages that the wider sidewalks provide to the bridge construction are discussed in the following section.

Recommended Sidewalk Width

The recommended sidewalk width for consideration is 9' to allow flexibility for bicycle and pedestrian accommodations as well as to better facilitate two-staged construction. Assuming 9' sidewalks at this stage in the design process provides flexibility if priorities change during the preliminary design phase. The 9' width could be converted to a 4' minimum width bike lane and a 5' minimum width sidewalk if needed without affecting the continued design by other disciplines. The 9' sidewalks also allow adequate width adjacent to the bridge for at-grade multi-modal facilities to be provided which is important for local connectivity and mobility.

An 8' sidewalk would provide similar multi-modal benefits as a 9' sidewalk; however, during our initial construction staging evaluations it was determined that a slightly wider typical section would better facilitate a two-staged construction scenario if it is determined that two lanes need to be maintained across the bridge during construction. Currently, two-stage construction of the proposed bridge and full closure of the bridge are being considered for construction methods and a recommendation will be provided in the Final Traffic Study. Conceptual details for two-stage construction options were developed and evaluated by examining the existing bridge plans to determine where construction cuts could be made for staging, applying width requirements for multiple lane configurations, and existing R/W.

Figure 2 shows two scenarios for staging construction while maintaining two lanes of traffic and the same centerline alignment. Scenario 1 is based on a proposed bridge with 5' sidewalks and scenario 2 is based on a proposed bridge with 9' sidewalks. The 9' sidewalks provide a wider bridge than the 5' sidewalks which allows for a different cut point on the existing bridge during staging. Scenario 1 would require a cut point between piers and beams which would require temporary bracing for the deck and cap during construction. Scenario 2 allows the cut point to be adjacent to an existing pier and would simplify structural concerns during staging, creating a more ideal construction scenario. The option of this additional staging scenario provided by 9' sidewalks creates flexibility for the design team going forward as construction methods, schedules, and costs are refined.

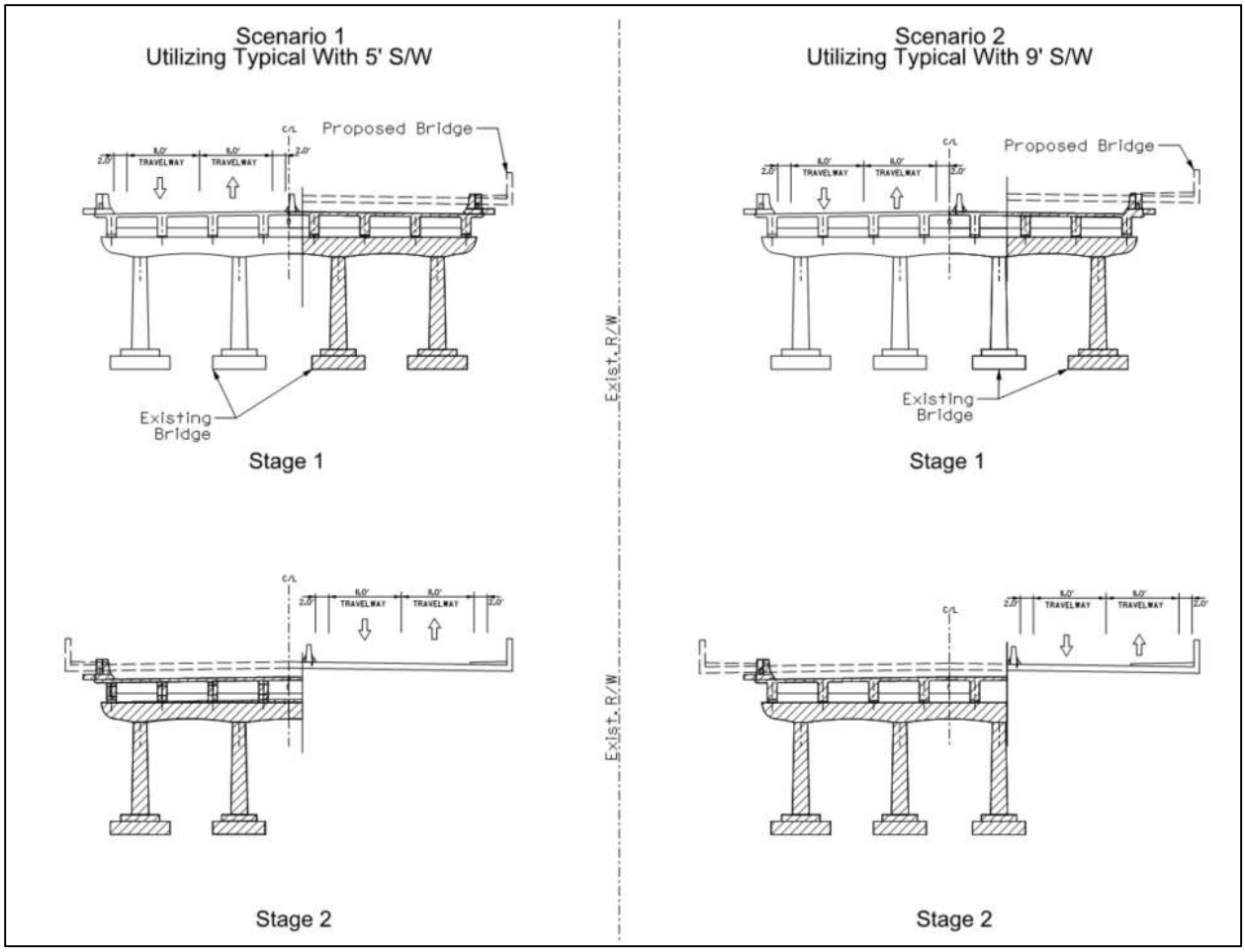


Figure 2: Potential Two Stage Construction Scenarios

Conclusions

Based on the information in this memo, the project team recommends the typical sections shown in Figure 1 for further consideration during the project development along with the typical section with standard width sidewalks. The advantages to moving forward with the proposed typical section shown in Figure 1 and more specifically wider than typical, 9' sidewalks include:

- Accommodate potential for high volumes of pedestrians
- Tie to wider sidewalks on each side of the bridge
- Allow room for bicyclists who choose to cross on the bridge
- Improve constructability of proposed retaining walls due to a larger offset from existing walls
- Better facilitate two-staged bridge construction
- Allow room for multi-modal accommodations adjacent to the bridge/roadway within the existing R/W
- Allow flexibility for bicycle and pedestrian accommodations on the bridge as the project is progressed

A potential disadvantage of the extra-width sidewalks is increased construction costs for the additional bridge area, earthwork and concrete required; however, the additional cost may be offset by the potential enhancements to constructability and staging

Obtaining concurrence from SCDOT to consider the proposed atypical typical section for the Blossom Street Bridge Replacement project will ensure continued design refinements and additional design discipline-specific studies are conducted under appropriate assumptions. If SCDOT would like to see additional information or discuss the proposed typical section further, please let the project team know.

Appendix B

Bridge Alternatives Report

Bridge Alternate Study

P030115 Blossom Street Bridge Replacement

Bridge over Norfolk Southern and CSX Railroads

Richland County

Columbia, SC

August 31, 2020

Contents

1.0 Executive Summary

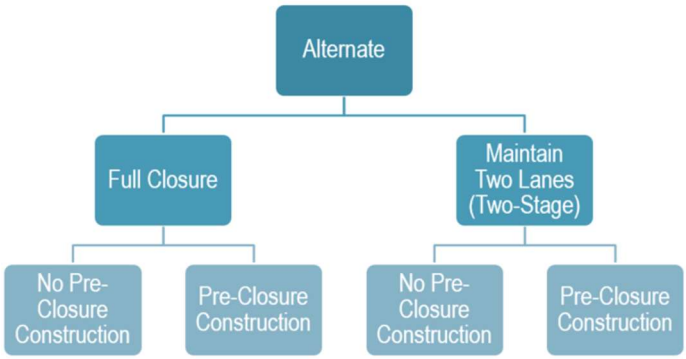
HDR has partnered with SCDOT to perform conceptual design services for replacing the existing 687'-0", 13-span Blossom Street (US 21) Bridge over the Norfolk Southern and CSX railroads between Huger Street and Gadsden Street in downtown Columbia, SC. The bridge serves as an entry point into the City of Columbia carrying over 31,000 vehicles per day. The physical constraints (adjacent roadways/loop road, Greene Crossing Annex apartments, historic Palmetto Compress apartments and UofSC Greek Village) and volume of traffic on the roadway pose challenges for designing and constructing the replacement bridge. Due to the numerous variables and significant challenges of the project, an in-depth screening of potential bridge alternates has been conducted and detailed in this report.

Background

Several other discipline focused analyses and studies have been completed with outcomes summarized below.

- Design Criteria Report (dated 10/21/2019) – Presents the project design criteria and the proposed typical section of four 12-ft travel lanes, a 4-ft raised median, and sidewalks to match the urban project area.
- Loop Road Memo (dated 2/18/2020) – Recommends not replacing the existing loop roads adjacent to the western side of the bridge as well as the City of Columbia parking under the bridge.
- Typical Section Memo (dated 5/5/2020) - Recommends using wider than typical sidewalk widths (8 to 9-ft wide).
- Traffic Technical Memo (dated 5/14/2020) – Identifies two feasible maintenance of traffic (MOT) scenarios out of five evaluated for further study: maintaining two travel lanes (allowing for two-stage bridge construction) and full closure. These two scenarios are considered in the analysis of each of the bridge alternates presented in this report.
- Geotechnical Technical Memo (dated 8/4/2020) – Identifies potential wall types and foundations for the approach fill walls and bridge structure.

Alternate Analysis



Five bridge alternates were considered; refer to the table below. Each alternate was evaluated for varied amounts of construction prior to lane closures (pre-closure construction) under each MOT scenario. The No Pre-Closure Construction case assumes typical bridge construction, such as driven piles and uninterrupted wall construction, due to unlimited headroom. Pre-closure construction includes micropile footings as they can be placed under the existing bridge with limited headroom while traffic is maintained and, where applicable, partial MSE wall construction under the bridge.

Alternate	Bridge Length	Number of Spans	Span Arrangement	Girder Type/Size	Distinctive Features
1	245’	3	79’-87’-79’	AASHTO Type III	West interior bent between CSX railroad and existing bent.
2	270’	3	79’-112’-79’	54” MTB	All bents outside Wayne Street R/W.
3	664’	6	104’-112’-112’-112’-112’-112’	54” MTB	Longest bridge-similar to existing; least approach fill and wall length
4	270’	3	79’-112’-79’	42” continuous steel	Steel girder option of Alternate 2
5	205’	1	205’	80” steel	Shortest bridge; most approach fill and wall length

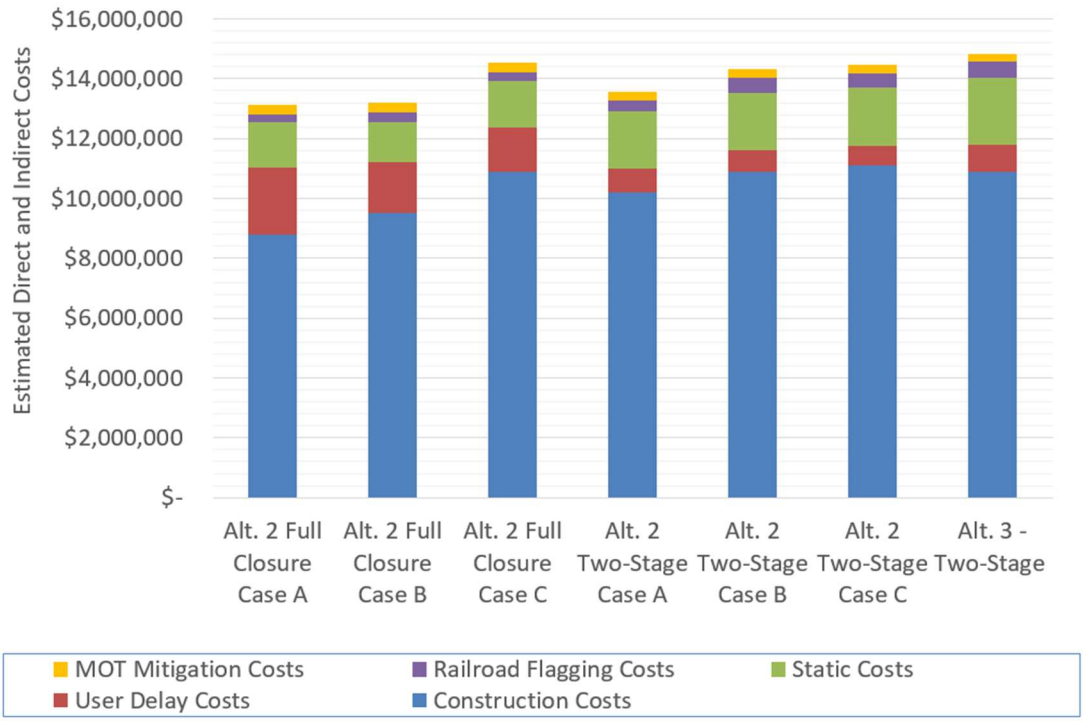
Span and Superstructure Alternates

An in-depth screening of the five alternates examined several factors such as construction techniques to minimize lane closure duration, constructability, construction costs and construction duration.

The initial screening of all alternates eliminated Alternate 1, Alternate 3 Full Closure, Alternate 4 and Alternate 5 from further consideration for the following reasons:

- Alternate 1 - Constructability concerns of the interior bent closest to CSX railroad and potential conflict with CSX R/W.
- Alternate 3 under a full closure – Prolonged duration of the full closure due to additional spans and substructures.
- Alternate 4 - Additional cost and limited benefit in terms of the lower roadway profile and lighter bridge elements.
- Alternate 5 - High bridge and roadway cost and constructability issues related to the large girders.

Alternate 2 (full closure and two-stage) and Alternate 3 (two-stage only) were advanced for further consideration. The staging scenarios for Alternate 2 were evaluated for three cases: A) no pre-closure construction (assumes driven pile foundations), B) micropile footings installation under existing bridge prior to closure and C) micropile footing installation and partial MSE wall construction under bridge prior to closure. The Alternate 3 two-stage evaluation assumes micropile footing installation prior to closure. In order to arrive at a recommendation, conceptual estimated direct and indirect costs for construction, user travel delay, static (cost for inspectors and Contractor’s equipment and overhead costs), railroad flagging and MOT mitigation were combined to determine an equivalent cost for alternate comparison. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget. Refer to the figure below.



Summation of Estimated Direct and Indirect Project Costs

Main Conclusions

Micropile foundations are recommended to maximize the contractor's ability to minimize lane or bridge closure duration as well as to minimize construction vibrations and noise due to adjacent residential and historic structures in very close proximity to proposed construction. The estimated closure duration savings from micropile foundation installation prior to closure as compared to driven pile foundations after is closure is seven to ten weeks for the full closure scenario for Alternate 2. This is reflected in the difference in the User Delay Costs for Alt. 2 Full Closure Case A and Case B in the figure above.

Constructing a portion of the MSE walls under the bridge prior to bridge closure as well as constructing full-height MSE walls adjacent to the partial existing bridge during staged construction, result in concerns of settlement of the existing bridge. This concern will likely result in the need for more expensive lightweight fill which is reflected in the alternate costs for Alt. 2 Full Closure Case C and all Alternate 2 Two-Stage cases in the figure above. Additionally, constructing partial MSE walls under the existing bridge complicates and prolongs bridge demolition. Alternate 3 is approximately the same length as the existing bridge; therefore, no MSE wall fill is assumed below the existing bridge while in service.

Alternate 2 under a full closure with micropile footing installation occurring prior to closure (Alternate 2 Full Closure Case B) is recommended as the sum of the estimated direct and indirect costs are in line with the lowest case while minimizing the traffic impact duration. The bridge closure duration is currently anticipated to be approximately 5.5 months assuming a five day work week and two bridge crews. As the design is advanced, bridge and wall components

will be refined and reevaluated to facilitate means and methods which will allow for the closure duration to be further reduced. In addition, construction scheduling assumptions will be reassessed to maximize production and limit closure duration.

Due to project constraints, temporary R/W for construction access is likely needed from adjacent properties.

Due to the location of the project within the Innovista Design District and proximity to a historic structure, aesthetic enhancements for the bridge, walls and lighting have been evaluated and presented herein for further consideration. As the design advances, the project team will continue coordination with SCDOT and project stakeholder to select the appropriate aesthetic features.

2.0 Introduction

HDR has partnered with SCDOT to replace the existing Blossom Street (US 21) Bridge over the Norfolk Southern and CSX railroads in downtown Columbia, SC. The Blossom Street Bridge is located between the Gadsden Street intersection and Huger Street intersection. Blossom Street is a principle, urban arterial with a posted speed limit of 35 mph and average daily traffic (ADT) of 31,700 vehicles. Figure 1 on the following page shows the project bridge and the project area.

The project has unique challenges due to the urban environment such as restricted Rights-of-Way (R/W), presence of multiple major utilities, desire for multi-modal accommodations and property access concerns for adjacent parcels. In addition, coordination is necessary with two separate railroads concurrently to facilitate design approvals and construction over the railroads. Due to the tight confines of the project area and heavy traffic crossing the bridge, a major variable for this project will be the maintenance of traffic (MOT) during the construction of the proposed bridge and thus minimizing the construction duration during lane closures will be a major objective for this alternatives analysis.

Due to the numerous variables and significant challenges of the project, an in-depth screening of potential bridge alternates has been conducted and detailed in this report. The alternatives analysis in this report examines several factors as they relate to the bridge design features, construction costs, construction duration and other project impacts. Some of these factors include the effects of varying foundation types, construction methods, and span layouts. Site characteristics will be discussed along with several notable constraints which are applicable to all alternates. Five bridge alternatives are examined in Section 9.0 and recommendations are presented in Section 10.0.

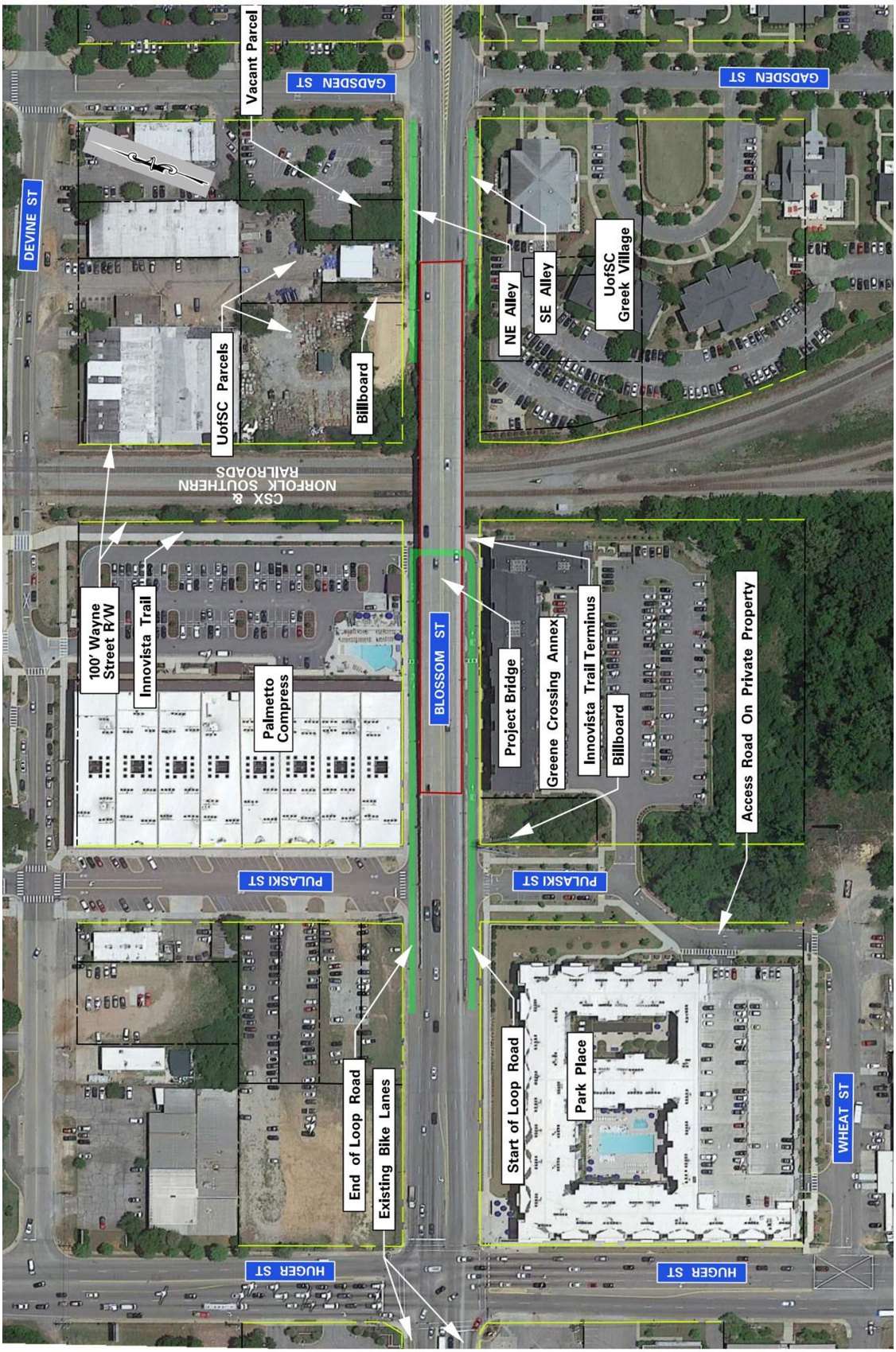


Figure 1: Project Area

3.0 Existing Conditions and Site Constraints

Existing bridge and walls

The existing 687'-0" Blossom Street Bridge was constructed in 1953 and rehabilitated in 1987. The substructure consists of twelve 50-ft reinforced concrete spans and a single 87-ft span over the railroads with steel girders and a concrete deck. The interior bents consist of four-column reinforced concrete bents founded on spread footings. The end bents are reinforced concrete abutment walls founded on spread footings. Cast-in-place retaining walls approximately 150 ft. and 220 ft. long on spread footings are utilized along the east and west bridge approaches. Wall heights range from 3.5 feet to 15.75 feet and footings range from 5.0-ft to 10-ft wide.

A substructure and superstructure rehabilitation was completed on the bridge in 1987 (File No. 40.225A. and 40.225A.1). The superstructure rehabilitation included a deck overlay and barrier parapet modification. The substructure rehabilitation consisted of constructing continuous steel saddles at all interior bents.

Figure 2 shows existing conditions adjacent to the bridge and its approaches. The City of Columbia has parking spaces with lighting beneath the bridge which were placed under encroachment permit and are not currently planned to be replaced with the proposed bridge.

Figure 2: Clockwise from Top Left - Loop Road North of the Bridge, Loop Road South of the Bridge, NE Alley, SE Alley

The existing Blossom Street roadway typical section on the bridge consists of four 12-ft lanes with a 3-ft flush median and 1-ft outside shoulders. The section does not meet current design standards for an Arterial class roadway due to the insufficient median and shoulder widths across the bridge. Figure 3 shows the existing typical sections of the bridge approaches including the existing approach walls and wall footings.

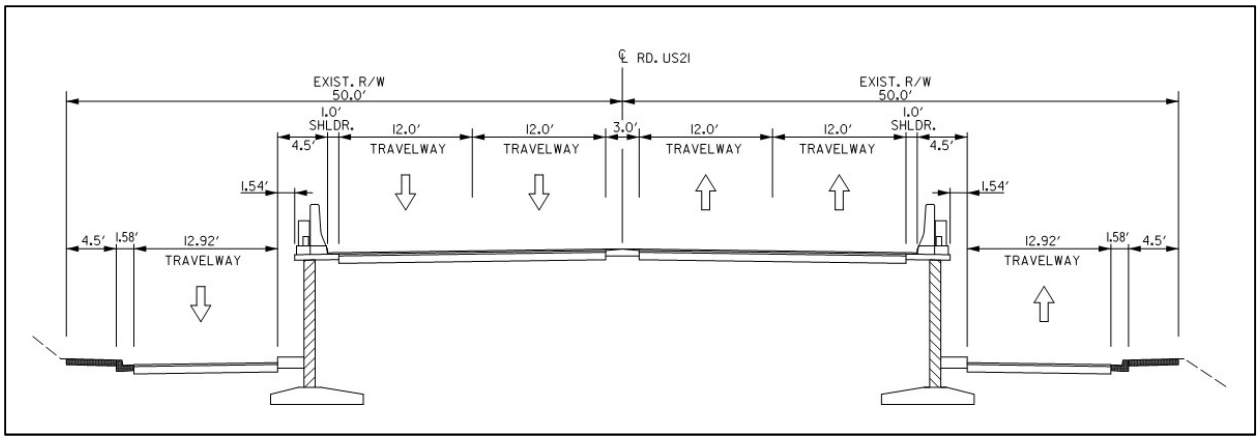


Figure 3: Existing Bridge Approach Typical Section

Adjacent Properties

The existing 50-ft R/W through the project is extremely constrained along the western approach which limits the opportunity for widening. The properties adjacent to the bridge include the Palmetto Compress, which is a large, historic, multi-level masonry warehouse that has been recently redeveloped into apartments. The southern face of this building is located at the existing 50’ R/W on the northern side of the western bridge approach. To the south of the western approach is a newly constructed apartment building, Greene Crossing Annex, which has a minimum offset from the existing 50’ R/W of 12 ft. to 14 ft. There are also two existing overhead billboard signs adjacent to the northeast and southwest bridge corners.

The University of South Carolina (UofSC) Greek Village is adjacent to the southeast corner of the bridge and a mostly vacant lot and parking lot are adjacent to the northeast corner. The UofSC has plans to develop the vacant property at the northeast corner into surface parking before the proposed bridge begins construction. Refer to Figure 4.

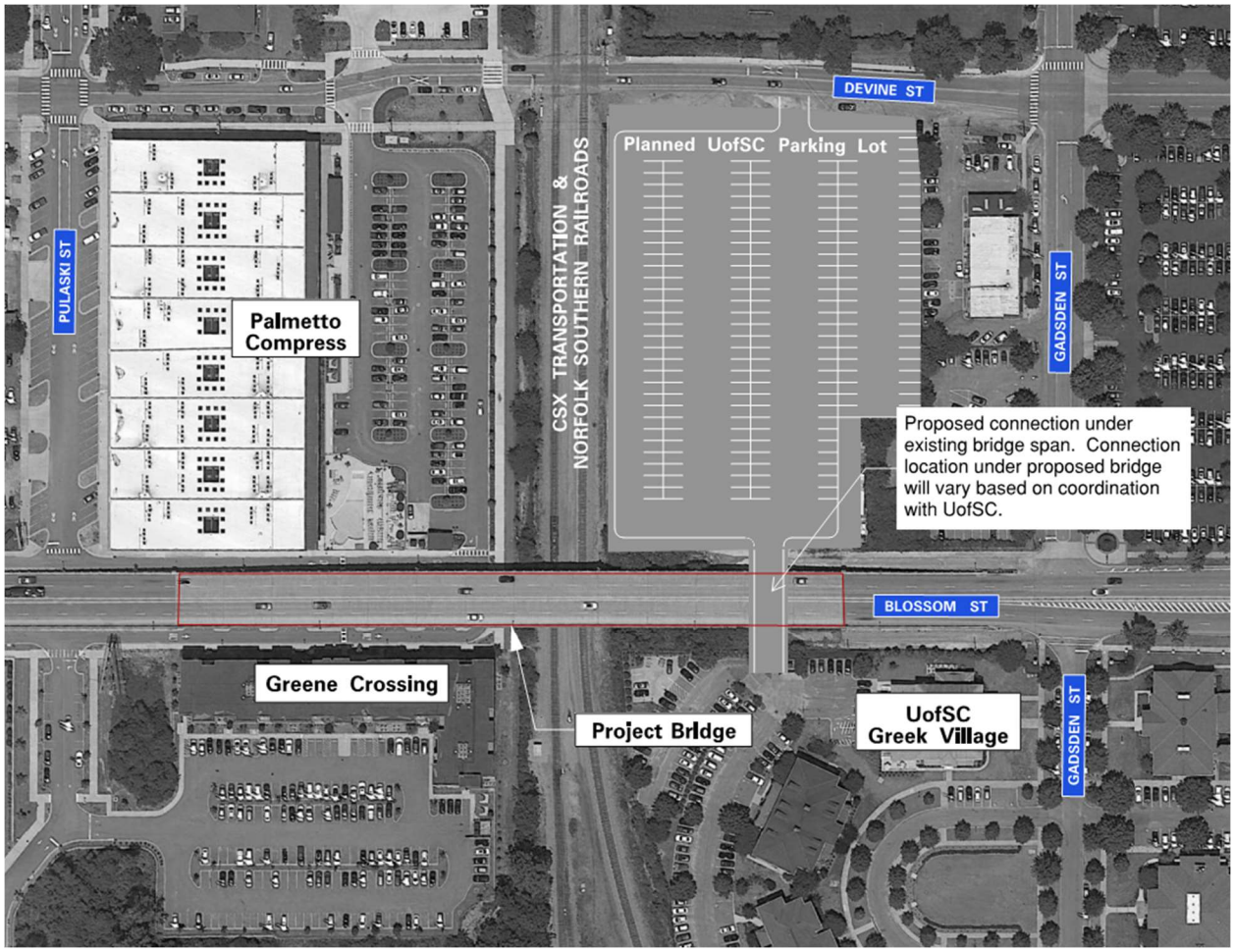


Figure 4: Proposed UofSC Parking Lot Concept

Span Accommodations

Several constraints for the alternate span layouts must be accommodated in the project site. These include the Innovista Trail along the west side of the railroads, a planned UofSC parking lot connection to the Greek Village on the east side of the bridge, two railroad tracks, and the existing substructure. Coordination is currently ongoing with UofSC and the railroads; however, probable and preferred scenarios are assumed in order to move the alternative concepts forward.

The Innovista Trail is a 20-ft wide (10-ft concrete and 10-ft asphalt) multi-use trail that is adjacent to the west side of the existing 100-ft Wayne Street R/W which carries the railroads through the project area. Currently, the Innovista Trail terminates beneath the existing bridge as it approaches the Greene Crossing Annex building. Project plans include tying the Innovista Trail into a proposed at-grade multi-use path running adjacent to Blossom Street between Pulaski Street and the Innovista Trail. This multi-modal connection is discussed in detail in the Loop Road Memo (2/18/2020). Maintaining the Innovista Trail under the proposed bridge will require 20-ft of clear width and at least 10-ft of vertical clearance. The vertical clearance will not be a controlling criteria for the bridge due to the height required to cross the adjacent railroads. Providing the horizontal clearance for the trail will need to be considered in the alternates;

however, it is assumed that the location of the trail can be shifted to accommodate bridge bent locations if needed.

A UofSC surface parking lot is currently planned to be located adjacent to the northeast corner of the bridge. The parking lot will service the UofSC Greek Village at the southeast corner of the bridge. UofSC is planning to provide an access between the two parcels beneath the bridge in order to connect the two parcels. The alternates have been developed to accommodate a potential driveway and sidewalk assuming 35-ft of clear width and 16-ft of vertical clearance. The location of the driveway beneath the bridge can be shifted; however, on-going coordination with UofSC will need to continue to ensure the plans remain compatible.

CSX and Norfolk Southern railroads each have a single track that cross beneath the bridge and are located in the existing 100-ft Wayne Street R/W. Norfolk Southern has confirmed that their R/W extends 18-ft east from the centerline of the 100-ft Wayne Street R/W and no additional tracks are anticipated. Coordination with CSX is on-going concerning verification of their R/W; however, property research indicates CSX's R/W extends 18-ft west from the centerline of the 100-ft Wayne Street R/W. CSX's representative indicated the desire to accommodate an additional track; however, it is contingent on the available CSX R/W. Span layouts have been developed to accommodate a minimum 23-ft vertical clearance over both tracks and horizontal clearances of 25-ft from the centerline of the two existing tracks.

Existing utilities adjacent to and under the bridge include sanitary sewer, storm sewer, buried electrical, buried telecom, and waterlines. Based on preliminary utility coordination and subsurface utility engineering (SUE), the relocation of the sanitary sewer will be a significant constraint for the project. A section of City of Columbia sanitary sewer crossing under the western side of the existing bridge is proposed to be relocated to cross under the proposed bridge closer to the railroads. The City requests a 30-ft clear width beneath the bridge for the sanitary sewer.

Seismic Considerations

The proposed bridge is assigned a Seismic Design Category (SDC) A per SCDOT's Seismic Design Specifications for Highway Bridges, Version 2.0 based on the operational classification (OC II) and the design SEE acceleration coefficient at a one-second period ($S_{D1\text{-}SEE}$ = 0.06g). Refer to the Geotechnical Subsurface Data Report (dated 11/27/2019) for ADRS curves. Seismic considerations will include minimum support length checks for expansion locations, verification of the capacities of superstructure to substructure connections, and meeting seismic detailing requirements.

4.0 Additional Studies to Date

Due to the numerous project variables and constraints, several other discipline focused analyses and studies have been completed. These include the Design Criteria Report (dated 10/21/2019), Loop Road Memo (dated 2/18/2020), Typical Section Memo (dated 5/5/2020) and Traffic Technical Memo (dated 5/14/2020) which have been reviewed by SCDOT. Additionally, the Geotechnical Technical Memo (dated 8/4/2020) has been submitted for review.

The **Design Criteria Report** includes roadway, drainage, and basic structural criteria to be utilized. The new bridge will be designed to provide a minimum of 23'-0" vertical clearance over the railroads and provide proper roadway width for Blossom Street across the bridge including four 12-ft travel lanes, a 4-ft raised median, and sidewalks to match the urban project area.

The **Loop Road Memo** addresses the existing at-grade one-way roadway located adjacent to the western bridge approach and the existing paved alleys adjacent to the eastern bridge approach. The memo identified and discussed the potential benefits and impacts of removing these roadways as part of the project. Based on review of the memo, SCDOT has given the project team preliminary approval to move forward with roadway typical sections that do not include replacing these roadways as part of the proposed project.

The **Typical Section Memo** presents the potential benefits of using wider than typical sidewalk widths which include enhanced pedestrian accommodations and additional width for construction staging.

The **Traffic Technical Memo** identified maintaining two travel lanes (allowing for two-stage bridge construction) and full closure of the bridge as feasible maintenance of traffic (MOT) scenarios to study further. These two options are considered for each of the bridge alternates presented in this report.

The **Geotechnical Technical Memo** identifies potential wall types and foundations for the approach fill walls and bridge structure.

Separate discipline specific alternative reports for traffic (Final Traffic Report) and roadway concepts (Alternatives Design Concept Report) are submitted concurrently with this report. The **Final Traffic Report** refines the two traffic models to determine user delay costs to be applied to construction duration during lane closures. The **Alternatives Design Concept Report** presents preferred roadway typical section options based on studies of property access, utility relocations and multi-modal accommodations.

The results from the Bridge Alternate Study will be used in conjunction with the Geotechnical Technical Memo, Alternatives Design Concept Report, Final Traffic Report and environmental evaluations to determine a recommended preferred alternate to progress into final design.

5.0 Construction Staging Scenarios

Due to the site characteristics of the project and existing bridge, the staging strategy will affect the final bridge design and will determine the magnitude of traffic impacts created by the construction on the City of Columbia's downtown traffic network. The Traffic Technical Memo (dated 5/14/2020) identified full closure of the bridge and maintaining two travel lanes (allowing for two-stage bridge construction) as feasible MOT scenarios to study further. This section discusses these construction staging scenarios.

5.1 Full Closure

As a construction staging scenario, the closure of Blossom Street between Huger Street and Gadsden Street to allow for demolition of the existing bridge and construction of the new bridge is considered. While this staging plan has benefits discussed below, it will create the largest impact to traffic since the more than 31,000 vehicle trips currently made across the existing Blossom Street Bridge will be rerouted throughout the downtown network. This staging scenario is evaluated for varied amounts of bridge and wall construction prior to lane closures (pre-closure construction).

Assuming no pre-closure construction under/adjacent to the existing bridge will maximize the construction area for the contractor to work, reduce constructability concerns, and reduce safety concerns related to work zone traffic control. It would require a longer closure time than assuming some pre-closure construction because a full closure would be implemented during existing bridge demolition and construction of the entire proposed bridge.

Assuming some pre-closure construction under/adjacent to the existing bridge would reduce the closure time by building portions of the proposed walls and bridge beneath or adjacent to the existing bridge while four lanes of traffic are maintained. Once these portions of the proposed bridge are complete, then a full closure would be implemented to allow for the existing bridge to be demolished and the remaining proposed bridge to be finished. This strategy will require additional design considerations and create constructability challenges which are discussed further in this report.

5.2 Two-Stage Construction

As a second construction staging scenario, constructing the proposed bridge in two stages is considered. This staging scenario allows for two lanes of travel (one in each direction) to be maintained throughout construction. Figure 5 depicts the two-stage construction scenario concept.

A two-stage construction scenario will allow for a portion of the existing bridge to be demolished and replaced with a portion of the proposed bridge. This would be achieved by utilizing a portion of the existing bridge for traffic during the first phase and then a portion of the proposed bridge for the second phase. Advantages and disadvantages of the two-stage scenario are evaluated for each bridge alternate and discussed in Section 9.0 of this report.

Some pre-closure construction is also applicable to the two-stage construction scenario. Portions of the proposed substructure, walls, and fill could be constructed, then approximately half of the existing structure would be removed. The remaining stage 1 bridge, walls, and fill would be built adjacent to the existing remaining structure. A temporary wall type would be required between the existing structure and the new fill.

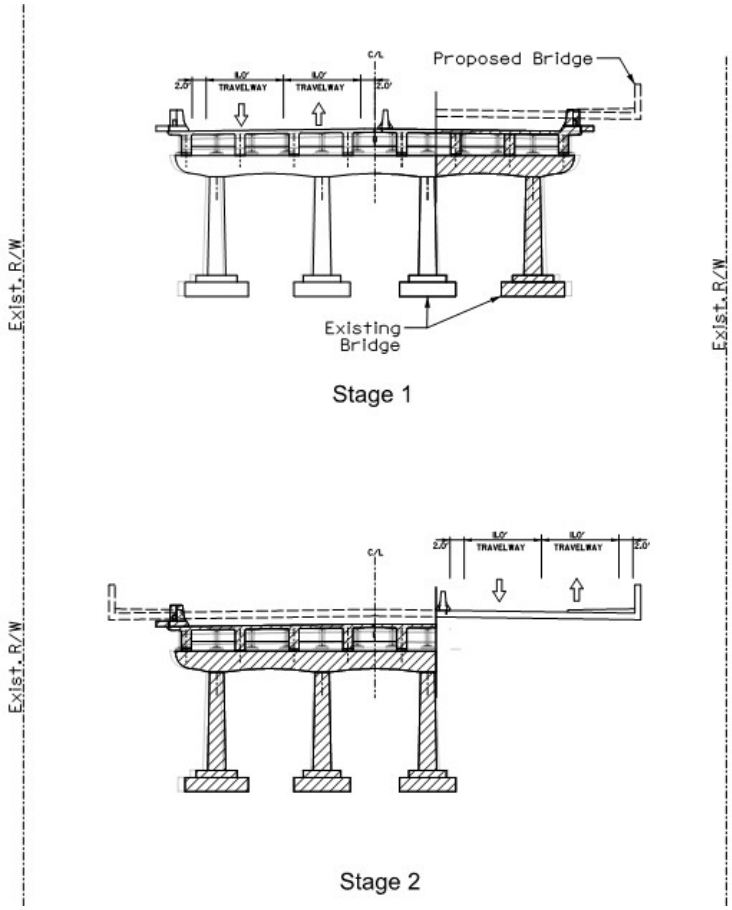


Figure 5: Two-Stage Construction Scenario Concept

6.0 Accelerated Bridge Construction

Multiple accelerated bridge construction (ABC) techniques and components have been investigated to reduce the closure duration as much as possible.

6.1 Structural Components

Precast Bridge Components

Precast prestressed girders have been proposed for several of the bridge alternates. Standard precast girders are common SCDOT girder types and will allow for simpler construction, shorter closure durations, and lower cost than structural steel girders.

Precast deck panels were considered to potentially shorten the closure duration and lower the cost of the deck slab as only the top mat of deck reinforcing will need to be installed. However, utilizing precast deck panels may not be a significant time savings over stay-in-place formwork and were not progressed for further consideration.

Full thickness precast deck sections have been considered but are not expected to provide a significant benefit. Full thickness precast deck panels have been installed on steel girder bridges with significant span lengths in other states. The deck panels are made composite with the girders by pouring small closure pours around groups of shear studs. Full thickness precast deck panels have likely not been used with concrete girders. The concrete girder to concrete deck interface makes up a large portion of the composite action for concrete girders; therefore, dense stirrup groups would likely be required to achieve the composite action for the full thickness precast deck section. The full thickness precast deck sections would require either an overlay or grinding to achieve a satisfactory riding surface.

For the substructure, precast bent and end bent caps have been considered but are not expected to provide a significant benefit. The bent and end bent caps are between 75 feet and 80 feet in length and are expected to weigh approximately 250 kips per cap. This weight is significantly higher than any other element for the alternates. This would require a much larger crane if the caps were precast full length. It would also be possible to precast the caps in two sections and pour a closure pour between the two once they are in place. This would lower the individual cap weights to approximately 125 kips per cap section which is approximately 25% heavier than the heaviest girder from the alternates. With the closure pour required between the two cap sections, it is expected that the time savings for this option may be fairly minimal.

Precast approach slabs have been considered as well. As the approach slabs will be overlaid with asphalt, the top surface of the precast approach slabs would not need to meet ride quality requirements. Precast, full length sections could be set side-by-side to create the full width of approach slab. The sections would be connected by small closure pours ideally cast with high early strength concrete to reduce the closure time. The precast approach slabs will likely be required to be cast off site and any time savings may be contractor dependent.

Wall Components
Several wall types have been investigated in an effort to avoid removing the existing approach walls and fill. From the impact to traffic standpoint, it is preferable to leave the existing fill and walls in place and place new fill around and on top. As discussed in the Geotechnical Technical Memo (dated 8/4/2020), for proposed walls adjacent to the existing walls, soldier pile and lagging walls, cast-in-place walls on spread footings, anchored cast-in-place walls, MSE walls and shored MSE walls have been considered for these locations depending on wall height and proximity to the exiting wall. As discussed later in this report, MSE walls appear to be the most feasible option for fill locations along the existing bridge.

Lightweight Fill
As discussed further in this report, differential settlement is a concern when placing fill around the existing bridge while it is in service. It is expected that lightweight fill with a weight of between 60 and 80 lbs per cubic foot would reduce the differential settlement to an acceptable level. Refer to the Geotechnical Technical Memo (dated 8/4/2020) for more information.

Lightweight flowable fill is expected to have some closure time benefits as well. With conventional fill, compaction equipment would be required during placement of the fill. The headroom required for this compaction equipment would limit the height of wall and fill that could be constructed while the existing structure is in service. Flowable fill requires less headroom to install which allows for a higher amount of wall and fill to be placed before the closure.

6.2 Construction Techniques

Low Headroom Foundation Installation
Micropiles allow for minimal headroom during installation. Micropiles can be installed in areas with as little as 12-ft of headroom. All of the substructure locations in the bridge alternates allow for the micropile installation beneath the superstructure of the existing bridge, allowing micropile installation to occur while traffic is maintained on the existing bridge. The micropile installation is expected to create less noise and produce less vibrations compared to traditional pile driving.

Substructure Construction beneath Existing Structure
As discussed further in this report, footings and columns for the bents may be constructed beneath the existing superstructure while the existing structure is in service if utilizing micropiles. This would reduce the length of the closure period.

“Roll-In” Superstructure
Constructing the new superstructure next to the existing structure and rolling or sliding it into place has been considered, but eliminated. This option could greatly reduce the closure time but causes significant impacts to the adjacent properties to the north. The apartment building at the southwest corner of the bridge eliminates the possibility of rolling the superstructure in from the south.

Temporary substructures would be constructed to the same elevation as the proposed substructures. The girders, deck, sidewalks, and barriers would be constructed at this

temporary location. Once the existing superstructure is removed, the new superstructure would be rolled or slid into place, potentially within a number of hours. While this would be the shortest duration closure, it is expected that at least a 100 to 150 foot width of property to the north would be needed to allow this construction. It is also expected that the railroads would not approve of this construction procedure. For these reasons, this option has been eliminated.

7.0 Aesthetic Considerations

Haunched Steel Girders

From the perspective of the Innovista Trail and UofSC Greek Village parking access, haunched girders could add visual appeal and may be an option if a steel girder alternate is selected. The hauched girders would likely increase the cost of the alternate. The Greene Street bridge that is currently under construction two blocks north, also spanning the two railroads and the Innovista Trail, utilizes concrete beams to span the railroads.

Decorative Bridge Railing and Fencing

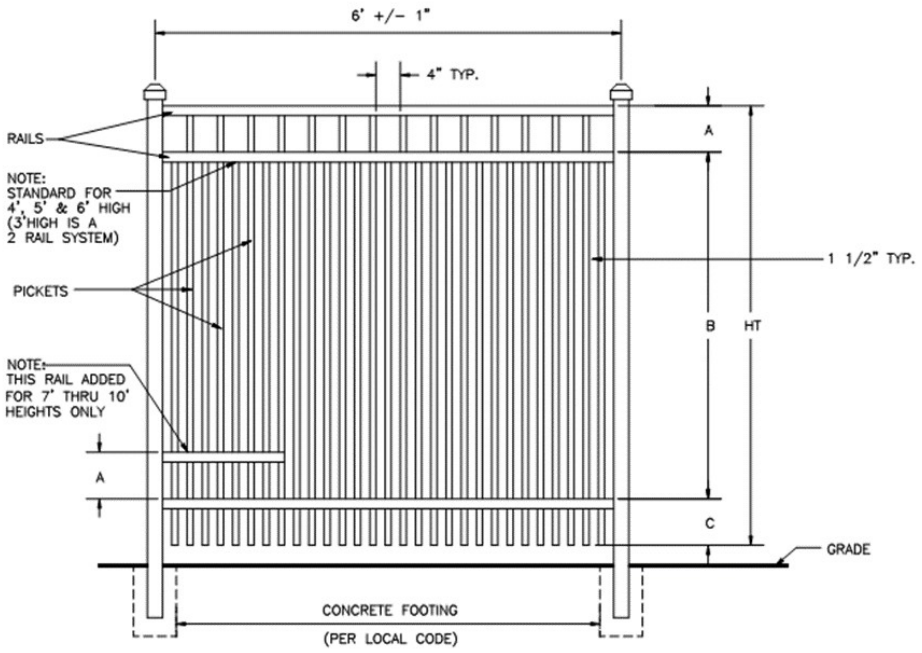
The typical MASH compliant SCDOT pedestrian railing wall is expected to be used; however, aesthetic indentations could be investigated as an option for both the inside and outside faces of the railing. It may be possible to place indentations in a similar pattern to the open bridge railing of the nearby Blossom Street bridge over the Congaree River or Lady Street bridge over CSXT and Norfolk Southern railroads; refer to Figure 6. Due to current railroad requirements, indentions or smaller openings would be required over the railroads as the railroads limit the maximum opening size. Figure 7 shows a railing with indentions with typical railroad protective fencing.

Figure 6: Blossom Street over Congaree River Railing (Top Left) and Lady Street over CSXT and Norfolk Southern Railroads (Top Right)

Figure 7: Sample Bridge over Railroad with Chain Link Fence and Railing with Indentions

Protective fencing is required for the span over the railroads per current railroad requirements. The protective barrier must extend at least 8'-0" above the sidewalk with openings not exceeding 2" x 2". It must also be configured to minimize the likelihood of climbing on the fencing. A typical approach to meet this criteria is to install chain link fence above the railing wall; refer to Figure 7. Aesthetic enhancements for this protective fencing could include epoxy coated chain link or closely spaced vertical pickets. Refer to Figure 8 below. Vertical picket fences are currently located in the median of Blossom Street as well as along Park Place. Vertical picket fencing with tight picket spacing, as shown in Figure 9, may be an option and would help tie the new bridge into the existing area aesthetically. The cost for an aluminum ornamental fencing with double pickets is estimated to be around $200 more per linear foot than standard chain link. City of Columbia planning staff noted that the pickets are preferred since they would be more consistent with the Innovista Design District standards.

Figure 8: Epoxy Coated Chain Link Fence (Left) and Vertical Picket Fence (Right)



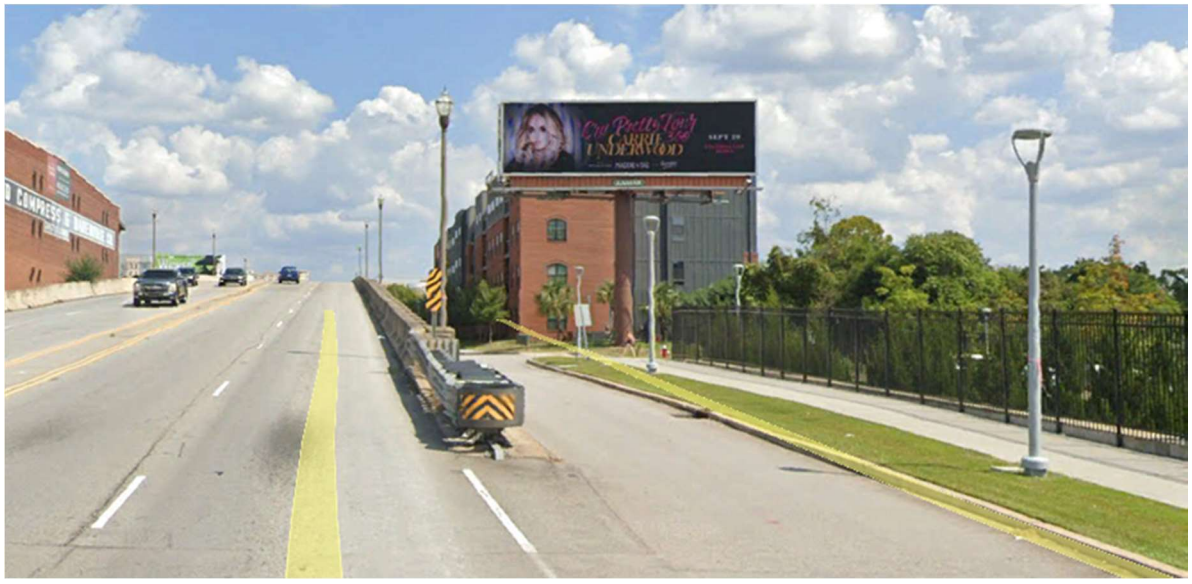


Figure 9: Ornamental Fencing with Double Pickets (Top) and Fencing along Park Place (Bottom)

Embossed/Stained Walls

Retaining walls will be utilized along the roadway approaching the bridge. The walls will be visible by the surrounding properties and by the users of the Innovista Trail. Potential aesthetic enhancements include the use of form liners and/or stained concrete. The Greene Street bridge that is currently under construction two blocks north, also spanning the two railroads and the Innovista Trail, will have a Fractured Fin finish. The same finish could be used here for consistency and was noted as the preference by City of Columbia planning. Another option could be to use a brick formliner consistent with the brick of the surrounding buildings.

Lighting

Lighting is along the existing bridge and roadway, and therefore is being considered for inclusion in the proposed project design. There is a mix of lighting within the project corridor. The existing bridge lighting is an acorn style lighting. The lighting associated with new development is an “Innovista” post-top assembly which is consistent with the Innovista Design District standards. Both lighting types are shown in Figure 10. Further coordination with the City of Columbia is recommended to finalize lighting type as well as any maintenance agreements. The Innovista style lighting is estimated to be approximately $1,000 more per fixture.

Figure 10: Existing Lighting

8.0 Common Features for All Alternates

8.1 Superstructure

All alternates will share the same bridge width, barrier type and sidewalk width. For the intent of comparisons among alternate types, it is assumed that all alternates will use elastomeric bearings. The typical section used for the superstructure evaluations and cost comparisons is shown in Figure 11 below. The final width of bridge may vary slightly compared to what is shown. See the Typical Section Memo and Alternatives Design Concept Report for more information.

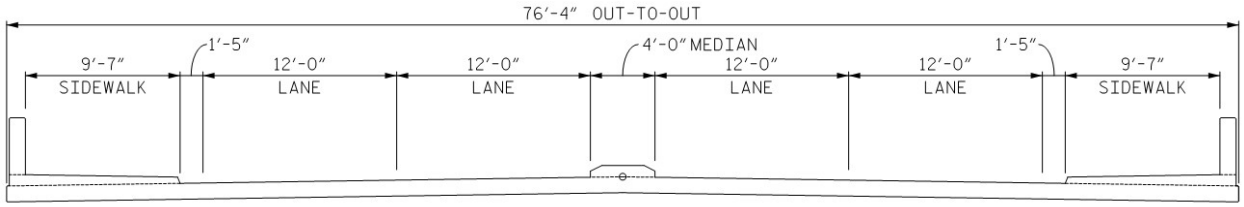


Figure 11: Typical Section

8.2 Substructure

End Bents

Three types of end bents have been investigated. Type 1 is a cast-in-place end bent cap on staggered or double rows of piles placed behind a MSE wall. Type 2 is a full height cast-in-place abutment wall on a footing supported by two or three rows of piles. Type 3 is a cast-in-place integral end bent cap on a single row of piles placed behind a MSE wall.

Type 1 could allow for the majority of the MSE wall and fill to be placed while the existing structure is in service. For driven steel HP piles, sleeves could be placed in the fill up to an elevation slightly below the existing superstructure. After the existing superstructure is removed, the piles could be driven through the sleeves during the closure period. For micropiles, further research is needed to determine the extent to which the micropiles can be installed above existing ground. To reach the proposed cap elevation, the micropiles will need to extend above existing ground by approximately 20-ft. The MSE fill would be placed around the micropiles after micropile installation. The bottom of the existing superstructure elevation is lower than the top of the proposed end bent caps, therefore, the end bent cap and backwall will be formed and poured during the closure of the existing structure. Lateral stability due to superstructure and earth pressure loads is provided by the staggered or double row pile configuration. The lateral stability is provided by a force couple between the pile rows. The cost of Type 1 for both end bents is expected to be about $550,000.

Type 2 allows for the footing and part of the abutment wall to be formed and poured while the existing structure is in service when utilizing micropiles. The top portion of the abutment wall/cap will be formed and poured during the closure of the existing structure similar. Lateral stability due to superstructure and earth pressure loads is provided by the footing and double or

triple row pile configuration. The lateral stability is provided by a force couple between the pile rows. The cost of type 2 for both end bents is expected to be approximately $1,000,000.

Type 3 could be an option with driven steel piles as HP piles are well suited for integral end bents. Type 3 has been eliminated for use with micropiles as micropiles are not well suited to the flexibility that is required for an integral end bent. In addition to flexibility concerns, the splices of micropiles have a reduced moment capacity when compared to the normal section of the micropile. As it is expected that integral end bent piles may reach the plastic moment capacity due to deflection induced moment, the splices will be a weak point and may not perform well over time.

The end bent types listed above will be suitable for full closure or two-stage construction.

Interior Bents

For all alternates, the bents will be traditional cast-in-place caps supported by columns and pile footings. Based on the width of the bridge, a four column bent is proposed with column spacings of approximately 22'-0". There is an existing sanitary sewer located beneath the proposed bents. Further coordination will be required to determine feasibility of moving the sanitary sewer or changing column and footing arrangements.

For the case of pre-closure construction while the existing structure is in service, micropile footings, and columns could be constructed before the closure of the existing structure. The cap would be formed and poured after the existing superstructure is removed.

If driven steel piles are used, the existing structure would be closed to traffic before construction of the bents can begin due to available head room, and the piles would be installed after the existing superstructure is removed.

To minimize the closure time, lower height bent caps that could be cast while the existing structure is in service were investigated. Cast-in-place pedestals would be placed on top of the bent caps after the existing superstructure has been removed. This option has been ruled out as the pedestals would be fairly large (up to approximately two feet tall) and it would be difficult to properly form and pour a cap directly beneath the existing superstructure. This option would leave approximately 1-ft between the existing superstructure and the bent cap being constructed.

The same bent arrangement will be suitable for full closure or two-stage construction.

8.3 Foundations

Several foundation options have been investigated. To allow for substructure construction while the existing structure is in service, micropiles have been selected as the preferred foundation type when pre-closure construction is proposed. Micropiles can be installed in low headroom applications and do not cause significant vibrations. 10-inch diameter and 7-inch diameter micropiles have been considered and have the same axial capacity (350 kips per pile) with slightly different required embedment depths into rock. The 10-inch diameter micropiles are preferred due to their higher stiffness and greater resistance to lateral loadings. This resistance

to lateral loadings is especially important to prevent end bent movement due to the earth pressure on the fill face. The cost for micropiles is expected to be about $380,000 for the three-span alternates.

When the existing superstructure is removed before pile installation, traditional driven steel pile installation would be allowed. HP14x73 piles have been selected for a similar load capacity of the micropiles. The cost for HP14x73 piles is expected to be about $320,000 for the three-span alternates.

Drilled shafts and spread footings have been eliminated as foundation options. Although low headroom drilled shaft rigs exist, it is expected that drilled shaft installation would negatively impact the construction timeline. Spread footings have been eliminated as a foundation option due to the depth of bedrock and span lengths of the proposed alternates.

8.4 Walls

Refer to the Geotechnical Technical Memo (dated 8/4/2020) for discussion on wall types under consideration and applications. For the purposes of comparing bridge alternates in this report, it is assumed that the wall sections along the existing walls are similar for each alternate. This discussion is focused on the walls adjacent to the existing bridge. Options for these walls are MSE or cast-in-place walls on spread footings.

MSE walls have been chosen as the preferred wall type. The conceptual cost of the MSE walls is less than the conceptual cost of cast-in-place walls. A cost comparison for a 25-ft tall wall indicates that an MSE wall will cost approximately $1,750 per linear foot while a cast-in-place wall will cost approximately $2,675 per linear foot. This comparison assumes lightweight fill behind each wall and does not include the cost of the fill.

Near the railroad crossing for the three span alternates, the walls will approach 30-ft in height. Cast-in-place walls at this height will require wall thickness at the base of approximately 3-ft thick for normal weight fill or 2-ft thick for light weight fill. In addition, the footing heels for the taller walls on spread footings are either encroaching on or very near the existing bridge footings. This would be unacceptable for leaving the existing structure in service during construction of these walls.

For construction occurring while the existing structure is in service, the walls could be constructed up to an elevation slightly below the existing superstructure before any closure of the existing structure. The remaining portion of wall and fill would be constructed when the existing superstructure is removed.

There are two different options for two-stage construction as shown in Figure 12. The first is to build a full height embankment for stage 1 using a temporary wall type adjacent to the staging line. The second is to build the walls on both sides simultaneously up to the elevations allowed by the existing superstructure prior to closure. After the first existing superstructure half is removed, the embankment would be built with a temporary wall adjacent to the staging line similar to the first option.

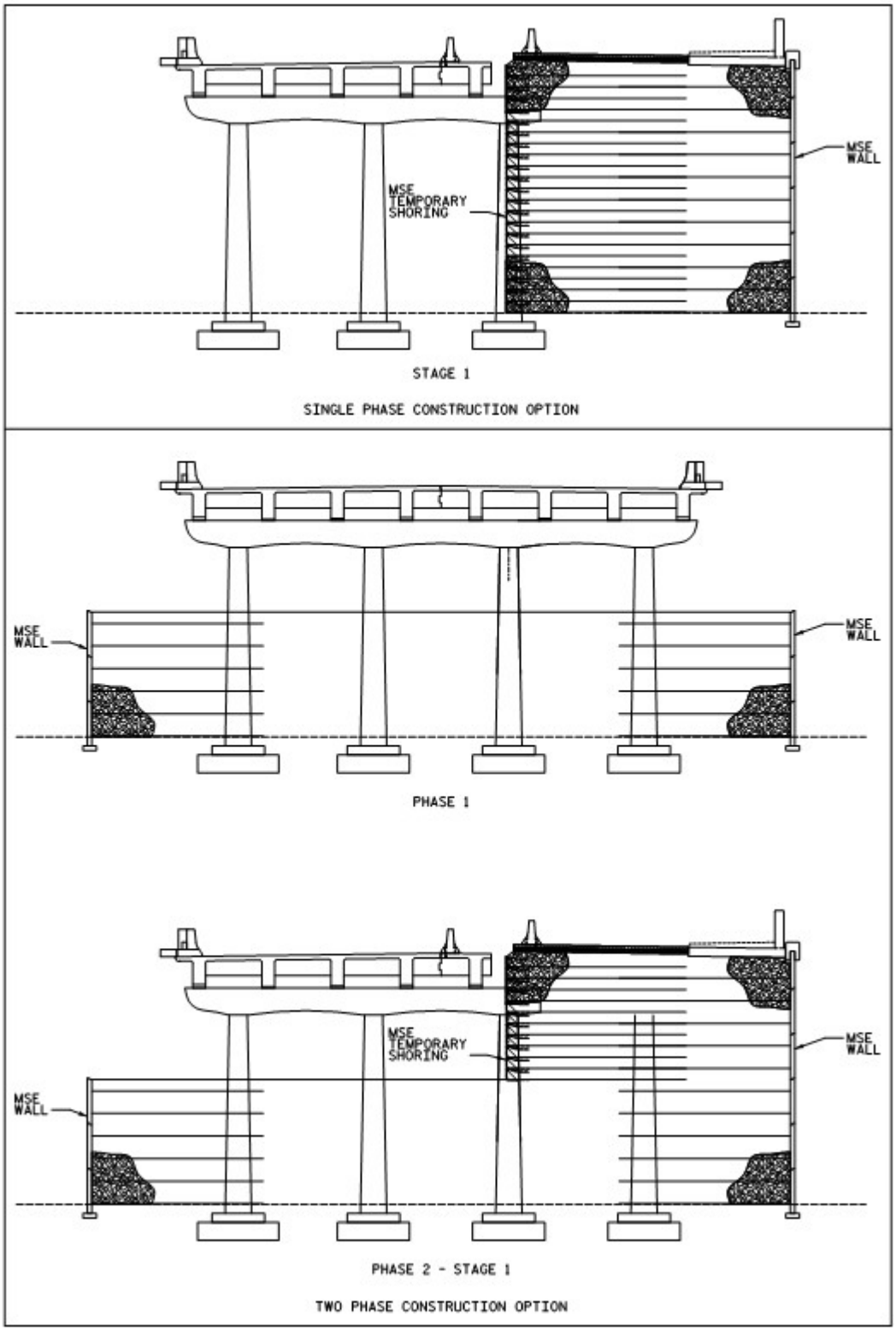


Figure 12: Phasing Options for Fill for Two Stage Construction

Differential settlement is a concern for any embankment construction while the existing structure is in service. Assuming a normal weight fill type and fill heights approximately 20-ft tall (corresponding to a few feet beneath the existing superstructure), the settlement of the existing interior footings and columns is estimated to be 1-inch while the settlement of the existing exterior footings and columns is estimated to be 0.5-inches. It is assumed that the existing structure was not designed to accommodate this differential settlement between columns.

Due to this settlement concern, either a lightweight fill type or placing less fill prior to bridge closure would be required. The lightweight fill will impact the cost of the structure, while placing less fill may impact the duration of the bridge closure period. Lightweight fill is estimated to cost approximately double that of typical MSE wall backfill.

If the existing structure is taken out of service before embankment construction begins, the settlement concerns are eliminated.

9.0 Span and Superstructure Alternates

The five span and superstructure alternates considered are listed in Table 1. Concept plans for each alternate are included in Appendix A.

Alternate	Bridge Length	Number of Spans	Span Arrangement	Girder Type/Size	Distinctive Features
1	245’	3	79’-87’-79’	AASHTO Type III	West interior bent between CSX railroad and existing bent.
2	270’	3	79’-112’-79’	54” MTB	All bents outside Wayne Street R/W.
3	664’	6	104’-112’-112’-112’-112’-112’	54” MTB	Longest bridge-similar to existing; least approach fill and wall length
4	270’	3	79’-112’-79’	42” continuous steel	Steel girder option of Alternate 2
5	205’	1	205’	80” steel	Shortest bridge; most approach fill and wall length

Table 1. Span and Superstructure Alternates

The five alternates are described further in their respective sections below. The following sections provide a general comparison of each alternate with regards to cost, compatibility with existing site features, constructability, and applicability to the full closure and two-stage construction scenarios. Because the ultimate selection of the proposed bridge alternate will depend on several considerations including construction duration, maintenance of traffic, user costs, and premium costs associated with staging or accelerated construction strategies, the alternates will first be screened at a high level with only some consideration of these factors. Therefore, the following sections offer this high level comparison of the alternates which will narrow the number of alternates that are ultimately compared with greater attention to the unique considerations outlined above.

9.1 Alternate 1

This alternate utilizes a three span layout centered about the railroad tracks. This alternate allows for the shortest spans by placing one bent on the railroad side of the existing Bent G. The span lengths are set to allow new construction to proceed without affecting the existing substructure.

Bridge Length and Span Layout

The total bridge length for this alternate is approximately 245 feet. This length includes end spans of 79’-0” and a center span of 87’-0”. The center span provides necessary horizontal and vertical clearances around existing railroad tracks. A potential future CSX track 15 feet to the west of the current CSX track would violate the 25-ft minimum distance between center of track and face of bent. CSX’s Right-of-Way and associated space available for a future track is currently under review by CSX. Refer to Section 3.0 under Span Accommodations for more information. The end spans provide flexibility for the Innovista Trail to the west and the future UofSC vehicular driveway and pedestrian traffic to the east.

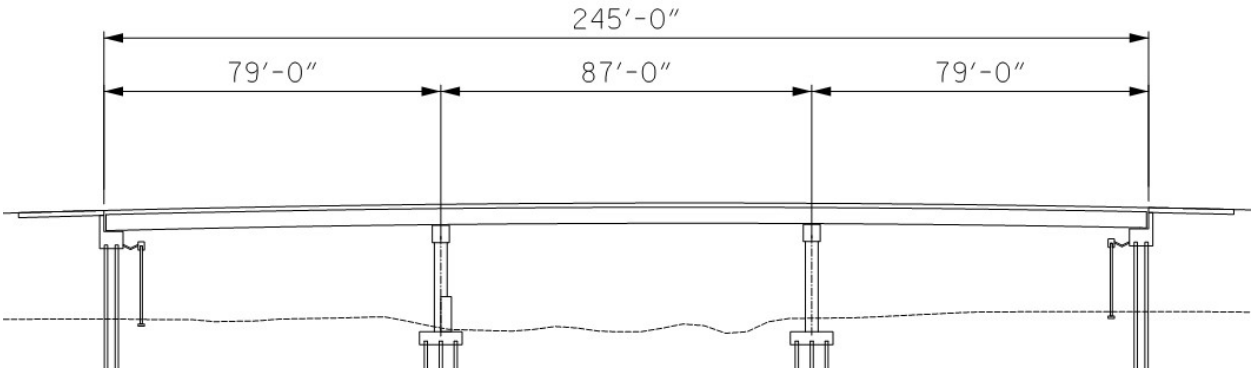


Figure 13: Alternate 1 Span Arrangement

Superstructure

For the span length of 87’-0”, eleven AASHTO Type III prestressed concrete beams will be sufficient for the cross section with a superstructure depth of approximately 5’-0”. Once an alternate is selected, beam design will be optimized to minimize the number of beam lines and therefore construction duration.

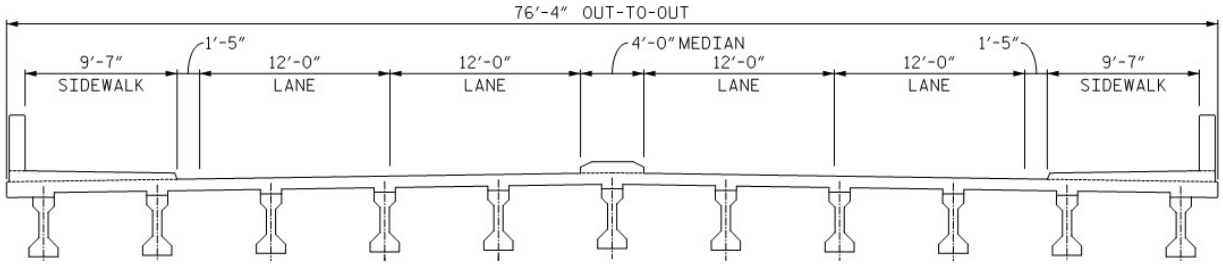


Figure 14: Alternate 1 Typical Section

Conceptual Cost

The conceptual bridge and wall cost estimate for the construction of this alternate is between $8.6 and $11 million, depending on the staging construction scenario and pre-closure construction costs. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget.

Discussion and Disposition of Alternate

This alternate places Bent 2 approximately 10 feet clear of the potential future CSX track. This violates both the 25-foot SCDOT minimum for no crashwall and the 18-foot absolute CSX minimum clearance. Even if the potential future CSX track is not a consideration, bent construction is complicated by the proximity to the active railroad.

The AASHTO Type III beams are relatively light weight and can be set in a span by span manner with no temporary supports or extended work over the railroad tracks required for the erection of the beams. The light weight girders should allow for smaller cranes and/or larger operating radius compared to the other alternates. As mentioned above, the construction of Bent 2 will present constructability challenges due to proximity to the railroad.

One of the keys to minimizing the duration of construction activities that impact traffic is to maximize the work done while traffic is maintained on the existing bridge. The shorter bridge length of this alternate compared to the existing bridge requires that new fill and retaining walls are placed within the footprint of the existing bridge. While construction of the bridge foundations and portions of the substructure can be performed beneath the existing bridge while traffic is on the existing bridge, the construction of the new fill and walls will be somewhat limited. The limiting factors for fill and wall placement while the existing bridge is in service are headroom and potential concerns about settlement of the existing bridge foundations induced by the fill placement as noted in Section 8.4. The construction of the approach fill and wall will further restrict space for equipment and access for delivery, especially in a staged construction scenario.

Due to the challenges associated with the construction of Bent 2 and still unknown status of CSX right-of-way and the requirement to consider a future CSX track, ***this alternate will not be advanced for further consideration.***

9.2 Alternate 2

This alternate utilizes a three span layout centered about the railroad tracks. This alternate allows for moderate length spans by placing both bents on the outside of the existing bents adjacent to the railroad. The span lengths are set to allow new construction to proceed without affecting the existing substructure.

Bridge Length and Span Layout

The total bridge length for this alternate is approximately 270 feet. This length includes end spans of 79’-0” and a center span of 112’-0”. The center span provides necessary horizontal and vertical clearances around existing railroad tracks and would accommodate a future CSX track if that is deemed necessary. The end spans provide flexibility for the Innovista Trail to the west and the future UofSC vehicular driveway and pedestrian access beneath the bridge to the east.

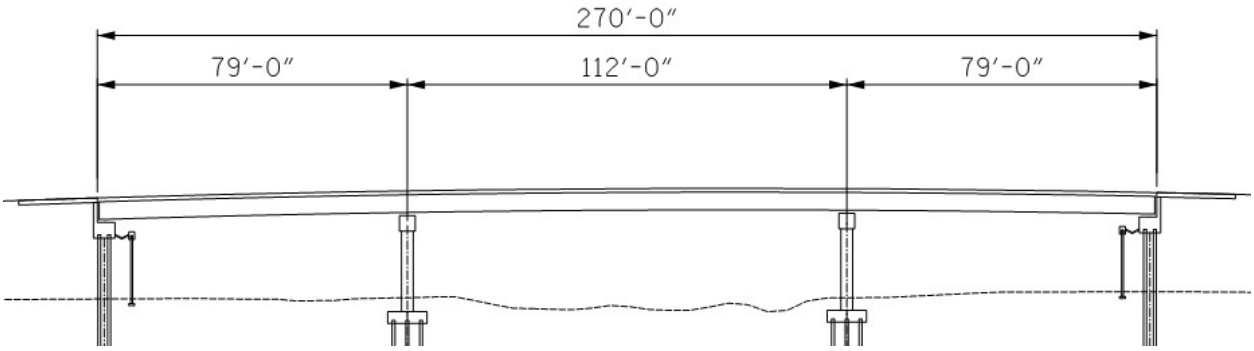


Figure 15: Alternate 2 Span Arrangement

Superstructure

For the span length of 112’-0”, eleven 54” Modified Bulb Tee prestressed concrete beams will be sufficient for the cross section with a superstructure depth of approximately 6’-0”. Once an

alternate is selected, beam design will be optimized to minimize the number of beam lines and therefore construction duration.

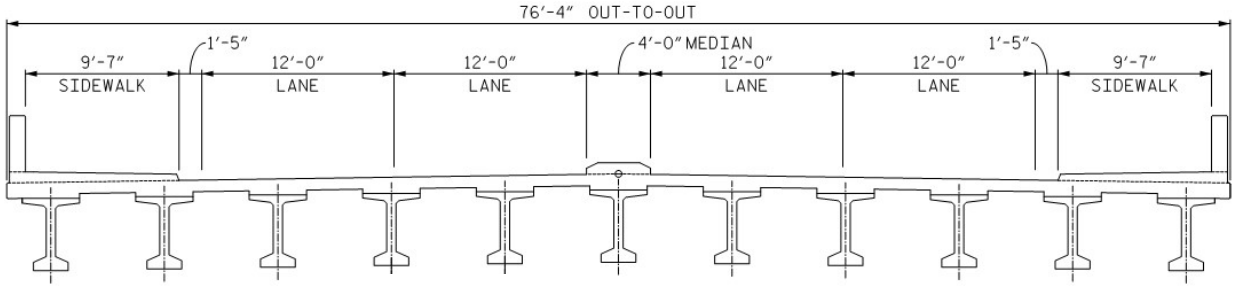


Figure 16: Alternate 2 Typical Section

Conceptual Cost

The conceptual bridge and wall cost estimate for the construction of this alternate is between $8.8 and $11.1 million, depending on the staging construction scenario and pre-closure construction costs. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget.

Discussion and Disposition of Alternate

The 54" Modified Bulb-Tee beams are heavier than the girders used for Alternate 1. The cranes needed for this alternate may need to be larger than what is required for Alternate 1. The placement of Bent 2 further from the railroad tracks should alleviate many of the concerns noted for Alternate 1 associated with the proximity to the tracks, but will require the Innovista trail to be re-aligned to avoid the new Bent 2 location. Similar to Alternate 1, this option could facilitate initial construction activities beneath the existing bridge; however, the sequencing of the bridge and wall construction will constrict access and equipment staging areas within right-of-way, especially in a two-stage construction scenario.

Based on the favorable cost and accommodation of the railroad clearances and local pedestrian and vehicular access desired by the adjacent property owners, ***Alternate 2 will be advanced for further consideration.***

9.3 Alternate 3

This alternate utilizes a six span layout with Span 4 centered about the railroad tracks. This alternate allows for moderate span lengths spans by placing all bents on the outside of the existing bents adjacent to the railroad. The span lengths are set to allow new construction to proceed without affecting the existing substructure. This alternate is similar in total length to the existing bridge and minimizes the amount of new wall and fill.

Bridge Length and Span Layout

The total bridge length for this alternate is approximately 664 feet. This length includes one 104'-0" span and five spans of 112'-0". Span 4 provides necessary horizontal and vertical clearances around the railroad tracks. The multiple spans provide flexibility for the Innovista Trail to the west and the future UofSC vehicular driveway and sidewalk to the east.

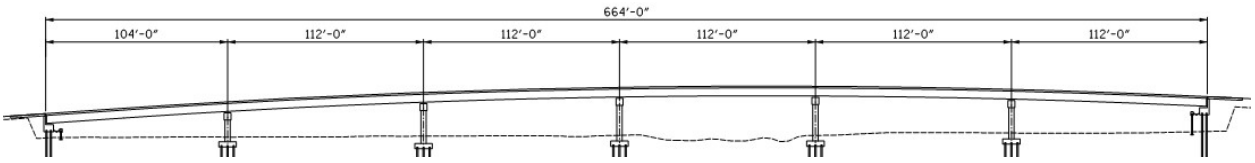


Figure 17: Alternate 3 Span Arrangement

Superstructure

For the span length of 112'-0", eleven 54" Modified Bulb Tee prestressed concrete beams will be sufficient for the cross section with a superstructure depth of approximately 6'-0". Once an alternate is selected, beam design will be optimized to minimize the number of beam lines and therefore construction duration.

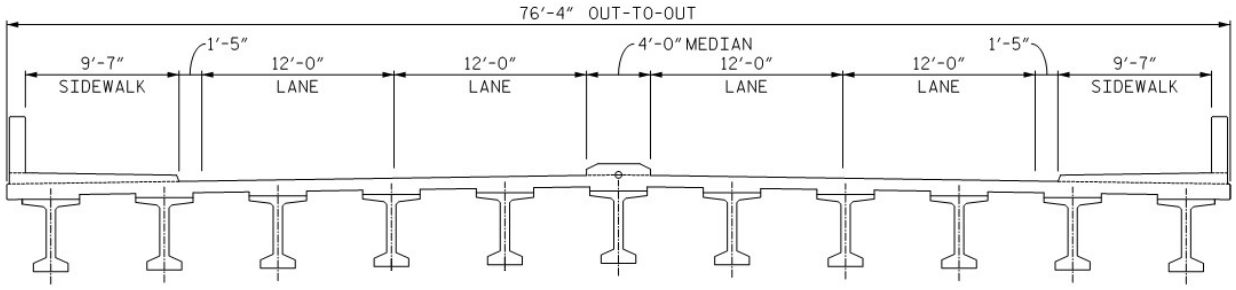


Figure 18: Alternate 3 Typical Section

Conceptual Cost

The conceptual bridge and wall cost estimate for the construction of this alternate is between $10.3 and $10.9 million, depending on the staging construction scenario and pre-closure construction costs. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget.

Discussion and Disposition of Alternate

The primary benefit of this alternate compared to the others is the minimization of new retaining walls that would need to be constructed beneath or adjacent to the existing bridge. Minimizing the new wall construction avoids the potential effects on the existing bridge's shallow foundations due to possible settlement induced by the new fill placement. This will be particularly beneficial if staged construction is required to maintain traffic on the existing bridge since construction of the other alternates would require full-height construction of new wall and embankment immediately adjacent to the existing bridge.

While this alternate has the benefit of eliminating fill adjacent to the existing bridge in the staged scenario, the placement of the beams in this alternate during two stage construction will be complicated by the constrained right-of-way and proximity of the adjacent buildings on the west end where the other alternates have walls. Beams for the western spans may require either a gantry crane or an operation that facilitates launching the beams from the end of the bridge during the two-staged construction operation.

Since this alternate alleviates potential concerns associated with settlements induced by new fill placement adjacent to the existing bridge, ***this alternate will be advanced for further consideration. This alternate will only be considered in the two-stage construction scenario*** *and not for the single stage construction scenario since the additional spans and substructures will prolong the duration of the full closure compared to Alternate 2.*

9.4 Alternate 4

This alternate is the same as Alternate 2 except it utilizes structural steel plate girders instead of prestressed concrete beams. The structural steel superstructure is being investigated to evaluate if the reduced superstructure depth will generate a significant benefit along the roadway approaches that would offset the additional superstructure cost. The lowering of the roadway profile could provide benefits in the urban corridor with proximity of intersections in close proximity on each end of the bridge.

Bridge Length and Span Layout

The total bridge length for this alternate is approximately 270 feet. This length includes end spans of 79'-0" and a center span of 112'-0". The center span provides necessary horizontal and vertical clearances around existing railroad tracks. The end spans provide flexibility for the Innovista Trail to the west and the future UofSC driveway and associated pedestrian connection to the east.

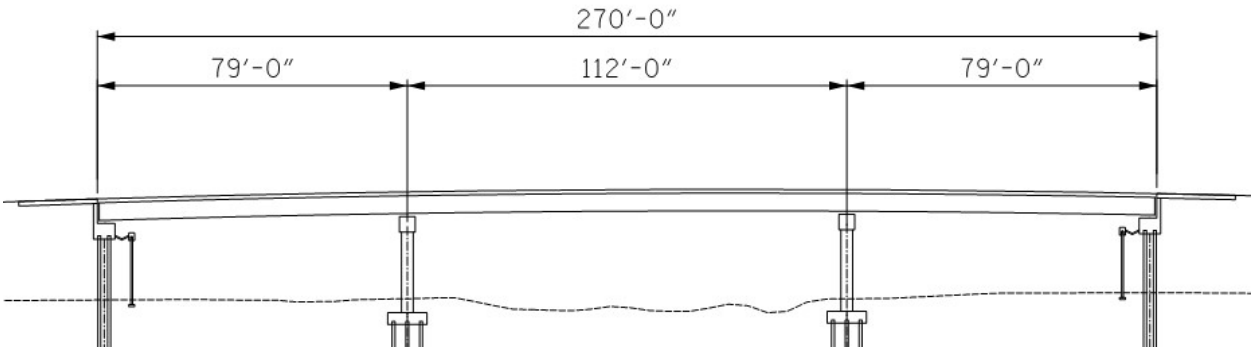


Figure 19: Alternate 4 Span Arrangement

Superstructure

For the span lengths of 79'-0", 112'-0", and 79'-0", nine 42-in deep continuous steel girders will be sufficient for the cross section with a superstructure depth of approximately 5'-0". This web depth allows for reasonable sized flanges up to approximately 16" x 2" on the bottom flange.

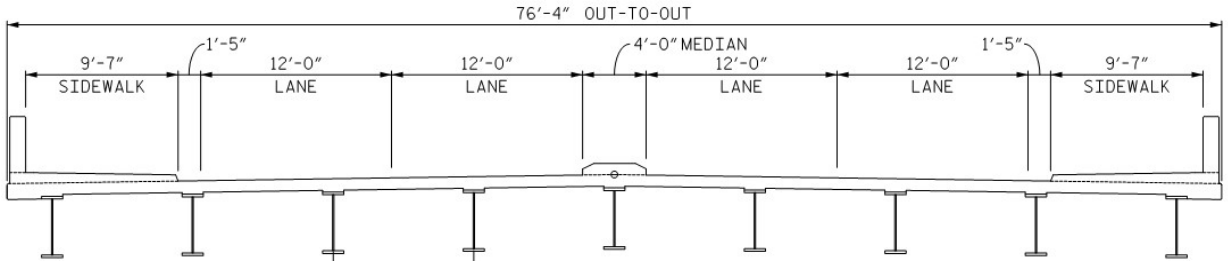


Figure 20: Alternate 4 Typical Section

Conceptual Cost

The conceptual bridge and wall cost estimate for the construction of this alternate is between $9.3 and $11.6 million, depending on the staging construction scenario and pre-closure construction costs. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget.

Discussion and Disposition of Alternate

This alternate has many of the same considerations and challenges as Alternate 2 with a few notable differences. The girder sections will be much lighter than the prestressed concrete beams, allowing for smaller cranes and/or larger operating radius compared to the alternates using prestressed concrete beams. While a small crane footprint is advantageous, the available right-of-way is so limited along the bridge, it is anticipated that temporary right-of-way will be required from the adjacent properties for access, laydown area, and crane placement regardless of the size of the crane. It is likely that at least one field splice will be in the span over the railroad. The bolted field splices will most likely be required to be assembled while the girder is hanging from the crane or supported by temporary supports within the railroad right of way. The likely presence of bolted field splices and more intermediate diaphragms will extend the timeframe of superstructure erection activities over railroad right-of-way.

The lower roadway profile afforded by the shallower structure depth (compared to the prestressed concrete span of the same length) does not translate to significant savings in roadway materials or enhanced constructability.

Based on the additional cost and limited benefit in terms of the lower roadway profile and lighter bridge elements, ***this option will not be advanced for further consideration****.*

9.5 Alternate 5

This alternate utilizes a long single span layout centered about the railroad tracks. The span length is set to accommodate all features under the bridge that the other alternates accommodate. The span also avoids conflict with existing bridge substructures, allowing new construction to proceed without affecting the existing bridge substructures. The goal of this alternate is to minimize overall construction duration, therefore minimizing impacts to traffic.

Bridge Length and Span Layout

The total bridge length for this alternate is approximately 205 feet. The span provides necessary horizontal and vertical clearances around existing railroad tracks as well as

clearance for Innovista trail to the west and the future UofSC vehicular driveway and sidewalk to the east.

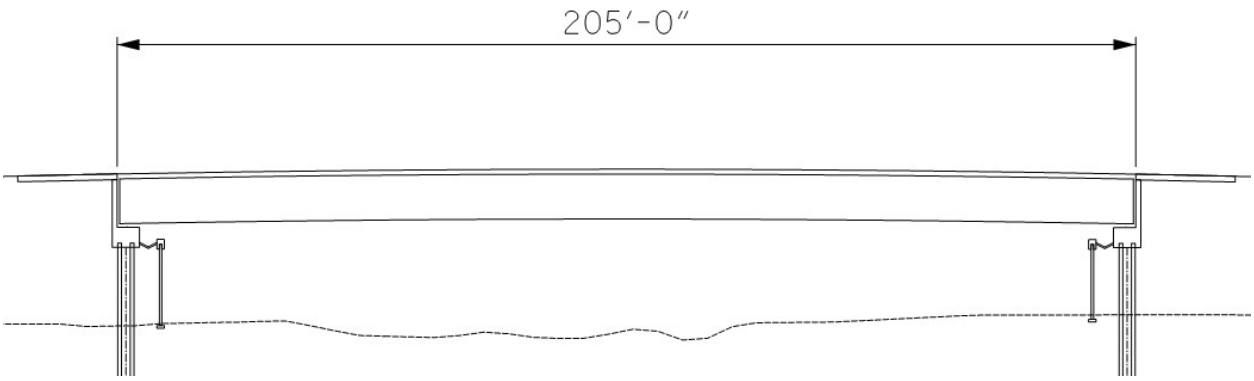


Figure 21: Alternate 5 Span Arrangement

Superstructure

For the span length of 205’-0”, nine 80-in deep steel girders will be sufficient for the cross section with a superstructure depth of approximately 8’-6”. As the web depth is minimized to reduce the impact to the profile, the flanges are fairly large, up to 32” x 1.75” for the bottom flange.

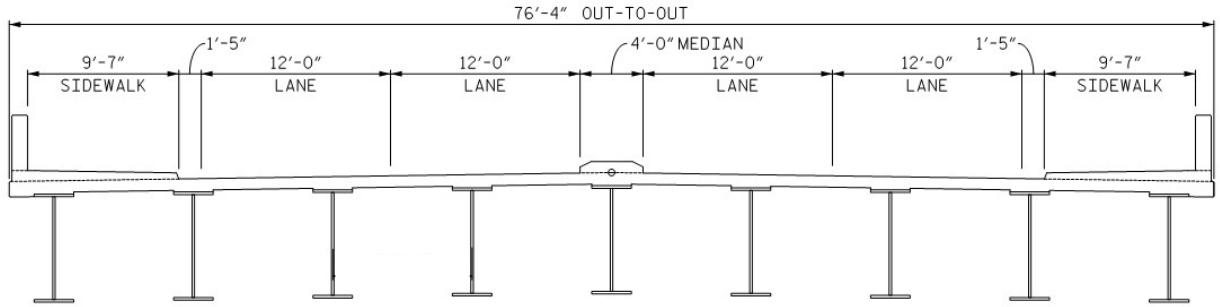


Figure 22: Alternate 5 Typical Section

Conceptual Cost

The conceptual bridge and wall cost estimate for the construction of this alternate is between $11.5 and $13.9 million, depending on the staging construction scenario and pre-closure construction costs. The conceptual estimate only includes major work items and is only intended to be used for comparison of the alternates and not to establish a budget.

Discussion and Disposition of Alternate

The alternate produces the heaviest girders and would likely require at least two cranes to set the girders. Similar to Alternate 4, this option could require temporary supports and/or extended periods of crane operation to hold the girders in place while field splices are bolted. The complex and potential multi-step girder erection process will likely lead to longer construction windows over the railroad compared to the other alternates, which could create a challenge scheduling work around railroad crossings through the project area. This alternate may be

extremely difficult to construct using a staged construction method. There is likely not enough room to assemble the girders on the ground and lift into place with the narrow staging areas. The structure depth required for this alternate will necessitate a significant grade change over the tracks that will propagate to the east end of the project. This grade change will significantly increase the roadway cost, requiring additional fill material and reconstruction of the intersection with Gadsden Street, including several hundred feet of Gadsden on either side of Blossom Street.

This alternate will not be advanced for further consideration *due to the high bridge and roadway cost and the constructability issues related to the large girders.*

9.6 Alternates 2 & 3: Evaluation of Constructability and Staging

Based on the initial screening of the alternates presented in the previous sections, two alternates have been advanced for a more detailed comparison: Alternate 2 and Alternate 3 (two-stage construction only). Since the decisions to be made regarding how this bridge will be replaced is multi-faceted and dependent on several different but inter-related factors, this detailed evaluation will include consideration of constructability issues, construction staging, impacts to the traveling public, and overall construction duration. Prior to the cost analysis in the next section, the unique challenges associated with constructability are described in detail below to directly address how they will affect construction schedule and thus cost.

Constructability and Construction Staging Cost Impact

Constructability and construction staging strategies have a direct impact on project cost and schedule. The project cost will be directly affected by the use of specialized construction equipment as well as means and methods required for complex construction and staging. The overall construction schedule also impacts project costs due to extended overhead, prolonged equipment rental, and additional management and inspection services. The indirect financial impact of the project will be associated with user delay costs resulting from increased travel time and distance due to potential lane reductions or closures during construction that may result from complex constructability or construction staging.

Construction Staging Scenarios

The constraints of the site present significant challenges relating to constructability due to limited space for equipment, limited access to the area under the bridge, and the presence of residential buildings and associated parking areas. Because of these constraints specialized equipment will likely be required for any option that keeps part of the existing bridge open during construction. These constraints will also make staged construction activities much more cumbersome and extend the timeframes for both construction and impacts to the traveling public. Conversely, the full closure of the roadway will maximize the amount of working room for the bridge construction and ultimately reduce both the overall construction time as well as the duration of impacts to traffic. While the timeframe for the traffic impact is shorter compared to the staged option, the impacts are more severe, which is reflected in the difference in the user delay costs per week presented in the next section.

Alternate 2

Construction of Alternate 2 which has a bridge length significantly shorter than the existing bridge will require construction of embankment and walls within the footprint of the existing bridge. The two-stage scenario for construction of this alternate will necessitate installation of embankment immediately adjacent to the existing bridge and bridge columns. As noted in previous sections, this creates some concerns related to induced settlement on the existing bridge foundations, but it also creates constructability challenges. The available space for delivery of backfill/embankment material and equipment to place the wall panels is minimal and will likely result in inefficient construction of a staged MSE wall. Once traffic is shifted, demolition activities will be slowed by the need to take great care due to the proximity of the newly constructed fill.

Alternate 3

Alternate 3 eliminates the concerns associated with settlement of the existing bridge foundations due to placement of wall backfill; however, it brings with it a lot of constructability issues. The constricted space on the west end of the bridge will likely require a gantry crane or a launching operation to facilitate beam placement from the end of the bridge. An alternative to this would be span by span construction that allows for crane placement within a previously constructed span to set the beams in the next span. This approach would increase the construction schedule since one span would need to be complete before the next one could begin.

Construction Access

Bridge construction activities along the bridge will be extremely confined due to the limited space within existing right-of-way and proximity of adjacent buildings, especially on the west end of the bridge. Access to the work site and space to maneuver equipment within the site will be extremely restricted, especially in the cases where bridge construction is staged to maintain traffic on the bridge. In order to facilitate access to the site for deliveries, provide space for cranes, and allow for storage of materials temporary right-of-way may be required from adjacent properties, especially for scenarios requiring staged construction of the bridge.

10.0 Analysis of Direct and Indirect Project Costs and Recommendations

This section compares Alternate 2 and Alternate 3 for various construction staging scenarios using a cost analysis that blends conceptual estimated direct and indirect projects costs for construction, user travel delay, static (cost for inspectors and Contractor's equipment and overhead costs), railroad flagging and MOT mitigation.

The direct costs associated with construction staging decisions and associated constructability challenges as discussed in Section 9.6 are generally inversely proportionate with the user travel delay costs. That is, the most straight-forward and cost effective construction causes the most impact to the traveling public and maintaining traffic throughout a work zone results in cumbersome and inefficient construction activities. The constructability and maintenance of traffic issues are compounded by the constraints of this site since all of the alternates and construction staging strategies require both complicated construction and impacts to traffic in varying degrees.

Many of the schedule and cost implications of the constructability challenges have been included in the cost analysis to the extent that they can be at this time. Construction costs and durations attempt to account for these challenges based on conceptual construction schedules developed for each alternate and construction scenario.

10.1 Estimated Direct and Indirect Project Costs

Construction Costs

Conceptual cost estimates for bridge and wall construction for each alternate are included in Table 2. The conceptual estimates only include major work items and are only intended to be used for comparison of the alternates and not to establish a project budget.

Alt.	MOT Scenario	Construction Activities Prior to Lane Closures	Estimated Construction Cost
2	Full Closure	N/A	$8,800,000.00
2	Full Closure	Micropile Footings and Partial Abutment Walls	$9,500,000.00
2	Full Closure	Micropile Footings, Partial Abutment Walls and Partial MSE Walls	$10,900,000.00
2	Maintain Two Travel Lanes (Two-Stage)	N/A	$10,200,000.00
2	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings and Partial Abutment Walls	$10,900,000.00
2	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings, Partial Walls and Partial MSE Walls	$11,100,000.00
3	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings and Partial Abutment Walls	$10,900,000.00

Table 2. Alternate 2 and Alternate 3 (Two-Stage) Estimated Conceptual Construction Costs

User Delay Costs

To estimate the impact to travelers in downtown Columbia during construction, the work zone road user costs for the full closure and maintaining two travel lane (allowing for two-stage construction) are estimated as $74,000 per week and $18,000 per week respectively. These estimates are based on guidance from the Federal Highway Department's Work Zone Mobility and Safety Program. Due to the project scope, conceptual level of the MOT schedules, and the need for a comparative analysis between the MOT scenarios, only the personal travel delay costs are calculated and considered. Refer to the concurrently submitted Final Traffic Report for more information.

Static Costs

There are static costs that remain approximately constant independent of the construction duration, such as cost for inspectors and Contractor's equipment and overhead costs. For the purpose of cost comparisons in this report, these costs are estimated as $4,000 per day. This includes SCDOT costs assumed as $1,800 per day based on the Schedule of Liquidated Damages in Section 108.9 of SCDOT's 2007 Standard Specifications for Highway Construction plus an additional $2,200 per day for Contractor's equipment and overhead costs.

Railroad Flagging Costs

Railroad flagmen are required when any entity is working on, near or adjacent to active railroad tracks. This includes work off railroad R/W that has the potential to impact railroad property or operations. These flagging services are estimated to be $1,300 per day per railroad per guidance in CSX's Public Project Information manual and estimates for the Greene Street bridge project. For the purpose of the cost comparisons in this report, the flagging duration is estimated as the construction time for demo, bent construction adjacent to the railroads and superstructure construction.

MOT Mitigation

In order to implement the MOT scenarios, mitigation at surrounding intersections is recommended for both scenarios. Refer to the concurrently submitted Final Traffic Report for more information. Mitigation measures include signal timing and phasing adjustments as well as temporary or permanent intersection improvements. The intersection improvements represent the bulk of the mitigation costs and are shown in Table 3.

Intersection Improvements	Full Closure	Maintain Two Travel Lanes
Gervais/Huger Intersection	$275,000	$275,000
Whaley/Assembly Intersection	$60,000	0

Table 3. Maintenance of Traffic Mitigation Estimated Conceptual Construction Costs

Construction Duration

For the purpose of alternate and construction staging scenario comparisons, conceptual construction schedules were developed for Alternate 2 single stage/full closure and two-stage construction as well as Alternate 3 two-stage construction. These conceptual schedules were developed for major bridge and wall construction activities for alternate comparison purposes. The approximate total construction duration and approximate construction duration impacting traffic are shown in Table 4. Approximate flagging duration is also included.

Alt.	MOT Scenario	Construction Activities Prior to Lane Closures	Estimated Total Construction Duration (Weeks)	Estimated Lane Closure Duration (Weeks)	Estimated Flagging Duration (Weeks)
2	Full Closure	N/A	55	30	19
2	Full Closure	Micropile Footings and Abutment Walls	49	23	23
2	Full Closure	Micropile Footings, Abutment Walls and MSE Walls	56	20	20
2	Maintain Two Travel Lanes (Two-Stage)	N/A	69	43	30
2	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings and Abutment Walls	69	39	39
2	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings, Abutment Walls and MSE Walls	70	36	36
3	Maintain Two Travel Lanes (Two-Stage)	Micropile Footings and Abutment Walls	80	49	42

Table 4. Alternate 2 and Alternate 3 (Two-Stage) Estimated Construction, Closure and Flagging Duration

10.2 Summation of Estimated Direct and Indirect Costs and Recommendations

In order to arrive at a recommendation, the conceptual estimated direct and indirect costs previously described are combined for Alternate 2 (full closure and two-stage) and Alternate 3 (two-stage only). Refer to Figure 23. The staging scenarios for Alternate 2 are evaluated for three cases: A) no pre-closure construction (assumes driven pile foundations), B) micropile footing installation under existing bridge prior to closure and C) micropile footing installation and partial MSE wall construction under bridge prior to closure. The Alternate 3 two-stage evaluation assumes micropile footing installation prior to closure.

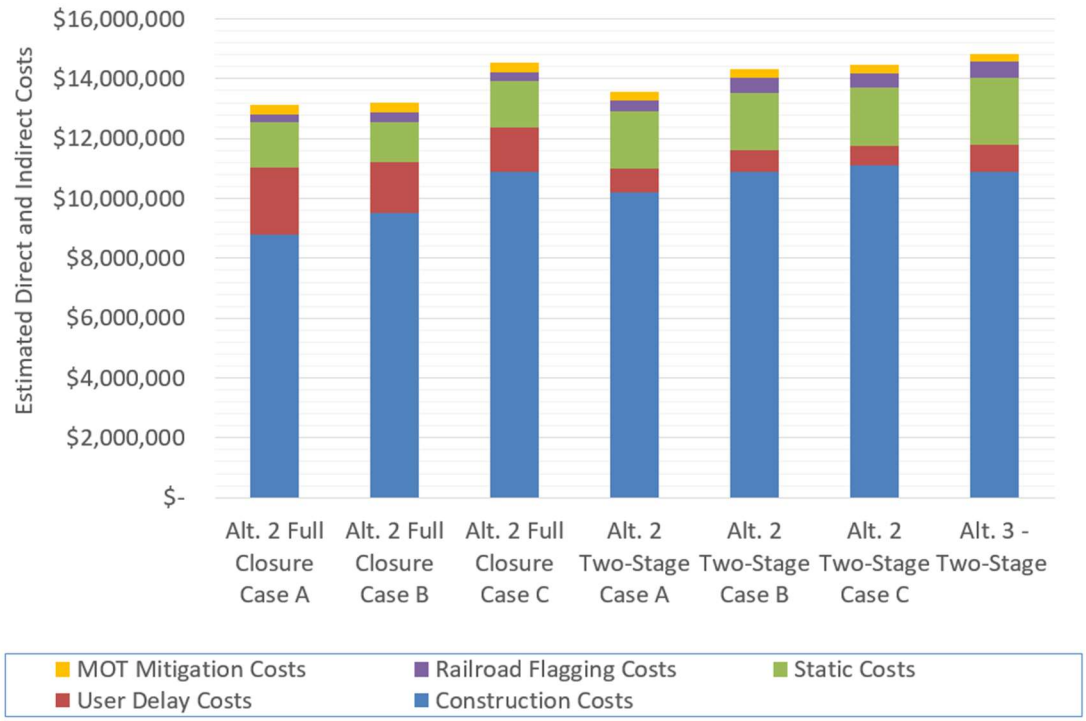


Figure 23. Summation of Estimated Direct and Indirect Project Costs

The construction scenario of full closure is recommended over two-stage construction. In evaluating the sum of the estimated direct and indirect costs of the alternates, Alternate 2 Full Closure Cases A and B, and Two-Stage Case A all have similar overall costs. In a two-stage construction scenario, traffic would be maintained through the work site, but the overall impact duration would be longer compared to the full closure. The extremely tight work area in the two staged scenario and the resulting need to perform construction in a somewhat linear fashion will greatly inhibit the contractor's ability to efficiently manage and make adjustments to construction activities to mitigate potential delays. A full closure scenario would shorten the overall duration of the traffic impact and will maximize the contractor's ability to control the closure schedule and mitigate delays by having more flexibility relative to the greater number of available work items at any given time and the maneuverability offered by the larger work area. Therefore it is felt that the risk of schedule creep during maintenance of traffic operations is greater with the two-stage construction versus the full closure.

Foundation installation represents the highest risk for delays during construction due to unseen subsurface conditions such as boulders, debris, and utilities; therefore, the risk of delays during lane or bridge closure can be further mitigated by installing the new bridge foundation elements before the closure. It is for these reasons that the recommendation is to construct the bridge under a full closure with the foundations installed prior to the beginning of the closure.

Micropile foundations are recommended to maximize the contractor's ability to minimize lane or bridge closure duration as well as to minimize construction vibrations and noise due to adjacent residential and historic structures in very close proximity to proposed construction. The estimated closure duration savings from micropile footing installation prior to closure as

compared to driven pile foundations after is closure is seven to ten weeks for the full closure scenario for Alternate 2. This is reflected in the difference in the User Delay Costs for Alt. 2 Full Closure Case A and Case B shown in Figure 23.

In summary, ***Alternate 2 under a full closure with micropile footing installation occurring prior to closure (Alternate 2 Full Closure Case B) is recommended*** as the sum of the estimated direct and indirect costs are in line with the lowest case while minimizing the traffic impact duration. The bridge closure duration is currently anticipated to be approximately 5.5 months assuming a five day work week and two bridge crews. As the design is advanced, bridge and wall components will be refined and reevaluated to facilitate means and methods which will allow for the closure duration to be further reduced. In addition, construction scheduling assumptions will be reassessed to maximize production and limit closure duration.

APPENDIX A

BRIDGE ALTERNATE CONCEPT PLANS

BRIDGE PLANS ID	SHEET NO.
P030115	1

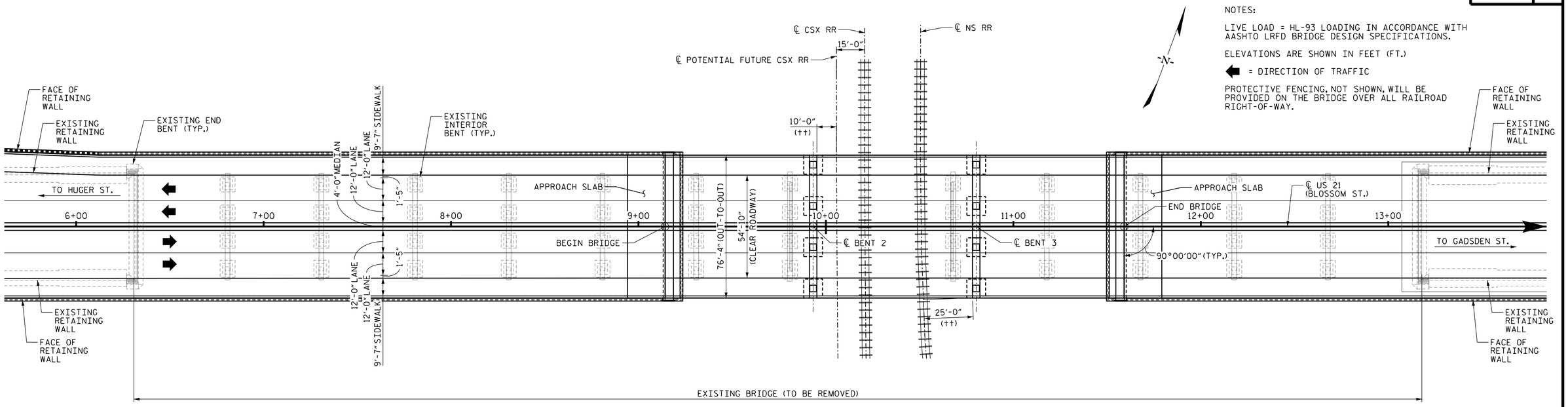
NOTES:

LIVE LOAD = HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

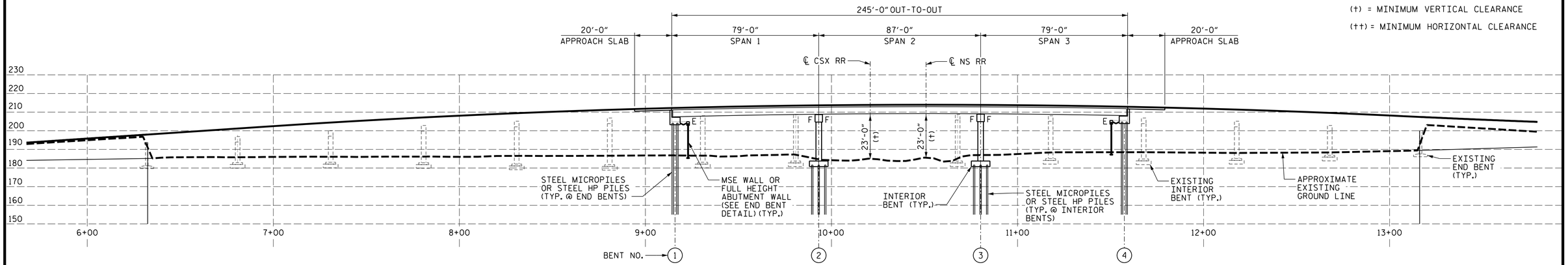
ELEVATIONS ARE SHOWN IN FEET (FT.)

⬅ = DIRECTION OF TRAFFIC

PROTECTIVE FENCING, NOT SHOWN, WILL BE PROVIDED ON THE BRIDGE OVER ALL RAILROAD RIGHT-OF-WAY.



PLAN



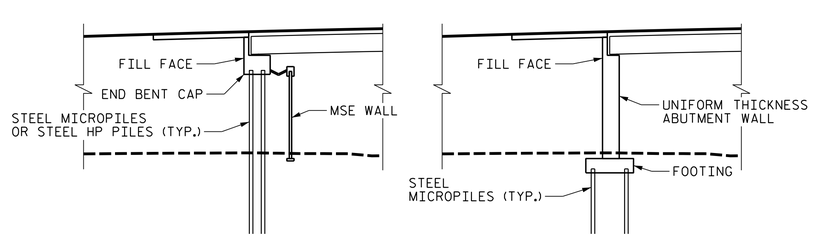
SECTION ALONG ℄ US 21 (BLOSSOM STREET)

45" AASHTO TYPE III PRESTRESSED CONCRETE GIRDERS CONTINUOUS FOR LIVE LOAD

LEGEND:

(†) = MINIMUM VERTICAL CLEARANCE

(††) = MINIMUM HORIZONTAL CLEARANCE



END BENT BEHIND MSE WALL

FULL HEIGHT ABUTMENT WALL

END BENT DETAIL

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QUAN.			
DR.	BP	EN	7-20
DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC. OF THE CAROLINAS

1122 LADY STREET
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ALTERNATE I PLAN AND PROFILE US 21 (BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

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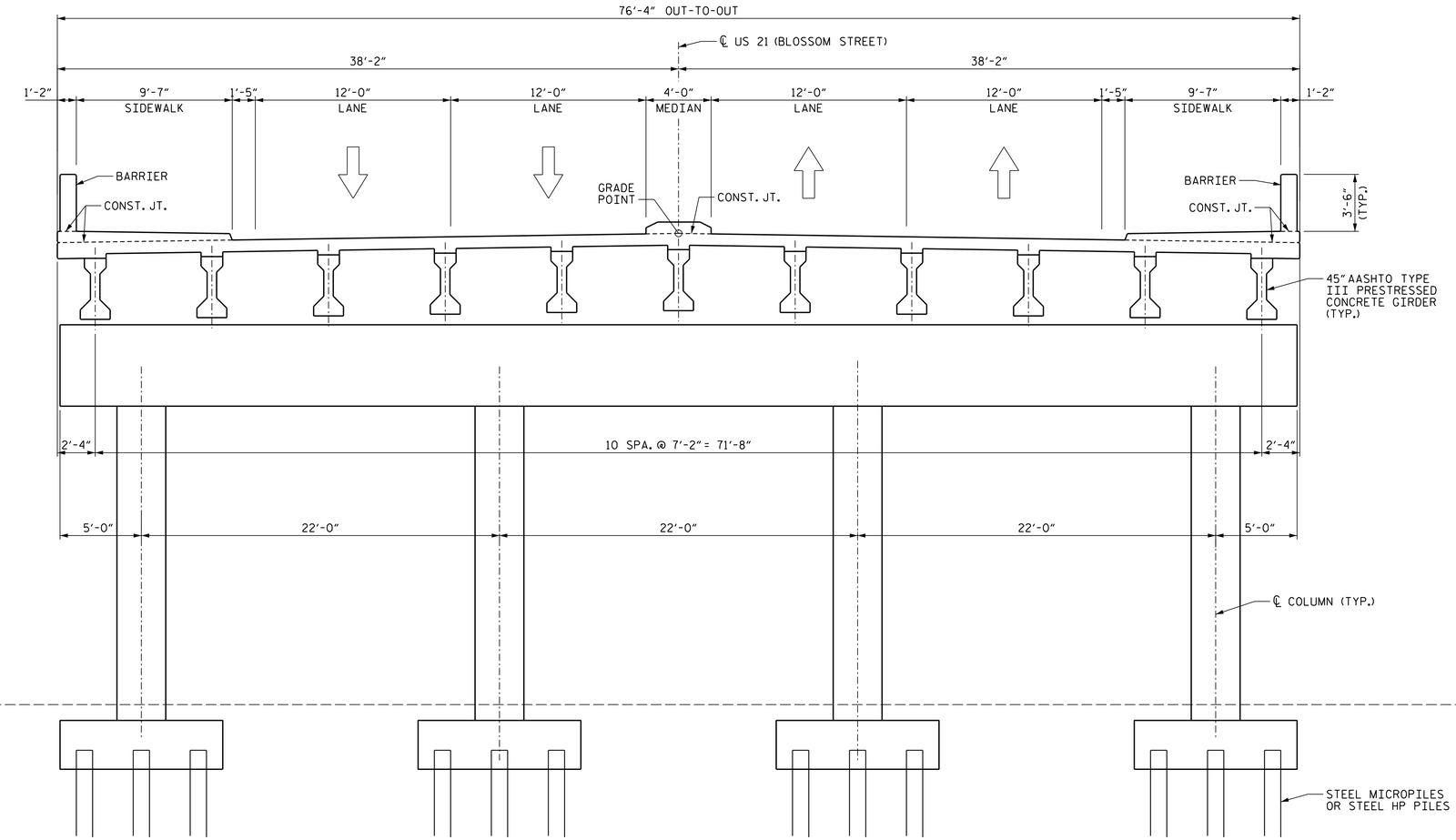
FILE NAME: c:\pw working\eastch\d573894\030115_BP_Working.dgn

BRIDGE PLANS ID	SHEET NO.
P030115	2



TYPICAL SECTION

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	BY	CHK.	DATE

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OF THE CAROLINAS

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ALTERNATE I SECTION US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	3

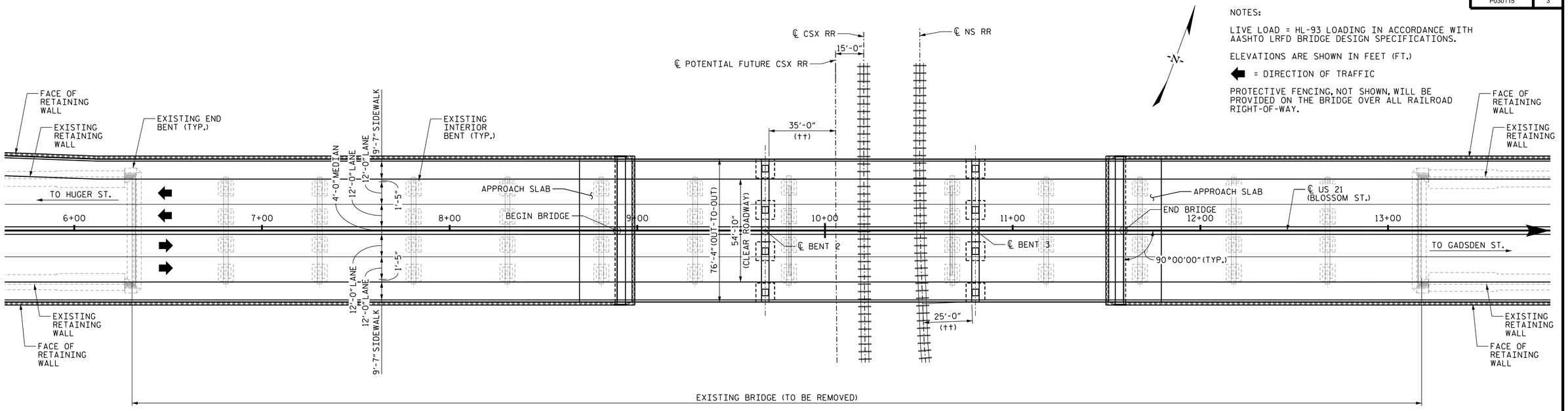
NOTES:

LIVE LOAD = HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

ELEVATIONS ARE SHOWN IN FEET (FT.)

= DIRECTION OF TRAFFIC

PROTECTIVE FENCING, NOT SHOWN, WILL BE PROVIDED ON THE BRIDGE OVER ALL RAILROAD RIGHT-OF-WAY.



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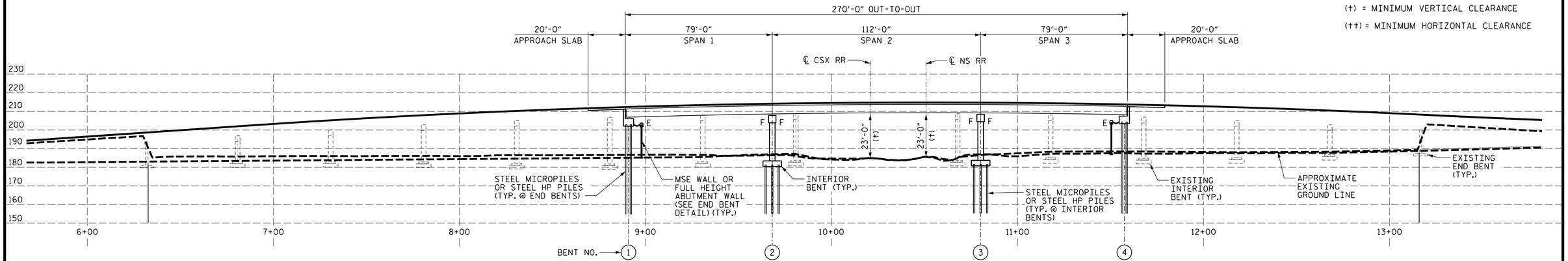


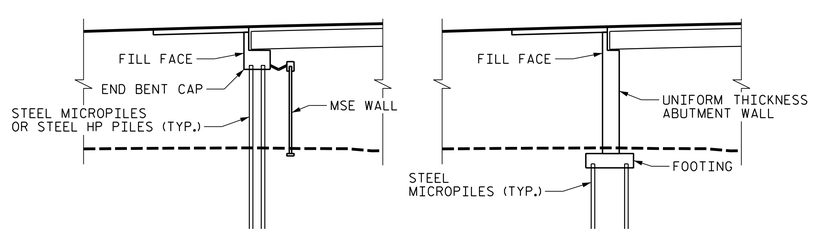
SECTION ALONG ℄ US 21 (BLOSSOM STREET)

54" PRESTRESSED CONCRETE MODIFIED BULB TEE GIRDERS CONTINUOUS FOR LIVE LOAD

LEGEND:

(†) = MINIMUM VERTICAL CLEARANCE

(††) = MINIMUM HORIZONTAL CLEARANCE



END BENT BEHIND MSE WALL

FULL HEIGHT ABUTMENT WALL

END BENT DETAIL

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	BY	CHK.	DATE

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ALTERNATE 2 PLAN AND PROFILE US 21 (BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

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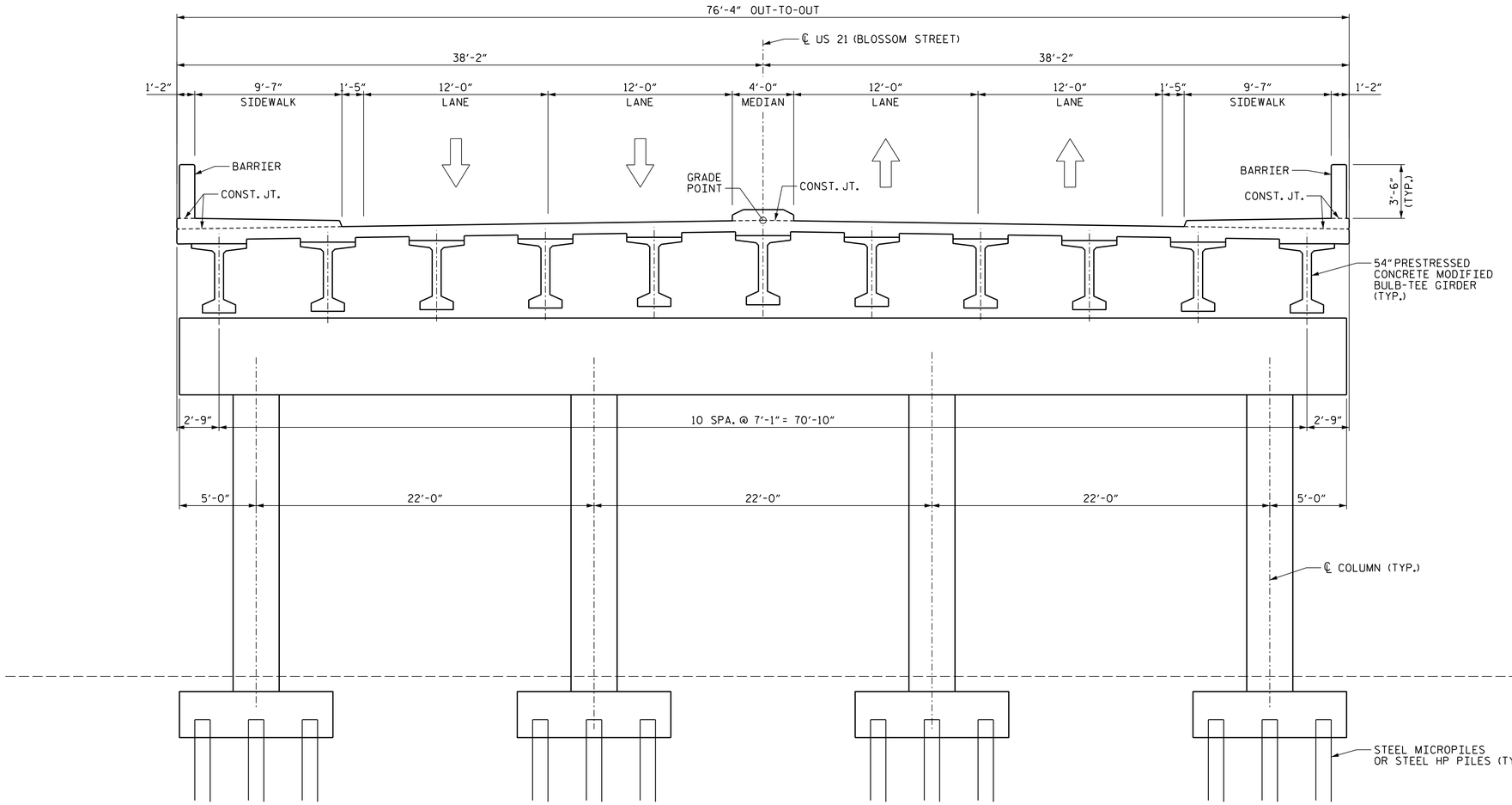

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	BY	CHK.	DATE

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ALTERNATE 2 SECTION US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	5

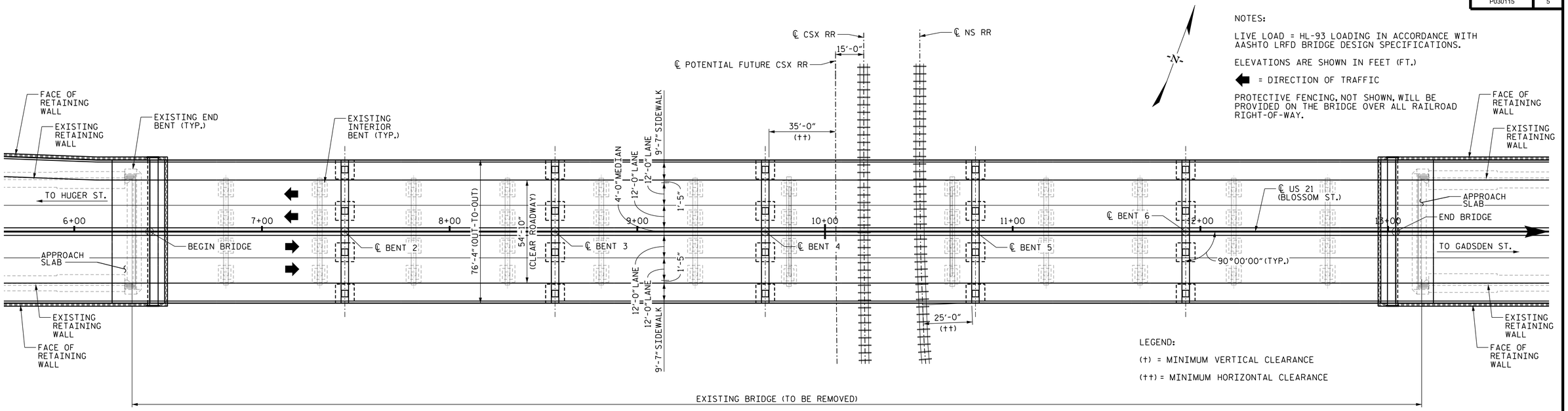
NOTES:

LIVE LOAD = HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

ELEVATIONS ARE SHOWN IN FEET (FT.)

= DIRECTION OF TRAFFIC

PROTECTIVE FENCING, NOT SHOWN, WILL BE PROVIDED ON THE BRIDGE OVER ALL RAILROAD RIGHT-OF-WAY.



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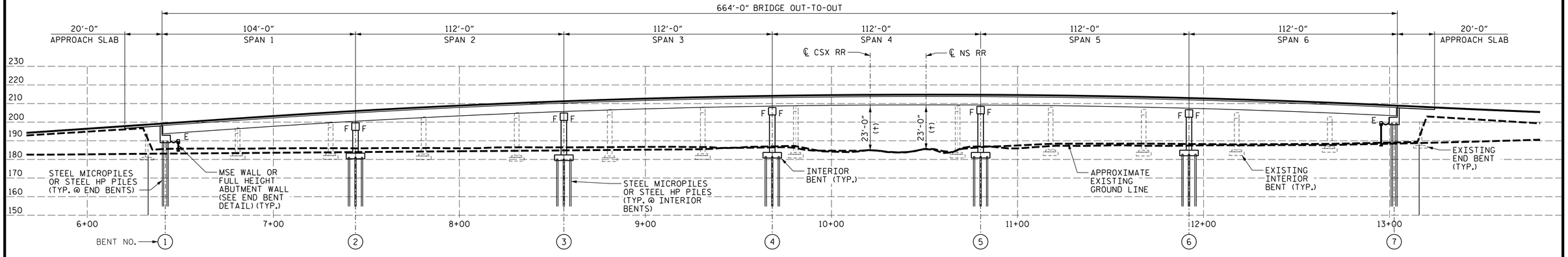
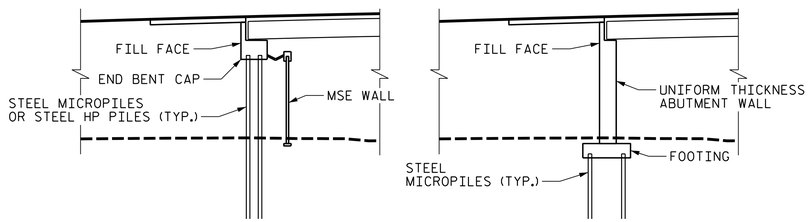


SECTION ALONG ℄ US 21 (BLOSSOM STREET)

54" PRESTRESSED CONCRETE MODIFIED BULB TEE GIRDERS CONTINUOUS FOR LIVE LOAD



END BENT BEHIND MSE WALL — FULL HEIGHT ABUTMENT WALL

END BENT DETAIL

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803-254-5800

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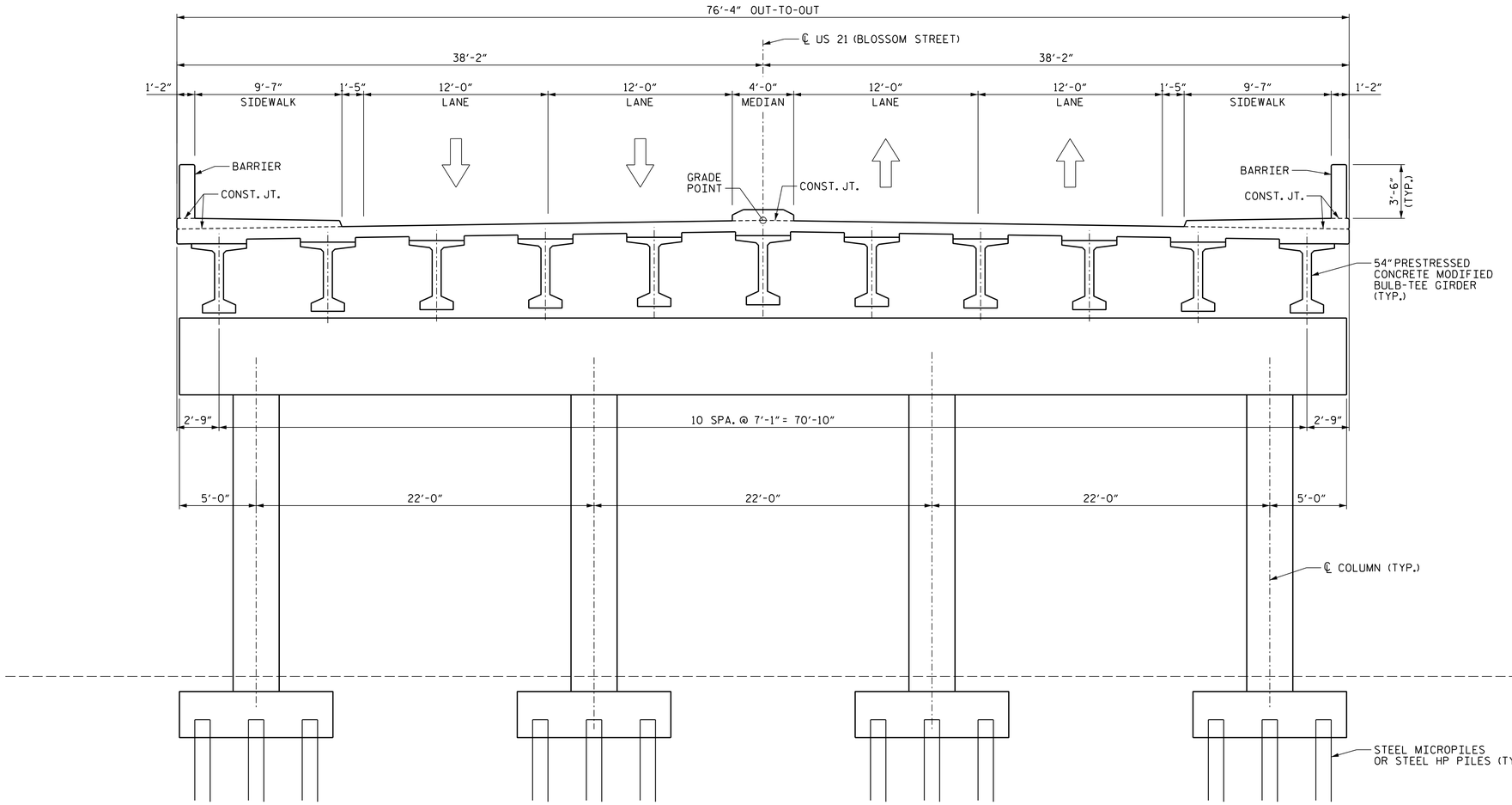
DEPARTMENT OF TRANSPORTATION

ALTERNATE 3 PLAN AND PROFILE US 21 (BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	6



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	BY	CHK.	DATE

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ALTERNATE 3 SECTION US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

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BRIDGE PLANS ID	SHEET NO.
P030115	7

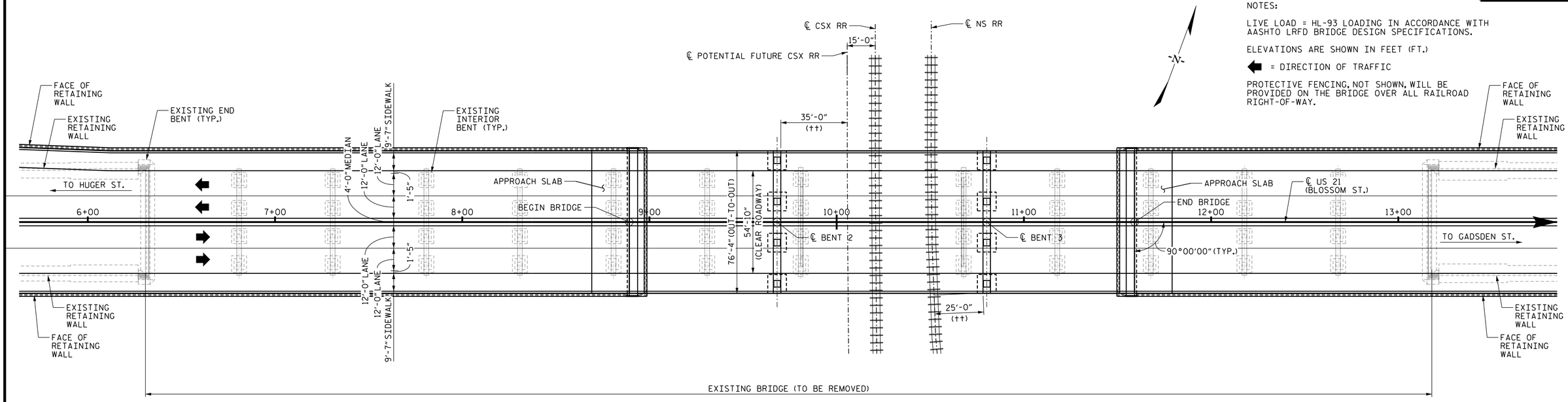
NOTES:

LIVE LOAD = HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

ELEVATIONS ARE SHOWN IN FEET (FT.)

= DIRECTION OF TRAFFIC

PROTECTIVE FENCING, NOT SHOWN, WILL BE PROVIDED ON THE BRIDGE OVER ALL RAILROAD RIGHT-OF-WAY.



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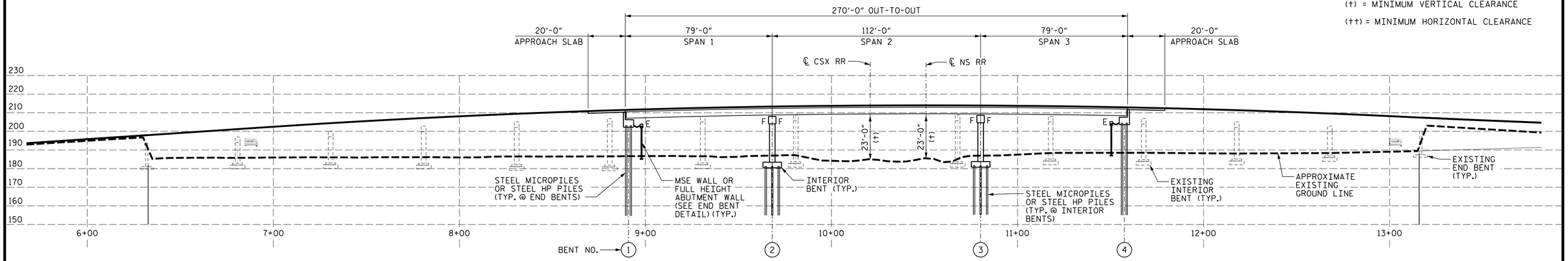


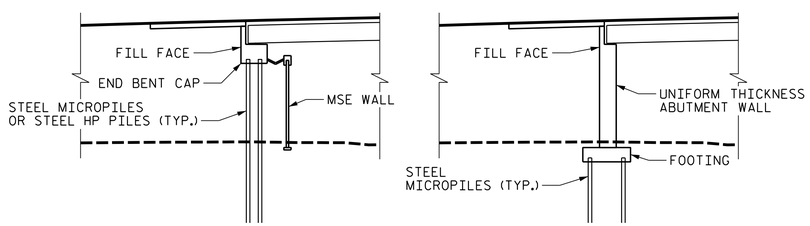
SECTION ALONG ℄ US 21 (BLOSSOM STREET)

CONTINUOUS STEEL PLATE GIRDER WITH 42"DEEP WEB

LEGEND:

(†) = MINIMUM VERTICAL CLEARANCE

(††) = MINIMUM HORIZONTAL CLEARANCE



END BENT BEHIND MSE WALL

FULL HEIGHT ABUTMENT WALL

END BENT DETAIL

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	BY	CHK.	DATE

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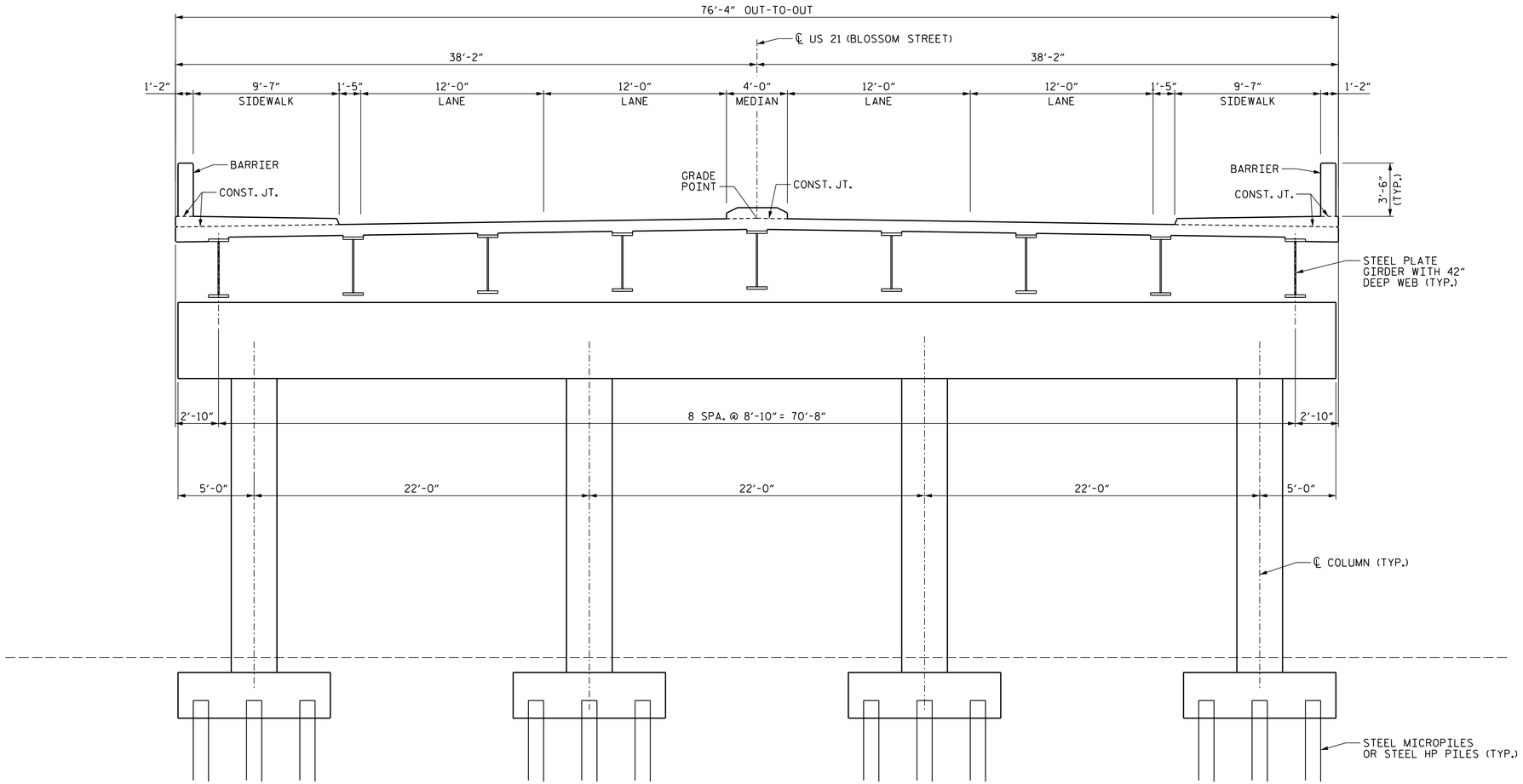
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ALTERNATE 4 PLAN AND PROFILE US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	8



TYPICAL SECTION

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DR.	BP	EN	7-20
DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC. OF THE CAROLINAS
1122 LADY STREET
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ALTERNATE 4 SECTION US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	9

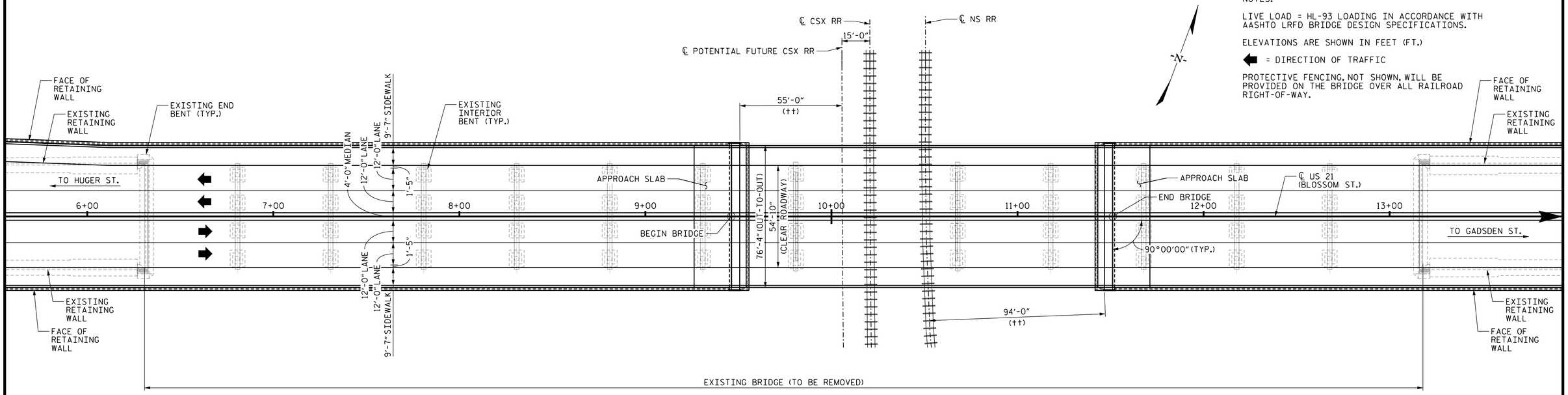
NOTES:

LIVE LOAD = HL-93 LOADING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

ELEVATIONS ARE SHOWN IN FEET (FT.)

= DIRECTION OF TRAFFIC

PROTECTIVE FENCING, NOT SHOWN, WILL BE PROVIDED ON THE BRIDGE OVER ALL RAILROAD RIGHT-OF-WAY.



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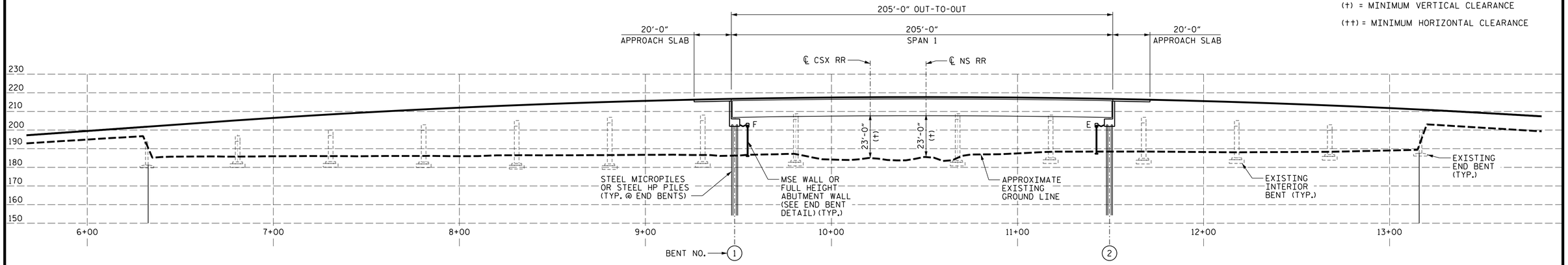


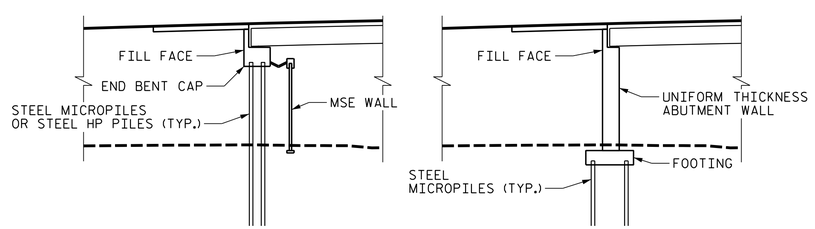
SECTION ALONG ℄ US 21 (BLOSSOM STREET)

SIMPLE SPAN STEEL PLATE GIRDER WITH 80"DEEP WEB

LEGEND:

(†) = MINIMUM VERTICAL CLEARANCE

(††) = MINIMUM HORIZONTAL CLEARANCE



END BENT BEHIND MSE WALL

FULL HEIGHT ABUTMENT WALL

END BENT DETAIL

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DR.	BP	EN	7-20
DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

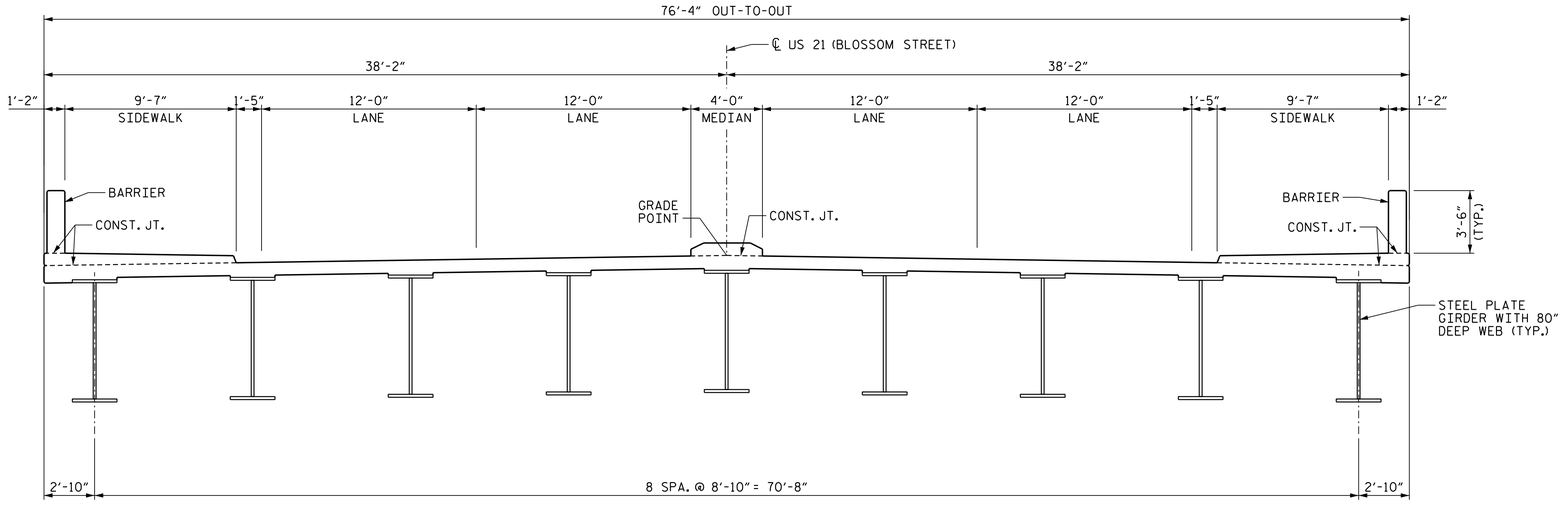
HDR ENGINEERING INC. OF THE CAROLINAS
1122 LADY STREET
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ALTERNATE 5 PLAN AND PROFILE US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	10



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DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC.
OF THE CAROLINAS

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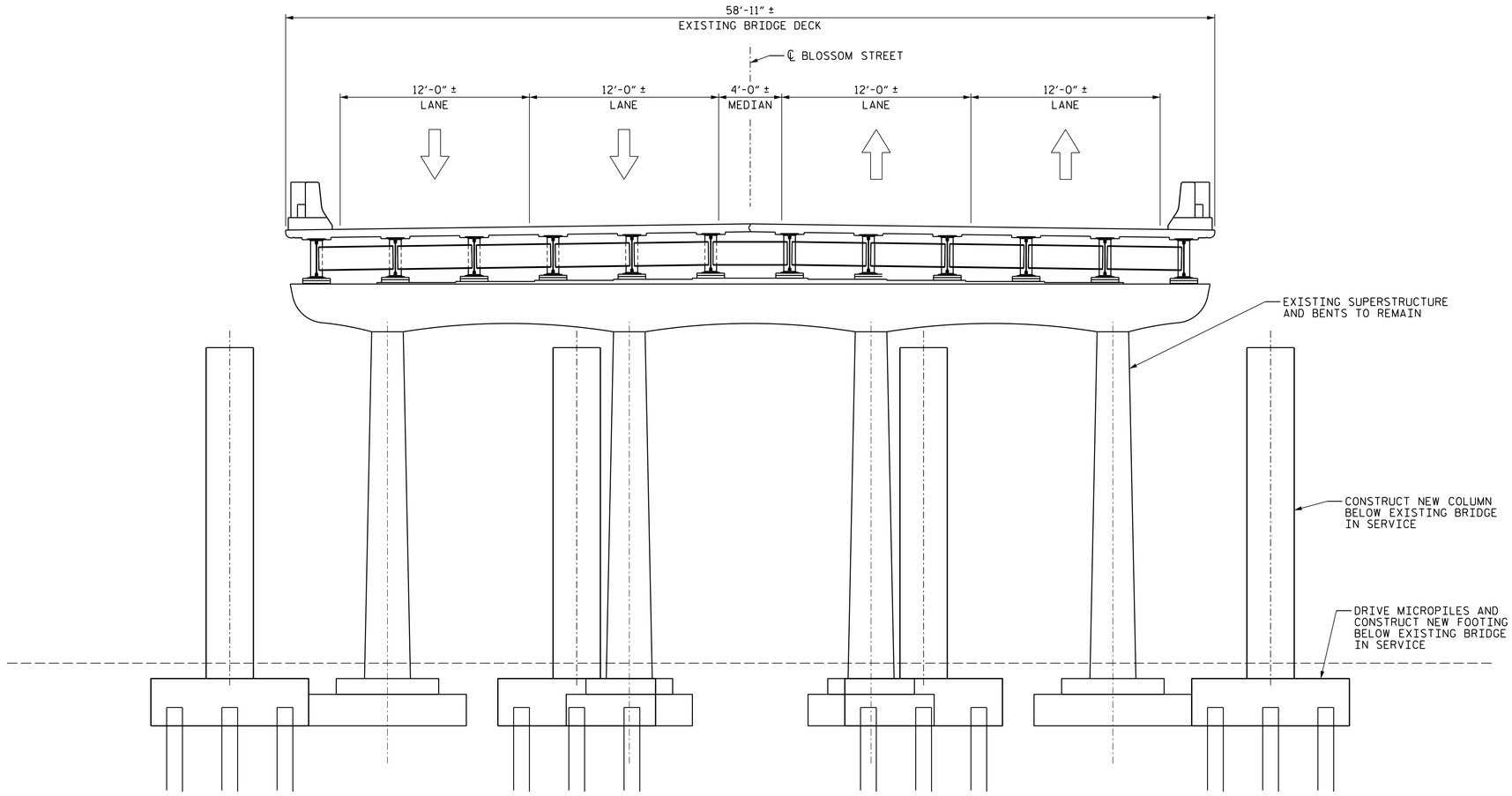
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ALTERNATE 5 SECTION
US 21(BLOSSOM STREET) BRIDGE
OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	11



PHASE 1

(ALTERNATE 2 SHOWN, OTHERS SIMILAR)

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QUAN.			
DR.	BP	EN	7-20
DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC.
OF THE CAROLINAS

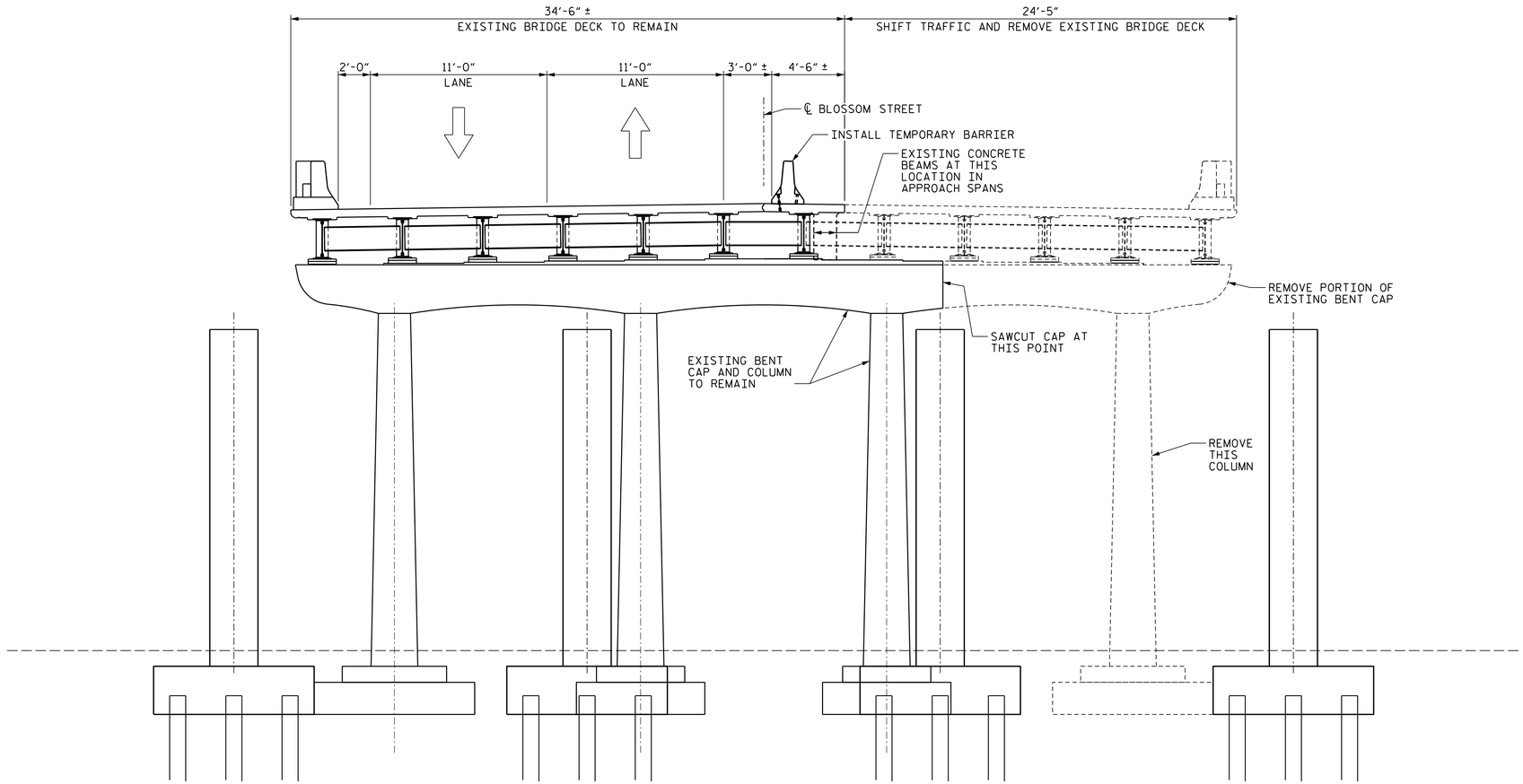
1122 LADY STREET
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN AND PROFILE US 21 (BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

BRIDGE PLANS ID	SHEET NO.
P030115	12



PHASE 2 - STAGE 1

(ALTERNATE 2 SHOWN, OTHERS SIMILAR)

CADD FILE INFORMATION $TIME$
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DR.	BP	EN	7-20
DES.			
	BY	CHK.	DATE

CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC.
OF THE CAROLINAS

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SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN AND PROFILE US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

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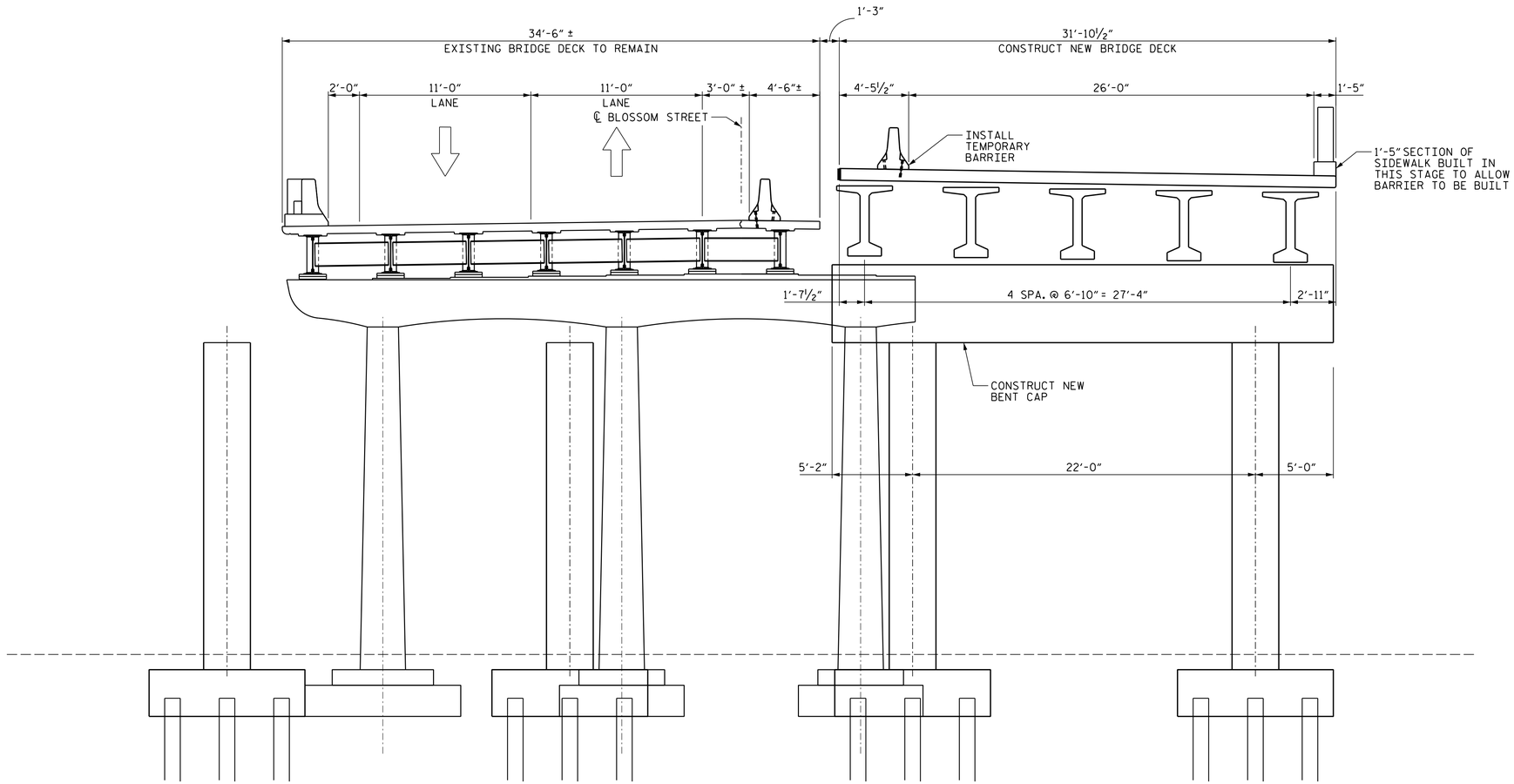

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CONCEPT PLANS

NOT FOR CONSTRUCTION

HDR ENGINEERING INC.
OF THE CAROLINAS

1122 LADY STREET
SUITE 1100
COLUMBIA, SC, 29201
803-254-5800

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN AND PROFILE US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

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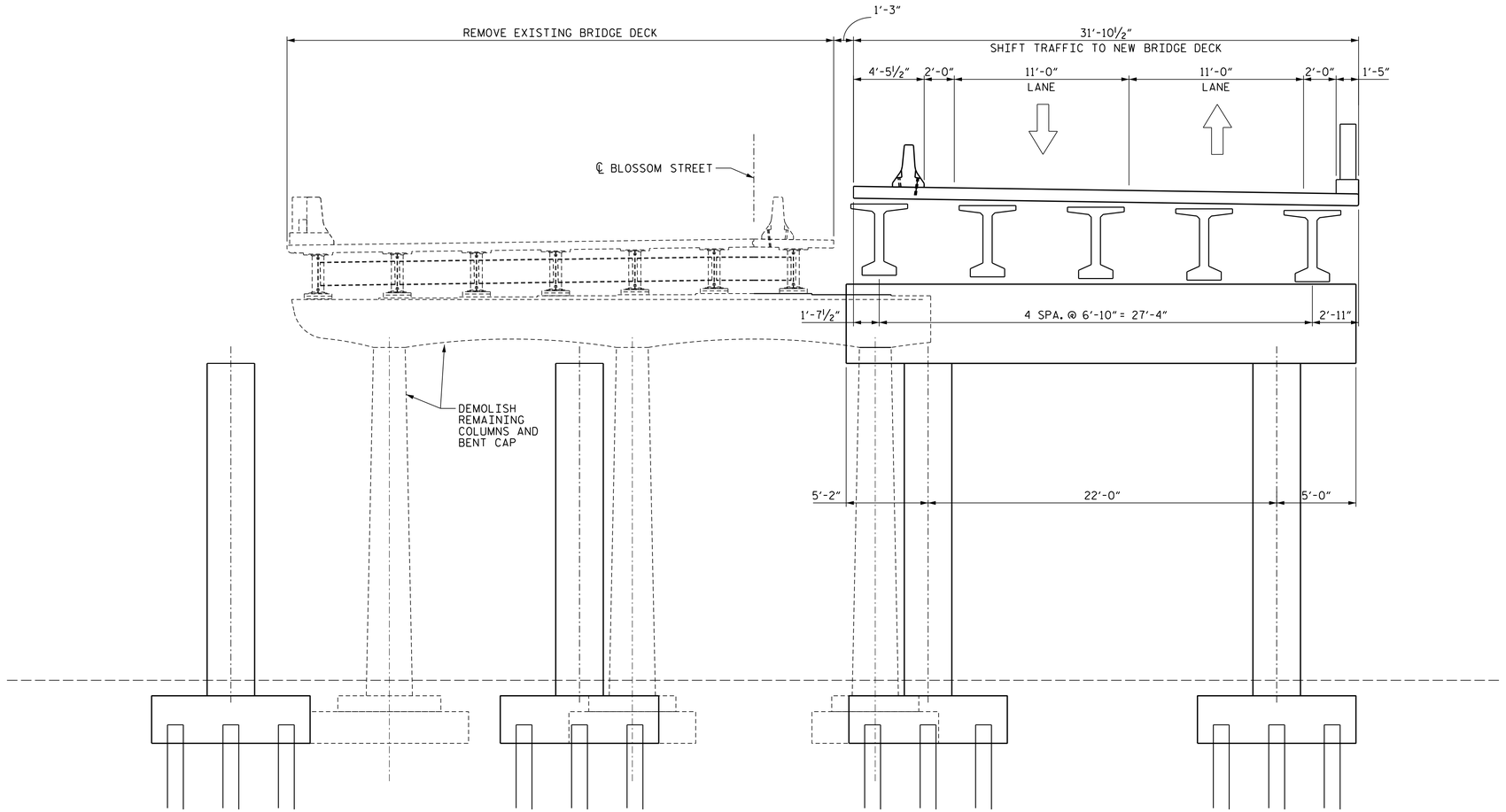

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RICHLAND	US 21

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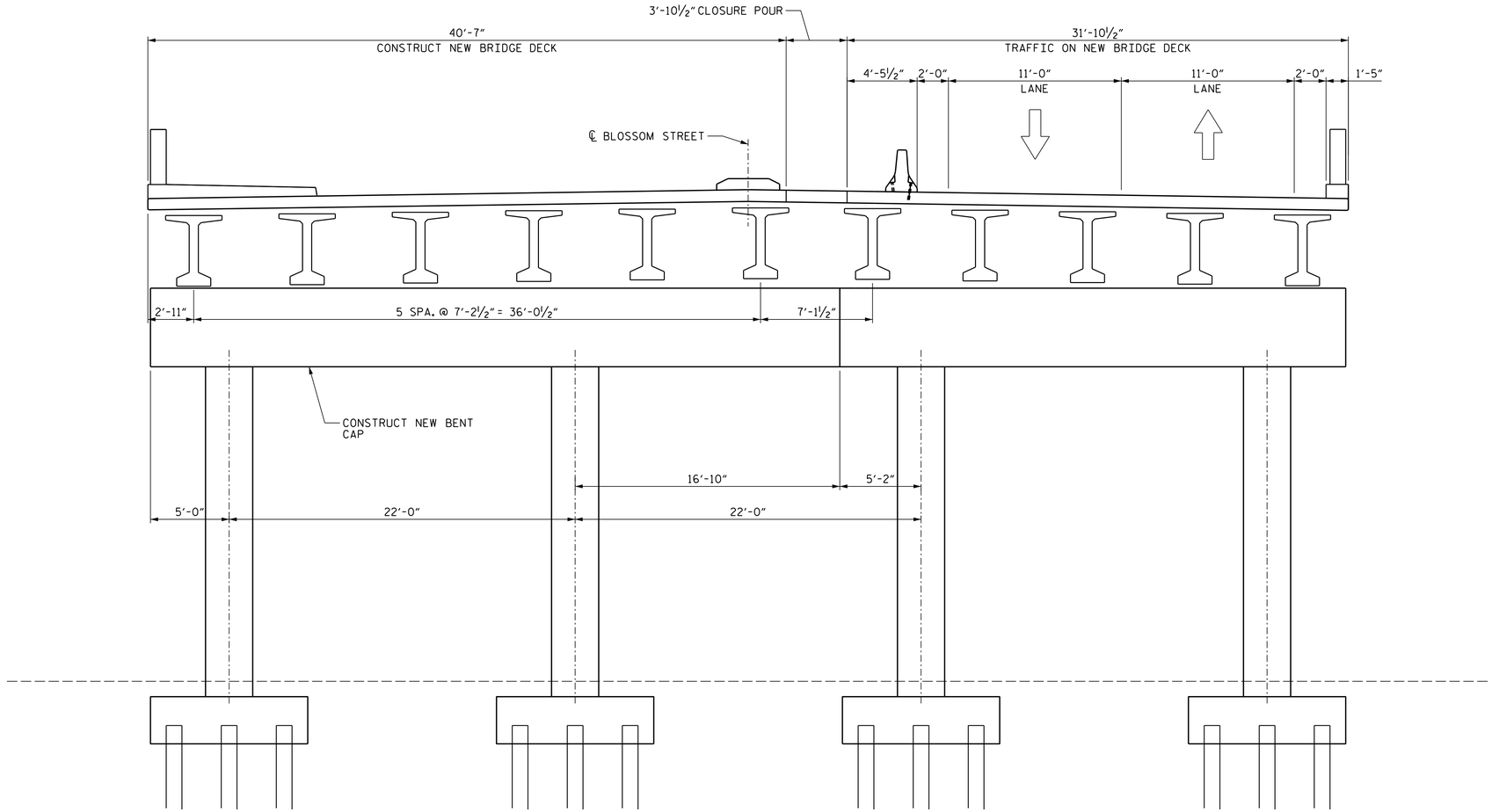

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COUNTY	ROUTE
RICHLAND	US 21

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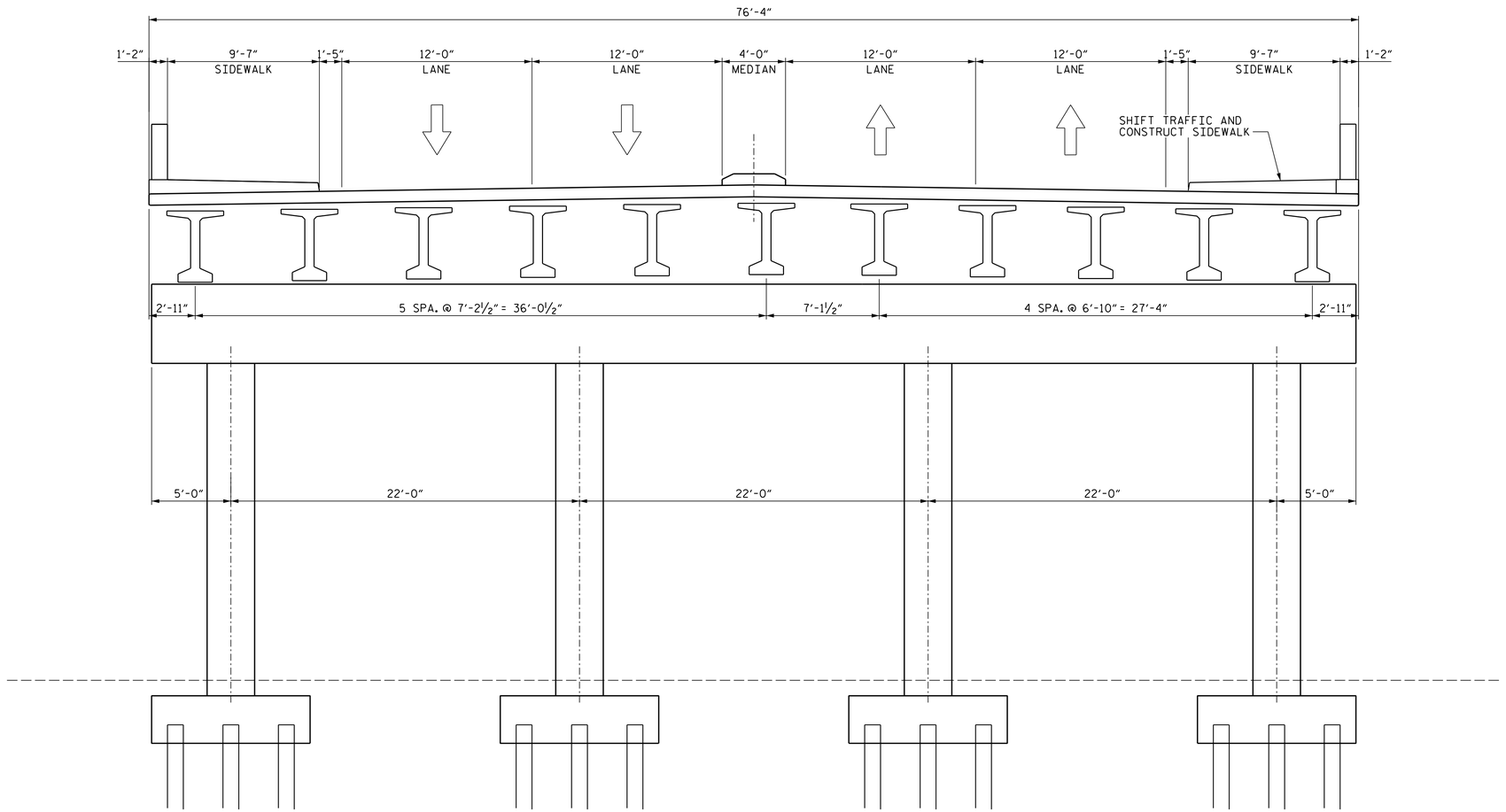

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DEPARTMENT OF TRANSPORTATION

BRIDGE PLAN AND PROFILE US 21(BLOSSOM STREET) BRIDGE OVER CSX AND NS RAILROADS

COUNTY	ROUTE
RICHLAND	US 21

Appendix C

Cultural Resources

Reports and MOA

Phase I Cultural Resources Survey for the Proposed Blossom Street Bridge Replacement

City of Columbia, Richland County, South Carolina

New South Associates, Inc.
Stone Mountain, Georgia

Phase I Cultural Resources Survey for the Proposed Blossom Street Bridge Replacement

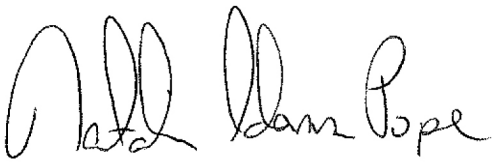
City of Columbia, Richland County, South Carolina

Report submitted to

HDR Engineering, Inc. • 4400 Leeds Avenue • North Charleston, SC 29405

Report prepared by

New South Associates • 1819 Hampton Street • Columbia, South Carolina 29201



Natalie Adams Pope—Principal Investigator

Kelly Higgins—Archaeologist and Co-Author
Brittany Hyder—Historian and Co-Author

February 7, 2020 • Final Report
New South Associates Technical Report 3067

ABSTRACT

This report provides the results of a cultural resources survey of the proposed Blossom Street Bridge replacement in the City of Columbia. The project area consists of an approximately 0.44-mile-long, 200-foot-wide (61 meters) corridor centered along Blossom Street, extending to 300 feet (91 meters) along Gadsden Street, Pulaski Street, and CSX Transportation and Norfolk Southern railroads. Additionally, the limits of the project extend 200 feet along Huger Street. No new archaeological sites were identified as a result of the cultural resources survey, but one previously recorded architectural resource was revisited and four new architectural resources were surveyed. The previously surveyed resource, the Palmetto Compress and Warehouse Company, is currently listed on the National Register of Historic Places (NRHP). While the building has been converted into apartments since its listing, the resource retains sufficient integrity to remain eligible for the NRHP. The boundary of the NRHP property is located within the area of direct effects. None of the newly surveyed resources are recommended eligible for the NRHP.

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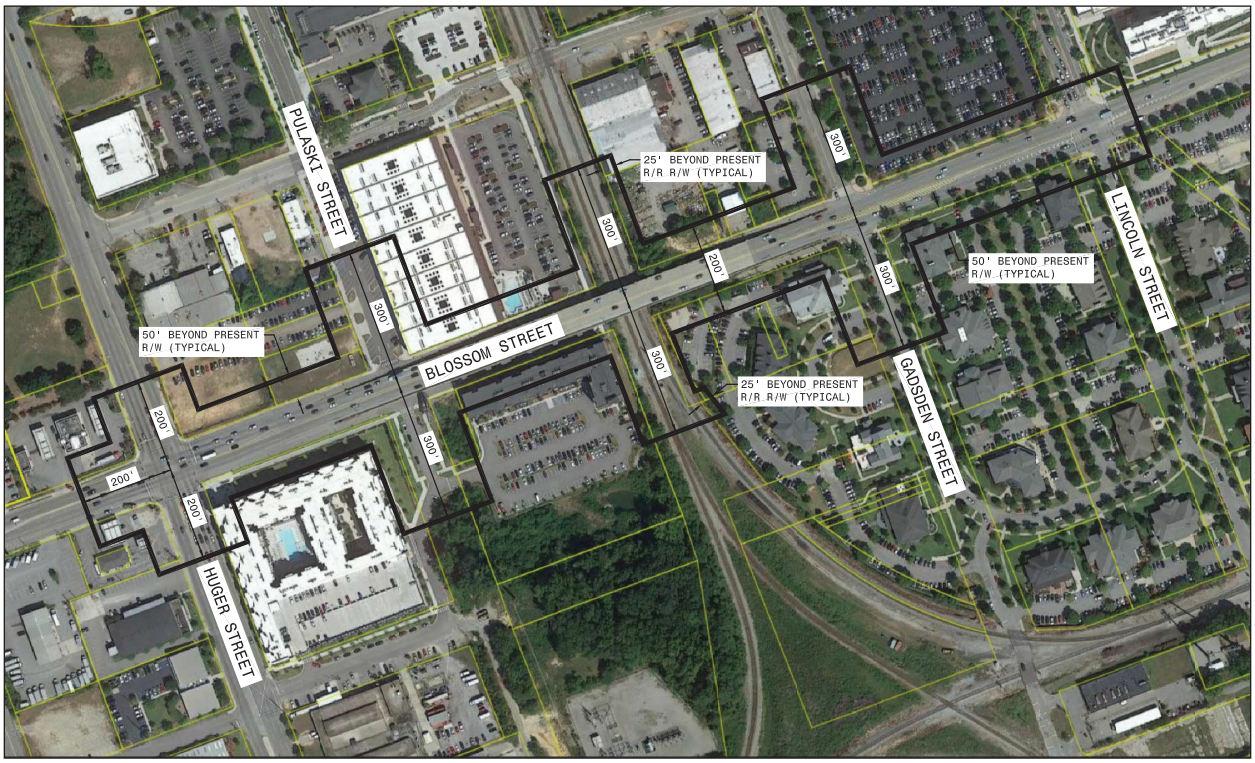
I. INTRODUCTION

New South Associates, Inc. has completed a cultural resources survey of the proposed Blossom Street Bridge replacement between Lincoln Street and Huger Street on behalf of HDR Engineering, Inc. to comply with Section 106 of the National Historic Preservation Act. The project area consisted of an approximately 0.44-mile-long (.7 km) corridor about 200 feet (61 m) wide centered along Blossom Street, extending to 300 feet (91 m) along Gadsden Street, Pulaski Street, and CSX Transportation and Norfolk Southern railroads. Additionally, the limits of the project extend 200 feet along Huger Street (Figure 1). Along Blossom Street, the existing facility consists of four lanes. The proposed project would include replacing the existing bridge with a four-lane bridge that includes travel lanes, a median, shoulders, and/or bike lanes/sidewalks as determined by the conceptual studies developed during the initial project phase. The Area of Potential Effects (APE) consists of a 300-foot buffer from the existing right of way (ROW). The architectural survey examined the entire APE, while the archaeological survey examined only the area of direct effects, which is located within the existing ROW.

The archaeological survey was conducted on December 19, 2019, while the architectural survey was conducted on December 11, 2019 by New South Associates. Natalie Pope served as Principal Investigator, Kelly Higgins served as Archaeologist, and Scott Morris conducted the architectural field survey, while Brittany Hyder contributed to the report.

This report is divided into five chapters, including this Introduction. Chapter II presents an environmental overview. Chapter III contains the cultural background of the project area. Chapter IV discusses the methodology used during the survey, and Chapter V presents the survey results and recommendations. References cited can be found at the end of the report.

Figure 1.
Project Location Map



Source: SCDOT

II. ENVIRONMENTAL CONTEXT

The project area is situated in the Congaree River Valley in Richland County. The county lies in two physiographic provinces: the Piedmont Plateau to the northwest of the Fall Line and the Sandhills to the southeast. The project area is located below the area of rapids and therefore occurs just below the Fall Line. In the Fall Line region, major physiographic and geologic subdivisions occur. Along the Fall Line, the Piedmont's resistant crystalline rocks meet the Coastal Plain's more easily eroded sedimentary rocks. Because of this difference in erosion resistance, many rock outcrops create rapids along the major drainage (Kovacik and Winberry 1987:18). The rapids impair water travel beyond this point, and a number of early historic towns (such as Camden, Granby, Saxe-Gotha, etc.) were located in these areas (Jones 1971; Mills 1972:157). The location of these early towns below the rapids facilitated trade between Charleston and the backcountry, since boats from Charleston could deliver and receive goods at these towns. The Fall Line also strongly influenced precontact occupation, since its location between two major ecotones allowed a greater diversity of resources to be exploited.

The dominant surface geology of the Congaree River Valley consists of alluvial river terrace formations comprising a mature sequence of Pliocene-, Pleistocene-, and Holocene-aged terraces. These alluvial terraces extend about 3 or 4 miles east of the Congaree River channel in this area and overlie the older marine terrace formations. The soil in the project area consists entirely of urban land.

Two major forest types characterize vegetation in the area: the longleaf and loblolly pine communities (Frothingham and Nelson 1944:19–21). These communities consist primarily of pine with several species of hardwoods, including gum and oak (Braun 1950:285–286). Currently, the entire project area is commercialized, with some landscaped areas containing trees and brush.

During the precontact period, a number of climatic changes affected the types of vegetation that would have been present in the project area (see Anderson and O'Steen 1992 for more detail). This vegetational sequence is summarized below.

Between 12,000 to 10,000 B.P. (the time of initial human occupation), the northern hardwoods, which include oak, hickory, beech, birch, and elm, replaced the spruce/pine boreal forests of the full glacial period in the region north of Columbia (Delcourt and Delcourt 1985, 1987). South of Columbia and across much of the Southeast, this hardwood canopy was probably in place earlier, possibly throughout most of the previous glacial cycle (Delcourt and Delcourt 1983, 1985, 1987).

In the late Pleistocene/Early Holocene, this area appears to have been a relatively stable region of oak-hickory vegetational communities, and temperatures changed from xeric and cold to warmer in the summer and colder in the winter. In addition, precipitation was increasing (Watts 1980).

In the mid-Holocene, from about 8000–4000 B.P., moister conditions caused southern pine communities to emerge in the Sandhills area, and extensive riverine swamp environments emerged (Davis 1983; Delcourt and Delcourt 1985, 1987; Knox 1983). As moisture increased, the climate began to approximate modern conditions. As the oak-hickory forests diminished and pine forests increased, nut masts became more concentrated and isolated. This probably affected settlement and foraging strategies. These pine forests and the associated climatic conditions remained in place throughout the rest of the precontact and historic periods.

Several sources provide historic accounts of the area's flora. In 1826, Robert Mills stated that the quality of lumber in the area was excellent:

> It is not uncommon thing to find trees of this description girthing six or seven feet. Besides the poplar, walnut, maple, and various species of the oak, there are the peach, plum, cherry, pear, quince, and apple; besides the native grapes, and various nuts and melons (Mills 1972:617).

The modern climate is temperate and usually characterized by mild winters and warm summers. Rainfall measures 46–48 inches per year, and the annual distribution indicates that July is the wettest month, with October and November as the driest. The summers are warm and long, with temperatures reaching 90°F or higher on an average of 49 days and 100°F or more for two or three days a year. Winters are mild, with temperatures as low as 32°F on 60 percent of the days (Lawrence 1978).

III. THE CULTURAL CONTEXT

The following overview of the region's cultural history provides a means for interpreting and evaluating archaeological sites or historic resources identified in the project corridor. The precontact period in South Carolina is divided into the Paleo-Indian, Archaic, Woodland, and Mississippian periods. The precontact period refers to the time before Native American and European societies first encountered one another. The historic period deals primarily with the time after Europeans and African Americans began permanent settlement in the region. This historic overview focuses on Richland County history.

PRECONTACT OVERVIEW

PALEO-INDIAN PERIOD

The Paleo-Indian period (12,000–10,000 B.P.) is archaeologically expressed by the presence of fluted and unfluted lanceolate projectile points (Clovis, Suwannee/Simpson, and Dalton), side scrapers, end scrapers, and drills (Coe 1964; Goodyear 1982; Michie 1977). The Clovis occupation in the Southeast is believed to span 11,500–11,000 B.P. In the subsequent 500 years, smaller fluted points and unfluted lanceolates, such as the Simpson and Suwannee types, replaced the Clovis. The last phase to represent Paleo-Indian occupation is the Dalton horizon, dating to 10,500–9900 B.P. (Goodyear 1982).

The traditional view of Paleo-Indian settlement has been that it was highly mobile and affiliated with the exploitation of megafauna, a view that persists into some current models of settlement (Kelly and Todd 1988). However, Anderson (1989a) proposed that Paleo-Indian colonists found and used key "staging areas" for subsequent population expansion. While evidence for the exploitation of Pleistocene megafauna in South Carolina has been documented (Goodyear et al. 1989), it is unclear just how much people depended on these resources. Many researchers believe that subsistence choices in the Dalton phase included a variety of plant and animal foods. In fact, some believe that the appearance of the Dalton point signifies a change from hunting Pleistocene megafauna to hunting Holocene species, primarily deer (Goodyear 1982; Morse 1973).

Most reported Paleo-Indian sites consist of surficial finds of lanceolate points, with very few having any well-preserved contexts. Attempts are being made to model late Paleo-Indian site formation using regional and local data on climate, hydrology, and sedimentology (Brooks and Brooks 1988; Goodyear et al. 1989).

ARCHAIC PERIOD

The Early Archaic period (9900–8000 B.P.) is typically regarded as an adaptation to post-Pleistocene environmental warming (Griffin 1967; Smith 1986). As opposed to the forms present during the Paleo-Indian period, Early Archaic points are notched, and sites are defined by the presence of Taylor side-notched points, Palmer/Kirk corner-notched points, and bifurcate forms (Coe 1964; Chapman 1985; Goodyear et al. 1979). These point types are much more abundant than the previously discussed Paleo-Indian types, indicating that an extensive regional Native American population was in place by the tenth millennium. It should be noted that the Taylor point type developed from its discovery at the Taylor site in adjacent Lexington County (Michie 1966). These points are similar to the side-notched Bolen points of Florida (Bullen 1958:42) and the Big Sandy points of Alabama (DeJarnette et al. 1962:48) and Tennessee (Lewis and Kneberg 1961:38) and probably have a similar chronological placement (Michie 1992:223).

Based on research conducted at two sites in North Carolina's Haw River Valley, Claggett and Cable (1982) proposed that changes in technology from the Paleo-Indian to the Early Archaic periods reflect changes in settlement organization in response to post-Pleistocene warming. They argued that the resource structure would have become increasingly homogeneous throughout the Early Archaic. The settlement strategy emphasized residential mobility rather than logistic mobility, which would be manifested in an increase in expedient tools or situational technology.

The Middle Archaic period (8000–5000 B.P.) is characterized by stemmed points, including Kirk Stemmed, Stanly, Morrow Mountain, and the lanceolate Guilford. Typically, the Morrow Mountain and Guilford types are better represented in the South Carolina record. Sassaman (1983) suggested that Middle Archaic people were very mobile, perhaps moving residences every few weeks, which fits Binford's (1980) definition of a foraging society. Binford proposed that foragers had high levels of residential mobility, moving camps often to take advantage of dispersed but similar resource patches. He believed that differences in environmental structure could be traced to large-scale climatic factors and further noted that a collector system could arise under any condition that limited the ability of hunter-gatherers to relocate residences. During his work in the Haw River area of North Carolina, Cable (1982) argued that postglacial warming at the end of the Pleistocene led to increased vegetational homogeneity, which encouraged foraging.

Sassaman's (1983) "Adaptive Flexibility" model suggests that this homogeneity allowed for a high degree of social flexibility, which allowed people to pick up and move when needed. This mobility did not allow them to transport much material, which alleviated the need for elaborate or specialized tools to procure and process resources at locations distant from camp.

The Fall Line area of the Congaree River Valley is noted for large, multicomponent sites that include impressive Middle and Late Archaic assemblages. The ecotonal properties of the Fall Line made this area attractive to multiple visits over a long period of time. It has been noted, however, that there is a high degree of variability in site size and density, which is believed to reflect functional differences, duration of habitation, or possibly group size. For instance, Anderson (1979:236) found that Middle Archaic components were located in the floodplain and upland locations. However, the greater diversity of floodplain assemblages suggested to him that habitation took place along the water's edge and that upland knolls such as the Manning Site (38LX5) were used for hunting and butchering tasks. Typically, however, upland site assemblages had limited diversity and density, matching the Middle Archaic pattern of short-term extractive activities.

The Late Archaic period (5000–3000 B.P.) has been described as a time of increased settlement permanence, population growth, subsistence intensification, and technological innovation (Smith 1986). The Savannah River Stemmed projectile point characterizes the period, as does the technological development of fiber-tempered pottery known as Stallings (Stoltman 1974). Stallings pottery (5000–3100 B.P.) and the later sand-tempered Thom's Creek series (4000–2900 B.P.) share many formal and stylistic similarities and have a great deal of chronological overlap.

The first use of freshwater shellfish in the region corresponds with the development of fiber-tempered pottery in the Coastal Plain (about 4500 B.P.). However, shellfish procurement and pottery use did not occur above the Fall Line until after 3700 B.P., and freshwater shell-midden sites are only found in the Savannah River Valley. Piedmont and Fall Line inhabitants used soapstone cooking tools, such as heating stones or bowls, which explains their late adoption of pottery (Sassaman et al. 1990; Sassaman 1993). In the Fall Line region, Thom's Creek pottery is heavily grit tempered, as opposed to the sand-tempered pottery found in the Coastal Plain. In terms of temper, it closely resembles later Deptford series pottery, while having classic Thom's Creek surface treatments.

In the Fall Line area, early investigations noted that the occupation of floodplain sites began to diminish after the Late Archaic period as sandy knolls and ridges, such as Manning and 38LX5, were increasingly used for repeated long-term habitation (Anderson 1979; Goodyear 1975). This is believed to reflect changes in fluvial systems from sea-level rise and possibly from rainfall patterns (Sassaman and Anderson 1994).

WOODLAND PERIOD

The Early Woodland period (3000–2450 B.P.) is characterized by Refuge (3000–2600 B.P.) and Deptford (2800–1500 B.P.) potteries, as well as Gypsy, Small Savannah River, and Badin projectile-point types. A compact, sandy, or gritty paste and a sloppy simple-stamped, dentate-stamped, or random-punctated decoration (Williams 1968) characterize the Refuge series. These wares are very similar to the preceding Thom's Creek wares. Anderson et al. (1982:265) noted that the typologies are "marred by a lack of reference to the Thom's Creek series" and that the punctate and incised types are indistinguishable from Thom's Creek (Trinkley 1989:11). Deptford, which first occurs in the latter portion of the Early Woodland, is characterized by a fine or coarse sandy paste, with surface treatments including plain, check stamped, simple stamped, cord marked, geometric stamped, and complicated stamped (Williams 1968).

Brooks and Hanson (1987) noted significant changes in the density and distribution of upland tributary sites during the Woodland period in the Steel Creek area of the Savannah River Site. Brooks proposed that, as tributary-associated habitats became more productive with floodplain maturation, upland tributary terraces hosted more permanent occupation. For the Savannah River area, the data suggested to Brooks and Hanson that annual settlement ranges in the Early Woodland period were restricted to tributary watersheds (Sassaman et al. 1990:315).

Site 38LK5 indicates the presence of an extensive Deptford occupation. Unfortunately, the sandy acidic soils preclude statements on the subsistence base (Anderson 1979). This and other (38AK228–W, 38RD60, and 38BM40) interior or upland Deptford sites are strongly associated with swamp terrace edges. This environment is highly productive of nut masts and large mammals such as deer (Trinkley 1989). Probably the best data from a Deptford "base camp" comes from the Lewis-West site (38AK228–W), where abundant food remains, storage-pit features, elaborate material culture, mortuary behavior, and craft specialization have been reported (Sassaman et al. 1990:96–98).

The Middle Woodland period (2450–1450 B.P.) is characterized by a continuation of the Deptford pottery tradition. The Deptford phase is part of the early carved-paddle-stamped tradition, which was replaced by the northern tradition of wrapped-paddle stamping during the Middle Woodland (Trinkley 1989:17). The Cartersville Series is restricted to the latter half of the Middle Woodland and is represented by check, linear-check, and simple-stamped designs (Anderson and Schuldenrein 1985:340–347). There are only subtle distinctions between Deptford and Cartersville, suggesting there may be a large amount of regional continuity or integration during this period (Sassaman et al. 1990:13). The Yadkin Series, also found in the Upper Coastal Plain

and Piedmont, is characterized by heavy crushed-quartz temper and has surface treatments of cord marking or fabric impression (Coe 1964). Middle Woodland projectile points consist primarily of the Yadkin Large Triangular type (Coe 1964).

In the Savannah River region, seasonal or permanent base camps in prime resource locations characterize the Middle Woodland settlement pattern. A wide range of wild food resources could be exploited from the bases, and additional foods could be procured through short-term extractive forays (Hanson and DePratter 1985). There has been no evidence for cultivation of native or tropical plants for the region, thus far. According to Sassaman et al. (1990:13), settlement and subsistence organization was probably consolidated and at times comprised relatively large aggregations of people, large-scale storage, and maybe some limited economic specialization.

The Late Woodland period (1450–800 B.P.) is defined by the decline in stamped Deptford wares around 1500 B.P. Unfortunately, this period is difficult to delineate from the preceding Middle Woodland period or the subsequent Mississippian period (Sassaman et al. 1990:14). Sites with Late Woodland or Mississippian occupations tend to contain small triangular points, such as the Caraway or Pee Dee (Coe 1964). In the Fall Line region, Brooks and Scurry (1980) have attributed Yadkin ceramics to a Late Woodland occupation, although a Middle Woodland occupation is more likely (Trinkley 1989).

Although Cartersville may extend into the Late Woodland period, archaeological surveys in the Piedmont have not found an appreciable amount of this ceramic type. Even though Late Woodland ceramics may be sparse because relatively little work has been done in the Piedmont, Native American population areas and distributions may have an unrecognized time depth. This area of the state may have been located in a buffer zone or hunting grounds claimed by two groups, such as the Cherokee and Catawba during the historic period (see Trinkley 1989:24).

Stoltman (1974) observed that, in the Middle Coastal Plain, dispersed upland settlement characterizes the settlement pattern of Late Woodland sites, which he believed may indicate the beginnings of slash-and-burn agriculture or the intensification of upland resource procurement. In the coastal area, sites are also numerous, small, and dispersed, which suggests a decrease in settlement integration over the Middle Woodland period. Contrasting this pattern, Piedmont sites are few and dispersed along tributaries, with little if any inter-riverine occupation (Goodyear et al. 1979; Taylor and Smith 1978).

MISSISSIPPIAN AND PROTOHISTORIC PERIODS

The Mississippian period (800–310 B.P.) is characterized by a sedentary village life, agricultural food production, and regionally integrated and hierarchically organized social, political, and ceremonial systems (Anderson 1989b). The presence of Pee Dee pottery is characteristic of Mississippian sites. Pottery decorations include complicated stamping, usually in conjunction with reed punctation and/or nodes, pellets, or narrow rim strips below the vessel lip.

According to Smith (1978:488), Mississippian populations had

> a ranked form of social organization, and had developed a specific complex adaptation to linear, environmentally circumscribed floodplain habitat zones. . . . The location of almost any Mississippian settlement within a floodplain habitat zone can, to a great extent, be generally explained as a result of two energy-capture factors:
>
> 1. The availability of well-drained, easily tilled, energy-subsidized natural levee soils suitable for horticultural garden plots.
>
> 2. Easy access to the rich protein resources of fish and waterfowl in channel-remnant oxbow lakes.

Although Anderson (1989b) determined there were no mound sites near the vicinity of Columbia during the Mississippian period, DePratter (1989) illustrated an undated mound, which he believed to date from the Mississippian period on the lower Saluda River, just above its confluence with the Congaree River. It is possible, then, that the surrounding area contained a number of associated hamlets such as the deposits Michie (1989) identified.

The town and chiefdom of Cofitachequi is located on the Wateree River near the present town of Camden. Hernando DeSoto and his followers visited this chiefdom in 1540, and members of the 1526 Aylló n expedition may have preceded them (Swanton 1922:31). In 1566, Juan Pardo and his forces visited the town. Two years later, he established a small fort there, which local Indians overran that same year. Another small Spanish expedition traveled through the area in 1627–1628, and the only Indian place name mentioned in the records is Cofitachequi (DePratter 1989).

In 1670, Henry Woodward trekked from Charleston to Cofitachequi to seek peace with the chiefs he encountered on the way. Woodward referred to the chief as “Emperor.” There were reported to be a thousand bowmen. Woodward convinced the “Emperor” to visit Charles Town, which he did

in September of that year. He visited the town again in 1672, for unspecified purposes (Cheves 1897:194, 201, 388). Only one other reference to Cofitachequi has been found that post-dates 1672. The reference, which dates to 1681, only mentions the town in passing (DePratter 1989).

In 1701, when John Lawson traveled through the area formerly occupied by Cofitachequi and his subjects, a new group of people known as the Congaree occupied the area (Lefler and Powell 1973:34). The Congaree took part in the Yamassee War of 1715, and in 1716, over half of them were captured and sent to the West Indies as slaves (Swanton 1952:93). The others retreated westward and were subsumed under the Catawba Nation. During this period, the Congaree also had a village on the Catawba trading path, on the west bank of the Congaree River near what later became Fort Congaree.

HISTORIC OVERVIEW

The following section briefly describes the historic context for the project vicinity. It has been partially excerpted from previous reports produced by New South Associates, including the 2013 Phase I Archaeological Cultural Resources Survey of the Pineview Industrial Site and Shop Road Extension (Pope 2013) and the 2017 Columbia Canal Embankment Repair Assessment Historic Context (Dykens and Reed 2017).

COLONIAL PERIOD

In 1670, the English established a permanent settlement on Albemarle Point, on the west bank of the Ashley River. The Lord Proprietors, who owned the colony until 1720, were in search of a staple crop that would provide great wealth in the mercantile system. By 1680, the settlement moved across the river to the peninsula formed by the confluence of the Ashley and Cooper rivers and became modern-day Charleston. This position provided better defense as well as a more healthful climate. In addition, its location between two major rivers made it a convenient place for settlers to bring their crops to market.

Early agricultural experiments there included grapes, olives, silkworms, and oranges, none of which was very successful. A number of settlers became involved in the deerskin trade; although profitable, it did not provide the proprietors with the wealth they were expecting. Nonetheless, the attraction of the deerskin trade with the Native American population drew a number of settlers to the backcountry. As a result, the Board of Commissioners of the Indian Trade established Fort Congaree in 1718, along the Cherokee Path near the Congaree River, in an effort to regulate business with the Cherokee and Catawba (Meriwether 1940). The fort was used until 1722 when

the Board of Commissioners of the Indian Trade abandoned the operation. The reasons for this are unclear, but it may be related to the 1721 Act allowing for private trade, or the Commons House may have felt the operating expense was too great (Michie 1989).

It was not until around 1700 that South Carolinians found their cash crops: naval stores and rice. With the success of rice as a profitable cash crop came the increased importation of African slaves (Wood 1974:59), indicating a strong connection in the minds of the European settlers between rice production and African slaves (Terry 1981:78). By 1720, enslaved Africans comprised 65 percent of the total South Carolina population (DePratter et al. 1976:149). As the price of rice increased, Africans were enslaved and brought to the South Carolina lowcountry in larger numbers. To offset the large slave population and provide a buffer between the western Native American population and the populous coastal region, Governor Robert Johnson implemented a township plan in 1731 to attract European settlers to the South Carolina backcountry. Eight government-funded townships were created, including the Congarees, laid out in the vicinity of Fort Congaree. Formally established in 1733, the 832-acre township was renamed Saxe-Gotha in 1737 (Meriwether 1940).

Thomas and Patrick Brown and, later, Robert Goudey established a store near the Old Fort Congaree, which acted as a post where settlers traded with the Catawba and Cherokee (Meriwether 1940). This trading post attracted a few settlers, and by the mid-1730s, a number of other settlers began to arrive. In 1735, a group of Swiss settlers arrived, followed by a party of Germans in 1736. Some English settlers arrived in the 1730s, although most of them settled opposite the town on the other side of Congaree River (Meriwether 1940). Primary sources indicate the store was active in 1735, when local residents complained it attracted Indians who were destroying their corn (Meriwether 1940).

To attract settlers, the colony paid their passage, granted them land, did not require them to pay quitrents for 10 years, and provided them with provisions and other assistance. Settlers arriving in Saxe-Gotha were eligible for a town lot and 50 acres of land per family member. If the family was able to bring more land under cultivation, then the grant was increased (Kovacik and Winberry 1989:78). The town lots were laid along the Congaree River, and a common was reserved west and north of the lots. The town developed along Russell Street, now known as Old State Road.

By 1748, about 200 settlers lived in the greater township, and by the 1750s, the Saxe-Gotha township was estimated to have about 800 to 900 settlers (Meriwether 1940:59–65). By 1762, there were enough settlers to spill over into the Dutch Fork area between the Saluda and Broad rivers and support a store there. A number of English settlers began occupying land on the opposite side of the river in lower Richland County (Jones 1971:54).

NATIONAL PERIOD

As the village of Granby developed around the ferry landing north of Saxe-Gotha, the town was slowly abandoned. By 1805, a portion of the lots were engulfed in trees, while others were still in cultivation. In 1785, Granby was established as the county seat, and a courthouse was erected. The town had eight stores, two blacksmith shops, a tavern, a gristmill, and the public market (Gallman and Gallman 1738). In the years following Columbia's development across the river, Granby's importance waned, and the county seat was moved to Lexington (Central Midlands Regional Planning Council 1974:135–136).

In the late colonial and antebellum periods, prominent families in lower Richland County included the Howells, Hopkins, Westons, Raifords, Adamses, Taylors, Hamptons, and Goodwyns. Although lower Richland County was part of a larger political unit, the area developed independently and was characterized by large and prosperous cotton plantations along major creeks and on the Congaree River floodplain. Richland County's slave population, which centered in lower Richland's developing plantation society, increased during the antebellum period. By 1840, 10,664 people in Richland County lived as slaves, representing the largest increase in any one segment of the county's population in the pre–Civil War era.

River and overland shipment of cotton and freight was replaced by rail transportation in 1842, giving rise to small hamlets such as Gadsden, Kingville, and Hopkins Turnout. All of these almost disappeared with the decline of cotton before 1930 (Chandler et al. 1985).

The Columbia area saw a great deal of action during the Civil War. The Union army attacked the city in 1865. To deceive Confederate forces, Sherman's army was divided into two prongs, one headed for Charleston and one that deceptively appeared to be headed for Augusta. Once Sherman's army entered South Carolina, refugees from Georgia and the lowcountry flooded into Columbia. While Sherman's troops did not appear to be headed for the capital, citizens were convinced that the city would be burned. However, only three days before the Union march into Columbia, Major Goodwyn "officially announced that on the basis of statements from the highest military authority, he could assure the inhabitants that Columbia was safe" (Lucas 1976:39), and authorities did not begin evacuating Columbia until Union guns were heard.

On February 15, 1865, a skirmish was fought between Sherman's Army and Confederate forces defending Columbia at an earthwork Confederates had erected near the intersection of Old State Road and Congaree Creek. On February 16, 1865, the two prongs of Sherman's army met on the west bank of the Congaree River, across from the town of Columbia. There, Sherman met with his wing commanders Slocum and Howard. Slocum was ordered to proceed up the Saluda about 13

miles to Zion Church, where he was to cross and move on to Winnsboro. He was instructed to destroy all railroads and bridges along the way. This maneuver was designed to cut off General Beauregard's evacuation, while Howard's task was to capture Columbia (Lucas 1976:72).

Because the Union forces found the Congaree swifter and wider than anticipated, Howard's men went up the Saluda to the bridge near the Saluda Factory. Finding it destroyed, they constructed a pontoon bridge and crossed the river. Overwhelming Union pressure forced the Confederates to retreat. Since the Broad River Bridge had also been destroyed, another pontoon bridge was ordered to be built, and after considerable difficulty, a ferry line was constructed.

After crossing the river, the troops encountered considerable resistance, but with the aid of reinforcements, they were able to displace the Confederates and take Columbia (Lucas 1976:73–75). During the occupation, the city was burned by both Union and Confederate troops (Lucas 1976). At this time, several houses in the surrounding county, including General Wade Hampton's, Brigadier General W.H. Wallace's, and a Mrs. Stark's house were also burned (Wallace 1951:551).

POSTBELLUM AND MODERN PERIOD

The end of the Civil War meant an end to slavery, which presented a practical as well as an ethical problem in South Carolina: How would newly emancipated people be provided with the means to survive and thrive in a changed social structure? From the very beginning, it was understood that land ownership was of tantamount importance to the successful and permanent integration of former slaves into South Carolina society (Bleser and South Carolina Tricentennial Commission 1969). In the early days of Reconstruction, several efforts were made to provide former slaves with the means to live and support themselves by way of land ownership. Early promises of "forty acres and a mule," as famously stated by General William Sherman, gave way to more complex solutions (Williamson 1965).

In 1869, the South Carolina Land Commission was established with the goal of providing former slaves with the capacity to purchase land. The federal government purchased land from plantation owners in blocks and sold it to former slaves. As they typically had little in the way of monetary resources, the land was purchased through payments over time. In Richland County, the roughly 5,000-acre O'Hanlon Tract was the largest parcel offered for sale, in 1870, divided into 170 lots. The tract extended from the Congaree River to today's Old Bluff Road. Sales of the O'Hanlon Tract were largely unsuccessful, and by 1887, only 15 deeds had been secured and paid for (Almlie et al. 2009).

Other arrangements were occasionally made between landowners and the people they had formerly held in slavery. For example, the community of Arthurtown was established around 1871 when Edmund Taliafero (Tolliver), who was newly emancipated, purchased roughly 91 acres of land from the widow of his former owner, Sally Taylor (Richland County Register of Deeds, Columbia, South Carolina 1871:Deed Book F:310). At times, less formal arrangements were reached whereby formerly enslaved people simply settled on less desirable areas of land or plots left in limbo due to the upheaval of the recent war (Bleser and South Carolina Tricentennial Commission 1969).

In 1877, the Republican government was overthrown and the goals of Reconstruction were abandoned. Egalitarian policies were rolled back, and the Jim Crow era began (Bleser and South Carolina Tricentennial Commission 1969). By the turn of the twentieth century, most planters used the tenant-farming/share-cropping system. Most modern researchers divide Southern farm tenancy into the three broad categories that came to be recognized by the U.S. Census by the end of this era: 1) sharecropper or cropper; 2) share tenant or share renter; and 3) cash tenant or cash renter. It is worth noting that these three categories were fairly well established by the 1900s but were not so well-defined in 1880, when rent arrangements were much more fluid and the range of tenant possibilities broader. Nonetheless, these three categories are basically accurate, even in the early phase of tenant farming that followed the Civil War (Aiken 1998:29–33).

In the South, the number of tenant farms continued to rise throughout the same period, from between 553 and 848 in 1880 to 1,591,121 in 1920. The greatest 10-year jump occurred between 1890 and 1900, from 706,343 to 1,231,144. (The smallest was between 1910 and 1920: 1,536,752 to 1,591,121). It is also worth noting that tenancy became epidemic whenever cash crops were involved, especially tobacco and cotton. Alternatively, investment crops, such as fruit trees, dairy, and livestock farms, remained the domain of owner-operators (Goldenweiser and Truesdell 1924:33). By the turn of the century, Richland County had 10 cotton mills, including the nearby Granby and Olympia cotton mills (Watson 1907:460–461). The boll weevil spread into the area by 1922, but it appears to have had only a minor impact on the practice of tenancy. State officials noted that although many tenants left, the lands they cultivated were marginally productive and had not been skillfully tilled (South Carolina Department of Agriculture and Clemson Agricultural College of South Carolina 1927:20–22)

The area's proximity to the Congaree River and the network of rail lines, developed between 1848 and 1869, aided in cotton exportation and attracted a manufacturing labor force. As early as the 1790s, cotton was heralded as mid-state South Carolina's primary cash crop. Cotton was a labor-intensive crop, and the industry's success had depended on the state's enslaved population, which as of 1790 accounted for over a third of Richland County's total population (Jaeger 1993).

Near the turn of the nineteenth century, proximity to water was important for the transportation of goods. Overland transportation was notoriously unreliable and involved roads paved with logs that frequently washed out (Kapsch 2010). In 1818, the South Carolina General Assembly earmarked funds for improving the state's roads and rivers, including the goal of making all major rivers in South Carolina navigable, to aid in the export of cotton (Jaeger 1993). By 1824, construction of the Columbia Canal began at the mouth of the Congaree River, where the Saluda and Broad rivers join together. The canal was built to bypass a series of impassable rapids and sandbars, allowing access to the Charleston Harbor from the Saluda and Broad rivers. The Columbia Canal was arguably the most successful and well-traveled canal constructed during the infrastructure project (Wilbur Smith and Associates 1979). The canal is located approximately 325 feet from the APE.

However, transportation of goods remained unreliable and subject to the vagaries of weather. Travel from Columbia to ports in Charleston could often take over a week, and in an effort to compete with expanding port cities in the northeast, Columbia businessmen backed a railroad that would link to Charleston and the wider rail networks in the Ohio River Valley more efficiently (Jaeger 1993). The first line, linking Charleston to Hamburg, just east of the Savannah River, was completed in 1830. By 1848, the line was extended to Columbia, Camden, and Kingsville. A section of the Charlotte and South Carolina Railroad, chartered in 1846, traveled through the southwest section of the city, servicing the textile-related facilities in the project area (Lewis 2016).

The construction of the railroads quickly rendered the Columbia Canal obsolete as a means of transportation (Kapsch 2010), and in the 1890s, it was repurposed. As Columbia's population grew and the city experienced a manufacturing boom, the canal was used as a source of potable water and hydroelectric power for both Columbia residents and the large textile mills that began opening along riverbanks (Columbia Railway, Gas and Electric Company 1914).

As of 1900, South Carolina followed Massachusetts as the second largest cotton-textile-producing state in the nation (Carlton 2016). After a period of experiencing the negative effects of soil depletion and overproduction, South Carolina's cotton market began to recover in the early twentieth century. Fertilizers aided in the restoration of depleted soil, and improved seeds reinvigorated farms. Between 1890 and 1910, the state's cotton yields increased from 747,000 bales to 1,280,000 bales (Edgar 1998:481). Although South Carolina's cotton industry was regaining success, the cotton market was competitive, inspiring some South Carolina industrialists to shift their focus to textile processing and manufacturing. Between 1879 and 1901, 62 cotton oil mills opened in South Carolina, and between 1890 and 1905, six cotton mills opened in Columbia (Christman 1994). The state's textile industry was predominantly located in the upper Piedmont region, with the exception of W.B. Smith Whaley and Company. Between 1895 and 1901, Williams Burroughs Smith Whaley designed and constructed four mills near the east bank of the

Congaree River, southwest of Columbia's historic grid. Granby Mill, Richland Mill, Capitol City Mill, and Olympia Mill included vast complexes of worker housing, churches, and stores that radiated from the mills' manufacturing hubs and characterized the southwest corner of the city (Brandt and Ward 2018). Olympia Mill housed over 100,000 spindles and 2,250 looms, and its corresponding mill village boasted the Olympia School, which included the area's first kindergarten and playground (Baker 2016).

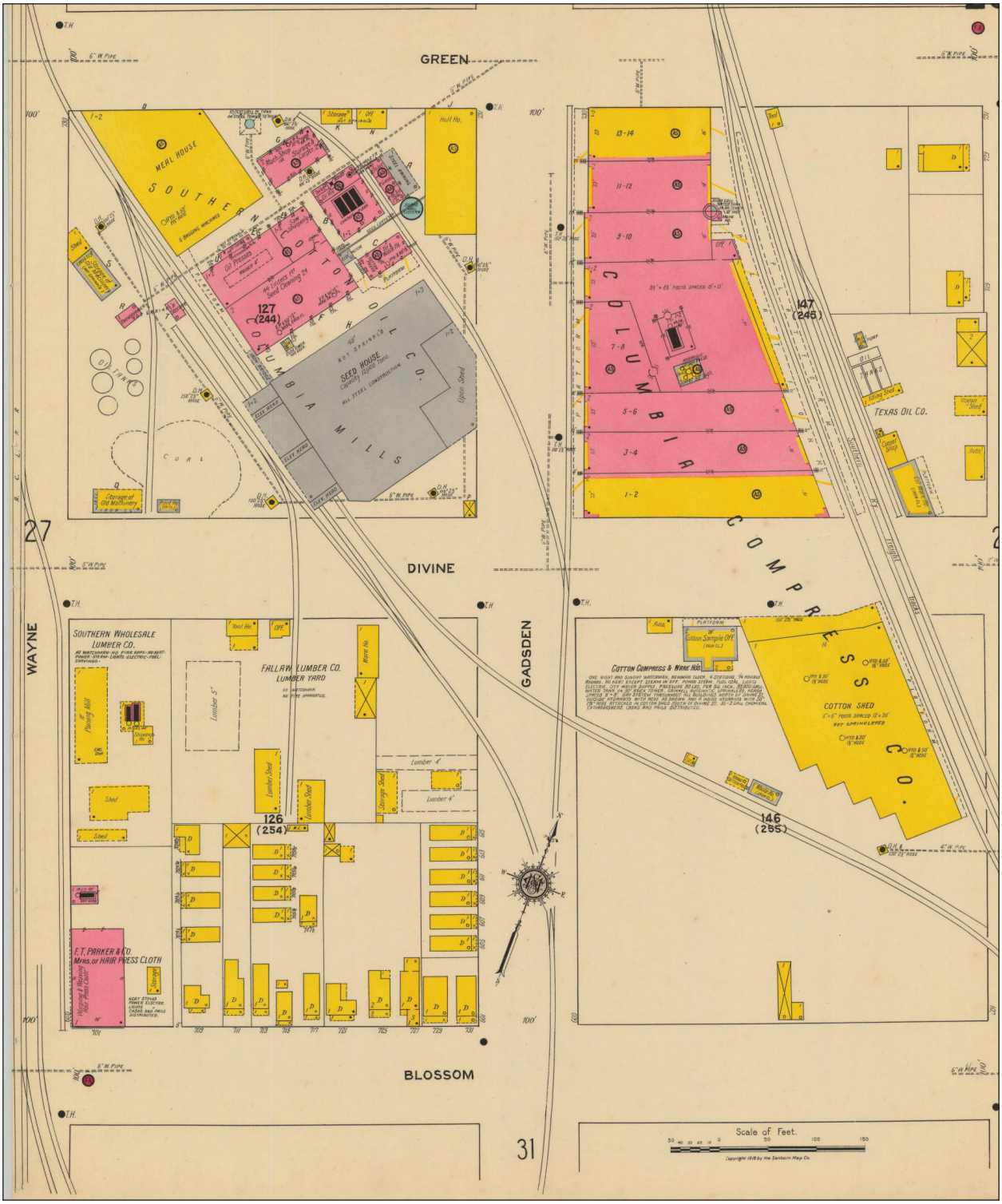
The twentieth century ushered in a tumultuous period for the nation's textile industries. World War I stalled exports to Europe, causing the price of cotton to plummet. To accommodate the overabundance of cotton, Governor Blease gathered the General Assembly in 1914 to regulate production and create a system of warehouses for storing, grading, and marketing cotton. Farmers who stored their supplies in state-funded warehouses were given a certificate of deposit that enabled them to renew their crop loans and restricted them from planting cotton on more than a third of their total acreage (Edgar 1998:480). When the United States entered World War I in 1917, the market began to recover, but, due to overproduction, it stagnated again in the 1920s and 1930s. Efforts by the National Recovery Administration (1933–1935) to stabilize prices and production failed. In an attempt to recoup costs, supervisors often applied "stretch-outs": additional production quotas added to existing quotas. Workers responded with a series of strikes and labor conflicts that culminated in the General Textile Strike of 1934. Incidents in the upcountry resulted in national headlines referring to the strike and resulting labor conflicts as a "Textile War Zone (Edgar 1998:505)." Workers yielded following an appeal by Franklin Roosevelt, but South Carolina mill supervisors were not quick to reinstate employees. After the strike, 26 mills across the nation, 15 of them in South Carolina, were given citations for not rehiring workers (Edgar 1998:505).

Consumer demand briefly revived the textile industry in the years following World War II, and companies consolidated and shifted focus to the production of synthetic fibers. Despite this attempt at diversification, South Carolina mills could not compete with low-cost production in developing countries (Carlton 2016). The 1970s and 1980s brought waves of mill closures throughout the state, and in 1996, Olympia Mill, which had been one of the most technologically advanced mills in Columbia, closed its doors (Baker 2016). The series of closures devastated mill communities and the economies they created. By 2001, South Carolina's textile industry disintegrated (Carlton 2016).

Sanborn Fire Insurance Maps created between 1888 and 1919 illustrate numerous manufacturing buildings north and east of the project area, including the Columbia Cotton Compress Company at the corner of Gadsden and Devine Streets, the Gulf Refining Company Oil Yard at the corner of Green and Pulaski Streets, and the Southern Cotton Oil Company, founded in 1887 at 737

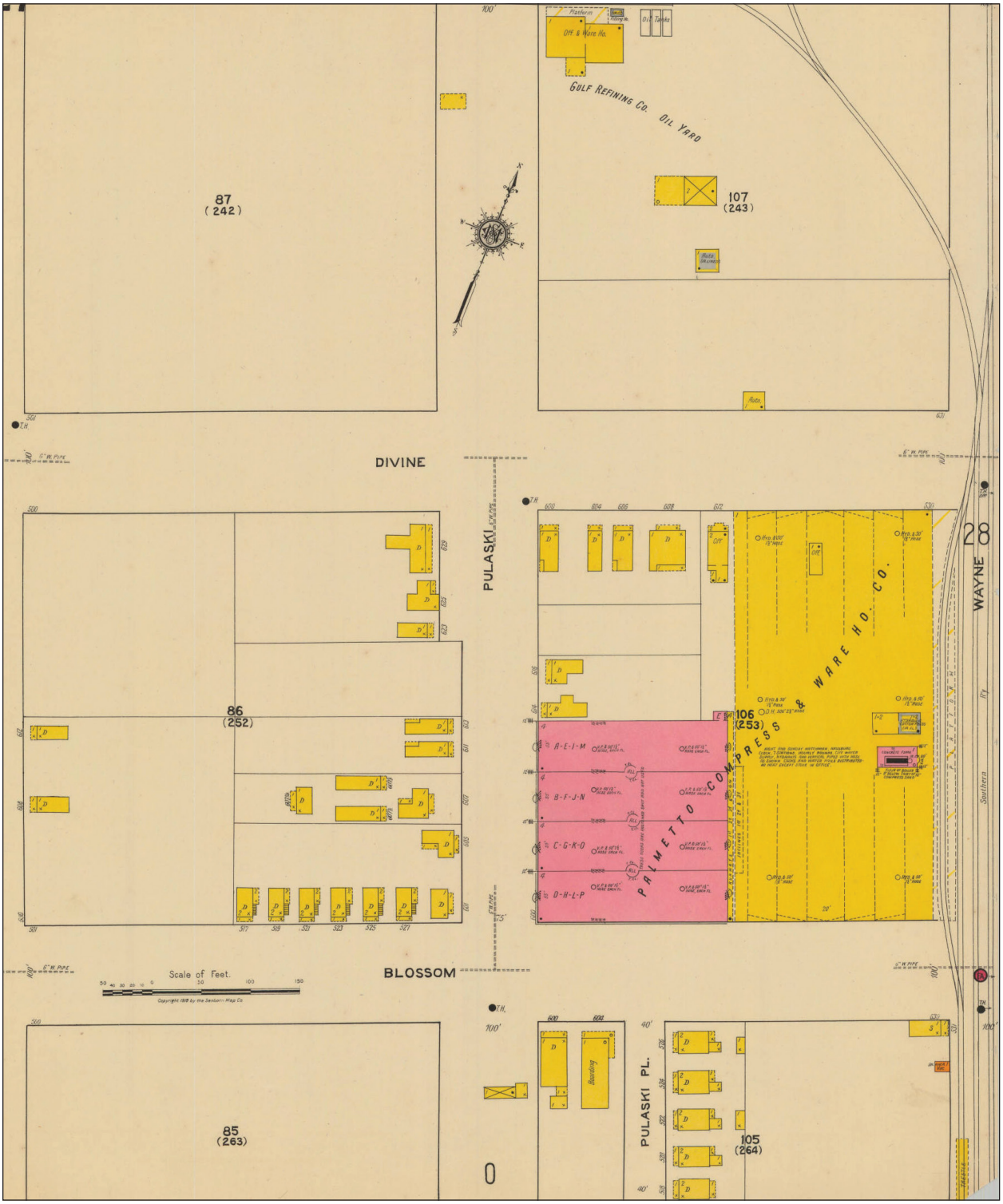
Gadsden Street (Figure 2; Christman 1994). At this time, the area was dotted with one-story frame dwellings likely constructed to house workers for the surrounding manufacturing facilities. The 1919 Sanborn map also illustrates the historic four-bay section of the Palmetto Compress and Warehouse Company bounded to the north, south, and west by one- and two-story frame dwellings and a one-story boarding house on Blossom Street (Figure 3). The 1917 Columbia City Directory indicates that a diverse group of residents employed as farmers, mill operators, and laborers occupied this area. As of 1917, a mill operator named W.H. Creech and his family lived on Pulaski Street, and a farmer named Addison Moorer resided at 600 Blossom Street. The neighborhood was home to both white and African American residents, including Porter Taylor, a laborer who resided at 623 Pulaski Street with his wife Leila (Walsh Directory Company 1917). Aerial imagery reveals that by 1981, a majority of the area's residential architecture had been demolished or moved. The area is now characterized by commercial, multi-family residential, and educational buildings associated with the University of South Carolina.

Figure 2.
Sanborn Fire Insurance Map of Blossom and Gadsden Streets, June 1919



Source: (Sanborn Fire Insurance Map Company 1919)

Figure 3.
Sanborn Fire Insurance Map of Blossom and Pulaski Streets, June 1919



Source: (Sanborn Fire Insurance Map Company 1919)

IV. METHODS

BACKGROUND RESEARCH

Background research helped in identifying previously recorded cultural resources in the vicinity of the APE and developing a general cultural and historical overview against which to properly evaluate resources identified during the field survey. New South Associates reviewed ArchSite, the digital site files and GIS database maintained by the South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina Department of Archives and History (SCDAH), to identify resources within the APE that were previously recorded, listed on the NRHP, or eligible for listing on the NRHP. In addition, historic maps were reviewed to locate potential historic resources and to develop an overview of the area's development over time. Cultural resource survey and evaluation reports were reviewed, and secondary history books concerning the Richland County area were also consulted.

ARCHAEOLOGICAL BACKGROUND RESULTS

The review of archaeological site files at SCIAA indicated that no previously recorded archaeological sites were present within the area of direct effects. However, 12 sites are recorded within a half mile of the project area (Table 1; Figure 4). Of these sites, two (38LX100 and 38RD54) are currently listed on the NRHP, one (38RD278 and 38RD286 combined) is eligible for the NRHP, and the rest are not eligible or need additional work to determine eligibility. Additionally, two previous surveys were identified within the half-mile search radius.

Table 1. Previously Recorded Archaeological Sites within 0.5-mile of the APE

Site	Components	Recommendation	Reference
38LX100	Guignard Brick Works, nineteenth/twentieth century	Listed	Harvey and Poplin 2000
38RD13	Nineteenth/twentieth-century bottle dump	Unassessed	Stephenson 1972
38RD54	Union Station, twentieth-century railroad station	Listed	Thomas 1973
38RD205	Middle/Late Archaic lithic scatter	Not Eligible	Harvey and Poplin 2000
38RD223	Nineteenth/twentieth-century bottle dump	Not Eligible	Harvey and Poplin 2000
38RD235	Possible nineteenth-century V-shaped wooden object	Not Eligible	Harvey and Poplin 2000
38RD275	Unknown precontact lithic scatter; twentieth-century brick scatter	Not Eligible	Harvey and Poplin 2000
38RD278	Congaree River Project: Woodland period artifact scatter; eighteenth/nineteenth-century artifact scatter; combined with 38RD286	Eligible	Norris 2015

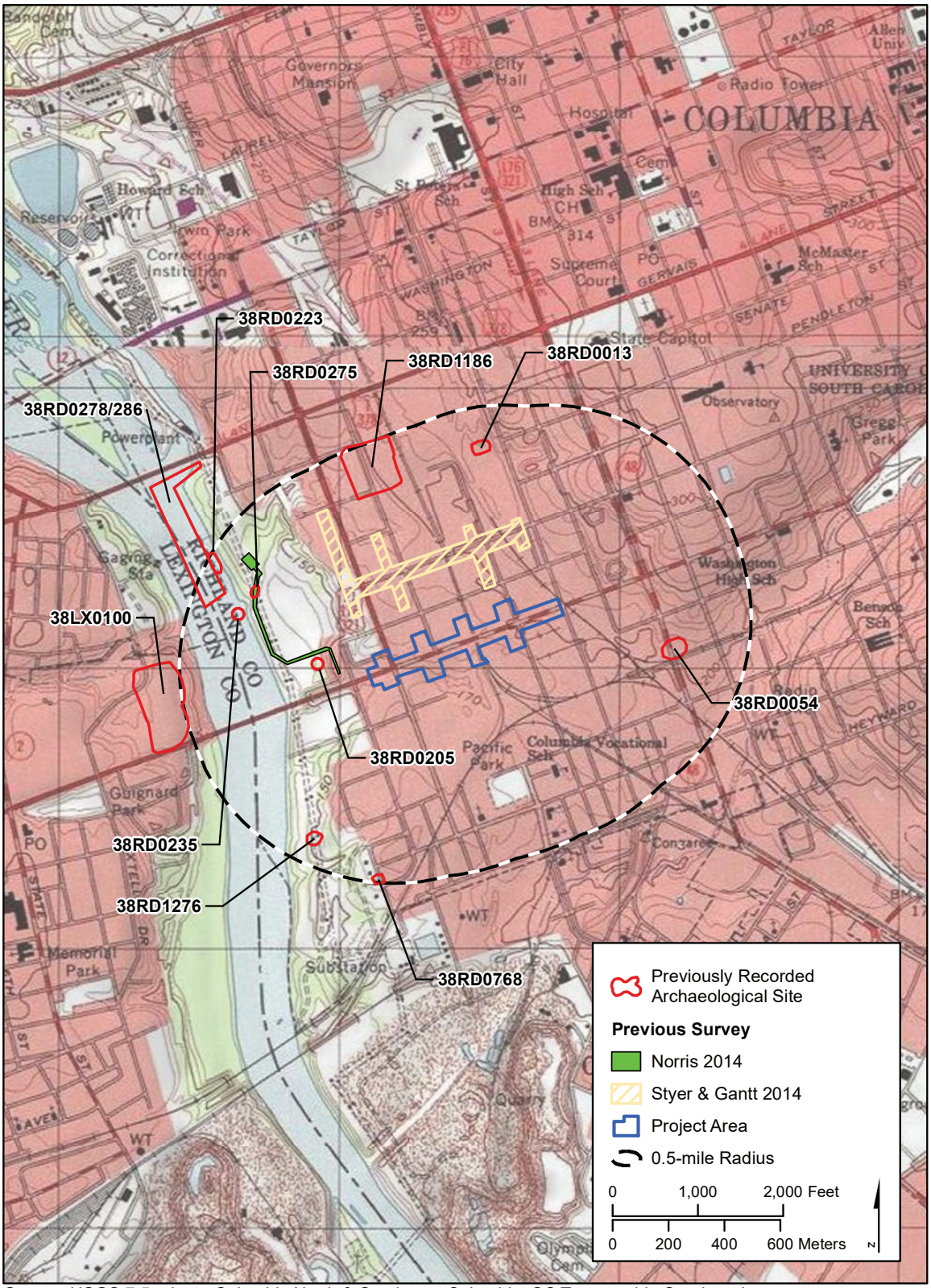
Table 1. Previously Recorded Archaeological Sites within 0.5-mile of the APE

Site	Components	Recommendation	Reference
38RD286	Congaree River Project: nineteenth-century Ordnance Dump Site; combined w/38RD278	Eligible	Norris 2015
38RD768	Twentieth-century mill house	Not Eligible	Harvey and Poplin 2000
38RD1186	Nineteenth/twentieth-century Columbia Public Burying Grounds; destroyed by twentieth-century construction	Not Eligible	Trinkley and Hacker 2001
38RD1276	Possible dispensary	Not Eligible	Chambliss 2004

Most sites within the search radius date to the historic period. Two, the Guignard Brick Works (38LX100) and Union Station (38RD54), are currently listed in the NRHP. Dating to the nineteenth and twentieth centuries, the Guignard Brick Works produced bricks used in the development of Columbia and South Carolina. The complex consists of a brick office, four brick beehive kilns, and other industrial features relating to the brickworks. Additionally, the complex has significance as beehive kilns were an important method of construction in brickmaking facilities (Smith 2012). Opened to the public in 1902, Union Station, an excellent example of eclectic architecture, was designed by Frank P. Milburn, a prominent Southern architect known for designing large public buildings and only using high quality materials. Additional train stations designed by Milburn are located in New Orleans, Atlanta, Savannah, and Knoxville (Myers 1973). The Ordnance Dump Site consists of two combined sites, 38RD278 and 38RD286, and was recommended eligible for the NRHP. This large site is located in the Congaree River and contains ordnance taken from the Palmetto Armory and dumped in the river by Union troops during the Civil War (Norris 2015). Salvage permits for the site were issued in the 1970s and 1980s; however, detailed information regarding recovered artifacts are lacking in the SCIAA files. In 2014, R.S. Webb undertook a cultural resources survey for the Greene Street Project (Styer and Gantt 2014). This survey, located to the north of the project area, encompassed Greene Street from Huger Street to Lincoln Street, as well as portions of Pulaski and Gadsden streets and Huger Street to its intersection with Pendleton Street. While no archaeological sites were identified, 15 structures were evaluated for their eligibility for the NRHP, and the NRHP–listed Southern Cotton Oil Company site was revisited. None of the newly recorded structures were determined to be eligible for the NRHP.

TRC Solutions, Inc. completed a cultural resources identification survey for improvements to an access road in 2014 (Norris 2014). Located west of the current project area and within the boundaries of the Columbia Canal, this survey did not identify any new archaeological or architectural resources. One previously recorded archaeological site, 38RD275, falls within the bounds of the survey; as no information was recovered to change its eligibility, site 38RD275 remains not eligible for inclusion in the NRHP.

Figure 4.
Previously Recorded Archaeological Sites and Surveys within 0.5 Miles of the APE



Source: USGS 7.5-minute Columbia North & Southwest Columbia, SC Topographic Quadrangles

ARCHITECTURAL BACKGROUND RESULTS

Background research was conducted to identify all previously recorded historic resources in the vicinity of the project area. The Statewide Survey Files of the SCDAH were searched for previously recorded properties within the APE using the ArchSite system. This section of Columbia has been the subject of numerous cultural resource studies, from survey to data recovery. A city-wide architectural survey and preservation plan was completed for the City of Columbia in 1993. The survey effort covered an area of 42.3 square miles, excluding Fort Jackson, Elmwood Park, and the Granby areas, which were intensively surveyed in 1989 and 1990. Approximately 33,000 resources were reviewed as part of the city-wide survey. Over 3,000 resources were recorded and determined eligible for a local designation or listing in the NRHP, including the Palmetto Compress and Warehouse Company Building (Resource 0076; John M. Bryan and Associates 1993). A NRHP Multiple Property Documentation Form (MPDF) for the Historic Resource of Columbia completed in 1978 recognized 25 individual historically or architecturally significant properties within the Columbia city limits and formally listed the Palmetto Compress and Warehouse Company Building (Resource 0076) on the NRHP (Burr et al. 1978). The APE is bounded by several textile-related resources and mill-town developments, including the Southern Cotton Oil Company (NRHP listed in 1996), the Granby Mill Village Historic District (NRHP listed in 1993), and the Olympia Mill Village Historic District (NRHP listed in 2018). Additionally, in 2005, Lichtenstein Consulting Company conducted a historic bridge survey of bridges 50 years old or older throughout the state. The Blossom Street Bridge (Structure Number: 000000000001977/Resource 7693) was noted during this survey (Lichtenstein Consulting Services 2005).

South Carolina ArchSite and SHPO records indicate that there are 28 previously recorded architectural resources 50 years old or older within a half mile of the APE. These resources are listed in Table 2 and shown in Figure 5. Of these, nine are listed in or eligible for listing in the NRHP but are not in the APE. One previously recorded NRHP-listed resource is within .5 miles of the APE and is discussed in more detail in Chapter V.

Table 2. NRHP Listed and Previously Recorded Architectural Resources within .5 Miles of the APE

Resource Number	Name/Address	Type	Construction Date	NRHP Recommendation
0020	Columbia Canal	Structure	1824	Listed; outside APE
0076	Palmetto Compress and Warehouse Company Building	Industrial	1917;1923	Listed
0078	Richland Cotton Mill; 211–221 Main Street	Industrial	1895	Listed; outside APE
0079	Union Station; 401 South Main Street	Transportation	1902	Listed; outside APE

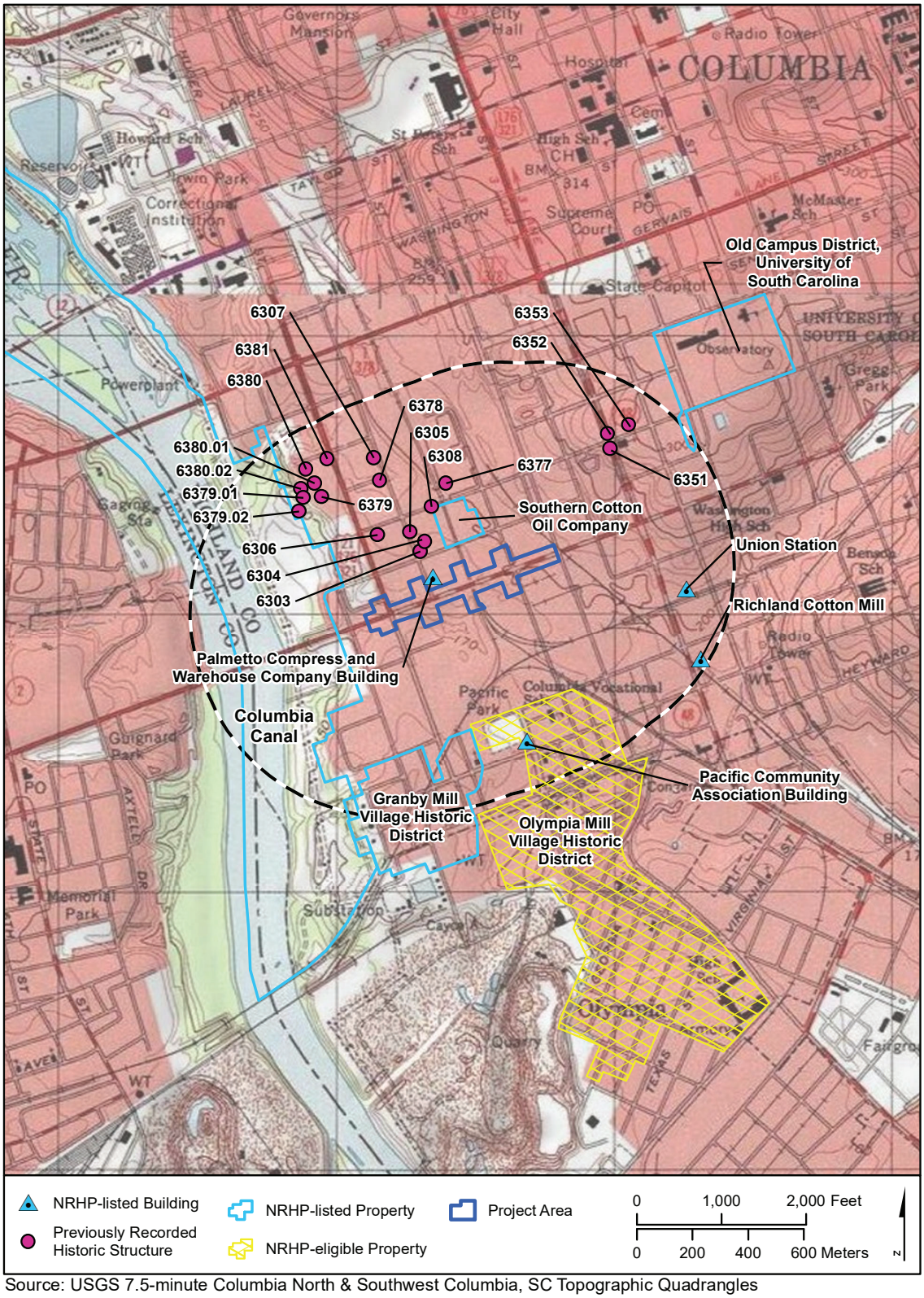
Table 2. NRHP Listed and Previously Recorded Architectural Resources within .5 Miles of the APE

Resource Number	Name/Address	Type	Construction Date	NRHP Recommendation
2973	Southern Cotton Oil Company	Industrial	1887	Listed; outside APE
5437	Granby Mill Village Historic District	Industrial/ Residential	1896–1897	Listed; outside APE
6299	Olympia-Pacific Community Association Building, 701 Whaley Street and 214 Wayne Street	Industrial, Residential, Recreational	1903–1941	Listed; outside APE
7914	Whaley Street/Olympia Mill Village Historic District	Residential District	1899–1954	Listed; outside APE
6303	617 Devine Street	Not Extant	c. 1930; 1949	Not Eligible
6304	Adjacent to parking lot of 617 Devine Street	Not Extant	c. 1920	Not Eligible
6305	724 Pulaski Street	Not Extant	1950	Not Eligible
6306	790 Pulaski Street	Industrial	1949; 1966–1987	Not Eligible
6307	914–930 Pulaski Street	Industrial	1919;1928;1960	Not Eligible
6308	Railroad at Greene Street Intersection	Transportation	c. 1860; 1980	Not Eligible
6351	Greene Street United Methodist Church; 1106 Greene Street	Religious	1905	Not Eligible
6352	1111 Greene Street	Commercial	c. 1940	Not Eligible
6353	801 Main Street	Commercial	c. 1940	Not Eligible
6377	743 Greene Street	Industrial	1956	Not Eligible
6378	850 Pulaski Street	Transportation	c. 1960	Not Eligible
6379	903 Huger Street	Industrial	1940	Not Eligible
6379.01	903 Huger Street	Industrial	1940	Not Eligible
6379.02	903 Huger Street	Industrial	1930	Not Eligible
6380	919 Huger Street	Industrial	1940	Not Eligible
6380.01	919 Huger Street	Industrial	1940	Not Eligible
6380.02	919 Huger Street	Industrial	1940	Not Eligible
6381	New Macedonia Baptist Church, 930 Huger Street	Religious	1957	Not Eligible
N/A	Old Campus District, University of South Carolina	Educational	1848	Listed; outside APE
N/A	Thomas Cooper Library, 1322 Greene Street	Educational	c. 1959	Eligible; outside APE

HISTORIC RESOURCE SURVEY METHODS

The architectural historian surveyed the APE for previously unrecorded historic architectural resources 50 years old or older. Buildings, structures, and sites more than 50 years old were assessed for their NRHP eligibility. The previously unrecorded resources were surveyed using the Statewide Survey Intensive Form, produced by the South Carolina State Historic Preservation

Figure 5.
Previously Recorded Architectural Resources in the Project Vicinity



Source: USGS 7.5-minute Columbia North & Southwest Columbia, SC Topographic Quadrangles

Office (SHPO) and in accordance with the SHPO-produced Survey Manual: South Carolina Statewide Survey of Historic Places. They were recorded using FileMaker Pro and photographed using a handheld tablet. Properties were evaluated according to NRHP eligibility criteria, and a preliminary assessment of effect for the proposed project was conducted for any property in the APE that was NRHP listed or that met the NRHP criteria for eligibility.

FIELD METHODS

The project archaeologist conducted the field survey, using the standards outlined in the South Carolina Standards and Guidelines for Archaeological Investigations (Council of South Carolina Professional Archaeologists et al. 2013). All undeveloped and undisturbed areas were surveyed using 30-meter interval test, and shovel tests were excavated when there was no surface exposure. Each shovel test was approximately 30 centimeters and excavated until culturally sterile subsoil was encountered. Soils were screened through 0.25-inch mesh hardware cloth to ensure systematic artifact recovery.

For the purposes of this survey, an archaeological site was defined as an area yielding three or more historic or precontact artifacts within a 30-meter radius and/or an area with visible or historically recorded cultural features (e.g., shell middens, cemeteries, chimney falls, brick walls, piers, earthworks, etc.). An isolated find was defined as no more than two historic or precontact artifacts found within a 30-meter radius. Field notes were maintained for all shovel tests excavated.

LABORATORY ANALYSIS AND CURATION

No artifacts were recovered as a result of the archaeological survey. New South Associates provides temporary storage for all records, which will be turned over to the SCIAA for final curation. Photographs and notes will be prepared using their standards.

NATIONAL REGISTER OF HISTORIC PLACES EVALUATION

Cultural resources are evaluated based on the criteria for NRHP eligibility specified in the Department of Interior Regulations 36 CFR Part 60: National Register of Historic Places. Cultural resources can be defined as significant if they "possess integrity of location, design, setting, materials, workmanship, feeling, and association" and if they are 50 years of age or older and:

A. are associated with events that have significantly contributed to the broad pattern of history;

B. are associated with the lives of persons significant in the past;

C. embody the distinctive characteristics of a type, period, or method of construction; or represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

D. have yielded, or may be likely to yield, information important in prehistory or history.

Criteria A, B, and C are usually applied to architectural resources. Archaeological sites are generally evaluated relative to Criterion D. In order to evaluate a resource under Criterion D, the National Register Bulletin Guidelines for Evaluation and Registering Archaeological Properties (Little et al. 2000) lists five primary steps to follow:

1. Identify the property's data set(s) or categories of archaeological, historical, or ecological information.

2. Identify the historic context(s), that is, the appropriate historical and archaeological framework in which to evaluate the property.

3. Identify the important research question(s) that the property's data sets can be expected to address.

4. Taking archaeological integrity into consideration, evaluate the data sets in terms of their potential and known ability to answer research questions.

5. Identify the important information that an archaeological study of the property has yielded or is likely to yield.

V. RESULTS AND RECOMMENDATIONS

This Phase I Cultural Resources Survey included both archaeological and architectural surveys. Fieldwork took place on December 11 and 19, 2019, resulting in the identification of no archaeological sites and four previously unrecorded historic resources. In addition, one previously identified architectural resource was revisited. This chapter describes these resources and provides recommendations for further historic preservation.

ARCHAEOLOGICAL SURVEY

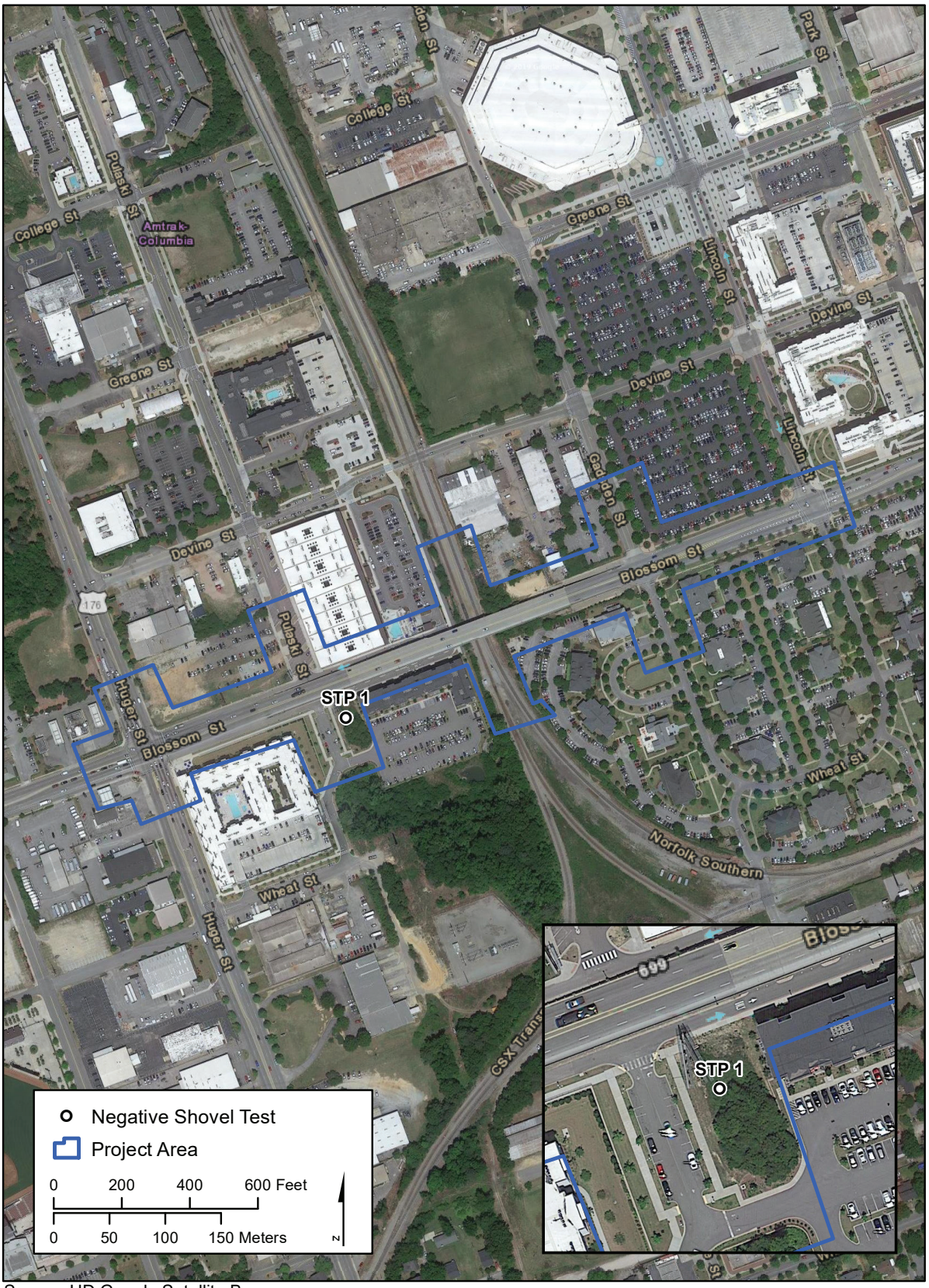
The archaeological survey involved systematic shovel testing in the APE (Figure 6). However, the entire project corridor was heavily developed, with current land use in and adjacent to the APE containing commercial and high-density residential buildings. Much of the project area was graded, filled, paved, and/or contained buried utilities. Areas showing substantial disturbance were visually inspected and shovel tests were mostly used to confirm conditions. Because the project area was heavily disturbed, only one shovel test was excavated.

The survey included an investigation of three side roads: Gadsden Street, Pulaski Street, and Huger Street. These side roads included paved and gravel parking lots, high-density residential buildings, buried utilities, and graded or disturbed areas (Figures 7–12). One shovel test was excavated on the southeastern corner of Pulaski Street. This shovel test was disturbed and consisted of approximately 20 centimeters of dark brown (10YR 3/3) sandy loam mottled with dark yellowish brown (10YR 4/6) sand; brick and cement inclusions were also noted in the shovel test.

ARCHITECTURAL SURVEY RESULTS

Development along Blossom Street includes a mix of residential and commercial uses. The area is characterized by multi-unit residential apartments and corresponding asphalt parking lots on the north and south sides of Blossom Street. The circa-2000 University of South Carolina Greek Village is partially situated in the southeastern section of the APE, as are a number of circa-1980 to -2000 commercial buildings. After 1980, the region’s use shifted from being primarily a manufacturing base to uses associated with the nearby University of South Carolina, including classroom space, apartment residences, and restaurants. One of the resources in the APE, 718 Devine Street (Resource 7695), houses university classrooms.

Figure 6.
Shovel Test Map



Source: HD Google Satellite Basemap

Figure 7.
Commercial Development at the Intersection of Lincoln and Blossom Streets

A. From the Northwest Corner, Facing West

B. From the Northwest Corner, Facing Northeast

C. From the Southeast Corner, Facing Northwest

Figure 8.
Development at the Intersection of Gadsden and Blossom Streets, NE Corner

A. Facing North

B. Facing West

C. Facing East

Figure 9.
Development at the Intersection of Gadsden and Blossom Streets, SE Corner

A. Facing South

B. Facing East

C. Facing North

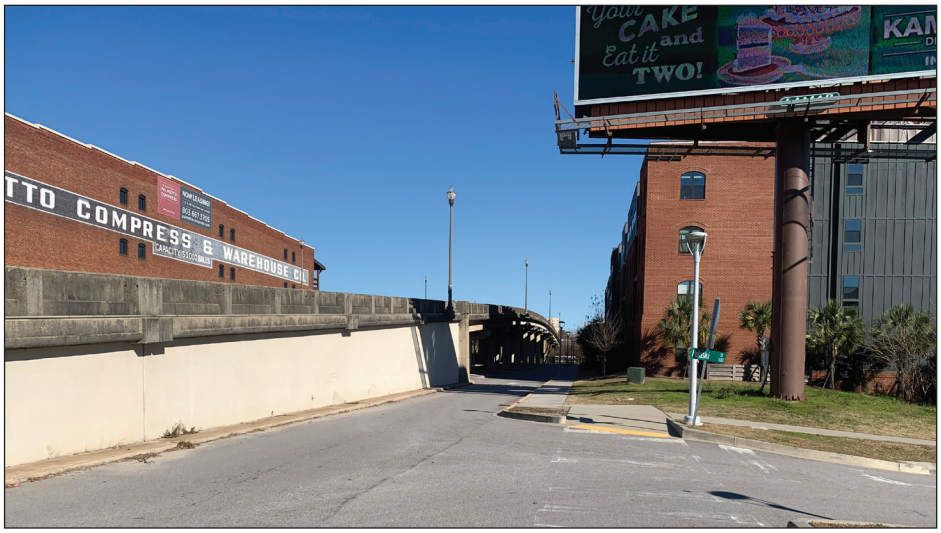
Figure 10.
Development and Disturbance at the Intersection of Pulaski and Blossom Streets, NE Corner

A. Facing North

B. Facing West

Figure 11.
Development and Disturbance at the Intersection of Pulaski and Blossom Streets, SW Corner

A. Facing East



B. Facing South

C. Facing West

Figure 12.
Development and Disturbance at the Intersection of Huger and Blossom Streets

A. Northeastern Corner, Facing East

B. Northeastern Corner, Facing Southwest

C. Southwestern Corner, Facing West

As a result of the survey, one previously surveyed and four newly identified individual historic architectural resources in the APE were recorded and evaluated (Figure 5). The eastern boundary of the NRHP-listed Columbia Canal is approximately 325 feet from the western edge of the APE (Burr 1973). The area between the APE and the district boundary is characterized by circa-1970 automobile-related resources and dense, non-historic development, including a multistory apartment complex constructed in 2016. This pocket of development provides a distinct visual barrier between the project area and the NRHP-listed Columbia Canal; therefore, the canal was not formally re-evaluated.

PREVIOUSLY RECORDED RESOURCES

One previously recorded resource, the NRHP-listed Palmetto Compress and Warehouse Company (0076), is located in the APE. Information on the Palmetto Compress and Warehouse Company (0076), including significant changes that have occurred since the last time the building was surveyed, is delineated in Table 3.

Table 3. NRHP Listed and Previously Recorded Architectural Resources within the APE

Resource Number	Name/Location	Type/Style	Construction Date	NRHP Recom-mendation	Significant Changes
0076	Palmetto Compress and Warehouse Company, 612 Devine Street	Warehouse	1917; 1923	Eligible	Replacement of windows, addition of new window and door openings on the façade, reconstruction of the east porch

RESOURCE 0076: PALMETTO COMPRESS AND WAREHOUSE COMPANY

The four-story Palmetto Compress and Warehouse Company building, located at 612 Devine Street, was modified to house apartments in 2015. The rectangular plan warehouse comprises two sections containing eight horizontal bays built between 1917 and 1923 (Burr et al. 1978). The façade faces east, toward the Southern and SLR Railroad. The four southernmost bays were constructed in 1917 to store mechanically compressed cotton bales in transit to the region's textile mills. Because cotton bales are flammable, fire prevention was a major concern during the building's tenure as a cotton warehouse (Figure 13A), and the warehouse was constructed with heavy brick exterior walls laid in a six-to-one common bond and interior brick fire walls that created four compartments on each floor (Burr et al. 1978). A low-pitched stepped parapet on the north and south elevations, featuring metal coping along the roofline, obscure the building's flat roof (Figure 13B). The 2015 renovation affected the east façade the most, with the reconstruction of the full-width frame shed–roof porch on the that façade. Four-stories high, the frame shed–roof porch is supported by square wood posts resting on square brick piers with concrete caps. The

Figure 13.
Resource 0076: Palmetto Compress and Warehouse Company

A. Historic Northeastern Oblique (*Cola Today* 2018)

B. Northeastern Oblique

continuous porch has a wood deck and stark wood railings. During the 2015 renovation, a number of the bricked-in bays were reopened to accommodate door openings, and additional fenestration was added to the east façade to provide light and access to the eastern apartments. Approximately 22 bays containing two sets of doors extend across the east façade. Each bay contains a pair of single-light, single-panel double doors and a pair of arched single-light, single-panel wood doors flanked by a sliding pressed-metal fire door. A central half-story projects from the roof and contains a single arched window (Figure 14A).

The north elevation fronts Devine Street and is primarily clad in brick laid in a six-to-one common bond. A historic advertisement that reads "Palmetto Compress & Warehouse Co. Capacity 50,000 Bales" has been repainted on the north elevation. Pairs of circa-2015 fixed eight-light metal windows with brick sills and soldier course lintels extend across the façade (Figure 14B).

The west façade fronts Pulaski Street and retains the original fenestration pattern. Each of the eight bays was constructed with an arched cargo opening at each floor, flanked by pairs of windows on each side. The original doors have been replaced with circa-2015 two-light windows with single panels that mimic the appearance of doors. Each opening has a brick sill and is topped by a double-course segmented brick arch. The original windows have been replaced with circa-2015 fixed six-light metal windows with operable three-light awning sashes at the base. Each window has a brick sill and a soldier course lintel (Figure 15A).

The south elevation is situated approximately 29 feet from the Blossom Street (US 21 Connector) bridge (Figure 15B). This elevation's composition is almost identical to the north elevation and with pairs of circa-2015 fixed eight-light metal windows with brick sills and soldier course lintels (Figure 15C).

The Palmetto Compress and Warehouse Company was founded around 1912. E. Borneman of Savannah, Georgia served as the company's first president, and in its early years, the company could store approximately 500 bales of cotton. W. Gordon McCabe, W.M. Gibbes, G.L. Smith, and H. Gordon Kenna acquired the company in 1917. Later that year, they hired the local architect James B. Urquhart to design the first section of the 208x208-foot brick compress warehouse. The estimated cost of construction was $60,000. In 1923, a four-bay addition was constructed that doubled the size of the warehouse and expanded the company's storage capacity to 60,000 bales. The warehouse was constructed with a sprinkler system and slow-burning heavy timber floors that sloped down from the center north-south axis to drain water in the event the sprinkler system was activated. A circa-1912 single-story frame warehouse was situated on the eastern side of the parcel, near the rail line, and housed the warehouses' shipping and receiving space, an office, and a

Figure 14.
Resource 0076: Palmetto Compress and Warehouse Company

A. East Façade

B. North Elevation

Figure 15.
Resource 0076: Palmetto Compress and Warehouse Company

A. West Elevation

B. South Elevation and Blossom Street (US 21 Connector) Bridge

C. South Elevation

compressing shed (Burr et al. 1978). Aerial imagery reveals that this warehouse was demolished or moved between 2004 and 2005. An asphalt parking lot occupies the former location of the frame warehouse. In 2015, the architect Scott Garvin rehabilitated the building to house 197 apartments. At this time, amenities including the asphalt parking lot and swimming pools were added on the east side on the parcel (Wilkinson 2015).

The Palmetto Compress and Warehouse Company was listed in the NRHP in 1985 as part of the Historic Resources of Columbia Multiple Property Submission. The building is a notable example of early twentieth-century warehouse design and is significant for its role in the city's prosperous textile industry. Between 1890 and 1905, six textile mills were constructed in Columbia, resulting in a rapid expansion of cotton-related industries and infrastructure. As of 1978, the Palmetto Compress and Warehouse Company was one of only four remaining cotton compresses operating in the southeast; it remained active until around 1986 (Burr et al. 1978). This survey recommends the Palmetto Compress and Warehouse Company as eligible for the NRHP under Criterion A for its association with twentieth-century Columbia and South Carolina's robust textile industry, as well as under Criterion C as an intact example of a twentieth-century cotton warehouse. Although modified, the warehouse retains its original footprint and many original exterior materials. Modifications including the reconstruction of the porch on the east façade and the replacement of the original windows are sensitive to the building's history and original design.

Resource 0076 is located within the project's area of direct effects. The NRHP nomination identifies the NRHP boundary as the four-acre parcel encompassing the entire 600 block of Devine Street (Figure 16; Burr et al. 1978).

NEWLY RECORDED RESOURCES

Four new architectural resources were identified within the project APE. None of these newly recorded resources are recommended eligible for inclusion in the NRHP. They are shown in Figure 17, summarized in Table 4, and discussed in more detail below the table.

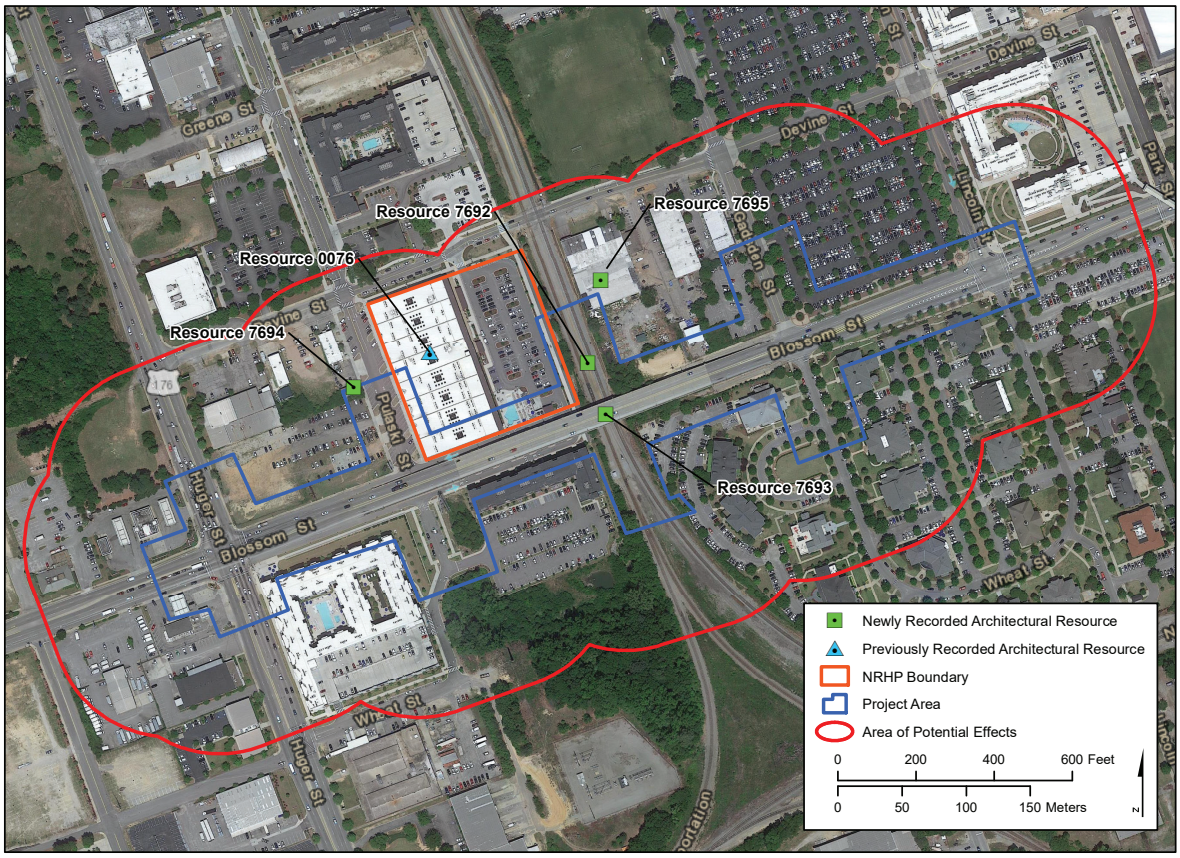
Table 4. Newly Recorded Individual Architectural Resources

Resource Number	Name/Location	Type/Style	Construction Date	Neighborhood	NRHP Recommendation
7692	Southern and SCL Railroad	Rail line	c. 1850	N/A	Not Eligible
7693	Blossom Street Bridge (US 21 over SOU and SCL RR); Structure #000000000001977	Four-lane steel stringer bridge	1953, Modified 1987	N/A	Not Eligible
7694	530 Devine Street	Front-gabled house	c. 1915	N/A	Not Eligible
7695	718 Devine Street	Warehouse	1959	N/A	Not Eligible

Figure 16.
Resource 0076: Palmetto Compress and Warehouse Company,
NRHP Boundary and Area of Direct Effects

Source: HD Google Satellite Basemap

Figure 17.
Newly Recorded Architectural Resources within the APE



Source: HD Google Satellite Basemap

RESOURCE 7692: SOUTHERN AND SCL RAILROAD

Resource 7692 is a section of the Southern and SCL Railway line. This line was originally part of the Charlotte and South Carolina Railroad, chartered in 1846 and operational by 1852. The original line extended 84 miles from Charlotte, North Carolina to Columbia, South Carolina. In 1869, the line merged with the Columbia and Augusta Railroad to create the Charlotte, Columbia and Augusta Railroad. Originally extending 177 miles from Charlotte, North Carolina to Augusta, Georgia, the Charlotte, Columbia and Augusta Railroad boasted 39 stations by 1882. That same year, the line officially merged with the Richmond and Danville Railroad but retained its name. In 1894, the line became part of the Southern Railway (Lewis 2016). The section that bisects the APE is a double-track linear line that splits into an additional double-track and a single-track just south of the project area (Figure 18). The track roughly parallels the Congaree River until it splits just north of I-126. It is an active standard-gauge track. No historic buildings are associated with this section of the line as it passes through the APE. As early as 1919, the line serviced a platform (no longer extant) associated with the Palmetto Compress and Warehouse Company (Figure 19).

Resource 7692 is common example of a rail line in South Carolina. It was not found to embody the distinctive characteristics of a type, period, or method of construction, and it does not possess significance for its engineering or materials. It is recommended not eligible for inclusion in the NRHP under Criterion C. It was evaluated under Criterion A, due to its association with patterns of development in both commerce and transportation. It was not found to rise to the level of significance necessary for inclusion in the NRHP due to either of these associations, particularly given that no additional historic elements communicate the association of this resource with those patterns of development within the APE. It is not known to be associated with any significant person and therefore is not recommended eligible under Criterion B.

RESOURCE 7693: BLOSSOM STREET BRIDGE (US 21 CONNECTOR)

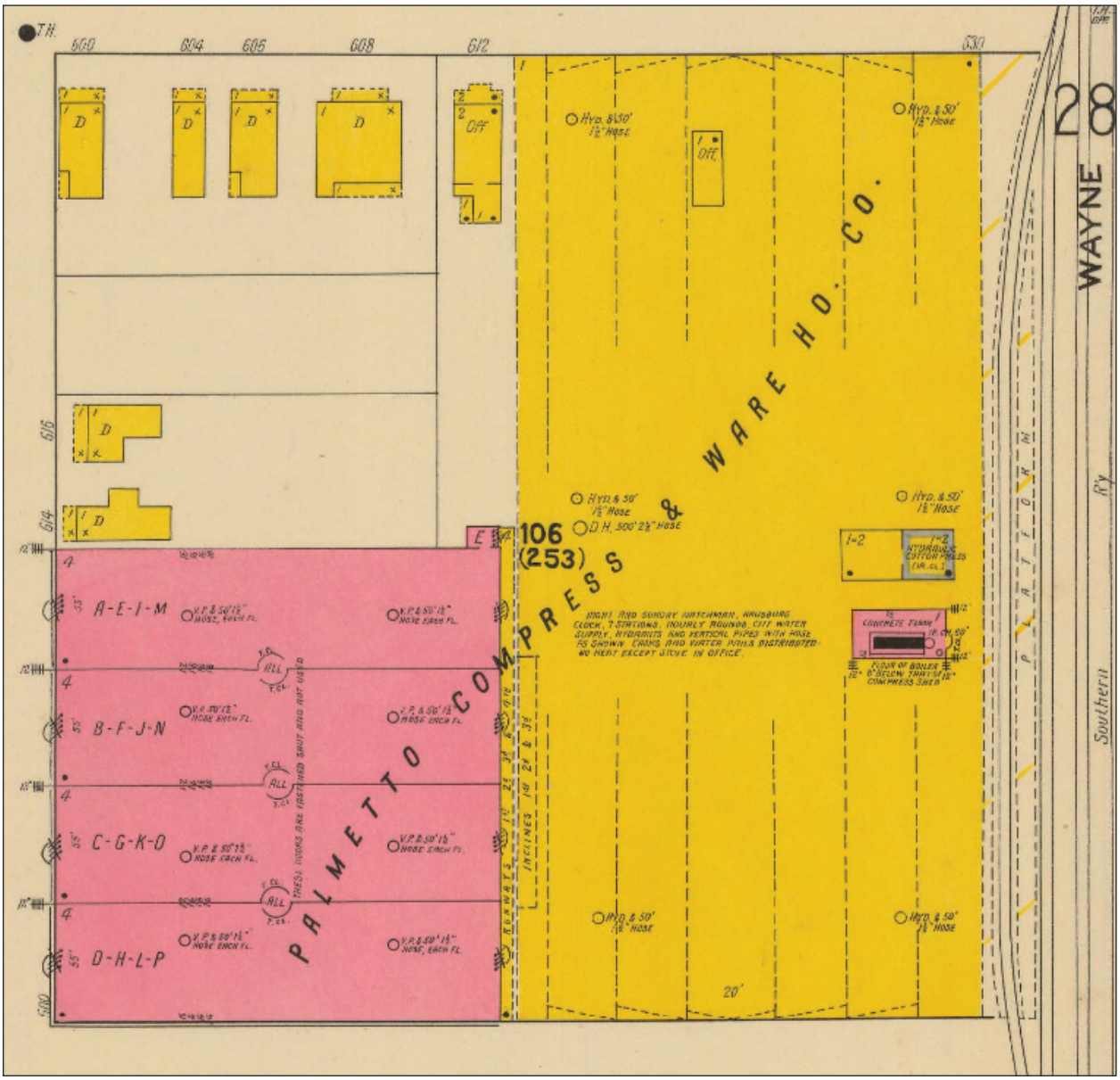
Resource 7693 is an automobile bridge that carries Blossom Street (US 21 Connector) over a section of the Southern and SCL Railroad. Built in 1953 by the South Carolina State Highway Department and modified in 1987, the bridge carries four lanes (a width of 53.2 feet) divided by a painted median. This steel stringer bridge has a total length of 687 feet and comprises 12 I-beam spans. Reinforced concrete bents support the concrete, cast-in-place deck (Figure 20A). Rail high concrete railings with safety-shape interior faces, added in 1987, and cast-iron streetlamps flank the travel lanes (Figure 20B; Lichtenstein Consulting Services 2005). The bridge's date of construction, 1953, has been cast into the west end of the original concrete railing (Figure 21).

Figure 18.
Resource 7692: Southern and SCL Railroad

A. View Southeast, Resource 7692

A. View Southwest, Resource 7692

Figure 19.
Sanborn Fire Insurance Map, Palmetto Compress Warehouse Company Platform, 1910



Source: (Sanborn Fire Insurance Map Company 1910)

Figure 20.
Resource 7693: Blossom Street Bridge (US 21 Connector)

A. Bents, View Northeast

B. Railing, View Northeast

Figure 21.
Resource 7693: Date of Construction, View Northeast

The bridge that carries Blossom Street (US 21 Connector) over a section of the Southern and SCL Railroad is representative of the designs and materials commonly used in midcentury bridge construction in South Carolina. The bridge is not located within a NRHP-listed historic district and was recommended not eligible according to the 2005 South Carolina State Bridge Survey, which described it as "not historically or technologically significant" (Lichtenstein Consulting Services 2005). The bridge does not exhibit distinctive engineering or design and is not associated with a distinctive engineer or engineering firm. Although the bridge retains some original features, it was modernized in 1987. The bridge is not associated with an event that contributed significantly to the broad patterns of our history or associated with a person significant in local, state, or national contexts. It is not recommended eligible for the NRHP under Criterion A, B or C.

RESOURCE 7694: 530 DEVINE STREET

Resource 7694 is a single-story front-gabled modified dwelling at 530 Devine Street. It shares a parcel with a single-story commercial building constructed in 1976. The Richland County tax record does not indicate a construction date for the dwelling; however, a 1919 Sanborn Fire Insurance Map depicts two single-story frame dwellings at 611 and 613 Pulaski Street, the approximate location of Resource 7694 (see Figure 3). The design, form, massing, and architectural details indicate that Resource 7964 is likely a modified remnant of one of these dwellings. Historically, this area was dotted with rows of one- and two-story frame dwellings constructed to house employees of the surrounding industries, including the Palmetto Compress and Warehouse Company. According to aerial imagery, most of these dwellings were moved or demolished by 1981. The 1917 City Directory reveals that a mill operator named W.H. Creech and his wife Maggie lived in the dwelling at 613 Pulaski Avenue (Walsh Directory Company 1917).

By 1922, J.J. Stone, an employee of nearby Glencoe Mills, lived in the dwelling on Pulaski Street (Miller 1922). A 1971 aerial image of the project area captures the dwelling, alongside two other buildings of similar scale and construction.

This one-story frame dwelling rests on a foundation of brick piers. Vertical board siding covers the original east façade and north and west elevations, and vertical boards and plywood shield most of the brick pier foundation (Figure 22A). An entrance situated near the northwest corner of the building has been enclosed with horizontal boards (Figure 22B). The south elevation is clad in painted weatherboard siding and features two paired windows and one single window with wood surrounds (Figure 23A). All visible windows have been enclosed with pressed wood and vertical boards. The gable roof, clad in sheets of standing seam metal, features exposed curved rafter ends (Figure 23B).

Figure 22.
Resource 7694: 530 Devine Street

A. East Façade

B. North Elevation

Figure 23.
Resource 7694: 530 Devine Street

A. South Elevation

B. Southeastern Oblique

Resource 7694 abuts the southern boundary of the parcel, approximately 212 feet north of Blossom Street (US 21 Connector). Located at the southwest corner of Pulaski Street and Devine Street, the dwelling shares a parcel with a 1976 commercial brick building located near the north end of the parcel and set back approximately 43 feet from Devine Street. The 1976 building currently houses a restaurant. An asphalt parking lot is located between the dwelling and the restaurant, and a gravel parking lot is situated behind the dwelling on the adjacent parcel. Dense vegetation surrounds the dwelling on the east, south, and west sides. Although the resource retains many of its original materials, deferred maintenance and modifications have negatively impacted its material integrity. The dwelling is not a distinctive or noteworthy example of its building type and was not found to embody the distinctive characteristics of a style, period, or method of construction. Additionally, the dwelling no longer retains integrity of association, as it has been modified for use as a storage facility for the nearby restaurant. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criterion A, B, or C.

RESOURCE 7695: 718 DEVINE STREET

Resource 7695 is a one-story brick and concrete-block warehouse located at 718 Devine Street. Richland County tax records indicate that the 31,230-square-foot warehouse or manufacturing space was constructed in 1959. The University of South Carolina purchased the parcel in 1997, and the space is currently utilized by the Center for Performance Experiment and the School of Arts and Visual Design. The rectangular-plan building is clad in painted brick laid in a running bond, and the roof comprises two barrel vaults clad in rolled asphalt sheets. A one-story flat-roof administrative wing projects from the east elevation. The main entrance is recessed in the north façade of the administration wing, near the northeast corner of the warehouse (Figure 24). The entrance and windows are sheltered beneath a metal flat-roof awning supported by round metal posts joined at the base to create a V-shape. A variegated stone veneer highlights the western wall of the entry bay. A row of nine original one-over-one horizontal-light sash windows with brick sills extends across the administrative wing's east elevation (Figure 25A). A metal flat-roof porch supported by round metal columns resting on a cast concrete foundation shelters two secondary pedestrian entrances on the wing's south elevation.

The warehouse's primary entrance has a pair of solid metal doors situated in a slightly recessed former garage bay, which has been enclosed with bricks, on the north façade's east side. There is no fenestration on the north façade of the warehouse wing with the exception of two garage bays at the west end, each featuring circa-2000 metal overhead-track doors sheltered beneath a flat-roof awning. A single pedestrian entrance with a solid metal door, accessed by a set of cast concrete stairs with a metal railing, flanks the garage bays to the east (Figure 25B).

Figure 24.
Resource 7695: 718 Devine Street

A. East Elevation, Resource 7695

B. Main Entrance, Resource 7695

Figure 25.
Resource 7695: 718 Devine Street

A. East Elevation, Administrative Wing

B. North Façade

The southernmost section of the warehouse is clad in concrete blocks and red brick laid in a running bond with two header courses demarcating the water table. Two garage bays are located on the east elevation; the southernmost bay has an original multipanel steel door; and the northernmost bay has a circa-2000 metal overhead-track door. Three fixed six-light metal windows are situated between the garage bays (Figure 26). The south elevation of the warehouse is clad in painted cast-concrete blocks. A row of eight multilight steel windows with cast-concrete sills extends across the south elevation, and plywood encloses the easternmost window (Figure 27A). On the building's west side the windows have been enclosed with concrete blocks.

Resource 7695 at 718 Devine Street faces north, occupying over half of the west side of its 1.16-acre parcel. The north façade sits approximately 60 feet south of Devine Street and is fronted by a lawn with small trees. An asphalt parking lot is located east of the building, and the Southern and SLR Railroad line is located to the west. The University of South Carolina purchased an adjoining parcel to the south in 1998, on which there are no buildings other than an Anagama wood kiln constructed by the university's Ceramics Department in November 2010 (Figure 27B). According to a university representative, the kiln is scheduled to be dismantled in the upcoming months (Personal Communication with Greyson Smith; SCArtsetc 2010). The single-chamber single-flue kiln is sheltered beneath a circa-2010 metal frame structure with a corrugated metal roof. Dense vegetation and a circa-2000 chainlink fence edge the gravel parcel.

Resource 7695 does not embody distinctive characteristics of a type, period, or method of construction, and it does not represent the work of a master or possess high artistic value. For these reasons, it is not recommended eligible for inclusion in the NRHP under Criterion C. Additionally, the building is not known to be associated with a broad pattern of history or significant person or event and is recommended not eligible for the NRHP under Criteria A or B.

Figure 26.
Resource 7695: 718 Devine Street

A. Warehouse, East Elevation

B. Southeastern Oblique

Figure 27.
Resource 7695: 718 Devine Street

A. South Elevation

B. Kiln, View Northeast

VI. CONCLUSIONS

This Phase I Cultural Resources Survey entailed archaeological and historic architectural investigations of a 0.44-mile-long (.7 km) segment of Blossom Street in Richland County for a proposed bridge replacement. Three side roads were also surveyed as part of this investigation. Along Blossom Street, the existing facility consists of four lanes. The proposed project would include replacing the existing bridge with a four-lane bridge that includes travel lanes, a median, shoulders, and may include bicycle and pedestrian accommodations. The work resulted in the identification of four previously unrecorded historic buildings and revisited one NRHP-listed structure. No archaeological sites were identified as a result of this survey. This chapter summarizes the results of the survey and provides recommendations for further historic preservation activities.

The archaeological survey indicated that the entire project area is substantially disturbed by commercial and high-density residential development. Therefore, only one shovel test was excavated in the APE. As a result of the survey, no archaeological sites were identified.

The architectural survey identified five newly and previously surveyed historic resources. One of the previously identified resources, the Palmetto Compress and Warehouse Company (Resource 0076) was listed in the NRHP in 1985. In the opinion of the consultant, the resource retains sufficient integrity to remain eligible for the NRHP. The resource lies within the area of direct effect and could be adversely affected by the replacement of the bridge. Minimization of adverse effects should be taken into account as part of construction planning. None of the newly surveyed resources is recommended eligible for listing in the NRHP, either individually or as part of a district.

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PHASE I CULTURAL RESOURCES SURVEY FOR THE PROPOSED BLOSSOM STREET BRIDGE REPLACEMENT: ADDENDUM

City of Columbia, Richland County, South Carolina

NEW SOUTH ASSOCIATES

Phase I Cultural Resources Survey for the Proposed Blossom Street Bridge Replacement: Addendum

City of Columbia, Richland County, South Carolina

Report submitted to

HDR Engineering, Inc. • 4400 Leeds Avenue • North Charleston, SC 29405

Report prepared by

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October 12, 2021 • Final Report
New South Associates Technical Report #4195

ABSTRACT

This report is an addendum to the cultural resources survey of the proposed Blossom Street Bridge replacement in the City of Columbia, South Carolina. In January 2020, New South Associates, Inc. completed the initial Phase I Cultural Resource Survey on behalf of HDR Engineering, Inc. The project area was 0.44 miles long by approximately 200 feet wide (0.7 km x 61 m) and was centered along Blossom Street. No new archaeological sites were identified as a result of this initial cultural resources survey. One previously recorded architectural resource was revisited and four new architectural resources were surveyed. The previously surveyed resource, the Palmetto Compress and Warehouse Company, is currently listed on the National Register of Historic Places (NRHP). The study determined that the Palmetto Compress and Warehouse Company building retained sufficient integrity to remain eligible for the NRHP. None of the newly surveyed resources were recommended eligible for the NRHP.

In May 2021, the project was expanded to include an additional turn lane and turn lane improvements at two outlying intersections. HDR Engineering, Inc. consulted with the South Carolina Department of Transportation (SCDOT) to establish a revised Area of Potential Effects (APE). The revised APE included the area of project work and the viewshed, which was defined as an irregular line of sight at each quadrant surrounding the intersection of Assembly and Whaley streets, and Huger and Gervais streets. No new or previously recorded archaeological sites were identified within the new APE. Two previously recorded architectural resources were revisited and nine new architectural resources were surveyed. Both previously surveyed resources, the Confederate Printing Press (Resource 026) and the Richland Cotton Mill (Resource 0078), are listed in the NRHP. The NRHP boundaries are not located within the area of project work. None of the newly surveyed resources are recommended eligible for the NHRP, either individually or as part of a district.

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I. INTRODUCTION

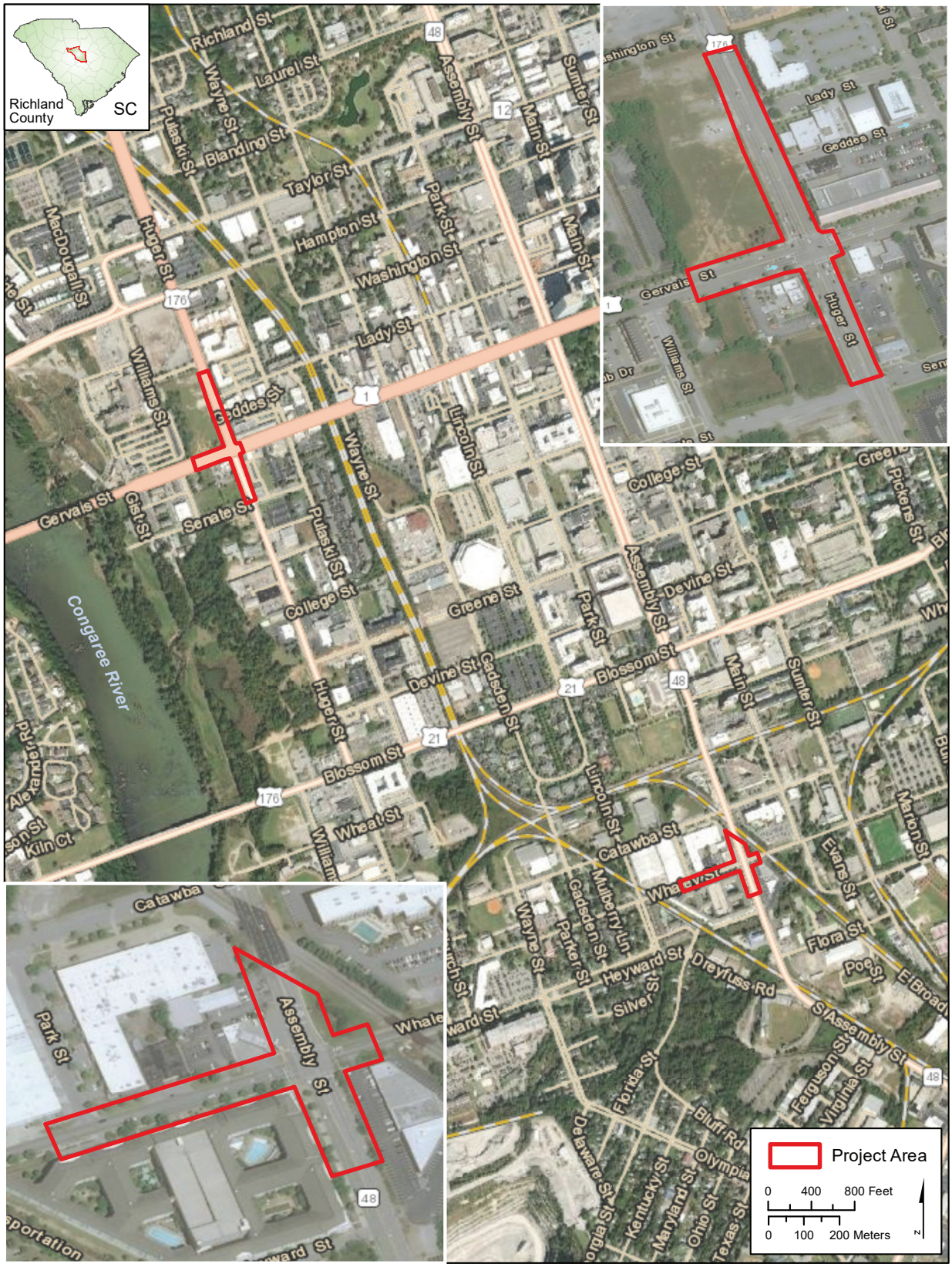
New South Associates, Inc. has completed an addendum to the cultural resources survey of the proposed Blossom Street Bridge replacement between Lincoln Street and Huger Street on behalf of HDR Engineering, Inc. to comply with Section 106 of the National Historic Preservation Act. In January 2020, New South Associates, Inc. completed the initial Phase I Cultural Resource Survey on behalf of HDR Engineering, Inc. The project area was 0.44 miles long by approximately 200 feet wide (0.7 km x 61 m) and was centered along Blossom Street. The proposed project would include replacing the existing bridge with a four-lane bridge that includes travel lanes, a median, shoulders, and may include bicycle and/or pedestrian accommodations as determined by the conceptual studies developed during the initial project phase.

In May 2021, the APE was expanded to include an additional turn lane and turn lane improvements at two outlying intersections (Figure 1). New work would include the addition of an approximately 640-foot turn lane to the southbound lanes of Huger Street. Turn lane construction would include acquisition of right-of-way from the vacant parcel at the northwest corner of Huger and Gervais streets. Additionally, the project proposed turn lane improvements at the intersection of Assembly and Whaley streets. No new right-of-way would be acquired at this location. HDR Engineering, Inc. consulted with the South Carolina Department of Transportation (SCDOT) to establish a revised APE. The APE includes the area of project work and the viewshed, which was defined as an irregular line of sight at each quadrant surrounding the intersection of Assembly and Whaley streets, and Huger and Gervais streets.

Archaeological survey was not required for the proposed intersection improvements. The architectural survey was conducted on July 7-9, 2021 by New South Associates. Natalie Pope served as Principal Investigator, Sean Stucker conducted the architectural field survey, and Brittany Hyder authored the report.

This addendum to the Phase I Cultural Resources Survey for the Proposed Blossom Street Bridge Replacement is divided into three chapters, following this Introduction. Chapter II discusses the methodology used during the survey, while Chapter III presents the survey results and recommendations. Conclusions are provided in Chapter IV.

Figure 1.
Project Location Map



Source: ESRI World Imagery (2021)

II. METHODS

BACKGROUND RESEARCH

Background research aided in identifying previously recorded cultural resources in the vicinity of the APE and in developing a general cultural and historical overview against which to properly evaluate resources identified during the field survey. New South Associates reviewed ArchSite, the digital site files and GIS database maintained by the South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina Department of Archives and History (SCDAH), to identify resources within the APE that were previously recorded, listed in the NRHP, or eligible for listing in the NRHP. In addition, historic maps were reviewed to locate potential historic resources and to develop an overview of the area's development over time. Cultural resource survey and evaluation reports were reviewed, and secondary history books concerning the Richland County area were also consulted.

ARCHITECTURAL BACKGROUND RESULTS

Background research was conducted to identify all previously recorded historic resources in the vicinity of the project area. The Statewide Survey Files of the SCDAH were searched for previously recorded properties within the APE using the ArchSite system. This section of Columbia has been the subject of numerous cultural resource studies, from survey to data recovery. A city-wide architectural survey and preservation plan was completed for the City of Columbia in 1993. The survey effort covered an area of 42.3 square miles, excluding Fort Jackson, Elmwood Park, and the Granby areas, which were intensively surveyed in 1989 and 1990. Approximately 33,000 resources were reviewed as part of the city-wide survey. Over 3,000 resources were recorded and determined eligible for a local designation or listing in the NRHP. A NRHP Multiple Property Documentation Form (MPDF) for the Historic Resources of Columbia completed in 1978 recognized 25 individual historically or architecturally significant properties within the Columbia city limits. The APE is bounded by several textile-related resources and mill-town developments, including the Olympia Mill Village Historic District (NRHP listed in 2018). Additionally, in 2005, Lichtenstein Consulting Company conducted a historic bridge survey of bridges 50 years old or older throughout the state (Lichtenstein Consulting Services 2005).

South Carolina ArchSite and SHPO records indicate that there are 37 previously recorded architectural resources 50 years old or older within a half mile of the area of project work. These resources are listed in Table 1 and shown in Figures 2 and 3. Of these, 18 are listed in or eligible for listing in the NRHP but are not in the APE. Two previously recorded NRHP-listed resources are within the APE and are discussed in more detail in Chapter III.

Table 1. NRHP Listed and Previously Recorded Architectural Resources within 0.5 mile of the Area of Project Work

Resource Number	Name/Address	Type	Construction Date	NRHP Recommendation
0020	Columbia Canal	Structure	1824	Listed; outside APE
025	Columbia Mills Building	Industrial	1901	Listed; outside APE
0026	Confederate Printing Plant	Industrial	1864	Listed; inside APE
0039	Gervais Street Bridge	Transportation	1928	Listed; outside APE
0076	Palmetto Compress and Warehouse Company Building	Industrial	1917;1923	Listed; outside APE
0078	Richland Cotton Mill; 211–221 Main Street	Industrial	1895	Listed; inside APE
0079	Union Station; 401 South Main Street	Transportation	1902	Listed; outside APE
2973	Southern Cotton Oil Company	Industrial	1887	Listed; outside APE
5419	Women's Boarding House	Residential	1910	Not Eligible
5437	Granby Mill Village Historic District	Industrial/ Residential	1896–1897	Listed; outside APE
5961	Olympia Mill	Industrial	1899	Listed; outside APE
6298	Harriet M. Cornwell Tourist Home	Commercial	1940	Listed; outside APE
6299	Olympia-Pacific Community Association Building, 701 Whaley Street and 214 Wayne Street	Industrial, Residential, Recreational	1903–1941	Listed; outside APE
6303	617 Devine Street	Not Extant	c. 1930; 1949	Not Eligible
6304	Adjacent to Parking Lot of 617 Devine Street	Not Extant	c. 1920	Not Eligible
6305	724 Pulaski Street	Not Extant	1950	Not Eligible
6306	790 Pulaski Street	Industrial	1949; 1966–1987	Not Eligible
6307	914–930 Pulaski Street	Industrial	1919;1928;1960	Not Eligible
6308	Railroad at Greene Street Intersection	Transportation	c. 1860; 1980	Not Eligible
6377	743 Greene Street	Industrial	1956	Not Eligible
6378	850 Pulaski Street	Transportation	c. 1960	Not Eligible
6379	903 Huger Street	Industrial	1940	Not Eligible
6379.01	903 Huger Street	Industrial	1940	Not Eligible
6379.02	903 Huger Street	Industrial	1930	Not Eligible
6380	919 Huger Street	Industrial	1940	Not Eligible

Table 1. NRHP Listed and Previously Recorded Architectural Resources within 0.5 mile of the Area of Project Work

Resource Number	Name/Address	Type	Construction Date	NRHP Recommendation
6380.01	919 Huger Street	Industrial	1940	Not Eligible
6380.02	919 Huger Street	Industrial	1940	Not Eligible
6381	New Macedonia Baptist Church, 930 Huger Street	Religious	1957	Not Eligible
6463	Richland County Jail	Institutional	1914-15	Eligible; outside APE
7914	Whaley Street/Olympia Mill Village Historic District	Residential District	1899–1954	Listed; outside APE
7920	Booker T. Washington High School Auditorium	Educational	1956	Listed; outside APE
7926	Zion Baptist Church	Religious	1916-1968	Eligible; outside APE
N/A	West Gervais Street Historic District	Residential	1846-1930	Listed; outside APE
N/A	Miller Brothers Cotton Warehouse	Industrial	1872	Listed; outside APE
N/A	Arsenal Hill Neighborhood	Residential	c. 1900	Not Eligible
N/A	Olympia Union Hall	Industrial	1946	Listed; outside APE
N/A	Florence Benson Elementary School	Educational	1956	Listed; outside APE

HISTORIC RESOURCE SURVEY METHODS

The architectural historian surveyed the APE for previously unrecorded historic architectural resources 50 years old or older. Buildings, structures, objects, and sites more than 50 years old were assessed for their NRHP eligibility, both individually and as a district. The previously unrecorded resources were surveyed using the Statewide Survey Intensive Form, produced by the South Carolina State Historic Preservation Office (SHPO) and in accordance with the SHPO-produced Survey Manual: South Carolina Statewide Survey of Historic Places. They were recorded using FileMaker Pro and photographed using a handheld tablet. Properties were evaluated according to NRHP eligibility criteria, and a preliminary assessment of effect for the proposed project was conducted for any property in the APE that was NRHP listed or that met the NRHP criteria for eligibility.

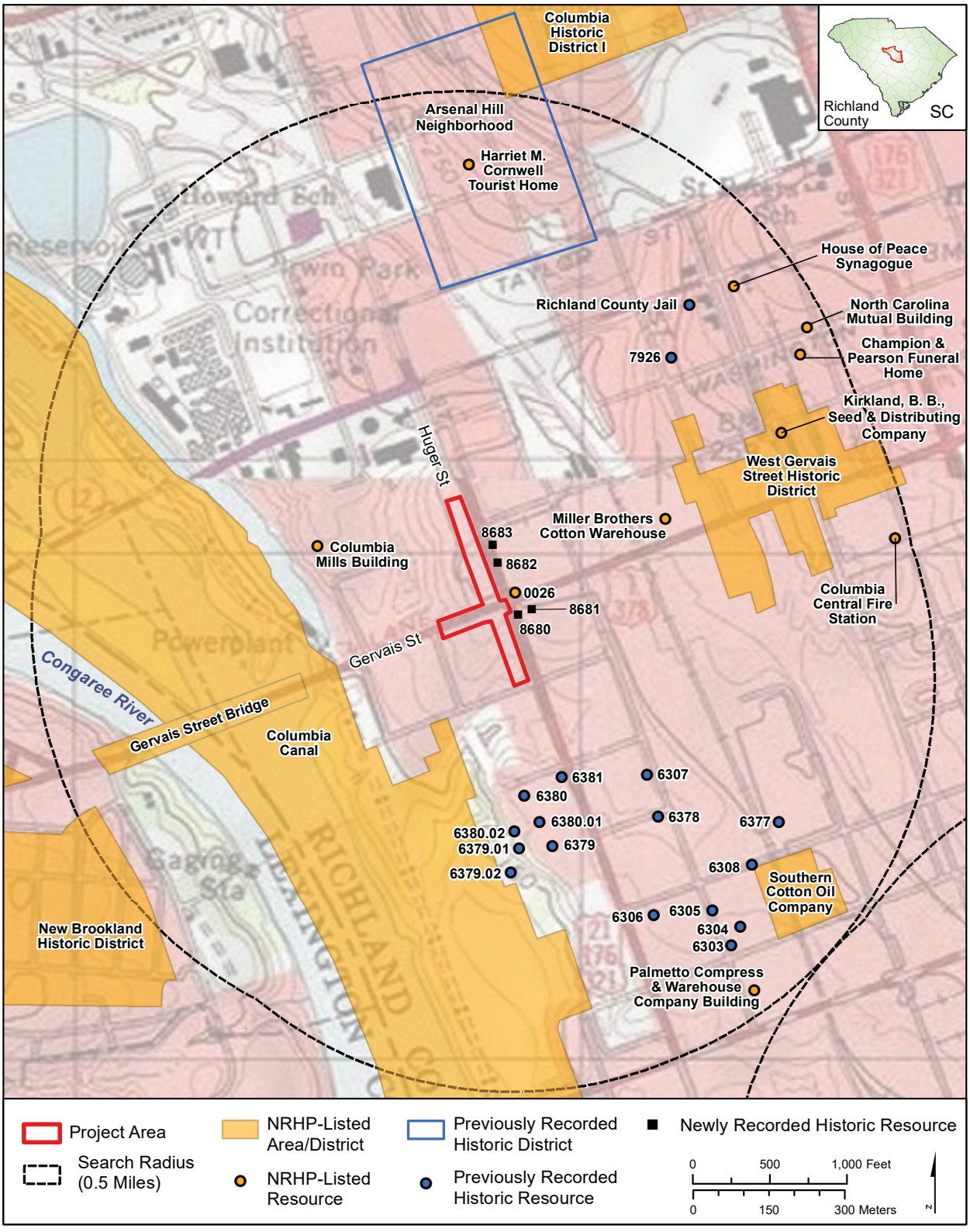
NATIONAL REGISTER OF HISTORIC PLACES EVALUATION

Cultural resources are evaluated based on the criteria for NRHP eligibility specified in the Department of Interior Regulations 36 CFR Part 60: National Register of Historic Places. Cultural resources can be defined as significant if they "possess integrity of location, design, setting, materials, workmanship, feeling, and association" and if they are 50 years of age or older and:

A. are associated with events that have significantly contributed to the broad pattern of history;

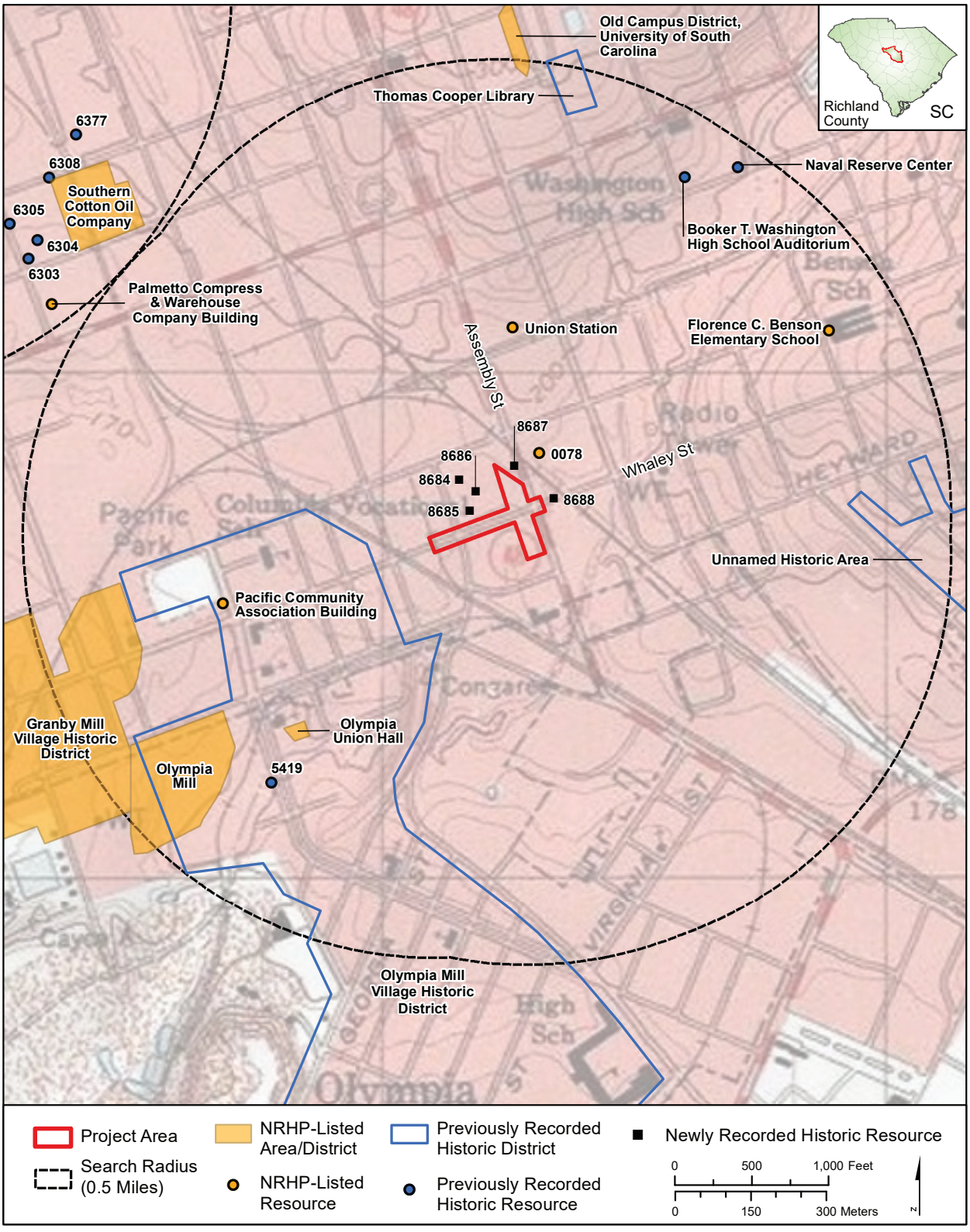
B. are associated with the lives of persons significant in the past;

Figure 2.
Previously Recorded Architectural Resources in the Project Vicinity at the Intersection of Huger and Gervais Streets



Sources: USGS Topographic Quadrangle Maps, Columbia North, SC (1973) and Southwest Columbia, SC (1983)

Figure 3.
Previously Recorded Architectural Resources in the Project Vicinity at the Intersection of Whaley and Assembly Streets



Source: USGS Topographic Quadrangle Map, Southwest Columbia, SC (1983)

C. embody the distinctive characteristics of a type, period, or method of construction; or represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

D. have yielded, or may be likely to yield, information important in prehistory or history.

Criteria A, B, and C are usually applied to architectural resources. Archaeological sites are generally evaluated relative to Criterion D. In order to evaluate a resource under Criterion D, the *National Register Bulletin Guidelines for Evaluation and Registering Archaeological Properties* (Little et al. 2000) lists five primary steps to follow:

1. Identify the property's data set(s) or categories of archaeological, historical, or ecological information.

2. Identify the historic context(s), that is, the appropriate historical and archaeological framework in which to evaluate the property.

3. Identify the important research question(s) that the property's data sets can be expected to address.

4. Taking archaeological integrity into consideration, evaluate the data sets in terms of their potential and known ability to answer research questions.

5. Identify the important information that an archaeological study of the property has yielded or is likely to yield.

III. RESULTS AND RECOMMENDATIONS

Fieldwork resulted in the identification of nine previously unrecorded historic resources. In addition, two previously identified architectural resources were revisited. This chapter describes these resources and provides recommendations for further preservation.

PREVIOUSLY RECORDED RESOURCES

Two previously recorded resources, the NRHP-listed Confederate Printing Press (0026) and Richland Cotton Mill (0078) are located in the project's APE (Figure 4). Information on these resources, including significant changes that have occurred since the last survey, are listed in Table 2.

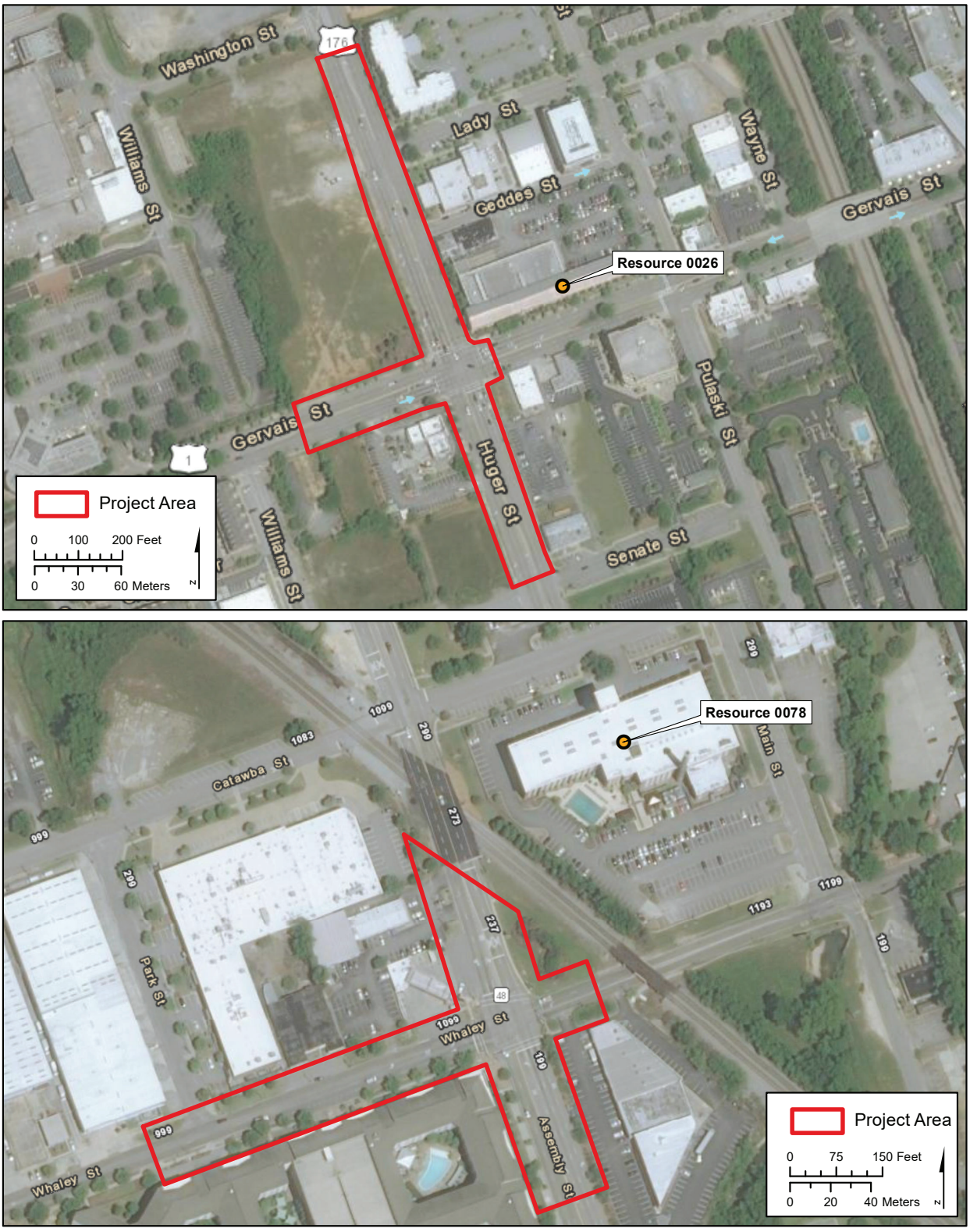
Table 2. NRHP Listed and Previously Recorded Architectural Resources within the APE

Resource Number	Name/Location	Type/Style	Construction Date	NRHP Recommendation	Significant Changes
0026	Confederate Printing Press, 501 Gervais Street	Warehouse	1864	Eligible	Replacement of windows, addition of new window and door openings on the façade. Addition at the northwest corner.
0078	Richland Cotton Mill, 211-221 Main Street	Mill	1895	Eligible	Replacement of original windows

RESOURCE 0026: CONFEDERATE PRINTING PLANT

The two-story Confederate Printing Plant is located at the northeast quadrant of Huger and Gervais streets at 501 Gervais Street. Constructed by the Evans and Cogswell Company in 1864 to house printing operations for Confederate bonds and stock currency, the brick warehouse has undergone multiple phases of construction, most recently in 2004 when it was adapted to house townhouse units and a supermarket. The large, two-story commercial building features elements of the Greek Revival style. During Evans and Cogswell's tenure, the brick warehouse was one-story in height and divided into three sections to house printers, storage for stationary, and a large print shop of 102 presses (Figure 5A). Evans and Cogswell operated at this location until 1865 when the warehouse was burned by U.S. forces during General W.T. Sherman's occupation of Columbia. The warehouse was reconstructed after the Civil War in its original one-story form and was used for cotton and seed storage (see Figure 5B). In 1893, the South Carolina Dispensary enlarged the warehouse to its current two-story form for the first state-operated alcohol distribution center.

Figure 4.
Previously Recorded Architectural Resources within the APE



Source: ESRI World Imagery (2021)

Figure 5.
Resource 0026: Confederate Printing Plant Historic Photographs

A. Historic Southeastern Oblique, 1865 Source: Historic Columbia Foundation 2021

B. Historic Southeastern Oblique, 1895 Source: Historic Columbia Foundation 2021

The South Carolina state legislature abolished the South Carolina Dispensary in 1907, leaving the warehouse vacant until the 1930s when it was used by the U.S. Seed Loan Program. It continued to operate as a warehouse until December of 1977 and fell into a state of disrepair in the late twentieth century. In 2004, M.B. Kahn Construction Company, Inc. adapted the warehouse to house a Publix supermarket and seven townhouses were added to the east side of the printing press building between 2004 and 2010 (Historic Columbia Foundation 2021; McNulty and Terry 1979).

Currently, the Confederate Printing Plant is comprised of two sections – the original two-story rectangular plan warehouse that occupies the length of the city block between Huger and Pulaski streets and a 2004 flat roof addition that projects from the northwest corner of the original warehouse.

Situated beneath a gable roof of circa 2000 standing seam metal, the two-story Confederate Printing Plant is clad in brick laid in a five-to-one common bond with stucco below the water table. Repeating bays extend along the north façade and the first and second stories are separated by a brick frieze that marks the building's original cornice line. Divided by molded brick pilasters, each bay contains a circa 2000 four-panel wood door that provides access to the individual townhouse units. Each entrance is topped by a three-light transom and shed roof awning and is flanked by a six-over-six, simulated-divided pane vinyl-sash window. Two windows are located at the second story of each bay. The windows in this section date to the 2004 rehabilitation and have original brick sills and soldier course lintels (Figure 6A). A gable-roof parapet with metal coping obscures the roofline on the east and west ends of the building. On the east elevation, a single round window sits centrally within the gable field and a corbelled brick cornice separates the gable field from a row of four windows with soldier course lintels and brick sills. The fenestration at the first floor of the east elevation has been enclosed with brick (see Figure 6B).

The south elevation fronts Gervais Street and retains the original fenestration pattern. Each bay contains four replacement windows with brick sills and soldier course lintels (Figure 7A). The west elevation is situated approximately 95 feet west of the proposed turn lane. This elevation's composition is almost identical with the east. A circular attic vent is located within the gable field and six windows extend across the first story to just above the water table.

The 2004 supermarket addition extends north from the northwest corner of the Confederate Printing Plant. Clad in running bond brick, this addition has a flat roof with metal coping along the roofline. The main entrance is located at the northeast corner with sliding glass doors that are sheltered by a metal awning that extends partially across the north and east elevations. The façade and supporting elevations are divided by engaged brick pilasters and a plain, cast concrete cornice wraps the addition (see Figure 7B).

Figure 6.
Resource 0026: Confederate Printing Plant

A. North Façade

B. Southeast Oblique

Figure 7.
Resource 0026: Confederate Printing Plant

A. South Elevation

B. North Elevation and Addition

The flat roof addition is connected to the Confederate Printing Plant by a cast concrete block hyphen with full-height banks of structural glass block on the east and west sides. Aerial imagery reveals that prior to the addition's construction, a twentieth-century wing of the Confederate Printing Plant occupied this section of the parcel. This wing was demolished between 1995 and 2004 and an asphalt parking lot currently occupies the east side of the parcel.

The Confederate Printing Press was listed in the NRHP in 1979 as an individual resource. The warehouse was determined eligible for the NRHP under Criterion A in the areas of commerce and industry and under Criterion C as an intact, significant warehouse structure in this formerly industrial area. Although modified, the warehouse retains its original footprint, historic exterior material including molded brick pilasters and corbeled brick frieze. Modifications including the division of the interior warehouse space, replacement of the original windows, and addition of pedestrian entrances on the north façade are sensitive to the building's history and original design.

Resource 0026 is not located within the project's area of direct effects. The NRHP nomination does not identify a NRHP boundary but all work, as planned, will take place outside of the resource's parcel boundary.

RESOURCE 0078: RICHLAND COTTON MILL

Constructed in 1895, the four-story Richland Cotton Mill is situated on a 3.47-acre parcel at 211 Main Street at the southwest corner of Main and Catawba streets. A former Southern Railway line crosses the southwest corner of the block. Selected for its proximity to rail lines and small streams that would power the mill's boiler room, the parcel now contains the multi-story mill, the adjoining engine, boiler, machine rooms, and a one-story gatehouse that fronts Main Street. The four-story mill is surrounded by landscaped beds, an asphalt-surface parking area, and an iron fence. Between 1994 and 2005 the mill was adapted to house The Lofts at University of South Carolina (USC).

Clad in red brick laid in a common bond and situated beneath a low-pitched gable roof, Richland Mill's four-story façade fronts Catawba Street and contains 27 bays divided by brick pilasters. A seven-story, flat roof stair tower is located centrally on the façade. A pair of windows are situated on each level of the north, east, and west tower elevations. At the attic level, a round vent is flanked by two arched ventes. The mill's primary entrance is situated at the base of the tower and has a pair of single-pane steel doors that are sheltered by a circa 2000 cloth awning (Figure 8).

Figure 8.
Resource 0078: Richland Cotton Mill

A. Northwestern Oblique

B. Northeastern Oblique

In the 2000s, Richland Cotton Mill was adapted to house loft apartments and at this time, the original windows were replaced in-kind. Rows of paired, wood sash nine-over-nine windows set beneath arched nine-light fixed, wood sash were added to the façade and supporting elevations. Each window is topped with an original three-course segmental brick arch. The east and west elevations contain seven bays of windows divided by brick pilasters (Figure 9A).

Shortly after construction in 1895, a 50x52-foot engine room, 25x52-foot boiler room, and 25x 50-foot machine shop were constructed on the southeast side of the mill. Clad in brick laid in a common bond, these flat roof additions are similar in design and construction to the main mass of the mill and were used to power the mill, first by steam and later by coal brought to the site by the adjacent rail line. The one-story boiler room is accessed by a solid door located centrally on the south elevation with a set of cast concrete stairs, iron railing, and cloth awning. While a number of windows have been replaced in this section of the building with in-kind designs, at least four windows remain partially enclosed with brick. A round chimney with a corbeled brick top stands 140 feet in height just northwest of the boiler room (see Figure 9B).

Two non-historic auxiliary structures including a cast concrete block storage building and a gable-roof shelter are situated just south of the mill to service a pool added during the mills circa 2000 rehabilitation.

Resource 0078.01: Gatehouse

Added between 1919 and 1952, the mill's gatehouse is situated at the northwest corner of the parcel. Comprised of two one-story brick sections with a central breezeway, the gatehouse is clad in brick laid in a common bond with a corbeled brick cornice. The original windows have been enclosed and each opening has a soldier course lintel. Each end of the gatehouse has a hipped roof of circa 2000 standing seam metal. These ends are connected by a gable that shelters the open breezeway (Figure 10).

Richland Cotton Mill is the first of four mills designed by Williams Burroughs Smith Whaley near the east bank the Congaree River between 1895 and 1901. A prominent mill architect and publisher of *Modern Cotton Mill Engineering*, W.B. Smith Whaley designed Granby Mill, Richland Mill, Capitol City Mill, and Olympia Mill. Each mill included vast complexes of worker housing, churches, and stores that radiated from the mill's manufacturing hubs and characterized the southwest corner of the city. Born in Charleston, South Carolina and educated in mechanical engineering at Cornell University, Whaley came to Columbia in 1892 to explore the potential of harnessing waterpower to manufacture textiles. Shortly after, he established W.B. Smith Whaley & Company with Gadsden E. Shand, superintendent of the restoration of the South Carolina State House. By 1899, the firm had earned a reputation "as mill architects…considered second to none (Lee and Terry 1983)."

Figure 9.
Resource 0078: Richland Cotton Mill

A. West Elevation

B. South Elevation

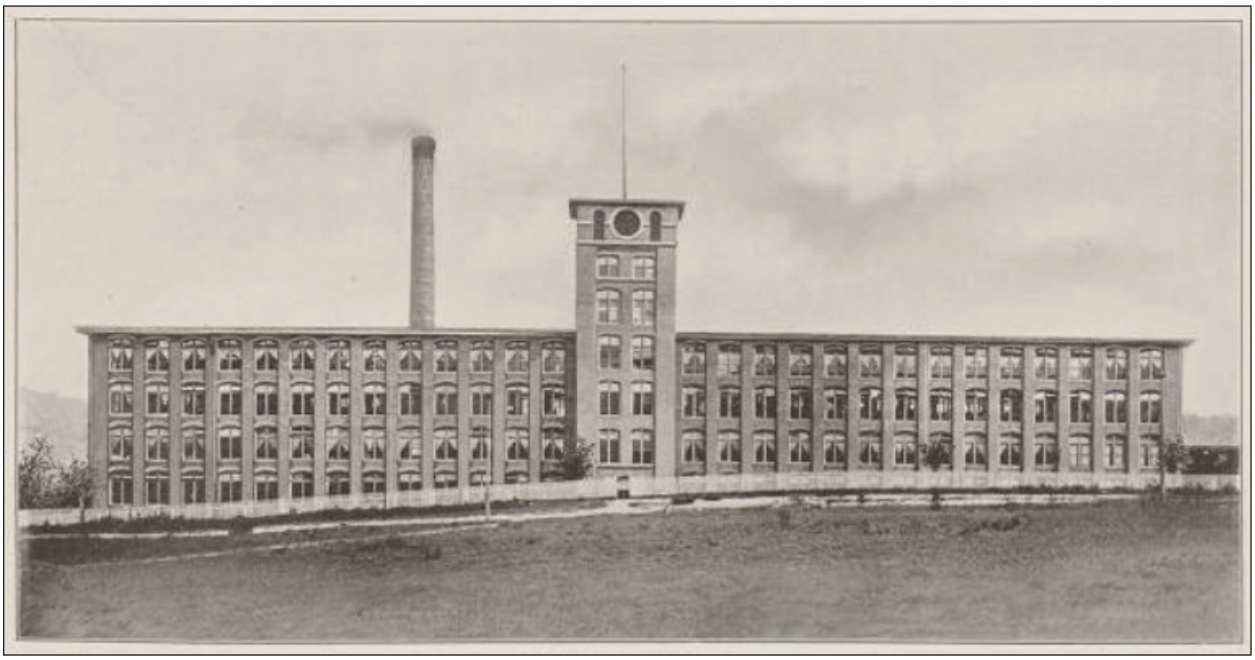
Figure 10.
Resource 0078.01: Richland Cotton Mill, Gatehouse, View Southwest

Prior to the construction of Richland Cotton Mill, textile mill design and construction had been focused in the northeastern part of the country. Whaley's designs were unique in not only their emphasis on self-sustaining design but Whaley's commitment to local construction and materials. The concrete foundation was dug by the Rice & Coleman firm, who had previously completed the Columbia Canal, and T.J. Bomar, an African American brick mason who completed the brickwork. Local brick from G.A. Guignard of Lexington County was used for mill construction (Figure 11A) (Lee and Terry 1983).

Richland Cotton Mill was completed in October 1895 for a sum of $150,000, most which was raised locally with the exception of an investment of $46,000 from northern machinery manufacturers. The mill was initially supplied with 10,240 spindles and 120 looms and was successful within the first 10 months of production. At first, Richland Cotton Mill was powered by steam and water collected from a small stream that traversed the site. By 1903, the mill had more than doubled its operations with 26,000 spindles and employed technology including humidifiers in each room, a Sturtevant heating system, sprinkler systems, and on-site hydrants. One of the most significant features of Whaley's mill design was the application of an adjoining powerplant and boiler room that provided a consistent and efficient power source (see Figure 11B) (W.B. Smith Whaley and Company 1903).

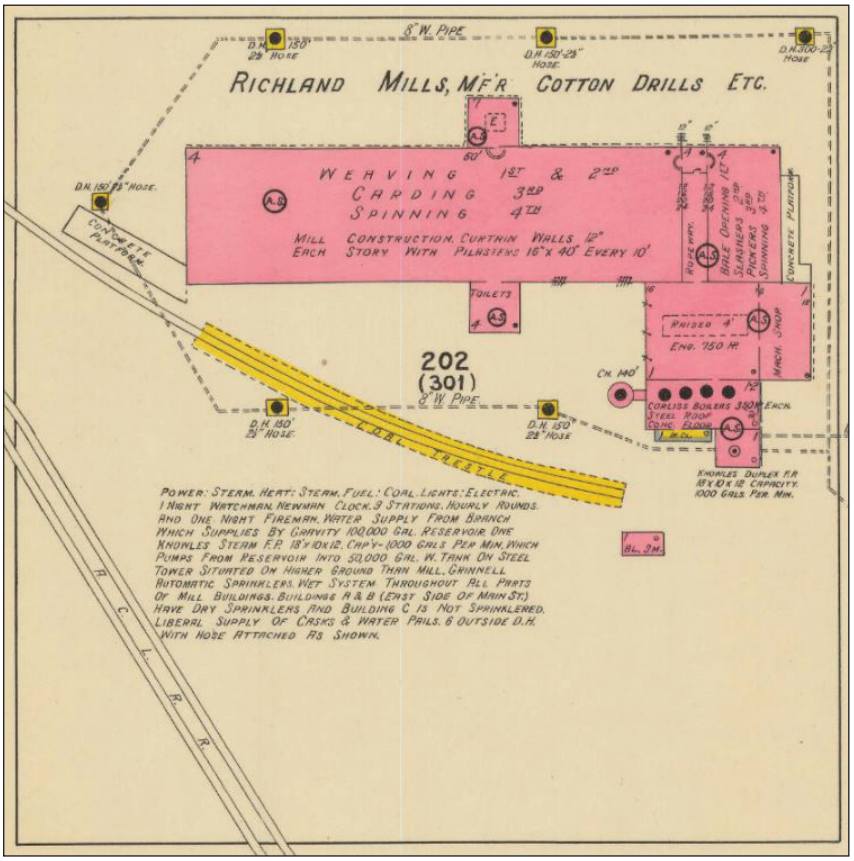
Shortly after the turn of the twentieth century, Whaley's overreliance on unstable local investments and changes in the textile market led to financial upheaval. In 1903, Whaley resigned as president of his four cotton mills, and Lewis W. Parker reorganized the mills, renaming the operation Hampton Cotton Mills Company. This firm endured a challenging financial period in the 1910s. Boll-weevil infestations and the outbreak of World War I negatively impacted cotton prices, and by 1914, production flagged. In 1916, Pacific Mills of Boston purchased the mills for 2.55 million dollars, approximately half of their estimated value. Pacific Mills operated Whaley's original mills from 1916 until 1954. While the 1930s are commonly referred to as the mills' most productive era, 1930s labor politics presented a new set of challenges for the textile industry. Employees of Pacific Mills participated in the United Textile Workers' General Textile Strike of 1937, and in 1938, mill owners agreed to sign union contacts. In 1939, Pacific Mills reduced worker wages by 12.5 percent, inciting a months-long strike that left more than 2,000 workers without work. The use of child labor was prohibited in 1930, and many companies considered company housing for entire families to be less beneficial when only one or two family members labored at the mill. Labor politics coupled with changes in legislation led Pacific Mills to sell off most of the company's mill housing and amenities. Additionally, public transportation and growing access to automobiles reduced the company's incentive to provide housing within walking distance of the mills. Pacific Mills sold its final holdings to Burlington Industries in 1954 (Brandt and Ward 2018).

Figure 11.
Resource 0078.01: Richland Cotton Mill, Historic Photographs



A. Richland Cotton Mill in Modern Cotton Mill Engineering

Source: W.B. Smith Whaley and Company 1903



B. Richland Cotton

Source: Sanborn 1919

Richland Cotton Mill was listed in the NRHP in 1983 under Criteria A and C in the areas of industry, engineering, and architecture. Richland Cotton Mill is significant for its role in the state's prosperous textile industry and for its association with one of the state's most prominent textile manufacturers and mill designers, W.B. Smith Whaley. The mill represents an intact local example of industrial architecture. Although modified for residential use, Richland Cotton Mill retains sufficient material integrity to remain listed in the NRHP. The mill retains its historic footprint and many of its original exterior materials. Modifications, including the addition of circa 2000 windows, are sympathetic to the building's history and original design. The NRHP boundaries of Richland Cotton Mill are not located within the area of project work.

NEWLY RECORDED RESOURCES

Nine new architectural resources were identified within the project's APE. None of the newly recorded resources are recommended eligible for inclusion in the NRHP. They are shown in Figure 12, summarized in Table 3, and discussed in more detail below the table.

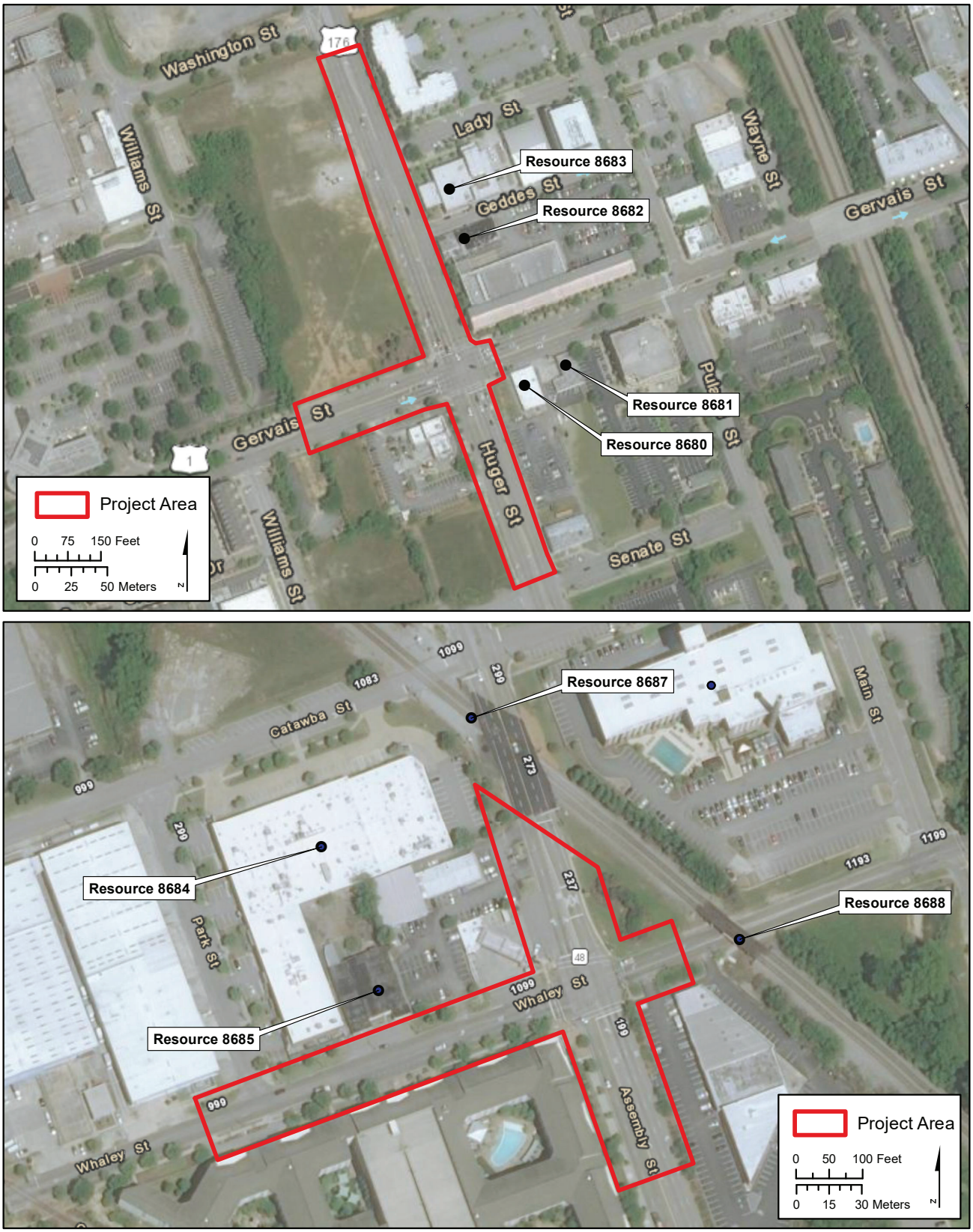
Table 3. Newly Recorded Individual Architectural Resources

Resource Number	Name/Location	Type/Style	Construction Date	NRHP Recommendation
8680	M.C. Caughman Grocery, 504 Gervais Street	1-story commercial	c. 1930	Not Eligible
8681	Neil Parts Rebuilders, Inc., 514 Gervais Street	1-story commercial	c. 1940	Not Eligible
8682	1224 Huger Street	2-story commercial	1939	Not Eligible
8683	Columbia Cigar and Candy Store, 522 Lady Street	2-story commercial	1929	Not Eligible
8684	1000 Catawba Street	1-story, L-plan commercial	c. 1960	Not Eligible
8685	1015 Whaley Street	2-story commercial building; International style	c. 1955	Not Eligible
8686	215 Assembly Street	1-story warehouse	1964	Not Eligible
8687	Southern and SCL Railroad	Double-track rail line	c. 1860	Not Eligible
8688	Southern Railroad Trestle	Double-track rail trestle	1965	Not Eligible

RESOURCE 8680: 504 GERVAIS STREET

M.C. Caughman Grocery (Resource 8680), is a one-story brick commercial building located at 504 Gervais Street. The Richland County tax record indicates that this three-bay commercial building was constructed in 1930. Since 1930 it has housed a variety of businesses including a café, an upholstery company, and multiple grocery stores. Storefronts were advertised for rent at

Figure 12.
Newly Recorded Architectural Resources within the APE



Source: ESRI World Imagery (2021)

this location in a 1933 edition of the *Columbia Record* and by 1938 the building housed Jax Brewing Company and Martin's Grocery (which later changed its name to M.C. Caughman Grocery in 1942). Iterations of M.C. Caughman Grocery operated at this location until 1953 (Columbia Record 1933-1942). The M.C. Caughman Grocery fronts the Gervais Street sidewalk and occupies the entirety of its approximately 5,000-square foot parcel. The building is surrounded by paved parking areas to the south and east, and an empty lot to the west.

Resting on a brick and cast concrete foundation, this one-story commercial building is situated beneath a flat roof with metal coping along the roofline. The roofline is stepped along the east and west elevations. Three storefronts extend across the north façade divided by brick pilasters with a stacked brick motif, cast concrete bases, and ornamented cast stone capitals. A corbeled brick cornice extends across the façade and a cast stone architrave tops the display windows. Each of the three storefronts have been significantly altered, most recently circa 2000. At the westernmost storefront, the main entrance is recessed on the west side and is flanked by a circa 2000 large, single-pane display window. The central storefront also has a recessed entrance on the west side that is flanked by a three-pane display window with a four-pane transom. The easternmost storefront has a recessed central entrance flanked by two, large, single-pane display windows sheltered by a circa 2000 cloth awning (Figure 13A).

There is minimal fenestration on the west elevation. A circa 1930 one-story brick addition is visible from the public right-of-way that extends south from the rear of the building. Clad in running bond brick, the west elevation of this addition has three multi-light, metal sash windows with cast concrete sills. Remnants of the façade of the adjacent building (demolished between 1982 and 1983) are visible on the west side. Five, circa 1950 fixed windows extend across the building's east elevation, each has security bars and is flanked by pair of inoperable louvered shutters (see Figure 13B).

The M.C. Caughman Grocery is a modified example of a twentieth-century commercial building and is not a distinctive or noteworthy example of its building type. Alterations to the original storefronts including the replacement of the original windows and modifications to the windows on the east elevation have negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

Figure 13.
Resource 8680: M.C. Caughman Grocery

A. Northwestern Oblique

B. Northeastern Oblique

RESOURCE 8681: 514 GERVAIS STREET

Neil Parts Rebuilders Inc. (Resource 8681), is a one-story commercial building located at 514 Gervais Street. According to the Richland County tax record this L-shaped commercial building was constructed in 1940. A February 1947 edition of the *Columbia Record* indicates that this building housed Neil Parts Rebuilders Inc., an automobile parts dealer and repair garage (Columbia Record 1947. The building has been significantly altered since construction and currently houses a salon.

Resting on a cast concrete foundation, this one-story, L-shaped commercial building has a flat roof with metal coping along the roof line and four interior chimneys. The main entrance is located on the north façade of the rear L-shaped wing and has a circa 2000 metal-frame door. Any former garage bays have been enclosed and the building's north façade and west elevation are clad in circa 2000 stucco. The building's original brick cladding is visible on the west elevation. There is minimal fenestration throughout the building. The three-bay north façade has six-over-nine wood sash windows, each with a cast concrete sill and stucco voussoir. Bays are divided by faux, stucco quoins and a molded pent-roof cornice wraps the building (Figure 14).

The building's north façade fronts the Gervais Street and occupies the northern half of its rectangular parcel. An asphalt-surface parking area and additional paved area is situated behind the resource. A circa 2000 iron fence resting on a stuccoed foundation and pillar extend from the northwest corner of the building.

Resource 8681 is a modified example of a mid-twentieth-century automobile repair garage. Significantly altered in recent years, this commercial building is not a distinctive or noteworthy example of its building type. Alterations to the east elevation, including the addition of stucco feature and replacement of the original entrance have negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

RESOURCE 8682: 1224 HUGER STREET

Resource 8682 is located at the southeast corner of Huger and Gervais streets. This two-story commercial building was constructed to house the Chattanooga-based Double Cola Bottling Plant from 1939 to 1940 however, by 1950, the building was listed as city property in the annual tax

Figure 14.
Resource 8681: Neil Parts Rebuilders, Inc.

A. Northeastern Oblique

B. Northwestern Oblique

collector's sale. According to a review of circa 1960 issues of the *Columbia Record*, the building housed multiple businesses including Robertson's Auto Service and a Marine Supply Store. Resource 8682 underwent a significant rehabilitation in 2020-21. At this time, paint was removed from the brick exterior and a row of partially enclosed display windows on the west façade were reopened. The interior floor plan was reconfigured and three, large, shed roof dormers were added to the roofline.

Resting on a cast concrete foundation, this commercial building is clad in running bond brick and has a flat roof with cast concrete coping along the roofline. The west façade features three distinct bays delineated by brick pilasters. During the 2020-21 renovation, three six-pane fixed, synthetic sash windows were added to the second floor of the west façade. At the first floor, a bank of three large, single-pane synthetic display windows extend the length of the bay with a soldier course lintel above. The north and south one-story bays are almost identical with tall brick parapets obscuring the roofline. Each bay has three, large synthetic single-pane display windows with soldier course lintels. The southernmost bay has a single-pane metal pedestrian entrance at the south end. All of the first-floor fenestration is sheltered by a 2020-21 flat roof awning (Figure 15A).

The north elevation retains the original fenestration pattern with the exception of an enclosed bay at the west end. Windows along this elevation and the rear (east) elevation are six-over-three aluminum sash with brick sills (see Figure 15B). Four windows puncture the rear (east) elevation and a stepped parapet with metal coping along the roofline obscures the added canted dormers clad in synthetic board and batten (Figure 16).

Resource 8682 occupies the entirety of its approximately 7,000 square-foot parcel. The west façade fronts Huger Street and is surrounded by a paved access drive and parking area on the north and west sides.

Resource 8682 is a modified example of a mid-twentieth-century commercial building that has been significantly altered in recent years. Alterations including the replacement of the original windows, addition of the shed roof dormers at the roofline, and reconfiguration of the building's fenestration has negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

Figure 15.
Resource 8682: 1224 Huger Street

A. Southwestern Oblique

B. Northwestern Oblique

Figure 16.
Resource 8682: 1224 Huger Street

A. Northeastern Oblique

B. Southeastern Oblique

RESOURCE 8683: 522 LADY STREET

The Columbia Cigar and Candy Store at 522 Lady Street was constructed around 1929 at the southeast corner of Lady and Huger streets. After falling into disrepair in the mid-to-late-twentieth century, Lambert Architecture + Construction Services and McCrory Construction undertook a significant renovation of the building in 2018. As part of this renovation, multiple non-historic wings were demolished and a frame, glass and metal addition with a partial third story was added to the northeast corner of the building (McCrory Construction 2021). The current main entrance is located on the east façade of the frame addition and has a metal-frame, single-pane glass door sheltered by a metal awning. Windows throughout the addition are fixed, single pane with extruded metal frames. The section of the original building that flanks the main entrance is clad in brick laid in a five-to-one common bond. The original flat-roof commercial building has cast stone coping along the roofline. Five large, multi-pane fixed windows added during the 2018 renovation extend across the north façade. Each window has a brick sill, a continuous soldier course lintel, and a corbeled brick architrave (Figure 17).

Secondary entrances are located on the building's south and west elevations fronting Huger and Geddes streets. Located centrally on the west elevation, the western entrance has a single-pane, glass and metal door with a large single-light transom. Accessed by a set of cast concrete stairs flanked by a closed brick railing with cast concrete caps, this entrance is flanked by four two-pane fixed, synthetic windows with soldier course lintels and a wide stucco architrave. An original brick wall with a corbeled cap stands between the building's west elevation and the Gervais Street sidewalk (Figure 18).

The modified building occupies a majority of its approximately 23,000-square foot parcel. The building is surrounded by landscaped garden beds and a small lawn bisected by paved pathways. A paved parking area flanks the west façade.

Resource 8683 is a modified example of a twentieth-century commercial building. Alterations including the replacement of the original windows and addition of the third story and frame addition have negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

Figure 17.
Resource 8683: 522 Lady Street

A. Northeastern Oblique

B. Southeastern Oblique

Figure 18.
Resource 8683: 522 Lady Street

A. Southwestern Oblique

B. Northwestern Oblique

RESOURCE 8684: 1000 CATAWBA STREET

Resource 8684 is a circa 1960, modified one-story warehouse at 1000 Catawba Street. The L-shaped warehouse occupies the majority of the southwest quadrant of Catawba and Park streets. An issue of *The State* reveals that the city of Columbia issued a permit for construction of the $126,000-warehouse and office building for the Epes-Fitzgerald Paper Company in 1959 (The State 1959). Designed by P.B. Harrison, the original one-story warehouse had a rectangular plan and occupied the northeast corner of the parcel. A review of historic aerials reveals that between 1971 and 1981 the warehouse was expanded to its current L-shaped form. The building currently houses the USC/Columbia Innovation Center which contains offices and shared meeting rooms. Around 2012, the Garvin Design group led an extensive interior and exterior renovation of the building that included the replacement of the building's original windows and doors and addition of corrugated metal cladding to the façade (South Carolina Research Authority 2021).

Resting on cast concrete foundation, this one-story flat-roof warehouse has metal coping along the roofline and is clad in brick laid in a five-one common bond. The main entrance is located at the northeast corner of the building in the 1971-1981 addition. Positioned off-center within a corner entry-bay, this entrance has a pair of single-pane aluminum doors surrounded by a multi-pane full-height window with extruded aluminum frames. The door is sheltered by a metal, flat roof awning. A secondary entrance is located almost centrally on the north façade in a projecting bay. The centermost bay on the north façade is clad in circa 2010 corrugated metal cladding. Windows throughout the building date to the circa 2010 rehabilitation, the secondary entrance is flanked by bays of two-pane, vertical fixed windows and a row of large, four-pane windows is located at the east end of the façade. Windows are divided by brick pilasters and sheltered by a flat roof metal awning (Figure 19A). The west end of the façade contains four of the original loading bays and a loading dock. The westernmost bays have overhead track and corrugated metal doors, and the easternmost bays have been enclosed. One contains a single pedestrian entrance with a metal-frame glass door flanked by multi-light, full-height windows with extruded metal frames. The second bay has been enclosed with a band of fixed metal windows and corrugated metal spandrel panels. An original pedestrian entrance with a solid steel-design door marks the east end of the original warehouse space (see Figure 19B).

There is minimal fenestration on the south and west elevations with the exception of a garage bay and two pedestrian entrances. A loading dock extends the length of the south elevation and a single pedestrian entrance with a solid, steel-design door is located at the southeast corner of the building (Figure 20).

Figure 19.
Resource 8684: 1000 Catawba Street

A. Northeastern Oblique

B. West End of the North Façade

Figure 20.
Resource 8684: 1000 Catawba Street

A. North End of the West Elevation

B. South Elevation

Resource 8684 occupies almost the entirety of its parcel and is surrounded is fronted by a paved parking area and landscaped beds on the north, east, and west sides and abuts Resource 8685 and a paved lot associated with Resource 8686 to the south and east.

Resource 8684 is a common example of a mid-twentieth-century warehouse that was extensively altered circa 2010. Alterations including the replacement of the original windows and addition of new fenestration and the enclosure of the original garage bays have negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

RESOURCE 8685: 1015 WHALEY STREET

Resource 8685 is a two-story commercial building that features influences of the International style. Richland County tax records indicate that this 10,012 square-foot office was constructed in 1960. A 1956 edition of the *Columbia Record* identifies this office building as the site of Commodity Engineering Company. A review of historic aerial imagery reveals that the office building was expanded with the addition of a two-story rear wing and a western warehouse wing between 1971 and 1981. Currently housing Safran's Antiques, Resource 8685 shares a parcel with a contemporary one-story commercial building that now adjoins the warehouse addition to the west.

Resting on a continuous cast concrete foundation, this two-story office has a flat roof with metal coping along the roofline. The original two-story section is clad in painted running bond brick. Two bands of ribbon windows are recessed on the south façade and the recessed portion is clad in Roman brick laid in a running bond. The main entrance to the two-story office is located at the southwest corner of the building in an incised one-story entry bay supported by square geometric posts resting on a brick base. A solid steel-design door provides access to the first floor. Two bands of ribbon windows extend across the south façade. At the first floor, windows are two-pane steel-designs with cast concrete sills and at the second-floor windows are two-pane operable sash with single-pane fixed sash below. Windows along the west elevation of the office building are one-over-one fixed steel-designs with brick sills. Currently, the main entrance is located on the south façade of the circa 1975 warehouse addition. Sheltered by a metal, shed roof awning, this entrance has a pair of metal-frame, single-pane double doors flanked by single-pane, fixed windows with a three-pane transom above. The entrance is accessed by a set of cast concrete stairs with a closed brick railing. The warehouse addition is of cast concrete block construction with a flat roof and little fenestration. The south façade of the warehouse is clad in corrugated metal sheets (Figure 21).

Figure 21.
Resource 8685: 1015 Whaley Street

A. Southeastern Oblique

B. South Façade

Resource 8685.01: Commercial Building

This one-story commercial building is contemporary to Resource 8685 and was constructed between 1955 and 1971 and expanded with a rear addition between 1971 and 1981. Of concrete block construction, this one-story commercial building has a flat roof with metal coping along the roofline and brick veneer on the façade. The main entrance is recessed on the south façade and has a single-pane, steel-design door that is flanked by fixed, single-pane windows. Paired, large picture windows flank the entrance bay and each window has a brick sill. No additional fenestration is visible from the public right-of-way (Figure 22).

Resource 8685 and 8685.01 are common examples of a mid-twentieth century commercial architecture featuring elements of the International style. Resource 8685 is a common example of its type and alterations including the substantial circa 1975 additions have negatively impacted the resources material integrity. The resources were not found to be unique examples of the International Style and do not warrant inclusion in the NRHP. Resources 8685 and 8685.01 do not possess significance for their engineering or materials. They are not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

RESOURCE 8686: 215 ASSEMBLY STREET

Resource 8686 is a one-story commercial building and warehouse located at 215 Assembly Street at the northwest corner of Assembly and Whaley Streets. The Richland County tax record states that this commercial building was constructed in 1964. A July 1965 edition of *The State* indicates that by 1965 this building housed Yocam Batteries, Inc.

Situated beneath a low-pitch gable roof obscured by a parapet on the west façade, this one-story commercial building and warehouse currently houses CSL Plasma. The building's main entrance is located centrally on the west façade and has a circa 2010 metal frame glass door flanked by two-pane sidelights with a three-pane transom above. The entrance is sheltered beneath a circa 2010 cloth awning and is flanked by eight windows with simulated divided-light vinyl sash with cast sills and voussoirs. A row of engaged cast concrete planters extends across the façade and each corner is highlighted by a row of quoins (Figure 23A).

The south elevation has five bays divided by brick pilasters. There is minimal fenestration with the exception of a single, pedestrian entrance with a metal frame glass door and two, fixed windows (see Figure 23B).

Figure 22.
Resource 8685.01: 1015 Whaley Street

A. Southeastern Oblique

B. Southwestern Oblique

Figure 23.
Resource 8686: 215 Assembly Street

A. East Facade

B. Southeastern Oblique

C. South Elevation of the Warehouse Addition

The rear two-story warehouse has a low-pitched gable roof and extends from the building's west elevation and is accessed by a metal frame and glass door at the southeast corner of the building. A corrugated metal cap obscures the upper level of the exterior. Paired, single-pane fixed windows populate two bays of the five-bay south elevation (see Figure 23C).

Resource 8686 is a modified example of a mid-twentieth-century commercial building and warehouse that is a common example of its type. Alterations including the replacement of the original windows and doors have negatively impacted the resource's material integrity. The building was not found to embody the distinctive characteristics of a style, period, or method of construction, and does not possess significance for its engineering or materials. It is not known to be associated with events or persons significant in the past. Therefore, the resource is recommended as not individually eligible for the NRHP under Criteria A, B, or C.

RESOURCE 8687: SOUTHERN AND SCL RAILROAD

Resource 8687 is a section of the former Southern and Seaboard Coast Line (SCL) Railroad. This line was originally part of the Charlotte and South Carolina Railroad, chartered in 1846 and operational by 1852. The original line extended 84 miles from Charlotte, North Carolina to Columbia, South Carolina. In 1869, the line merged with the Columbia and Augusta Railroad to create the Charlotte, Columbia and Augusta Railroad. Originally extending 177 miles from Charlotte, North Carolina to Augusta, Georgia, the Charlotte, Columbia and Augusta Railroad boasted 39 stations by 1882. That same year, the line officially merged with the Richmond and Danville Railroad but retained its name. In 1894, the line became part of the Southern Railway and is now operated by the Norfolk Southern Railroad (Lewis 2021).

The section that travels adjacent to the project area is a double-track linear line. The track continues north where it roughly parallels the Congaree River until it splits just south of I-126. It is an active standard-gauge track. No historic buildings are associated with this section of the line as it passes near the project area. As early as 1919, the line serviced a coal trestle that serviced the Richland Cotton Mill (Resource 078) (Figure 24).

Resource 8687 is located at the southwestern edge of the NRHP-listed Richland Cotton Mill but was not identified as a contributing or noncontributing resource in the NRHP nomination and is situated outside of the parcel boundaries. Resource 8687 is common example of a rail line in South Carolina. It was not found to embody the distinctive characteristics of a type, period, or method of construction, and it does not possess significance for its engineering or materials. It is recommended not eligible for inclusion in the NRHP under Criterion C. It was evaluated under Criterion A, due to its association with patterns of development in both commerce and

Figure 24.
Resource 8687: Southern and SCL Railroad

A. View Northwest

B. View Southeast

transportation. It was not found to rise to the level of significance necessary for inclusion in the NRHP due to either of these associations, particularly given that no additional historic elements communicate the association of this resource with those patterns of development within the APE. It is not known to be associated with any significant person and therefore is not recommended eligible under Criterion B.

RESOURCE 8688: SOUTHERN RAILROAD TRESTLE

Now part of the Norfolk Southern Railroad, Resource 8688 is a double-track railroad trestle that carries a section of the former Southern and SCL railroad over Whaley Street just southwest of the Richland Cotton Mill. Constructed in 1965 to replace an older structure, this active double-track railroad is supported by iron and cast concrete girders resting on eight iron abutments and four cast concrete bents (Figure 25)(Hinson 2014).

Resource 8688 is a common example of a rail trestle in South Carolina. It was not found to embody the distinctive characteristics of a type, period, or method of construction, and does not possess significance for its engineering or materials. It is recommended not eligible for inclusion in the NRHP under Criterion C, individually or as part of a district. Due to its association with patterns of development in both commerce and transportation, the rail trestle was evaluated under Criterion A. It is one of many railroad features associated with the placement and development of the nearby textile mills designed and constructed by W.B. Smith Whaley. Resource 8688 was not found to rise to the level of significance necessary for inclusion in the NRHP. It is not known to be associated with any significant person and therefore is not recommended eligible under Criterion B.

Figure 25.
Resource 8688: 215 Southern Railroad Trestle

A. View Southeast

B. View Southwest

C. North Abutment Detail

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IV. CONCLUSIONS

This report is an addendum to the cultural resources survey of the proposed Blossom Street Bridge replacement in the City of Columbia. In January 2020, New South Associates, Inc. completed the initial Phase I Cultural Resource Survey on behalf of HDR Engineering, Inc. The project area was 0.44 miles long by approximately 200 feet wide (0.7 km x 61 m) and was centered along Blossom Street. No new archaeological sites were identified as a result of the cultural resources survey. One previously recorded architectural resource was revisited and four new architectural resources were surveyed. The previously surveyed resource, the Palmetto Compress and Warehouse Company, is currently listed in the NRHP. The study determined that the Palmetto Compress and Warehouse Company building retained sufficient integrity to remain eligible for the NRHP. None of the newly surveyed resources were recommended eligible for the NRHP.

In May 2021, the project was expanded to include an additional turn lane and turn lane improvements at two outlying intersections. HDR Engineering, Inc. consulted with SCDOT to establish a revised APE. The revised APE included the area of project work and the viewshed, which was defined as an irregular line of sight at each quadrant surrounding the intersection of Assembly and Whaley streets, and Huger and Gervais streets. No new or previously recorded archaeological sites were identified within the new APE. The work resulted in the identification of two previously recorded architectural resources and nine new architectural resources were surveyed. Both previously surveyed resources, the Confederate Printing Press (Resource 026) and the Richland Cotton Mill (Resource 0078), are listed in the NRHP. The NRHP boundaries are not located within the area of project work. None of the newly surveyed resources are recommended eligible for the NHRP, either individually or as part of a district.

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REFERENCES CITED

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MEMORANDUM OF AGREEMENT

BETWEEN THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, SOUTH CAROLINA STATE HISTORIC PRESERVATION OFFICE, AND FEDERAL HIGHWAY ADMINISTRATION

Regarding the Blossom Street (US 21 Connector) Bridge Replacement over CSX Transportation and Norfolk Southern Railroads in Richland County, South Carolina

WHEREAS the South Carolina Department of Transportation (SCDOT) plans to carry out the Blossom Street (US 21 Connector) Bridge Replacement over CSX Transportation and Norfolk Southern Railroads in Richland County using funds issued by the Federal Highway Administration (FHWA), under the authority of 23 U.S.C. 101 et seq, which implements the Federal-aid Highway Program (Program) in the State of South Carolina by funding and approving state and locally sponsored transportation projects that are administered by SCDOT; and

WHEREAS, the undertaking consists of the replacement of the Blossom Street (US 21 Connector) Bridge over CSX Transportation and Norfolk Southern Railroads in Richland County. The proposed project will replace the existing four-lane bridge with a new four-lane bridge; and

WHEREAS, SCDOT has defined the undertaking's area of potential effect (APE) as a 300-foot buffer from existing right-of-way (ROW); and

WHEREAS, the FHWA has determined that the undertaking has the potential to have adverse effects on the Palmetto Compress and Warehouse Company Building (0076), a property which is listed in the National Register of Historic Places (NRHP), and the FHWA and SCDOT have consulted with the South Carolina State Historic Preservation Officer "SHPO" pursuant to 36 C.F.R. part 800, of the regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f) to resolve or minimize potential adverse effects; and

WHEREAS, the building's owner, 612 Devine Street Associates, the City of Columbia, and Historic Columbia have been consulted and have been included as concurring parties.

NOW, THEREFORE, SCDOT, SHPO, and FHWA agree that the undertaking shall be implemented in accordance with the following stipulations in order to avoid or minimize potential adverse effects on the Palmetto Compress and Warehouse Company Building (0076).

STIPULATIONS

FHWA and SCDOT shall ensure that the following stipulations are implemented:

I. AVOIDANCE

No permanent right-of-way (ROW) will be taken from the NRHP boundary [Attachment A]. Any temporary occupancy will be limited to the eastern half of the parcel which, though in the NRHP

boundary, does not include elements considered contributing to the resource's NRHP eligibility. Areas used for temporary occupancy will be restored to their previous condition or improved. Detour routes will avoid the NRHP boundary.

II. MINIMIZATION

Minimization measures will be employed in bridge demolition and construction to reduce auditory and vibrational effects to the historic resource. The proposed design will employ two joints along the bridge (a reduction from the existing 14 joints) that would result in reduced traffic noise and vibration from collision between vehicle tires and bridge joints. Driven piles will not be used due to expected vibration and noise levels.

III. VIBRATION MONITORING AND PROTECTION OF STRUCTURE

Vibration monitoring will occur during bridge demolition and construction to avoid physical damage to, or advanced deterioration of, the Palmetto Compress and Warehouse Company Building. A vibration monitoring plan with pre- and post-construction surveys of the Palmetto Compress and Warehouse Company Building (0076) will be applied to monitor sites during construction. In addition, a protection plan for the Palmetto Compress and Warehouse Company Building (0076) will be developed. The vibration monitoring plan and protection plan will be shared with all signatories and concurring parties for review and comment prior to implementation.

IV. UNANTICIPATED EFFECTS

If unanticipated effects to the Palmetto Compress and Warehouse Company Building (0076) are found or occur during construction, all construction activities will halt immediately. SCDOT shall notify the SHPO and all signatories within two (2) business days of the unanticipated effect. Each of these parties has two (2) business days to respond. The parties shall attempt to reach a consensus on the treatment of the historic property. If a consensus is reached, construction activities may resume once the conditions of the agreement are met.

V. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories.

VI. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation V, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Execution of the Memorandum of Agreement by the Federal Highway Administration, the South Carolina Department of Transportation, and the South Carolina State Historic Preservation Office, and implementation of its terms, is evidence that the FHWA has taken into account the potential effects of the undertaking on the Palmetto Compress and Warehouse Company Building (0076) in accordance with Section 106 of the National Historic Preservation Act (16 U.S.C. Sec. 470f) and its implementing regulations (36 CFR Part 800).

SIGNATORIES:

By: J. Shane Belcher Digitally signed by J. Shane Belcher Date: 2021.11.15 15:39:11 -05'00' Date: 11/15/2021

Federal Highway Administration

By: Elizabeth M. Johnson Date: 10/13/2021

South Carolina State Historic Preservation Office

By: Mary Martin Date: September 21, 2021

South Carolina Department of Transportation

By: opted not to sign Date: _____

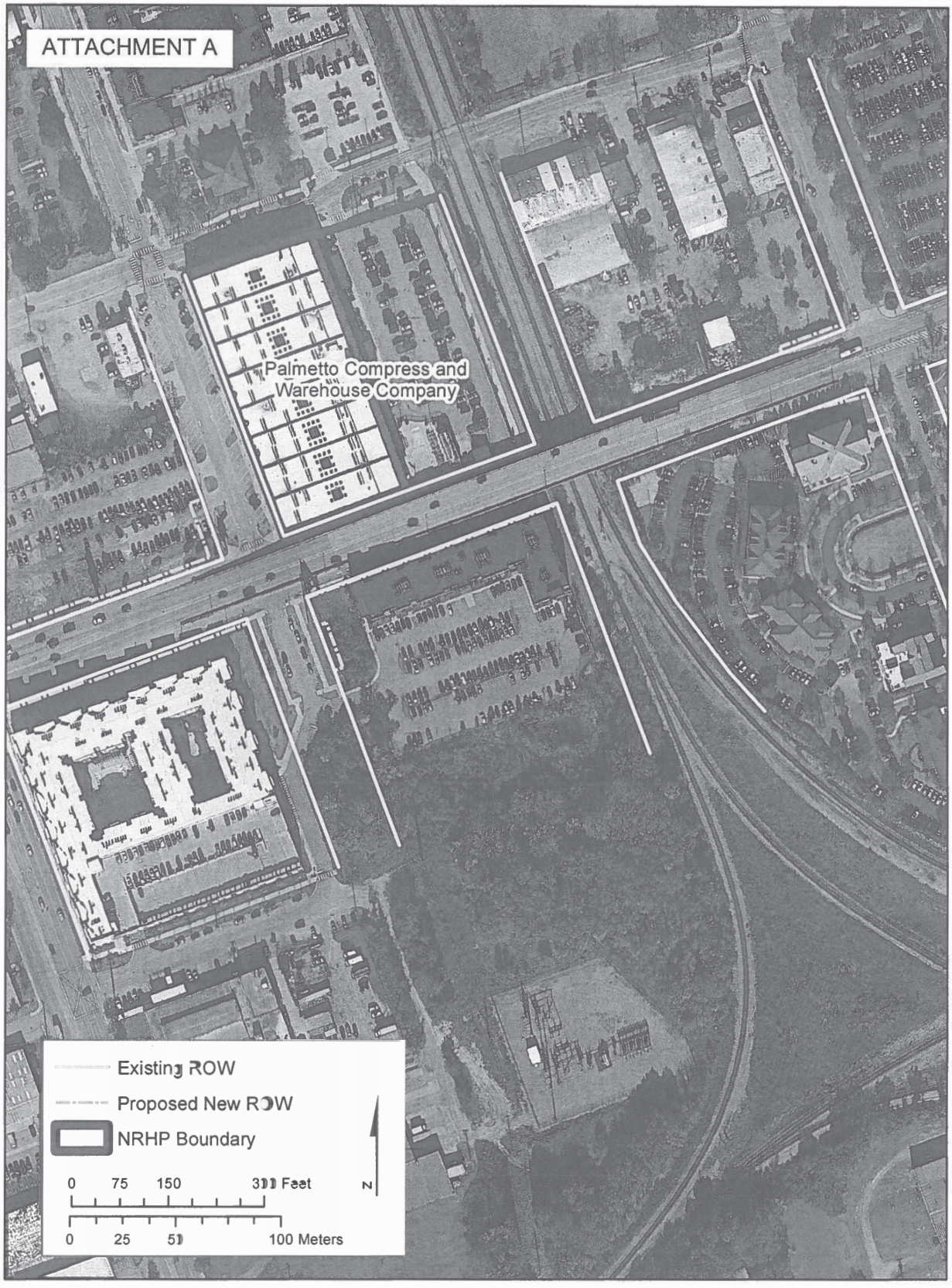
612 Devine Street Associates (Building Owner), Concurring Party

By: Amy E. Moore Date: September 15, 2021

City of Columbia, Concurring Party

By: John M. Sherrer III Date: September 15, 2021

Historic Columbia, Concurring Party



Source: Google Earth

Appendix D

Agency Correspondence

South Carolina
Department of Transportation

September 7, 2021

Ms. Elizabeth Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office
SC Department of Archives & History
8301 Parklane Road
Columbia, SC 29223

RE: Phase I Cultural Resources Survey for the US 21 over Southern & SCL RR (Blossom St Bridge), Richland County, South Carolina.

Dear Ms. Johnson:

Please find attached a copy of the above referenced report that describes cultural resources investigations conducted for the proposed US 21 over Southern and SCL RR bridge replacement in **Richland County**, South Carolina.

The South Carolina Department of Transportation (SCDOT) proposes to replace the existing four lane Blossom Street Bridge between Lincoln and Huger Streets with a four-lane bridge that includes travel lanes, a median, shoulders, and/or bike lanes/sidewalks as determined by the conceptual studies developed during the initial project phase. The project area consisted of an approximately 0.44-mile-long corridor about 200 feet wide centered along Blossom Street, extending to 300 feet along Gadsden Street, Pulaski Street, and CSX Transportation and Norfolk Southern railroads. Additionally, the limits of the project extend 200 feet along Huger Street. The Area of Potential Effects (APE) consists of a 300-foot buffer from the existing right of way (ROW). The architectural survey examined the entire APE, while the archaeological survey examined only the area of direct effects (ADE), which is located within the existing ROW.

The archaeological survey found that the entire project area was substantially disturbed by commercial and high density residential development. No archaeological sites were identified.

The architectural survey identified four previously unrecorded historic buildings and revisited one structure already listed on the National Register of Historic Places (NRHP). The Palmetto Compress and Warehouse Company (Resource 0076) was listed in the NRHP in 1985 and retains sufficient integrity to remain **eligible** for the NRHP. Newly recorded resources consist of the Southern and SCL Railroad, c. 1950 (Resource 7692); the current Blossom Street Bridge, c. 1953 (Resource 7693); one residential structure, c. 1915 (Resource 7694), and a warehouse from 1959 (Resource 7695). These newly recorded resources are recommended **not eligible** for inclusion on the NRHP.

Because the Palmetto Compress and Warehouse lies within the ADE consideration has been given to avoiding or minimizing adverse effects to the resource. Design plans will consider the project viewshed as well as the connectivity of residents to multi-modal transportation and safety. Construction methods will be employed that minimize vibration and noise during construction. A vibration monitoring plan will be implemented with pre- and post-construction surveys of the structure, monitoring during construction, and a protection plan for the structure. It

is anticipated that the design of the proposed bridge will result in less auditory vibration effects from vehicular movement.

The Federal Highway Administration (FHWA) has determined that this undertaking has the potential to have adverse effects on the Palmetto Compress and Warehouse (Resource 0076), a property which is listed on the NRHP. FHWA and SCDOT have consulted with the South Carolina State Historic Preservation Office pursuant to 36 C.F.R. part 800, of the regulations implementing Section 106 of the National Historic Preservation Act (116 U.S.C. § 470f) to resolve or minimize potential adverse effects that may occur to this resource as a result of the proposed undertaking. A Memorandum of Agreement (MOA) outlining appropriate mitigation for this adverse effect will be submitted to the South Carolina State Historic Preservation Office.

Per the terms of the Section 106 Programmatic Agreement executed on October 6, 2017, the Department is providing this information on behalf of the Federal Highway Administration. It is requested that you review the enclosed material, and, if appropriate, indicate your concurrence in the Department's findings. Please respond within 30 days if you have any objections or if you have need of additional information.

Sincerely,

Tracy Martin
Chief Archaeologist

Enclosures: Cultural resources survey report

I (~~do not~~) concur in the above determination.

Signed: _____ Date: 10/4/2021

ec: Shane Belcher, FHWA
Russell Townsend, Eastern Band of Cherokee Indians
Stephen J. Yerka, Eastern Band of Cherokee Indians
Elizabeth Toombs, Cherokee Nation
LeeAnne Wendt, Muscogee (Creek) Nation
Karen Pritchett, United Keetoowah
Charlotte Wolfe, United Keetoowah

cc: Wenonah G. Haire, Catawba Nation
Keith Derting, SCIAA

South Carolina
Department of Transportation

October 21, 2021

Ms. Elizabeth Johnson
Director, Historical Services, D-SHPO
State Historic Preservation Office
SC Department of Archives & History
8301 Parklane Road
Columbia, SC 29223

RE: Phase I Cultural Resources Survey for the Proposed Blossom Street Bridge Replacement: Addendum, Richland County, South Carolina.

Dear Ms. Johnson:

Please find attached a copy of the above referenced report that describes cultural resources investigations conducted for the expanded survey area for Blossom Street bridge replacement in **Richland County**, South Carolina.

The South Carolina Department of Transportation (SCDOT) has proposed replacing the existing four lane Blossom Street Bridge between Lincoln and Huger Streets. A Phase I cultural resources survey was completed for the project in 2020. In May of 2021, SCDOT expanded the project area to include an additional turn lane and turn lane improvements at two outlying intersections. The revised area of potential effect (APE) included the area of project work and the view shed, which was defined as an irregular line of sight at each quadrant surrounding the intersection of Assembly and Whaley streets, and Huger and Gervais streets.

No new or previously recorded archaeological sites were identified within the new APE. The architectural survey identified two previously recorded architectural resources, the Confederate Printing Press (SHPO Resource No. 0026) and the Richland Cotton Mill (SHPO Resource No. 0078). Both resources are **listed** in the National Register of Historic Places (NRHP). The NRHP boundaries for the two previously recorded resources are not located within the area of projected work. Nine new architectural resources were recorded within the APE. Six of these new resources are mid-twentieth century commercial buildings (SHPO Resource Nos. 8680-8685); SHPO Resource No. 8686 is a 1964 warehouse; SHPO Resource No. 8687 is a circa 1860 double track railroad line; and SHPO Resource No. 8688 is a 1965 double track railroad trestle. All of the newly recorded resources are recommended **not eligible** for inclusion on the NRHP, either individually or as part of a district. Based on the results of the background research and field investigations, the SCDOT has determined that **no historic properties will be affected** by the proposed undertaking.

Per the terms of the Section 106 Programmatic Agreement executed on October 6, 2017, the Department is providing this information on behalf of the Federal Highway Administration. It is requested that you review the enclosed material, and, if appropriate, indicate your concurrence in the Department's findings. Please respond within 30 days if you have any objections or if you have need of additional information.

Sincerely,

Post Office Box 191
Columbia, South Carolina 29202-0191

Tracy Martin
Chief Archaeologist

Enclosures: Cultural resources survey report

I (~~do not~~) concur in the above determination.

Signed: _____ Date: 11/9/2024

ec: Shane Belcher, FHWA
Russell Townsend, Eastern Band of Cherokee Indians
Stephen J. Yerka, Eastern Band of Cherokee Indians
Elizabeth Toombs, Cherokee Nation
LeeAnne Wendt, Muscogee (Creek) Nation
Karen Pritchett, United Keetoowah
Charlotte Wolfe, United Keetoowah

cc: Wenonah G. Haire, Catawba Nation
Keith Derting, SCIAA

From: Section106
To: Martin, Tracy
Subject: Re: PIN 30115 Blossom St bridge replacement, Richland Co, SC - CR report and transmittal letter
Date: Monday, October 4, 2021 10:13:03 AM
Attachments: image001.png

Tracy,

Thank you for contacting the Muscogee (Creek) Nation concerning the Proposed US 21 over Southern and SCL RR Bridge Replacement in Richland County, South Carolina. This project is located within our Tribes historic area of interest. After reviewing the material provided and noting that a Phase I archaeological survey has been conducted for the project area and that no cultural material was located during the survey, it was determined that the project can proceed as planned. The Muscogee (Creek) Nation believes that there should be *no effects to any known historic properties*. However, due to the historic presence of our people in the project area, if any inadvertent discoveries of cultural material (i.e. artifacts) and/or human remains and/or funerary objects are noted, we request to be contacted as soon as the discovery is made and that appropriate federal agencies are also notified. Additionally, if there are any updates or changes to the proposed project, we request that the information be sent to our office for further review. If you have any questions regarding this, please do not hesitate to contact me.

Regards,
LeeAnne Wendt

LeeAnne Wendt, M.A., RPA
Tribal Archaeologist, Historic and Cultural Preservation Department
The Muscogee Nation
P.O. Box 580 | Okmulgee, OK 74447
T 918.732.7852
F 918.758.0649
lwendt@MuscogeeNation.com
MuscogeeNation.com

From: Martin, Tracy <MartinT@scdot.org>
Sent: Wednesday, September 8, 2021 10:56 AM
To: Elizabeth Johnson <EJohnson@scdah.sc.gov>
Cc: Belcher, Jeffery - FHWA <Jeffrey.Belcher@dot.gov>; russtown@nc-cherokee.com <russtown@nc-cherokee.com>; syerka@nc-cherokee.com <syerka@nc-cherokee.com>; elizabeth-

toombs@cherokee.org <elizabeth-toombs@cherokee.org>; Section106 <Section106@muscogeenation.com>; kpritchett@ukb-nsn.gov <kpritchett@ukb-nsn.gov>; cwolfe@ukb-nsn.gov <cwolfe@ukb-nsn.gov>
Subject: PIN 30115 Blossom St bridge replacement, Richland Co, SC - CR report and transmittal letter

All,

Attached is the survey report and transmittal letter for the cultural resources survey done for the upcoming Blossom Street bridge replacement in Richland Co, SC. Please let me know if you have any questions or comments.

Thank you,

Tracy Martin
Chief Archaeologist
SC Department of Transportation
955 Park Street, Columbia SC, 29201
Office 803-737-6371 / Cell 803-206-1223

Appendix E

Section 4(f) Constructive Use Applicability Checklist

Section 4(f) Applicability Checklist

FHWA South Carolina Division

State File #		Fed Project #	P028309	PIN		Route	S-216-17 Blossc	County	Richland

Project Description	The SCDOT proposes to replace the Blossom Street (US 21 Connector) Bridge over Norfolk Southern and CSX Transportation Railroads in Richland County, SC.

Form Instructions: Use this checklist to determine if there is a potential for Section 4(f) involvement, and to document the determination if there is no Section 4(f) involvement. Note, however, that it is impossible to cover all types of Section 4(f) involvement in this checklist. If there is any uncertainty about any of these issues, consult with the FHWA-SC Division Office.

U.S. DOT Involvement in the Project	☒ Yes ☐ No	Federal transportation funds will be used by SCDOT on this project
	☒ Yes ☐ No	This project requires an action (besides funding) by a U.S. DOT agency (FHWA, FAA, FTA, FRA). Such actions include permits or other approvals.
	☐ Yes ☐ No	A local government or cooperating state agency will use federal transportation funds on this project.

If all of the above are "no," then Section 4(f) does not apply. If "yes" is checked for any of the above, continue completing the checklist.

Properties Covered by Section 4(f)	☐ Yes ☒ No	The project has the potential to affect a park or recreation area that is publicly-owned and open to the public.
	☐ Yes ☒ No	The project has the potential to affect a publicly-owned wildlife or waterfowl refuge
	☒ Yes ☐ No	The project has the potential to affect a historic resource that is on or eligible for the National Register for History Places.

If all of the above are "no," then Section 4(f) does not apply. If "yes" is checked for any of the above, continue completing the checklist.

Use of Section 4(f) Properties	☐ Yes ☒ No	The project will affect a Section 4(f) property by acquiring all or part of the property for a transportation purpose.
	☐ Yes ☒ No	The project will affect a Section 4(f) property by temporarily occupying it or acquiring a temporary easement.
	☐ Yes ☒ No	The project will affect a Section 4(f) property by acquiring permanent easement over the property.
	☐ Yes ☒ No	The project will affect a Section 4(f) property by causing a "constructive use" of the property. (Fill out "Constructive Use" Checklist as appropriate & place in project file)

If "no" can be checked for all four statements above, then there is probably no Section 4(f) involvement. However, consult with FHWA-SC if "yes" is checked or if there is any uncertainty regarding Section 4(f) use of property. FHWA has the authority to determine if use of a property results in Section 4(f) involvement. If there is Section 4(f) involvement, the Section 4(f) evaluation and approval process must be completed.

Preparer:	Josh Fletcher	Date:	May 13, 2021

Section 4(f) Constructive Use Applicability Checklist

FHWA South Carolina Division

State File #	Fed Project #	PIN	Route	County
	P028309		S-216-17 Blossc	Richland

Project Description: The SCDOT proposes to replace the Blossom Street (US 21 Connector) Bridge over Norfolk Southern and CSX Transportation Railroads in Columbia, SC.

Form Instructions: Use this checklist to determine if there is a potential for a Section 4(f) Constructive Use, and to document the determination. **Any "YES" answer will require a Section 4(f) evaluation**. If there is any uncertainty about any of these issues, consult with the FHWA-SC Division Office. Reference 23 CFR Part 774.15 for detailed information.

FHWA has determined that a Section 4(f) Constructive Use occurs when:

1. The projected noise increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a property protected by Section 4(f), such as:
   - i. Hearing the performances at an outdoor amphitheater,
   - ii. Sleeping in the sleeping area of a campground,
   - iii. Enjoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance,
   - iv. Enjoyment of an urban park where serenity and quiet are significant attributes, or
   - v. Viewing wildlife in an area of a wildlife and waterfowl refuge intended for such viewing.

   ☒ NO ☐ YES ☐ N/A

   Supplemental Comments (if any):

2. The proximity of the proposed project substantially impairs aesthetic features or attributes of a property protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the property. (*i.e.*: obstructs or eliminates views of an architecturally significant historical building, or substantially detracts from the setting of a Section 4(f) property which derives its value in substantial part due to its setting).

   ☒ NO ☐ YES ☐ N/A

   Supplemental Comments (if any):

3. The project results in a restriction of access which substantially diminishes the utility of a significant publicly-owned park, recreation area, or a historic site.

   ☒ NO ☐ YES ☐ N/A

   Supplemental Comments (if any):

4. The vibration impact from construction or operation of the project substantially impairs the use of a Section 4(f) property, such as projected vibration levels that are great enough to physically damage a historic building or substantially diminish the utility of a building, unless the damage is repaired and fully restored consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, *i.e.*, the integrity of the contributing features must be returned to a condition which is substantially similar to that which existed prior to the project.

   ☒ NO ☐ YES ☐ N/A

   Supplemental Comments (if any): The project team is required to provide a copy of the vibration monitoring plan to the SHPO prior to any demolition taking place, and also to produce a final report upon completion of the project.

5. The ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife and waterfowl refuge adjacent to the project, substantially interferes with the access to a wildlife and waterfowl refuge when access is necessary for established wildlife migration or critical life cycle processes, or substantially reduces the wildlife use of a wildlife and waterfowl refuge.	☒ NO ☐ YES ☐ N/A
Supplemental Comments (if any):	

Supplemental Information: A Constructive Use will not occur if:

1. Compliance with the requirements of 36 CFR 800.5 for proximity impacts of the proposed action, on a site listed on or eligible for the National Register, results in an agreement of "no historic properties affected" or "no adverse effect;"

2. The projected noise levels exceed the relevant noise abatement criteria (NAC) contained in 23 CFR Part 772 because of existing noise, but the increase in the projected noise levels if the proposed project is constructed, when compared with the projected noise levels if the project is not built, is barely perceptible (3 dBA or less);

3. There are proximity impacts to a Section 4(f) property, but a governmental agency's right-of-way acquisition or adoption of project location, or the Administration's (FHWA) approval of a final environmental document, established the location for the proposed transportation project before the designation, establishment, or change in the significance of the property. However, if it is reasonably foreseeable that a property would qualify as eligible for the National Register prior to the start of construction, then the property should be treated as a historic site for the purposes of this section; or

4. Overall (combined) proximity impacts caused by a proposed project do not substantially impair the activities, features, or attributes that qualify a property for protection under Section 4(f);

5. Proximity impacts will be mitigated to a condition equivalent to, or better than, that which would occur if the project were not built, as determined after consultation with the official(s) with jurisdiction;

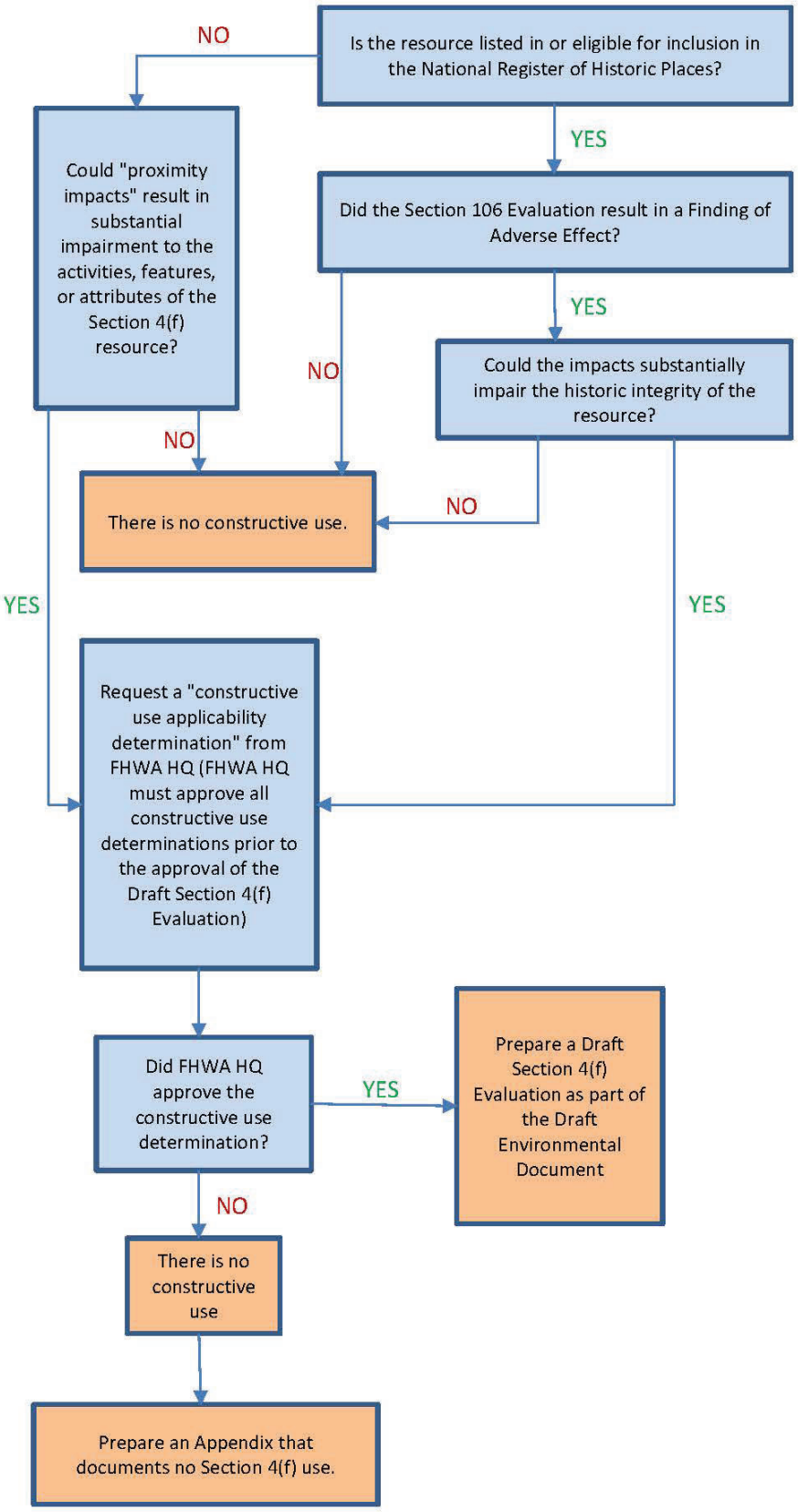
6. Change in accessibility will not substantially diminish the utilization of the Section 4(f) property; or

7. Vibration levels from project construction activities are mitigated, through advance planning and monitoring of the activities, to levels that do not cause a substantial impairment of protected activities, features, or attributes of the Section 4(f) property.

Additional Comments (if needed):

Preparer:	Josh Fletcher	Date:	May 13, 2021

SECTION 4(F) CONSTRUCTIVE USE DECISION TREE



4/16/2012

Appendix F

Phase I ESA

LIMITED PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

THREE PROJECT AREAS
BLOSSOM STREET BRIDGE IMPROVEMENTS
COLUMBIA, RICHLAND COUNTY
SOUTH CAROLINA

PREPARED FOR:

HDR
112 Lady Street, Suite 1100
Columbia, South Carolina 29201

PREPARED BY:

F&ME Consultants
1825 Blanding Street
Columbia, South Carolina 29201

September 9, 2021 (Revision 1)

FME Project No.: G6121.000

TABLE OF CONTENTS

LIST OF ACRONYMS

AAI	All Appropriate Inquiry
AST	Aboveground Storage Tank
ASTM	ASTM International
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CREC	Controlled Recognized Environmental Condition
EDR	Environmental Data Resources, Inc.
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FOI	Freedom of Information
HREC	Historical Recognized Environmental Condition
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
SCDHEC	South Carolina Department of Health and Environmental Control
SCDOT	South Carolina Department of Transportation
SHWS	State Hazardous Waste Site
SWF/LF	Solid Waste Facility/Landfill Facility
USGS	United States Geological Survey
UST	Underground Storage Tank

1. SUMMARY

F&ME Consultants, Inc. (FME) has performed a Limited Phase I Environmental Site Assessment (Phase I ESA) relating to the Blossom Street Bridge replacement, road improvements, and the re-routing of traffic, for three (3) distinct project areas in the City of Columbia, Richland County, South Carolina, the "Project Areas." The three (3) distinct Project Areas included:

- Offset Interchange #1: Located at the intersection of Huger and Gervais Streets. This intersection assessment limits includes two (2) Richland County tax parcels, TMS R08912-13-08 and R08912-13-02. Offset Interchange #1 includes vacant lands, which were formerly occupied by the Kline Iron and Steel Company.

- Offset Interchange #2: Located at the intersection of Assembly and Whaley Streets. This intersection assessment limits includes one (1) Richland County tax parcel, TMS R11301-02-03. Offset Interchange #2 includes the currently operating Pantry Express gas station and convenience store.

- The Blossom Street Corridor: Located roughly on Blossom Street from the Congaree River to Lincoln Street, and to include intersections at Huger Street, Pulaski Street, railroad, and Gadsden Street. This corridor assessment area includes only those parcels which are slated for new right-of-way acquisition. Based on HDR provided preliminary (30%) plans, this corridor will include ten (10) tax parcels (i.e., Parcels 1, 2, 3, 4, 15, 24, 28, 29, 30, and 36 denoted on 30% Preliminary Plans). Based on the 30% Preliminary Plans, the Blossom Street Corridor includes TMS R08909-01-01, R08910-01-07A, R08914-01-10, R08914-01-09, R08914-01-08, R08914-03-04, R08914-12-02A, R08914-13-02, R08914-13-01, and R08914-16-02. The parcels which make up the Blossom Street Corridor consist of mixed use, including retail, multi-family housing, undeveloped lands, etc.

Additional information on each assessed parcel included in the "Project Areas" is provided in the table below:

Table 1 – Identification of Assessed Parcels

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax Info	Owner
Offset Interchange #1 - Huger and Gervais Streets			
R08912-13-02	N/A	405 Gervais St.	Kline Huger LLC
R08912-13-08	N/A	Gervais St.	Huger Hospitality LLC
Offset Interchange #2 - Assembly and Whaley Streets			
R11301-02-03	N/A	205 Assembly St.	Pantry Express LLC
Blossom Street Corridor			
R08909-01-01	36	W/S Williams St.	Williams at Blossom LLC
R08910-01-07A	1	449 Blossom St.	Guignard Partnership
R08914-01-10	2	602 Huger St.	604 Huger LLC
R08914-01-09	3	Pulaski St.	604 Huger LLC

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax Info	Owner
R08914-01-08	4	603-05 Pulaski St.	604 Huger LLC
R08914-03-04	15	613 Gadsden St.	613 Gadsden Street LLC
R08914-12-02A	24	Blossom St.	University of South Carolina
R08914-13-02	28	620 Blossom St.	Trea Greene Crossing LLC
R08914-13-01	29	W/S Pulaski St.	Columbia Outdoor Advertising Inc.
R08914-16-02	30	506 Huger St.	CD/Park7 Columbia SC Owner LLC

The site location is identified on Appendix A, Figure 1 and the site plans for each Project Area are included in Appendix B, Figures 2 through 4. This report was prepared for the "Users", namely HDR and South Carolina Department of Transportation (SCDOT), and this report may not be shared or relied upon by anyone but the Users without prior written permission.

In general accordance with ASTM International (ASTM) E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, FME's Limited Phase I ESA included records review and site reconnaissance. FME reviewed reasonably ascertainable historical records, historical photographs, regulatory records databases, and other records made readily available. On July 26 and 27, 2021, FME photographed the Project Area during site reconnaissance. Site reconnaissance included observation of the present usage of portions of the parcels located within the Project Area from public thoroughfares (i.e., FME did not enter private property).

Findings. Nineteen (19) REC/HREC were identified within and adjacent to the Project Areas, including automotive or petroleum operations, industrial sites (i.e., Kline Iron & Steel), utility providers, (i.e., gas plant), UST sites, VCP sites, etc. Due to the type of operations and since many of the sites operated prior to modern environmental regulations, these sites could adversely impact the Project Areas. The nineteen (19) REC/HREC were identified during preparation of this Limited Phase I ESA and are described and discussed in more detail throughout this Limited Phase I ESA Report. A convenient listing of these nineteen (19) REC/HREC can also be found in Table 9 within Section 8 of this report.

Opinions. FME's assessment determined that these noted findings may potentially affect the proposed roadwork in the three (3) Project Areas. Based upon site-specific information, FME identified nineteen (19) potential environmental issues potentially impacting the Project Areas.

Conclusions. This assessment has revealed indications of nineteen (19) Recognized Environmental Conditions (RECs) and/or Historical Recognized Environmental Conditions (HRECs) in connection with the Project Areas that could potentially impact the Project Areas and proposed road and bridge improvements.

Recommendations. FME recommends Phase II Environmental Site Assessments (Phase II ESA) on portions of the Project Areas. Based on the results of the Phase II ESA, additional recommendations may be warranted to ensure the safe and proper handling of soils, which may include road or building construction, earth moving, grading, or utility installations.

2. INTRODUCTION

2.1 Purpose

The purpose of this Limited Phase I ESA was to identify, to the extent feasible and in general accordance with ASTM E1527-13, Recognized Environmental Conditions in connection with the Project Area.

ASTM 1527-13 defines a Recognized Environmental Condition (REC) as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a Project Area: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or, (3) under conditions that pose a material threat of a future release to the environment.

ASTM 1527-13 defines a Controlled Recognized Environmental Condition (CREC) as a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

ASTM 1527-13 defines a Historical Recognized Environmental Condition (HREC) as a past release of any hazardous substances or petroleum products that has occurred in connection with the Project Area and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the Project Area to any required controls (for example, Project Area use restrictions, activity and use limitations, institutional controls, or engineering controls).

ASTM 1527-13 defines a de minimis condition as a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

2.2 Detailed Scope of Services

Pursuant to an agreement between the Users and FME, and in general accordance with ASTM E1527-13, FME's Limited Phase I ESA consisted of: a physical site reconnaissance of the portions of the parcels found within the Project Area from public thoroughfares; review of reasonably ascertainable South Carolina Department of Health and Environmental Control (SCDHEC) records for the Project Area, as well as records pertaining to parcels within the minimum search distances as defined in ASTM 1527-13; where applicable, a review of available current and past aerial photographs for the Project Area; Environmental Data Resources, Inc. (EDR) database report for the Project Area; a report written using the format recommended in ASTM E1527-13; and, recommendations as to the need for additional investigations where applicable. Please note that the parcels included in the three (3) Project Areas were selected by HDR in an email dated June 9, 2021.

This assessment is consistent with good commercial and customary practice as defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) for the

purposes of the Landowner Liability Protection only for the portions of the parcels located within the Project Area.

2.3 Significant Assumptions

FME has made the following assumptions in preparing the scope for this Limited Phase I ESA.

- Data gathered from public information sources (i.e., libraries and public regulatory agencies) is accurate and reliable.

- Site operations reflect site conditions relative to potential releases and no intentional concealment of environmental conditions or releases has occurred.

- Any interview information is directly reported as gathered by the assessor and is limited by the accuracy of the interviewee's recollection and experience.

- Published geologic information and site observations made by the Environmental Professional are utilized to estimate likely surficial and subsurface contaminant migration pathways (i.e., groundwater, soil, and vapor). These estimates are limited in accuracy and generally cross-referenced with existing information about similar sites and environmental releases in the area.

- Pursuant to an agreed upon scope of work, site reconnaissance was only performed on the portions of the parcels located within the Project Area and viewed from public thoroughfares.

- Similarly, deeds are typically provided by the User(s), however, pursuant to the agreed upon scope of work, deeds are not included in this report.

2.4 Limitations and Exceptions

This Limited Phase I ESA does not address all possible environmental liabilities that the User may need to consider in the context of a commercial real estate transaction. Asbestos-containing building materials, biological agents, cultural and historical resources, ecological resources, endangered species, health and safety, indoor air quality, industrial hygiene, lead-based paint, lead in drinking water, mold, radon, regulatory compliance, wetlands, and Federal Emergency Management Agency (FEMA) flood zones are investigative areas not included in this Limited Phase I ESA.

2.4.1 Site Reconnaissance

The findings of this report are applicable, and representative of conditions encountered at the Project Area on the date of the site reconnaissance and may not represent conditions at a later date. Where portions of the Project Area were inaccessible, or access was limited, FME renders no opinion as to the presence or absence of potential environmental

concerns located indirectly or directly on the Project Area, adjoining parcels, or contents of onsite/offsite building structures. As stated above, FME did not access private property during this assessment. Therefore, site reconnaissance was performed from public rights-of-way.

2.4.2 Records Review

The review of public records was limited to that information which was available to FME at the time that this report was prepared. To the extent that public files were missing, incomplete, or not provided, FME is not responsible for the completeness of public files. If an overlap in the information provided by the various officials, other parties, or agencies is noted, FME did not attempt to verify the accuracy or completeness of information received and incorporated into this Limited Phase I ESA. No warranty or guarantee, either stated or implied, is given concerning the authenticity of the various agencies and present or past owners or operators of the Project Area or the completeness of federal, state, or local records.

If data gaps concerning the Project Area and adjoining parcels are identified, regardless of cause (i.e., intentional or unintentional withholding or loss of information), FME will attempt to comment on the significance of these data gaps. However, FME cannot and does not warrant or guarantee that significant events, releases, or negative conditions did not occur during periods of time for which no records are available.

2.4.3 Findings, Opinions, Conclusions, and Recommendations

The findings, opinions, and conclusions of this Limited Phase I ESA are based, in part, upon the information obtained from the records made available by others and from the site reconnaissance. If variations or latent conditions arise or become evident later, it may be necessary to re-evaluate the findings and conclusions presented in this Limited Phase I ESA.

During the Limited Phase I ESA, FME did not perform any collection, sampling, or laboratory analysis of materials (e.g., soil, water, air, building materials). Therefore, if the conclusions and recommendations contained herein are based in part upon laboratory data found during our research, then the conclusions and recommendations are contingent upon the validity of such data and the laboratory that performed the analyses and prepared the analytical data report. The potential for vapor encroachment or intrusion is also considered relative to onsite and offsite sources, based on the experience of the Environmental Professional.

2.5 User Reliance

This Limited Phase I ESA has been prepared exclusively for the Users, HDR and SCDOT, and shall not be disseminated in whole or in part to other parties without prior consent from FME.

3. SITE DESCRIPTION

3.1 Location and Legal Description

This Limited Phase I ESA Report includes an assessment of three (3) distinct Project Areas, each located within the City of Columbia, Richland County, South Carolina. The Project Areas, and specifically which tax map parcels were included, were established by the Users. The Project Areas include:

- Offset Interchange #1: Located at the intersection of Huger and Gervais Streets. This intersection assessment limits includes two (2) Richland County tax parcels, TMS R08912-13-08 and R08912-13-02. Offset Interchange #1 includes vacant lands, which were formerly occupied by the Kline Iron and Steel Company.

- Offset Interchange #2: Located at the intersection of Assembly and Whaley Streets. This intersection assessment limits includes one (1) Richland County tax parcel, TMS R11301-02-03. Offset Interchange #2 includes the currently operating Pantry Express gas station and convenience store.

- The Blossom Street Corridor: Located roughly on Blossom Street from the Congaree River to Lincoln Street, and to include intersections at Huger Street, Pulaski Street, railroad, and Gadsden Street. This corridor assessment area includes only those parcels which are slated for new right-of-way acquisition. Based on HDR provided preliminary (30%) plans, this corridor will include ten (10) tax parcels (i.e., Parcels 1, 2, 3, 4, 15, 24, 28, 29, 30, and 36 denoted on 30% Preliminary Plans). Based on the 30% Preliminary Plans, the Blossom Street Corridor includes TMS R08909-01-01, R08910-01-07A, R08914-01-10, R08914-01-09, R08914-01-08, R08914-03-04, R08914-12-02A, R08914-13-02, R08914-13-01, and R08914-16-02, respectively. The parcels which make up the Blossom Street Corridor consist of mixed use, including retail, multi-family housing, undeveloped lands, etc.

Refer to Appendix B for the general layout of the Project Areas.

3.2 Site and Vicinity General Characteristics

The Project Areas are located in an urban area within the City of Columbia, South Carolina. Parcels surrounding the Project Areas are identified as mixed-use, with educational (i.e., University of South Carolina), multi-family housing, commercial businesses, industrial, retail, and automotive uses. The Congaree River lies to the west of the Project Areas. Please refer to the Site Vicinity Map included as Appendix A and the Site Plans included as Appendix B. The Project Areas are located approximately 165 to 200 feet above mean sea level (MSL). This information was obtained from the United States Geological Survey's (USGS) 7.5 Minute Topographic Maps obtained from EDR.

3.3 Geologic and Hydrogeologic Conditions

The Project Areas are located at the contact between the Piedmont Physiographic Province and the Upper Coastal Plain Physiographic Province in Richland County, South Carolina. Typically, the Piedmont is an erosional surface, characterized by undulating topography with dendritically patterned streams. The topography of the Upper Coastal Plain is in an intermediate stage of erosion, which is commonly characterized by flat, interfluvial divides with narrow stream valleys. Topography of the Project Areas has been heavily influenced by the confluence of the Broad, Saluda and Congaree Rivers. Precipitation is 44 to 55 inches per year.

According to the Web Soil Survey, United States Department of Agriculture (USDA), the surficial soil within the Project Areas is generally Urban land. This soil is considered well drained. However due to past disturbance by human activities, this will vary. Depth to the water table for these soils is generally six (6) feet or greater. However, depth to groundwater throughout the Project Areas is largely controlled by rainfall frequency, intensity, stormwater movement, as well as depth to bedrock. Therefore, reference to groundwater in this area should not be considered static.

Underlying the surficial soils at the site are Congaree River terrace deposits. These soils are a result of deposition from the Congaree River and consist of clay, silt, and sand. Gravel and cobbles occasionally occur. Generally, below the Congaree River deposits is the Middendorf Formation, which is a Cretaceous aged sedimentary formation of sand, silt, and clay that was deposited in a delta plain environment. This is the catchment area for the Middendorf aquifer. However, the Middendorf may not be present here due to erosion by the Congaree River. Underlying the Middendorf Formation are crystalline rocks of the piedmont. The Columbia metagranite underlies the Middendorf at this location.

3.4 Current Use of the Project Areas

Uses of parcels within the three (3) distinct Project Areas, are as follows:

Table 2 – Current Use(s) of Assessed Parcels

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax nfo	Current Use and/or Occupant
Offset Interchange #1 - Huger and Gervais Streets			
R08912-13-02	N/A	405 Gervais St.	Vacant/Undeveloped
R08912-13-08	N/A	Gervais St.	Vacant/Undeveloped
Offset Interchange #2 - Assembly and Whaley Streets			
R11301-02-03	N/A	205 Assembly St.	Pantry Express Gas Station and Convenience Store
Blossom Street Corridor			
R08909-01-01	36	W/S Williams St.	Vacant, but occasionally used for parking for adjoining stadium
R08910-01-07A	1	449 Blossom St.	Exxon Gas Station and Convenience Store
R08914-01-10	2	602 Huger St.	Vacant/Undeveloped

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax nfo	Current Use and/or Occupant
R08914-01-09	3	Pulaski St.	Vacant but used for parking for Palmetto Compress Apartments
R08914-01-08	4	603-05 Pulaski St.	Vacant but used for parking for Palmetto Compress Apartments
R08914-03-04	15	613 Gadsden St.	Pay Surface Parking Lot
R08914-12-02A	24	Blossom St.	Gamma Phi Beta Sorority Housing of University of South Carolina
R08914-13-02	28	620 Blossom St.	Greene Crossing Apartments
R08914-13-01	29	W/S Pulaski St.	Billboard
R08914-16-02	30	506 Huger St.	Park Place Apartments

3.5 Current Uses of the Adjoining Parcels

The Project Area is generally, surrounded by mixed-use operations. Specific uses of neighboring properties are included in Table 3 below.

Table 3. Adjoining Project Areas and Facility Descriptions

GENERAL LOCATION RELATIVE TO OFFSET INTERCHANGE #1 (Huger and Gervais Streets)	GENERAL ADJOINING PROPERTY/FACILITY DESCRIPTION
North	Williams Street, with a vacant lot to the north (former SCANA bus barn/shop)
South	Gervais Street, with McDonalds restaurant and vacant lands beyond
East	Huger Street, with Springhill Suites hotel, offices, and Publix Grocery store beyond
West	Williams Street with South Carolina State Museum, parking areas, and EdVenture Children's Museum beyond
GENERAL LOCATION RELATIVE TO OFFSET INTERCHANGE #2 (Assembly and Whaley Streets)	GENERAL ADJOINING PROPERTY/FACILITY DESCRIPTION
North	CSL Plasma (blood donation center, South Carolina Research Authority (SCRA), McNair Aerospace Center, parking areas
South	Whaley Street, with YOUnion @ Columbia (student housing center) beyond
East	Assembly Street, with a grassed area, railroad tracks, and the Lofts at USC (apartments) beyond
West	Parking areas with Safran's Antiques and Furniture and SCRA beyond.

GENERAL LOCATION RELATIVE TO THE BLOSSOM STREET CORRIDOR	GENERAL ADJOINING PROPERTY/FACILITY DESCRIPTION
North (generally)	Mixed uses, including undeveloped lands, offices, parking areas, multifamily housing/apartments, academic buildings of USC
South (generally)	Mixed used, including S-Mart 102 Gas Station, a USC stadium, industrial operations including textile services (Alsco), industrial and vehicle rental operations, offices, parking areas, railroad tracks, and academic and housing buildings of USC
East (generally)	Parking areas, academic and housing buildings of USC
West (generally)	Undeveloped lands and the Congaree River

4. USER PROVIDED INFORMATION

4.1 Title Records

As per ASTM E1527-13, it is the responsibility of the Users to provide the chain of ownership information. However, due to an agreed upon scope of work, deed information was not provided by the Users and was not reviewed as part of this Limited Phase I ESA.

4.2 Environmental Liens or Activity and Use Limitations

Environmental liens as well as activity and use limitations are often documented in deeds for affected parcels. When necessary, liens resulting from delinquent financial responsibilities and/or land use restrictions are memorialized in deeds for these affected parcels. However, per an agreed upon scope of work, deed information was not provided by the Users and was not reviewed as part of this Limited Phase I ESA.

5. RECORDS REVIEW

5.1 Standard Environmental Record Sources

FME utilized Environmental Data Resources, Inc. (EDR) to complete database searches of federal, state, local, and tribal environmental records for the Project Area. EDR also collected information on parcels within the minimum search distance of 500-feet from the Project Area. Please note that per an agreed upon scope with the Users, the minimum search distances as defined in ASTM 1527-13 were decreased to 500-feet due to the urban and industrial nature of the Project Area.

Additionally, FME requested information from the SCDHEC Freedom of Information (FOI) office pertaining to records related to the Project Area and parcels within the minimum search distances. FME requested the following information.

- Information pertaining to the removal or installation of aboveground storage tanks (ASTs) and USTs.

- Issuance of any environmentally related licenses, permits, and well records.

- Issuance of any licenses, permits, or complaints against to store hazardous substances and/or petroleum products at the Project Area and/or adjoining parcels, and any actions taken.

- Issuance of any licenses, permits, or complaints regarding waste disposal at the Project Area and/or adjoining parcels.

- Brownfield sites on the Project Area and/or adjoining parcels.

FME routinely requests information from the SCDHEC to obtain environmental records. Occasionally, conditions arise where this process proves inadequate to meet the needs of our client (i.e., parcels with no address, quick turnaround on report, etc.). Therefore, EDR is utilized as a primary records resource to provide a timely response to the Users. Requests are submitted to SCDHEC at the beginning of the Limited Phase I ESA review, using sites identified by EDR. If FME receives a response from SCDHEC following the completion of a Limited Phase I ESA report which changes the findings of the report, FME will notify the Users upon receipt of such information. Refer to Appendix E for copies of the noted correspondence.

The three (3) EDR Radius Map Reports, found in Appendix E, identified records within the minimum search distances and databases for each of the Project Areas. The listed records are divided by Project Area categorized in Table 4 below for ease of discussion and evaluation. Many regulatory sites were identified within the established search distance. Each identified site was evaluated based upon history, compliance information, regulatory record details, distance, direction, presumed groundwater gradient, etc. A determination of each identified regulatory site was made by FME on whether an identified site was considered a REC based on an evaluation of available information for the site and the surrounding area. Records identified by EDR for facilities within the minimum search distances databases include the following:

Table 4 - Regulatory Records Identified by EDR (Requiring Further Evaluation)
Three Project Areas
Blossom Street Bridge Improvements
Columbia, South Carolina

Site Name	Street Address	Database(s)	Distance from Project Area (feet)	Direction from Project Area	Higher or Lower Relative Elevation than Project Area	REC (Y/N)	Rationale for REC/HREC Designation
Offset Interchange #1 - Huger and Gervais Streets							
Kline Iron & Steel Co.	1225 Huger St.	SHWS, VCP, Brownfields FINDS, UST, RCRA Non Gen	Project Area	Project Area	Project Area	**Y**	Identified as SHWS and VCP site, although Certificate of Completion not yet issued for VCP; Contamination onsite includes Metals, Base Neutrals; Abandoned 6,000 gallon UST documented; Documented contamination located within Project Area
Former John Deere Warehouse	1210 Huger St.	LUST, UST	85	ESE	Higher	**Y (HREC)**	UST ID 18914; One LUST release (dated 2003) which was issued NFA (No Further Action) status by SCDHEC in 2004; Adjoining and upgradient site to Project Area; Due to close proximity and immediate upgradient direction, this LUST site may impact the Project Area
Gervais Street Texaco	428 Gervais St.	LUST, UST, RCRA, GWCI	130	SSE	Lower	**Y (HREC)**	UST ID 07771; Three releases (dated 1992, 1998, 2011), each issued NFA status by SCDHEC, in 2003, 2001, and 2011, respectively; Some groundwater contamination remains; Adjoining site to Project Area, although may be located side- to up-gradient
Mont's Texaco	428 Gervais St.	EDR Historic Auto	130	SSE	Lower	**Y**	Same street address as listing above (Gervais Street Texaco); EDR Historic auto sites often predate modern UST/petroleum regulations and, therefore, may be environmental concern
Barnett Oil Co.	410 Gervais St.	SHWS, VCS, Brownfields	130	SSE	Lower	**Y**	Identified as SHWS, VCP and Brownfield site; Certificate of Completion has not been issued for VCP; Contamination onsite includes Petroleum, Base Neutrals; Adjoining site and likely located side-gradient to Project Area
Columbia Cigar & Candy Co.	522 Lady St.	UST	190	ENE	Higher	N	No documented release reported; Normal operations of UST site (in absence of release) are not expected to adversely impact the Project Area
Epting Tract	1126 Williams St.	VCP, Brownfields, SHWS	196	S	Lower	N	Located downgradient of Project Area; Due to distance/direction, site not likely to adversely impact the Project Area
Columbia Hydroelectric Project (SC State Museum, Dominion Energy, SCE&G - Columbia Hydro)	301 Gervais St.	SHWS, SPILLS, NPDES, UST, RCRA VSQG, FINDS, LUST, AST	231	SW	Lower	N	Located downgradient of Project Area; UST ID 14797; One release (dated 1990) issued NFA status by SCDHEC in 1990
Publix Supermarket	501 Gervais St.	RCRA VSQG	252	ESE	Higher	N	Normal operations of RCRA VSQG site (in absence of violations) are not expected to adversely impact the Project Area
SCE&G Fleet Maintenance	1409 Huger St.	SHWS, VCP, Brownfields, RCRA Non Gen, FINDS, GWCI, AST, LUST, UST	281	N	Lower	**Y**	Identified as SHWS, VCP, and Brownfield site; Adjoins Project Area and located side-gradient; Soil contamination includes PAH, VOC, BTEX, SVOC, Base Neutrals; Groundwater contamination includes BTEX and PAH; Documented UST release in 1991 and issued NFA by SCDHEC in 1993; Abandoned USTs remain onsite
Middleton Building	300 Gervais St.	UST	291	SSW	Lower	N	Normal operations of UST site (in the absence of violations or release) are not expected to adversely impact the Project Area; Located downgradient of Project Area
Standard Oil of New Jersey	300 Gervais St.	SHWS, VCP, Brownfields	291	SSW	Lower	N	Same street address as listing above (Middleton Building); Listed as SHWS, VCP, and Brownfield, but located downgradient from Project Area
City Club LLC	300 Gervais St.	LUST, UST	291	SSW	Lower	N	Same street address as two listings above (Middleton Building and Standard Oil); Located downgradient of Project Area; UST ID 19224; Two LUST releases (both dated 2006), issued NFA status by SCDHEC in 2006 and 2007
Richland County Sheriff Dept. (Detention Center)	1400 Huger St.	LUST, UST, RCR, Asbestos, GWCI	371	N	Lower	N	UST ID 10028; Three LUST releases (dated 1992, 1998, and 1998) each issued NFA status by SCDHEC in 1992, 2013, and 2008, respectively; due to location/direction, site not expected to adversely impact the Project Area
SC Ag Lab	1101 Williams St.	US Brownfields, ECHO, RCRA VSQG, FINDS	411	S	Lower	N	Located downgradient of Project Area; Due to location and direction, site not expected to adversely impact the Project Area
Bundrick's City Garage (City Garage and Body Shop)	520 Gervais St.	LUST, UST, RCRA, GWCI, RCRA Non Gen	421	ESE	Higher	N	UST ID 18641; Two releases (dated 2000 and 2001) each issued NFA status by SCDHEC in 2007 and 2002, respectively; due to location/direction, not expected to adversely impact the Project Area
Colonial Wood Works	1102 Huger St.	RCRA Non Gen, FINDS, ECHO	462	SE	Lower	N	Normal operations of RCRA Non Gen site (in absence of violations) are not expected to adversely impact the Project Area
Columbia Gaslight Co.	Huger St.	EDR MGP	585	W	Lower	**Y**	Manufactured Gas Plant; same location/street address as SCE&G Fleet Maintenance site listed above and identified as REC
Lumber & Builders Supply	316 & 320 Senate St.	UST	596	S	Lower	N	Normal operations of UST site (in the absence of violations or release) are not expected to adversely impact the Project Area; Located downgradient of Project Area
Offset Interchange #2 - Assembly and Whaley Streets							
Pantry Express 640	205 Assembly St.	LUST, UST, GWCI, FINDS	Project Area	Project Area	Project Area	**Y (HREC)**	UST ID 07435; One LUST Release (dated 1990) which has not been issued NFA status by SCDHEC; remains open and possible contamination remains; Documented contamination located within Project Area
Acme Retail Inc.	201 Assembly St.	EDR Historic Auto	10	SE	Lower	**Y**	EDR Historic auto sites often predate modern UST/petroleum regulations and, therefore, may be environmental concern; Also identified as 5 Star Automotive; Likely located within the Project Area
Metts Ben R	1106 Whaley St.	EDR Historic Auto	119	ESE	Lower	**Y**	EDR Historic auto sites often predate modern UST/petroleum regulations and, therefore, may be environmental concern; Former Gasoline Service Station; Upgradient of Project Area
South Carolina Research Authority (SCRA)	1000 Catawba St.	SHWS, VCP, Brownfields	323	NW	Higher	**Y**	Formerly operated as auto repair and gasoline service station; Metal contamination in soil also identified; Due to close proximity/distance and direction to Project Area, this site may adversely impact the Project Area
Nitek Inc.	1000 Catawba St.	RCRA-VSQG	323	NW	Higher	N	Normal operations of RCRA VSQG site (in absence of violations) are not expected to adversely impact the Project Area
Car Doctor Site	311 Assembly St.	RCRA Non Gen, FINDS	475	NNW	Higher	N	Normal operations of RCRA Non Gen site (in absence of violations) are not expected to adversely impact the Project Area

Table 4 - Regulatory Records Identified by EDR (Requiring Further Evaluation)
Three Project Areas
Blossom Street Bridge Improvements
Columbia, South Carolina

Site Name	Street Address	Database(s)	Distance from Project Area (feet)	Direction from Project Area	Higher or Lower Relative Elevation than Project Area	REC (Y/N)	Rationale for REC/HREC Designation
Blossom Street Corridor							
Blossom Street Exxon, Exxon RAS 41970, Tiger Express	439 and 449 Blossom St.	EDR Historic Auto, RCRA VSQG, FINDS, LUST, UST, RCRA, GWCI	Project Area	Project Area	Project Area	**Y (HREC)**	UST ID 07645; One LUST release (dated 1991) issued NFA status by SCDHEC in 1999; EDR Historic auto sites often predate modern UST/petroleum regulations and, therefore, may be environmental concern; Site located within Project Area and possible groundwater contamination remains
CMC Construction Services	500 Huger St.	RCRA Non Gen	Project Area	Project Area	Project Area	N	Normal operations of RCRA Non Gen site (in absence of violations) are not expected to adversely impact the Project Area
Chic Antique Mall	602 Huger St.	SHWS, VCP, Brownfields	Project Area	Project Area	Project Area	**Y**	SHWS, VCP, and Brownfield site located within the Project Area; Limited information provided; Certificate of Completion for VCP was issued in 2018; Although Certificate of Completion was issued, contaminants may remain on this parcel located within Project Area
Shuman Owens Supply	820 Blossom St.	UST	107	ENE	Higher	N	UST ID 15719; One abandoned UST onsite; No documented UST releases for this site; Normal or past operations of UST (in absence of release) would not be expected to adversely impact the Project Area
Columbia Heavy Duty Inc.	501 Huger St.	LUST, UST, RCRA Non Gen, FINDS	120	SSW	Lower	**Y (HREC)**	UST ID 07425; Three LUST releases (dated 1993, 1991, 1998) each granted NFA status by SCDHEC in 1994, 1994, and 2000, respectively; Site adjoins Project Area and lies between two parcels of the Project Area (i.e., upgradient of a portion of the Project Area); Although NFAs issued, due to proximity, location, and direction of this site, remaining contamination may adversely impact the Project Area
Champion American Service, S-Mart 102, Amoco 899	436 Blossom St.	EDR Historic Auto, LUST, UST, RCR, GWCI, RCRA Non Gen, FINDS	161	WSW	Lower	**Y (HREC)**	UST ID 07637; Two LUST releases (dated 1989 and 2019) each granted NFA status by SCDHEC in 1998 and 2019, respectively; Site adjoins the Project Area and is located between several parcels of the Project Area (i.e., upgradient of a portion of the Project Area); groundwater contamination may remain on this site
Alsco	420 Huger St.	LUST, UST	188	S	Lower	**Y (HREC)**	UST ID 07405; One release (dated 1994) issued NFA status by SCDHEC in 1999; Adjoins the Project Area and is upgradient of a portion of Project Area; Although NFAs issued, due to proximity, location, and direction of this site, remaining contamination may adversely impact the Project Area
City of Columbia, Owens Steel Co. Inc.	801 Blossom St.	RCRA Non Gen, UST	261	ENE	Higher	N	One abandoned UST onsite; Normal operations of UST site and/or RCRA Non Gen site (in the absence of violations or release) are not expected to adversely impact the Project Area
Helen McLendon Property	Devine & Pulaski Sts.	LUST, UST	268	NNW	Higher	N	UST ID 18518; One LUST release (dated 1999) issued NFA status by SCDHEC in 2000; presumed to be side-gradient of Project Area; due to distance and direction of this site from Project Area, it is not expected to adversely impact the Project Area
Palmetto Compress & Warehouse Building	612 & 617 Devine St.	US Brownfields, FINDS, Asbestos	340	NNE	Higher	N	Previous Phase I ESA found cleanup or additional assessment not required, therefore, this site is not expected to adversely impact the Project Area
W O Blackstone & Co. Inc.	425 Huger St.	LUST, UST, Asbestos	380	S	Higher	N	UST ID 14294; One LUST release (dated 1991) issued NFA status by SCDHEC in 1998; Due to distance/direction, this site is not expected to adversely impact the Project Area
Salem Leasing Corp, US Pollution Control	401 Williams St.	LUST, UST, RCRA, RCRA Non Gen, GWCI, UIC, FINDS	387	SSW	Higher	N	UST ID 07421; One LUST release (dated 1990) issued NFA status by SCDHEC in 2007; Identified as active corrective action for GWCI; UIC identified as inactive; Location is predominantly downgradient of Project Area
Dewey Lybrand	700 Huger St.	LUST, UST	401	NW	Higher	N	UST ID 14682; One LUST release (dated 1994) issued NFA status by SCDHEC in 1994; site is side-gradient from Project Area; Due to distance/direction, not expected to adversely impact the Project Area
S&Y Inc.	444 Gadsden St.	RCRA Non Gen, FINDS	418	E	Higher	N	Normal operations of RCRA Non Gen site (in absence of violations) are not expected to adversely impact the Project Area
Central Roofing & Supply Co.	737 Gadsden St.	LUST, UST, RCR, GWCI	516	NNE	Higher	N	UST ID 07411; One LUST release (dated 1994) issued NFA status by SCDHEC in 1998; due to distance/direction, this site is not expected to adversely impact the Project Area
Carolina Bonded Storage Co.	404 Gadsden St.	UST	565	ESE	Higher	N	One abandoned UST onsite; Normal operations of UST site (in the absence of violations or release) are not expected to adversely impact the Project Area
Red Distributing Co.	723 Pulaski St.	UST	611	N	Higher	N	One abandoned UST onsite; Normal operations of UST site (in the absence of violations or release) are not expected to adversely impact the Project Area
Jean Blount Property	403 Lincoln	LUST, UST	616	E	Higher	N	UST ID 15528; One LUST release (dated 1993) issued NFA in 2005 status by SCDHEC; Due to distance/direction, this site is not expected to adversely impact the Project Area
Huger Street Dump	Not Provided	SWF/LF	652	NW	Lower	N	Limited information provided; Side-gradient; In absence of additional information, this site is not likely to adversely impact the Project Area
Virginia Carolina Chemical	NE Corner of Catawba and Gadsden Sts.	SEMS	Unmapped	Unmapped	Unmapped	N	EDR unmapped site, but based on limited address information appears to be within 500 feet of Project Area; Former Superfund site; Identified as removal only (no assessment); Due to distance/direction, this site is not expected to adversely impact the Project Area

KEY:
UST - Underground Storage Tank
AST - Above Ground Storage Tank
LUST - Leaking Underground Storage Tank
GWCI - South Carolina Groundwater Contamination Inventory
RCRA VSQG - Resource Conservation and Recovery Act (RCRA) Very Small Quantity Generator (hazardous waste)
RCRA Non Gen - RCRA non-generator, no longer generates hazardous waste, no longer regulated
Asbestos - Asbestos Notification Listing
SEMS - Superfund Enterprise Management System, tracks hazardous waste sites
US Brownfields - Federal Brownfields site
Brownfields - State Brownfield site
SHWS - State Hazardous Waste site
SWF/LF - Permitted Solid Waste Facility/Landfill
RCR - Registry of Conditional Remedies
FINDS - Facility Index System/Facility Registry Systems (EPA)
VCP - Voluntary Clean up Sites/Program
UIC - Underground Injection Control Permitted site
MGP - Manufactured Gas Plant
SPILLS - Spills and releases of petroleum and hazardous chemicals
NPDES - Waste Water Treatment Facilities Listing

A total of nine (9) regulatory sites were identified as RECs in connection with the Project Area, which include Kline Iron & Steel Co., Mont's Texaco, Barnett Oil Co., SCE&G Fleet Maintenance, Acme Retail Inc., Metts Ben R Site, South Carolina Research Authority, Chic Antique Mall, and Columbia Gaslight Co. A total of seven (7) regulatory sies were identified as HRECs in connection to the Project Area, which include Former John Deere Warehouse, Gervais Street Texaco, Pantry Express 640, Blossom Street Exxon/Tiger Mart, Columbia Heavy Duty Inc., Champion American Service/S Mart, and Alsco.

Several unmapped sites were identified within the EDR Radius Map Reports. An unmapped site is deemed unmappable due to the uncertainty of address information associated with the sites. However, based upon a review of limited address information and/or details within the listing, these unmapped sites are not expected to adversely impact the Project Area. One unmapped site, Virginia Carolina Chemical, was further evaluated and was included in Table 4 above but was not ultimately considered a REC/HREC.

5.2 Historical Use Information for the Project Area

The historical use of the Project Area was evaluated through the information received, available aerial photographs, and mapping. The historic information was obtained from the following sources:

Table 5. Historical Records Reviewed

SOURCE	DOCUMENT/PHOTOGRAPH DATES
Aerial Photographs (EDR)	1938, 1943, 1951, 1955, 1964, 1966, 1970, 1971, 1981, 1983, 1994, 2006, 2009, 2013, 2017 (each may not be available for all Project Areas)
Topographic Maps (EDR)	1904, 1944, 1947, 1948, 1972, 1981, 1982, 1983, 1990, 1994, 1997, 2014
Sanborn Maps	1888, 1893, 1898, 1904, 1910, 1919, 1950,1956, 1965, 1969
City Directories (EDR)	1952, 1964, 1970, 1975, 1980, 1985, 1992, 1995, 2000, 2005, 2010, 2014, 2017

5.2.1 Aerial Photograph Review

Table 6. Aerial Photographs - Summary of Review

YEAR(S) OF PHOTOGRAPHS	GENERAL OFFSET INTERCHANGE #1 (Huger and Gervais Streets)
1943-1955	The 1943 photograph is the earliest for Offset Interchange #1 Project Area. It indicates that several buildings of the former Kline Iron & Steel operations are present within the Project Area. Additional buildings and structures are added to the Kline Iron & Steel site over the years, notably in 1955. The former SCANA (SCE&G) manufactured gas plant can be seen to the north of the Project Area. The former Columbia Mill facility is seen west of the

	Project Area in these earliest photographs, with the Columbia Canal beyond. A staging or laydown area appears to occupy the site to the south, across Gervais Street. Surrounding uses appear to include residential, commercial, and industrial uses, and appear to be highly urbanized even by 1938. Significant railroad uses appear to the east and southeast of the Project Area.
1964-1966	Some of the buildings of Kline Iron & Steel which occupy the Project Area appear to be reconfigured and/or connected. Some grading or possibly "washout" appears east of the Project Area along Gervais Street. No other significant changes to the Project Area or surrounding uses are noted.
1971-1994	No significant changes to the Project Area are noted. However, the SCANA (SCE&G) gas manufacturing which was located on the site to the north has changed to other uses, presumably the previously noted SCANA (SCE&G) bus shop. Most of the ASTs on the site to the north have been removed (except one in 1971 photograph) and buses now appear to be parked on this site adjacent to a long shop building. Some of the railroad uses to the southeast of the Project Area appeared to be scaled back or removed.
2006	In the 2006 photograph, each of the buildings of the former Kline Iron & Steel site on the Offset Interchange #1 Project Area have been removed/demolished. The staging or laydown area to the south (across Gervais) does not appear to be utilized. However, the newly constructed EdVenture museum can be seen to the west of the Project Area, along with associated parking. Additional structures/operations to the southwest of the site appear to also have been demolished in 2006 photograph, along with a cleared area to the northwest of the Project Area (current day location of Sola Station and Canalside Lofts).
2009-2017	No significant changes to the Project Area are noted, however, the former SCANA (SCE&G) bus shop operations to the north of the Project Area have ceased by 2009. Increased residential and multifamily housing appear to have been constructed on the former open lands located to the northwest and southwest of the Project Area.
YEAR(S) OF PHOTOGRAPHS	OFFSET INTERCHANGE #2 (Assembly and Whaley Streets)
1938-1951	The 1938 photograph is the earliest for Offset Interchange #2 Project Area. However, due to the lower quality of the image and the scale, not much detail about the Project Area can be ascertained until 1955. A small structure may be present on the Project Area in 1951, however, the use and structure cannot be firmly ascertained. The Project Area at Offset Interchange #2 is surrounded by some open areas, residential uses, and some commercial buildings. This area appears to be less urbanized than the Project Area at Offset Interchange #1.
1955-1966	The 1955 photograph clearly shows a small structure present within the Project Area; however, it is not consistent with the structure/layout today (i.e., current gas station). The use of the structure on the Project Area cannot be ascertained. Lands to the west and south appear to be residential in nature, with a large warehouse/storage building to the west beyond the

	current Park Street. Lands to the north appear more open/undeveloped with a few small structures. Lands to the east appear to contain vacant land, railroad uses, and the Whaley Mill building beyond. Lands to the south appear to be residential.
1970	The 1970 photograph appears to show two (2) structures on the Project Area. Surrounding uses do not appear to be significantly changed.
1981	The 1981 photograph appears to show that the structures on the Project Area appear to have been removed/demolished. The distinct buildings to the north, northwest, and west of the Project Area now appear to have been "connected" or assembled into one use. Increased development can be seen throughout the vicinity of the Project Area.
1983-2017	The building which currently occupies the Project Area, the Pantry Express gas station and convenience store, first appears in the 1983 aerial photograph. The Pantry Express can be seen in photographs through 2017. Increased development, presumably related to the university and associated housing, can be seen in the surrounding areas in the 2006 through 2017 photographs.
YEAR(S) OF PHOTOGRAPHS	BLOSSOM STREET CORRIDOR
1938 - 1951	The 1938 photograph is the first available photograph of the Blossom Street Corridor Project Area. Much of the assessed lands are vacant, with the exceptions of the site which is currently occupied by Park Place Apartments. The current Park Place Apartments which are included in the Blossom Street Corridor Project Area appears to contain several residences in 1938 through 1951. Railroad uses are seen to the southeast of the Project Area and bisect the Blossom Street Corridor between Gadsden and Pulaski Streets. The Blossom Street Bridge, which crosses the Congaree River, is not visible in these photographs, although it appears that construction had begun on the bridge piers in 1951. Some structures can be seen on the current site of the Greene Crossing Apartments, as well as the Gamma Phi Beta sorority housing. However, the uses of the buildings in 1943 and 1951 cannot be ascertained.
1955 - 1970	Increased development can be viewed within the Blossom Street Corridor Project Area in the 1955 through 1970 aerial photographs. Buildings have now been constructed on the current day Blossom Street Exxon parcel, as well as the parcel located in the northeast quadrant of Blossom and Huger Streets. The smaller buildings on the present-day Park Place Apartments site were removed by 1964 and a larger commercial or industrial building has taken their place. What appears to be a commercial or industrial use also is visible on the present-day Gamma Phi Beta sorority site, but its exact use cannot be determined. Increased development is seen throughout the vicinity of the Blossom Street Corridor.
1981 - 1994	Increased development can be viewed within the Blossom Street Corridor Project Area in the 1981 through 1994 aerial photographs. The site of the current-day Park Place Apartments appears to be used as a trucking or logistics center, as many trailers appear to be staged on this site through

	1994. The parcel to the east (present day Greene Crossing Apartments, however, appears vacant. The land of the Blossom Street Corridor which is adjacent to the Congaree River (i.e., western-most parcel) remains vacant and undeveloped.
2006-2017	The trucking or the logistic center previously noted on the current-day Park Place Apartments site is no longer visible in 2006. Increased development can be seen in the photographs dating from 2006 to 2017, primarily related to university academic and housing uses. The baseball stadium located south of the Project Area first appears in 2009. The Gamma Phi Beta building appears to be under construction in 2006, along with other university housing buildings near the eastern limits of the Project Area. The Park Place Apartment building has been constructed by 2017, along with the Greene Crossing Apartments. The Blossom Street Exxon gas station and convenience store remains visible through 2017.

5.2.2 Sanborn Fire Insurance Maps

The 1898 to 1969 Sanborn Fire Insurance Maps (Sanborn Maps) of the Project Areas were reviewed to assist in determining the historical uses of parcels within the Project Area. Please note that not every map year was available for each of the Project Areas.

Table 7. Sanborn Fire Insurance Maps - Summary of Review

YEAR(S) OF MAPS	GENERAL OFFSET INTERCHANGE #1 (Huger and Gervais Streets)
1898 - 1919	The 1898 through 1919 maps do not depict any structures on the Project Area, although the coverage is somewhat limited. In 1898, Martin's Grist Mill is located to the east, on the opposite side of Huger Street. Several small dwellings are visible to the east and southeast. By 1904, bottle and barrel warehouses are located to the east of the Project Area, along with beer storage. By 1910, the bottle, beer, barrel uses have changed to cotton storage.
1950 - 1956	By 1950, the Kline Iron and Metal works occupies the southern one-half of the Project Area. Kline Iron uses include crane, welding, riveting, steel yard, junk yard, and warehousing. The southwest portion of the Project Area contains the Columbia Children's Clinic, including a swimming pool and cottage. The northern one-half of the Project Area contains the Riverside Baptist Church and a junk yard. A railroad trestle and spur can be seen within the Project Area and serving the Kline Iron site. A drainage ditch can be seen to the west of the Project Area, and a portion of the Columbia Mill can be seen to the northwest of the Project Area. Two (2) large gas tanks can be seen on the former SCE&G (SCANA) gas plant located to the north of the Project Area. Use of the land on the east side of Huger Street now contain a tractor shed/yard, machinery repair and warehouse, bottling works, paper

	wholesale, and residences. Lands to the south include a restaurant, a filling station (former Mont's/Gervais Street Texaco), an unnamed filling station and auto washing, and used auto sales.
1969	The Riverside Baptist Church, formerly located within the northern one-half of the Project Area has been removed, and Kline Iron appears to use the bulk of the Project Area include a large craneway and storage. The Columbia Children's Clinic has also been demolished/removed. Lands to the east of Huger Street contain residences, boat storage, wholesale tobacco/candy, boat repair, and tractor/farm equipment repair and service. One of the two (2) gas stations remain to the south (i.e., Mont's/Gervais Street Texaco), however, the gas station located at Gervais and Williams Street appears to be vacant. A trailer sales facility is also located to the south on the opposite side of Gervais Street.
YEAR(S) OF MAPS	OFFSET INTERCHANGE #2 (Assembly and Whaley Streets)
1919 - 1950	The 1919 map shows three (3) smaller structures on the Project Area, two (2) of which are noted as stores. The use of the third structure is likely a store or dwelling. Surrounding uses appear to be predominantly dwellings. However, a railroad track and the Richland Mills facility can be seen to the northeast of the Project Area. Two (2) additional structures, including an office and small dwelling, are visible within the Project Area by 1950.
1956	The 1956 map indicates that some structures on the Project Area have been removed, and only two (2) structures remain on the Project Area, a store in the southwest corner, and a restaurant in the southeast corner. Surrounding uses have not significantly changed. The mill operation to the northeast has been renamed as the "Pacific Mills, Richland Plant", and many surrounding structures remain as dwellings.
1965	The 1965 map appears to show the Project Area as vacant, i.e., no structures. However, surrounding coverage is limited within this map.
1969	The 1969 map indicates that a new structure, consistent with current-day gas station, is present within the Project Area. It is identified as "retail" and "office". It is not labeled as a gas or filling station within the 1969 map. A store appears to be located on/near the southwest corner of the Property Area. Surrounding uses are generally consistent, however, a battery warehouse is located to the north, a store to the west, and a filling station with oil storage to the southeast. The mill located to the east is now identified as "M. Lowestein & Sons, Pacific Mills Division, Richland Plant".
YEAR(S) OF MAPS	BLOSSOM STREET CORRIDOR
1888 - 1893	The Palmetto Cotton Compress operation is visible to the northeast of the Project Area; however, it has not yet expanded to its currently identifiable location at Blossom and Pulaski Streets.
1904	A large oil house and associated oil tanks can be seen on the west side of Gadsden Street; however, the cross street cannot be ascertained. This location would be south of Devine at another cross street of Gadsden Street.

	Later maps reveal that the oil house/storage is located at the northwest quadrant of Gadsden and Wheat Streets.
1910 - 1919	Some of the 1910 and 1919 maps reveal little information, due to the sporadic coverage of the Project Area. Several dwellings are present on the parking areas just west of the Palmetto Compress Apartments (i.e., on TMS R08914-01-08 and -09). The American Press Cloth Co and the SC Cotton Oil Co. have buildings located along the railroad tracks, on what was formerly identified as Wayne Street, between Pulaski and Gadsden Streets). On what is the current day Greene Crossing Apartments, Carolina Glass Co., a bottle warehousing and shipping operation, is visible within the 1910 map. Several gas tanks also are present on what is currently the Greene Crossing Apartments in 1910. In 1919, dwellings appear on what is now the parking lot in the northwest quadrant of Gadsden and Blossom Street (R08914-03-04). The Union Seed and (Cotton) Oil Mill operation is located on the block that is bounded by Blossom, Gadsden, Wheat and Wayne Streets (railroad tracks). Oil tanks were located on this site, which contains the Gamma Phi Beta Sorority house today, however, it is presumed that the oil tanks contained cotton oil rather than petroleum. A boarding house is located on what today is the Greene Crossing Apartments.
1950	A large lumber and sawmill is located north of Devine Street, west of Pulaski Street. Chemical manufacturing and chemical storage are visible to the north of surface parking areas (west of the Palmetto Compress Apartments, i.e., on TMS R08914-01-08 and -09). Motor Freight Station operations are visible on the present-day vacant lot at the northeast quadrant of Blossom and Huger Streets (TMS R08914-01-10). Dwellings can be seen fronting Blossom and Pulaski Streets. The large Southern Cotton Oil Co and Columbia Mills is visible on the north side of Devine Street between Wayne Street (railroad) and Gadsden Street. Again, oil tanks presumably contain cotton oil, rather than petroleum. Additional buildings related to the Palmetto Compress & Warehouse Co. are visible in the northwest quadrant of Devine and Wayne Streets. The large Palmetto Compress & Warehouse Co building which is presently used for apartments (located at Blossom and Pulaski Streets) is visible in 1950 map. Buildings associated with the Palmetto Compress & Warehouse Co. are also seen on what is presently the Greene Crossing Apartments (TMS R08914-13-02). A small Glencoe Baptist Church is seen on the current “billboard” site located at Pulaski and Blossom Streets (TMS R08914-13-01).
1956	The chemical manufacturing and storage operation located north of the Project Area is no longer visible in 1956. Rather, the Motor Freight Station Operations have expanded into neighboring lands along with a laundry operation and equipment repair. The small Glencoe Baptist Church that was previously visible on the current “billboard” site located at Pulaski and Blossom Streets (TMS R08914-13-01) has been removed.

1969	Trucking and transfer operations appear to occupy the lands along Blossom Street between Huger and Pulaski Streets in the 1969 map. A machinery warehouse is visible on Devine Street, also between Huger and Pulaski Streets. On the current Gamma Phi Beta Sorority house site, an oil house, bulk oil storage, a cement warehouse, waste paper warehouse are visible in 1969. It is unclear if this is petroleum-based oil or cotton oil. A metal fabrication and steel company is located south of this site, i.e., south of the current Gamma Phi Beta Sorority house.

5.2.3 Historical Topographic Maps

The historical topographical maps were created by the USGS. Review of these maps show that the general topography within the Project Area, from 1904 to 2014, has changed very little over time. It is worth noting that some of the coverage from early topographic maps is sporadic at best but improves over time. Further, not every map year was available for each of the Project Areas.

5.2.4 City Directories

The pertinent excerpts of the 1952 to 2017 city directories for Gervais Street, Huger Street, Assembly Street, Whaley Street, and Blossom Street were reviewed to assist in determining the historical uses of parcels within the Project Area. Note that the Table 7 below is not a complete listing. However, Table 7 shows potential operations within the Project Area, obtained from these historical city directories, which may impact the Project Area but were not discussed or evaluated elsewhere in the report, or may have needed additional evaluation. Please note that only adjacent sites which were not discussed in other sections of this report are included here. See Appendix B, Figures 2 to 4 for more information regarding potentially impacted areas of the Project Areas.

Table 8. Historical Listings of Potential Operations which may Impact the Project Areas (Not Discussed Elsewhere in Report)

ADDRESS OF LISTING	NAME OF LISTING	CITY DIRECTORY YEAR(s)	REC/HREC (Y/N)*
OFFSET INTERCHANGE #1 (Huger and Gervais Streets)			
300 Gervais Street	Humble Oil and Refining Co., Rogers Esso Station	1964, 1952	N
400 Gervais Street	Brazzell's Gulf Service	1952	Y
428 Gervais Street	Gervais Street Service Station, Yesterday's Car Wash, Gervais Street Texaco, Mont's Texaco, Midlands' Truck Service Inc., Roof's Oil Service/Gas Station, Freeman's Esso Station	1995, 1992, 1985, 1980, 1975, 1970, 1964 1952	Y
433 Gervais Street	Locklair Esso Station	1964	Y

ADDRESS OF LISTING	NAME OF LISTING	CITY DIRECTORY YEAR(s)	REC/HREC (Y/N)*
508 Gervais Street	Hertz, Hertz Car Rental	2017, 2014, 2010	N
508 Gervais Street	HIA Inc. – Chemical Distributor	1985	N
520 Gervais Street	City Garage Body Shop & Towing Service Inc., Roof's Oil Service (520 ½ and 522 Gervais Street),	2000, 1995, 1992, 1985, 1975	N
522 Gervais Street	Columbia Truck Terminal (gas station)	1964, 1952	N
530 Gervais Street	Brand's Service Station	1952	N
600 Gervais Street	Certified Coal & Oil Co.	1980, 1975, 1970, 1964, 1952	N
601 Gervais Street	Hood's Tire and Break Service, Columbia Tire Center	2005, 2000, 1995, 1992, 1985, 1975	N
713-715 Gervais Street	Vinson's Pure Oil Service, Vinson C R Cities Service Station	1964, 1952	N
784 Gervais Street	Pitt Stop (gas station)	2014	N
815 Gervais Street	Evans Motor Co. Inc. No. 2 Filling Station	1952	N
911 Gervais Street	Wholesale Tire & Battery, Tire Brokers, Wholesale Tire Co.	1995, 1975, 1975	N
916 Gervais Street	Zeagler Auto Repair Service	1975	N
419 Huger Street	Colonial Printing Inc.	2017, 2014, 2010	N
501 Huger Street	Bush Truck Rentals, Columbia Heavy Duty, S&Y Inc. (also evaluated relative to Blossom Street Corridor)	2000	N
519 Huger Street	Capital Thunder, Premier Power Sports Inc., Vortex Cycles LLC (also evaluated relative to Blossom Street Corridor)	2005, 2000	N
715 Huger Street	Truesdale's Pure Oil Service (also evaluated relative to Blossom Street Corridor)	1970	N
716 Huger Street	Printers Incorporated (also evaluated relative to Blossom Street Corridor)	2000, 1995, 1992, 1980	N
902 Huger Street	Talbert Motors	1995, 1992, 1985, 1980, 1975	N
911 Huger Street	Fort Jackson Cleaners and Laundry Inc.	1952	N
917 Huger Street	Ross F H & Co – Laundry and Cleaners	1952	N
918 Huger Street	Muffler Shop of Columbia, Custom Muffler & Brake Center	2017, 2014, 2010, 2000, 1995, 1992, 1985, 1980	N

ADDRESS OF LISTING	NAME OF LISTING	CITY DIRECTORY YEAR(s)	REC/HREC (Y/N)*
1043 Huger Street	Barnett Oil Co.	1995, 1992, 1985, 1980, 1975, 1970, 1964	N
1409 Huger Street	Columbia City Bus Services, SCE&G Transport, SCE&G Gas Co.	1995, 1985, 1980, 1975	Y
1431 Huger Street	SCE&G Gas Plant	1970, 1952	Y
1601 Huger Street	Red Diamond Service Station	1985	N
OFFSET INTERCHANGE #2 (Assembly and Whaley Streets)			
201 Assembly Street	Pantry Express – Gas Station, Handy Pantry	2017, 2014, 2010, 2005, 1992, 1985	Y
425 Assembly Street	Sunshine Laundry & Cleaners	1985, 1980	N
600 Assembly Street	Dollar Rent-A-Car, University Sinclair Service Station	1980, 1970, 1964	N
804 Assembly Street	Long's Texaco Service Station	1964	N
826 Assembly Street	Exxon, Humble Oil & Refining Co.	1980, 1975, 1970	N
830 Assembly Street	Corner Pantry, Gamecock Exxon Service Center (gas station), Avis Rent-A-Car, Shumpert's Esso Service Station	2014, 2010, 2005, 2000, 1980, 1970	N
839 Assembly Street	Hutto's Exxon Service Center	1975	N
1215 Assembly Street	John Paul's Armadillo Oil Co. of Columbia	2000	N
625 Whaley Street	Sunoco – Gas Station	2017	N
631 Whaley Street	Shiv Food Mart	2017, 2014	N
711 Whaley Street	Colonial Printing Inc., McCaw Printers	2000, 1992, 1985	N
927 Whaley Street	Richland County School Transportation, Student Transportation	2010 (listed other years, but no reference to transportation)	N
1001 Whaley Street	Whaley Street Amoco Service Station	1952	N
1106 Whaley Street	Kapacee Exxon Service Center, Metts Ben Exxon Service Center	1980, 1975, 1970	Y
1200 Whaley Street	Kangaroo Express, The Pantry	2014, 2010, 2005, 1985, 1980	N
Blossom Street Corridor			
408 Blossom Street	Budget Truck Rental	2014, 2010, 2005, 2000, 1995, 1992	N
436 Blossom Street	BP, Blossom Street Amoco, Dunn's American Service Center, Champion's American Service Center	2017, 2014, 2010, 2005, 2000, 1995, 1992, 1985, 1970, 1964	Y

ADDRESS OF LISTING	NAME OF LISTING	CITY DIRECTORY YEAR(s)	REC/HREC (Y/N)*
439 Blossom Street	Blossom Street Exxon Service, McCullough Esso Service Center	1985, 1970, 1964	Y
449 Blossom Street	Rainbow Gas Garden, Tiger Express, Blossom Street Exxon Service	2017, 2014, 2010, 2005, 1992, 1985	Y
730 Blossom Street	BP Oil Corp. – Bulk Plant, Shell Oil Co. Inc. – Bulk Plant	1970, 1964, 1952	Y
820 Blossom Street	Columbia Truck Rentals Inc.	1964	N
1001 Blossom Street	Columbia Service Station, Inc. – gas	1964	N
1908 Blossom Street	Master Cleaners & Laundry	2010, 2005, 2000, 1995, 1992	N

** REC/HREC determination listed in right-hand column of Table 8 is determined by the type of operation/occupant listed in City Directory, date of listing in the City Directory, frequency of the City Directory listing, and the distance/direction of the listing to Project Area. This table does not consider other regulatory information or site observations, but those considerations are noted elsewhere in this report.*

The historic sites listed in Table 8 above required some additional evaluation to determine if each represented a REC or HREC in connection to the Project Area s. FME considered distance, direction, presumed groundwater flow direction, operational dates/lengths, in addition to any operational details that were provided within the historical city directories. Details assessed by FME may have included, for example, whether a vehicle repair or rental company likely had associated USTs, or rather, whether just small motor repair was taking place on a given site. The time of operation was also considered heavily, as more recent operations would have been regulated by modern environmental regulations. When available information was considered for each site, FME determined whether each suspect historic site represented a REC/HREC as it relates to the Project Areas. Refer to right-hand column of Table 8 for this information and determination.

6. SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

On July 26 and 27, 2021, FME conducted site reconnaissance of the Project Areas to the extent the Environmental Professional was not obstructed by bodies of water, limits on access, adjacent buildings, or other obstacles. The site reconnaissance included a site walkover of the Project Areas, observations of adjoining parcels, and photographing portions of the Project Area from public rights-of-way. Photographs taken during site reconnaissance are included in Appendix C.

6.2 General Site Setting

The Project Area includes three (3) distinct Project Areas, each located within the City of Columbia, Richland County, South Carolina. The Project Areas, and specifically which tax map parcels were included, were established by the Users. The Project Area includes:

- Offset Interchange #1: Located at the intersection of Huger and Gervais Streets. This intersection assessment limits includes two (2) Richland County tax parcels, TMS R08912-13-08 and R08912-13-02. Offset Interchange #1 includes vacant lands, which were formerly occupied by the Kline Iron & Steel Company.

- Offset Interchange #2: Located at the intersection of Assembly and Whaley Streets. This intersection assessment limits includes one (1) Richland County tax parcel, TMS R11301-02-03. Offset Interchange #2 includes the currently operating Pantry Express gas station and convenience store.

- The Blossom Street Corridor: Located roughly on Blossom Street from the Congaree River to Lincoln Street, and to include intersections at Huger Street, Pulaski Street, railroad, and Gadsden Street. This corridor assessment area includes only those parcels which are slated for new right-of-way acquisition. Based on HDR provided preliminary (30%) plans, this corridor will include ten (10) tax parcels (i.e., Parcels 1, 2, 3, 4, 15, 24, 28, 29, 30, and 36 denoted on 30% Preliminary Plans). Based on the 30% Preliminary Plans, the Blossom Street Corridor includes TMS R08909-01-01, R08910-01-07A, R08914-01-10, R08914-01-09, R08914-01-08, R08914-03-04, R08914-12-02A, R08914-13-02, R08914-13-01, and R08914-16-02. The parcels which make up the Blossom Street Corridor consist of mixed use, including retail, multi-family housing, undeveloped lands, etc.

6.3 Interior and Exterior Observations

6.3.1 Current Uses of the Project Areas

Table 9 below lists the current uses of the thirteen (13) parcels within the Project Areas.

Table 9. Current Uses of the Project Areas

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax Info	Current Use and/or Occupant
Offset Interchange #1 - Huger and Gervais Streets			
R08912-13-02	N/A	405 Gervais St.	Vacant/Undeveloped
R08912-13-08	N/A	Gervais St.	Vacant/Undeveloped
Offset Interchange #2 - Assembly and Whaley Streets			
R11301-02-03	N/A	205 Assembly St.	Pantry Express Gas Station and Convenience Store
Blossom Street Corridor			
R08909-01-01	36	W/S Williams St.	Vacant, but occasionally used for parking for adjoining stadium
R08910-01-07A	1	449 Blossom St.	Exxon Gas Station and Convenience Store
R08914-01-10	2	602 Huger St.	Vacant/Undeveloped

Richland County TMS ID	30% Plans ID Number (HDR)	Street Address, per Richland County Tax Info	Current Use and/or Occupant
R08914-01-09	3	Pulaski St.	Vacant but used for parking for Palmetto Compress Apartments
R08914-01-08	4	603-05 Pulaski St.	Vacant but used for parking for Palmetto Compress Apartments
R08914-03-04	15	613 Gadsden St.	Pay Surface Parking Lot
R08914-12-02A	24	Blossom St.	Gamma Phi Beta Sorority Housing of University of South Carolina
R08914-13-02	28	620 Blossom St.	Greene Crossing Apartments
R08914-13-01	29	W/S Pulaski St.	Billboard
R08914-16-02	30	506 Huger St.	Park Place Apartments

Past Uses of the Project Areas were established by the historical aerial photographs, Sanborn Fire Insurance maps, and City Directories. Please refer to Section 5.2 of this report for pertinent historical information.

6.3.3 Hazardous Substances and Petroleum Products in Connection with Identified Uses

Petroleum substances were used at retail gas stations both within the Project Areas (i.e., Pantry Express gas station at 205 Assembly Street and Exxon gas station at 449 Blossom Street), as well as gas stations adjacent to the Project Areas (i.e., S-Mart gas station located at 436 Blossom Street), among others. Petroleum may have also been used and/or present on the Avis and Budget Rental Agency located at 408 Blossom Street, however, FME staff could not definitively ascertain as private property was not accessed during site reconnaissance.

6.3.4 Storage Tanks

missing "."

Evidence of USTs was observed on the Pantry Express gas station located at 205 Assembly Street and Exxon Gas Station at 449 Blossom Street. However, as noted in other sections of this report, several parcels are known to have been historically associated with automotive gas stations and automotive service sites within the Project Areas.

Additionally, one (1) steel AST of compressed gas was observed outside the western side of the SCRA building, located to the west of Offset Interchange #2. The contents of the AST could not be determined during site reconnaissance, but it is assumed that this small tank is used for education and academic purposes.

6.3.5 Odors

No unusual odors were observed during the site reconnaissance.

6.3.6 Pools of Liquid

No pools of unidentified liquid were observed on the Project Area during the site reconnaissance.

6.3.7 Drums

No drums or large storage containers were observed during the site reconnaissance.

6.3.8 Hazardous Substances and Petroleum Products Containers

No hazardous substances or petroleum containers were observed during the site reconnaissance.

6.3.9 Unidentified Substance Containers

No unidentified substances containers were observed during the site reconnaissance.

6.3.10 PCBs

Electrical equipment and oil-filled transformers manufactured prior to 1979 may contain PCB dielectric oils. The production of PCB fluids was discontinued in the United States in 1977 and new PCB-oil containing equipment was banned on July 1, 1979. However, older equipment containing PCBs can still be found within equipment and in the environment today.

Some pole-mounted and pad mounted-transformers which are currently still in use may still contain PCB oils. During site reconnaissance, FME was careful to observe transformers, and to look for evidence of a spill such as soil staining or stressed vegetation. No staining or stressed vegetation was observed during site reconnaissance. Likewise, hydraulic fluids formerly used in Historic Automotive sites may have contained PCBs. Therefore, the potential exists for encountering former hydraulic lift equipment and residual contamination at these former automotive sites.

Several pole-mounted transformers were located along public roadways, and several newer-construction pad mounted transformers were observed at the SCRA site, west of Offset Interchange #2. While some of the noted transformers were affixed with a blue label indicating “no PCBs,” no soil staining, concrete, or asphalt staining was observed beneath any of the observed transformers.

6.3.11 Interior Observations

Pursuant to an agreement between FME and the Users, private property was not accessed during site reconnaissance.

6.3.12 Heating/Cooling

Pursuant to an agreement between FME and the Users, private property was not accessed during site reconnaissance. However, as viewed from public thoroughfares, evidence of heating, ventilation, and air conditioning (HVAC) systems were observed during site reconnaissance. Normal use of these HVAC systems is not likely to impact the Project Areas.

6.3.13 Stains or Corrosions

No staining or corrosion was observed on the Project Areas, with the exception of de minimus surface staining observed at the operational gas stations within the Project Areas.

6.3.14 Drains and Sumps

No drains or sumps were observed within the Project Areas aside from typical municipal storm drains.

6.4 Exterior Observations

6.4.1 Pits, Ponds, or Lagoons

Pits, ponds, and lagoons were not observed during site reconnaissance. However, typical municipal storm water convenance, including drains and culverts, were observed on several parcels.

6.4.2 Stained Soil or Pavement

No stained soil was observed on the Project Area.

6.4.3 Stressed Vegetation

No stressed vegetation was observed on the Project Area.

6.4.4 Solid Waste

De minimis amounts of household garbage and yard debris were found within various portions of the Project Areas, particularly along public roadways and on vacant parcels. These de minimis amounts of waste are not expected to impact the Project Area.

Typical commercial and household waste was generated at some of the parcels within the Project Areas. However, generated household and commercial wastes appeared to be properly managed and placed into labeled bins and/or dumpsters for proper removal/disposal.

6.4.5 Wastewater

No wastewater was observed during site reconnaissance.

6.4.6 Wells

No potable wells were observed in the Project Areas. Due to the urban nature of the Project Areas, it is likely that parcels within the Project Areas are connected to municipal water supply rather than wells.

It is worth noting that two (2) sites, the Pantry Express 640 located within the Offset Interchange #2, and the Gervais Street Texaco located south of the Offset Interchange #1, both had observable monitoring wells. These wells are likely due to the ongoing assessment of a petroleum release.

6.4.7 Septic Systems

Evidence of septic systems was not observed in the Project Areas. Due to the urban nature of the Project Areas, it is likely that parcels within the Project Areas are connected to municipal sewer system rather than onsite septic systems.

6.4.8 Other Observations

Evidence of underground and above ground utilities was observed during site reconnaissance, primarily along public roadways.

7. DATA GAPS

FME identified the following data gaps that may affect the ability of the Environmental Professional to identify RECs.

- Gaps of greater than 5 years in available aerial photography;
- Lack of 60-year chain of title information; and,
- Lack of city directories prior to 1952.

Data gaps regarding aerial photographs, city directories prior to 1952, and deed information are not considered to be significant due to other sources of information, which included Sanborn Maps and historical topographic maps.

8. FINDINGS

FME has completed this Limited Phase I ESA, and based on our research, the following findings were revealed:

- The three (3) district Project Areas lie within a very urban part of the City of Columbia, South Carolina and appear to have a varied development and use history.

- The following is a brief summary of the Project Areas:
    - Offset Interchange #1: Located at the intersection of Huger and Gervais Streets. This intersection assessment limits includes two (2) Richland County tax parcels, TMS R08912-13-08 and R08912-13-02. Offset Interchange #1 includes vacant lands, which were formerly occupied by the Kline Iron & Steel Company.

    - Offset Interchange #2: Located at the intersection of Assembly and Whaley Streets. This intersection assessment limits includes one (1) Richland County tax parcel, TMS R11301-02-03. Offset Interchange #2 includes the currently operating Pantry Express gas station and convenience store.

    - The Blossom Street Corridor: Located roughly on Blossom Street from the Congaree River to Lincoln Street, and to include intersections at Huger Street, Pulaski Street, railroad, and Gadsden Street. This corridor assessment area includes only those parcels which are slated for new right-of-way acquisition. Based on HDR provided preliminary (30%) plans, this corridor will include ten (10) tax parcels (i.e., Parcels 1, 2, 3, 4, 15, 24, 28, 29, 30, and 36 denoted on 30% Preliminary Plans). Based on the 30% Preliminary Plans, the Blossom Street Corridor includes TMS R08909-01-01, R08910-01-07A, R08914-01-10, R08914-01-09, R08914-01-08, R08914-03-04, R08914-12-02A, R08914-13-02, R08914-13-01, and R08914-16-02. The parcels which make up the Blossom Street Corridor consist of mixed use, including retail, multi-family housing, undeveloped lands, etc.

- Nineteen (19) REC/HREC were identified within and adjacent to the Project Areas, including automotive or petroleum operations, industrial sites (i.e., Kline Iron), utility providers, (i.e., gas plant), UST sites, VCP sites, etc. Due to the type of operations and since many of the sites operated prior to modern environmental regulations, these sites could adversely impact the Project Area. The following nineteen (19) REC/HREC were identified during preparation of this Limited Phase I ESA:

Table 10. Summary of RECs Identified

REC No.	PARCEL ADDRESS	HISTORICAL USE	POTENTIAL IMPACTS RESULTING FROM REC	INFORMATION SOURCE
Offset Interchange #1 - Huger and Gervais Streets				
1	1225 Huger St.	Kline Iron & Steel Co.	Metals, Base Neutrals, and Petroleum	EDR Regulatory Database
2	1210 Huger St.	Former John Deere Warehouse	Petroleum, Solvents	EDR Regulatory Database

REC No.	PARCEL ADDRESS	HISTORICAL USE	POTENTIAL IMPACTS RESULTING FROM REC	INFORMATION SOURCE
3	428 Gervais St.	Gervais Street Texaco, Mont's Texaco, Gervais Street Service Station, Yesterday's Car Wash, Midlands' Truck Service Inc., Roof's Oil Service/Gas Station, Freeman's Esso Station	Petroleum, Solvents	EDR Regulatory Database
4	410 Gervais St.	Barnett Oil Co.	Petroleum	EDR Regulatory Database
5	1409 Huger St.	SCE&G Fleet Maintenance, Columbia City Bus Services, SCE&G Gas Plant	Petroleum, Base Neutrals, VOC	EDR Regulatory Database, Historic City Directories
6	Huger St. / 1431 Huger Street	Columbia Gaslight Co.	Metals and VOC	EDR Regulatory Database, Historic City Directories
7	400 Gervais Street	Brazzell's Gulf Service	Petroleum, Solvents	Historic City Directories
9	433 Gervais Street	Locklair Esso Station	Petroleum, Solvents	Historic City Directories
Offset Interchange #2 - Assembly and Whaley Streets				
10	205 Assembly St.	Pantry Express 640	Petroleum, Solvents	EDR Regulatory Database, Site Reconnaissance
11	201 Assembly St.	Acme Retail Inc.	Petroleum, Solvents	EDR Regulatory Database
12	1106 Whaley St.	Metts Ben R Service Center, Kapacee Exxon Service Center,	Petroleum, Solvents	EDR Regulatory Database, Historic City Directories
13	1000 Catawba St.	South Carolina Research Authority (SCRA)	Petroleum, Solvents, Metals	EDR Regulatory Database
Blossom Street Corridor				
14	439 and 449 Blossom St.	Blossom Street Exxon, Exxon RAS 41970, Tiger Express, McCullough Esso Service Center, Rainbow Gas Garden	Petroleum, Solvents	EDR Regulatory Database, Historic City Directories
15	602 Huger St.	Chic Antique Mall	Unknown	EDR Regulatory Database
16	501 Huger St.	Columbia Heavy Duty Inc.	Petroleum, Solvents	EDR Regulatory Database

REC No.	PARCEL ADDRESS	HISTORICAL USE	POTENTIAL IMPACTS RESULTING FROM REC	INFORMATION SOURCE
17	436 Blossom St.	Champion American Service, S Mart 102, Amoco 899, PB, Blossom Street Amoco, Dunn's American Service Center	Petroleum, Solvents	EDR Regulatory Database, Historic City Directories, Site Reconnaissance
18	420 Huger St.	Alsco	Petroleum	EDR Regulatory Database
19	730 Blossom Street	BP Oil Corp. – Bulk Plant, Shell Oil Co. Inc. – Bulk Plant	Petroleum	Historic City Directories

9. OPINION

Based on our records research, site reconnaissance, environmental records discovered within the minimum search distances, the proximity of possible sites in relation to the Project Areas, review of topographic mapping data, a general understanding of the groundwater flow direction in the area around the Project Area, and a general understanding of the regional geology and soil stratigraphy in the area, it is FME's opinion that, nineteen (19) REC/HREC were identified in connection with the Project Areas.

10. CONCLUSIONS

FME has performed a Limited Phase I ESA in general conformance with the scope and limitations of ASTM E1527-13 of the Project Areas. Any exceptions to, or deletions from, this practice are described in Section 2.4 of this report. This assessment has revealed indications of nineteen (19) REC/HREC in connection with the Project Areas.

The following statement is required by ASTM E1527-13 as a declaration of whether RECs were found.

FME has performed a Limited Phase I ESA in general conformance with the scope and limitations of ASTM E1527-13 of the three (3) Project Areas (i.e., identified within the Site Plans in Appendix B, within the City of Columbia, Richland County, South Carolina. Any exceptions to or deletions from these practices are described in previous sections of this report. This assessment has revealed evidence of nineteen (19) REC/HREC in connection with the Project Areas.

11. RECOMMENDATIONS

Recommendations were developed through the investigative procedures described in the Scope of Services, Significant Assumptions, and Limitations and Exceptions sections of this report. Based upon RECs identified within the Project Area, FME makes the following recommendation.

- FME recommends a Phase II ESA on potentially impacted areas within the Project Areas (i.e., REC #1 – 19, Table 9). See Appendix B, for more information regarding potentially impacted sites on/adjacent to the Project Areas. Based on the results of the Phase II ESA, additional recommendations may be warranted to insure the safe and proper handling of soils, which may include road or building construction, earth moving, grading, or utility installations. It is worth noting that additional regulatory documentation may be requested from SCDHEC FOI office in order to further assess the identified RECs and may reduce the number of sites recommended for Phase II ESA. Additionally, depending upon the specifics of the proposed road and bridge improvement design, some of the noted RECs may not be impacted by future roadway activities and, therefore, may not require additional assessment.

- FME recommends that the Users consider the "shelf life" of Phase I ESA documents in determining risk. ASTM E1527-13 states that a conforming "Phase I" report is valid for a period of 180 days, and may be updated during the 180 days, up to a 1-year timeframe. The report is valid only for the Users in any of the CERCLA defenses and only if it is updated within this 180-day time frame. If an update is issued and more than one-year passes from the report issue date, the Phase I effort would need to be repeated to remain in compliance with ASTM and the "All Appropriate Inquiry" protections.

12. DEVIATIONS

There are no deviations from the standard of practice for this Limited Phase I ESA.

13. REFERENCES

ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM International, West Conshohocken, PA, 2013.

ASTM E1528-06, Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process, ASTM International, West Conshohocken, PA, 2006.

Cretaceous and Tertiary Stratigraphy of the Upper Coastal Plain (S.C.) Nystrom, Willoughby and Price, 1989

Environmental Data Resources, Inc., July 14, 2021 inquiry 6576441.8;
EDR Aerial Photo Decade Package, with included aerial photographs.

Environmental Data Resources, Inc., July 19, 2021, inquiry 6576441.5;
EDR City Directory Image Report, with included city directories.

Environmental Data Resources, Inc., July 15, 2021, 6576441.3;
Certified Sanborn Fire Insurance Map Report.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576441.2s;
EDR Radius Map Report with GeoCheck.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576441.4;
EDR Historical Topo Map Report with QuadMatch, with included; United States Geological Service (USGS), 7.5 Minute Topographic Maps, *Southwest Columbia and Columbia North, SC,* Quadrangles; USGS, 15 Minute Topographic Maps.

Environmental Data Resources, Inc., July 14, 2021 inquiry 6576349.8;
EDR Aerial Photo Decade Package, with included aerial photographs.

Environmental Data Resources, Inc., July 15, 2021, inquiry 6576349.3;
EDR City Directory Image Report, with included city directories.

Environmental Data Resources, Inc., July 15, 2021, 6576349.3;
Certified Sanborn Fire Insurance Map Report.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576349.2s;
EDR Radius Map Report with GeoCheck.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576349.4;
EDR Historical Topo Map Report with QuadMatch, with included; United States Geological Service (USGS), 7.5 Minute Topographic Maps, *Southwest Columbia, Columbia North, Edmund, and Irmo, SC,* Quadrangles; USGS, 15 Minute Topographic Maps.

Environmental Data Resources, Inc., July 14, 2021 inquiry 6576521.8;
EDR Aerial Photo Decade Package, with included aerial photographs.

Environmental Data Resources, Inc., July 19, 2021, inquiry 6576521.5;
EDR City Directory Image Report, with included city directories.

Environmental Data Resources, Inc., July 20, 2021, 6576521.3;
Certified Sanborn Fire Insurance Map Report.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576521.2s;
EDR Radius Map Report with GeoCheck.

Environmental Data Resources, Inc., July 14, 2021, inquiry 6576521.4;
EDR Historical Topo Map Report with QuadMatch, with included; United States Geological Service (USGS), 7.5 Minute Topographic Maps, *Southwest Columbia, Columbia North, Edmund, and Irmo, SC,* Quadrangles; USGS, 15 Minute Topographic Maps.

EPA-560-F-05-242, Comparison of the Final All Appropriate Inquiries Standard and the ASTM E1527-00 Environmental Site Assessment Standard, United States Environmental Protection Agency, October 2005.

FEMA Flood Map Service Center, United States Department of Homeland Security, http://msc.fema.gov/.

Google Earth; Accessed on August 9, 2021.

National Wetlands Inventory Wetlands Mapper, United States Fish and Wildlife Service, http://www.fws.gov/wetlands/Data/Mapper.html

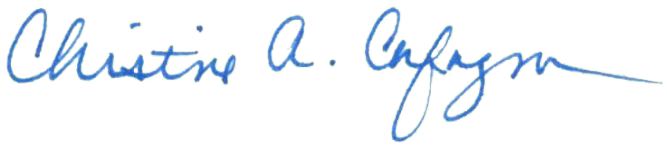
Richland County multiple TMS numbers; http://www.richlandmaps.com/apps/dataviewer/?lat=34.02403&lon=-81.04363&zoom=16&base=roadmap&expanded=53759|52088|18518|38669|39665&layers=33844|24029; Retrieved online from; Accessed on July 30, 2021.

Web Soil Survey, U.S. Department of Agriculture, Natural Resources Conservation Service; Retrieved online from http://websoilsurvey.nrcs.usda.gov/; Accessed on July 28, 2021.

14. SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

I declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental Professional as defined in §312.10 of 40 CFR 312.

I have the specific qualifications based on education, training, and experience to assess a site of the nature, history, and setting of the Project Area. I have developed and performed AAI in general conformance with the standards and practices set forth in 40 CFR Part 312, noting the limitations within the report.



Christine A. Cafagna
Senior Environmental Manager

15. QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL

Christine A. Cafagna

Senior Environmental Manager

Christine Cafagna has over 14 years of experience working on diverse environmental engineering and real estate development projects for a wide variety of clients. Most recently, her focus has been associated with land use, NEPA documentation, brownfields, environmental remediation, and site characterization/investigation. Ms. Cafagna also has experience with indoor and outdoor air quality, air and water permitting, Phase I and Phase II environmental site assessments, environmental impact statements, hazardous materials, water quality, wetlands, hazardous waste, stormwater, pollution prevention workplans, and litigation support.

EXPERIENCE

F&ME: 1 year

Other: 14 years

EDUCATION

J.D., Cum Laude
Campbell University (2008)

M.S. in Environmental Science
Drexel University (1998)

B.S. in Environmental Science
Rutgers University (1995)

REGISTRATION

Florida Bar (#64740)

New Jersey Bar (#023182008)

Pennsylvania Bar (#208821)

TRAINING

40-Hour HAZWOPER Training

CPR Training

Confined Space Entry Training

First Aid Training

F&ME CONSULTANTS

Project Experience

Brownfields Assessment Grants
Allendale County, South Carolina
Ms. Cafagna served as Project Manager for two EPA brownfields assessment grants for hazardous substances and petroleum. She was responsible for assisting Allendale County and the Brownfields Task Force in identifying, selecting, and evaluating the redevelopment potential of viable sites. After sites were evaluated and identified, Phase I and Phase II Environmental Site Assessments were performed and documented. The project resulted in the redevelopment of numerous blighted former industrial sites.

Phosphate Fertilizer Site
Richland County, South Carolina
Ms. Cafagna served as Project Manager for environmental investigations on a site with a long history of environmental concerns. The former phosphate fertilizer manufacturing site was identified as a target for redevelopment in the fast-growing area of Columbia, known as the Congaree Vista. Past operations left the site with soils and groundwater significantly impacted with heavy metals. Ms. Cafagna was responsible for assisting with the project's progress through SCDHEC's Voluntary Cleanup Program.

Dry-Cleaning Site
Chesterfield County, South Carolina
Ms. Cafagna was the Project Manager for a Phase I Environmental Site Assessment on a former dry-cleaning facility. Ms. Cafagna spearheaded the project's progress through SCDHEC's Voluntary Cleanup Program.

Historic Mill Site
Richland County, South Carolina
Ms. Cafagna served as Project Manager for a large-scale PCB-remediation project at a historic mill site. The complex site was formerly used by an electric utility provider for the storage and service of electrical equipment. The objective of the project was to ready the site for resale and adaptive reuse. Remediation is complete and several potential redevelopers/investors have been identified.

APPENDICES

Appendix A – Site Vicinity Map

Appendix B – Site Plans

Appendix C – Site Photographs

Appendix D – Historical Research Documentation

Appendix E – Regulatory Records Documentation

Appendix G

Public Involvement

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COLUMBIA, SC 29201

PUBLIC NOTICE

NOTICE TO CITIZENS OF RICHLAND COUNTY: Pursuant to the South Carolina Eminent Domain Procedure Act, Section 28-2-70(c), Code of Laws of South Carolina, 1976, as amended, notice is hereby given that entry by personnel of the South Carolina Department of Transportation will be made in the area of the roads described below for such purposes as topographic surveys, subsurface exploration, environmental related studies and for the gathering of any other data necessary for the planning, development of location alternatives, design, property acquisition, and construction of a bridge replacement project.

The proposed project is the replacement of the US 21 Blossom Street Bridge over SCL Railroad located in Richland County. Improvements will consist of replacing the bridge and necessary approach work. It is anticipated that additional right-of-way will be required to implement the proposed repairs at the project location.

More specific information about the project may be obtained by contacting Assistant Program Manager Joey McIntyre at (803) 737-1842 in Columbia, South Carolina.
4267849

State of South Carolina

County of Richland

I, Michelle Long, makes oath that the advertisment, was published in The State, a newspaper published in the City of Columbia, State and County aforesaid, in the issue(s) of

1 Insertion(s)

Published On:

June 24, 2019

Michelle Long
Inside Classified Accounts
Representative

Subscribed and sworn to before me on this 5th day of July in the year of 2019

Amy L. Robbins
Notary Public for South Carolina
My Commission Expires:
November 27, 2022

"Errors- the liability of the publisher on account of errors in or omissions from any advertisement will in no way exceed the amount of the charge for the space occupied by the item in error, and then only for the first incorrect insertion."

PROPOSED BLOSSOM STREET BRIDGE REPLACEMENT

Richland County

Virtual Public Information Meeting

Comment Period:

To obtain comments from the public regarding the proposed bridge replacement, South Carolina Department of Transportation (SCDOT) is hosting a virtual public information meeting starting Monday November 16, 2020 through Wednesday December 16, 2020 at www.blossombridgeproject.com. The virtual public information meeting website will include project informational materials and displays of the recommended preferred alternative for viewing. Citizens will have the opportunity to review and submit comments.

Purpose:

The purpose of this virtual public information meeting is to provide an opportunity for the public to review the recommended preferred alternative and provide questions and input to representatives from SCDOT on the proposed Blossom Street bridge replacement in Columbia, SC. The bridge is located between Huger Street and Gadsden Street over the Norfolk Southern and CSX Transportation Railroads. The purpose of this project is to replace the aging bridge to meet current design standards. The recommended preferred alternative would replace the current bridge with a new three span bridge. Another purpose of this virtual public information meeting is to gather information from the public or any interested organization on historic or cultural resources in the area. Personnel from SCDOT will respond to comments received during the public comment period. If you have any questions regarding the project or any of the informational materials provided, please contact the SCDOT Project Manager using the information provided below.

Contact:

If you have limited access to the internet, please call (803)509-6660 to request a physical copy of the virtual public information meeting. Comments may be submitted to the project manager, Joey McIntyre, through December 16th by way of the project website at www.blossombridgeproject.com, project email at info@blossombridgeproject.com, the project number at (803)509-6660, or standard mail to Blossom Bridge Project, Attn: Joey McIntyre, Post Office Box 191, Columbia, SC 29202-0191. Persons with disabilities who may require special accommodations should contact Ms. Betty Gray at 803-737-1395.

SCDOT South Carolina Department of Transportation

Meeting Summary

Project:	SCDOT Blossom Bridge Project
Subject:	Virtual Public Information Meeting
Date:	November 16, 2020 – December 16, 2020
Location:	Virtual on-demand meeting accessed via the project website

Meeting Overview

The South Carolina Department of Transportation (SCDOT) is proposing to replace the Blossom Street Bridge in downtown Columbia between Huger Street and Gadsden Street over the Norfolk Southern and CSX Transportation Railroads. The existing bridge is considered structurally deficient due to deteriorating integrity of the bridge structure. The purpose of the proposed project is to replace the structurally deficient Blossom Street Bridge over CSX Transportation and Norfolk Southern Railroads to meet current standards. This meeting served as the public meeting and comment period for the Blossom Bridge Project.

The meeting was held virtually in an online, on-demand platform accessed via the project website. The Virtual Public Information Meeting was accessible online, 24-7 during the comment period.

The Virtual Public Information Meeting was open to the public for formal comments from November 16, 2020 to December 16, 2020.

The meeting was comprised of eight videos that explained the online meeting platform and comment process, project overview, project history, the recommended preferred alternative, the project design renderings and animation, traffic management, right of way, and next steps for the project.

The online meeting website provided a comment form that allowed individuals to submit their comments directly within the Virtual Public Information Meeting. The website also noted other ways in which comments could be submitted, including the comment form on the general project website, project phone number, project email and the physical mailing address.

Additionally, in project outreach and on the welcome slide of the online meeting, noted that individuals were able to request a physical copy of the meeting in English or Spanish if they preferred to view the content in that way. Additionally, text in the online meeting had the ability to change languages via a Google translate feature that was provided to users.

The online meeting is available for reference via the project website's resource page at the link below. The comment form has been removed from the meeting and it is noted on each slide that the comment period has closed. http://www.blossombridgeproject.com/meeting/

Meeting Outreach

Prior to and during the online meeting time period, the project team executed several outreach strategies to maximize public participation in the online meeting during the official comment period. The outreach activities completed for the Virtual Public Information Meeting are listed in the table below.

Outreach Type	Number of Recipients	Type of Recipients	Date Sent	Total Direct Cost
Postcard	14,623 recipients	• General Public • Mailed via Every Door Direct Mail Service • Sent to all postal routes within project area, including downtown Columbia, Cayce, West Columbia, University of South Carolina, and Olympia/Mill district	Mailed week of November 16, 2020	$4,837.25
Facebook Advertisements	5,179 people were reached via the Facebook ads	• General public • The Facebook ads were directed at people living in the downtown Columbia, Cayce and West Columbia who live and/or work near the project area. **Additional statistics available in the following table.*	November 16, 2020 – November 26, 2020 December 4, 2020 – December 15, 2020	$104.98
Stakeholder and Elected Official Letters/Emails	62 Emails Sent 4 Letters Sent	• Stakeholders and Elected Officials • These individuals had previously been engaged with the project for the Stakeholder Committee and represent businesses, schools, agencies, organizations, and local and state elected officials in the project area. • Emails were sent via the project email to all stakeholders and elected officials that email addresses were known for. • Standard mail letters were sent to all remaining	November 16, 2020	N/A Letters were printed and sent from the HDR office by HDR staff.

		stakeholders and elected officials where emails were not known.		
Mailing List Email	25 emails sent	• Individuals who signed up for the project mailing list • These individuals signed up for the project mailing list via the project website to receive updates on the project as it progresses.	November 16, 2020	N/A
Adjacent Property Owner Letter	15 letters sent	• Adjacent property owners and properties potentially impacted by right of way • These individuals/businesses are adjacent to the project area and may have right of way impacts. This letter contained a specific note regarding next steps on the project and right of way.	November 16, 2020	N/A Letters were printed and sent form the HDR office by HDR staff.
Press Release	N/A	• Local Media & General public via published or aired stories • Distributed via SCDOT media office • HDR provided content and worked with Ted Creech to coordinate distribution from the SCDOT press office alongside Virtual Public Information Meeting launch.	November 16, 2020	N/A
Legal Ad	N/A	• General Public • Placed in The State newspaper via SCDOT public involvement office • HDR provided content and worked with Nicole Riddle to coordinate placement in the papers alongside Virtual Public Information meeting launch.	November 16, 2020	N/A
SCDOT Press Social Media Posts	N/A	• General and Traveling Public • 2 posts via SCDOT Press social media accounts • Posts coincided with project launch and a one-week reminder for the end of the comment period.	November 16, 2020 & December 9, 2020	N/A

	• HDR provided content and worked with Ted Creech to coordinate posts on the SCDOT press accounts regarding the Virtual Public Information Meeting.

Additional statistics regarding the Facebook advertisements are shown in the table below.

Facebook Advertisement Results	
Number of Facebook Ads	2
Total Spend	$104.98
Dates	November 16, 2020 – November 26, 2020 December 4, 2020 – December 15, 2020
# of People Reached	5,179
Total # of Link Clicks to the Virtual Public Information Meeting	358
Cost per Link Click	$0.30

Meeting Participation

Statistics regarding public participation in the Virtual Public Information Meeting are shown in the table below.

Virtual Public Information Meeting Results	
Total Meeting Visitors	875
Total Meeting Comments	22 comments submitted 19 via comment form 1 via letter 2 via project phone number
Total Requests for Physical Meeting Copy	1 physical meeting copy requested Printed and mailed via HDR staff

Public Participation Insight: While we only received 22 comments on the project, 875 people visited the Virtual Public Information Meeting website. This shows that a high number of individuals visited the online meeting to learn more about the recommended preferred alternative and proposed traffic management strategy. With only about 3% of individuals submitting a comment, we feel that most individuals felt the project information presented was clear and they found the recommended preferred alternative acceptable.

Common Comment Themes: Of the 22 comments that were submitted, all fell within four key themes.

- Bike and pedestrian accommodations

- Bridge aesthetics
- Specific Right of Way concerns
- General recommended preferred alternative support

Bike and pedestrian accommodations were the most prevalent theme in the comments, making up 9 of the total comments submitted.

We did not receive any comments showing concern regarding the full traffic closure scenario or general project design, outside of bike/ped accommodations and aesthetics.

A full table of all comments and responses is in the following section of this meeting summary.

Comments Submitted

This section includes details for all 22 comment submissions, including the project team's response sent via the project email.

Name	Comment	Comment Source/Date	Email/Phone	Recommended Response
Daniel Steedley	Yes, my name is Daniel Steedley. S-T-E-E-D-L-E-Y. I am calling because I would like a physical copy. My telephone number is 803-252-2817 and my mailing address is PO Box 3741, Columbia, SC 29230.	Project Hotline 11/16/2020	803-252-2817	Raven Gambrell, HDR called to inform Mr. Steedley that the physical copy had been mailed.
Jackson Hurst	I approve and support the recommended preferred alternative for the Blossom St Bridge Project because it will replace the existing bridge with one that is up to current design standards.	Public meeting comment 11/16/2020	ghostlightmater@yahoo.com	Hello Mr. Hurst, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

Jacob Oblander	The importance of pedestrian and cyclist safety needs to be remembered. This bridge has one of the safest crossings between the two cities. The economic impact for both could be huge with the creation of a crossing point that would make all users comfortable.	Public meeting comment 11/16/2020	oblanderjl@gmail.com	Hello Mr. Oblander, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The recommended preferred alternative would add sidewalks for pedestrians on the bridge and a multi-use path underneath and adjacent to the bridge to connect bicyclist to the Innovista Trail to travel safely though the downtown network. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

ARTHUR HILL	I think the design is ok. Seems to me SCDOT is not in the wow business when it comes to new construction. Most projects have very minimal streetscaping or exciting amenities that you see in projects throughout the country. I do feel we need to start adding these features soon as we'll continue to look behind the times and not modern.	Public meeting comment 11/16/2020	sc03jigga@aol.com	Hello Mr. Hill, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

Luke Gleissner	I know that the architects have finished their work and there is little to no chance of changing things this late in the game, but... It would be nice to add a bit more flair. I am sure the developers and businesses in the area would prefer something more attractive https://untouristsingapore.files.wordpress.com/2013/08/alexandra-arch-look-architects.jpg Most bridges in the area have arches underneath, something not possible on this bridge. So, why not make the bridge stand out and add the arches above. I agree that shutting the road completely down makes the most sense.	Public meeting comment 11/17/2020	luke@gleissnerlaw.com	Hello Mr. Gleissner, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

Mark Robertson	Thank you for the opportunity to comment. This recommendation applies to all the alternatives that SC-DOT is considering. All alternatives must include dedicated walkways for pedestrians AND dedicated, protected lanes for bicyclists. This bridge is a major connector between UofSC campus, several neighborhoods with a mix student and long-term housing, and to the Blossom Street bridge to Cayce and access to the very popular River Walk. Dedicated pedestrian and bicycle lanes on the bridge will enhance transportation opportunities for all residents of Columbia and surrounding areas. Currently, bicycle and pedestrian access to areas west of the bridge, such as the River Walk, from eastern areas, such as the UofSC campus and neighborhoods like University Hill, is very limited and hazardous due to interactions with motorized vehicles. There is currently no safe way to get across the railroad tracks and Huger Street. This new bridge creates an excellent opportunity to enhance multi-modal transportation in this dense urban area. Thank you for your consideration, and I again urge you to include safe, dedicated pedestrian and bicycle access in the design of all alternatives.	Public meeting comment 11/17/2020	robertson6725@gmail.com	Hello Mr. Robertson, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The recommended preferred alternative would add sidewalks for pedestrians on the bridge and a multi-use path underneath and adjacent to the bridge to connect bicyclist to the Innovista Trail to travel safely though the downtown network. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

Mark Robertson	Additional comments after viewing the video describing the preferred alternative: It looks like the bicycle and pedestrian path at ground level, parallel to the bridge, does not include a crossing of the railroad tracks. This is a major oversight. The plan should include a pedestrian and bicyclist crossing over the railroad tracks. Assuming that it is on ground-level with the tracks, it should include automated gates and warning lights to prevent pedestrians and bicyclists from crossing the tracks when a train is approaching. Without this crossing, the preferred alternative will not enhance multi-modal transporation alternatives in this dense urban neighborhood.	Public meeting comment 11/17/2020	robertson6725@gmail.com	*Comment response is above – same commenter with two submissions.*
Elisabeth Donato	Please just make it pretty. Ideally as similar to the gervais street bridge as possible.	Public meeting comment 11/17/2020	elisabethdonato@icloud.com	Hello Ms. Donato, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely,

				Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Charles Z Crumpler	Looks awesome!!! Go for it! Especially like the full closure for 6 months versus the lengthy partial closure. Great job!	Public meeting comment 11/17/2020	czaned@gmail.com	Hello Mr. Crumplet, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Kelly Jones	I love the old bridges but they don't feel safe with more than one car on them at a time. Yes, please close the entire bridge during construction for safety and a shorter project duration.	Public meeting comment 11/17/2020	kj29229@gmail.com	Hello Ms. Jones, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to

				Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
RJ Breen	I like this idea, but the kids in the apartments and Greek Village are going to whine, and any of their parents that have political pull are going to insert themselves into any controversy. One other thought -- with the bridge being wider, what is the risk that kids in Greene Crossing can throw beer bottles and other objects onto the roadway?	Public meeting comment 11/20/2020	sacbuoy@hotmail.com	Hello Mr. Breen, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Brenda Kramar	This looks great!! The enhanced bike and pedestrian access will greatly improve that area. One concern - trespassing from students across the railroad tracks is a common problem. If not already planned, I would like to see a fence between the trail and the tracks on both sides stretching from Greene Street to just past	Public meeting comment 11/20/2020	bkramar@mindspring.com	Hello Ms. Kramar, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project.

	the Greek Village. For example, it needs to be easier for someone in the Greek Village to get to the apartments across the tracks by hopping on the new sidewalk than hopping across the railroad tracks.			The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Sean Potter	I am hoping to meet with you all as one of the owners of BDS Park LLC that owns the piece of property at 721 Blossom Street. This project, and the "NE Ally closure" land locks our property without a road access and restricts its future development ability/opportunity. We are very concerned and request a meeting to talk about this further.	Public Meeting Comment 11/24/20	sean@southernvalet.com	Raven Gambrell, HDR reached out directly to discuss. Minutes are attached.
Claire Windsor	I am in favor of the recommended changes especially as a bike commuter and cyclist who often uses the bridge and road underneath it. I would like better bike/pedestrian features. Would the bike lane be able to be extended as well? For cyclists, this is a dangerous intersection, so if there could be any additional safety measures for bikes and pedestrians, that would be great.	Public Meeting Comment 11/28/20	claire.windsor2@gmail.com	Hello Ms. Windsor, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed.

				The recommended preferred alternative would add sidewalks for pedestrians on the bridge and a multi-use path for pedestrians and cyclists underneath and adjacent to the bridge west of the railroad tracks. The proposed multi-use path would connect to the existing sidewalks and bike lanes on Blossom Street west of Huger Street. To the east of Huger St, the proposed multi-use path would connect to Pulaski Street and the Innovista Trail which will connect to the Greene Street corridor currently under construction. The new Greene Street bridge will provide grade separated access over the railroads for pedestrians and cyclists. The project team appreciates comments regarding bike and pedestrian crossing concerns at Huger Street and we will take this into consideration as we further develop the plans for the crossing. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation

Zach Pippin	I would like to see even more attention to bike/ped safety. Perhaps one solution would be combine the sidewalks on one side of the bridge into a shared use path, add a barrier, and include an underpass on the east side of the train tracks as well. The north side of Blossom is prime for a wide shared use path from Five Points to Cayce, especially if the river crossing safety is improved too.	Public Meeting Comment 12/01/20	zpippin@gmail.com	Hello Mr. Pippin, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The project team appreciates your comments and suggestions. The recommended preferred alternative would add sidewalks for pedestrians on the bridge and a multi-use path for pedestrians and cyclists underneath and adjacent to the bridge west of the railroad tracks. Cyclist accommodations on the bridge are not proposed because the accommodations would reduce the options for multi-modal facilities adjacent to the bridge and the height and grade of the proposed bridge are not ideal for cyclists. Additionally, there are currently no bike lanes on Blossom Street east of Gadsden Street to tie into bike accommodations on the bridge. The proposed multi-use path would connect to the existing sidewalks and bike lanes on Blossom Street west of Huger Street. To the east of Huger St, the proposed multi-use path

				would connect to Pulaski Street and the Innovista Trail which will connect to the Greene Street corridor currently under construction. The new Greene Street bridge will provide grade separated access over the railroads for pedestrians and cyclists. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Jeff Sizemore	Excellent website and presentation. Looking forward to a very successful project.	Public Meeting Comment 12/01/20	sizemorejc@scdot.org	Hello Mr. Sizemore, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely,

				Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Bryant Walker Smith	Sidewalks and modern, separated bicycle lanes on both sides of the bridge are absolutely essential for this urban roadway. There is currently a critical missing link between the facilities on campus and the facilities along the river and in Cayce. Anything less than a full and equal commitment to vulnerable road users would exclude and endanger them.	Website Comment 12/06/20	Bryantwalkersmith@gmail.com	Hello Mr. Smith, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The project team appreciates your comments and suggestions. The recommended preferred alternative would add sidewalks for pedestrians on the bridge and a multi-use path for pedestrians and cyclists underneath and adjacent to the bridge west of the railroad tracks. Cyclist accommodations on the bridge are not proposed because the accommodations would reduce the options for multi-modal facilities adjacent to the bridge and the height and grade of the proposed bridge are not ideal for cyclists. Additionally, there are currently no bike lanes on Blossom Street east of Gadsden Street to tie into bike accommodations on the bridge.

				The proposed multi-use path would connect to the existing sidewalks and bike lanes on Blossom Street west of Huger Street. To the east of Huger St, the proposed multi-use path would connect to Pulaski Street and the Innovista Trail which will connect to the Greene Street corridor currently under construction. The new Greene Street bridge will provide grade separated access over the railroads for pedestrians and cyclists. The comment period closes on December 16. At that time, the project team will evaluate all comments collected and draft the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Richard Best	Pedestrian and bikeways must be included along with foresight into future lanes needed for vehicles in the next 20 years. Proper width of lanes to alleviate possible travel problems is a definite. Gervais Street Bridge is a good example of lack of width of lanes. Remember, a new bridge only comes along every 60-70 years, so design and build it right. An added plus is to have a pedestrian sitting/viewing overhang over the middle of the river viewing the Gervais Street	Web Comment 12/08/20	daddyobest@aol.com	Hello Mr. Best, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. The bridge proposed for replacement is the Blossom Street Bridge over the railroad between Huger Street and Gadsden Street.

	Bridge and Columbia. People will be more concentrated in future years and use this bridge more than envisioned. The Cayce/West Columbia Riverwalk should have easy access and access should also be provided for the existing and future Columbia Riverwalk and planned River Park.			SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The project team appreciates your comments and suggestions. The comment period closed on December 16. The project team is now evaluating all comments collected and drafting the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Jesse Burke	Install a physical barrier (guard rail) between the pedestrians (sidewalk) and the vehicular travel lanes. Barrier separation is not proposed due to width constraints. The proposed sidewalks are wider than typical sidewalks allowing for additional offset between pedestrians and traffic. Implementing barrier separation would be a challenge due to width constraints of the project site.	Public Meeting Comment 12/10/20	jesse@BurkeEngr.com	Hello Mr. Burke, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. Based on design guidelines and project site width constraints, barrier separation is not proposed for this project. To accommodate higher volumes of pedestrians, wider than

				typical sidewalks are proposed which would allow for additional offset from traffic. The project team appreciates your comments and suggestions. The comment period closed on December 16. The project team is now evaluating all comments collected and drafting the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG South Carolina Department of Transportation
Daniel K Rothschild	Dear Mr. McIntyre: My name is Daniel Rothschild and I am a representative of 612 Devine Street Associates LLC(Palmetto Compress), and 604 Huger LLC (future new construction). These properties are located between Huger Street and the Norfolk Southern & CSX Transportation Railroad tracks. After viewing the Blossom Bridge Project Virtual Public Information Meeting presentation, we wanted to formally request an individual meeting with your team. We have several questions and concerns regarding the potential impact/disruption to our apartment community and the "Potential New ROW" as depicted within the presentation.	Public Meeting Comment 12/16/20	danielr@pmcpropertygroup.com	Raven Gambrell, HDR reached out directly to discuss. Minutes are attached.

	Below I have outlined some of our concerns and discussion topics that we would like to address. The project corridor is directly adjacent to the Palmetto Compress and Warehouse Company Building, a structure which is listed on the National Register of Historic Places and has recently seen substantial rehabilitation. 1. General safety concerns of residents and employees and potential damage to Palmetto Compress during construction. What potential impact is there to the historic structure from vibration, and excavation. What noise buffering is being planned? Is there an impact study being done? 2. Traffic and Pedestrian safety / management during construction. 3. Cleanliness of construction, debris removal, temporary lighting 4. Hours of Construction and clarification of days of the week. 5. Overhead protection to Palmetto Compress swimming Pool, dumpster enclosure, Palmetto Compress/Dominion Power electrical vault area, and building egress on the SE corner of the building. 6. Proximity of new bridge to apartment windows and building façade. 7. Pulaski Street turn around and curb cut to 604 Huger LLC parcel.			

	8. Who is maintaining the longer bridge wall facades facing our property? Will they be cleaned and/or power washed annually? Restrictions to signage or letter messaging on this wall. 9. Impact of "Potential ROW" for 604 Huger LLC future development and the maintenance of those improvements. We look forward to future discussions. I can be reached directly at (786)586-0907. Very truly yours, PMC Property Group, Inc. By:_____ Daniel K Rothschild, Eecutive Vice President PMC Property Group			
Daniel K Rothschild	*Voicemail message transcribed below.* Hi – Good morning. My name is Daniel Rothschild and I am part of the ownership group of the Palmetto Compress and the lot at the corner of Huger and Blossom. I just went through your presentation and have some questions. I would request a one-on-one meeting with your team. I also would let you know that Scott Garvin who is our architect in Columbia – it is okay with him to meet on our behalf as	Voicemail 12/16/20	danielr@pmcproperty group.com	*Same person as above.* Comment will be addressed via meeting with SCDOT team. Raven is coordinating.

	well. Any questions can be answered with him or I. Again, Dan Rothschild, Palmetto Compress owner as well as the lot on the corner of Huger and Blossom. Which appears will be affected based on the presentation I just went through. My personal telephone number is 786-586-0907. Today is December 16th around 10:30 in the morning.			
City of Columbia Lucinda Statler, Amy Moore, Leigh DeForth, Shane Shaughnessy	*Letter* *Attached as PDF separately*	Signed letter sent to Joey directly 12/16/20		Hello, Thank you for taking the time to learn more about SCDOT's Blossom Bridge Project recommended preferred alternative and submit your comment. We appreciate your feedback on the project. SCDOT understands the importance of safe pedestrian access in the area and continues to take bicycle and pedestrian accommodations into consideration as plans are developed. The project team appreciates your comments and suggestions. The comment period closed on December 16. The project team is now evaluating all comments collected and drafting the environmental document to be submitted to Federal Highway Administration (FWHA) for approval. Sincerely, Joey McIntyre, PE Program Manager – Midlands RPG

				South Carolina Department of Transportation
UofSC Derek Gruner	*Letter* *Attached as PDF separately*	Signed letter sent to Joey directly 12/16/20		Raven Gambrell spoke directly with UofSC about their comment submission.

Palmetto Compress & Adjacent Property - Meeting Minutes

Project:	SCDOT Blossom Bridge Project
Subject:	Virtual Public Information Meeting - Follow-Up with Daniel Rothschild, Palmetto Compress (612 Devine Street Associates LLC) & Adjacent Undeveloped Land (604 Huger LLC) Representative
Date:	Wednesday, January 13, 2021
Location:	Webex
Attendees:	Daniel Rothschild, PMC Property Group, Joshua Harding, PMC Property Group (Local) Scott Garvin, Garvin Design Group Amy Moore, City of Columbia Joey McIntyre, SCDOT Hugh Hadscock, SCDOT Raven Gambrell, HDR Lee Tupper, HDR Sarah Newcomb, HDR

Purpose – The call was held per Mr. Daniel Rothschild's request noted in his comments during the Virtual Public Information Meeting.

Property Contacts and Property Use

Ms. Gambrell introduced the project team members on the call. Then Mr. Rothschild introduced the property contacts and the plans for the undeveloped property.

- PMC Property Group represents the Palmetto Compress property (612 Devine Street Associates LLC) and the adjacent undeveloped land (604 Huger LLC) along Blossom between Huger Street and Pulaski Street. Mr. Rothschild is located in Florida and Mr. Harding is local in Columbia. Mr. Garvin can also serve as a contact for the properties.
- The plans for the vacant lots include a four-story apartment with a multi-level parking garage. Plans have been developed for the apartment and garage. No permit has been obtained to date. The start date is undetermined, potentially this time next year.

Project Overview - Ms. Gambrell walked the group through project visuals.

Discussion – PMC Property Group Questions and Comments are summarized below.

Potential New Right-of-Way

- What is the width of the proposed strip take along Blossom Street? Mr. Tupper indicated that based on preliminary design it is approximately 15 to 10 feet along Blossom Street and 20 feet along Pulaski Street.
- Why is the billboard along Blossom St. not shown on the drawings? Ms. Gambrell said that it is in the proposed new Right-of-Way and that relocating the billboard will be coordinated through the R/W process. Mr. Hadsock mentioned that SCDOT would try to work with the property to relocate the billboard if possible, with a last option of SCDOT buying the billboard.

Pulaski Street Turn-Around – Mr. Tupper presented a Microstation drawing of a potential configuration of the turn-around. The group discussed that the turn-around could be reconfigured/shifted. One

potential option could be to shift the turn-around north. It was noted that the turn-around will affect parking along Pulaski.

Property Parking – The apartments met the City of Columbia's parking requirements by including Pulaski on-street parking and parking under the current Blossom Street bridge. The reduced parking will need to be coordinated with City of Columbia.

Palmetto Compress Historic Structure – Ms. Moore noted concerns about the structure during and after construction.

- The design team is evaluating construction methods that minimize vibrations and noise during construction. For example, driven piles are not recommended due to the vibration and noise during driving. Additionally, a vibration monitoring plan would be proposed with pre- and post-construction surveys of the Palmetto Compress structure and monitoring sites during construction.
- The proposed bridge would result in less joints reducing the noise from tires hitting the bridge joints. Since the bridge is shorter, the joints would be further from the Palmetto Compress building.
- The project is being coordinated with the State Historic Preservation Office (SHPO).

Roadway Noise

- Would the roadway noise would be the same or less? Mr. Tupper said that the vehicular noise is anticipated to be about the same since the proposed bridge will have the same number of lanes in approximately the same location as they are today. The bridge edge will be closer to the building due to the small additional median width, sidewalks and railing.
- Could the wall/railing along the roadway could be designed to minimize noise as much as possible?
- It was mentioned that trains travel by all hours of the night and blow their horns.

Emergency Access – Emergency access may be a concern without the south entrance to Palmetto Compress. Ms. Gambrell noted that the design team has discussed the loop road closure and Palmetto Compress access closure with Major Randy Martin with emergency services with the City of Columbia. PMC representatives may investigate this as well.

Pedestrian Access across Blossom at Pulaski – Could pedestrian access be provided across/under Blossom at Pulaski? Mr. Tupper explained that due to the grade of Blossom and desire to tie down the roadway before Huger Street, there would not be enough height between the Blossom grade and Pulaski grade for a pedestrian crossing under the roadway.

Path-Forward

- Mr. Rothchild will be added to the list for future stakeholder meetings.
- Mr. Garvin will provide new development plans.
- PMC Representatives to discuss the project and get back in touch with the project team with additional comments/concerns.

721 Blossom & 613 Gadsden – Meeting Minutes

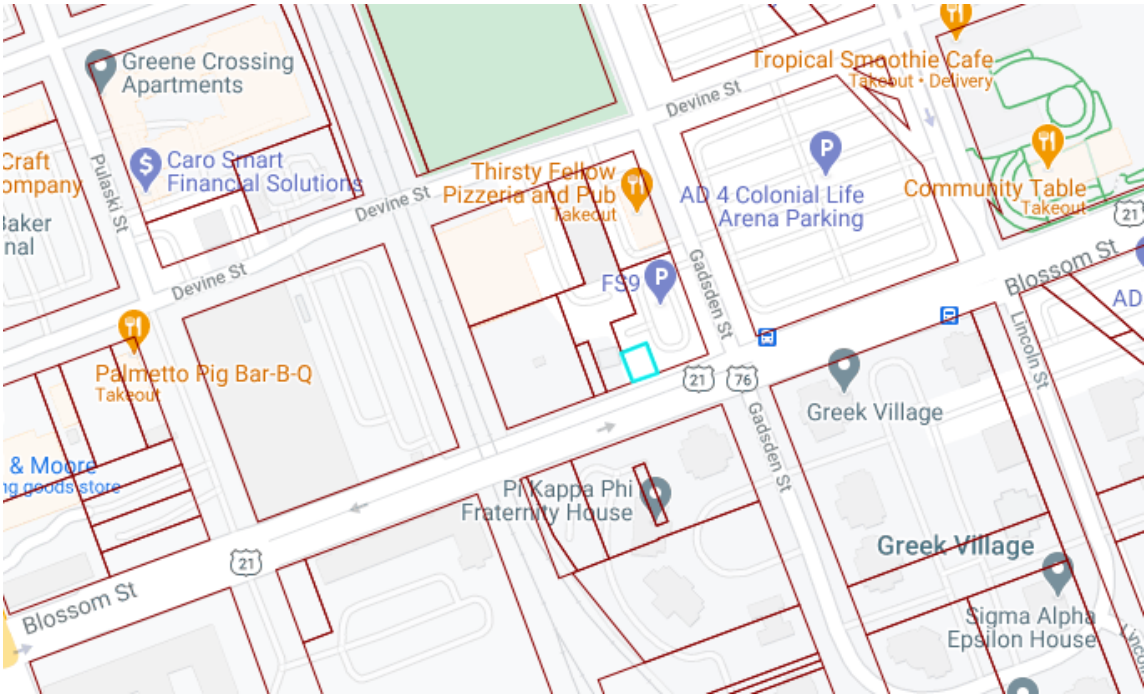
Project:	SCDOT Blossom Bridge Project
Subject:	Virtual Public Information - Follow-Up with Sean Potter (721 Blossom St & 613 Gadsden St)
Date:	Wednesday, December 9, 2020
Location:	Phone Call
Attendees:	Sean Potter, 613 Gadsden Street LLC & BDS Park LLC Raven Gambrell, HDR

Purpose

The call was held per Mr. Sean Potter's request noted in his comment during the Virtual Public Information Meeting.

General Discussion

Mr. Potter has part ownership in 721 Blossom Street (BDS Park LLC, blue highlight below) and 613 Gadsden Street (613 Gadsden Street LLC, parking lot by the blue highlight).



Access / Property Use

Mr. Potter indicated that he wanted to make sure it was in our official records that closing the alley would restrict access.

Mr. Potter is concerned about access to the parcels due to the closure of the alley. He indicated they have considered using the space for a Dunkin Donuts using the alley for access to a drive through. They

have also considered combining the parcels for a larger parking lot. Additionally, he mentioned that he has been approached by an out of town buyer to potentially buy the property.

He also mentioned the possibility of using the property for a construction laydown area.

Ms. Gambrell noted the project is still in the preliminary design phase and it has not been 100% determined if the alley will need to be permanently closed. Ms. Gambrell indicated that the alley closure was likely due to safety concerns and the space needed to tie down the retaining wall.

Proposed Right-of-Way

Mr. Potter asked about the triangular R/W acquisition shown in the meeting materials. Ms. Gambrell responded that this was not final and that triangular areas are typically acquired for sight distance at intersections.

Path-Forward

Mr. Potter has been participating in the stakeholder group and will continue to do so. Ms. Gambrell noted that the R/W acquisition process is not anticipated until late 2021 or 2022. Mr. Potter will be kept up to date on this timeline through his involvement in the stakeholder committee.